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Attorneys for Applicant SUEZ Water Idaho Inc.

RECEIVED
APR 04 2018
DEPARTMENT OF
WATER RESOURCES

BEFORE THE IDAHO DEPARTMENT OF WATER RESOURCES

IN THE MATTER OF INTEGRATED MUNICIPAL APPLICATION PACKAGE ("IMAP") OF SUEZ WATER IDAHO INC., BEING A COLLECTION OF INDIVIDUAL APPLICATIONS FOR TRANSFERS OF WATER RIGHTS AND APPLICATIONS FOR AMENDMENT OF PERMITS.

EIGHTH AFFIDAVIT OF JACK W. RELF (GARDEN CITY UTILITY MASTER PLAN)

State of Idaho)
) ss.
County of Ada)

JACK W. RELF, being first duly sworn upon oath, deposes and states:

1. I am an associate attorney with the above-captioned firm, Givens Pursley LLP. I am one of the attorneys representing SUEZ Water Idaho Inc. in the above-entitled action and am duly licensed to practice law in the state of Idaho.

2. I make this affidavit based upon my personal knowledge of the facts set forth in this affidavit and to the best of my information and belief.

3. A true and accurate copy of the Utility Master Plan (Facilities Planning Study) Water System – City of Garden City Idaho (January 2009), as obtained from the Office of the City Clerk for Garden City, Idaho is attached hereto as Exhibit A.

DATED this 4th day of April, 2018.

GIVENS PURSLEY LLP

By _____
Jack W. Relf

Subscribed and sworn to before me this 4th day April, 2018.

LISA A. HUGHES NOTARY PUBLIC STATE OF IDAHO

_____
Notary Public for Idaho
Residing at: Boise Idaho
My Commission Expires: 3-22-2019

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 4th day of April, 2018, the foregoing was filed, served, and copied as shown below. Service by email is authorized by the Hearing Officer's Order of September 11, 2017 at page 3. Due to the size of the exhibit, a courtesy copy of the foregoing without the exhibit attached was emailed to all parties noted below, and a physical copy of the same with the exhibit has been placed on a disk and mailed as indicated below.

DOCUMENT FILED:

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Jack W. Relf

Exhibit A **GARDEN CITY UTILITY MASTER PLAN**

UTILITY MASTER PLAN
(FACILITIES PLANNING STUDY)
WATER SYSTEM

GARDEN CITY™
NESTLED BY THE RIVER

City of Garden City
Idaho

Ada County

January 2009

APPROVED
By: _____
IDAHO DEQ
Boise Regional Office
Date: 9/29/09

PROFESSIONAL ENGINEER
REGISTERED
Kevin L. Harris
11364
9/14/2009
STATE OF IDAHO
KEVIN L. HARRIS

FORSGREN Associates Inc.

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

TSP&S-187/2009

September 29, 2009

Delhie Block
City of Garden City
6015 Glenwood
Boise, Idaho 83714

RE: Garden City Utility Master Plan - Water System *(Garden City, Ada County)*
Public Drinking Water System - Facility Plan

Dear Ms. Block:

The referenced project appears to meet state of Idaho standards, and is approved based on the conditions listed below.

I. PROJECT SPECIFIC CONDITIONS:

A. This approval is for the Public Drinking Water System Facility Plan (FP) only. Please submit a Preliminary Engineering Report (PER) to DEQ for review and approval prior to preparing and submitting detailed plans and specifications for all material modifications, as defined by the Idaho Rules for Public Drinking Water Systems (IRPDWS), to the water system. Detailed plans and specifications cannot be reviewed until the PER is approved; furthermore, no construction can begin until the detailed plans and specifications have been reviewed and approved by DEQ.

B. The referenced FP is part of a project, or may eventually lead to projects, that require the release of sanitary restrictions. In the interest of protecting public health, the Boise Regional Office will not recommend lifting sanitary restrictions until specific conditions are met. For additional information, please find the attachment entitled "Release of Sanitary Restrictions and Project Approval, General Guideline, Idaho DEQ Boise Regional Office, April 2008. If you have any questions please contact The Boise Regional Office at 373-0550."

C. This approval letter does not include approval of the Environmental Information Document (EID) that was included as part of the facility plan submittal. The EID was not reviewed as part of the submittal. If, in the future, the City is eligible to receive federal funding for any of the projects, the EID may need to be resubmitted at that time and approved by DEQ.

D. Currenty the water rights for Wells #4 and #5 allow a lower pumping rate than the well is capable of pumping and the water right for Well #5 was recommended to be disallowed in December 2006. As such, the City does not have sufficient water rights to meet the current maximum day demand plus fire flow when the largest source is out of service. **The City will not be allowed to add connections to the system until both of these water right issues are addressed by either updating the individual water rights or updating all of the water rights to specify that the water right can be used at multiple diversion points within the muncipality.**

1. The updated water rights must be submitted to DEQ.

E. The Capacity Summary Table, included as Attachment A to this letter, will need to be updated whenever capacity is added to the system. The updated table should be submitted to DEQ to aid in subsequent plan and specifications reviews.

F. The Item D in Section 6-5-4 of Title 6 Water and Sewer Chapter 5 Cross Connections (located in Appendix H), states that a double check valve assembly or a reduced pressure principle backflow prevention device must successfully pass performance tests of the University of Southern California Engineering Center or meet AWWA C-506 standard, or another equal test. This does not entirely meet the requirements of the IRPDWS and should be changed as soon as possible to accurately reflect the requirements of IDAPA 58.01.08.543. All double check valve backflow prevention assemblies, reduced pressure principle backflow prevention assemblies, spill resistant vacuum breakers, and pressure vacuum breakers used for cross connection control must pass a performance test conducted by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.

Please call me with any questions at (208) 373-0137 or contact me via e-mail at stephanie.carroll@deq.idaho.gov.

Sincerely,

Stephanie M. Carroll, P.E.
Staff Engineer

SMC:sjt
Enclosures: Approved and Stamped Facility Plan
Release of Sanitary Restrictions and Project Approval, General Guideline

C: Mark Mason, P.E., DEQ Boise Regional Office
Michael Stambulis, P.E., DEQ Technical Services
Kevin Harris, P.E., Forsgren & Associates *(w/approved and stamped FP cover page)*
BRO Source File 1-ENG, Garden City
TSP&S Reading File

Table VII-3 Capacity Summary Table

Item Description	Current ERU Estimate	Maximum ERU Capacity Added	Total ERU Capacity to Meet MDD plus Fire Flow	Remaining ERU Capacity
Current System Configuration	6,000	---	7,270 (supply) 0 (storage)	1,295 (supply) 0 (storage)
Converting Water Rights to Municipal	6,000	NA (this will allow 12,055 gpm to be diverted; however the system is limited by the 8,690 gpm Firm Pumping Capacity)	7,295 (supply) 0 (storage)	1,295 (supply) 0 (storage)
Rehabilitate Wells #3, #8, and #6 to add 1,375 gpm to system	6,000	1,930 (supply)	9,200 (supply) 0 (storage)	3,200 (supply) 0 (storage)
Conservation Program (locate leaking distribution lines)	6,000	362 (supply)	9,562 (supply) 0 (storage)	3,562(supply) 0 (storage)
Generator at Wells #4 and #9	6,000	No Impact on Capacity		
Rehabilitate Wells #6 and #12 to add 3,310 gpm to system	6,000	3,169 (supply)	1,2731 (supply) 0 (storage)	6,731(supply) 0 (storage)
Drill New Well	6,000	1,869 (supply)	14,600 (supply) 0 (storage)	8,600(supply) 0 (storage)
Construct Storage Reservoir (1 MG)	6,000	650 (storage)	14,600(supply) 650 (storage)	8,600(supply) 650(storage)

Assumptions:

1. Year 2009 unit connections = 5,340 residential; 650 commercial with 6,000 Equivalent Residential Units (ERU's).
2. ERU capacity added is the maximum expected additional capacity based on the Maximum Day Demand of 0.71 gpm per connection and the Fire Flow requirement. Actual capacity added must consider location of the new ERU's relative to the improvements. Additional improvements to the distribution system may be necessary prior to reaching the listed "Maximum ERU Capacity Added."
3. Conservation Program assumes that one-half of the volume discrepancy (372,500 gpd) between the well production and volume accounted for by the meters is saved.
4. ERU's for water storage are calculated with the assumption that 420,000 gallons of storage is used to meet the 3,500 gpm for 2 hour fire flow requirement; the remaining 580,000 gallons of storage is sufficient for a system total of 15,250 ERU's.

Release of Sanitary Restrictions and Project Approval
General Guideline
Idaho DEQ - Boise Regional Office
April 2008

In the interest of protecting public health, the Boise Regional Office will not recommend lifting sanitary restrictions for developments unless the following are in place. This list is not all-inclusive, but does cover the general case. Specific cases may involve additional requirements.

Planning and Operational Documents – These items must be approved but they do not directly result in construction or the construction is not required to be completed prior to release of sanitary restrictions.

- Facility Plans for wastewater and drinking water as needed
- PERs for wastewater and drinking water system components as needed
- Technical Financial and Managerial Documentation
- Operation and Maintenance Manual(s)
- Wastewater disposal permits (Subsurface, Reuse, NPDES)
- Approved plans and specs for onsite water and sewer lines

System Components –These items are generally identified in an approved facility plan or may be items not identified in a facility plan, but that are necessary to serve one or more developments that are covered by the facility plan. System components must be constructed, tested and operational.

- Offsite water and sewer mains needed to connect to the municipal system.
- Drinking water wells with full system capacity in place
- Drinking water booster stations.
- Drinking water storage reservoirs constructed
- Drinking water pressure reducing stations
- Drinking water treatment plants or equipment
- Wastewater lift stations and force mains
- Wastewater treatment facilities
- Wastewater disposal facilities
- Any standby power facilities as required by rule

All of the above system components must be at the capacities shown in an approved facilities plan. An example is if a new development needs a lift station, force main and WWTP capacity from a city: All those capacities must be in place prior to lifting restrictions.

Please note:
In the general case, plans and specifications for the system components listed above must be approved by DEQ prior to the approval of plans and specifications for onsite water and sewer mains extension projects that are dependant on the system components that are listed above. However, on a case by case basis (as determined by the Boise Regional Office), and provided that sanitary restrictions remain in force, plans and specifications for water and sewer main extension projects may be approved prior to the approval of plans and specifications for the required system component(s). However, no water mains will be approved until drinking water well quantity and quality is proven and approved by DEQ.

Please contact the Boise Regional Office Engineering Manager at 373-0550 with any questions or for additional information.

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GARDEN CITY, IDAHO
UTILITY MASTER PLAN
WATER SYSTEM

I. INTRODUCTION

The City of Garden City, Idaho is located in one of the fastest-growing regions in the nation. This growth along with potential areas for land development and re-development present challenges related to utility infrastructure planning. Many of these challenges are related to water supply, water delivery, wastewater collection, wastewater treatment, changing source water quality, and maintenance.

To aid in the planning of systematic growth, the City has entered into an agreement with the team of Forsgren Associates and Wilson & Company to develop a Utility Master Plan. This document is one of three companion planning documents that evaluates and discusses the water utility.

A. Description

This report presents the Utility Master Plan – Water System (WMP). The WMP will provide the City with a planning document for the next 30 years, as well as, present documents that assist city officials and staff in understanding the physical extent of the water system; evaluating the current condition of the existing water system; anticipating the future demands of the water system; developing plans to systematically improve the water system through replacement, rehabilitation and new construction to meet the future demands; formulating an implementation plan that includes realistic means of financing the scheduled improvements; and instituting a preliminary asset management plan that provides the maximum benefit to the customer base at the least cost while meeting regulatory requirements and minimizing risk to the city. This master plan will not be just a document that sets on a shelf, rather it will be an integrated planning tool to allow the City to grow and adapt to the changing needs of the Garden City community

This WMP also includes population projections and water characterization. Figure I-1 shows the planning area which consists of the incorporated limits of Garden City.

B. Purpose and Scope of the Project

1. Purpose

The purpose and scope of this Utility Master Plan – Water System (WMP) is to establish a path to improve utility services provided by Garden City. The WMP will provide the City with a planning document as well as a set of tools and processes to improve efficiency, enhance customer service, and prepare for future growth. This plan will provide the City officials and staff with information regarding the current condition and extent of utilities and evaluate anticipated future demands.

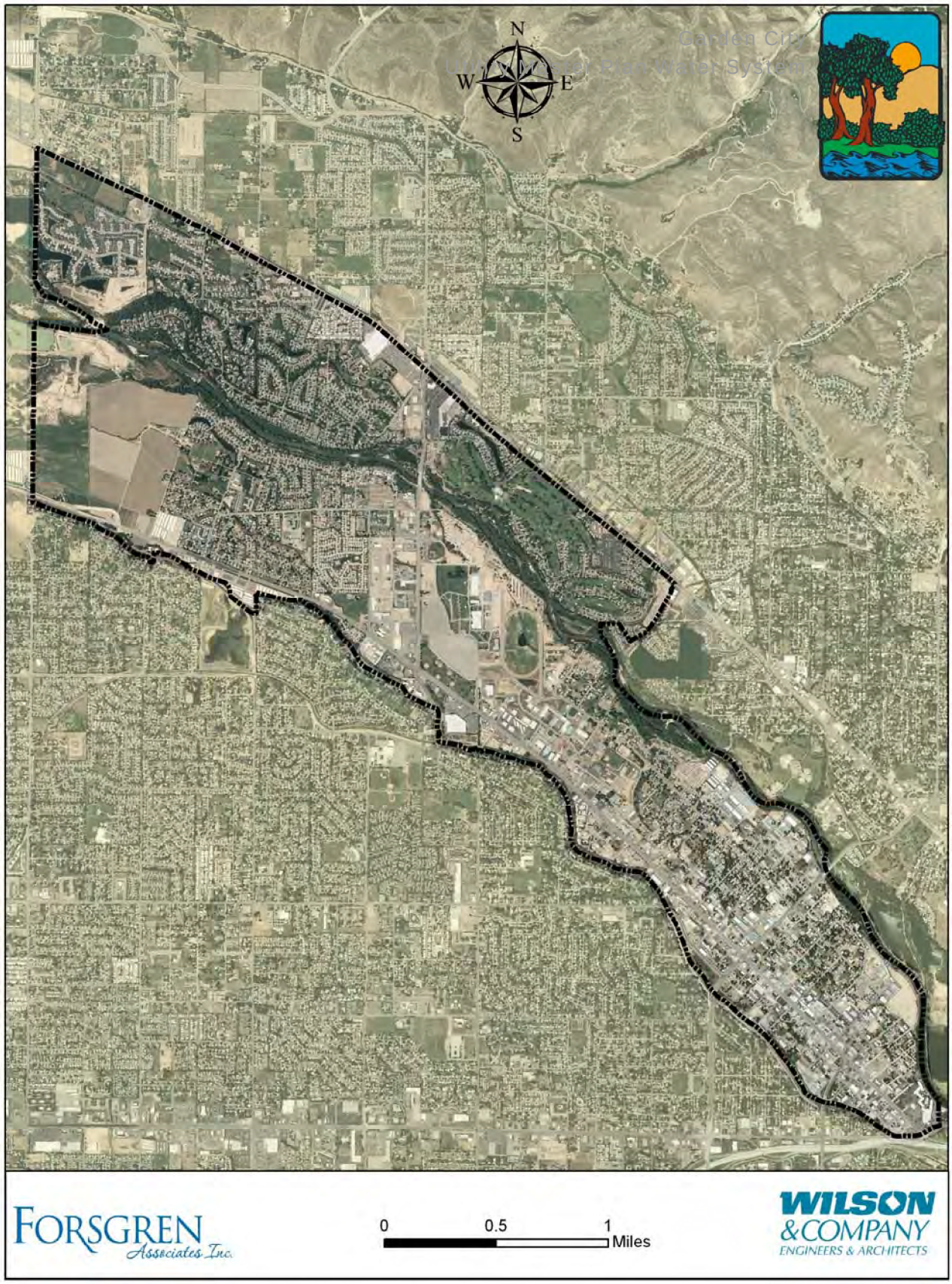


Figure I-1 Garden City Boundary Map

The main goals of the study are:

- Develop a planning basis to systematically improve the utilities through replacement, rehabilitation, and new construction;
- formulating an implementation plan example that includes realistic means of financing the scheduled improvement;
- develop computerized models of the water system with reliable mapping of the existing and future elements;
- suggested capital improvement examples for the water system based on current conditions;
- outline a financial plan presenting the scenario of funding both the operation and maintenance and the suggested capital improvement examples.

2. Planning Area

The planning area consists of the incorporated limits of Garden City as depicted in Figure I-1. A vicinity map is provided in Figure I-2. The planning area includes the following "Special opportunity areas" as described in the *Garden City Comprehensive Plan*: (1) the Expo Idaho; (2) the area around 37th and Adams Street; (3) the ITD property at Chinden Boulevard and Coffey Street; (4) the area west of the city limits and north of Chinden Boulevard; (5) the east gateway at Chinden Boulevard; and (6) the area between the river and Riverside Drive west of Glenwood Street.

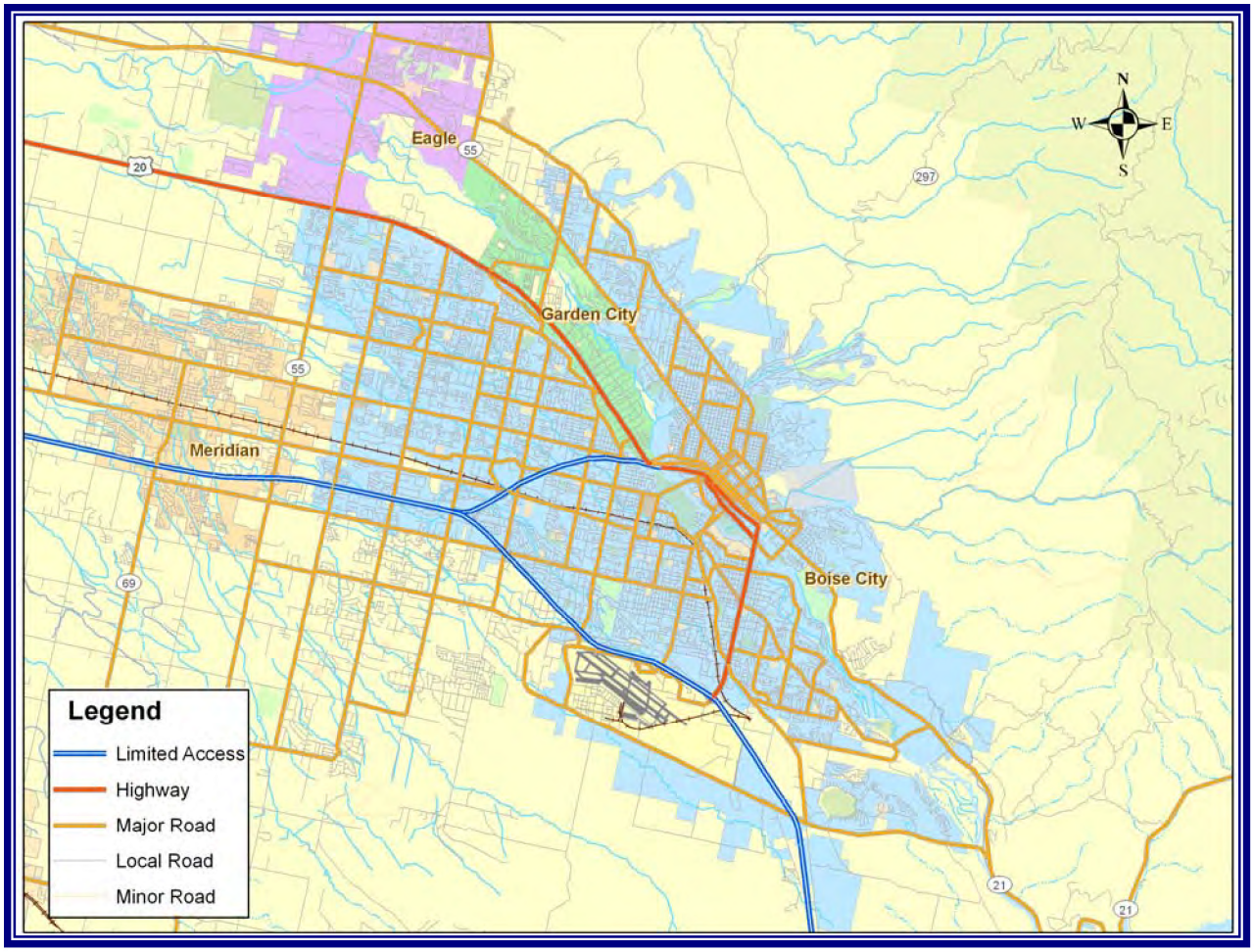


Figure I-2 Vicinity Map for Garden City

3. Planning Period

The planning period for system analysis projects is typically 20 years, an interval based on the terms of the financing arrangements for municipal infrastructure projects and the design life of many major equipment components. In the case of Garden City, the financing is likely to originate with IDEQ SRF loans or private equity loans and may have an amortization period of thirty years. Therefore, the selected planning period for the water utility is 30 years.

4. Authorization and Participants

The Garden City Council has authorized the consulting of Forsgren Associates Inc. along with their partner Wilson & Co. to prepare this Utility Master Plan. The financing for said report originates from the City.

C. Report Organization

The report is organized according to the EPA outline for Facility Planning Studies, a format that is analogous to the Rural Development suggested outline for a Preliminary Engineering Report. Essentially, the organization is as follows:

1. Chapter 1 Introduction

Chapter 1 is titled as Introduction. The Introduction provides a brief project description, defines the purpose and scope of the study, and presents the report organization.

2. Chapter 2 Existing Environmental Conditions

Chapter 2 is titled Existing Environmental Conditions. This chapter presents the environmental backdrop against which the deficiency remedies are evaluated against.

3. Chapter 3 Existing Source, Distribution, and Treatment Facilities

Chapter 3 is titled Existing Source, Distribution, and Treatment Facilities. This chapter describes the condition and utilization of the all of the drinking water components including: water sources, wells, pumps, tanks, transmission lines, system pressures, and fire flows.

4. Chapter 4 Future Conditions

Chapter 4 is titled Future Conditions. This chapter addresses the future land use and development patterns for the community, projects future population growth, extrapolates population growth into anticipated water demands, forecasts changes to the regulatory environment that may affect the treatment paradigm, and identifies facilities and equipment necessary to meet the growth and regulatory changes.

5. Chapter 5 Development and Initial Screening of Alternatives

Chapter 5 is titled Development and Initial Screening of Alternatives. This chapter describes the problems and deficiencies identified in the analysis of the existing system and discovered while developing future conditions, develops criteria for use in initial screening of alternatives, presents various alternatives in preliminary form, and evaluates the alternatives using the initial screening criteria.

6. Chapter 6 Final Screening of Alternatives and Plan Adoption

Chapter 6 is titled Final Screening of Alternatives and Plan Adoption. This chapter describes the alternatives advanced in from the initial screening in more detail, develops process flow diagrams or sketches of the alternatives, highlights the advantages and disadvantages of each alternative, presents criteria for use in final screening of alternatives, evaluates the final alternatives against criteria, outlines capital and operation & maintenance costs, and recommends an alternative as a solution to the deficiencies identified in earlier chapters.

7. Chapter 7 Selected Plan Description and Implementation

Chapter 7 is titled Selected Plan Description and Implementation. This chapter provides a detailed description of the selected plan along with the justification for its selection, develops a conceptual design of the selected plan, presents the construction cost for the selected plan, evaluates the user charge system with respect to financing the selected plan, and identifies operational requirements for the selected plan.

II. EXISTING ENVIRONMENTAL CONDITIONS

This environmental information document is the backdrop with which all environmental concerns are evaluated against the Utility Master Plan (MP) improvements and facility upgrades. The MP provides the City with a planning document for the next 30 years as well as present documents that assist city officials and staff in understanding the physical extent of water, sewer, and treatment systems. This document is used to inform the City, government agencies, and the general public of potential environmental impacts of the MP on the community and surrounding habitat, an extended (un-abbreviated) environmental document would discuss mitigation of potentially negative impacts and develop an action plan for mitigation. Many topics discussed herein have been address in the *Garden City Comprehensive Plan, 2006*, and/or the *Ada County Comprehensive Plan, 2007*. These topics have been confirmed and either referenced or directly quoted where applicable.

A. Environmental Conditions

1. Physiography, Topography, Geology, and Soils

a. Physiography

Garden City, Idaho lays in an area of the Columbia Plateau known as the Payette Section Physiographic Province, see the USGS map provided in Figure II-1.

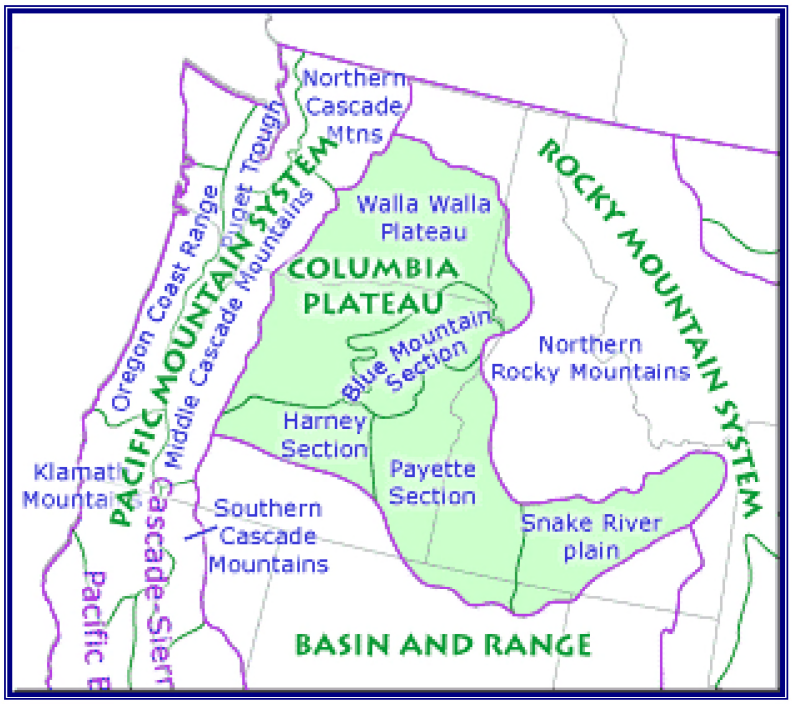


Figure II-1 Payette Section in the Columbia Plateau

b. Topography/Surface Hydrology

Garden City, Idaho is located at an elevation of about 2,600 ft above sea level in the Treasure Valley and is situated on relatively flat terrain split by the Boise River that runs the length of the City. Various canals traverse the area and provide irrigation to residential subdivisions. Multiple lagoons dot the landscape; many of these lagoons are filled via canal system, seepage from shallow groundwater, stormwater, or the river. The lagoons are used as recreational drainage basin areas and to preserve the natural habitat. The City utilizes various methods for disposing of stormwater including retention ponds that are drained by infiltration into the aquifer and drainage channels that terminate in the Boise River

c. Geology

The Treasure Valley is located between the Owyhee Mountains to the south and the Boise Mountains to the north. The Garden City area is underlain by Quaternary alluvial deposits, with the surrounding areas underlain by Quaternary gravels and terraces on the western Snake River plain to the south and Pliocene and Upper Miocene stream and lake deposits (Salt Lake Formation, Starlight Formation, Idaho Group) across the Boise River to the north. A geologic map of Ada County is presented in Figures II-2 and II-3.

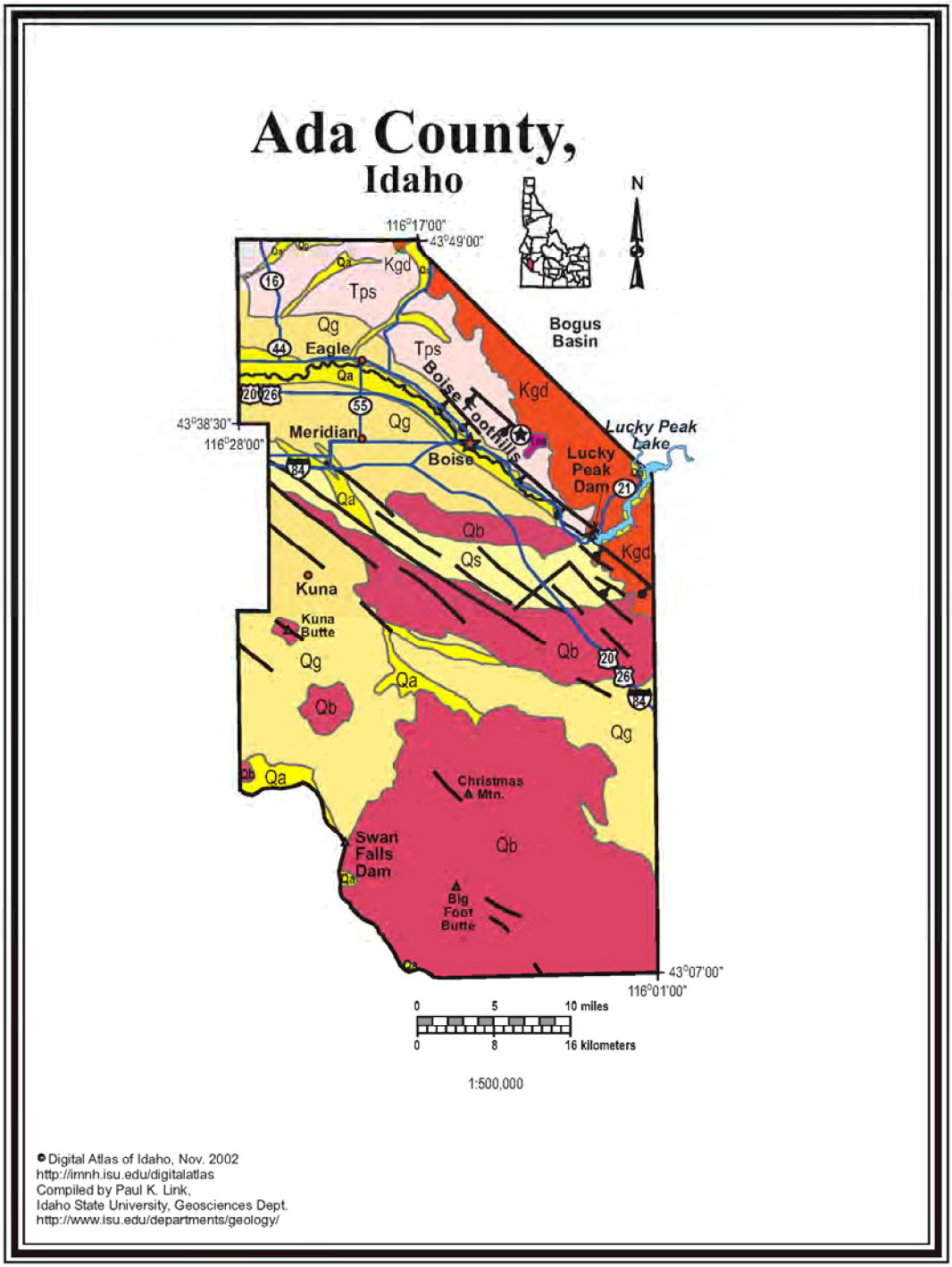
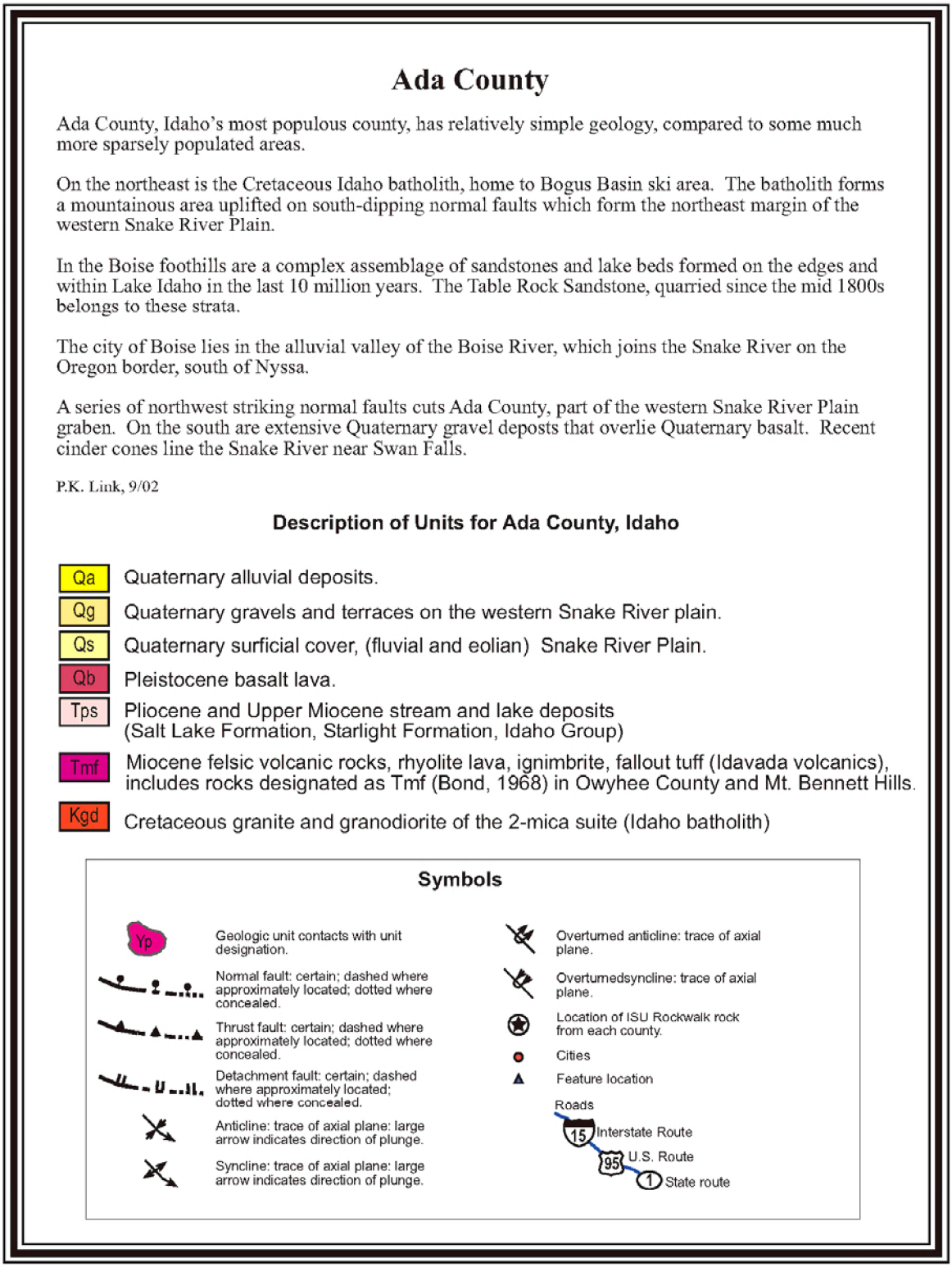


Figure II-2. Ada County Geologic Map



Ada County

Ada County, Idaho's most populous county, has relatively simple geology, compared to some much more sparsely populated areas.

On the northeast is the Cretaceous Idaho batholith, home to Bogus Basin ski area. The batholith forms a mountainous area uplifted on south-dipping normal faults which form the northeast margin of the western Snake River Plain.

In the Boise foothills are a complex assemblage of sandstones and lake beds formed on the edges and within Lake Idaho in the last 10 million years. The Table Rock Sandstone, quarried since the mid 1800s belongs to these strata.

The city of Boise lies in the alluvial valley of the Boise River, which joins the Snake River on the Oregon border, south of Nyssa.

A series of northwest striking normal faults cuts Ada County, part of the western Snake River Plain graben. On the south are extensive Quaternary gravel deposts that overlie Quaternary basalt. Recent cinder cones line the Snake River near Swan Falls.

P.K. Link, 9/02

Description of Units for Ada County, Idaho

Qa	Quaternary alluvial deposits.
Qg	Quaternary gravels and terraces on the western Snake River plain.
Qs	Quaternary surficial cover, (fluvial and eolian) Snake River Plain.
Qb	Pleistocene basalt lava.
Tps	Pliocene and Upper Miocene stream and lake deposits (Salt Lake Formation, Starlight Formation, Idaho Group)
Tmf	Miocene felsic volcanic rocks, rhyolite lava, ignimbrite, fallout tuff (Idavada volcanics), includes rocks designated as Tmf (Bond, 1968) in Owyhee County and Mt. Bennett Hills.
Kgd	Cretaceous granite and granodiorite of the 2-mica suite (Idaho batholith)

Symbols

Yp — Geologic unit contacts with unit designation.

Normal fault: certain; dashed where approximately located; dotted where concealed.

Thrust fault: certain; dashed where approximately located; dotted where concealed.

Detachment fault: certain; dashed where approximately located; dotted where concealed.

Anticline: trace of axial plane: large arrow indicates direction of plunge.

Syncline: trace of axial plane: large arrow indicates direction of plunge.

Overturned anticline: trace of axial plane.

Overturnedsyncline: trace of axial plane.

Location of ISU Rockwalk rock from each county.

Cities

Feature location

Roads

15 Interstate Route

95 U.S. Route

1 State route

Figure II-3. Ada County Geologic Map Legend

d. Soils

The NRCS has designated the soil types in the Garden City area. The most common types of soil groups include: Notus soils, Falk-Moulton-Urban land complex, Moulton fine sandy loam, and Falk fine sandy loam. Refer to the NRCS soil map and legend in Figure II-4.

2. Surface and Groundwater Hydrology

a. Surface Water

The main sources of Surface water in Garden City are the Boise River which divides the City and/or the shallow groundwater both of which contribute to the multiple small natural and manmade lagoons in the area. Irrigation canals divert water from the Boise River and convey it, along with stormwater following a precipitation event, to surface water users, parks, and recreational areas through a network of canals surrounding the City. Water districts within Garden City are limited to the Thurman-Mill Ditch Company LTD - 2,587 Acres; Fairview Acres Water Users Association Inc. - 702 Acres; and the Boise Valley Irrigation Ditch Company - 5,850 acres. Thurman-Mill Ditch Company LTD covers most of the city on the southern side of the Boise River. Fairview Acres Water Users Association Inc. overlaps the boundaries of the Thurman-Mill Ditch Company in the Southern and Eastern portion of the city. Boise Valley Irrigation Ditch Company covers the north of the Boise River.

b. Groundwater

The Boise Valley Aquifer (BVA) lies beneath the Garden City impact area. This aquifer is not a Sole Source Aquifer; refer to the Figure II-5 and Figure II-6 for maps of aquifers in the State of Idaho. The BVA area and flow directions are also shown on Figures II-5 and Figure II-6. The BVA flows through sedimentary and volcanic formations and is reported as being deep with shallow ground water. The flow direction of groundwater in the Garden City area is generally towards the west and southwest. The static water level elevations for Garden City wells are: artesian at Well #3, 7 feet at Well #4, 20 feet at Well #5, 8 feet at Well #6, -2 feet at Well #7, artesian at Well #8, 3 feet at Well #9, artesian at Well #10, artesian at Well #11, and artesian at Well #12.

3. Fauna, Flora, and Natural Communities

From the *Garden City Comprehensive Plan*, “Forests contribute to the county's recreational and aesthetic values, enhance the appearance of developed areas, provide shade and wildlife habitat, reduce soil erosion, cleanse the air, and preserve valuable watersheds.” There is one general forest type in Garden City: “Riparian forests located in wet gulches and areas adjacent to rivers and streams.”

“The diversity of habitat in Ada County supports a wide variety of plant and animal species, including the Bald Eagle and Ute Ladies’-tresses (a plant), which are both listed as a threatened species by the federal government, and the Yellow-billed Cuckoo, which is a candidate for federal listing. Ada County is not a habitat area for any other federal, threatened, endangered, or special concern species of plants or invertebrates.” (Ada County Comprehensive Plan, 2007)

4. Residential, Commercial, and Industrial Development

Based on 2000 census data, the economic conditions in Garden City are consistent with an urban setting. The median value of an owner-occupied single-unit home in Garden City is $161,800, compared with $124,700 for all of Ada County, and $106,300 in comparison to the entire state of Idaho (US Census, 2000). Median income for the Garden City is $46,140, compared with $39,302 for Ada County, and $37,557 for the State of Idaho. Garden City has economic strength in food wholesale and retail; the 2000 census bureau data indicates a mixed economic base including hospitality, food retail, and department stores. Major employers include Wal-Mart, employing 550 persons; Fred Meyer, employing 315 persons; Doubletree Hotels-Riverside, employing 300 persons; and Grasmick Produce Co., employing 49 persons.

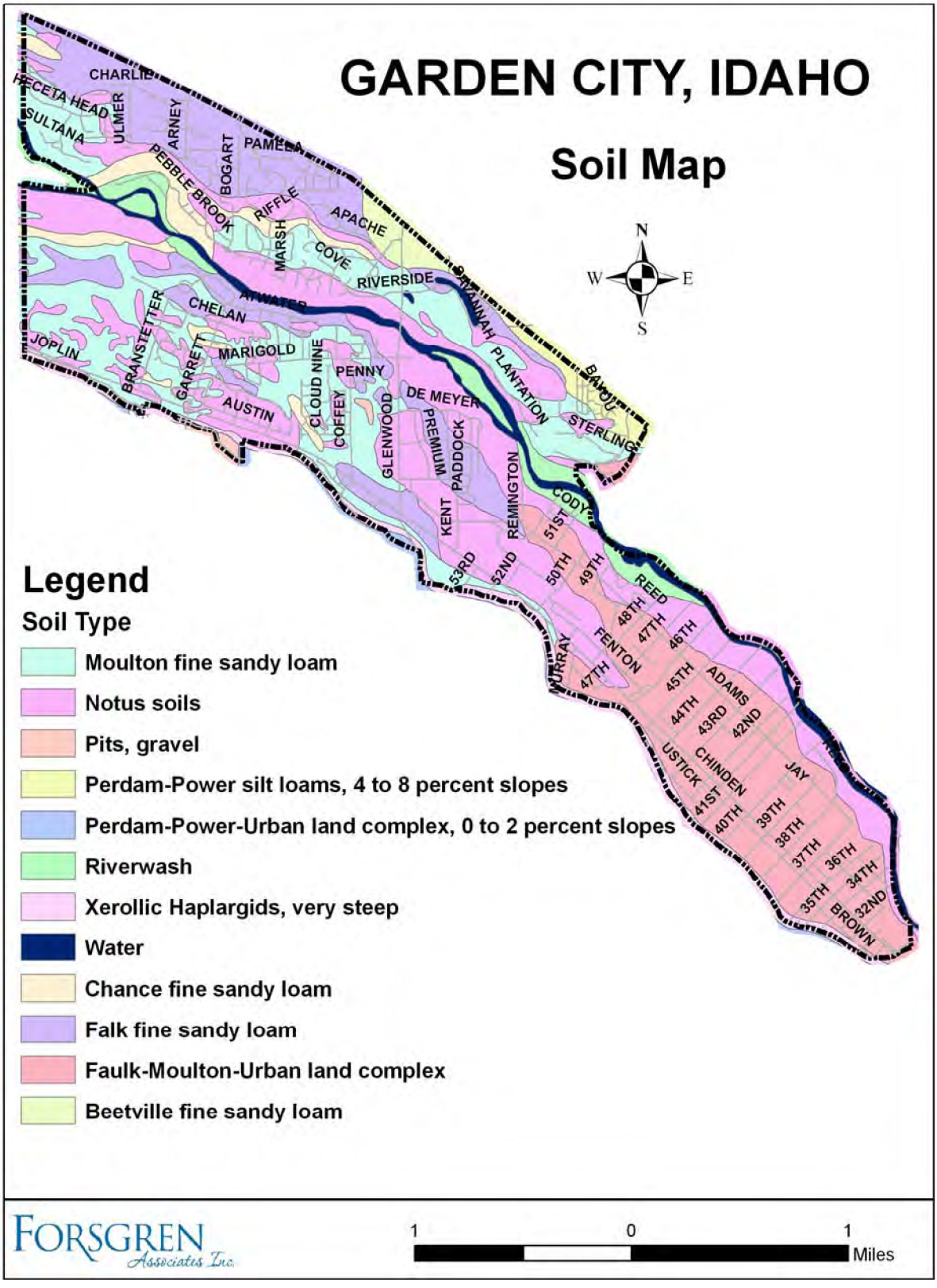
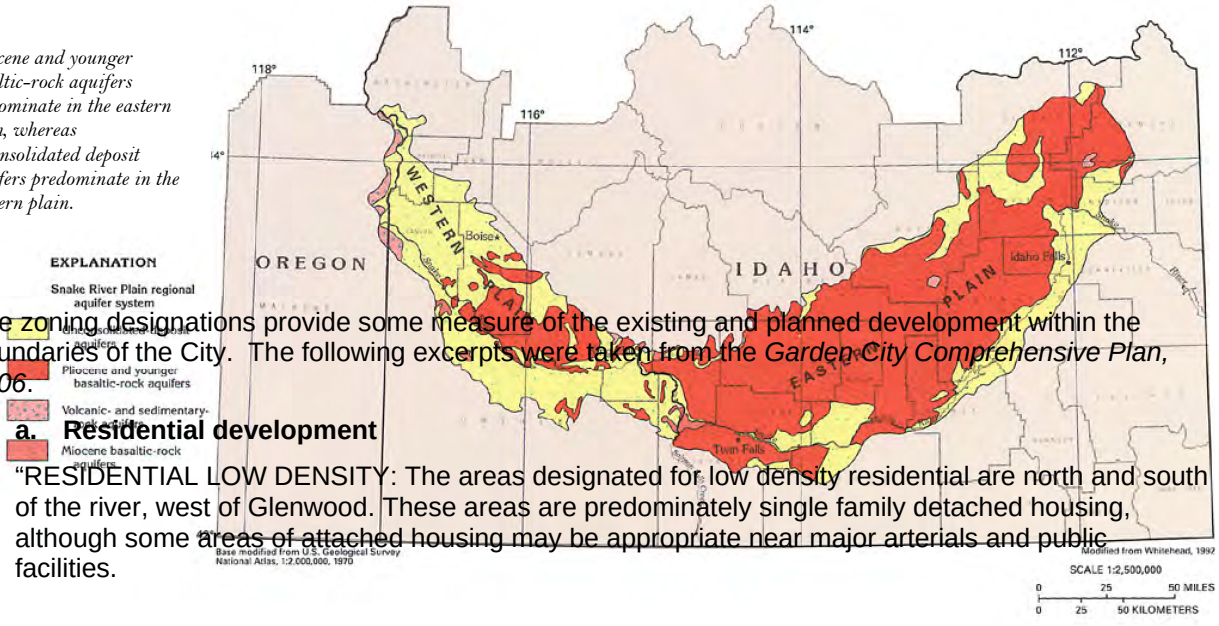


Figure II-4 Garden City Soil Map

Pliocene and younger basaltic-rock aquifers predominate in the eastern plain, whereas unconsolidated deposit aquifers predominate in the western plain.



The zoning designations provide some measure of the existing and planned development within the boundaries of the City. The following excerpts were taken from the *Garden City Comprehensive Plan, 2006*.

a. Residential development

"RESIDENTIAL LOW DENSITY: The areas designated for low density residential are north and south of the river, west of Glenwood. These areas are predominately single family detached housing, although some areas of attached housing may be appropriate near major arterials and public facilities.

Figure II-5. Snake River Plain Aquifer

The general direction of groundwater movement in the Snake River Plain regional aquifer system is from east to west. Much of the discharge from the aquifer system is to the Snake River. Rocks of low permeability underlie areas of shallow local aquifers or perched water bodies.

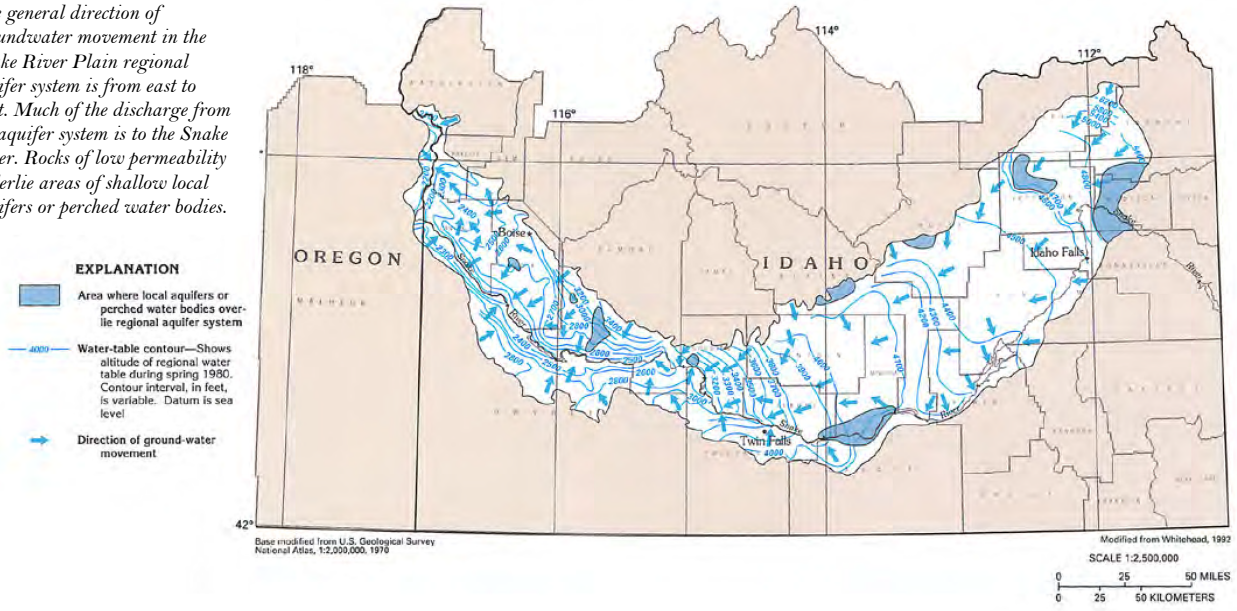


Figure II-6. Snake River Plain Aquifer Flow Direction

The following excerpts were taken from the Garden City Comprehensive Plan, 2006.

a. Residential development

"RESIDENTIAL LOW DENSITY: The areas designated for low density residential are north and south of the river, west of Glenwood. These areas are predominately single family detached housing, although some areas of attached housing may be appropriate near major arterials and public facilities.

RESIDENTIAL MEDIUM DENSITY: The residential medium density designation is shown for the areas north of Chinden and west of Glenwood. This designation allows for detached and attached dwelling units including duplexes and townhouses.

MIXED USE RESIDENTIAL: The mixed use residential area is north of Adams Street. This designation allows for residential and commercial uses in a form and scale that is residential in character and design. A mix of residential; small scale office and retail; and public and semi-public uses are appropriate in this district. Regulations for this area should focus on form more than use, with a maximum height of two stories."

b. Industrial development

"LIGHT INDUSTRIAL: The light industrial designation reflects an intent to maintain the area of existing industrial uses, around Bradley Street and north of Chinden. Industrial development includes: materials processing and assembly, product manufacturing, storage of finished products, and truck terminals. Manufacturing support facilities such as offices and research related activities should also be allowed in this area, but other non-industrial uses should be limited. Major consideration in regulating industrial uses should be setbacks, buffering and landscaping from adjacent residential uses. Standards should also be directed toward control of light, glare, noise, vibration, water and air pollution; use and storage of toxic, hazardous or explosive materials; and outdoor storage and waste disposal."

c. Commercial development

"MIXED USE COMMERCIAL: The mixed use commercial designation is for the area south of Adams Street. The intent of this designation is to create an area for mixed uses, including residential, office, retail, and small scale industrial, that are more urban in character than in the mixed use residential area. Three story buildings and 40%¬60% lot coverage, with aggregated open spaces for pocket parks should guide the development pattern in this area.

MAIN STREET COMMERCIAL CENTERS: Along Adams Street in both the Mixed Use Residential and Mixed Use Commercial areas are opportunities to create "Main Street Commercial Centers". The specific locations for these centers are not shown on the land use map, but would be appropriate within a two block area along both sides of Adams Street and at the intersection with a major north-south street. The development in these areas should be small scale retail, office, commercial and residential uses, integrated vertically in two stories with three stories at the corners.

The focus of development should be on the streets with maximum front yard setback, parking on the street and behind buildings, and pedestrian amenities.

LIVE-WORK-CREATE: The live-work-create district is located in the Old Town Site generally between 32nd to 37th Streets. This designation reflects an opportunity to create an Arts District within the City where artists, crafts persons, or others can live, work, exhibit and operate a business. A mix of uses, including residential, retail, office and small scale industrial are appropriate for this area. Regulation should be primarily through form not uses, including maintaining the existing subdivision pattern of small lots, and limiting the maximum building footprint or square footage of a building in relation to lot size. Large scale development that consolidates lots and allows for larger scale industrial or commercial uses should be restricted.

TRANSIT ORIENTED DEVELOPMENT NODE: The transit oriented development (TOD) nodes are identified within one quarter mile of locations where a transit station has been planned or could be located. It is not intended that all nodes could be developed within the twenty year period of the plan.

A mix of uses including higher density residential, retail, office, research and public uses are included in the TOD area designation. A development to be considered for the TOD designation should include 50,000 square feet of non-residential uses and 60 - 80 dwelling units. The form of the development should be multi-story (three or more stories) along the boulevard corridor with lower height moving away from the street. Site design characteristics should include walkability, public spaces, and transit station design. Lower parking standards should be allowed.

GREEN BOULEVARD CORRIDOR: The state highways and arterials are identified as green boulevard corridors. This is a bold statement that these corridors should be dramatically changed from the current single purpose function for moving vehicles. The intent of this designation is to create more multi-modal characteristics on these corridors, including sidewalks with parkways, bus stops, landscape medians with pedestrian refuges and channelized left-turn lanes. Mobility for vehicles should be maintained, but improvements to the safety and convenience for transit and pedestrians is needed that will influence changes in the adjacent land uses. Existing uses, including commercial uses, are allowed in the corridors, but new uses which generate high volumes of vehicular traffic should be restricted. Development regulations in the corridor should include access management including number and spacing of driveways, location of parking behind the buildings and maximum setback requirements from the street."

5. Cultural Resources

The potential for historically significant cultural resources to be detected in the urban or suburban areas of Garden City are low due to the existing infrastructure and land use. In areas that are undisturbed from there natural state the likelihood of identifying cultural resources increases. The *Garden City Comprehensive Plan* identifies the riverbanks as the most likely location of cultural resources. To more fully assess the potential for discovery of cultural resources in the region the Idaho State Historical Preservation Office (SHPO) must be contacted.

6. Utility Use

It is anticipated that most of the proposed projects can be completed within existing utility corridors or on property currently owned by Garden City. Acquisition of property or easements is limited. Acquisition that is anticipated include the transfer of the Ada County Fairgrounds to the City for redevelopment, property along the western boundary of the City for a potential wastewater treatment plant, and easements for pipelines to connect sewer service areas.

7. Floodplains/Wetlands

a. Floodplains

The Boise River flows through Garden City and implicates a portion of the incorporated city limits with the floodplain boundaries. The FEMA 1% annual chance flood event boundary (100-year floodplain) follows the river corridor extending away from the river in an irregular pattern as influenced by the surface contours both north and south of the river. The specific FEMA designation for this zone through the reaches within Garden City is predominantly AE signifying that base flood elevations have been determined. In addition, FEMA designations for Other Flood Areas, specifically Zone X, roughly follows the city limits boundaries throughout much of the city. A Zone X designation signifies one of the following: a 0.2% chance of annual flooding, a 1% chance of annual flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile, or area protected by levees from 1% annual chance of flood. Structures within Zone X are not typically subject to flood insurance. The Flood Insurance Rate Map for Garden City is shown as Figure II-7.

"River flows are managed by three upstream dams, but unusual weather conditions that exceed the capacity of the dams can result in flooding downstream. Normal flow for the river is 1,200 cubic feet per second. At 6,500 cfs, the river is full from bank to bank and at 7,000 cfs, minor flooding occurs along the greenbelt. A 100-year flood, one that has a one percent chance of occurrence in any year, is at 16,600 cfs." (Garden City Comprehensive Plan, 2006)

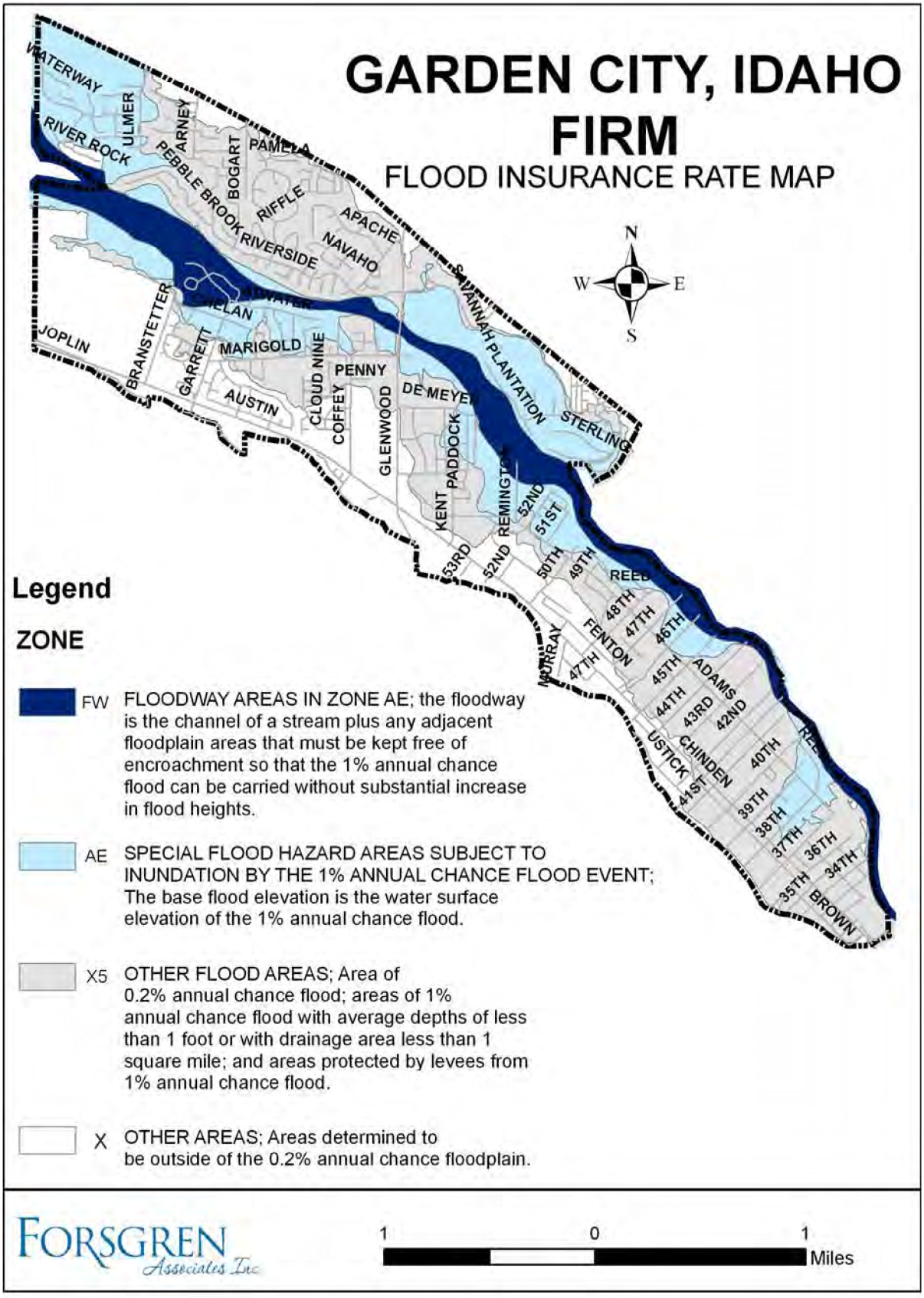


Figure II-7. Garden City Flood Insurance Rate Map

b. Wetlands

"Wetlands generally include swamps, marshes, bogs, and similar areas. They provide important wildlife habitat, help to maintain surface water quality and provide flood water storage. The National Wetlands Inventory shows a number of wetlands within Ada County, the majority of which occur along, or in close proximity to, Lake Lowell or the Boise and Snake Rivers, and are part of the river and canal system. Additional wetlands may be found in the many irrigation canals and return ditches that are under federal jurisdiction, and are therefore not listed in the National Wetlands Inventory." (Ada County Comprehensive Plan, 2007)

8. Wild/ Scenic Rivers

According to IDWR there are no Wild and Scenic Rivers in the vicinity of Garden City; therefore impact to such rivers is unlikely.

9. Existing Municipal Systems

In the vicinity of Garden City are multiple municipalities with water, wastewater, storm drain, and collection/distribution systems for each. Garden City owns and operates their own water distribution system, their own wastewater collection system, is currently under agreement with the City of Boise for wastewater treatment, and Ada County Highway District currently has responsibility for maintenance of the road network.

10. Prime Agricultural Land Protection

"Prime and unique farmlands are found in central Ada County. Prime farmland is that which has the best combination of physical and chemical characteristics for producing food and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and with minimal soil erosion.

Much of the County's farmlands are being converted to urban or rural residential development as the County's population grows. Additional agricultural land may be converted to non-farm uses as a result of locating a new road in a farming area, rebuilding and/or enlarging an existing road, or adding an interchange from an interstate highway in a rural area. Prime farmland status is lost once land is developed to a certain density or is dedicated to other uses such as water storage." (Ada County Comprehensive Plan, 2007)

Based on discussion with Dean Smith, NRCS of the USDA Blackfoot Idaho Office (Smith, 2006), the NRCS will become involved in design review for municipal systems projects in Prime Agricultural Land Areas only if the federal funding is receive for the project.

11. Proximity to Sole Source Aquifer

The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et. seq). EPA defines a sole or principal source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer and the supported areas have no alternative drinking water source(s) which could physically, legally, and economically supply drinking water. According to IDWR there are no SSA in the vicinity of Garden City, therefore impact to a SSA is unlikely.

12. Land Use and Development

The following excerpts were taken from the *Garden City Comprehensive Plan, 2006*.

"Garden City has a diverse range of land uses. Residential uses occupy thirty-two percent (32%) of the land within the city. Commercial, office and industrial uses are twenty percent (20%). The city also includes or surrounds 258 acres of land owned and used by other public agencies, including Expo Idaho, Idaho Transportation Department and the Ada County Highway District.

a. Land Use

"The city has developed with different land-use patterns. The original Old Town site was developed in a standard grid, parallel to the river and in lots of 7,500 square feet and 30,000 square feet. Much of this original part of the city is zoned for commercial and multi-family development. The original reason for much of the commercially zoned land was for the location of mobile homes.

This eastern part of the city has a mix of land uses. In much of the commercial zone, residential, commercial and industrial uses are adjacent or across the street from one another. This mixed-use character provides an opportunity to create a live and work environment. This mixed-use pattern can benefit the city as long as the most intensive and intrusive commercial-industrial uses are controlled. If this mixed use land-use pattern is to be continued, it will require a different way of zoning or regulating land uses with a focus more on form and design than on separation of uses.

Recent development in the western portion of the city and near the river reflects a suburban character with curvilinear streets and cul-de-sacs. Here large-scale planned residential development, including some gated neighborhoods, has created desirable residential neighborhoods.

The city has significant, capacity for in-fill development, both on vacant parcels and under-utilized properties. As described below, in-fill and redevelopment will increase in the future. The city's existing zoning code and development standards were drafted when the city was developing more on greenfield sites. The code has been found inadequate by the Planning and Zoning Commission, applicants, and neighbors for in-fill properties. A major need is in the creation of new development codes that provide direction on these in-fill sites.

Commercial and industrial land uses are scattered throughout the community with a concentration of retail uses along major streets. Overall, the scale of commercial uses is typically low-intensity in a one or two-story development pattern.

Along State Street, Chinden Boulevard and more recently Glenwood Street, the land use pattern can be characterized as strip commercial development. The area, which is auto-oriented with large signs, multiple driveway cuts, expanses of pavement and low-quality designed buildings, has created an unattractive commercial setting.

During the past ten years, the seminal event in commercial development was the construction of the Wal-Mart on State Street, west of Glenwood Street. This development has encouraged further commercial development along State and Glenwood. The sale of the old City Hall property on 50th Street has also allowed for more office development in that area.

The construction of the new post office, City Hall and library at the intersection of Glenwood Street and Marigold has created a focal point of civic uses in one location, and has contributed to a sense of identity for the city.

Like most cities in the county, Garden City at one time turned its back on the river. The river frontage was an industrial area, and in Garden City these uses included stock yards, animal processing, warehouses, maintenance yards and storage areas. This trend is changing. With the success of residential housing along the west end of the river frontage, the river is being re-discovered and the old industrial uses are disappearing from the river frontage in the eastern side of town."

b. Future Development

"Garden City has an enviable location. It is adjacent to the Boise River, is linked with major transportation corridors, and is close to downtown Boise, the commercial center of the Treasure Valley. As the valley continues to spread out and vehicle commuting becomes more difficult, and as older couples opt for smaller and more convenient home locations, Garden City will become even more desirable. Considering these factors, Garden City provides a market for redevelopment of older and under-utilized properties.

Redevelopment of the Expo Idaho site, the ACHD maintenance facility and the ITD property on North Coffey Street also presents an opportunity. These three properties represent almost 300 acres that

currently contribute no direct tax revenues to the city but hold opportunities for a renaissance in development for the community.

The 240-acre Expo Idaho site, formerly the Ada County Fairgrounds, includes the North Ada Fire Station, EMS building, County Extension offices, Expo buildings, Ladybird Park, racetrack and stables, RV park and baseball field. The leases on the RV park and racetrack expire in 2010, providing a near-term opportunity for new uses. Given the adjacency to City Hall, the library and the post office, redevelopment of this segment of the Expo site as a city center is possible. A mix of uses, including a public open space adjacent to the river for community events, shops and housing would create a heart for the city that has been lacking for a long time.

The 1.8-acre ITD District Three headquarters site may relocate to be more central to its service area. The ACHD owns 16 acres, including approximately two-thirds of the property devoted to maintenance and vehicle storage. The district also owns a site on Cloverdale Road and may be looking to provide a more central location for this facility too.

Finally, there are 309 acres of vacant land outside the city but within its impact area. The largest area is west of the city boundary and north of Chinden Boulevard."

13. Environmental Justice

Environmental justice is a term used to signify that a proposed project does not either unfairly benefit or disproportionately harm a certain sector of the population to be served by a public works project. Projects discussed in this MP provide benefits to the system as a whole, and to those areas where service is substandard.

14. Agency Input

Letters requesting input regarding this Existing Environmental Conditions Section were sent to the appropriate agencies. A list of the agencies and responses are included in Appendix Q.

III. EXISTING SOURCE, DISTRIBUTION, AND TREATMENT FACILITIES:

A. Current Population, Connections and Water Demand

1. Current Population

The population of Garden City was reported at 10,624 residents in the 2000 census. The estimated 2006 population of the city is 12,074 residents (Source: Garden City Comprehensive Plan, 2006). This suggests a 2000-2006 average annual growth rate (AAGR) of approximately 2%. This growth rate would imply a 2007 population for Garden City at 12,315 residents. This population estimate is comparable to the Ada County Comprehensive Plan that was published in September, 2007. However, the U.S. Census population estimate for 2006 suggests a smaller population of around 11,353 residents. According to the U.S. Census, this approximation is calculated using the base population from the 2000 census and calculating the estimate based on data for births, deaths, and migration. This projection results in an AAGR that is approximately one-half of that suggested for Garden City in both the 2006 Comprehensive Plan and the 2007 Ada County Comprehensive Plan. Since the AAGR for Ada County for the past five to ten years has been above 2%, and Garden City along with the cities of Meridian, Eagle, Kuna, and Star were responsible for nearly half of the county's population growth over that time period, a 2% AAGR used to estimate the 2007 populace for Garden City of 12,315 is being used for this plan. It is important to note that this is an estimation based on current data used in recent planning documents, population growth rates may change in the future as more data becomes available. (Source: Garden City Comprehensive Plan 2006; Ada County Comprehensive Plan 2007; U.S. Census Bureau, 2006 Population Estimates, Census 2000; COMPASS 2006 Population Estimates).

2. Water System Connections

Although the City has a few customers that are connected to the sewer system that do not use water provided through the municipally owned water system, the City of Garden City invoices most of their customers for sewer use based on the flow of water through each metered connection to the water system. Therefore, a reasonable estimate of the number of units connected to the water and sewer system is the number of units represented in the billed accounts for the water system.

Based on billing records, the city invoices approximately 4,420 accounts, 650 of which are commercial. The accounts are comprised of an estimated 5,340 residential units (3,400 single family, 60 duplexes, 1,100 mobile homes, and 780 apartments) and 650 commercial units. The average daily demand including consumptive and non-consumptive uses of 1,700,000 gallons per day for the residential connections calculates as nearly 320 gallons per day per connection (gpdc), while that of the commercial units calculates as approximately 1,400 gpdc with a combined average of 437 gpdc as shown in Table III-1.

3. Water System Demand

Garden City utilizes water meters to measure water usage for both residential and commercial connections. Besides water meters, the City also tracks system water production with flowmeters at each well. Meter readings from 2005 through September 2007 have been used to establish the consumer water demand. Well production data for 2006 and 2007 indicate that more water is reported to have been produced at the wells than delivered to customers. Table III-2 summarizes this discrepancy, which indicates that meter readings were 24% and 29% lower than well production for 2006 and 2007, respectively. Possible causes that result in "non-revenue water" being produced, but not metered, are listed below:

- Leaking from aging water lines; this can usually account for 10-15% of the well production.
- Illegal and unaccounted for hookups to the system.
- Old meters and/or flow meters

Month	Residential ADD (gallons)	Commercial ADD (gallons)	System Total ADD (gallons)	Residential ADD per Connection (gallons)	Commercial ADD per Connection (gallons)	System Total ADD per Connection (gallons)
January	682,000	381,000	1,063,000	128	586	178
February	842,000	416,000	1,258,000	158	641	210
March	840,000	487,000	1,328,000	158	750	222
April	1,715,000	1,144,000	2,859,000	322	1,761	478
May	2,313,000	1,146,000	3,459,000	434	1,764	578
June	3,420,000	1,696,000	5,117,000	641	2,610	855
July	3,802,000	1,831,000	5,634,000	713	2,818	941
August	2,690,000	1,444,000	4,133,000	504	2,222	691
September	1,743,000	1,081,000	2,825,000	327	1,664	472
October	1,027,000	666,000	1,693,000	193	1,025	283
November	591,000	362,000	953,000	111	558	160
December	673,000	384,000	1,056,000	126	591	177
Ave*	**1,700,000**	**922,000**	**2,622,000**	**318**	**1,415**	**437**

*Calculations based on 5,340 residential unit connections and 650 commercial unit connections.

Table III-1 Average Daily Demand, ERU, and Unit Use

Table III-2 Well Production versus Meter Consumption Summary

Month	Well Production 2006 (MG)	Meter Consumption 2006 (MG)	Production versus Consumption Difference 2006 (%)	Well Production 2007 (MG)	Meter Consumption 2007 (MG)	Production versus Consumption Difference 2007 (%)
January	35.92	33.16	7.69	59.39	28.54	51.95
February	42.77	32.58	23.82	61.33	26.59	56.65
March	49.42	30.91	37.45	64.40	46.41	27.93
April	52.80	82.37	-56.01	92.12	95.98	-4.19
May	159.26	109.37	31.33	148.63	113.57	23.59
June	146.61	140.91	3.89	174.47	169.35	2.94
July	207.57	177.69	14.39	243.67	162.84	33.17
August	185.65	129.58	30.20	198.73	100.36	49.50
September	141.09	83.37	40.91	147.17	ND**	–-
October	92.28	46.94	49.13	84.22	ND	–-
November	55.74	25.79	53.73	63.07	ND	–-
December	53.43	31.68	40.70	57.41	ND	–-
Total	**1222.54**	**924.37**	**24.39**	**1042.75***	**743.63***	**28.69***

*Total is for 2007 data through August only.

** ND = No data available at time of determination.

- Water users hooking up to fire services
- Water loss from water main breaks; water loss through line flushing
- Water used by the City or other public services that may be unaccounted for

Water use based on residential and commercial meters is being used to calculate current and future demands for this report since this data more accurately reflects the amount of water being consumed and ultimately charged for. As the City works to upgrade and improve the utility; tracking differences between well production and consumer usage should be evaluated on a continuous basis to determine if a water conservation program to calibrate or replace meters is necessary.

The water meter data was evaluated and Figure III-1 depicts the average daily demands by month for residential connections. This figure illustrates that the minimum average daily water demand of 591,000 gallons per day (gpd) occurs in the month of November, while the maximum average daily water demand of 3.8 million gallons per day (MGD) occurs in the month of July. Figure III-2 portrays the average daily demands by month for commercial connections. This figure also illustrates the minimum average daily water demand of 362,000 gpd occurs in the month of November, while the maximum average daily water demand of 1.8 MGD occurs in the month of July.

a. Average Daily Demand

The sum of the residential and commercial average demands is used to determine the total Average Daily Demand (ADD) for individual months, as well as, the overall ADD. The number of residential and commercial connections (5,340 residential and 650 commercial) were then used to calculate the number of gallons that make up an ERU. These values are shown in Table III-1 and the ADD is illustrated in Figure III-3. The total ADD for the system is 2.62 MGD with a residential ERU of approximately 320 (gpd) per residential connection based on water meter data. The number of persons in each Garden City household is estimated to be 2.43, resulting in water consumption of 132 gallons per capita per day (gpcd).

b. Domestic Versus Irrigation Water Use

Average domestic water is defined as that water used for indoor household use and was determined by evaluating the water production in months of low water consumption. During winter months it is assumed irrigation and outdoor water use is limited due to dormant vegetative growth inherent to a northern latitude. Based on this assumption, water use for the months of November, December, January, February, and March were selected to represent average domestic use for both residential and commercial connections. This value is based on meter data and is calculated as nearly 34.1 million gallons per month. This value is compared with seasonal water use in Figure III-4. The domestic use calculation equates to 1,132,000 gpd (726,000 gpd – residential and 406,000 gpd – commercial), 190 gallons per connection per day for the entire system (140 gpd per residential connection and 630 gpd per commercial connection), and 80 gpcd.

c. Maximum Day Demand

The Maximum Day Demand (MDD) was determined based on the demand during the highest peak month reported in water use data. The peak month was July 2005 when the estimated population of Garden City was around 11,820 persons. The total water usage during this month averaged 5.92 MGD, which equates to 500 gpcd when based on population. Water meter records also show that 4.09 MGD of this use was recorded on residential meters and 1.83 MGD of this use was recorded on commercial meters. The total system MDD based on residential and commercial use is 1,026 gallons per unit connection per day or 2.3 times the total system ADD (see Table III-3). Applying the peak month demand to the current populace results in a current MDD of 6.2 MGD (500 gpcd x 12,315 residents).

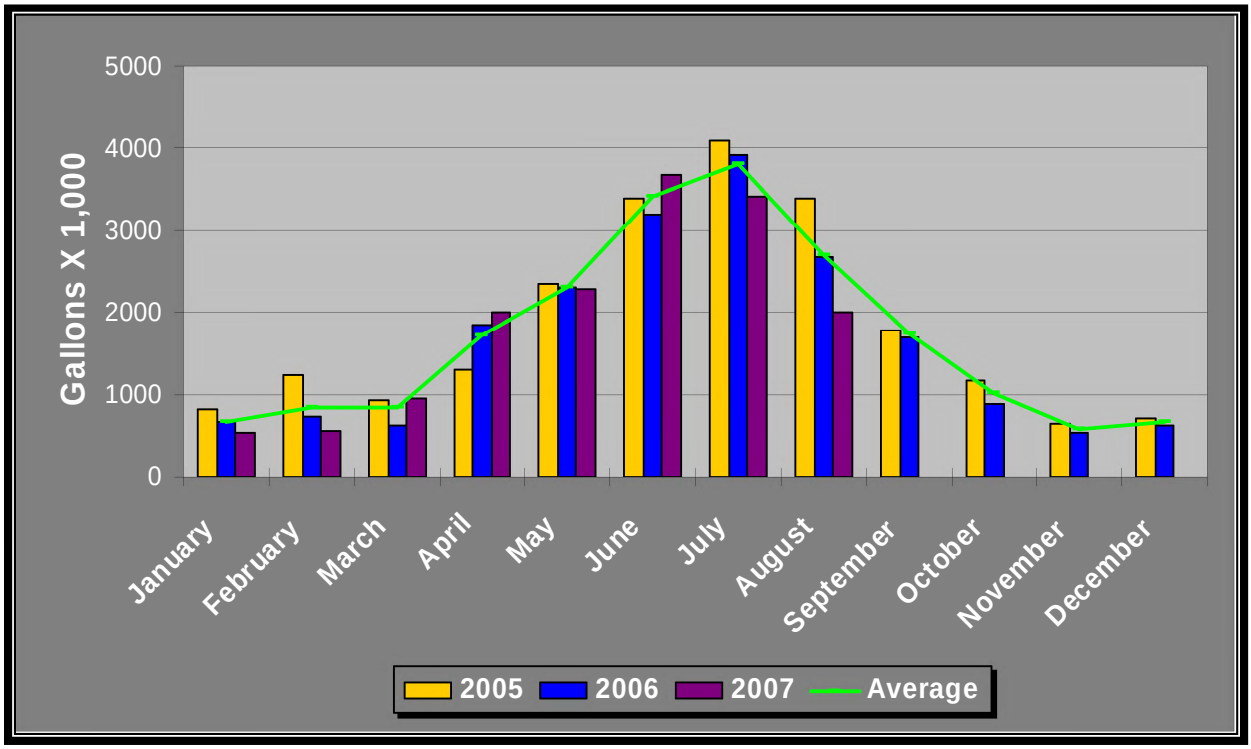


Figure III-1 Garden City Average Daily Residential Water Demand

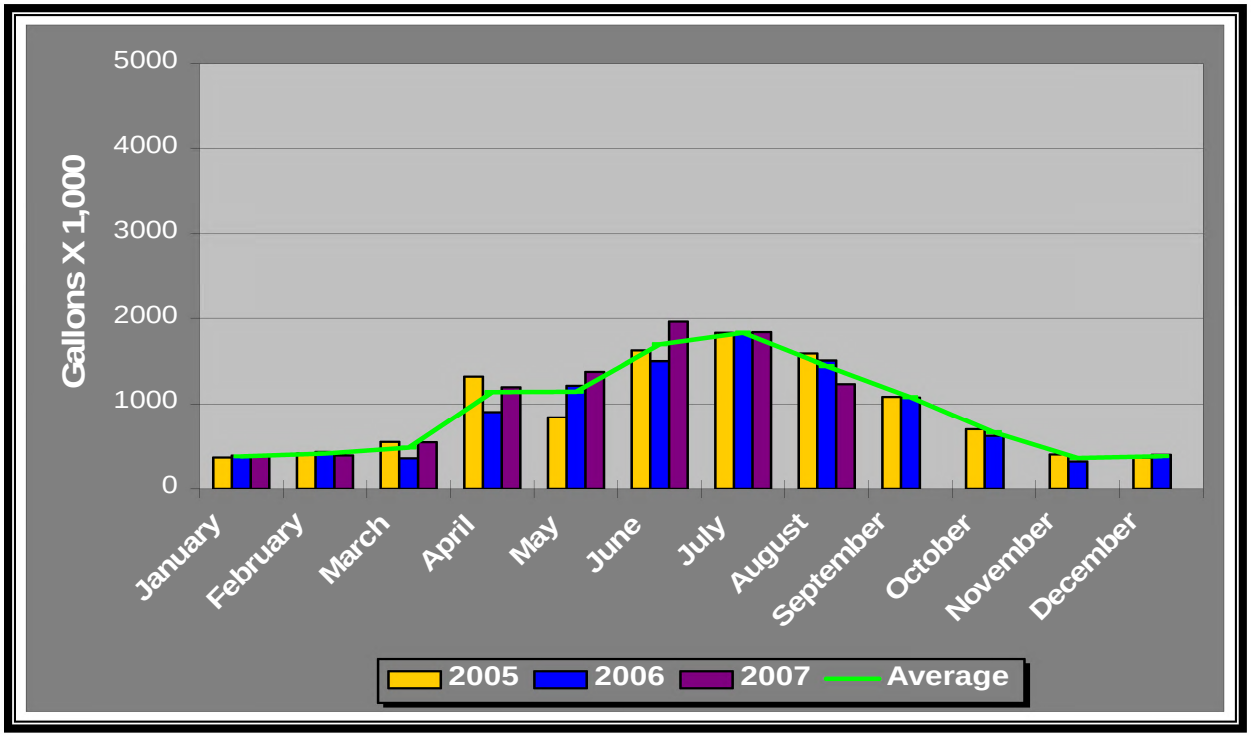


Figure III-2 Garden City Average Daily Commercial Water Demand

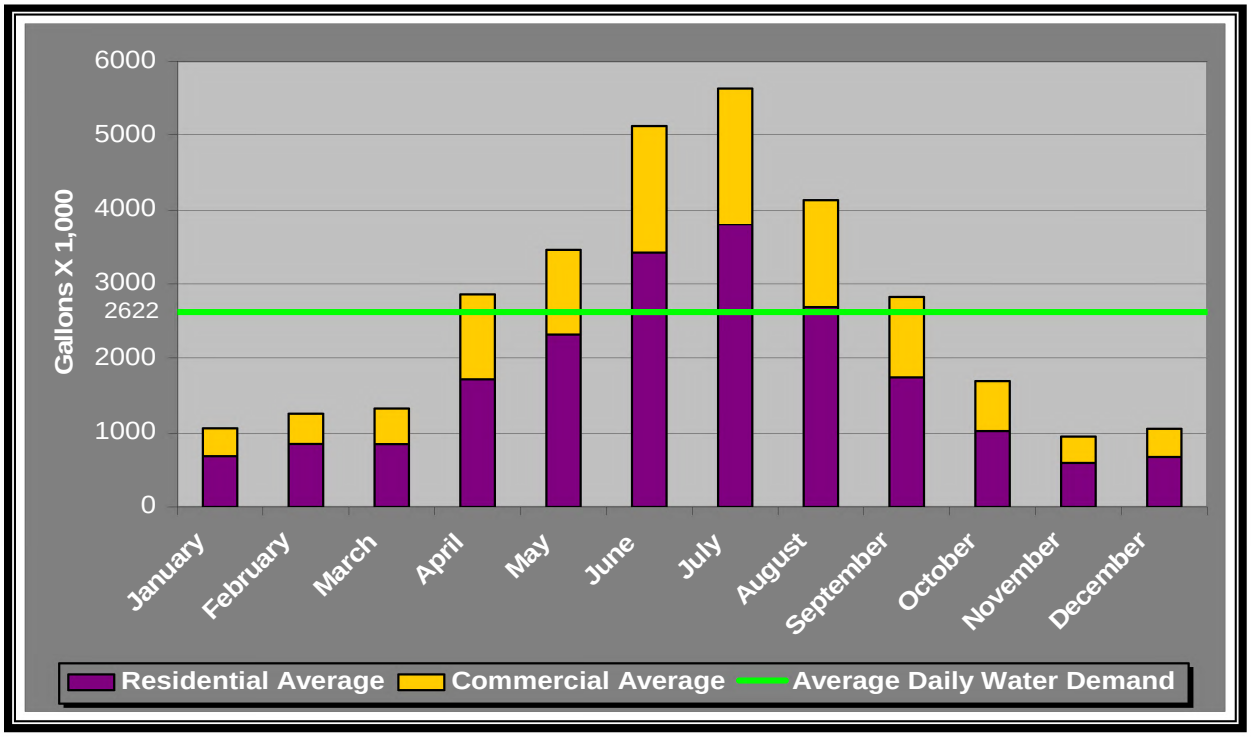


Figure III-3 Garden City Total Daily Water Demand by Month

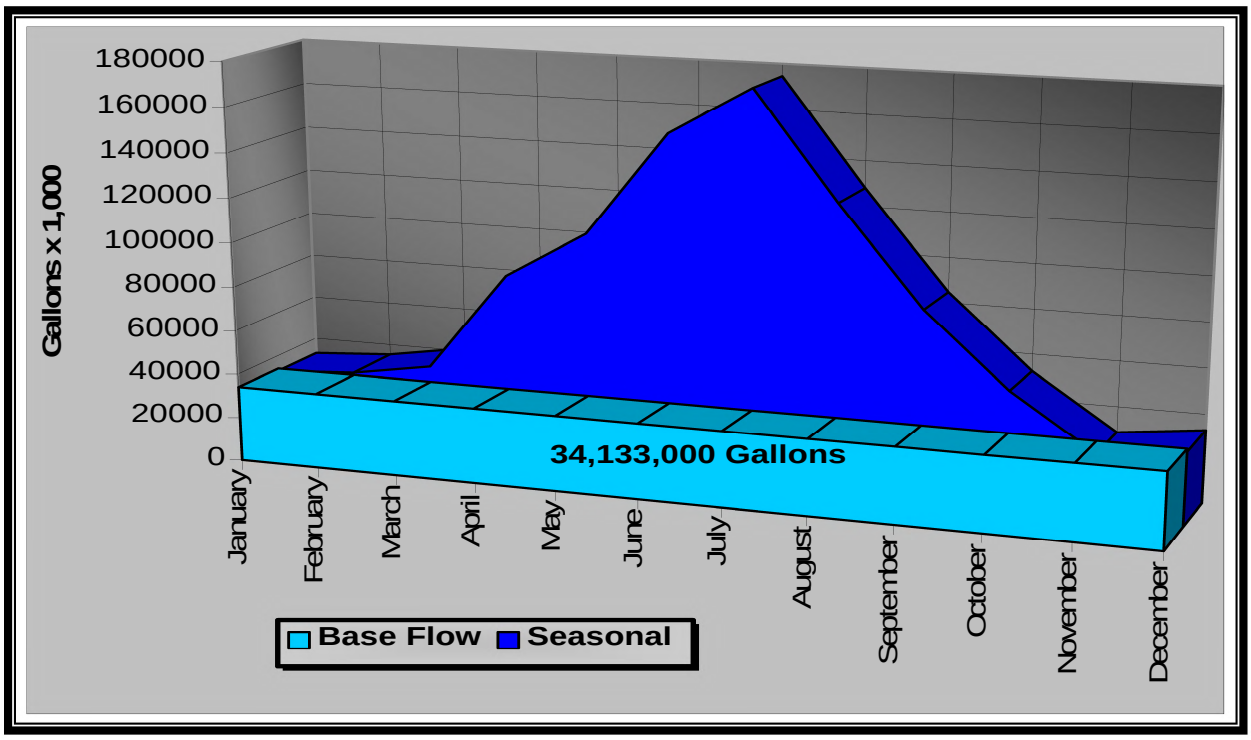


Figure III-4 Domestic and Irrigation Water Use Monthly Flow

Table III-3 Average Maximum Demand and Unit Use

Month	Residential MDD (gallons)	Commercial MDD (gallons)	System Total MDD (gallons)	Residential MDD per Connection (gallons)	Commercial MDD per Connection (gallons)	System Total MDD per Connection (gallons)
Jul. 2005	4,086,000	1,831,000	5,917,000	800	2,860	1,026

*Calculations based on 5,130 residential unit connections and 640 commercial unit connections in July, 2005.

d. Peak Hour Demand

The City has recently installed and is beginning to utilize a SCADA system for its water production wells. This new tool will allow water production records to be kept on a daily or hourly basis. However, current information is presented as a monthly total production from each well. Prediction of a peak hour demand is therefore derived from theoretical flows for similar water systems as presented in literature common to the industry. A PHD of 150% of the maximum day is suggested in the reference *Wastewater Engineering: Treatment Disposal and Reuse* originally authored by Metcalf & Eddy and published by McGraw Hill. The PHD for the Garden City system then calculated as 750 gpcd or more appropriately 1.2 gallons per minute per connection for a current total system demand of 6,417 gallons per minute (gpm) or 9.2 MGD.

4. Existing Value and Replacement Cost

The age, type, and condition of the existing system are largely unrecorded, efforts to monitor and record facility locations are also recommended. There is a large range in the type and age of the pipes that make up American water distribution systems, depending on the population and economic booms of the previous century. For many cities, the periods of greatest population growth and urban expansion were during the late 1800s, around World War I, during the 1920s, and post-World War II. The water pipes installed during these growth periods differ in their manufacture, materials, and life span. The oldest cast iron pipes from the late 19th century are typically described as having an average useful lifespan of about 120 years because of the pipe wall thickness (AWWA, 2001; AWWSC, 2002). In the 1920s the manufacture of iron pipes changed to improve pipe strength, but the changes also produced a thinner wall. These pipes have an average life of about 100 years. Pipe manufacturing continued to evolve in the 1950s and 1960s with the introduction of ductile iron pipe that is stronger than cast iron and more resistant to corrosion. Polyvinyl chloride (PVC) pipes were introduced in the 1970s and high-density polyethylene in the 1990s. Both of these are very resistant to corrosion but they do not have the strength of ductile iron. Post-World War II pipes tend to have an average life of 75 years (AWWA, 2001; AWWSC, 2002). Approximately 20 percent of the pipe in place in North America is lined with asbestos or cement. Furthermore, the overwhelming majority of ductile iron pipe is mortar-lined and about 40 percent of cast iron pipe in place is mortar-lined. These facts may be of great importance where the life of pipe is concerned, as linings are meant to prevent corrosion and increase pipe longevity.

In the 20th century, most of the water systems and distribution pipes were relatively new and well within their expected lifespan. However, a recent report by the American Water Works Association (AWWA, 2001) and a white paper by the American Water Works Service Company, Inc. (AWWSC, 2002) point out that these different types of pipes, installed during different time periods, will all be reaching the end of their expected life spans in the next 30 years. Analysis of main breaks at one large Midwestern water utility that kept careful records of distribution system management documented a sharp increase in the annual number of main breaks from 1970 (approximately 250 breaks per year) to 1989 (approximately 2,200 breaks per year) (AWWSC, 2002). Thus, the water industry is entering an era where it must make substantial investments in pipe repair and pipe replacement. The trends of aging pipe and increasing numbers of main breaks are of concern because of the potential relationship between waterborne disease outbreaks and main breaks.

The current Garden City water system has an estimated value of $43 million with the cost to replace the system estimated at $82 million or $180 million to replace the system and the roads lying above the water mains. For a detailed opinion of probable cost, see the Appendix N. The majority of the value in the water system and consequently, the replacement cost is associated with the water lines.

5. Water Conservation Programs

One of the action steps in the Garden City Comprehensive Plan is to develop programs and incentives that encourage water conservation (Garden City, 2006). These programs and incentives could include the following:

- Water Schedule
- Conserving water by utility
- Non-Potable irrigation
- Metering and data management
- Accounting for unmetered users
- Reducing leakage and other losses
- Conserving water by customer
- Education
- Equipment and hardware programs
- Rates and billing practices
- Water reuse

B. Water Source, Location, and Pumping Facilities

The existing water system in Garden City is comprised of ten municipal production wells, distribution piping, chlorination facilities, operations, and auxiliary power. The following sections describe the water system following a convenient 5-point analysis of the critical areas comprising a viable water system;

1) Water rights
2) Water source
3) Water storage
4) Distribution system
5) Water quality treatment

In addition, several key criteria regarding the requirements for public water systems can be extracted from IDAPA 58.01.08 Idaho Rules for Public Drinking Water Systems. These criteria involve the existence and interaction of water supply sources, water storage, and emergency power generation capability. The specific criteria are:

- IDAPA 58.01.08.501.07(b) New community water systems constructed after April 15, 2007 must have a sufficient number of water sources with standby power to satisfy the ADD for a minimum of (8) hours plus fire flow or emergency storage of an equivalent volume (see Water Production Rates Section). Existing community water systems that are substantially modified after April 15, 2007 shall meet these requirements in those portions of the system affected by the modifications. “Substantially modified” is defined as the combined increase of 25% or more above the system’s existing configuration in the population served or number of service connections, the total length of transmission and distribution water mains, and the peak or average water demand.
- Water Works 2003 section 3.2.1.1 and IDAPA 58.01.08.513 state: “Under normal operating

conditions, with any source out of service, the remaining sources shall be capable of providing either peak hour demand of the system or maximum day demand plus equalization storage."

- IDAPA 58.01.08.501.17(a) Total system capacity including supply and storage must be sufficient to meet MDD plus Fire Flow Demand, while maintaining a 20 psi residual throughout the system.

2. Water Rights (Point 1)

A Preliminary Investigation of Garden City's water rights was performed by Forsgren Associates in 2005. A copy of the report regarding this investigation is in Appendix B.

All the waters in Idaho, when flowing in their natural channels, including the waters of all natural springs and lakes within the boundaries of the state, and ground waters of the state, are public waters by authority of the constitution and statutes of the State of Idaho. The constitution and statutes of the State of Idaho guarantee the right to appropriate the public waters of the State of Idaho. When a right to the use of public waters is established by appropriation, a water right is established. This right is a real property right much like property rights in land. With an established water right, there must be an identified Point of Diversion(s), which is the location where water is obtained. The constitution and statutes of the State of Idaho protect private property rights, including water rights.

A water right is the right to divert the public waters of the state of Idaho and put them to a beneficial use, in accordance with one's priority date (Forsgren, 2005). Acquiring a water right in the State of Idaho consists of four consecutive components:

- A Potential user must submit an application to the Department of Water Resources for specific water rights.
- The Department of Water Resources grants a conditional permit for a specific development period.
- The Potential user submits proof of beneficial use of the water.
- The Department of Water Resources then performs a beneficial use exam and issues a water right license.

a. Priority Date

A priority date is the date the IDWR issues the conditional use permit. The priority date is used to determine who gets to use water when there is a shortage. If there is not enough water available to satisfy all of the water rights, then the individual or entity with the oldest (or senior) water rights get their water rights satisfied first and so on in order until there is no water left. It is the individual or entity with the new (or junior) water rights that do not get water when there is not enough to satisfy all the water rights. This practice is often described by "first in time, first in line" under western water law (Forsgren 2005).

b. Beneficial Use

The state defines domestic use, irrigation, stock-watering, manufacturing, mining, hydropower, municipal use, aquaculture, recreation, and fish and wildlife as beneficial uses. The amount of the water right granted is the amount of water put to beneficial use. Due to the beneficial use requirement, a water right (or a portion of a water right) may be lost if it is not used for a continuous five-year period (Forsgren, 2005).

c. Diversion

A diversion is a structure used to divert the water from its natural source. Typical diversion structures include pumps, head gates, ditches, pipelines, and dams, or some combination thereof. A diversion is generally required to establish a water right. The Idaho Water Resource Board is authorized to acquire water rights without diversions. These water rights are called *"instream flow"* water rights, and are typically authorized for purposes of protecting some public interest in a natural stream or lake, such as recreation, wildlife, or natural beauty. A water right may also be acquired to water livestock directly from the stream, which is called an *"instream livestock"* water right.

Water law in Idaho is based on the appropriation doctrine, because water rights in Idaho are based upon diversion and beneficial use of water. The appropriation doctrine has also been called *"first in time is first in right"*, because the priority date determines who gets water when there is not enough to go around. The water right is said to have "appropriated" water. A water right under the law of the state of Idaho can be established only by appropriation (Forsgren, 2005).

d. Surface Water

Prior to May 20, 1971, there were two ways in which a right to surface water could be established. The first way was to simply divert water and apply it to beneficial use. These water rights are called "beneficial use", "historic use" or "constitutional" water rights. The priority date for a water right established by this method is the date water was first put to beneficial use.

The second way to establish a right to surface water was to comply with the statutory method in effect at the time the water right was established. The current statutory method is an application/permit/license procedure that is described further below. The priority date for a water right established by this method is the date of filing the application with IDWR, and this priority date is shown on the license that is issued when the process is completed. Prior to 1903, Idaho had a "posted notice" statute, which provided for posting of a notice at the point of diversion and recording the notice at the county recorder's office, followed by actual diversion and beneficial use of water, among other things. If the statutory requirements were met then the priority date for a water right established under the posted notice statute was the date of posting the notice. Water rights established under the old statutory method are called "Posted Notice" water rights, but are considered beneficial use rights because they are not confirmed by a license or decree (Forsgren, 2005).

As of May 20, 1971, there is only one way to establish a right to surface water, and that is by following the application/permit/license procedure that is described further below. The one exception to this rule is for water rights used solely for instream watering of livestock (IDWR, 2004).

e. Ground Water

Prior to March 25, 1963, there were two ways to establish rights to ground water, which are the same methods described above under Surface Water. As of March 25, 1963, there is only one way to establish a right to ground water, and that is by following the application/permit/license procedure that is described further below. There is one exception to this rule. A *"beneficial use"* right to ground water may still be established for domestic purposes. *"Domestic purposes"* is defined by statute as *"(a) the use of water for homes, organization camps, public campgrounds, livestock and for any other purpose in connection therewith, including irrigation of up to one-half (1/2) acre of land, if the total use is not in excess of thirteen thousand (13,000) gallons per day, or (b) any other uses, if the total use does not exceed a diversion rate of four one-hundredths (0.04) cubic feet per second and a diversion volume of twenty-five hundred (2,500) gallons per day."* The exception for domestic purposes does not include *"water for multiple ownership subdivisions, mobile home parks, commercial or business establishments"* unless the use does not exceed a diversion rate of four one-hundredths (0.04) cubic feet per second and a diversion volume of twenty-five hundred (2,500) gallons per day (Forsgren, 2004).

f. Issues Involved in Increasing the Pumping Capacity of a Well (Point of Diversion)

The State of Idaho issues permits to develop a water right at a point of diversion through the application/permit/license process. For licensing, the State of Idaho requires the submittal of a *"proof of beneficial use"* which represents the results of a flow test for the well. The license for the water right assigns a maximum diversion rate based on the IDWR's examination of the proof of beneficial use. The maximum diversion rate cannot exceed the calculated or actual flow from the well.

If later modifications to the well (more efficient pump, more powerful motor, or re-installed screen) result in a flow capacity that exceeds the maximum diversion rate stated in the license, the State of Idaho requires the submittal of an application for additional water right, which if granted, is added to the existing water right (Forsgren 2005).

g. Garden City Water Rights

Table III-4 summarizes the water rights associated with Garden City. The information contained in this table shows that the City of Garden City has obtained 9 separate water rights by license for municipal use which corresponds to City Wells #1– #4 and #6– #10. The City also has obtained a statutory claim for use of water associated with Well #5. It appears that this claim is currently being investigated by the IDWR. A "statutory claim" is filed with IDWR to make a record of an existing beneficial use right. The purpose of the statute is to provide some means to make records of water rights for which there were previously no records. However, these records are merely affidavits of the water users, and do not result in a license, decree, or other confirmation of the water right (http://www.idwr.idaho.gov/water/rights/claim.htm).

A Permit to Appropriate Water was issued for Well #10 on August 28, 1991, subsequently, a Beneficial Use Field Report was completed on May 30, 1997 with a recommendation to amend the service area to "municipal," however, a license still has not been issued for this water right. Water Right 63-8357 that is associated with Well 12 currently shows United Water Idaho, Inc. as the owner. This right is for domestic use in the Millstream subdivision only. The City has filed a Notice of Claim for this water right which will be heard by the District Court of the Fifth Judicial District in February, 2008. Water Right 63-9144 that is associated with Well #11 currently shows Shenandoah Park Investors as the owner. This right is for domestic and fire protection use in the Shenandoah Mobile Home Estates Park only.

Table III-4 Garden City Water Rights

Water Right	Priority Date	Well Number	Type/Beneficial Use	Max. Flow (CFS)	Max. flow (GPM)
63-2872*	1951-08-04	Groundwater Well #1	License/ Municipal	1.15	516
63-2895	1952-02-13	Groundwater Well #2	License/ Municipal	1.50	673
63-3124	1958-02-28	Groundwater Well #3	License/Municipal	3.56	1,598
63-5330	1927-01-01	Groundwater Well #5	Statutory Claim/Domestic and Irrigation	1.95	875
63-7805	1973-06-01	Groundwater Well #4	License/Municipal	1.11	498
63-8005	1974-07-10	Groundwater Well #9	License/Municipal	4.80	2,154
63-9134	1978-06-27	Groundwater Well #7	License/Municipal	1.43	642
93-9136	1978-07-01	Groundwater Well #6	License/Municipal	1.38	619
63-10270	1984-10-18	Groundwater Well #8	License/Municipal	3.10	1,391
63-11487	1990-10-18	Groundwater Well #10	Permit/Municipal, Irrigation, Commercial, Domestic, Fire Protection	4.5	2,020
63-9144**	1978-04-25	Groundwater Well #11	License (Shenandoah Park Investors) / Domestic and Fire Protection	1.2	539
63-8357**	1976-08-16	Groundwater Well #12	License (United Water) /Domestic	1.18	530
Total Allowable Diversion Rate Wells 3-10 (including right for #2)				**23.33**	**10,470**
Total Allowable Diversion Rate Wells 1-12				**26.86**	**12,055**

** These water rights have probably lapsed.* ***Garden City has filed a motion with the SBRA to reinstate the claim*

h. Points of Diversion

Water rights are given a specified location from which water can be drawn known as a diversion point. The State of Idaho recognizes a the growing communities doctrine whereby a city will likely not lose its right to a water source from nonuse, rather it may be preserved as a beneficial use provided the community demonstrates a future need for that water as a growing community. In fact, Idaho codified the growing communities' doctrine through the Municipal Water Rights Act of 1996 which established specific procedures and limitations governing a municipality's ability to acquire water rights for long term growth. More specifically, the 1996 Act can be summarized by *"Municipal providers"* may secure water rights for *"municipal purposes"* of sufficient quantity to serve all *"reasonably anticipated future needs"* within an expanding *"service area"* during a specified *"planning horizon"* (Forsgren 2005).

The concepts established in the 1996 Act of most significance to the city include no limits on the planning horizon, the place of use is not limited to the city limits, the service area is not fixed but may change as the city grows, and the water rights may be drawn from multiple points of diversion if so designated on the water right. The caveat a municipality must consider is the demonstration of reasonably anticipated future needs. The city must proactively address the future needs through judicious and documented planning efforts such as completion of this plan. Another measure the city may elect to implement is enumerating each point of diversion as an alternate point of diversion for each water right. By so doing, the city will have the flexibility to pump water from any diversion point within the system so long as injury to another water right is not introduced (Forsgren 2005).

The municipal drinking water system is currently supplied by Wells #3, #4, #5, #6, #7, #8, #10, #11 and #12 (Garden City Water System Consumer Confidence Report-July 2005). Wells #1 and #2 were taken out of service several years ago, and Well #2 was plugged and abandoned in 1990. The corresponding water right for Well #1 remains listed on the IDWR database. An application could be submitted to IDWR to add the point of diversion for this water right to the diversion points for the current production wells. The water right could then be used by the City where needed in the system (Forsgren 2005). The location of the point of diversion for water right associated with Well #1 is illustrated in Figure III-5. The diversion point for the water right associated with Well #2 is located in the same quarter, quarter section as the diversion point for Well #4. Under current procedures in the State of Idaho used to transfer water rights to a new diversion point, an application is not required if the diversion point lies within the same quarter, quarter section. Therefore, it is probable that the water right for Well #2 remains active and can be withdrawn from the diversion point associated with Well #4. Water Right 63-8005 that is associated with Well #9 is currently active; however, Well #9 is not currently functional pending repairs. Table III-5 summarizes the well locations and the corresponding diversion point description as reported by IDWR.

3. Water Source (Point 2)

Water for the distribution system is obtained from the points of diversion as listed in Table III-5 and delivered to the system by pumps installed at each of the wells. The pumps supply and maintain flow and pressure to the distribution system. Although two booster pump stations exist, they are not used in this system. The total combined estimated pumping capacity of all wells connected to the distribution system is nominally 10,680 gpm or 15.4 MGD. Table III-6 shows the well pumping capacity, standby power, well depth, water level, water treatment, and the year the well was initially drilled for the 10 wells that currently supply the drinking water system, refer to Figure III-6. A summary of all the major assets associated with each well is found in Table III-7. This table lists the condition and remaining useful life of the asset as determined by Garden City. A detailed asset list is found in Appendix C.

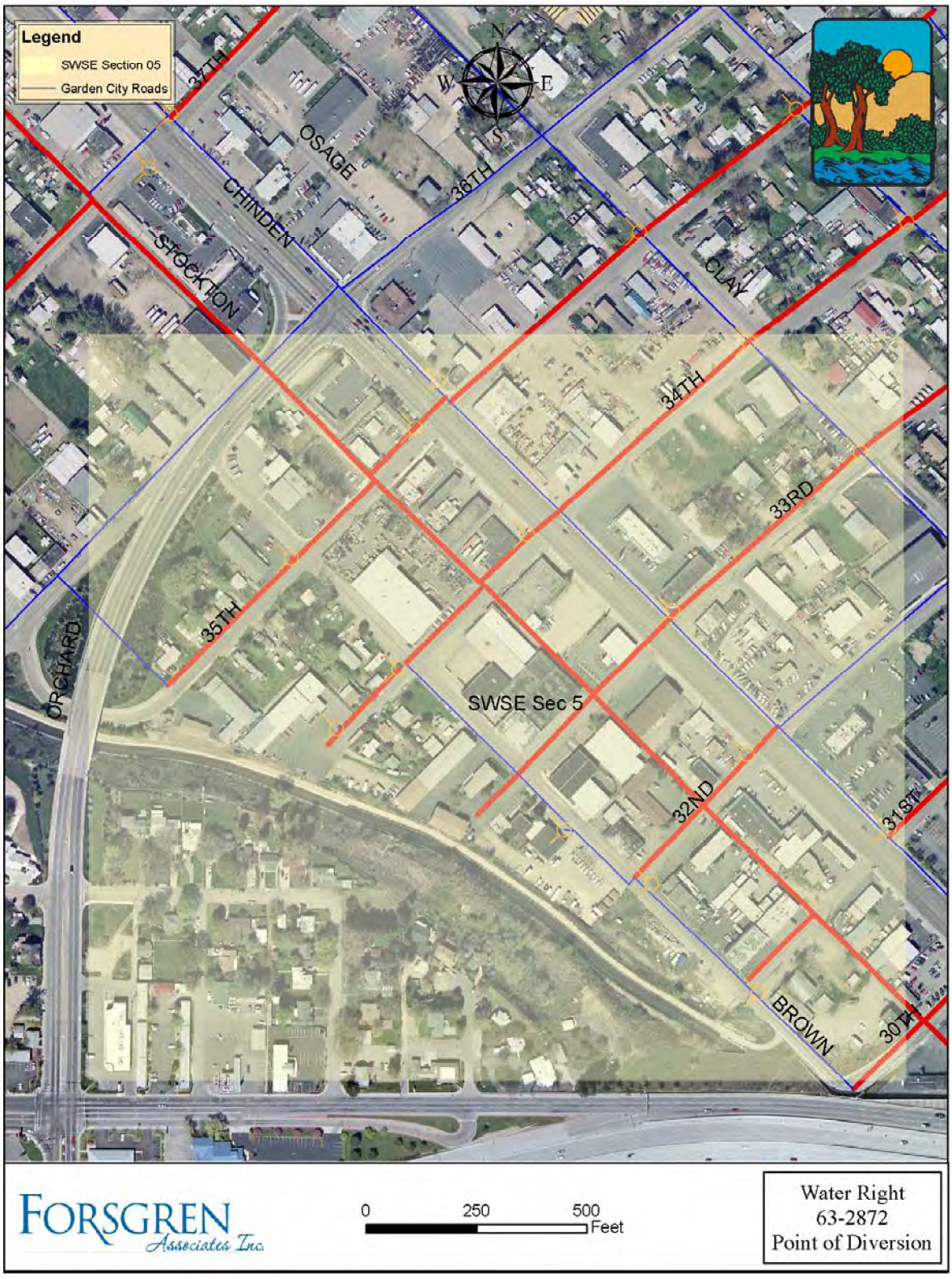


Figure III-5 Location of Water Right 63-2872 associated with Well #1

Table III-5 Garden City Well Location Summary

Well #	Physical Location	Point of Diversion Section/Township/Range	Place of Use
1	33rd and Brown (not active)	SWSE Sec 05, T03N, R02E, Ada County	Within city limits of Garden City
2	36th, east of Clay (before abandoned)	SENE Sec 05, T03N, R02E, Ada County	Within city limits of Garden City
3	405 East 43rd Street	SESW Sec 32, T04N, R02E, Ada County	Within city limits of Garden City
4	308 East 36th Street	SENE Sec 05, T03N, R02E, Ada County	Within city limits of Garden City
5	48th and Adams	SWSENE Lot 14, Sec 31, T04N, R02E, Ada County	NENW 20 Acres; NWNW 30 Acres; SWNW 3 Acres; SENW 20 Acres, Sec 31, T04N, R02E, Ada County
6	6150 N River Glen Pl	NENW Sec 25, T04N, R01E, Ada County	Within city limits of Garden City
7	7201 Savannah Lane	SESE Sec 24, T04N, R01E, Ada County	Within city limits of Garden City
8	9162 N Mountain View Dr	NESE Sec 26, T04N, R01E, Ada County	Within city limits of Garden City
9	9120 Riverside Dr	SWNESE Sec 23, T04N, R01E and SENE Lot 14, Sec 31, T04N R02E, Ada County	Within city limits of Garden City
10	10460 Joplin Road	NENE Sec 27, T04N, R01E, Ada County	Municipal Use is within Garden City; other use as defined in IDWR Water Right Report
11	W Rapidan Ln (behind clubhouse)	SENW Sec 24, T04N, R01E, Ada County	Shenandoah Mobile Home Estates
12	Millstream Way (between 5758 and 5760)	SWNW Sec 25, T04N, R01E, Ada County	Millstream Subdivision

Table III-6 Garden City Well Information

Well #	Maximum Production Rate from SCADA (gpm)	Standby Power	Well Depth (feet)	Static Water Level (feet)	Treatment Notes	Year Well Drilled
3	1,000	No	456	Artesian	NaOCl, PO_4	1957
4	1,620	No	211	-7	NaOCl	1973
5	1,400	Yes	700	-20	Pressure Filters, On-Site NaOCl generation, PO_4	1975
6	530	No	299	-8	NaOCl, PO_4	1978
7	510	No	328	-2	NaOCl, PO_4	1978
8	1,180	No	665	Artesian	NaOCl, PO_4	1985
9	2,000*	No	403	-3	NaOCl, PO_4	1990
10	1,800	Yes	892	Artesian	Pressure Filters, On-Site NaOCl generation, PO_4	1993
11	350	No	268	Artesian	NaOCl, PO_4	1979
12	290	No	324	Artesian	NaOCl, PO_4	1977
Total	**10,680**					

* 2,000 gpm is proposed for Well #9 rehabilitation in January 2008.



Figure III-6 Garden City Existing Wells

Table III-7 Remaining Useful Life of Major Well Components

Asset	Type	Condition	Remaining Useful Life Estimate (year)
Well #3			
Well Building	Block	Fair	20
Disinfection Building	Wood	Fair/poor	7
Well	150 hp V. Turbine	Good/fair	5
VFD[1]	Safetronics	Poor	0
Internal Plumbing	NA	Fair	5
Well #4			
Well Building	Block	Good	30
Disinfection Building[3]	Block	Good	30
Well	150 hp V. Turbine	Good	7
VFD	VLT 8000	Good	13
Internal Plumbing	NA	Good	15
Well #5			
Well Building	Block	Good	28
Disinfection Building[3]	Block	Good	28
Filter Building[3]	Block	Good	28
Well	125 hp V. Turbine	Good	7
Generator	Diesel	Good/fair	18
VFD	VLT 8000	Good	12
Storage Tank[3]	NA	Good	28
Filter Vessels	NA	Good	23
Internal Plumbing	NA	Good	15
Well #6			
Well Building	Wood	Fair	7
Disinfection Building[3]	Wood	Fair	7
Well	50 hp Submersible	Good	5
Internal Plumbing	NA	Fair	5
Well #7			
Well Building	Wood	Fair/poor	10
Disinfection Building[3]	Wood	Fair/poor	10
Well	Submersible	Good/fair	5
Internal Plumbing	NA	Fair/poor	2
Well #8			
Well Building	Wood	Fair	7
Disinfection Building[3]	Wood	Fair	7
Well	150 hp V. Turbine	Poor	1
Internal Plumbing	NA	Poor	1
Well #9			
Well Building	Wood	Fair/poor	10
Disinfection Building[3]	Wood	Fair/poor	10
Well	200 hp V. Turbine	Good	8
Internal Plumbing	NA	Good	15

Table III-8 Continued Remaining Useful Life of Major Well Components

Asset	Type	Condition	Remaining Useful Life Estimate (year)
Well #10			
Well Building	Block	Good	28
Disinfection Building[3]	Block	Good	28
Filter Building	Block	Good	28
Well	250 hp V. Turbine	Good	7
Generator	Diesel	Good/fair	18
VFD	VLT 8000	Good	12
Storage Tank[2]	NA	Good	28
Filter Vessels	NA	Good	23
Internal Plumbing	NA	Good	8
Well #11			
Well Building	Block	Fair/Poor	10
Disinfection Building[3]	Block	Fair/poor	10
Well	Submersible	Good	10
Internal Plumbing	NA	Poor	2
Well #12			
Well Building	Wood	Fair	15
Disinfection Building[3]	Wood	Fair	15
Well	Submersible	Fair	10
Internal Plumbing	NA	Fair/poor	2

Note: Not all wells include the same major components such as filter equipment or generators.

1. VFD is not in service.
2. Storage Tank is for filter backwash water.
3. Facility is included as part of the well building.

a. Well No. 3 – 405 East 43rd Street

Well #3 was drilled and the housing facility constructed in 1957. This well has been very dependable in supplying water to the system and has been producing for many years with little maintenance. Water production is around 1,000 gpm during the peak-use season. Well #3 is used with Well #4 to provide water during the winter months and produces approximately 300 gpm during this period. Adjustment to the flow is made using a valve since the variable frequency drive (VFD) was taken off-line due to radio interference. The facility for Well #3 includes a hydropneumatic tank that is not being utilized, as well as, a small shed used to house the sodium hypochlorite disinfection equipment. The disinfection system utilizes direct injection of the chlorine solution into the well discharge piping. There is no standby power generator or pump-to-waste capability at this facility. Both the well house and adjoining shed are in need of maintenance due to age. Figure III-7 shows a picture of the pump on Well #3 and Figure III-8 is a picture of the housing facilities.

b. Well No. 4 – 308 East 36th Street

Well #4 was originally drilled in 1973 and was rehabilitated in 2006. During this rehabilitation, the well casing was replaced and a new block building was constructed. Well #4 is capable of producing approximately 1,600 gpm of water to the system. A VFD allows production rates to vary based on system demand. This well is used in conjunction with Well #3 to provide water during the winter months.



Figure III-7 Pump on Well No. 3



Figure III-8 Well #3 Facility

The water produced at this well is chlorinated at the discharge piping using sodium hypochlorite. The pump-to-waste line empties into an overflow pond that is adjacent to the facility. There is no standby generator for this well. Figure III-9 is a picture of the Well #4 facility and of the pump on Well #4.



Figure III-9 Well #4 Facilities and Pump

c. Well No. 5 – 48th Street and Adams

Well #5 was originally drilled in 1975 and later deepened in 1992. In 2002, a new pump and treatment equipment were installed. A new CMU block facility with a metal roof to house the well and the new treatment equipment was also constructed at this time. These improvements, along with the construction of Well #10, were funded by a municipal bond approved by the voters to be paid over a twenty year period. The pump is a vertical turbine controlled by a VFD and is fully integrated with a SCADA system. Any pump-to-waste water that is produced from well startup, disinfection, or maintenance is emptied to a small onsite drain pit. System water is discharged to the system

through a 10-inch steel pipe. There is a diesel powered standby generator for this well. A photograph of the Well No. 5 Facility is shown as Figure III-10.



Figure III-10 Well #5 Facility

Water treatment equipment is used to remove dissolved iron and manganese at this well location. The process involves oxidation of both the iron and manganese through the addition of chlorine. Two filter vessels that run in parallel collect iron precipitates and absorb the manganese. Precipitates or settled solids, produced from backwashing the system are sent to a 95,000 gallon backwash water reclaim tank, see Figure III-11, which is located near the wellhouse facility. Currently, the settled solids are disposed through the Boise City Sewer System resulting in additional treatment charges of approximately $30,000 per month ($61.75 per 1,000 gallons disposed). The chlorine additive in water treatment also provides chlorine residual for disinfection.



Figure III-11 Well #5 Backwash Water Reclaim Tank

The water produced at this well has contained detectable levels of sulfates, iron, and manganese. In 2001, following a pump failure, Well #5 was inspected. One of the conclusions of this inspection was that the well is subject to severe corrosion and pitting of steel casing and pumping equipment which caused the failure of the pump-shafting. The complete cause of the corrosion is believed to be largely related to bio-corrosion from anaerobic bacteria in concert with groundwater chemistry (Hydro Logic Inc. 2001). That same year the well casing was lined and the pump-shafting and screen were replaced with stainless steel. During the summer of 2007, the pump column failed due to corrosion. The column was repaired and coated with a special paint to inhibit corrosion and sacrificial anodes were installed. At this same time the well casing and screen were evaluated and it was determined that the stainless steel had not corroded since it was installed in 2001. In addition to these upgrades to prevent further well failures, phosphate dosing is also utilized to inhibit corrosion.

d. Well No. 6 – 6150 N River Glen Place

Well #6 was originally drilled in 1978 and is used to supplement supply to meet the summer water demand. The 340 square foot well facility accommodates a 60 horsepower submersible vertical turbine pump and a 2,000 gallon hydropneumatic tank and all of the associated equipment. Pump-to-waste water is discharged into a drainage ditch located behind the facility. This well produces between 300 to 400 gpm of water to the distribution system.

In 1991, a pre-fabricated chlorination building was added next to the well facility. This facility originally utilized chlorine gas to disinfect the water at the well head, but was later modified to disinfect using sodium hypochlorite at the discharge pipe. This facility does not have a standby generator. Both the well house and adjoining chlorination building need maintenance due to age. In December 2000, rehabilitative maintenance was performed, which included de-scaling the 16-inch

casing and swabbing the 12-inch louvered screens. A photograph of the Well #6 Facility is shown in Figure III-12 and the wellhead is shown in Figure III-13.



Figure III-12 Well No. 6 Facility



Figure III-13 Well No. 6 Wellhead

e. Well No. 7 – 7201 Savannah Lane

Well #7 was originally drilled in 1978. In 1991, the well site was expanded to allow for the addition of treatment facilities within the pump station. The well house constructed at this site is a duplicate of the well house at Well #9. It consists of wood framing with cedar siding. The wellhead is located on the side of the building under a "doghouse" type structure that is attached to the main building. Water is pumped into the system with a 50 horsepower submersible pump.

Sodium hypochlorite is added to the water at the discharge pipe (post chlorination) to achieve a required total residual chlorine concentration. Pump-to-waste water is discharged through the side of the building and into Elmore Lake that sits near the facility. The water quality at this location has contained detectable levels of hydrogen sulfide in the past. Photographs taken at Well #7 are shown in Figures III-14 and III-15.



Figure III-14 Well No. 7 Facility



Figure III-15 Well No. 7 Piping from Well Head

f. Well No. 8 – 9162 N Mountain View Drive

Well #8 was drilled in 1985 and is housed in a 384 square foot stucco finished building. This well has been able to produce approximately 1,180 gpm in the past and has had little maintenance since it was put into service. Currently the well produces between 800 and 900 gpm, probably due to a worn pump impellers.

Since the well house does not have double doors, access to perform maintenance using any type of large equipment is not possible. Access to equipment within the well house is difficult since operators must crawl under the main piping to access each side of the facility and to engage or disengage the security system. Water is disinfected at the discharge piping using sodium hypochlorite. Water that is pumped to waste is sent to a nearby irrigation canal. The Well No. 8 house is shown in Figure III-16 and a photograph of the interior of the facility is shown in Figure III-17.



Figure III-16 Well No. 8 Facility



Figure III-17 Pump and Piping at Well No. 8

g. Well No. 9 – 9120 Riverside Drive

Well #9 was drilled during the summer of 1990 and Garden City advertised to transfer up to 4.8 cfs water rights from Well #5 to this new well. However, when test pumping was performed, it was found that the well would only pump 700 to 800 gpm or less, if the well was used on a continuous basis. The submersible pump that was installed was sized for 800 gpm. The well has been primarily used to supplement sprinkler irrigation during the summer months producing around 500 gpm. In 2003 the submersible pump failed and this well was taken offline. Results of a pump test performed in October 2007 indicate that Well #9 is located in a bounded aquifer, meaning that the aquifer is not areally extensive and is not in direct hydraulic connections with other aquifers. The pump test also indicated that the well could be used to pump flows of 2,000 gpm (SPF 2007). Pump repairs are currently underway and the well is expected to provide water to the system in 2008.

The well house is similar to Well #7 and is constructed of wood framing with cedar siding. The wellhead is located on the side of the building under a “doghouse” type structure that is attached to the main building. Sodium hypochlorite is added to



Figure III- 18 Well No. 9 Facility

the water at the discharge pipe (post chlorination) to achieve a required total residual chlorine concentration. Pump-to-waste water is discharged through the side of the building and into a nearby pond. The Well No. 9 well house facility is shown in Figure III-18.

h. Well No. 10 – 10460 Joplin Road

Well #10 was drilled and the facility constructed in 1993. The construction of this well, along with improvements made to Well # 5, were funded by a municipal bond approved by the voters to be paid over a twenty year period. The well facility includes two block with metal roof buildings, one building to house the pump and associated piping and the second building to house a phosphate and iron treatment facility that is similar to the facility at Well #5. The pump is a 250 hp vertical turbine controlled by a VFD and is fully integrated with a SCADA system. Any pump-to-waste water is emptied to a nearby canal. System water is discharged to the system through a 12-inch steel pipe. There is a diesel powered standby generator for this well. A photograph of the Well No. 10 Facility with the standby generator is shown as Figure III-19.



Figure III-19 Well No. 10 Facility

Water treatment equipment is available to be used to remove dissolved iron and manganese at this well location. The process involves oxidation of both the iron and manganese through the addition of Chlorine. Two filter vessels that run in parallel collect iron precipitates and absorb the manganese. Precipitates or settled solids, produced from backwashing the system are sent to a 95,000 gallon backwash water reclaim tank, see Figure III-20, which is located near the wellhouse facility. Currently, the settled solids are disposed through the Boise City Sewer System resulting in additional charges. The chlorine additive in water treatment also provides chlorine residual for disinfection.



Figure III-20 Well No. 10 Backwash Tank

The water produced at this well has had detectable levels of hydrogen sulfide, iron, and manganese. These constituents are corrosive in nature which may decrease the useful life of the pump, similar to Well #5.

i. Well No. 11 – W Rapidan Lane

Well #11 was drilled in 1979 to serve an estimated 150 mobile homes in Shenandoah Estates. This well is located in a multi-use building that is shared with the maintenance company that services Shenandoah Estates. The facility is located near the clubhouse swimming pool and is shown in Figure III-21 and houses the well, pressure tank, and disinfection equipment. This well is only utilized when



Figure III-21 Well No. 11 Facility

necessary to meet the summer water demand and contributes around 300 gpm to the system with a 40 hp submersible pump. Pump-to-waste water produced during pump start-up is sent through the distribution system to a fire hydrant that has been isolated by closing valves in order to prevent flooding on the clubhouse property. A pressure tank is located near the wellhead and is used as a contact chamber for the sodium hypochlorite disinfection system. Water associated with this well has contained detectable levels of iron so a phosphate injection treatment system was added in 2007 to minimize potential staining that could be caused by the iron.

j. Well No. 12 – Millstream Way

Well #12 was drilled in 1977 by United Water Company and was purchased by Garden City. This well is mainly used to help meet the peak summer water demand. The well provides approximately 300 gpm to the system with a submersible pump. Pump-to-waste water is flushed into an adjacent canal. The well has not been rehabilitated since it was drilled. Figures III-22 and III-23 show the well house and the contact chamber and well head. The wood frame building also houses a chlorine disinfection system.



Figure III-22 Well No. 12 Facility



Figure III-23 Well No. 12 Equipment

k. Water Production Rates

1) Firm Pumping Capacity

Water Works 2003 section 3.2.1.1 and IDAPA 58.01.08.513 state: “Under normal operating conditions, with any source out of service, the remaining sources shall be capable of providing either peak hour demand of the system or maximum day demand plus equalization storage.” The redundant source(s) necessary for adequate water production when the largest pump is out of service is called the firm pumping capacity. With well #9 out of service the combined water production rate is 8,680 GPM or 12.5 MGD compared to the current Peak Hour Demand of 9.2 MGD for existing connections.

2) Auxiliary Power Supply

Reliability and Emergency Operations in IDAPA 58.01.08.501.07 Idaho Rules for Public Drinking Water Systems, establishes requirements for, or alternatives to, standby power. “New community water systems are required to have sufficient dedicated on-site standby power, with automatic switch-over capability, and/ or storage so that water may be treated and supplied to pressurize the entire distribution system during power outages. During power outages, the water system shall be able to meet the operating pressure requirements for a minimum of eight (8) hours at average day demand plus fire flow.” Existing community water systems that are substantially modified after April 15, 2007 shall meet the requirements listed above where “substantially modified is defined as a combined increase of 25% or more above the system’s existing configuration in the population served or number of service connections, the total length of transmission and distribution water mains, and the peak or average day demand.

For Garden City's existing system to meet the definition of being substantially modified would occur when the population served increases by 3,080 residents to a future population of 15,400; or when the number of connections increases by 1,500 to approximately 7,500 connections from the current 5,990 connections; or when the average day demand increases to 3.28 MGD from the current 2.62 MGD; or when the linear feet of transmission and distribution water mains increases 94,000 feet from approximately 375,000 feet to 470,000 feet.

The current system has standby power supply at Well #5 and Well #10 which would be able to supply 3,200 gpm or 4.6 MGD to the system. Fire Flows vary depending on the size, type, and construction of the building in question. A structure located at 7761 Riverside Drive has the maximum fire flow in the city limits of 3,500 gpm associated with it. Since Garden City currently does not utilize storage capacity to augment water demands, standby power water capacity is insufficient to meet the current fire flow obligation. Even though the current water system in Garden City has not been substantially modified at this time and required by the IDAPA code to upgrade standby power, additional standby power capacity is needed to meet the City's fire flow commitment. In order for the City to meet the requirements of a new or substantially modified system, an additional 2,100 gpm must be supplied with standby power resulting in a capacity of 5,300 gpm.

l. Integrated Water System

Garden City has recently integrated the water system functions into a Supervisory Control and Data Acquisition (SCADA) system. The SCADA system registers demand influxes and commands pump operation. Set alarms of operation and a standby power supply for the SCADA system will also be included in the package.

4. Water Storage (Point 3)

The water system currently operates with no distribution storage.

5. Water Distribution (Point 4)

a. Description

The public water system identification number assigned to the Garden City water system by the State of Idaho is 4010066. This system receives source water from the ten wells directly connected to the distribution system. The existing distribution system piping ranges from 2 ½ - inch to 16-inch and is constructed of a variety of pipe materials, including polyvinyl chloride (PVC), cast iron, steel, ductile iron, and asbestos cement. Garden City has historically kept a record of water mains on a system base map and the City currently conducts Global Positioning

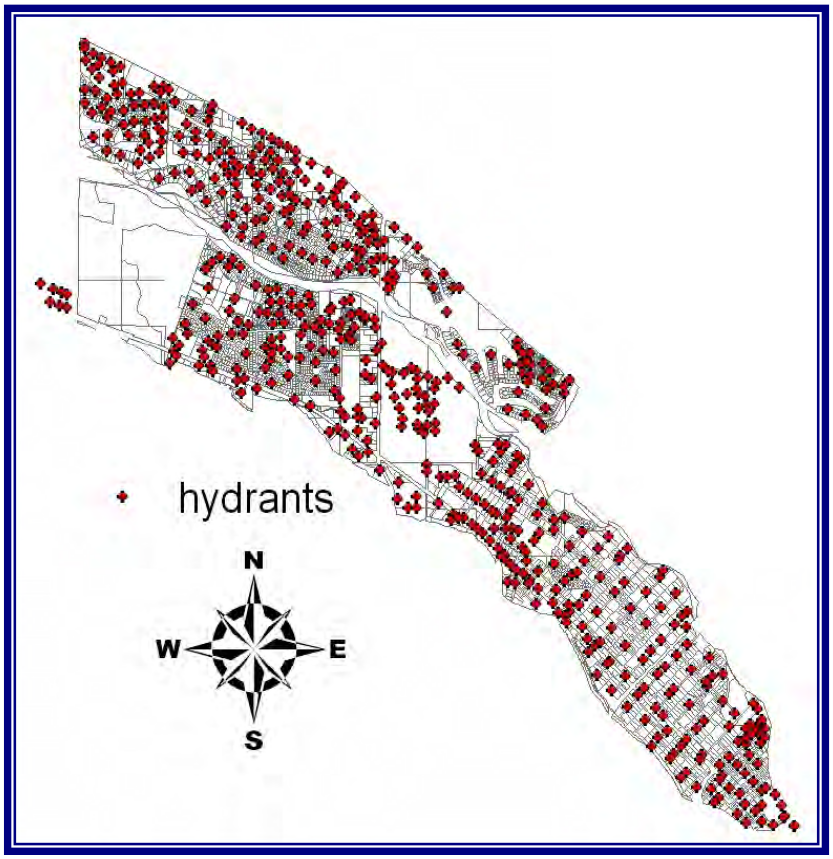


Figure III-24 Garden City Fire Hydrants

System (GPS) fieldwork and correlates this data with the City's Geographic Information System (GIS) Department to produce GIS-based water system maps, refer to Figure III-25.

Water meters are used on residential and commercial connections globally in the distribution system. The system has approximately 577 fire hydrants, shown in Figure III-24, which are exercised and flushed annually.

b. Pressure Zones

The elevation of Garden City is nearly flat with the mean elevation of 2,620 feet above sea level. The highest elevation is at the southeast side of town decreasing to the northwest side of town by approximately 85 feet. This level terrain allows the distribution system to have one pressure zone over the approximately 4.15 square miles of land area in the City.

c. Hydraulic Water Model

A hydraulic model (*MWH Soft InfoWater Suite 4.0, 2007*) of the distribution system was developed to evaluate the ability of the distribution system to meet the current needs of the City. Summaries of input and output data are contained in Appendix D. The software reports pressures and flows based on external demands imposed upon the model. These demands may be steady and applied over a large part of the network, such as peak summer demand, or a large demand for a short period at a single location in the network, such as a fire flow or a major leak. The model includes an electronic representation of the physical features of the water supply and distribution system created in the software and a series of reports generated from applying system demands at specific points within the system that simulate various scenarios such as maximum day demand, peak hour demand, and potential fire demand.

The base mapping of the water distribution system was developed from the system map maintained by Garden City, construction/ as-built plan sets, and line sizes reported by City personnel. Aerial photographs, GIS based contour maps, and City property maps were used to identify where dwellings are located and to estimate the approximate ground surface elevation at each node location within the model. Updates have occurred periodically as more information has been reported.

System demands were estimated from historical water use obtained from City supplied water meter data that summarized monthly water use as presented previously in this chapter. Water demand per residential and commercial connection was determined by taking the total water use for both residential and commercial users and dividing by the number of residences and commercial users served by the City water system. System demand at each node in the model was then estimated by multiplying the water demand by the number of connections served by a given node.

The hydraulic model was originally created and calibrated by HDR Engineering for the *Garden City Water Supply and Capacity Study* prepared during 2006. The model was initially calibrated using hydrant flow tests and comparing observed and simulated static pressures. Under static conditions, demands and pipe roughness were adjusted until the model simulated pressures within 10 percent of the observed pressures (HDR 2006). The computer model simulations were evaluated using these pipe roughness figures and updated system water demands compared to addition hydrant tests performed during 2007.

d. Peak Hour Analysis

Modeling for the theoretical PHD was performed for the current customer base for a flow rate of 9.2 MGD. Results for the peak hour flow modeling suggest that the system can meet pressure design criterion of IDAPA 58.01.08.552(b)ii of 40 psi throughout the city utilizing Wells #3, #4, #5, #6 and #10. Figure III-26 illustrates the resulting pressures estimated when the peak hour is modeled. This figure shows that pressures range from 50 to 80 psi throughout the system (excluding valves at the Well #10 facility) with the highest pressures on the northwest side of Garden City and the lowest pressures on the east side on both sides of the Boise River.

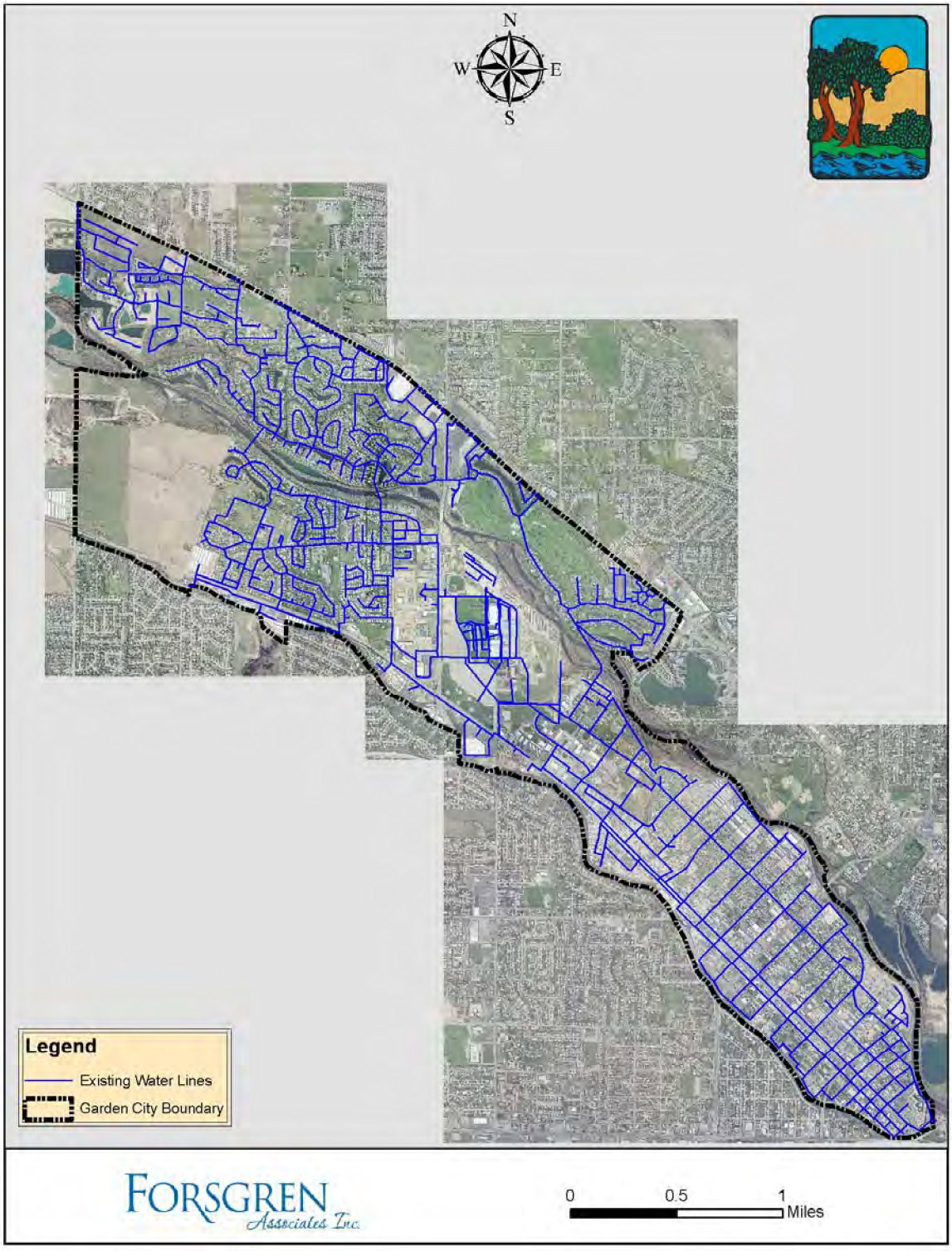


Figure III-25 Garden City Existing Water Lines

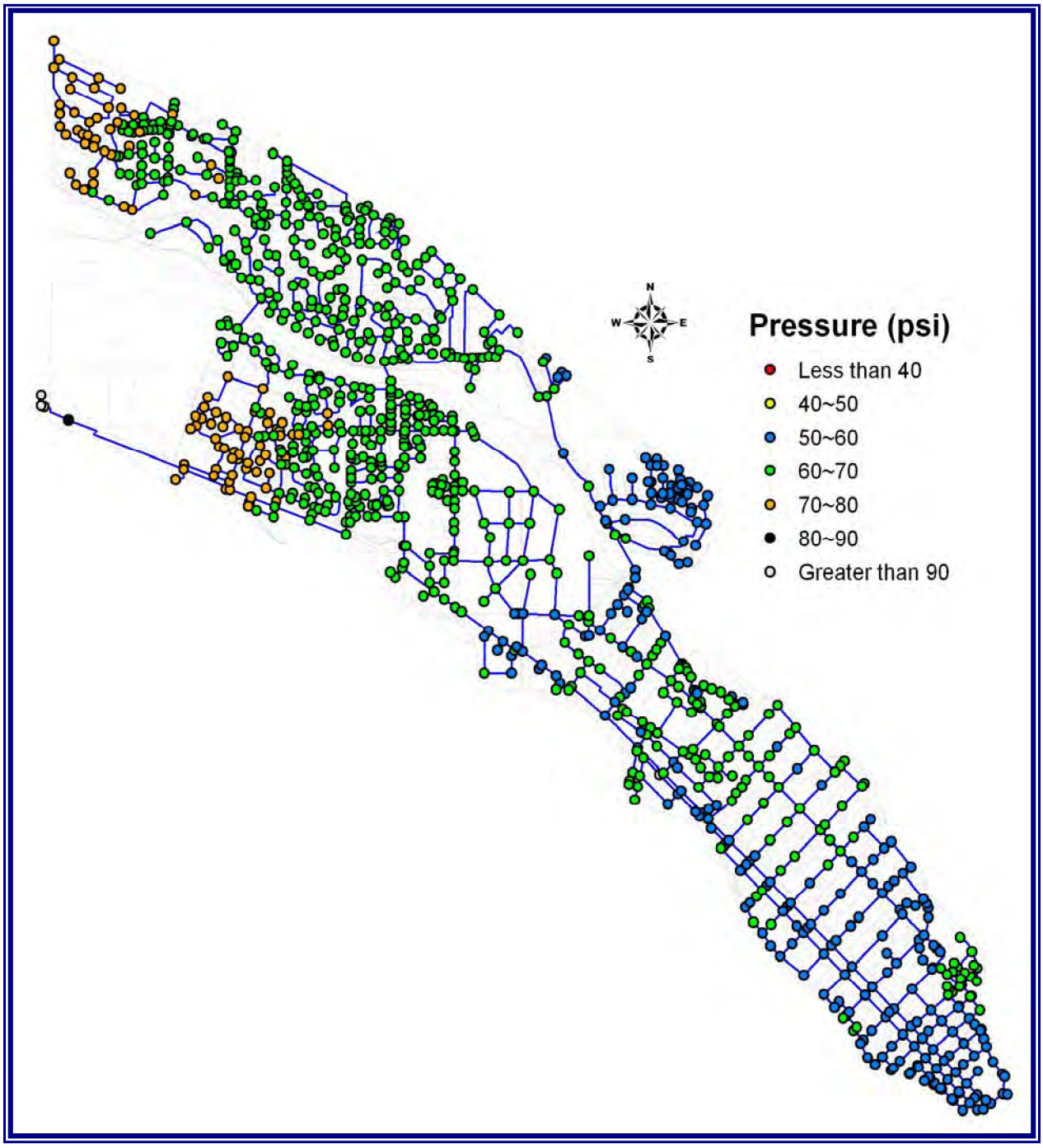


Figure III-26 Peak Hour Demand Pressure

e. Maximum Day Analysis

Modeling for the maximum day demand was performed for the 6.2 MGD. Since the model showed that for peak hour flow, the system could meet the pressure criterion of 40 psi, it is also able to meet the 40 psi criterion for the maximum day.

To meet the standard of IDAPA 58.01.08.552(b)i, the public water system must provide sufficient water to meet the maximum day demand and also meet fire flow requirements. Garden City strives to

provide fire protection to its residents by maintaining its water system to adequately meet fire flow requirements and by contracting with the North Ada County Fire & Rescue for fire protection. The North Ada County Fire & Rescue is a rural department made up of full-time firefighters and volunteers. Fire flow requirements are established through the North Ada County Fire & Rescue Fire Marshal with jurisdiction over Garden City. The fire marshal establishes required flows based on building size, occupancy designation, known building construction materials, type of construction, and fire protection sprinkler systems as presented in the International Fire Code (IFC). Based on these fire flow zones, the minimum fire flow requirement, as listed in the latest edition of the IFC, for a one or two family residential structure (less than 3,600 square feet) is 1,000 gpm, and the minimum fire flow requirement for residential structures larger than 3,600 square feet and all commercial/industrial buildings is 1,500 gpm (with flow requirements based on calculated "fire area" and the building construction type) for 2 hours with a minimum operating pressure of 20 psi to be maintained within the distribution system. A letter from the North Ada County Fire & Rescue detailing the method used to determine fire flows in located in Appendix J. A structure located at 7761 Riverside Drive has the maximum fire flow of 3,500 gpm associated with it that must be met by the system. All fire flow requirements at each separate location are verified with a physical fire flow test performed by City personnel. The water model was used to mimic maximum fire flows available across Garden City while also meeting the maximum day demand. Fire flow results using the City's firm pumping capacity are shown with Figure III-27. This figure shows that in many instances the firm pumping capacity is able to meet the maximum day demand, and provide fire flows on the northwest side of the City of 3,500 gpm, with flows varying throughout the region. It also suggests some areas, mainly on the southeastern side of the city, may have insufficient capacity (below the minimum 1,500 gpm for /commercial/industrial and 1,000 gpm for residential) to meet flows as defined by the latest fire codes and should be physically measured. Fire flows below these latest codes may be due to undersized pipes and/or dead-end lines.

The current maximum fire flow requirement for the structure located at 7761 Riverside Drive is 3,500 gpm; the current MDD is 1,026 gallons per connection per day or 0.71 gpm (see Section III.A.3.e); and the current firm pumping capacity of the system is 8,680 gpm (see Section III.B.3.k.1). Therefore, 7,750 gpm is required to be provided by the system to meet the MDD and the maximum fire flow. This leaves 930 gpm available that could serve approximately 1,300 additional connections.

C. Water Quality

Both the existing and future Garden City water systems are required to comply with all primary and interim primary drinking water regulations. These regulations include primary maximum contaminant levels (MCLs) promulgated by the EPA and IDEQ. The EPA establishes federal regulations for drinking water quality in community potable water systems. However, individual state regulatory agencies are required to adopt and enforce these regulations or may at their discretion mandate stricter regulations. IDEQ has established primacy for enforcing the federal regulations and has historically adopted the federal regulations as State standards. Thus, the EPA's regulations promulgated under the Safe Drinking Water Act (SDWA) govern the regulation-based goals for the existing and future Garden City drinking water supply.

The SDWA was originally passed by Congress in 1974 and is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, the EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. In 1986 Congress amended the law to require many actions to protect drinking water and its sources – rivers, lakes, reservoirs, springs, and ground water wells. The law was amended again in 1996 to emphasize sound science and risk-based standard setting, small water supply system flexibility and technical assistance, community-empowered source water assessment and protection, public right-to-know, and water system infrastructure assistance through a multi-billion-dollar state revolving loan fund.

Under the SDWA drinking water standards apply to water systems differently based on community type and size. Standards apply to all public water systems (systems with at least 15 service connections or serve at least 25 people per day for 60 days of the year). The Garden City Water System is classified as a Community Water System. The following sections highlight key federal drinking water regulations adopted by the IDEQ, which are applicable to this water system.

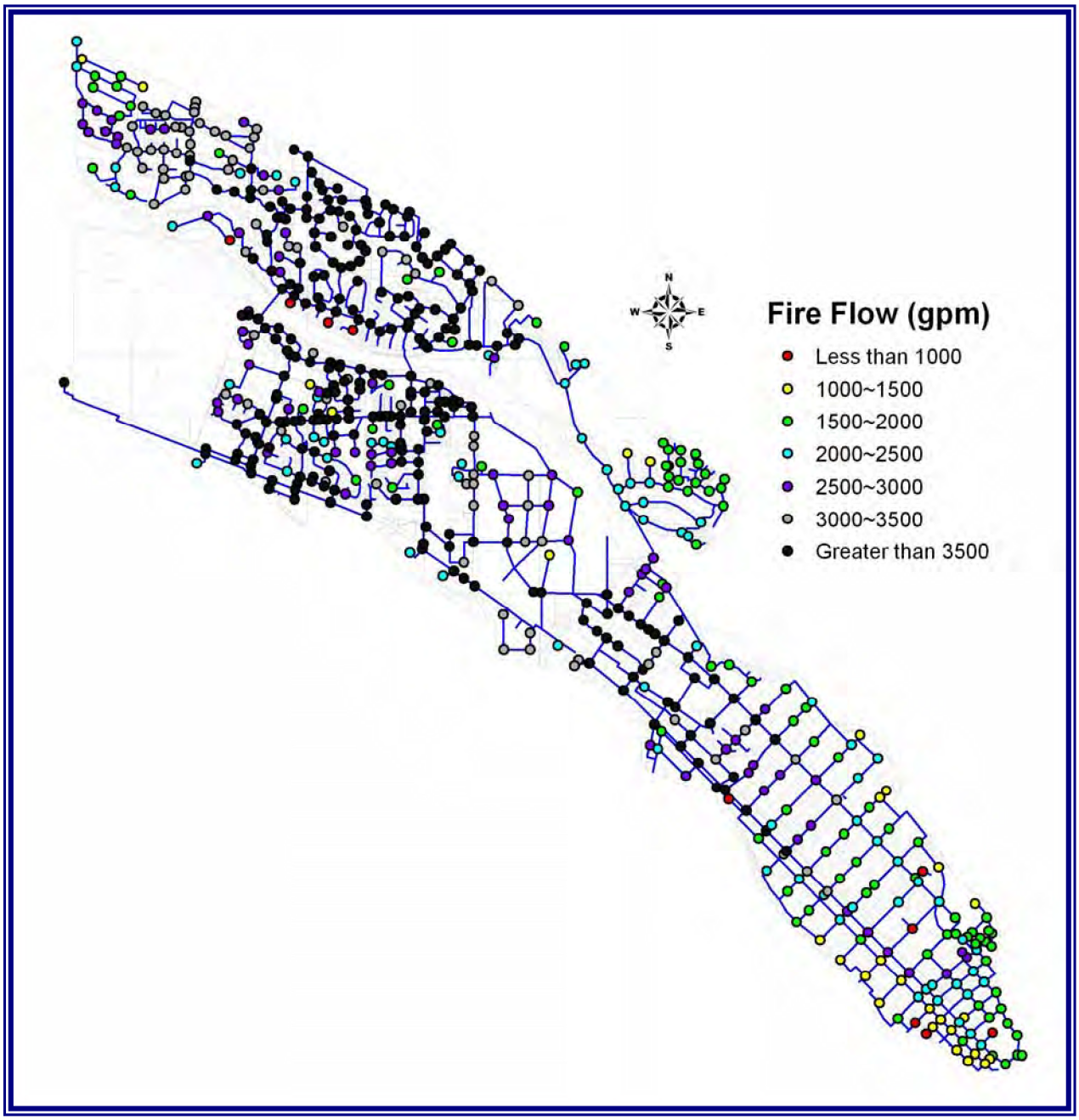


Figure III-27 Maximum Day Demand Fire Flow with Firm Pumping Capacity

1. Safe Drinking Water Act and Amendments:

Between 1976 and 2002, the EPA promulgated a total of 14 major rules in accordance with the SDWA that resulted in the regulation of 90 contaminants. Each of the regulations is germane to either a microbial contaminant risk or a chemical risk or a radiological risk. The rules are intended to provide multiple barriers to protect the public health. This approach includes:

- Source water protection,
- Treatment methods by a certified operator,
- Storage and distribution requirements, and
- Monitoring and public information on water quality and health effects.

a. National Interim Primary Drinking Water Regulations (NIPDWRs)

EPA established MCLs for a number of microbial, organic, inorganic and radioactive constituents by promulgating the NIPDWRs and their amendments over the course of an 8-year period from 1975 to 1983. Many of the requirements of these regulations have been superseded by later rules.

The level of many of contaminants in the Boise Valley Aquifer, the raw water supply for the City of Garden City, as identified in the NPDWR is less than the corresponding MCLs. The existing water supply does not have a history of violating the NPDWR as promulgated under the SDWA. Typically a community water system (CWS) that employs at minimum basic conventional particle removal and disinfection processes will achieve compliance.

b. Total Coliform Rule

Bacteria from sewage and animal wastes present the most frequent and immediate health risks to public water supplies. The best and easiest way to test for the presence of harmful bacteria in drinking water is to determine the presence of coliform bacteria. Although the presence of coliform bacteria in drinking water is not necessarily harmful by itself, it is a good indication of the presence of fecal coliform bacteria and E. coli bacteria. Fecal coliforms and E. coli are particularly pathogenic strains of coliform bacteria. Their presence indicates that drinking water has been contaminated with sewage or animal (including human) wastes. To mitigate coliform bacteria the EPA promulgated the Total Coliform Rule (TCR) on June 29, 1989.

The TCR, which became effective on December 31st, 1990, specifies a maximum contaminant level goal (MCLG) of zero for total coliforms (fecal coliforms and E-coli). The rule further specifies an MCL based on the presence of total coliforms in distribution system samples.

Summary of Compliance with Maximum Contaminant Levels of Total Coliform Rule

1. The maximum contaminant level (MCL) for microbiological contaminants is based on the presence or absence of total coliforms in a sample, rather than coliform density.
2. Each public water system is required to determine compliance with the MCL for total coliforms in each month in which it is required to monitor.
3. Systems which collect at least 40 samples a month are in compliance if no more than 5.0 percent of the samples collected during a month are total coliform-positive.
4. Systems which collect fewer than 40 samples a month are in compliance if no more than one sample collected during a month is total coliform-positive.
5. Each total coliform bacteria positive sample is required to provide public notice to its customers according to the Public Notification Rule.
6. Any routine positive sample for fecal coliform or *E. Coli* triggers repeat sampling and is a **Monthly MCL Violation**. Notification is required public within 14 days to customers.
5. Any triggered repeat positive Fecal coliform or *E. Coli* sample constitutes an **Acute MCL Violation**. Notification is required to public within 72 hours to customers.
6. The Environmental Protection Agency has stated "the best technology, treatment techniques or other means available for achieving compliance with the MCL for total coliforms is:
    a) Protection of wells from contamination by coliforms by appropriate placement and construction;
    b) Maintenance of a disinfectant residual throughout the distribution system;
    c) Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system;
    d) Filtration and disinfection of surface water, and disinfection of ground water using strong oxidants such as chlorine, chlorine dioxide," [or chloramines];

All community public water systems as well as non-community water systems must submit samples on a monthly basis to an approved testing laboratory or the appropriate state agency for coliform bacteria testing. The samples are tested to determine their compliance with the maximum contaminant level (MCL) for total coliforms. For large systems (>33,000 people served), compliance is achieved if total coliforms are detected in no more than 5% of distribution system samples collected in a given month. For smaller systems (population served <33,000) compliance is achieved if no samples collected for the monitoring period are positive for total coliforms. The number of samples required per monitoring period is established under the rule and varies by population served. In order for Garden City to comply with the TCR, it will need to provide sufficient test samples per month such that the public water system continues to meet this goal. A Quick Guide can be found in Appendix E (EPA, September 2001).

c. Regulations for IOCs, Fluoride, VOCs and SOCs (Phase I, IIA, II, and V)

A majority of the drinking water contaminants regulated under the SDWA Amendments fall into the categories of inorganic chemicals (IOCs), synthetic organic chemicals (SOCs) and volatile organic chemicals (VOCs). The rule-making for these groups of contaminants is divided into the following phases:

- Phase I - VOCs (effective July 30, 1992)
- Phase IIA - Fluoride (effective October 1987)
- Phase II - SOCs and IOCs (effective July 30, 1992)
- Phase V - Additional SOCs and IOCs (effective January 17, 1994)

In total, there are 135 contaminants that are currently regulated by these rules. For a complete list refer to Appendix E under Primary Drinking Water Standards (EPA, January 2005)

The existing and future water system in Garden City is required to be in compliance with all contaminant MCLs. If raw water quality continues to reflect historical quality based on the mandatory monitoring for these constituents, the water system will comply with these regulations without any treatment.

d. Lead and Copper Rule (LCR)

Ingestion of lead can result in brain damage, damage to red blood cells, and kidney damage while exposure to copper poses a health risk by potentially causing stomach and intestinal distress, liver and kidney damage, and complications of Wilson's disease for those genetically predisposed for the malady. Mitigation of these health risks led the EPA to promulgate the original LCR on June 7, 1991 which was modified by technical amendments on July 15, 1991; June 29, 1992; and June 30, 1994. Finally, minor revisions were adopted on January 12, 2000.

The intent of the LCR is to minimize exposure of the population to lead and copper from drinking water. As with most systems, this means that the corrosivity of the finished water must be controlled to minimize the release of lead and/or copper from distribution system materials (lead and copper in raw water is not typically a problem). Treatment techniques are required when 90th percentile lead and copper concentrations from the consumer tap exceed action levels (AL) of 15 µg/L and 1,300 µg/L, respectively. All community water systems and Non-Transient Non-Community Water Systems are required to comply with the LCR. The number of samples and frequency of sampling required by the LCR for monitoring is based on the size of the water system: A Quick Guide can be found in Appendix E (EPA, March 2004).

The City is currently in compliance with the LCR.

e. Stage 1 Disinfectant/Disinfection By-Products Rule (D/DBP Rule)

Some disinfectants and disinfectant byproducts have been shown to cause cancer and adverse reproductive effects in lab animals and suggested bladder cancer and adverse reproductive effects in humans. To improve public health protection by reducing exposure to disinfection byproducts, the EPA promulgated the Stage 1 D/DBP Rule in December 1998, which became effective in January

2002 for surface water systems serving more than 10,000 people. Surface water systems and ground water systems under the direct influence of surface water serving populations of less than 10,000 and all ground water systems must comply with the Stage 1 D/DBP Rule as of January 1, 2004.

EPA's goal for this rule is to reduce customer exposure to high levels of residual disinfectants (such as chlorine, chloramine, and chlorine dioxide) and to unknown and known DBPs (such as trihalomethanes (THMs), haloacetic acids (HAA5), bromate, and chlorite). The Rule sets a MCL of 0.08 mg/L for THMs, 0.06 mg/L for HAA5, 0.010 mg/L for bromate for plants that use ozone for oxidation or disinfection, and 1.0 mg//L chlorite for plants that use chlorine dioxide for disinfection or oxidation. Since disinfection is provided by the utility as a public service, the Stage 1 Disinfection/Disinfection By-Products Rule applies to the Garden City system. A Quick Guide can be found in Appendix E (EPA, January 2006).

f. Stage 2 D/DBF Rule

The Stage 2 D/DBP Rule applies to community and nontransient noncommunity water systems that add and/or deliver water that is treated with a primary or residual disinfectant other than ultraviolet light. This rule, proposed in 2001 and effective January 2005, focuses on limiting peak levels of THMs and HAAs within distribution systems by establishing a new compliance determination method. This compliance determination method requires that the running annual average of four quarterly samples for total THMs (TTHM) and five HAAs (HAA5) be no greater than 80 ppb and 60 ppb, respectively, at each distribution system compliance monitoring location. Furthermore, an initial system evaluation (ISE) is required of utilities to locate points of high DBP concentration in the distribution system, so that these points can be identified and included as compliance monitoring locations.

The Stage 2 Rule does not include a revision of the current bromate MCL of 10 ppb; however, it is very likely that EPA will revisit the bromate MCL in the next 5 to 10 years due to health effects data that indicate that a revision may be prudent. Garden City is required to comply with the Stage 2 Disinfection/Disinfection Byproducts Rule. A Quick Guide can be found in Appendix E (EPA, January 2006).

g. Radionuclides Rule (RR)

Radionuclides are radioactive elements long suspected of carcinogenic effects on the human body. In an effort to better address the health risk posed by radionuclides, the EPA published the Radionuclides Rule (RR) on December 7, 2000. The Radionuclides Rule (RR) provides for improved health, safety, and welfare of the public by requiring public water systems to minimize regulated radionuclides levels in the potable water system. The RR establishes monitoring requirements and includes maximum contaminant levels for Beta/photon emitters, Gross alpha particle, combined Radium 226/228, and Uranium. This rule requires monitoring at each entry point into the distribution system. All public water systems are required to comply. A Quick Guide can be found in Appendix E (EPA, December 2000).

From the compiled water quality data, it does not appear that radionuclides are of concern to Garden City.

h. Arsenic Rule

Arsenic is believed implicated in increased bladder and lung cancers along with other carcinogenic maladies. The EPA proposed The Arsenic Rule to address the health risks associated with arsenic. The Rule, published January 22, 2001, and effective in January 23, 2006, establishes a MCL of 10 ppb. A Quick Guide can be found in Appendix E (EPA, January 2001).

Current sampling results show that arsenic levels are below the established MCL of 10 ppb.

i. Groundwater Rule (GWR)

On November 8, 2006 the GWR was accepted by the Federal Government as 40 CFR Parts 9, 141, and 142 National Primary Drinking Water Regulations and the compliance date has been set as December 1, 2009. The GWR is meant to provide increased protection against microbial pathogens

in public water systems that use ground water sources which sources are not under the influence of surface water. EPA has increased awareness of ground water systems that are susceptible to fecal contamination because of the risk associated of supplying water that contains harmful microbial pathogens. The GWR identifies at risk groundwater systems susceptible to fecal contamination and stipulates measures to protect public health; The Final Ground Water Rule is location in Appendix E. Methods used to identify at risk systems are:

1) Regular Sanitary Surveys
2) Total coliform monitoring
3) Triggered Groundwater Source Monitoring in correlation with the TCR for systems that do not provide treatment which reliably achieves at least 99.99 percent (4-log) inactivation or removal of viruses

The City of Garden City is required to comply with the GWR.

2. Violations of Water Quality Regulations

The quality of water produced depends on the well water quality being drawn from and distribution pipe maintenance. Garden City has a history of water quality testing with results from 2006 reported herein (see Appendix F). The next Sanitary Survey of the system is scheduled to occur in June 2009.

Garden City reported meeting all EPA and IDEQ drinking water health standards with zero violations of MCL's in 2006. EPA has no record of health based water quality violations in the Garden City water system from 1993 to 2007. The Garden City water system is in compliance with all Safe Drinking Water Act water quality standards. The water quality contaminants that were detected but below health standards, MCL, highest level detected, date tested, and typical sources of contamination, as reported by the Garden City CCR are shown in Table III-9. The complete CCR is included in Appendix G.

Table III-9 Level of Detected Contaminants and Typical Source of Contamination from 2006 CCR

Contaminant	MCL	Highest Level Detected	Date Tested	Typical Source of Contamination
Arsenic	10 ppb	8 ppb*	2004	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium	2 ppm	0.02 ppm	2004	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Cadmium	5 ppb	0.5 ppb	2004	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Fluoride	4 ppm	0.47 ppm	2000	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate	10 ppm	0.5 ppm	2006	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	50 ppb	6 ppb	2001	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
Copper**	1.3 ppm	0.463 ppm	2006	Corrosion of household plumbing systems; erosion of natural deposits
Lead**	15 ppb	0 ppb	2006	Corrosion of household plumbing systems; erosion of natural deposits

* This arsenic result was from Well #7.
** Treatment techniques are required when 90th percentile lead and copper concentrations from the consumer tap exceed action levels (AL) of 15 µg/L and 1,300 µg/L

a. Total Coliform Rule (TCR)

Water is disinfected at the well head and the City follows a specific sampling procedure for compliance with the TCR. City personnel collect samples at designated sample locations. Procedures are followed to minimize the possibility of sample contamination. The City of Garden City public water system presently has no violations of the TCR.

b. Groundwater Rule (GWR)

In the future (the GWR compliance date has currently been set as December 1, 2009), Garden City will be required to implement additional monitoring to achieve compliance with the GWR. The impact of the ground rule may not be significant since the City is adding chlorine for disinfection at all sources. However, since each well is located in close proximity to customers and the distribution system includes no storage, it is unlikely that the current level of disinfection meets the required 99.99 percent (4-log) inactivation of viruses for sensitive groundwater sources. In addition, the City must maintain an effective wellhead protection program and should monitor the development of the GWR and IDEQ actions relative to characterizing the hydrogeologic sensitivity of the City's source aquifer (HDR 2006).

D. Water Treatment (Point 5)

Minimum treatment standards have been established for water systems in the State of Idaho by IDEQ and EPA. Since Garden City only uses groundwater for supply, only groundwater treatment rules apply. The City is currently adding liquid sodium hypochlorite for disinfection at all sources and is in full compliance with applicable drinking water quality regulations. In addition, the City treats for removal of iron and manganese at Wells #5 and #10 which have Secondary MCLs levels above the recommended. Table III-10 refers to the contaminant levels found in Wells #5 and #10. At these locations, the City utilizes an oxidizer, chlorine, and filtration systems for iron and manganese removal. These treatment plants consist of pressure filtration, backwash storage, disinfection, and onsite sodium hypochlorite generation.

Table III-10 Wells #5 and #10 Iron and Manganese Contaminate Levels

Date	Well #5		Well # 10	
	Iron (mg/L)	Manganese (mg/L)	Iron (mg/L)	Manganese (mg/L)
2/21/01	0.88	0.33	0.15	0.16
3/22/01	0.81	0.355	0.15	0.147
3/26/01	0.80	0.357	0.11	0.167
3/28/01	0.82	0.342	0.13	0.153
Average	0.83	0.346	0.135	0.157
EPA Standard	0.3	0.05	0.3	0.05
Exceeds	Yes	Yes	No	Yes

At the present time, treatment capacities seem sufficient to treat each source and the City has no treatment deficiencies. Compliance to the new MCL standard for arsenic of 0.01 mg/L became mandatory during 2006. For this reason, City staff should continue to monitor arsenic levels since a level of 0.008 mg/L was reported in 2006 (Garden City CCR 2006). While this level remains below the MCL, future monitoring may show require actions need to be taken to ensure that the arsenic MCL is not exceeded. Blending water from wells with lower arsenic levels to reduce overall concentrations is a common resolution for exceeding arsenic MCL.

The City's water supply currently complies with all primary and interim primary drinking water regulations. Water quality data show that no constituents exceed established MCLs in the water supply. Garden City has also implemented a flushing program to flush distribution piping and dead ends twice per year to improve water quality regarding odor, taste, and color.

E. Sewer System

1. Facilities Description

Garden City currently does not own their own wastewater treatment system, rather all the collections are connected to the Boise Wastewater Treatment Facilities for wastewater disposal. The Lander Street WWTF consists of grit and screening removal, primary clarifiers and secondary clarifiers, activated sludge process, nitrification and denitrification, finally disinfection by ultraviolet light. All bio-solids are pumped to the West Boise WWTF for digestion and applied to privately held agricultural lands. The West Boise WWTF consists of grit and screening removal, primary clarifiers and secondary clarifiers, activated sludge process, nitrification and denitrification, sludge digestion, finally disinfection by ultraviolet light, dechlorination, and post aeration.

F. Cross Connection Control Program

As defined by the Garden City Ordinance 6-5-2 a cross-connection is: Any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture or other device which contains or may contain contaminated water, sewage or other waste or liquids of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as a result of backflow.

To maintain water quality, Garden City has enacted an ordinance to control cross connection by requiring installation of backflow prevention devices. The ordinance requires installation, inspection, and testing of approved backflow prevention devices where the nature and extent of the activities conducted or the materials used or stored on the premises would present a hazard to public health or be deleterious to the quality of the City water supply should a cross-connection occur. Ordinance 6-5-5 allows for inspections to be made periodically of all buildings, structures or improvements of any nature receiving water through the City's system to ascertain whether cross connections exist. In the event that an improper cross connection is found and not corrected within the time limit set by the City Public Works Director or his authorized agent, service will be discontinued. Enforcement measures in the ordinance include the person who violates this ordinance shall be deemed guilty of a misdemeanor and may be fined and/or confined to jail.

Currently, the City's Ordinance (6-5-4-E) states that double check valve assemblies or reduced pressure principle backflow prevention devices require a successful performance test of the University of Southern California Engineering Center or meet AWWA C-506 standard, or another equal test. It is recommended that this ordinance be amended to meet IDAPA 58.01.08.543.01 which requires that all double check valve backflow prevention assemblies, reduced pressure principle backflow prevention assemblies, atmospheric vacuum breakers, and pressure vacuum breakers pass a performance test conducted by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research. - To view the ordinances refer to Appendix H.

G. Sanitary Survey

In accordance with the TCR a Sanitary Survey is to be conducted every 5 years. The survey is required to follow the EPA/State Joint Guidance on Sanitary Surveys outline of eight essential elements. The eight critical components are: source; treatment; distribution system; finished water storage; pumps, pump facilities and controls; monitoring, reporting and data verification; system management and operation; and operation compliance with State requirements.

The latest Sanitary Survey was conducted by IDEQ in June of 2004, but a report was never prepared to provide a basis for the Garden City public water system deficiencies and descriptions of physical features. Major points of interest from the survey field sheets state:

- The eastern most part of the system around 29th and 30th Streets has chronic low pressure;
- a system valve exercising program is needed;
- there is currently no leak detection program in place; and
- Wells #6, #7, #8, #10, #11, and #12 need to be vented with the open end of the vent screened and terminated downward at least 18 inches above the floor.

A copy of the Sanitary Survey field sheets are in Appendix I.

H. User Charges

1. Equivalent Residential Users

To perform the required evaluation of cost impacts it was necessary to determine the ERUs for the distribution system. This value is used later in this study to evaluate potential changes in user costs. As discussed in Section A, based on billing records, the city invoices approximately 4,420 accounts, 650 of which are commercial. The accounts are comprised of an estimated 5,340 residential units (3,400 single family, 60 duplexes, 1,100 mobile homes, and 780 apartments) and 650 commercial units. The average daily demand including consumptive and non-consumptive uses of 1,700,000 gallons per day for the residential connections calculates as nearly 320 gallons per day per connection (gpdc), while that of the commercial units calculates as approximately 1,400 gpdc with a combined average of 437 gpdc as calculated in Table III-1.

The user rate structure (shown in Appendix J) includes a base payment of $11.49 that covers system fees plus $1.40 per 1,000 gallons. This results in the average residential water bill of $27.58 (see calculation below).

320 gallons per day results in 9,920 gallons per month at $1.40 per 1,000 gallons = $13.89 plus $11.49 flat fee for a total of $25.38 per month.

Garden City's water rate structure employs a monthly flat rate with an additional charge based on water consumption, a practice that typically encourages water conservation. Only a regressive rate structure where water becomes more expensive as consumption increases would encourage more water conservation.

I. System Deficiencies

The following list summarizes the major existing system deficiencies for each of the five key components of a water system; (1) Water Rights/Source, (2) Water Supply Pumping Facilities, (3) Water Storage, (4) Water Distribution, and (5) Water Quality/Treatment.

1. Water Rights/Source

a. Water Right Discrepancy

Water right 63-2872 that was associated with Well #1 is listed by IDWR as having a point of diversion as SWSE Sec. 05, Township 03N, Range 02E, Ada County. Since Well #1, which was located at 33rd and Brown Street, has been abandoned, this point of diversion must be transferred to the diversion points for the current production wells

Water right 63-5330 that is associated with Well #5 is listed by IDWR as a statutory claim, and was recommended as disallowed in the Snake River Basin Adjudication in December 2006. It appears

that this right was disallowed due to the lack of evidence of priority being submitted for the claim. Evidence of priority is substantiation of the date of the first use of the water right as claimed on the right. The objection deadline was June 2007; however, a "Late Objection" can still be filed with SRBA court in Twin Falls. The place of use for this water right has been designated and is limited to an area within the city of 73 acres (Township 04, Range 02E, Section 31, Tracts NENW [20 acres], NWNW [30 acres], SWNW [3 acres], and SENW [20 acres]) instead of within the Garden City municipal service area. The diversion rate allowance of 1.95 cfs includes irrigation use of 1.65 cfs that is only allowed from June through September; the remaining 0.3 cfs is allowed year round for domestic use. This means that if Well #5 is used between October and June, it is legally limited to pump only 0.3 cfs or 135 gallons/minute.

Water right 63-11487 associated with Well #10 is listed by IDWR as a permit to appropriate water. A Beneficial Use Field Report was completed on May 30, 1997, but no license has ever been issued for this water right in 10+ years.

Water right 63-9144 associated with Well #11 is shown by IDWR to be owned by Shenandoah Park Investors instead of Garden City. This right is designated for domestic and fire protection use for Shenandoah Mobile Home Estates only.

Water right 63-8357 associated with Well #12 is shown by IDWR to be owned by United Water instead of Garden City. This right is in the need of having an SRBA claim filed because it was missed during the claim filing in approximately 1990. If the claim was filed, it has not been reported. If it has not been filed, a "Motion to File a Late Notice Claim" must be submitted. The City has filed a Notice of Claim for this water right which is pending. The water right is designated for domestic use in the Millstream Subdivision only.

2. Water Supply Pumping Facilities

a. Source Adequacy

Table III-11 presents the allowed water right diversion rate and the maximum pumping capacity reported for each well.

Table III-11 Well Source Capacity and Licensed Water Rights

Well #	Water Right Diversion Rate Allowed (gpm)	Well Pumping Capacity (gpm)	Well Pumping Capacity Below Diversion Rate	Actual Allowed Current Diversion Rate (gpm)
1	516	NA[1]	516	0
3	1,598	1,000	598	1,000
4	1,171[2]	1,620	-449	1,171[3]
5	875	1,400	-525	875[3]
6	619	530	89	530
7	642	510	132	510
8	1,391	1,180	211	1,180
9	2,154	2,000	154	2,000
10	2,020	1,800	220	1,800
11	539	350	189	350
12	530	290	240	290
Total	**12,055**	**10,680**	**1,375**	**9,706**

1. Well #1 was abandoned but the water right is listed as active by IDWR.
2. This is the combined water diversion rate for Well #2 (located in same diversion area) that was abandoned and Well #4.
3. Allowed water right diversion rate used instead of well pumping capacity.

As seen in Table III-11, all of the wells in the municipal water system are pumping below their allowable diversion rates, with the exception of Wells #4 and #5 which are pumping in excess of their allowable diversion rates. The system could pump an additional 1,375 gallons per minute or 1.98 MGD to meet the allowable diversion rates as recorded in the individual water rights. Since Wells #4 and #5 are currently able to pump at a rate above the diversion rate allowed by the current water right, the actual current diversion rate that the City is able to produce is calculated at 9,706 gpm. However, the City is currently working to resolve the water right issues and convert the various water rights to municipal rights allowing the point of diversion and diversion rates to be shared among all of the wells in the system. When the water rights are converted to municipal rights, the current allowed water right diversion rate is 12,055 gpm with a current well pumping capacity of the system of 10,680 gpm.

Deficiencies at each well location are as follows:

1) Well # 3

- The maximum pumping capacity for Well #3 is 598 gpm below the allowed water right diversion rate.
- The hydropneumatic tank located at this facility is not being utilized to provide a buffer to absorb water hammer shocks to the system. This tank is partially buried behind the well house and appears to be rusted.
- Flow is regulated manually using a gate valve, which is insufficient when the well is using full power; since this is a core well of the system, flow would be better regulated using a VFD or other variable flow device.
- A pump-to-waste configuration is not provided to allow pumping to waste.
- The well casing does not vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen.
- The well house, pumping equipment, and disinfection equipment are in need of maintenance/repair, modernization, and better protection from sabotage.
- The non-sample taps installed in the well house are not equipped with backflow prevention devices.
- A bacteria sampling tap of smooth nose type without threads is not provided.
- A pressure gauge is required on the discharge piping.

2) Well #4

- The maximum pumping capacity for Well #4 is 449 gpm above the allowed water right diversion rate.

3) Well #5

- The maximum pumping capacity for Well #5 is 525 gpm above the maximum allowed seasonal statutory claim diversion rate.

4) Well #6

- The maximum pumping capacity for Well #6 is 89 gpm below the allowed water right diversion rate.
- The well house, pumping equipment, and disinfection equipment are in need of maintenance/repair, modernization, and better protection from sabotage.
- The well casing does not vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen per IDEQ requirement.

5) Well #7

- The maximum pumping capacity for Well #7 is 132 gpm below the allowed water right diversion rate.
- The pumping and disinfection equipment are in need of maintenance and repair.
- The well casing does not vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen.
- The well casing is less than 6 inches above the ground. The casing needs to be raised to 12 inches above the final ground surface according to IDAPA 58.01.08.511.06(a).

6) Well #8

- The maximum pumping capacity for Well #8 is 211 gpm below the allowed water right diversion rate.
- The facility is in need of maintenance to repair, modernization, and better secure the water source and disinfection equipment.
- The well casing does not vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen.
- The non-sample taps installed in the well house are not equipped with backflow prevention devices.
- A bacteria sampling tap of smooth nose type without threads is not provided.
- The pump has never been part of a maintenance routine and will need repaired or replaced in the near future.
- The layout of the piping and equipment in the wellhouse is poor. Access to equipment within the well house is difficult since operators must crawl under the main piping to access each side of the facility.

7) Well #9

- The anticipated maximum pumping capacity for Well #9 when the pump is replaced is 154 gpm below the allowed water right diversion rate.
- The facility is in need of maintenance to repaint and maintain rusting pipes.

8) Well #10

- The maximum pumping capacity for Well #10 is 220 gpm below the allowed water right diversion rate.
- The well casing does not vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen.
- The non-sample taps installed in the well house are not equipped with backflow prevention devices.

9) Well #11

- The maximum pumping capacity for Well #11 is 189 gpm below the allowed water right diversion rate.
- The hydropneumatic tank located at this facility is not being utilized to provide a buffer to absorb water hammer shocks to the system.
- A pump-to-waste configuration is not provided to allow pumping to waste at design capacity before the first service connection.
- The well casing does not vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen.

- The facility is in need of maintenance to repair, modernization, and better secure the water source and disinfection equipment. Since the wellhouse is shared with the swimming pool facilities for the subdivision, the door is left unlocked.
- The non-sample taps installed in the well house are not equipped with backflow prevention devices.
- A bacteria sampling tap of smooth nose type without threads is not provided.

10) Well #12

- The maximum pumping capacity for Well #12 is 240 gpm below the allowed water right diversion rate.
- The facility is in need of maintenance to repair, modernization, and better secure the water source and disinfection equipment.

11) Auxiliary Power Supply

- Based on current fire codes and regulations, standby power supply conditions require 5,300 gpm. Since Garden City currently does not utilize storage capacity to augment water demands, existing generation facilities can produce 3,200 gpm, therefore, emergency water supply should be increased by 2,100 gpm.

3. Water Storage

The water system currently operates with no distribution storage facilities and, therefore, must meet the PHD utilizing the current pumping capacity of the system when the largest producing well is out of service. The system will not be allowed to grow once the PHD is equal to this pumping capacity without the addition of more pumping capacity or water storage. Water storage can optimize pump facilities and water rights by equalizing PHD. Existing operations require groundwater pumping capacity to satisfy PHD. With the addition of adequate storage, PHD can be satisfied with storage and pumping combined, thus decreasing the amount of groundwater pumping capacity required from the PHD rate to the MDD rate.

4. Water Distribution

a. Inadequate Fire Flow

Fire flow shortcomings based on the latest fire code (fire flow less than 1,000 gpm) were identified by the water model during the MDD with the largest producing well out of service at the following locations (see Figure III-27):

1) Hydrant on Chinden between 45th and 46th Street due to insufficient line size of 2 ½ inches
2) Hydrant on 31st Street just north of Chinden due to insufficient line size of 4 inches
3) Hydrant on 34th and Brown Street due to insufficient line size of 4 inches
4) Hydrant on W Winterwood Lane due to insufficient line size of 4 inches
5) Hydrant on E Adam CT due to insufficient line size of 4 inches
6) Hydrant on N Lakeview PL due to insufficient line size of 4 inches
7) Hydrant on 38th and W Kay Street due to insufficient line size of 4 inches
8) Hydrant on 35th and Brown Street due to insufficient line size of 4 inches
9) Hydrant on N Lakemont PL due to insufficient line size of 4 inches
10) Hydrant on N Lakeshore PL due to insufficient line size of 4 inches

b. Insufficient Line Size

Fire hydrants that are located at the following locations are connected to mainlines less than 6-inchs in diameter:

1) Between W Elayner and W Cody
2) Along Chinden to 49th Street
3) Along 38th Street
4) Along 37th Street
5) Along 35th Street
6) Along 34th Street
7) Along 33rd Street
8) Along W Stockton Street
9) Along Chinden between 45th and E Ellen Street

c. As Built

For the majority of the existing distribution system no as-built drawings are available, the city personnel know of line sizes and type from personal knowledge and working on the system. The condition of the distribution lines is largely unrecorded, such factors as age, frequency of breaks, and line sizes that are beneficial for operations and maintenance. The city is working to locate water features by GPS and keep this data in the GIS system. Additionally, City personnel are determining distribution lines sizes by counting the revolution to open and close valves.

5. Water Quality/Treatment Water Supply

No existing water quality deficiencies have been noted. Documentation of treated water supply has shown compliance to Federal and State regulations, therefore no deficiencies have been addressed.

IV. FUTURE CONDITIONS

A. Land Use and Development:

Garden City has a varied range of land uses. Residential uses occupy 32% of the land within the City. Commercial, office, and industrial uses take up 20%. Garden City also includes or surrounds 258 acres of land owned and used by other public agencies (e.g. Expo Idaho, Idaho Transportation Department, Ada County Highway District). Much of the original "Old Town" site is zoned for commercial and multi-family development while recent development in the western portion of the city and near the river is almost exclusively residential neighborhoods. Commercial and industrial land uses are scattered throughout the community with a concentration of retail uses along major streets (Garden City 2006).

The 2006 Garden City Comprehensive Plan goals for future development within the city encourages an increased mix and density of uses, allowing for concentration of uses along potential public transportation routes; development of all 605 acres of vacant land within the city and area of city impact; redevelopment of some public lands that include the Expo Idaho site, Ada County Highway District, and Idaho Transportation Department property. In addition, there are properties within Garden City that have potential for redevelopment because land value is greater than improvement value; multi-family zoned parcels currently have one residential unit on the property; and underutilized or vacant property that exists along the Boise River.

Potential areas for land development or re-development are shown in Table IV-1.

Table IV-1 Potential Areas for Development or Re-Development

Area	Sub-Area	Size (Acres)
Vacant Land	Area of City Impact	309
	Public Lands (Ada County, ACHD, ITD)	258
	Other vacant land within the City	38
Re-development Potential	Residential property with one unit and potential for additional development	15
	Residential property with improvement value less than land value	905
Vacant and under-utilized riverfront property	Riverfront	40
Table adapted from Garden City Comprehensive Plan, July 24, 2006		

B. Future Population Growth:

Population forecasting for Garden City was recently performed to provide input to the 2006 Comprehensive Plan. The population increased from 6,369 in 1990 to 10,624 in 2000. This increase denotes an annual growth rate of 5.2% for this period. Population projections have been prepared for Garden City by the Community Planning Association Southwest Idaho (COMPASS). Southwest Idaho is one of the fastest-growing regions in the nation and Ada County population has increased at an average rate of 4.1% between 2000 and 2006. If this growth rate was to continue over the next 20 years, the Ada County population could be as high as 980,000 by 2030 (Ada County, 2007). For Garden City, COMPASS forecasts a population of 16,600 in 2030 (Garden City, 2006).

However, population forecasts for the City have historically underestimated population change, in part because of the tendency to overlook the potential for redevelopment in Garden City. The consultant team that assisted with the 2006 Garden City Comprehensive Plan prepared a population forecast for 2025

with the assumption that 50% of the vacant area in the City will be developed at an average density of 12 units/acre; that 50% of all underutilized residential property will be developed at an average density of 8 units/area; and that 6 transit-oriented development (TOD) nodes will be developed with 80 units within each node. The additional population associated with these assumptions, along with regional trends in growth, forecast a 2025 Garden City population of 28,000 people (Garden City, 2006). This suggests an annual growth rate of 4.5%. After 2025, it is assumed that population growth will follow the average annual growth rate established by COMPASS for Ada County of 1.66% (Ada County, 2007). This results in a 30-year population projection for Garden City of 34,860 residents. Figure IV-1 illustrates Garden City population growth and forecasted 30-year growth. It is important to note that this is an estimation based on current data used in recent planning documents, population growth rates may change in the future as more data becomes available.

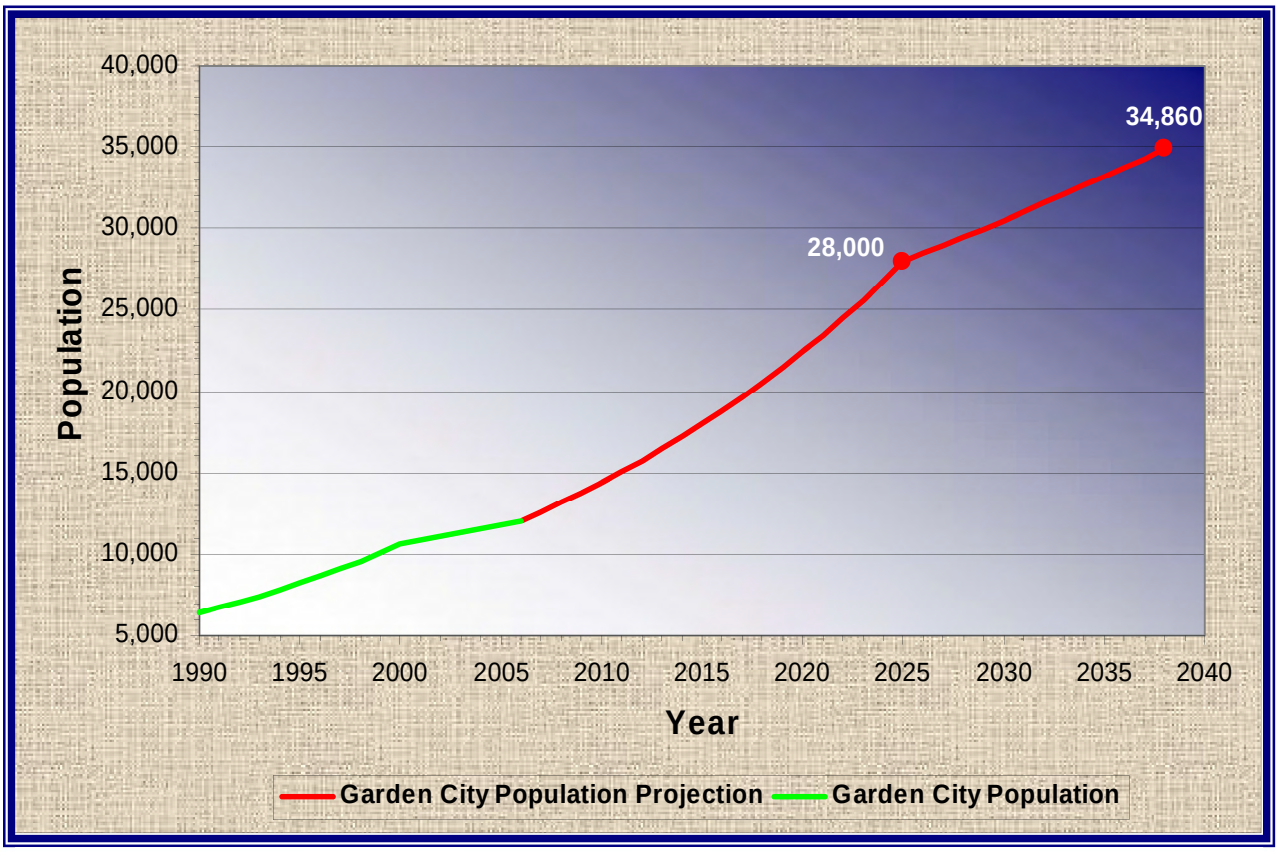


Figure IV-1 Garden City Population Forecast

C. Forecast of Potable Water Demand

At an average household population of 2.43 people, the number of residential connections in 2038 is projected to be 14,346. Based on the current ratio of one commercial connection for every 8.2 residential connections, the number of commercial connections in 2038 is projected to be 1,750. Multiplying number of connections by the current ADD and the MDD per connection produces future estimates of the ADD and MDD on the water system. The forecast residential ADD is 4.6 MGD and the MDD is 16.5 MGD while the total system demand is forecast as 7.1 MGD for ADD and 25.3 MGD for MDD, refer to Table IV-2 for the summary of predicted demands. Figure IV-2 depicts the MDD by year and the maximum diversion rate for existing water rights at 17.36 MGD; the maximum pumping capacity at 15.38 MGD; and the firm pumping capacity of 12.50 MGD.

Table IV-2 Water Demand Forecast Summary; 30 -year ADD and MDD

Parameter	No. Residential Units	Residential Demand per Unit (gpd)	Residential System Demand (MGD)	Average Commercial Demand MGD	Total System Demand (MGD)
Average Daily Demand (ADD)	14,346	320	4.6	2.5	7.1
Maximum Daily Demand (MDD)	14,346	1,150	16.5	8.8	25.3

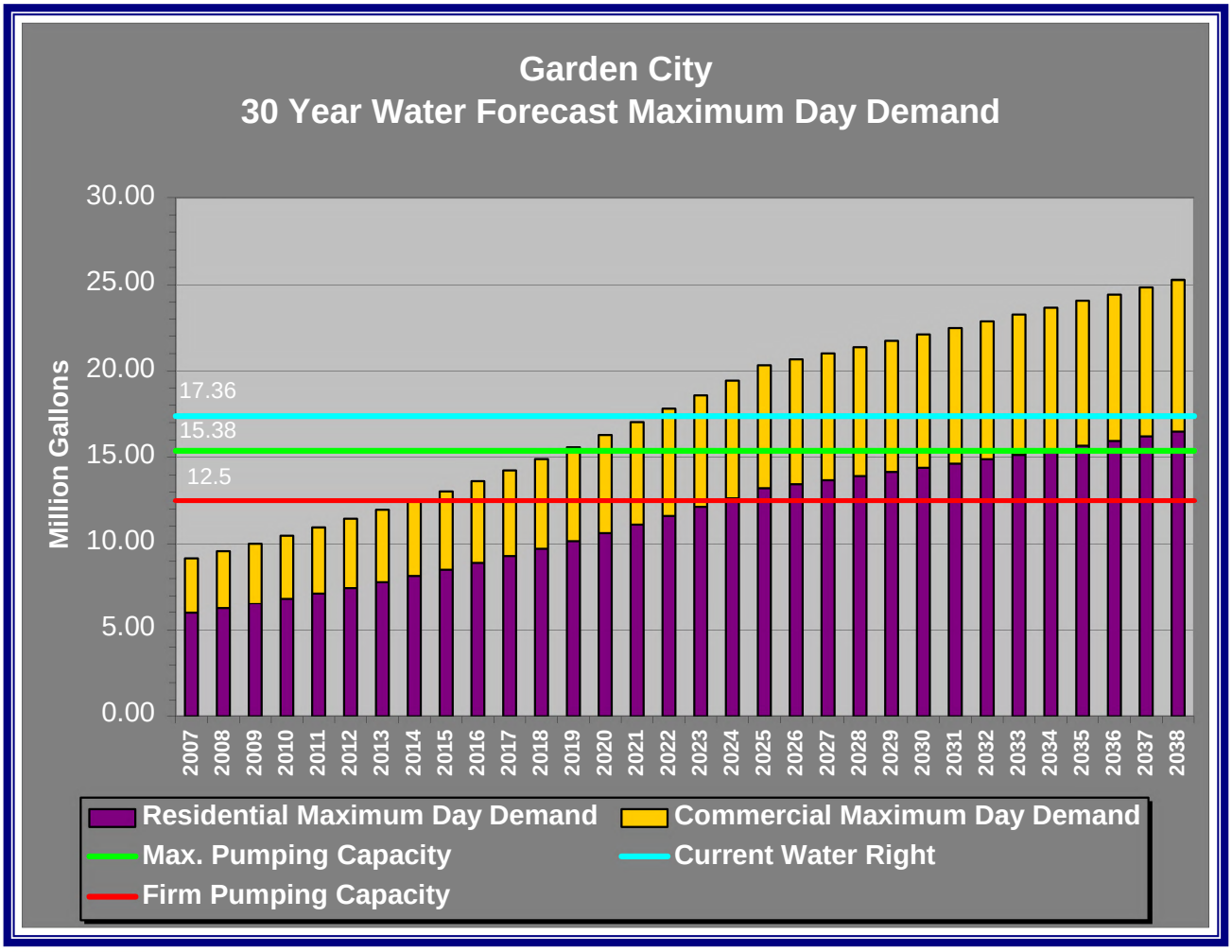


Figure IV-2. Water Demand Forecast

1. Future Peak Hour Demand

Prediction of a peak hour demand is again derived from theoretical flows for similar water systems as presented in literature common to the industry. A peak hour of 1.5 times the maximum day is suggested in the reference Wastewater Engineering: Treatment Disposal and Reuse originally authored by Metcalf & Eddy and published by McGraw Hill. The peak hour demand for the future conditions predicted for the Garden City water system then calculates as 26,350 gpm or 38.0 MGD.

D. Facilities Needed (30Yr)

1. Water Source

a. Increased Water Rights

The existing diversion rate allowed by right is reported as 26.9 cfs. The projected MDD of 25.3 MGD translates as 39.1 cfs. This indicates that the allowable diversion rate would require an increase of 12.2 cfs, or 5,480 gpm to meet the projected demand of 39.1 cfs. With the largest source out of service (Well #9 with a diversion rate of 4.80 cfs) the increase is 17.0 cfs or 7,630 gpm.

2. Water Supply Pumping Facilities

a. Insufficient Water Production

Recall that the water system, without storage, must have sufficient pumping capacity to satisfy the PHD with the largest pump out of service, or must have sufficient pumping capacity to match the MDD while using storage to meet the PHD with the largest pump out of service. This condition is often termed the firm pumping capacity. Currently, the firm pumping capacity with Well #9 out of service is 8,680 gpm, which will be exceeded during 2014. The required firm pumping capacity to satisfy the future PHD is 26,350 gpm, or 17,600 gpm to meet the future MDD at 2038. Therefore, an additional 8,900 gpm of firm pumping capacity will be required to meet the projected 30-year water MDD along with water storage of sufficient quantity to supply the system during the projected PHD. If no water storage is provided, an additional 17,670 gpm of firm pumping capacity will be required to meet the projected 30-year PHD.

3. Water Storage

The Garden City water system does not currently include finished water storage. Storage is not specifically required in the Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08). These rules refer to the *Recommended Standards for Water Works,* by the Great Lakes Upper Mississippi River Board of State Public Health and Environmental Managers (also known as the *Ten State Standards*). These standards suggest that public water systems should provide sufficient storage to meet domestic demands and fire flow demands. Under future conditions for Garden City, the various components of storage are evaluated as follows (see Figure IV-3 for an illustration of these components):

1) Dead Storage – the volume stored in a tank or reservoir that cannot be drawn out or used beneficially because of piping elevations or low pressures (minimum or 20 psi static) in the distribution system. Dead storage is not required if an elevated tank, low profile tank, or reservoir with outlet booster pumping is provided.

2) Effective Storage – is the additive value of the following storage components.

    a) Operational Storage – is the volume between the pump “on” and the pump “off” levels when the tank is normally being used and the sources of supply pumps to the storage tank are off. Operational storage is calculated using 2.5 times the capacity of the largest pump, or the amount of storage where the largest pump will cycle on and off no more than 10 times per hour. Well #9 has the largest capacity at 2,000 gpm, so operational storage is calculated to be 5,000 gallons.

b) Equalization Storage – the current firm pumping capacity of Garden City cannot supply the future MDD. At a minimum, the firm pumping capacity must be able to supply the MDD of the system. Since the system will not be able to provide the MDD with the largest source out of service, a new source must be added to the system with storage of finished water in sufficient quantity to compensate for the difference between the water system's firm pumping capacity and the PHD. If the firm pumping capacity is increased to equal to the future MDD (17,600 gpm), then the equalization storage would be the difference between the PHD and the firm pumping capacity or 500,000 gallons (1.6 MG – 1.1 MG).

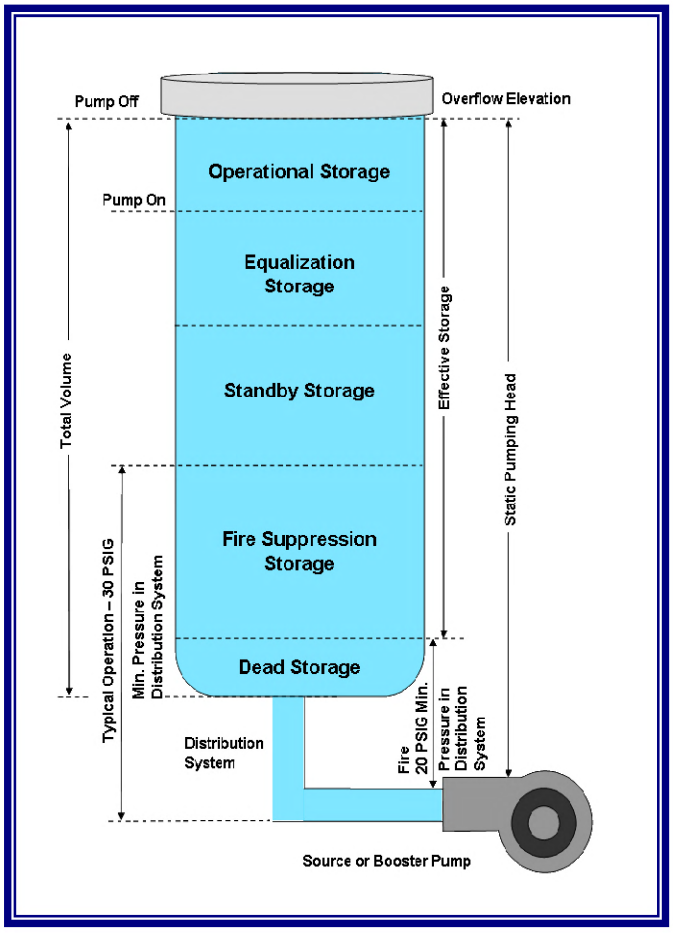


Figure IV-3. Storage Volume Classification

c) Fire Suppression Storage – is equal to the maximum fire flow condition or 3,500 gpm for a two-hour duration which calculated as 420,000 gallons.

d) Standby Storage – Garden City currently has standby generation capability at Wells #5 and #10 with a combined pumping capacity of 3,200 gpm. The standby storage is calculated as the difference between the ADD for an 8 hour period and the combined pumping capacity for Wells #5 and #10 for 8 hours. This difference is 832,000 gallons ([296,000 gph x 8 hours] – [3,200 gpm x 60 min/hour x 8 hours]). Standby power at additional wells would reduce this storage requirement.

Table IV-3 shows the water storage capacity required for the 30 -year planning period.

Table IV-3 Future Conditions Required Water Storage

Storage Type	Storage Component	Storage Required with Firm Pump Capacity > MDD (gallons)
Dead Storage	Dead Storage	0
Effective Storage	Operation Storage	5,000
	Equalization Storage	500,000
	Fire Suppression Storage	420,000
	Standby Storage	832,000
	TOTAL	**1,760,000**

If finished water storage is not utilized to provide the difference between the system's future firm pumping capacity and PHD, then the firm pumping capacity must be increased to meet the future PHD of 26,350 gpm.

4. Water Distribution

a. Future ADD

Modeling was performed for the 7.1 MGD system requirement to meet the future ADD. Results show that for the firm pumping capacity, the design requirement of 40 psi can be met as illustrated in Figure IV-4. However, when the distribution system is modeled using standby power that is supplied at Wells #5 and #10 only, all areas of the system fall below 40 psi, thus, future ADD and fire flow cannot be satisfied when relying on standby power.

b. Future MDD

Modeling was also performed for the 25.3 MGD system requirement to meet the MDD using the firm pumping capacity. Results show that for the firm pumping capacity, the system cannot meet the 40 psi design criteria for nearly the entire city, except for a small area near Wells #8 and #10. The model results also indicate that the system cannot provide MDD and meet fire flow requirements at a system pressure of 20 psi with the existing firm pumping capacity. The largest fire flow produced by modeling with the future MDD was less than 310 gpm.

c. Future PHD

PHD was also modeled. Results show that like MDD, the firm pumping capacity cannot meet the 40 psi design criteria for nearly the entire City, except for a small area near Wells #8 and #10. Figure IV-5 illustrates the resulting pressures estimated by the model for the future PHD.

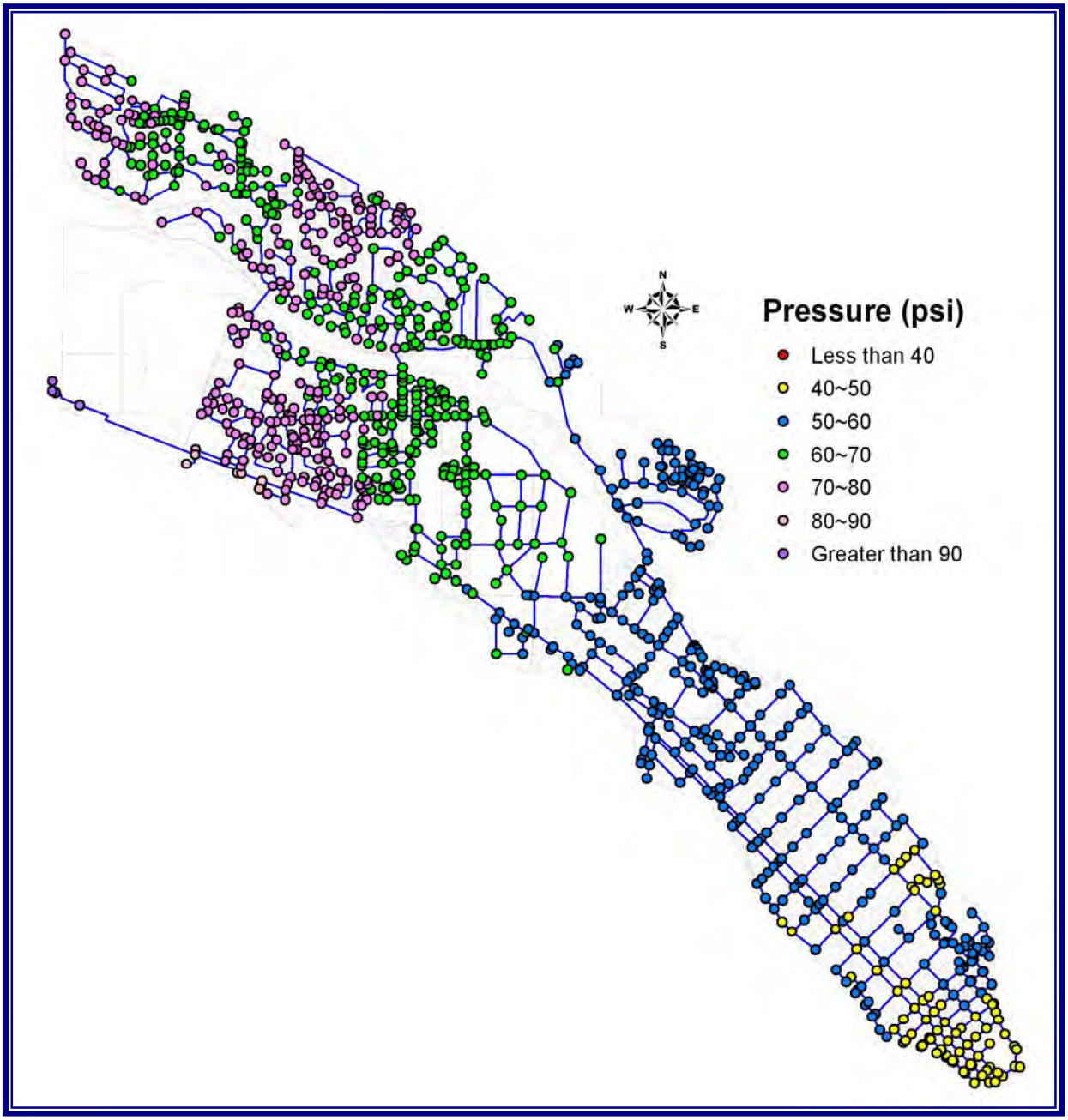


Figure IV-4. 2038 Future Average Day Demand with Firm Pumping Capacity

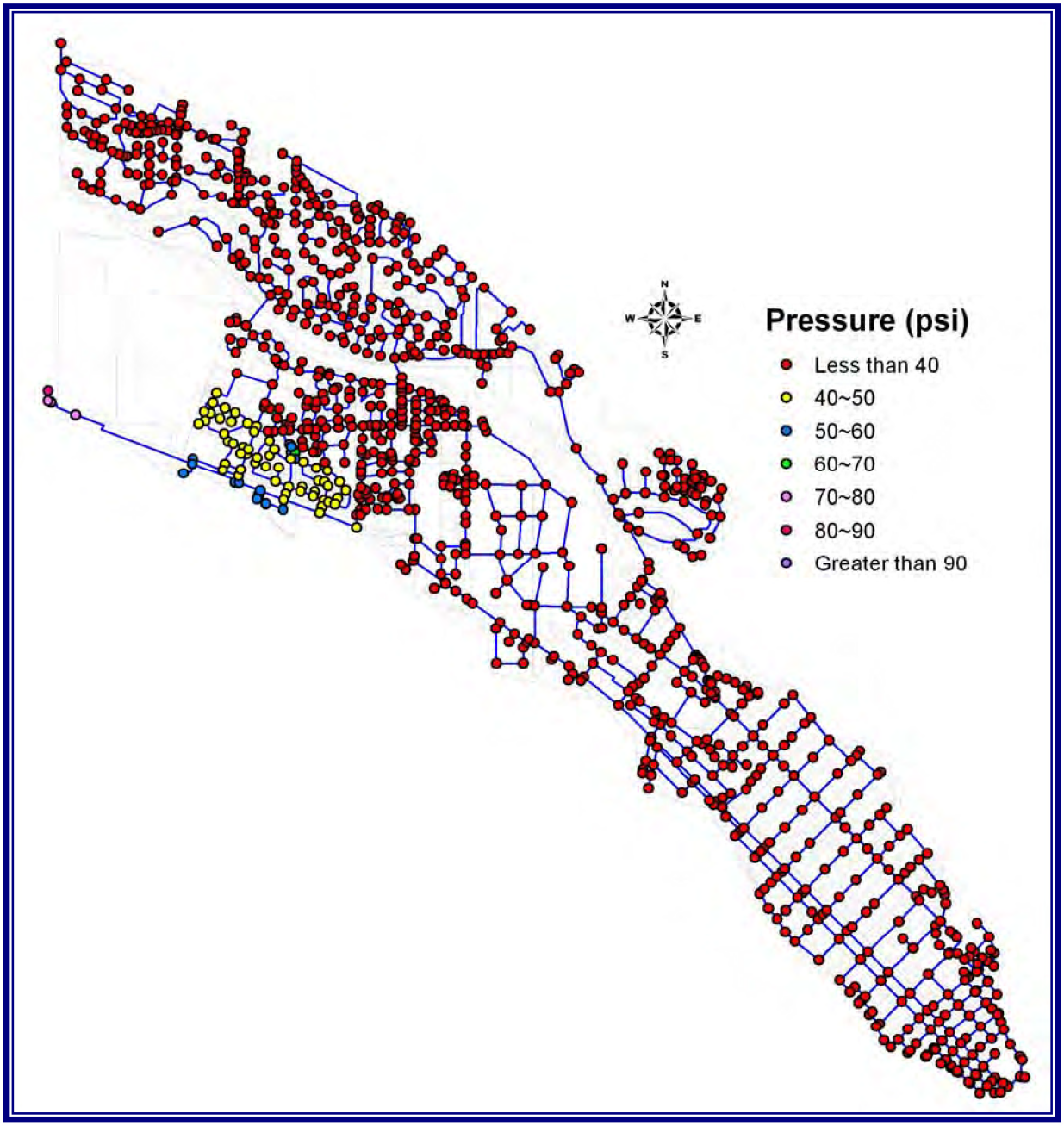


Figure IV-5. 2038 Future Peak Hour Demand with Firm Pumping Capacity

5. Water Quality/Treatment Water Supply

a. Sample Testing

Monitoring for organic, inorganic, and microbial contaminants plus radionuclides, turbidity, disinfection byproducts, and residual disinfectant levels will occur at a frequency outlined by IDEQ.

b. Future Water Quality Standards

Conformance to the Groundwater Rule is a future need.

E. Future Conditions without Project

The City is compelled to address several deficiencies with the water system to accommodate the existing as well as future conditions. Without correcting the deficiencies, the City will incur several consequences including: the City is unable to meet current minimum fire flow requirements at various locations due to undersized lines; the City may divert more water than water right allows and incur increased risk of litigation, additional water demand will cause the City to be unable to meet minimum pressure and fire flow requirements; and the City will be unable to deliver an adequate water supply during a power outage due to insufficient back up power and no finished water storage.

1. Insufficient Water Rights

The existing diversion rate associated with the firm pumping capacity allowed by right for Garden City is 17.4 MGD (26.9 cfs). While this diversion rate will meet the 30-year ADD of 7.1 MGD, it does not meet the 30-year MDD of 25.3 MGD.

Without correcting the situation of insufficient water rights, or providing sufficient finished water storage to be able to provide the MDD, the City will not have sufficient water to legally supply the obligated demand for future connections to the water system.

2. Insufficient Water Source

The current firm pumping capacity is 12.5 MGD (Well #9 out of service). This pumping rate will provide sufficient water to meet the 30-year ADD of 7.1 MGD but will not meet the PHD in the near future (if no finished water storage is developed) and will not meet the MDD of the system near the year 2014. In order to meet the 30-year MDD, the firm pumping capacity would need to be increased by 8,900 gpm, over twice the current capacity.

An insufficient water source would also result in pressures that are below minimum standards of 40 psi during the PHD. Fire flow during this period will fall below minimum standards of 1,000 gpm with the maximum flow at less than 350 gpm at 20 psi during the MDD. This insufficient water source occurs when the system is producing at firm pumping capacity. Since standby power is only supplied at Wells #5 and #10, deficiencies related to supplying the ADD with sufficient pressure and fire flow would occur during power outages also.

3. Insufficient Storage Capacity

Without development of finished water storage, or increasing the firm capacity and adding emergency generation, the City will experience loss of reliability in the water supply and increased risk due to water quality degradation from reduced pressure and insufficient fire flow. The required storage volume is dependant upon available water rights, firm pumping capacity, and standby power availability.

4. Water Quality/Treatment Water Supply

As science and technology improve, new water regulations are passed and enforced by EPA and state agencies. Many regulations are given a duration for public water systems to comply. One such regulation which will affect Garden City is Source Water Monitoring under the July 2007 Groundwater Rule (GWR). Source Water Monitoring requires triggered total coliform sampling of groundwater sources when a positive total coliform is reported under the TCR.

In addition, some future regulations will impact the monitoring and reporting of the City's water quality. Garden City will be required to prepare an IDSE Plan and either a Standard Monitoring Plan or a System Specific Study under the Stage 2 D/DBP. Garden City will also be required to monitor TTHM and HAA5 and report results using a locational running annual average.

V. DEVELOPMENT AND INITIAL SCREENING OF ALTERNATIVES

The goal of this study is to develop alternatives for addressing the system deficiencies and then recommending a preferred alternative or set of alternatives. First, system deficiencies noted in existing and future conditions were summarized and assigned a nomenclature corresponding to each of the five key components. Then the preferred alternatives were developed using a four-tiered approach. System deficiencies were then evaluated to determine if they could be addressed without changes to the water system infrastructure. This evaluation included the No Action Alternative or adjustments to system operation. An initial screening of preliminary alternatives was then performed for each of the deficiencies identified for the five water system components discussed in the report. These Preliminary Alternatives were then evaluated in more detail to select Preferred Alternatives for recommendation to the City.

A. Description of Problems/Deficiencies

Based on deficiencies identified for both the existing conditions and the anticipated future conditions of the system, the following list summarizes findings for each of the five key components of a water system and assigns a nomenclature. The five key components are; (1) Water Source (WR), (2) Water Supply Pumping Facilities (WSu), (3) Water Storage (WSt), (4) Water Distribution (WD), and (5) Water Quality/Treatment (WQ).

1. Water Source

Table V-1 provides a convenient list of deficiencies, both for the existing condition and the future condition, regarding the water source.

Table V-1 Water Source System Deficiencies

Item No.	Deficiency Description	Existing or Future Condition	Description of Issue Requiring Improvement
WR-1	Multiple diversion points	Existing	Water rights do not take advantage of municipal right designation by listing all diversion points in system for each right.
WR-2	Water rights discrepancy	Existing	Water right associated with Well #5 is a statutory claim for domestic and irrigation use only and has been recommended as disallowed in the SRBA.
WR-3	Water rights discrepancy	Existing	No water right license has been issued for Well #10.
WR-4	Water rights discrepancy	Existing	Water rights associated with Wells#11 and #12 are not shown by IDWR to be owned by Garden City.
WR-5	Insufficient water rights	Future	Projected 30-year MDD exceeds current water rights by 7.9 MGD

a. WR-1: Multiple Diversion Points

Municipal water rights are unique in that a single right may be extracted from multiple diversion points within the municipal boundary, provided that each diversion point is listed on the water right. Currently, the water rights for Garden City list only a single diversion point.

Water right 63-2872 that is associated with Well #1 must be transferred to must be transferred to the diversion points for the current production wells to preserve the right from being forfeited.

b. WR-2: Water Right Discrepancy

Water right 63-5330 that is associated with Well #5 is listed by IDWR as a statutory claim, and was recommended as disallowed in the Snake River Basin Adjudication in December 2006. This claim is for domestic and irrigation use only at a diversion rate of 1.65 cfs for irrigation use and 0.3 cfs for domestic use. It appears that this right was disallowed due to lack of evidence of priority being submitted for the claim. Evidence of priority is evidence of the date of the first use of the water as claimed on the right. In addition, this diversion rate does not meet the current reported pumping capacity of 1,400 gpm at Well #5. The objection deadline was June 2007; however, a "Late Objection" can still be filed with the SRBA Court in Twin Falls.

c. WR-3: Water Right Discrepancy

A Beneficial Use Field Report for water right 63-11487 associated with Well #10 was completed in 1997, however, no license has ever been issued for this right.

d. WR-4: Water Right Discrepancy

Water right 63-9144 associated with Well #11 is owned by Shenandoah Park Investors and the place of use is defined as being for Shenandoah Mobile Home Estates only.

Water right 63-8357 associated with Well #12 is owned by United Water and the place of use is defined as being for Millstream Subdivision only. This right is missing the SRBA claim that should have been filed during the claims filing period in approximately 1990. A "Motion to File a Late Notice Claim" must be submitted.

e. WR-5: Insufficient Water Rights

The allowable diversion rate of existing water rights requires an increase of 5,500 gpm to meet the 30-year projected MDD including consideration of firm pumping capacity.

2. Water Supply Pumping Facilities

Table V-2 provides a convenient list of deficiencies, both for the existing condition and the future condition, regarding the pumping facilities.

Table V-2 Pumping Facilities System Deficiencies

Item No.	Deficiency Description	Existing or Future Condition	Description of Issue Requiring Improvement
WSu-1	Insufficient pumping capacity	Existing	Nominal pumping rates for the water system are below allowable water right diversion rate.
WSu-2	Insufficient water production	Existing	During ADD with fire flow, standby power facilities are unable to deliver water at 40 psi to the system.
WSu-3	Well discharge piping	Existing	Discharge piping configuration requires modification
WSu-4	Facility upgrade/replacement	Existing/ Future	Well facility is nearing end of useful life.
WSu-5	Insufficient water production	Future	Projected demand exceeds current firm pumping capacity of 8,700 gpm during 2015.

a. WSu-1: Insufficient Pumping Capacity

All of the wells in the municipal water system are pumping below their allowable diversion rate, with the exception of Wells #4 and #5, which are pumping in excess of their allowable rates. The system as a whole is allowed to pump an additional 1,375 gpm or 1.98 MGD to meet the allowable diversion rates as recorded in the individual water rights.

b. WSu-2: Insufficient Water Production

Wells #5 and #10 are the only pumps with standby power capabilities, together these pump produce 3,200 gpm which is below the ADD requirement of 1,800 gpm and maximum fire flow requirement of 3,500 gpm.

c. WSu-3: Well Discharge Piping

Well discharge piping configurations have various defects as noted in the sanitary survey, the following is a list of items to be corrected through modification of the piping discharge schemes:

1) Sample Tap

   A bacteria sampling tap of smooth nose type without threads is not provided at Wells #3, #8, and #11.

2) Well Casing Vent:

   The well casing vent does not vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen at Wells #3, #6, #7, #8, #10, and #11.

3) Well Casing Extension

   On Well #7 the well casing is less than 6 inches above the ground. The casing needs to be raised to 12 inches above the final ground surface.

4) Backflow Prevention Device

   The non-sample taps installed in the well house are not equipped with backflow prevention devices at Wells #3, #8, #10, and #11.

5) Pressure Gauge

   A pressure gauge is required on the discharge piping of well # 3.

6) Pump to Waste

   A pump to waste configuration is not provided at Wells #3 and #11, to allow pumping to waste at design capacity before the first service connection.

7) Piping Configuration

   The layout of the piping and equipment in the wellhouse is poor providing difficult access to equipment in Well #8.

   The hydropneumatic tank located at Wells #3 and #11 is not being utilized to provide a buffer to absorb water hammer shocks to the system. In the case of well #3 this tank is partially buried behind the well house and appears to be rusted.

d. WSu-4: Facility Upgrade/Replacement

The estimated remaining useful life for system facilities varies (see Tables III-7 and III-8). Those major assets with a useful life estimated at below 10 years are as follows:

1) Well Building

   The well buildings/housing at Wells #6, #7, #8, #9, and #11 with well #3 in need of better protection from sabotage.

2) Disinfection Facility

The disinfection building at Well #3 will need upgraded or replaced in approximately 7 years. The disinfection facilities that are part of the well buildings listed above will need to be upgraded or maintained when the building is scheduled to this action.

3) Wells

All of the pumps and motors will need to be maintained or replaced.

4) Internal Plumbing

The internal plumbing will need to be maintained and/or replaced with the exceptions of Wells #4 and #5.

e. WSu-5 Insufficient Water Production

The current firm pumping capacity of approximately 8,700 gpm will be exceeded by the MDD in 2014. The required firm pumping capacity to satisfy the projected 30-year MDD is 17,600 gpm requiring an additional 8,900 gpm of firm pumping capacity along with water storage of sufficient quantity to supply the system during the projected PHD. If no water storage is provided, an additional 17,670 gpm of firm pumping capacity will be required to meet the projected 30-year PHD..

3. Water Storage

Table V-3 provides a convenient list of deficiencies, both for the existing condition and the future condition, regarding the water storage.

Table V-3 Storage Tank Deficiencies

Item No.	Deficiency Description	Existing or Future Condition	Description of Issue Requiring Improvement
WSt-1	Insufficient storage capacity	Future	With firm pump capacity > MDD and sufficient standby power to meet future ADD, the storage requirement would be approximately 1 MG

a. WSt-1: Insufficient Storage Capacity

Garden City does not currently utilize finished water storage. Public water systems should provide sufficient finished water to meet domestic and fire flow demands. If the firm pumping capacity is increased to meet the future MDD of 17,600 gpm and there is sufficient standby power to meet future ADD, the storage requirement would be around 1 MG. Water storage can optimize pump facilities and water rights by equalizing PHD. Existing operations requires pumping to satisfy PHD. With the addition of adequate storage, PHD can be satisfied with the storage and pumping combined, thus decreasing the amount of water production required and optimization of existing facilities.

4. Water Distribution

Table V-4 provides a convenient list of deficiencies, both for the existing condition and the future condition, regarding the water distribution.

Table V-4 Water Distribution Deficiencies

Item No.	Deficiency Description	Existing or Future Condition	Description of Issue Requiring Improvement
WD-1	Inadequate fire flow	Existing	Fire flow does not meet flows recommended by Fire Marshall at required pressure in specific areas
WD-2	Insufficient line sizes	Existing	Areas of deficient pressure and insufficient mainlines and line sizes identified
WD-3	As-built	Existing	Documentation of existing distribution system is limited
WD-4	Inadequate pressure	Future	The 30-year projected ADD, MDD, and PHD requirements cannot be met with standby power or the firm pumping capacity.

a. WD-1: Inadequate Fire Flow

According to the hydraulic model, fire flows of less than the minimum requirement of 1,000 gpm (according to the latest fire code) have been identified in the following locations, also refer to Figure V-1:

1) Hydrant on Chinden between 45th and 46th Street due to insufficient line size of 2 ½ inches
2) Hydrant on 31st Street just north of Chinden due to insufficient line size of 4-inches
3) Hydrant on 34th and Brown Street due to insufficient line size of 4-inches
4) Hydrant on W Winterwood Lane due to insufficient line size of 4-inches
5) Hydrant on E Adam CT due to insufficient line size of 4-inches
6) Hydrant on N Lakeview PL due to insufficient line size of 4-inches
7) Hydrant on 38th and W Kay Street due to insufficient line size of 4-inches
8) Hydrant on 35th and Brown Street due to insufficient line size of 4-inches
9) Hydrant on N Lakemont PL due to insufficient line size of 4-inches
10) Hydrant on N Lakeshore PL due to insufficient line size of 4-inches

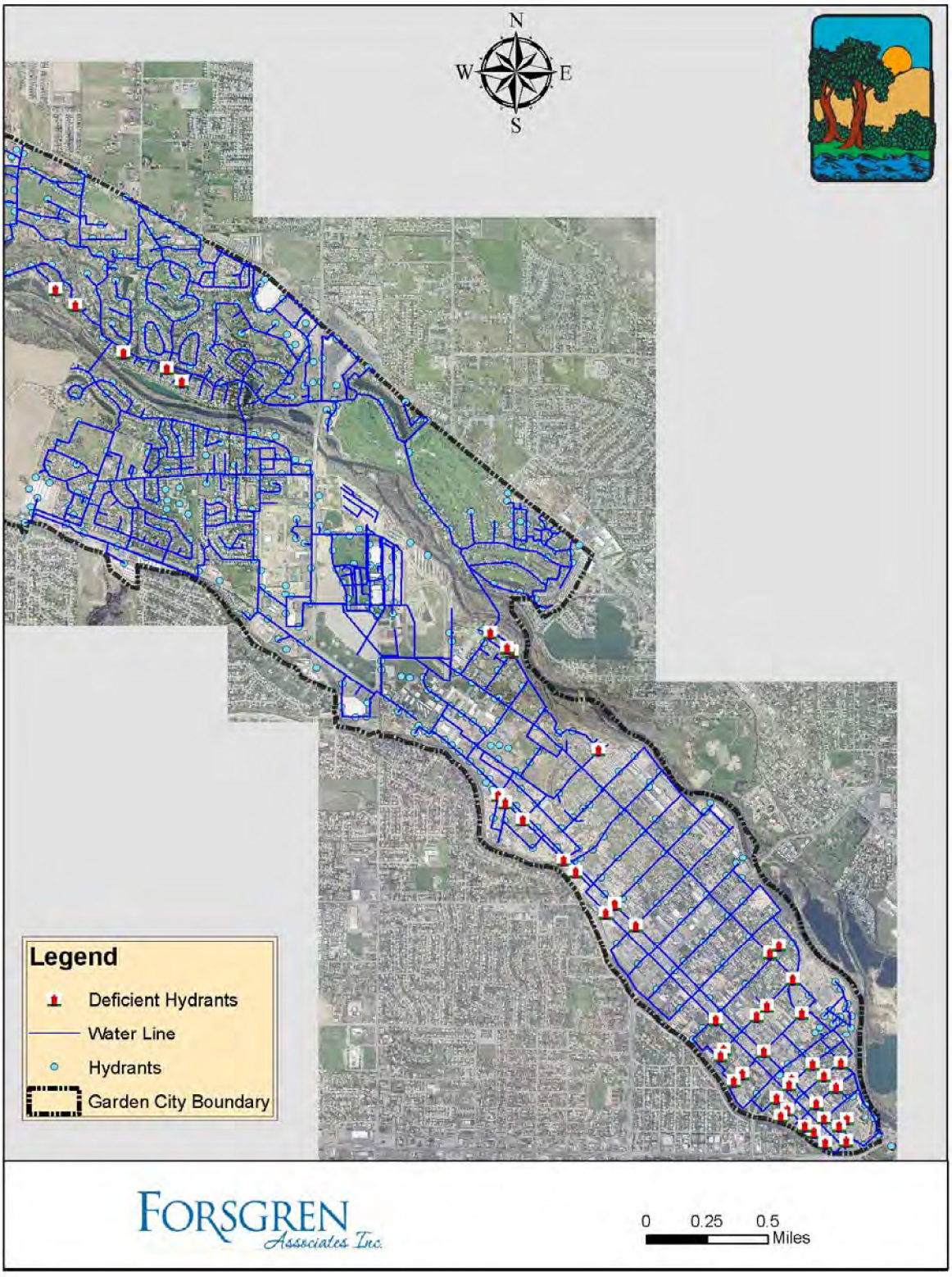


Figure V-1 Insufficient Fire Flow by Hydrant Map

b. WD-2: Insufficient Line Sizes

Fire hydrants that are located at the following locations are connected to insufficient diameter mainlines (less than 6-inch diameter), also refer to Figure V-2:

1) Between W Elayner and W Cody
2) Along Chinden to 49th Street
3) Along 38th Street
4) Along 37th Street
5) Along 35th Street
6) Along 34th Street
7) Along 33rd Street
8) Along W Stockton Street
9) Along Chinden between 45th and E Ellen Street
10)

c. WD-3 As-built

For the majority of the existing distribution system no as-built drawings are available, the city personnel know of line sizes and type from personal knowledge and working on the system. The condition of the distribution lines is largely unrecorded; such factors as age, frequency of breaks, and line sizes are beneficial for operations and maintenance.

d. WD-4 Inadequate Pressure

Model results show that the system cannot maintain the required 40 psi and meet the 30-year projected ADD with standby power; or meet the 30-year projected MDD with fire flow at the current firm pumping capacity; or meet the 30-year projected PHD at the required 40 psi at the current firm pumping capacity.

5. Water Quality/Treatment Water Supply

Table V-5 provides a convenient list of deficiencies, both for the existing condition and the future condition, regarding the water quality/treatment.

Table V-5 Water Quality/Treatment Deficiencies

Item No.	Deficiency Description	Existing or Future Condition	Description of Issue Requiring Improvement
WQ-1	Conformance to Groundwater Rule	Future	Begin water source monitoring in correlation with TCR

a. WQ-1: Conformance to Groundwater Rule

As science and technology improve, new water regulations are passed and enforced by EPA and state agencies. Many regulations are given a duration for public water systems to comply. One such regulation which will affect Garden City is Source Water Monitoring under the July 2007 Groundwater Rule (GWR). Source Water Monitoring requires triggered total coliform sampling of groundwater sources when a positive total coliform is reported under the TCR.

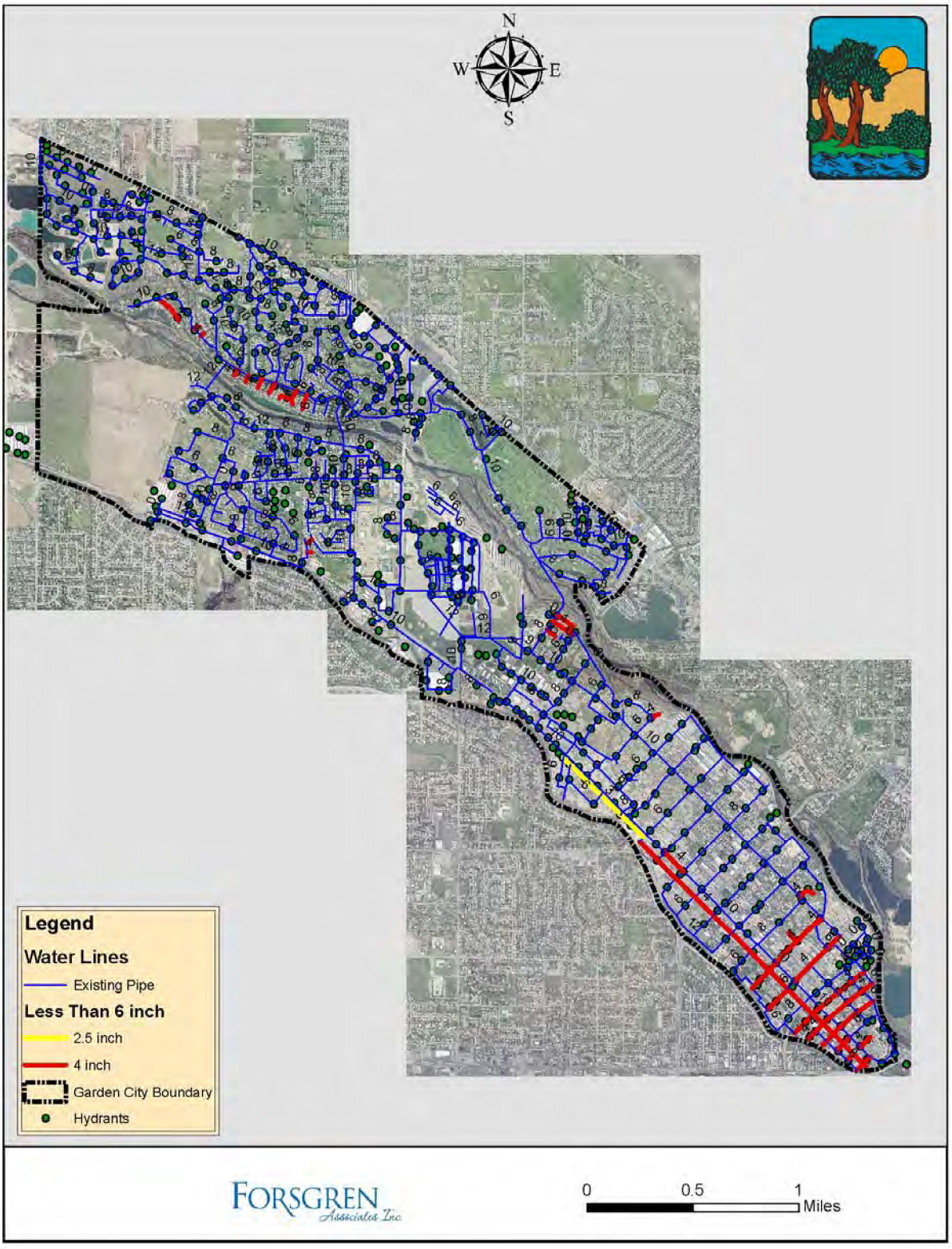


Figure V-2 Insufficient Line Sizes

B. Water Quality Objectives/Goals

Although the finished water quality delivered to the customer must meet the NPDWS regulated by the EPA as adopted by the IDEQ, the City has further established the following goals for the production of treated water and the quality of the water supplied to the customer through the distribution system.

Initial Screening Criteria

1. Compliance
2. Capacity
3. Feasibility
4. Cost Effectiveness
5. Safety

1. Compliance

The City places a high value on compliance with existing federal and state drinking water regulations. It could be stated that the City will comply with NPDWS as promulgated in the SDWA and all subsequent rules.

2. Capacity

The City has an obligation for water production to meet projected demand for typical situations as well as extenuating circumstances. This objective can be further stated by:

a. Water Demand Forecast

Water production rates must be adequate for the 30-year planning period; 25.3 MGD for MDD.

b. Emergency Operations

The water production rates cannot be compromised during pump failures, power outages, or any other extenuation circumstances.

3. Feasibility

While somewhat subjective to evaluate, the recommended improvements should represent an alternative that can be implemented in an effective and efficient manner without undue exertion to accomplish. Further elucidation of feasibility includes:

a. Legal Implications

The City intends on having legal right to the water they provide to their customers, thus mitigating the risk of increased unforeseen costs to continue providing water previously obligated to the customer base. In addition, water rights in particular, have an inherent tendency to elicit legal actions and courtroom proceedings from competing interests that may delay the implementation of improvements.

b. Reliability

Recommended improvements should have a predictable outcome.

4. Cost Effectiveness

The City would like to provide drinking water at a reasonable cost to the customer. Selected alternatives must first be able to achieve compliance, second provide the necessary capacity, then consider the life cycle costs of the improvements; life cycle costs include capital cost, operation & maintenance costs and salvage value of existing infrastructure if applicable.

a. Capital Costs

Capital costs are defined as the planning, design, and construction costs of the recommended improvements.

b. Operation & Maintenance Costs

Operation & maintenance costs are defined as those costs associated with operating and maintaining the recommended improvement and may include materials, labor, and administration.

5. Safety

The City accepts a responsibility to provide a safe working environment for the operations staff and a system secure from outside intervention.

a. Safe Working Environment

Selected alternatives must minimize exposure of operations staff to hazardous chemicals and harsh working conditions and construct facilities for compliance with federal and state safety regulations.

b. Secure Facility

Given the paradigm shift in the types of emergencies for which a community should prepare, the recommended improvements should enhance the City's ability to provide a secure supply of water to the customers.

C. Development of Alternatives

1. Discussion of "No Action" Alternatives

The No Action future condition is assumed to represent no action in terms of infrastructure improvements. Deficiencies, such as meeting the fire flow requirements or being able to meet the projected MDD with the largest well out of service, require upgrades to the infrastructure; such improvements cannot be accomplished through modified operation. The No-Action Alternative is not recommended and will not be carried forward for detailed evaluation.

2. Discussion of Optimum Operations of Existing Facilities

Adjusting operational procedures will not address all pressing deficiencies in the system. Water supply, storage, and distribution deficiencies are related to infrastructure, and many of the deficiencies cannot be improved through system optimization. To the contrary, many corrective infrastructure alternatives increase the systems ability to prevent recurrence of operational deficiencies. However, some deficiencies can be corrected through operational efforts as described herein. Operational efforts that can adequately correct deficiencies will be considered as the planned implementation.

a. WSu-3: Well Discharge Piping

Some items related to the discharge piping can be resolved by simple means, namely the sampling taps and the well vent. These items are to be corrected by the city personal along with the general maintenance of the wells.

b. WD-4 As-Built

Field maintenance reporting practices can help resolve this deficiency. Recording practices should include; all water line locations, water line conditions, approximate age, line diameter, line materials, valves used for isolation of system, valve locations, and valve conditions. The City is already working to locate water features with GPS equipment, additionally, city personnel are exercising valves and noting pipe size, type, and general condition when in the field.

c. WQ-1: Conformance to Groundwater Rule

The Groundwater rule becomes effective December 1, 2009, it is therefore recommended the City begins Source Water Monitoring as part of the normal operations. This means each water sources is to be tested for total coliforms, triggered by a positive total coliform in accordance with the routine TCR monthly testing. Other maintenance strategies recommended by EPA to mitigate total coliforms are:

1) Periodic sanitary surveys
2) Correction of all significant defects
3) Eliminate potential sources of contamination

In addition, some future monitoring and reporting of the City's water quality will be required in the form of an Initial Distribution System Evaluation (IDSE) Plan and either a Standard Monitoring Plan or a System Specific Study under the Stage 2 D/DBP. Garden City will also be required to monitor trihalomethanes (TTHM) and haloacetic acids (HAA5) and report results using a locational running annual average.

3. Discussion of Alternatives

a. Water Source

Several alternatives are presented for consideration to correct the deficiencies identified for the water source as shown in Table V-6.

1) WR-1 Multiple Diversion Points Alternatives

   The advantages of assigning multiple diversion points associated with each well to each water right are manifold and have been previously discussed. Additional points of diversion associates with each water right, requires forms to be completed and sent into IDWR for approval, the forms are attached in Appendix K. The likelihood of entities protesting changes to the diversion point within the City limits is considered to be low. Therefore, feasibility and cost effectiveness are both considered to be high and this alternative is considered the only plausible solution to this deficiency.

   Assigning multiple diversion points will also correct the point of diversion for water right 63-2872 that was associated with Well #1. Since Well #1, which was located at 33rd and Brown Street, is currently inactive, this point of diversion must be transferred to the diversion points of the existing production wells to preserve the right from being forfeited. Assigning multiple diversion points for this right will give the City flexibility of where to best use this water right.

2) WR-2 Water Rights Discrepancy Alternatives

   a) Leave water right as currently designated

      The City cannot elect to leave the designation of the water right for Well #5 as a domestic and irrigation right since it has been recommended as disallowed in the SRBA. Additionally, the diversion rate is insufficient to augment supplies for the customer base and does not come close to meeting the pumping capacity of Well #5. Therefore, this alternative is unfavorable when compared to applying for a change in designation and will not be advanced for further consideration.

   b) Apply to IDWR for change in designation

      Through efforts of the Engineer and the City Attorney, Garden City must file a "Late Objection" with the SRBA Court in Twin Falls. The City must provide evidence of water used at this location at the time listed as the priority date of the right. This alternative will be advanced for further consideration.

Table V-6 Deficiencies and Initial Screening of Water Source Alternatives

Item No.	Deficiency Description	Development of Alternatives	Initial Screening of Alternatives Based on Water Quality Objectives				
			Compliance	Capacity	Feasibility	Cost	Safety
WR-1	Multiple diversion points	Apply to IDWR to list multiple diversion points for each right.	●	●	●	●	●
WR-2	Discrepancy for Water Right 63-5330 associated with Well #5	Leave right as currently described			●	●	●
		Apply to IDWR for change in designation and correction	●	●		●	●
WR-3	Discrepancy for Water Right 63-11487 associated with Well #10	Apply to IDWR for change in designation	●	●	●	●	●
WR-4	Discrepancy for Water Rights 63-9144 and 63-8357 associated with Wells #11 and #12	Leave right as currently described				●	●
		Apply to IDWR for change in designation and correction	●	●	●	●	●
WR-5	Insufficient water rights for projected demand	Purchasing existing right/well in vicinity of city	●		●		●
		Purchasing existing right and transfer water to a new well	●	●			●
		Apply for new water right and drill a new well	●	●	●	●	●
		Apply for new water right, domestic use only, and drill a new well	●			●	●
		Construct a municipal secondary irrigation system	●	●	●		●
		Surface water exchange	●			●	●
		Surface water treatment	●				●
		Implement water conservation measures	●		●	●	●

3) WR-3 Water Rights Discrepancy Alternatives

Water Right 63-11487 associated with Well #10 had a Beneficial Use Field Report completed in 1997, results have yet to be reported. Once the license is issued from IDWR, City officials, the City Attorney, and Engineer will examine the assigned diversion rate, place of use, and designation to ensure they meet the expectations of the application when it was submitted. This alternative will be advanced for further consideration.

4) WR-4 Water Rights Discrepancy Alternatives

a) Leave water right as currently designated

The City may elect to leave the designation of the water rights for Well #11 and #12 as owned by *Shenandoah Park Investors* and *United Water*. The designated uses for both rights are for domestic and fire protection and the place of use is limited to individual subdivisions. Since Garden City has claimed ownership for these wells and they are used as part of the overall system, this alternative is unfavorable and will not be advanced for further consideration.

b) Apply to IDWR for change in designation

Through efforts of the Engineer and the City Attorney, Garden City should file a Notice of Change of Water Right Ownership with IDWR. This copy of this form is found in Appendix L. Change in ownership to Garden City will eliminate any legal implications on having legal right to the water these rights provide to their customers. In addition, the City must verify that a SRBA claim has been filed for Right 63-8357 associated with Well #12. If it has not been filed, a "Motion to File a Late Notice of Claim" must be filed. This alternative will be advanced for further consideration.

5) WR-5 Insufficient Water Rights for Projected Demands

Garden City will require more water rights to meet the 30-year projected demand.

a) Purchasing Existing Right in Vicinity of Garden City

In the vicinity of Garden City, a total of 19 water rights associated with groundwater and/or wells have been identified (see Table V-7). All but three of these rights are currently used to supply municipal water leaving 3 as possible candidates for potable water supplies sufficient in quantity for use as a new water source (above 500 gpm). Figure V-3 shows the water rights in the vicinity of Garden City. Other water rights and wells within Garden City which could be combined for a water supply sufficient in quantity (between 100 – 500 gpm) have been identified in Table V-8.

Table V-7 Water Rights near Garden City Greater Than 500 GPM

Owner	Location	Flow Rate (gpm)	Water Right Number
Capital Water Corp.	T3NR2ES6	1,500	63-3166
Capital Water Corp.	T3NR2ES6	1,500	63-7108
Capital Water Corp.	T3NR2ES6	1,525	63-11528
United Water Idaho Inc.	T3NR2ES6	1,200	63-11558
United Water Idaho Inc.	T3NR2ES6	2,240	63-31810
United Water Idaho Inc.	T3NR1ES36	900	63-2915
United Water Idaho Inc.	T3NR1ES36	1,250	63-3239
Thomsen Golf Inc.	**T3NR1ES36**	**800**	**63-4923**
United Water Idaho Inc.	T3NR1ES36	800	63-8432
United Water Idaho Inc.	T3NR1ES36	1,900	63-9223
United Water Idaho Inc.	T3NR1ES36	950	63-31856
United Water Idaho Inc.	T3NR2ES5	6730	63-2892
United Water Idaho Inc	T3NR2ES5	675	63-2895
Red Lion Inns Operating LP	**T3NR2ES5**	**1,100**	**63-7271**
United Water Idaho Inc	T4NR2ES30	1,800	63-9147
County of Ada	**T4NR2ES30**	**1,135**	**63-3568**
United Water Idaho Inc	T4NR2ES31	550	63-3064
United Water Idaho Inc	T4NR2ES32	1,080	63-3291
United Water Idaho Inc	T4NR1ES36	2,600	63-7066

Table V-8 Water Rights in the Vicinity of Garden City Between 100 to 500 GPM

Owner	Location	Flow Rate (gpm)	Water Right Number
Capital Water Corp.	T3NR2ES6	400	63-3002
Capital Water Corp.	T3NR2ES6	360	63-3071
Capital Water Corp.	T3NR2ES6	415	63-3152
City of Boise	T3NR2ES6	450	63-3565
Christian Larsen; Tyde Trailer Park	T3NR2ES6	160	63-18118
Meridian Joint School District #2	T3NR1ES36	125	63-9891
Waterfront District LLC	T3NR2ES5	425	63-3565
Bill Claiborne	T3NR2ES5	105	63-15376
ACHD	T3NR2ES5	450	63-10943
NGP Reality SUB LP	T4NR2ES30	260	63-9248
Mountain View Mutual Water Corp	T3NR2ES31	300	63-2982
City of Boise	T3NR2ES31	360	63-10750
State of Idaho	T3NR2ES32	200	63-9126
City of Boise	T3NR2ES32	450	63-10296
Ind. School District of Boise	T3NR2ES36	160	63-3476
Ind. School District of Boise	T3NR2ES36	120	63-7195
Estate of Vernon K. Smith	T4NR1ES26	130	63-25741
State of Idaho	T4NR1ES24	200	63-3502
Estate of Vernon K. Smith	T4NR1ES23	200	63-24158

This option is dependent on the water right owner agreeing to sell the right and has the potential to be one of most expensive alternatives depending upon the asking price of the water right. Preliminary investigation reveals that water rights in the region have sold for approximately $3,000 - $5,000 per acre-inch per year. This alternative shall be advanced for further consideration.

b) Purchase Existing Well and Transfer Water Right

Transferring a groundwater right from one region to another must under go in-depth examination of potential aquifer impacts. Negative aquifer impacts decrease transferable rate of diversion, thus transferring a point of diversion is highly variable and many times unfavorable. Each water right is evaluated on a case by case basis. The cost of this alternative is likely similar to purchasing a water right and has the inherent uncertainty associated with approval of a water rights transfer without a protest from competing interests. Therefore, this alternative is less favorable than purchasing a water right and will not be advanced for further consideration.

c) Apply for New Water Right and Drill a New Well

Recently the IDWR has begun to process applications from municipalities for new water rights. It is likely that the application may take some time to process, taking an estimated year, refer to Appendix M for the conversation review (IDWR 2008). Since the new water right is for future use, this alternative is currently being pursued and will therefore be advanced for further consideration.

d) Apply for a New Water Right, Domestic Use Only, and Drill a New Well

Although there is not a means on the IDWR applications for a new water right to designate a domestic use only request, that is, outdoor irrigation of landscaping is prohibited; discussions have circulated that a water right may not incur protest under the postulate of domestic use only. This may satisfy IDWR. However, *IDAPA*

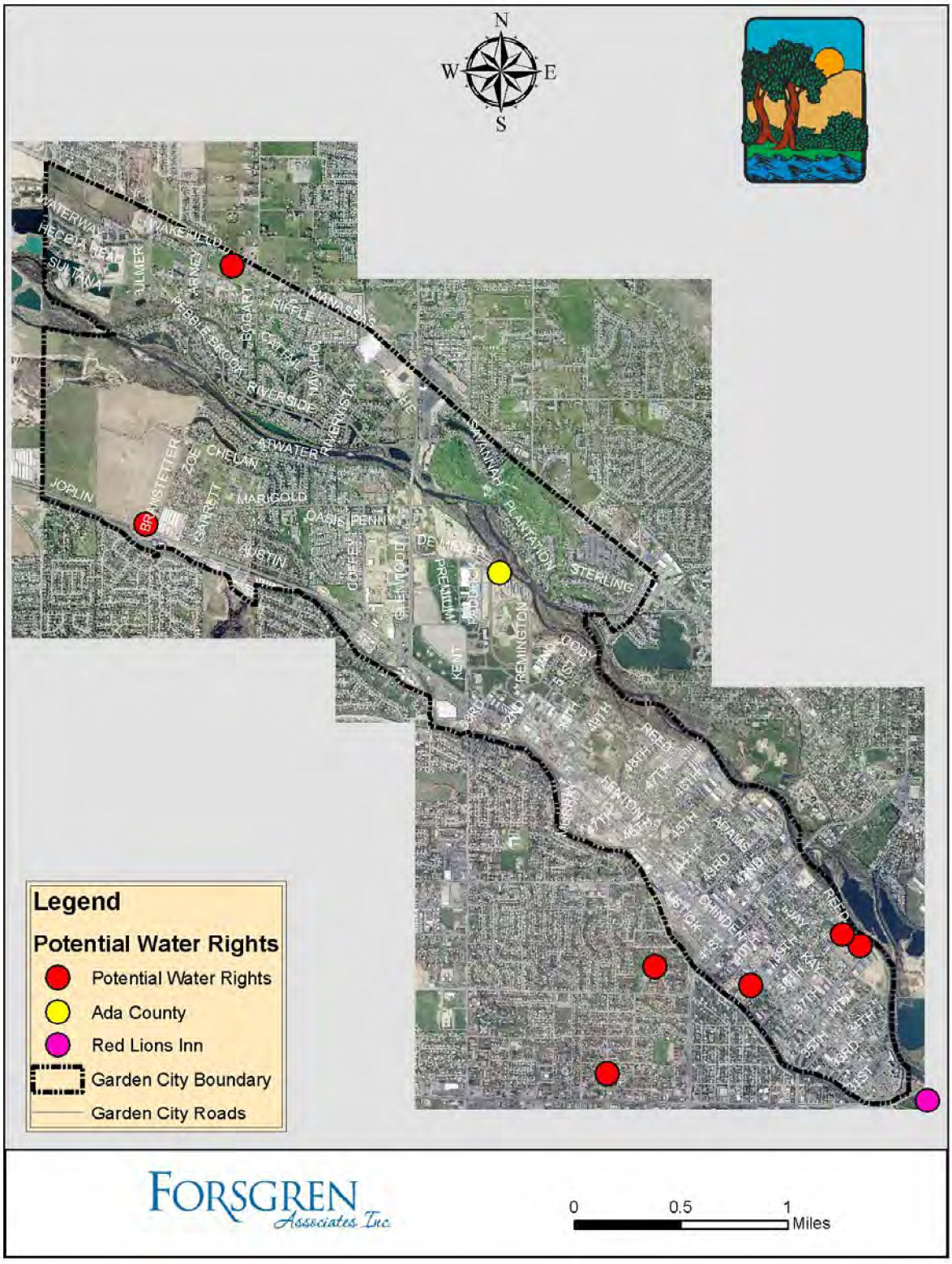


Figure V-3 Water Rights near Garden City

58.01.08.552.01.d.i states; “Public water systems… shall be capable of providing water for uncontrolled, simultaneous foreseeable irrigation demand, which will include all acreage that the system is designed to irrigate.” In subsection *d.i.1)* “In. general, an assumption that no outside watering will occur is considered unsound and is unlikely to be approved.” It is also stated in the same section *d.2.1)* “Unless a separate irrigation system is provided.” Thus, this approach may not satisfy IDEQ. Furthermore, it would prove an operational and administrative challenge to insure no water is used for irrigation. Some portions of the City would have the ability and right for outdoor use while other portions of the city would not. As a stand alone solution, this alternative is not recommended and will not be advanced.

e) Construct a Municipal Secondary Irrigation System

There are numerous examples of municipalities that manage secondary irrigation systems as a means of extending their domestic water supplies. Several communities in Idaho are beginning to adopt this approach including Kuna and Eagle. To be successful, this approach requires a thoughtful and well crafted set of ordinances and a rate structure that encourages use of the secondary system. There are several hurdles to implementing this alternative. The City would need to locate and acquire an irrigation water source with sufficient water right for the separate irrigation system to be in compliance with the aforementioned IDAPA rule, there is a significant cost to constructing a secondary water system that serves the entire community, and a municipally owned secondary system would increase the operation and maintenance burden on the public works staff. However, if a City considers a utility a business, most utilities provide an additional revenue stream for the City and Garden City may want to contemplate this alternative for the future.

A variation of constructing a secondary irrigation system is to require, or allow in lieu of transferring sufficient water rights from developments to the City for outdoor use, all new subdivisions to construct a secondary irrigation system. The system could be operated and maintained by the canal company providing the water rights, the homeowners association, a private company, or the City. At this juncture, the canal companies have expressed little interest it maintaining municipal secondary irrigation systems and a private company does not currently exist to serve that purpose. The homeowner’s association is the easiest to implement but the most difficult to manage over time as the City may have little influence over their effectiveness in operating and maintaining the system.

It is possible that at some point in the future, the City would inherit one or more secondary irrigation systems installed by the developer and operated and maintained by a homeowner’s association. If the City does not establish uniform standards for secondary irrigation systems, they could inherit substandard systems with regard to quality of materials and system condition.

Given what could occur, implementation of this alternative should begin by requiring any new subdivision that does not assign ownership of water rights to the City sufficient for indoor use and outdoor irrigation use, to construct a secondary irrigation system according to standard details and specifications yet to be established by the City. Furthermore, a document should be recorded with the deed and provided to the owner of each residence at purchase informing them that their outdoor irrigation from the municipal water source is restricted by City ordinance. Administration of this ordinance is to be facilitated by a rate structure conducive to outdoor irrigation from the secondary source which suggests that each new residence be required to have a water meter. From a practical standpoint, this alternative will be advanced for further consideration.

f) Surface Water Exchange

Exchanging surface water for groundwater rights has proven to be difficult due to the protests of water right holders. Those entities who protest argue that surface water can be pulled from the point of diversion the same year it runs down stream and point to studies that suggest that groundwater may take 200 plus years to travel through the underground geologic formations to arrive at the same destination as the surface water during that irrigation season.

The City could exploring a variation of surface water exchange with new developers, whereby, the developer will arrange to recharge the aquifer during shoulder irrigation seasons in exchange for a ground water right. IDWR has not approved any of the conditions; therefore, at present this solution is speculative.

g) Surface Water Treatment

This alternative is for diversion of surface water to be treated and distributed through the potable water system. The high dollar per gallon produced rate is not economical in an area where subsurface water meets all drinking water constituent requirements. Also a surface water right would have to be claimed by the City in order to divert water for surface water treatment, which again increases cost and decreases feasibility. Surface water treatment requires addition of chemicals which compared to other alternatives increases the operation effort and subjectively detracts from the aesthetic perception of water quality. In addition, chemical addition increases the safety hazards associated with providing water. This alternative is not recommended and will not be advanced.

h) Water Conservation

Water conservation offers a staged means of extending the water supply through developing programs and incentives that encourage water conservation.

These programs and incentives were presented in the Comprehensive Plan and could include the following:

- Water Schedule
- Conserving water by utility
- Non-Potable irrigation
- Metering and data management
- Accounting for unmetered users
- Reducing leakage and other losses
- Conserving water by customer
- Education
- Equipment and hardware programs
- Rates and billing practices
- Water reuse

Given the benefits, water conservation measures will be advanced as an alternative for further consideration.

From the matrix developed in Table V-6 Deficiencies and Initial Screening of Water Source Alternatives 8 alternatives have been selected as primary options. These options include rectifying all water right discrepancies by applying to IDWR to correct water right points of diversion, designation, and ownership. The options to obtain additional water rights for future use include: purchasing of existing water rights within the City, continue the application process for a new water right, implement

water conservation measures in a staged approach, and require water rights, or fees in lieu of rights, for new development.

b. Pumping Facilities Alternatives

The legal authority to obtain groundwater through the acquisition of suitable water rights is inextricably connected to increasing pump capacity. The water rights issues have been thoroughly discussed under water source alternatives and therefore are assumed to be resolved throughout the discussion of pumping capacity discussions. Water rights may be unrestricted municipal right or they may be restricted to domestic use only in relation to developing a new Well. Pumping capacity deficiencies along with other pumping facilities deficiencies are summarized in Table V-9 and addressed in the ensuing paragraphs.

Table V-9 Deficiencies and Initial Screening of Pumping Facilities Alternatives

Item No.	Deficiency Description	Development of Alternatives	Initial Screening of Alternatives Based on Water Quality Objectives				
			Compliance	Capacity	Feasibility	Cost	Safety
WSu-1	Insufficient pumping capacity to meet allowed water right diversion rates	Implement WR-1 and rehabilitate Wells #3 and #8 to produce 2,250 gpm each and Well #6 to produce up to 2,250 gpm.	♦	♦	♦		♦
		Implement WR-1 and drill a new well.	♦	♦		♦	♦
		Rehabilitate all wells to meet water right diversion rate.	♦	♦			♦
WSu-2	Insufficient pumping capacity to meet ADD and fire flow with standby power	Install standby generators at Wells #4 and #9	♦	♦	♦	♦	♦
		Install standby generators at Wells #3, #4, and #8	♦	♦	♦		♦
WSu-3	Well discharge piping	Remedy appropriate for and discussed with optimum operations	♦	♦	♦	♦	♦
WSu-4	Facility upgrade/replacement	Upgrade or replace facilities at the end of their useful life or when the well is rehabilitated.	♦	♦	♦		♦
WSu-5	Insufficient water production for future demands	Drill a new 2,500 gpm well; transfer right and abandon Wells #7 and #11; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; implement WSu-1; and provide water storage to meet the PHD.	♦	♦	♦		♦
		Drill four new wells that produce 8,050 gpm between them, and provide water storage to meet the PHD.	♦	♦	♦		♦
		Use 3.6 MGD of non-potable water for irrigation, implement the preferred alternative for WSu-1, and provide water storage to meet the PHD.	♦	♦		♦	♦

1) WSu-1 Insufficient Pumping Capacity

Since the water system is allowed to pump an additional 1,375 gpm to meet allowable diversion rates as recorded by individual water rights. The alternatives presented involve increasing pumping capacity to meet this rate by implementing the preferred alternative for WR-1. Assigning multiple diversion points associated with each well to each water right are required for all options that do not include rehabilitating each well to meet its specific diversion rate as recorded on the individual water right.

a) Implement WR-1 and rehabilitate Wells #3 and #8 to produce 2,250 gpm each and Well #6 to produce up to 2,250 gpm

Wells #3, #6, and #8 are nearing the end of their useful lives making them likely candidates for rehabilitation. Increasing the capacity of an existing well typically requires rehabilitation of the above grade features and the below grade aspects of the well to improve flow quantity. Wells #3 and #8 facilities are in fair condition and the remaining useful life for the existing pumps are 5 years and 1 year respectively. The Well #6 facility is in fair/poor condition and has a remaining useful life estimate of 5 years. Rehabilitation of these wells to increase production to meet the allowable diversion rate would also accomplish the needed upgrade or replacement of the above grade features at these facilities. It appears that this alternative will meet compliance, capacity, feasibility, and safety objectives. Therefore, this alternative is advanced for further consideration.

b) Implement alternative for multiple diversion points and drill a new well

Generally, it is more cost effective to drill a new well than to rehabilitate 3 existing wells. The need to pump an additional 1,375 gpm could easily be met with one new well, however, in order to drill this well the 1,375 gpm diversion rate would need to be transferred from the other wells in the system, or a new right would need to be obtained. A new right could be assigned to the multiple diversion points and the existing diversion points assigned to the new well providing many advantages as discussed previously. It appears that this alternative meets compliance, capacity, cost, and safety objectives. Feasibility ranked lower because of the uncertainty of transferring water rights for a new well when the system is not meeting existing diversion rates. This alternative has been advanced for further consideration.

c) Rehabilitate all wells to meet water right diversion rate

Rehabilitation of all the wells would meet the compliance, capacity, and safety objectives since allowable diversion rate would be met. However, it would prove costly to rehabilitate 8 wells; some of them would only require minimal improvement at a high cost. The benefit is not considered commensurate with the cost and this alternative will not be advanced.

2) WSu-2 Insufficient Pumping Capacity to Meet ADD and Fire Flow with Standby Power

During the current ADD of 1,800 gpm plus 3,500 gpm to meet the maximum fire flow requirement, standby power at Wells #5 and #10 are unable to deliver water at the 40 psi requirement and meet fire flow requirements since their combined pumping capacity is 3,200 gpm. Alternatives that provide this added flow to the system include the following:

a) Install standby generators at Wells #4 and #9

The current pump capacity at Well #4 is reported to be 1,620 gpm. Well #9 is currently being rehabilitated and is reported that it will be able to produce in excess of 2,000 gpm. This combination is the only two-well configuration among the highest producing wells in the system that produce enough additional flow to meet the ADD and fire flow demand. The placement of generators at these two locations would allow four of the highest producing wells in the system to meet demands during a power outage. The combined pumping capacity of these four wells is approximately 6,800 gpm, which meets the requirement. A model scenario was performed with this configuration and indicated that

the 40 psi requirement would be met. This alternative met all objectives to meet this deficiency. Since the wells with the highest pumping capacity were selected, water production versus cost is optimized. This alternative has been advanced for further consideration.

b) Install standby generators at Wells #3, #4, and #8

The current pump capacity for this three well combination is approximately 3,800 gpm and meets the additional flow needed to meet the ADD and fire flow demand. This alternative is put forth in the event that Well #9 is unable to meet the predicted flow of around 2,000 gpm after rehabilitation. Like the previous alternative, a model scenario was performed with this configuration and indicated that the 40 psi requirement would be met. This alternative would entail the cost of an additional generator compared to the previous alternative and produce less than 200 gpm more than the two well configuration. This alternative has been advanced for further consideration.

3) WSu-3 Well Discharge Piping

a) City directed maintenance projects

The alternatives for deficiencies identified with well discharge piping are documented under optimum operation and are intended for city maintenance personnel to perform as part of their system maintenance duties.

4) WSu-4 Facility Upgrade/Replacement

a) Upgrade or replace facilities at the end of their useful life or when the well is rehabilitated

The estimated remaining useful life for system facilities varies (see Table III-7). As these facilities reach the end of their useful life they will be upgraded or replaced to meet requirements of a public water system. No further discussion is necessary.

5) WSu-5 Insufficient Water Production for Future Demands

The 30-year projected MDD would require a firm pumping capacity of 17,600 gpm. It is assumed that the current system is capable of pumping at the water right allowed rate of 12,050 gpm (implementing the preferred alternative for WSu-1). Firm pumping capacity would eliminate 2,500 gpm from production resulting in the production of 9,550 gpm. This firm pumping capacity is short of the 30-year MDD by 8,050 gpm. In addition, the 30-year projected PHD is approximately 26,350 gpm. In order to meet this demand, it is more efficient to provide water storage than increase the pumping capacity an additional 8,750 gpm. The required storage volume to be able to meet the PHD would be approximately 525,000 gallons.

Well #11 is in need of immediate upgrade to the well house to meet IDAPA security requirements. This well was not considered for rehabilitation because of its location in the Shenandoah Mobile Home Estates pool house. This well produces around 300 gpm (less than 2% of the future MDD). Due to location and production, the best option for this well is to transfer the water right to the rest of the system wells (WR-1 alternative) and then abandon this well.

Well #7 produces 510 gpm (less than 3% of the future MDD). This well produces water that has contained hydrogen sulfide and is located on a small area near the end of a residential street. Because of water production, quality, and lack of space for upgraded facilities, a viable option for this well is to also transfer the water right to the rest of the system wells (WR-1 alternative) and abandon the well. The elimination of small producing wells will help to simplify the system as it is expanded to meet future demands.

The following alternatives relate to meeting these future demands.

a) Drill a new 2,500 gpm well; transfer right and abandon Wells #7 and #11; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; implement WSu-1; and provide water storage to meet the PHD

In order to produce the additional 7,550 gpm required to meet the 30-year projected MDD, new and current water sources are utilized. Rehabilitation of Wells #6 and #12 to produce 4,250 gpm between them would upgrade these wells to roughly the same production as the other wells currently in the system. To make up the remainder of the difference, a new well that is able to produce 2,500 gpm would be required. This pump configuration would not be able to produce the required flow to meet the PHD necessitating the need for water storage to meet this demand. This alternative meets the compliance, capacity, feasibility, and safety objectives and will be advanced for further consideration.

b) Drill four new wells that produce 8,050 gpm between them and provide water storage to meet the PHD

Four new wells with combined pumping capacities able to produce 8,050 gpm would be required to meet the 30-year MDD if pumping rates at the existing wells remain the same. This pump configuration would not be able to produce the required flow to meet the PHD necessitating the need for water storage to meet this demand. This alternative meets the compliance, capacity, feasibility, and safety objectives and will be advanced for further consideration.

c) Use 3.6 MGD of non-potable water for irrigation, implement the preferred alternative for WSu-1, and provide water storage to meet the PHD

This alternative enlists the use of water conservation, specifically, using non-potable water and a secondary pressurized irrigation system to assist in meeting the 30-year projected MDD. Historically, the MDD has occurred during a peak irrigation month of August and is over 5 MGD above domestic water use rates. The City would develop a pressurized secondary irrigation system and supply water to it through reuse of treated wastewater and/or by requiring future development to provide water rights for irrigation or pay a fee to cover the purchase of irrigation water rights by the City. Wells #6 and #12 would be rehabilitated and Wells #7 and #11 would be abandoned as discussed above. Similar to the other alternatives, this pump configuration would not be able to produce the required flow to meet the PHD necessitating the need for water storage to meet this demand. This storage system may consist of utilizing the existing ditches, canals, and ponds that already exist within the city limits to store the non-potable water to be used for the secondary irrigation; however, since the ownership of much of this network is not under the control of the City, the merits of this storage will need to be evaluated before implementation. Depending upon the amount of storage that is available in the existing network of ponds and canals, supplemental water storage ponds may need to be constructed to store the non-potable water. It appears that this alternative will meet compliance, capacity, cost, and safety objectives. Therefore, this alternative is advanced for further consideration.

c. Water Storage Alternatives

The Garden City water system does not currently include finished water storage. Storage is not specifically required in the Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08). The volume of storage required by IDAPA rules is variable depending upon its relationship with firm pumping capacity and auxiliary power generation. Therefore, development and screening of alternatives for future water demands assumes a range of possibilities on a continuum where the minimum volume is required when the firm pumping capacity is greater than the 30-year projected MDD, and standby power generation is provided sufficient to supply the 30-year projected ADD for 8 hours plus fire flow. The maximum storage volume is required when the current firm pumping capacity is used and current standby power generation is provided. Garden City's current firm pumping capacity is less than the future MDD and standby power generation can produce approximately 3,200 gpm. The full array of alternatives considers increasing firm capacity discussed in pumping alternatives and providing standby power generation at the wellheads.

The evaluation of storage capacity is interrelated with pumping capacity and in general must satisfy the following criteria while providing sufficient pressure in the distribution system:

The system must have sufficient supply with standby power to satisfy 1/3 ADD plus fire flow.

The firm pumping capacity combined with additional storage must be sufficient to supply the PHD.

The total system capacity including supply and storage must be sufficient to meet the MDD + fire flow.

The alternatives and initial screening based on water quality objectives are presented in Table V-10.

Table V-10 Deficiencies and Initial Screening of Water Storage Facilities Alternatives

Item No.	Deficiency Description	Development of Alternatives	Initial Screening of Alternatives Based on Water Quality Objectives				
			Compliance	Capacity	Feasibility	Cost	Safety
WSt-1	Insufficient storage capacity for projected demand	Do not increase firm capacity and do not supply additional standby power	♦		♦		♦
		Do not increase firm capacity; provide additional standby power to supply ADD	♦		♦		♦
		Increase firm capacity to 17,600 gpm (= MDD); do not provide additional standby power	♦	♦		♦	♦
		Increase firm capacity to 17,600 gpm (= MDD); provide additional standby power to supply ADD	♦	♦		♦	♦
		Increase firm capacity to 15,100 gpm provide additional standby power to supply ADD	♦	♦			♦

1) WSt-1 Insufficient Storage Capacity for Projected Demand

a) Do not increase firm capacity and do not supply additional standby power

The current pumping capacity assumes that the wells are able to pump the allowed water right diversion rate of 12,055 gpm. To determine the firm capacity, it is assumed that 2,000 gpm is unavailable, resulting in a rate of 10,055 gpm. This alternative calls for providing finished water storage and leaving the current water system well configuration as is, with the exception of rehabilitating wells to meet the allowed diversion rate by right. The resulting storage requirement would be 11.7 million gallons including operational, equalization, fire suppression, and standby storage. A summary of the storage requirements are found in Table V-11. Since the current firm pumping capacity is 7.7 MGD, this rate would not be able to replenish storage at a pace to meet high demand the day following the MDD. Since this alternative will not meet capacity requirements, it is not being advanced for further consideration.

Table V-11 Insufficient Storage for Projected Demand, Storage Required Summary

Storage Component	Do not increase firm capacity and do not supply additional standby power	Do not increase firm capacity; provide additional standby power to supply ADD	Increase firm capacity to 17,600 gpm (= MDD); do not provide additional standby power	Increase firm capacity to 17,600 gpm (= MDD); provide additional standby power to supply ADD	Increase firm capacity to 15,100 gpm provide additional standby power to supply ADD
Dead Storage	0	0	0	0	0
Operation Storage	5,000	5,000	5,000	5,000	5,000
Equalization Storage	11,300,000	11,300,000	525,000	525,000	4,127,000
Fire Suppression Storage	420,000	420,000	420,000	420,000	420,000
Standby Storage	0*	0	831,000	0	0
TOTAL	**11,725,000**	**11,725,000**	**1,781,000**	**950,000**	**4,552,000**

* This storage is nested, or included in the equalization storage.

b) Do not increase firm capacity; provide additional standby power to supply ADD

The current firm pumping capacity is determined to be 10,055 gpm and standby power can produce 3,200 gpm as discussed above. This alternative calls for providing finished water storage and leaving the current water system well configuration as is, with the exception of rehabilitating wells to meet the allowed diversion rate by right and providing additional standby power that allows the system to meet the future ADD (this results in additional power to provide 2,150 gpm above the current standby production). The resulting storage requirement would be 11.7 million gallons including operational, equalization, and fire suppression storage. The standby storage would be eliminated due to the addition of standby power generation. A summary of the storage requirements are found in Table V-11. Since the current firm pumping capacity is 7.7 MGD, this rate would not be able to replenish storage at a pace to meet high demand the day following the MDD. Since this alternative will not meet capacity requirements, it is not being advanced for further consideration.

c) Increase firm capacity to 17,600 gpm (= MDD); do not provide additional standby power

The current firm pumping capacity is determined to be 9,550 gpm when the largest well (approximately 2,500 gpm is out of service). Current standby power can produce 3,200 gpm as discussed above. This alternative calls for providing finished water storage and increasing the firm pumping capacity to the future MDD. The resulting storage requirement would be 1.8 million gallons including operational, equalization, fire suppression, and standby storage. A summary of the storage requirements are found in Table V-11. This alternative meets the capacity and safety objectives. It does require new water rights to be obtained, new wells drilled, and/or existing wells to be rehabilitated. This alternative will be advanced for further consideration.

d) Increase firm capacity to 17,600 gpm (= MDD); provide additional standby power to supply ADD (WSu-1)

The current firm pumping capacity is determined to be 9,550 gpm when the largest well (approximately 2,500 gpm is out of service). Current standby power can produce 3,200 gpm as discussed above. This alternative calls for providing finished water storage and

increasing the firm pumping capacity to the future MDD. In addition, standby power generation would be added to the current system to produce an additional 2,150 gpm to meet the future ADD and eliminate the need for standby storage. To meet current ADD and fire flow requirements, this alternative is needed and will already be in place for future demands. The resulting storage requirement would be 950,000 gallons including operational, equalization, and fire suppression storage. A summary of the storage requirements are found in Table V-11. This alternative meets the capacity and safety objectives. It does require new water rights to be obtained, new wells drilled, and/or existing wells to be rehabilitated. This alternative will be advanced for further consideration.

e) Increase firm capacity to 15,100 gpm provide additional standby power to supply ADD

This alternative eliminates the need for the new well or one of the rehabilitated wells. The difference in the firm capacity and MDD will be supplied with storage. Standby power generation would be added to the current system to produce an additional 2,150 gpm to meet future ADD and eliminate the need for standby storage. The resulting storage requirement would be 4.6 million gallons that includes operational, equalization, and fire suppression storage. A summary of the storage requirements are found in Table V-11. This alternative will be advanced for further consideration.

From the matrix developed in Table V-10, 3 alternatives have been selected as primary options. These options include 1) increasing firm capacity to 17,600 gpm (= MDD) and do not provide additional standby power, 2) Increase firm capacity to 17,600 gpm (= MDD); provide additional standby power to supply ADD (WSu-1), and 3) Increase firm capacity to 15,100 gpm and provide additional standby power to supply ADD.

d. Water Distribution System

Table V-12 Deficiencies and Initial Screening of Water Distribution Alternatives

Item No.	Deficiency Description	Development of Alternatives	Initial Screening of Alternatives Based on Water Quality Objectives				
			Compliance	Capacity	Feasibility	Cost	Safety
WD-1	Inadequate fire flow	Infrastructure improvements	♦	♦	♦	♦	♦
WD-2	Insufficient line sizes	Infrastructure improvements	♦	♦	♦		♦
WD-3	Limited As-Built Drawings	Remedy appropriate for and discussed with optimum operations	♦	♦	♦	♦	♦
WD-4	Inadequate pressure when meeting future demands	Addition of firm pumping capacity and/or water storage	♦	♦	♦		♦

1) WD-1 Inadequate Fire Flow Alternatives

Within the City limit specific areas of inadequate fire suppression flows to meet the latest fire code requirements have been identified in the locations depicted below. For each deficient flow location particular infrastructure improvements are recommended and described below. Resolutions of insufficient flows are contingent upon available water rights and pumping capacity capable of supplying the MDD.

a) Hydrant on Chinden between 45th and 46th has a deficient flow rate. This alternative is the replacement of the 2.5" water line from 45th Street to E. Ellen Street with an 8" line.

b) Hydrant on 31st Street just north of Chinden has a deficient flow rate. This alternative is the replacement of the 4" water line on 31st Street with an 8" line.

c) Hydrant on 34th Street and Brown Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 34th Street and Stockton with an 8" line.

d) Hydrant on 38th Street and W Kay Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 38th Street with a 6" line.

e) Hydrant on 35th Street and Brown Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 35th Street with a 6" line.

f) Hydrants on W Winterwood Lane, N Lakeview Place, E Adam Court, N Lakemont Place, and N Lakeshore Place have deficient flow rates. This alternative is the replacement of the 4" water line adjacent to these hydrants with a 6" line.

2) WD-2: Insufficient Line Size Alternatives

Remedies for insufficient line sizes are infrastructure replacements of exiting waterlines or looping of dead end lines. All areas noted below are considered of to be of the highest priority based on inadequacy of pressure in the distribution system.

Alternatives for replacement of water lines, which assumed fire hydrants to be connected to 4" diameter lines are limited to general and specific infrastructural improvements. The specific improvements include replacement of 4" lines connected to fire hydrants listed by area below. The general improvements are to replace all 4" and smaller pipes with 6" lines. It has been Forsgren's experience with other municipal water systems of similar aged pipes to be deficient. The design life of water lines was discussed previously, and many of the water lines that have been part of the original distribution system are reaching the end of their predicted design life. To upgrade the entire system, all 4" and smaller pipes are recommended for replacement first and then the rest of the lines replaced through a replacement program. Areas with 4" lines are listed below:

a) Stockton Ave
b) 30th Street
c) 32nd Street
d) 33rd Street
e) 34th Street
f) 37th Street
g) W Elaynea Lane
h) W Cody Lane
i) W Quinella St
j) W. Mystic Cove Way
k) N Pebble Falls Lane
l) N Pebble Cove Lane
m) N Lakefront Place
n) N Lake Park Place
o) N Lakes Edge Place

3) WD-3 As-Built

Field maintenance reporting practices can help resolve this deficiency. Recording practices should include; all water line locations, water line conditions, approximate age, line diameter, line materials, valves used for isolation of system, valve locations, and valve conditions.

This alternative is also documented under optimum operations and is intended for city maintenance personnel to perform as part of their system maintenance duties.

4) WD-4 Inadequate pressure when meeting future demands

The current water system cannot provide adequate system pressure and meet the future demands. In order to resolve this deficiency, the City is required to obtain more water supplies, increase distribution, and/or provide finished water storage sufficient to meet the future load. The alternatives presented to address deficient future water supply (WSu-5) and water storage to meet future demands (WSt-1) also address this shortcoming.

e. Water Quality

Table V-13 Deficiencies and Initial Screening of Water Quality Alternatives

Item No.	Deficiency Description	Development of Alternatives	Initial Screening of Alternatives Based on Water Quality Objectives				
			Compliance	Capacity	Feasibility	Cost	Safety
WQ-1	Conformance to Groundwater Rule	Remedy appropriate for and discussed with optimum operations	♦	♦	♦	♦	♦

1) WQ-1 Conformance to Groundwater Rule Alternatives

a) City directed operation projects.

The alternatives for deficiencies associated with the GWR are documented under optimum operation and are intended for city maintenance personnel to begin performing as part of the normal operations.

D. Description of Serving Isolated Areas

Garden City has contiguous city limits, therefore few isolated areas exist. Any isolated areas are close to the edge of the city limits and may be connected to the system using nearby main lines.

E. Describe New Sources

The existing diversion rate associated with the firm pumping capacity allowed by right for Garden City is 17.4 MGD (26.9 cfs). While this diversion rate will meet the 30-year ADD of 7.1 MGD, it does not meet the 30-year MDD of 25.3 MGD.

Without correcting the situation of insufficient water rights, or providing sufficient finished water storage to be able to provide the MDD, the City will not have sufficient water to legally supply the obligated connections or the future connections to the water system. In order to meet this projected demand, existing sources will need to be rehabilitated and a new well will need to be drilled.

F. Discuss Treatment Requirements

Water is currently treated for secondary contaminants iron and manganese when concentrations climb above the standards of 0.3 mg/L and 0.05 mg/L respectively. Iron and manages contaminate levels are shown in Table III-10. Efforts through compliance to regulatory regulations for Sanitary Surveys, the Groundwater Rule, disinfection treatment facilities, and treatment facilities will be utilized comply with water quality standards.

G. Discuss Storage Requirements

Garden City does not currently use finished water storage. Storage requirements to meet future demands are reliant upon acquiring more water right; enactment of a water conservation programs; and the extent that standby power is provided to system wells. Without development of finished water storage to enable the system to meet the future PHD, or increasing the firm capacity to meet the future MDD and adding emergency generation, the City will experience loss of reliability in the water supply and increase risk due to water quality degradation from reduced pressure and insufficient fire flow. The required storage volume is dependant upon available water rights, firm pumping capacity, and back up power availability.

H. Discuss Pumping Requirements

The current firm pumping capacity is 12.5 MGD (Well #9 out of service). This pumping rate will provide sufficient water to meet the 30-year ADD of 7.1 MGD but will not meet the MDD of the system near the year 2014. In order to meet the 30-year MDD, the firm pumping capacity would need to be increased by 8,900 gpm, over twice the current capacity.

An insufficient water source would also result in pressures that are below minimum standards of 40 psi during the PHD. Fire flow during this period will fall below minimum standards of 1,000 gpm with the maximum flow at less than 350 gpm at 20 psi. This insufficient water source occurs when the system is producing at firm pumping capacity. Since standby power is only supplied at Wells #5 and #10, greater deficiencies related to supply, pressure, and fire flow would occur during power outages.

I. Discuss Pressure Maintenance

Pressure throughout the distribution system for Garden City is adequately maintained by the City's wells. Issues with pressure have largely to do with high flow demands and insufficient pumping supply, with secondary issues of non-looping mains and undersized pipe diameters.

J. Separate Irrigation Facilities

Many cities in the intermountain west have been involved in the planning and implementation of the pressurized irrigation system to help relieve the demand on culinary water resources. Cities that adopt the use of this system use it as part of their long-term plans to meet increasing water demands. Secondary irrigation systems allow cities to use low-grade water sources for outdoor watering. This type of system could extend the life of the City's existing culinary water system, improve the ability to provide fire flow, reduce the cost of treating outdoor water, help to conserve water, improve service pressures, and increase property values. Use of this system in Garden City could reduce demand for potable water by around 40% based on ADD versus the "domestic use ADD."

This plan considers the option of installing a secondary irrigation system as part of a near-term capital improvement project. With all the benefits of a secondary irrigation system, the major drawback is the cost. Recently, the City of Salem, Utah constructed as secondary system with approximately 1,200 service connections and 125,000 lineal feet of pipe at a cost of nearly $12,000,000. If this option is not

advanced during the screening of alternatives to include in a near-term capital project, the City may want to consider requiring new development to include secondary irrigation pipelines and facilities in their design and construction.

K. Staged Distribution

This distribution system is in need of upgrade to ensure fire flow is in accordance with current fire regulations. The changes will resolve other pressure deficiencies in they system. The City has surveyed water valves and is also utilizing GIS to sort and store this information. Continued efforts to acquire as-built drawing will continue to be valuable for locating unknown portions of the distribution system and storing this information.

Some mainline sizes are small; pressure has not been an issue with many due to connecting larger mainlines. In general regulatory requirements become more stringent with time it is therefore assumed that the smaller pipe diameter sizes are the oldest pipes in the system and in the poorest condition. Replacement and up sizing of the pipe diameter is recommended for all pipe smaller than 6".

L. Intermunicipal Agreement

Intermunicipal agreements are becoming popular since they allow cities the ability to manage risk collaboratively and for reduced cost. Garden City has explored the potential for interconnecting their water system with that of Eagle such that in an emergency situation, water could be delivered to the city in need by the other entity. A review of the location of the adjacent systems suggests that the 10-inch pipeline in Aspen Glen could be connected to the Eagle system with a short extension. The concept of interconnection in this case is logical and it is recommended the City establish an agreement for the interconnect designed in a manner that water would be automatically supplied and metered if a significant drop in pressure was experienced by one system. The design should also allow for a deliberate manual connection intended to facilitate the sale of water from one entity to the other for typical domestic use.

M. Public Input

A public meeting was held January 26, 2009 during the normally scheduled City Council meeting. Advertisement for the Public meeting was published in the Idaho Statesman on January 9, 2009, a copy is located in Appendix Q. Meeting minutes are also available for viewing in Appendix Q indicating that there was no public comment given.

VI. FINAL SCREENING OF PRINCIPAL ALTERNATIVES AND PLAN ADOPTION

The goal of this chapter is to evaluate the alternatives advanced from initial screening for addressing the system deficiencies and then to recommend a preferred alternative or set of alternatives. To accomplish this purpose, first, an engineer's opinion of probable cost was determined for each alternative advanced from the preliminary screening of alternatives. The second step was to compare each alternative selected for final screening against several criteria by assigning a numerical value to the alternative for each criterion describing how well it satisfied the criteria. Finally, each criterion was weighted to represent its importance relative to the other criteria. The alternatives with the highest numerical rating were selected as the preferred alternatives for recommendation to the City.

A. Water Quality Objectives/Goals

Although the finished water quality delivered to the customer must meet the National Public Drinking Water Standards (NPDWS) regulated by the EPA and adopted by the IDEQ, the City has further established the following goals for the production of treated water and the quality of the water supplied to the customer through the distribution system.

Final Screening Criteria

1. Compliance
2. Capacity
3. Feasibility
4. Cost Effectiveness
5. City Preference

1. Compliance

The City places a high value on compliance with existing federal and state drinking water regulations. It could be stated that the City will comply with NPDWS as promulgated in the SDWA and all subsequent Rules.

a. Compliance with IDWR Regulations

The Idaho Department of Water Resources is charged with protecting and managing the groundwater and surface water resources throughout the state, a task largely implemented by a permit or license system granting users permission to use a specified amount of water owned by the State for a specific purpose. The holder of water right must have a permit to drill a new well and the well must be constructed in a fashion that protects the aquifer. Compliance with IDWR regulations for the purposes of this document shall mean having a legal right to access water and accessing the water according to the requirements of IDWR which are codified in State statutes.

b. Compliance with IDEQ Regulations

Regarding drinking water, it is the responsibility of IDEQ to protect the health and welfare of the citizens of Idaho from contamination of their drinking water source, a task they accomplish by enforcing standards for the quality of water for all systems classified as public water systems. IDEQ reviews the design drawings for any improvements to existing systems and public water systems, they require certified as-built drawings at the conclusion of all construction on public water systems, and they conduct sanitary surveys to evaluate each system's compliance with current regulations. Compliance with IDEQ regulations for this document shall mean the alternative meets current administrative rules for drinking water systems as promulgated by the State of Idaho.

2. Capacity

The City has an obligation to supply water in sufficient quantity to meet the current demand and a goal to provide water for projected demand which continues the tradition of rendering the community desirable for future residents as well as new and expanding commercial ventures. Capacity is certainly one aspect of compliance, but will be considered as a separate discriminating factor because of its importance. Capacity can be defined by several criteria, each applicable to one or more of the components of a water system:

a. Firm Capacity Must Satisfy MDD

1) Current Demand

The water system must have sufficient firm capacity to satisfy the MDD for the existing connections (6.2 MGD).

2) Future (Projected) Demand

The water system should have sufficient firm capacity to satisfy the MDD for the projected connections (25.3 MGD).

b. Sufficient Capacity with Standby Power or Emergency Storage

1) Current Demand

The water system must have sufficient pumping capacity with standby power to satisfy the 1/3 ADD (1,800 gpm) plus fire suppression (3,500 gpm). This capacity is for the current connections and emergency use is equivalent to a flow rate of 5,300 gpm.

2) Future (Projected) Demand

The water system must have sufficient pumping capacity with backup power to satisfy the 1/3 ADD (5,350 gpm) plus fire suppression (3,500 gpm). This capacity is for the future connections and emergency use is equivalent to a flow rate of 8,850 gpm.

c. Firm Capacity Combined with Storage Must Satisfy Peak Hour Demand

1) Current Demand

The water system must have sufficient firm pumping capacity combined with peak storage to satisfy the PHD for the current connections (6,400 gpm).

2) Future (Projected) Demand

The water system must have sufficient firm pumping capacity combined with peak storage to satisfy the PHD for the future connections (26,350 gpm).

d. Firm Capacity must be Sufficient to meet MDD Plus Fire Flow

1) Current Demand

The total system capacity including supply and storage must be sufficient to meet the MDD plus fire flow for the current connections (4,300 gpm + 3,500 gpm or (420,000 gallons of fire suppression storage) = 7,800 gpm).

2) Future (Projected) Demand

The total system capacity including supply and storage must be sufficient to meet the MDD plus fire flow for the future connections (17,600 gpm + 3,500 gpm or (420,000 gallons of fire suppression storage) = 21,100 gpm).

3. Feasibility

Feasibility implies the alternative can be implemented during a specific time frame and is reasonably certain to be implemented as the decisions lie within the control of the City and do not depend upon an action or lack of action from an outside entity. Further elucidation of feasibility includes:

a. Schedule

Much of the infrastructure in the older part of the city is undersized and inadequate to meet current requirements. The water system is a limiting factor to accepting growth and rehabilitation throughout the city. The population forecast for Garden City assumes that 6,680 residential units providing housing for 16,200 people will be added by 2025. Based on the current ratio of one commercial connection per 16.3 residents, an increase of around 990 commercial units to the system is estimated. The City feels some obligation to the development community to provide them with a

schedule indicating when improvements supporting new growth will be made. In general, the City should begin improvements to meet current requirements immediately and then schedule additional improvements to meet forecasted demands.

b. Reliability

The probability of implementing the alternative is high because the outcome is within the control of the City and does not rely on efforts or decisions by regulatory agencies or private concerns.

4. Cost Effectiveness

The City would like to provide drinking water at a reasonable cost to the customer. Selected alternatives must first be able to achieve compliance, second provide the necessary capacity, then consider the life cycle costs of the improvements; Life cycle costs include capital cost, operation & maintenance costs and salvage value of existing infrastructure if applicable.

a. Capital Costs

Capital costs are defined as the planning, design, and construction costs of the recommended improvements

b. Operation & Maintenance Costs

Operation & maintenance costs are defined as those costs associated with operating and maintaining the recommended improvement and may include materials, labor, and administration.

c. Salvage Value

Salvage value is defined as costs recovered from reuse of materials or equipment in a different application or costs recovered from sale on the open market.

d. Net Present Value

Net present value is a method of comparing various options that have cash flows from differing time periods. It is a calculated number that removes the effect of interest and inflation by determining an equivalent value in today's dollars.

5. City Preference

The City Council, Public Works Staff, and the interested public have preferences regarding alternatives for correction of certain deficiencies based on perceived benefit to the community, consistency with operation and maintenance protocols, and personal preference. This criterion is therefore considered for selection and recommendation. It is recognized that limitations of cost with the ability to pay for alternatives and regulatory compliance are essential concerns for the alternatives to be viable.

a. Preference

The preferences of the elected officials, operation and maintenance staff, and public input are evaluated.

B. Water Source Alternatives

These alternatives offer potential solutions to the deficiencies previously identified related to water source/water right.

1. WR-1 Multiple Diversion Points Alternative

The recommended alternative to correct this deficiency is submitting applications to IDWR requesting additional diversion points representing each well for each water right.

In addition, by assigning multiple diversion points, the 1.15 cfs diversion rate for Water Right 63-2872 associated with Well #1 will be preserved from forfeiture. This right can then be used by the City where needed in the system.

2. WR-2 Discrepancy for Water Right 63-5330 associated with Well #5

The recommended alternative to correct this deficiency is to file a "Late Objection" with the SRBA Court in Twin Falls. The City must provide evidence of water used at this location at the time listed as the priority date of the right to IDWR to change the designation of this right to municipal.

3. WR-3 Discrepancy for Water Right 63-11487 associated with Well #10

The recommended alternative to correct this deficiency is contacting IDWR and inquire about the status of water right license since the Beneficial Use Field Report was completed in 1997. Once the license is issued, City officials, the City Attorney, and Engineer will examine the assigned diversion rate, place of use, and designation to ensure they meet the expectations of the application when it was submitted.

4. WR-4 Discrepancy for Water Rights 63-9144 and 63-8357 associated with Wells #11 and #12

The recommended alternative to correct this deficiency is filing a Notice of Change of Water Right Ownership with IDWR. A copy of this form is found in Appendix L. Change in ownership to Garden City will eliminate any legal implications on having legal right to the water these rights provide to their customers. In addition, the City must verify that a SRBA claim has been filed for Right 63-8357 associated with Well #12. If it has not been filed, a "Motion to File a Late Notice of Claim" must be filed.

5. WR-5 Insufficient water rights for projected demand

As discussed previously, Garden City will require more water rights to meet the 30-year projected demand. The alternatives considered assume that any water right acquired will be sufficient to meet future demand.

a. Summary Description

1) Purchasing Existing Right in Vicinity of Garden City

Multiple water rights/wells were identified in for the initial screening. The intent of this alternative is to purchase existing water rights. If these rights are associated with an irrigation well, a new municipal well can be drilled in the proximity of the existing well since irrigation wells are typically developed to a different standard than a drinking water well for a public water supply. However, IDWR does not currently take a favorable stance toward changing water right designations (IDWR 2008). A new well or rehabilitation of an existing well is anticipated for each water right purchased. In some cases, a water rights transfer may prove necessary, but the transfer is not anticipated to relocate the right more than 3 miles from its original location to eliminate protests of the transfer. The quantity necessary to meet the future MDD is 12.3 cfs.

2) Apply for New Water Right and Drill New Well

It is common practice in Idaho for consulting and attorney fees in the realm of water rights to be charged on a time and material basis. This is due to the high variability of protests, the acceptability of mitigation plans by IDWR, and favorable courtroom proceedings. Recently the IDWR has begun to process applications from municipalities for new water rights. It is likely that the application may take some time to process, taking an estimated year (IDWR 2008).

3) Construct a Municipal Secondary Irrigation System

One means of increasing the water supply available for indoor use is to reduce the demand for potable water by constructing a municipally owned secondary irrigation system that depends on a surface water right rather than a groundwater right. The "domestic use ADD" of 190 gallons per unit per day is approximately 44% of the total ADD of 435 gallons per unit per day. A rough comparison would suggest that a secondary irrigation system would allow the existing water rights to serve approximately 2.3 times the current number of units, or 12,280 residential and 1,500 commercial, which is near the 30-year projection of 14,346 residential and 1,750 commercial. This report does not entail a detailed evaluation of a secondary irrigation system but does include a comparison to just such a system for a similar community in Utah where municipally owned secondary irrigation systems are more common. The City of Salem, Utah recently constructed a secondary irrigation system with approximately 1,200 service connections

and 125,000 lineal feet of pipe ranging from 6-inch to 24-inch in diameter at a cost of nearly $12,000,000.

4) Water Conservation

Water conservation is defined as any action by the utility or its customers that improves the efficiency of water produced or used. Water use data for 2006-2007 indicate that well production volume is greater than the amount metered by approximately 745,000 gallons per day. A water conservation program will reduce the amount of "non-revenue water" and reduce overall water consumption. This results in multiple benefits to the water system and community by postponing capacity-related improvements and reduced costs for the utility and ultimately its customers. Many water conservations programs and incentives were presented in the Comprehensive Plan. Some programs that would immediately target the "non-revenue water" include:

a) Utility Water Conservation Program that identifies and reduces losses in the distribution system. Identification of water loss would be accomplished through leak detection surveys and losses reduced with rehabilitation and replacement programs.

b) Accurate Metering Program that focuses on maintaining and calibrating both source and large customer meters, and regular replacement for smaller meters.

c) Data Management Program that tracks water consumption patterns.

d) Accounting for Unmetered and Unauthorized Users Program to estimate water loss due to main line breaks and flushing; unmetered use by public service facilities and fire departments; construction contractors or water users who connecting to fire services for water; and illegal taps into the system.

e) Consumer Education Program to demonstrate the need to use water efficiently and provide information on how to accomplish this goal. Common techniques used include distribution of brochures on water conservation; promotion of conservation through bill mailings and newsletters; displaying customer water usage on bills; and through promotion at public venues, such as, schools, sporting events, library, etc.

f) Financial Incentives to Large Customers that would encourage this group of users to implement water-efficient practices and make investments in water-saving equipment.

b. Engineer's Opinion of Probable Cost

The Engineer's Opinion of Probable Cost (EOPC) considers the capital cost; the net present value is summarized in the table. Construction costs include a confidence factor accounting for the variability inherent in planning level cost estimates, and support costs such as legal, administrative, and engineering. The evaluation of the net present value for alternatives to satisfy the water source/rights deficiencies are summarized in the following table.

Table VI-1 Water Source Alternatives, Net Present Value Comparison

ITEM NUMBER	SPEC SECTION AND DESCRIPTION	Purchasing Existing Well in Vicinity of Garden City	Apply for Water Right and Drill New Well	Municipal Secondary Irrigation System	Water Conservation
1	CAPITAL COST	$ 13,410,000	$ 1,580,000	$ 22,000,000	$ 187,200
2	OPERATION & MAINTENANCE COSTS	$ -	$ -	$ 1,245,000	$ 3,812,000
3	REPLACEMENT COSTS	$ -	$ -	$ -	$ -
4	REVENUE INCREASE	$ -	$ -	$ -	$ (92,000)
NET PRESENT VALUE		**$ 13,410,000**	**$ 1,580,000**	**$ 23,245,000**	**$ 3,907,200**

The highest net present value cost alternative is purchasing an existing right in the vicinity of Garden City and constructing a municipal secondary irrigation system. The lowest net present value is to make application to IDWR for a new water right and drill a new well.

c. Evaluation Matrix

Table VI-2 compares the alternatives against the objectives established for improvements to the water system.

Table VI-2 Water Source Alternatives, Comparison with Objectives

Screening Criteria	Final Screening of Alternatives				
	Compliance	Purchasing Existing Right in Vicinity of Garden City	Apply for Water Right and Drill New Well	Municipal Secondary Irrigation System	Water Conservation
Compliance	Ability to meet IDEQ regulations	0	0	0	0
Compliance	Ability to meet IDWR regulations	1	2	1	0
Capacity	Firm Capacity for Current Demand	1	2	1	1
Capacity	Firm Capacity for Future Demand	0	2	1	0
Feasibility	Schedule - Implementation	0	1	0	1
Feasibility	Reliability - Implementation relies only upon City	-1	0	1	2
Feasibility	Operation effort is minimal	1	1	-2	-2
Cost	NPV or capital cost is affordable	-2	2	-2	1
City Preference	City officials and city staff approve the improvement	0	1	1	1
TOTAL		**0**	**11**	**1**	**4**

+2	Significant beneficial impact to city compared to other alternatives
+1	Minimal beneficial impact to city compared to other alternatives
0	No impact to city compared to other alternatives
-1	Minimal adverse impact to city compared to other alternatives
-2	Significant adverse impact to city compared to other alternatives

The recommended alternative is to apply for an additional water right and drill and new well. IDWR is accepting applications for new municipal water rights. The application process is estimated to take around one year. This alternative will be able to meet the current and future water demands since application will be made to IDWR based on need. Another benefit of this alternative is the lower estimated cost.

The City should also consider implementing a Water Conservation Program. A secondary irrigation system would lessen the amount of new water needed to be obtained, but it still would not quite meet the future MDD and is much costlier than the other alternatives.

C. Pumping Facilities Alternatives

These alternatives offer potential solutions to the deficiencies previously identified related to water production.

1. WSu-1 Insufficient Pumping Capacity to Meet Allowable Water Right Diversion Rates

As discussed previously, the City does not have sufficient water production capability to meet the allowed water right diversion rates; they are short 1,375 gpm. The alternatives discussed involve increasing pumping capacity to meet this rate. These alternatives assume that each water right currently in the system has been assigned multiple diversion points.

a. Summary Description

1) Implement WR-1 and rehabilitate Wells #3 and #8 to produce 2,250 gpm and Well #6 to produce up to 2,250 gpm.

As discussed previously, Wells #3, #6, and #8 are reaching the end of their useful life. Rehabilitation of these wells to increase the production to meet the allowable diversion rate would bring the system up to the capacity allowed by right and allow these aging facilities to be upgraded.

2) Implement WR-1 and drill a new well

This alternative entails drilling a new well with a diversion rate of 1,375 gpm to meet the rate additional diversion rate allowed by Garden City's water rights. If the existing water right diversion points are transferred to all wells in the system, the City would not need to rehabilitate multiple wells and would not need to obtain additional rights for a new well.

b. Engineer's Opinion of Probable Cost

The EOPC considers the capital cost, the capital cost is summarized in the table as construction costs (including purchases), a confidence factor accounting for the variability inherent in planning level cost estimates, and support costs such as legal, administrative, and engineering. The evaluation of capital costs for alternatives to satisfy the water production deficiencies are summarized in the following table.

Table VI-3 Water Supply Alternatives to Meet Allowable Diversion Rate, Capital Cost Comparison

ITEM NUMBER	SPEC SECTION AND DESCRIPTION	Rehabilitate Wells #3, #8, and #6	Drill a New 1,375 gpm Well
1	CONSTRUCTION COSTS	$ 794,000	$ 526,000
2	CONFIDENCE FACTOR	$ 199,000	$ 131,000
3	SUPPORT COSTS	$ 111,000	$ 171,000
OPINION OF PROBABLE PROJECT COST		**$ 1,104,000**	**$ 828,000**

As shown in Table VI-3, rehabilitating three existing wells is estimated to cost more than drilling a new well, however these three wells can be rehabilitated to produce higher flowrates than could be achieved with just one well. This additional flow will aid in meeting the projected future demand. In addition, if Wells #3, #8, and #6 will need upgraded and/or rehabilitated in the near future as their useful lives are reaching an end. Maintaining these wells and adding an additional would introduce complication to the system as operators maintain a system of many small producing wells.

c. Evaluation Matrix

Table VI-4 compares the alternatives against the objectives established for improvements to the water system.

Table VI-4 Pump Capacity to Meet Allowable Diversion Rate, Comparison with Objectives

Screening Criteria	Final Screening of Alternatives				
	Compliance	Rehabilitate Wells #3, #8, and #6	Drill a New 1,375 gpm Well	NA	N/A
Compliance	Ability to meet IDWR regulations	0	0		
Compliance	Ability to meet IDEQ regulations	0	0		
Capacity	Firm Capacity for Current Demand	0	0		
Capacity	Firm Capacity for Future Demand	0	-1		
Feasibility	Schedule - Implementation within two years	1	2		
Feasibility	Reliability - Implementation relies only upon City	0	0		
Feasibility	Operation effort is minimized	2	0		
Cost	NPV or capital cost is affordable	0	1		
City Preference	City officials and city staff approve the improvement	1	0		
TOTAL		**4**	**2**		

+2	Significant beneficial impact to city compared to other alternatives
+1	Minimal beneficial impact to city compared to other alternatives
0	No impact to city compared to other alternatives
-1	Minimal adverse impact to city compared to other alternatives
-2	Significant adverse impact to city compared to other alternatives

The recommended alternative to correct the current pumping capacity to meet the allowable water right diversion rate is to rehabilitate Wells #3, #8, and #6 to increase production by at least 1,375 gpm. These wells are reaching the end of their useful life and will need upgraded; the rehabilitated wells would remain at their existing locations; and operation effort would be minimized since there would be no new wells added to the system to operate and maintain.

2. WSu-2 Insufficient pumping capacity to meet ADD and Fire Flow

As discussed previously, current standby power cannot deliver the ADD of 1,800 gpm and 3,500 gpm to meet the maximum fire flow requirement. The current system is able to deliver 3,200 gpm using standby power, requiring an additional capacity of at least 2,100 gpm.

a. Summary Description

1) Install standby generators at Wells #4 and #9.

This alternative calls for the installation of standby generators at Wells #4 and #9. The current pumping capacity at Well # 4 is around 1,620 gpm and Well #9 is being rehabilitated and is anticipated to be able to produce approximately 2,000 gpm. This combination will produce enough flow to meet the requirement.

2) Install standby generators at Wells #3, #4 and #8

This alternative entails installation of standby generators at Wells #3, #4, and #8. The pump capacity for this three-well combination is approximately 3,800 gpm and will provide the flow needed to meet the requirement. This alternative is being put forth in case Well #9 is unable to meet the predicted 2,000 gpm after it is rehabilitated.

b. Engineer's Opinion of Probable Cost

The EOPC considers the capital cost, the capital cost is summarized in the table as construction costs (including purchases), a confidence factor accounting for the variability inherent in planning level cost estimates, and support costs such as legal, administrative, and engineering. The evaluation of capital costs for alternatives to satisfy the water production deficiencies are summarized in the following table.

Table VI-5 Water Supply Alternatives to Meet PHD with Standby Power, Capital Cost Comparison

ITEM NUMBER	SPEC SECTION AND DESCRIPTION	Standby Generation for Wells #4 and #9	Standby Generation for Wells #3, #4, and #8
1	CONSTRUCTION COSTS	$ 240,000	$ 350,000
2	CONFIDENCE FACTOR	$ 60,000	$ 90,000
3	SUPPORT COSTS	$ 80,000	$ 100,000
OPINION OF PROBABLE PROJECT COST		**$ 380,000**	**$ 540,000**

The highest capital cost alternative is understandably the one that requires three standby generators as opposed to two generators.

c. Evaluation Matrix

Table VI-6 compares the alternatives against the objectives established for improvements to the water system.

Table VI-6 Pumping Capacity to Meet ADD with Standby Power, Comparison with Objectives

Screening Criteria	Final Screening of Alternatives				
	Compliance	Standby Generation for Wells #4 and #9	Standby Generation for Wells #3, #4, and #8	N/A	N/A
Compliance	Ability to meet IDWR regulations	0	0		
Compliance	Ability to meet IDEQ regulations	0	0		
Capacity	Firm Capacity for Current Demand	0	0		
Capacity	Firm Capacity for Future Demand	0	1		
Feasibility	Schedule - Implementation within two years	1	0		
Feasibility	Reliability - Implementation relies only upon City	0	0		
Feasibility	Operation effort is minimized	1	0		
Cost	NPV or capital cost is affordable	2	-2		
City Preference	City officials and city staff approve the improvement	0	0		
TOTAL		**4**	**-1**		

+2	Significant beneficial impact to city compared to other alternatives
+1	Minimal beneficial impact to city compared to other alternatives
0	No impact to city compared to other alternatives
-1	Minimal adverse impact to city compared to other alternatives
-2	Significant adverse impact to city compared to other alternatives

The recommended alternative is to install standby generators at Wells #4 and #9. This configuration would require less capital cost with one less generator to maintain. Standby generators in the three-well configuration would only produce around 200 more gpm. This gain in flow is not considered adequate compared to the additional cost.

3. WSu-3 Well Discharge Piping

The recommended alternative is for the City to include well piping improvements in their system maintenance activities as it prepares for the next Sanitary Survey in June 2009. The *Idaho Rules for Pubic Water Systems* require IDEQ to conduct a sanitary survey every five years. The nine components of Idaho's sanitary survey include:

1. General Information regarding the system
2. Groundwater Source
3. Storage

4. Hydropneumatic Tanks
5. Distribution
6. Pumping
7. Financial Capacity
8. Managerial Capacity
9. Treatment Application

One of the specific steps recommended by IDEQ to prepare for a Sanitary Survey are to review deficiencies from the last survey and be sure they are properly addressed. IDEQ did not prepare a Sanitary Survey Report for their 2004 inspection; however a copy of the survey form used by the inspector is located in Appendix I where deficiencies are noted.

4. WSu-4 Facility Upgrade/Replacement

The recommended alternative is for the City to upgrade or replace system facilities when they reach the end of their useful life. Upgrades will meet the current requirements of a public water system and will be performed at Wells #3, #6, and #8 as WSu-1 is implemented. Well #12 will be upgraded as WSu-5 is implemented.

5. WSu-5 Insufficient Water Production for Future Demands

The future projected MDD will require a firm pumping capacity of 17,600 gpm. Considering the current firm capacity based on meeting the water right allowed diversion rate of 9,550 gpm, an additional 8,050 gpm is required. The projected future PHD is approximately 26,350 gpm. Meeting this demand with the use of pumping capacity only would require more than twice the pumping capacity to meet the MDD. For this reason, providing water storage to meet the PHD is being evaluated for all the alternatives.

a. Summary Description

1) Drill a new 2,500 gpm well; transfer right and abandon Wells #7 and #11; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; implement WSu-1; and provide water storage to meet the PHD

This alternative satisfies the firm capacity for future MDD of 17,600 gpm by developing a new 2,500 gpm well and rehabilitating Well #6 and #12 to increase their production to around 4,250 gpm between them. This rehabilitation would result in similar water production at these wells compared to the other wells in the system. In addition, Wells #7 and #11 would not be upgraded due to location, low pump rates, and water quality issues. The water rights associated with these wells would be transferred to the other system wells as part of WR-1. The wells would then be abandoned. Since these wells produce less than 5% of the future MDD, operation and maintenance efforts are not commensurate to keeping these wells. This alternative would not be able to produce the required flow to meet the PHD necessitating the need for water storage to provide the difference.

2) Drill four new 2,500 gpm wells that produce 8,050 gpm between them and provide water storage to meet the PHD

This alternative entails developing four new wells with the combined pumping capacities to be able to produce the additional water required to meet the future MDD. Pumping rates at all existing wells would remain the same. Like the previous alternative, the need for water storage is required to provide the difference between MDD and PHD.

3) Develop 3.6 MGD of non-potable water for irrigation; implement WSu-1; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; and provide water storage to meet the PHD.

This alternative entails using water conservation in the form of non-potable water for irrigation. This non-potable water could be supplied from treated wastewater or through obtaining water rights for irrigation water. Wells #6 and #12 would be rehabilitated to produce 4,250 gpm

between them similar to the previous alternative. Wells #7 and #11 would be abandoned as discussed above. Like the previous alternative, the need for water storage is required to provide the difference between MDD and PHD. In this case, the water storage could be a storage reservoir for the non-potable water, eliminating the need to construct a finished water storage tank.

b. Engineer's Opinion of Probable Cost

The EOPC considers the capital cost, the capital cost is summarized in the table as construction costs (including purchases), a confidence factor accounting for the variability inherent in planning level cost estimates, and support costs such as legal, administrative, and engineering. The evaluation of capital costs for alternatives to satisfy the water production deficiencies are summarized in the following table.

Table VI-7 Water Supply Alternatives to Meet Future Demands, Capital Cost Comparison

ITEM NUMBER	SPEC SECTION AND DESCRIPTION	DRILL 1 WELL AT 2,500 GPM; IMPLEMENT WSu-1; ABANDON WELLS #7 AND #11; REHABILITATE WELLS #6 & #12 FOR 4,250 PRODUCTION, AND 0.6 MG STORAGE	DRILL 4 NEW WELLS TO PRODUCE 8,050 GPM AND 0.6 MG STORAGE	DEVELOP 3.6 MGD IRRIGATION FLOW, IMPLEMENT WSu-1; ABANDON WELLS #7 AND #11; REHABILITATE WELLS #6 & #12 FOR 4,250 PRODUCTION, AND 0.6 MG STORAGE
1	CONSTRUCTION COSTS	$ 2,110,000	$ 3,150,000	$ 16,940,000
2	CONFIDENCE FACTOR	$ 530,000	$ 790,000	$ 2,230,000
3	SUPPORT COSTS	$ 580,000	$ 892,000	$ 2,280,000
OPINION OF PROBABLE PROJECT COST		**$ 3,220,000**	**$ 4,832,000**	**$ 21,450,000**

The alternative with the lowest capital cost is to drill one well and rehabilitate three existing wells to increase production capacity. Costs associated with the installation of a secondary pressurized irrigation system made this alternative have a much higher capital cost.

c. Evaluation Matrix

Table VI-8 compares the alternatives against the objectives established for improvements to the water system.

Table VI-8 Pumping Capacity Alternatives, Comparison with Objectives

Screening Criteria	Final Screening of Alternatives			
	Compliance	Drill a new 2,500 gpm well; transfer right and abandon Wells #7 and #11; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; implement WSu-1; and provide water storage to meet the PHD	Drill four new 2,500 gpm wells that produce 8,050 gpm between them and provide water storage to meet the PHD	Develop 3.6 MGD of non-potable water for irrigation; implement WSu-1; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; and provide water storage to meet the PHD
Compliance	Ability to meet IDWR regulations	0	0	0
Compliance	Ability to meet IDEQ regulations	0	0	0
Capacity	Firm Capacity for Current Demand	0	0	0
Capacity	Firm Capacity for Future Demand	2	2	1
Feasibility	Schedule - Implementation within two years	1	0	1
Feasibility	Reliability - Implementation relies only upon City	0	0	1
Feasibility	Operation effort is minimized	2	0	-1
Cost	NPV or capital cost is affordable	1	0	-2
City Preference	City officials and city staff approve the improvement	1	0	2
TOTAL		**7**	**2**	**2**

+2	Significant beneficial impact to city compared to other alternatives
+1	Minimal beneficial impact to city compared to other alternatives
0	No impact to city compared to other alternatives
-1	Minimal adverse impact to city compared to other alternatives
-2	Significant adverse impact to city compared to other alternatives

The recommended choice is to Drill a new 2,500 gpm well; transfer right and abandon Wells #7 and #11; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; implement WSu-1; and provide water storage to meet the PHD. This choice is considered superior to the others because it will meet future demands; has the lowest capital cost; and only one well is added to the system instead of four new wells. The high cost of the secondary irrigation system was the main reason for this alternative to score lower.

D. Storage Facilities Alternatives

These alternatives offer potential solutions to the deficiency previously identified related to water storage.

1. WSt-1 Insufficient Storage Capacity for Projected Demand Alternatives

As discussed previously, the City does not have sufficient storage under the current pumping capacity and backup power condition for the projected demand. The alternatives are complicated by the interrelationship of storage to pumping capacity and backup power capability.

a. Summary Description

1) Increase firm capacity to 17,600 gpm (equal to the MDD); do not provide additional standby power

This alternative involves providing finished water storage and increasing the firm pumping capacity to meet the projected future MDD. The standby power capability of the system would not be improved and would continue to produce 3,200 gpm. The resulting storage requirement would be 1.8 million gallons (see Table V-11).

2) Increase firm capacity to 17,600 gpm (equal to the MDD); provide additional standby power to supply the future ADD

This alternative is the same as the previous, with the exception of providing an additional 2,150 gpm to meet the future ADD and eliminate the need for standby storage. The resulting storage requirement is approximately 1.0 million gallons (see Table V-11).

3) Increase firm capacity to 15,100 gpm; provide additional standby power to supply ADD

This alternative eliminates the need for the new well or one of the rehabilitated wells. The difference in the firm capacity and the future MDD will be supplied with storage. Standby power will be sufficient to supply the ADD. The resulting storage requirement is 4.6 MG (see Table V-11).

b. Engineer's Opinion of Probable Cost

The EOPC considers the capital cost, the capital cost is summarized in the table as construction costs (including purchases), a confidence factor accounting for the variability inherent in planning level cost estimates, and support costs such as legal, administrative, and engineering. The evaluation of capital costs for alternatives to satisfy the water storage deficiencies are summarized in the following table.

Table VI-9 Water Storage Alternatives to Meet Future Demands, Capital Cost Comparison

ITEM NUMBER	SPEC SECTION AND DESCRIPTION	INCREASE FIRM CAPACITY TO FUTURE MDD; NO ADDITIONAL STANDBY POWER	INCREASE FIRM CAPACITY TO FUTURE MDD; ADDITIONAL STANDBY POWER TO MEET FUTURE ADD	INCREASE FIRM CAPACITY TO 15,100 GPM; ADDITIONAL STANDBY POWER TO MEET ADD	NA
1	CONSTRUCTION COSTS	$ 2,880,000	$ 2,480,000	$ 4,030,000	$ -
2	CONFIDENCE FACTOR	$ 720,000	$ 620,000	$ 1,010,000	$ -
3	SUPPORT COSTS	$ 780,000	$ 700,000	$ 1,060,000	$ -
OPINION OF PROBABLE PROJECT COST		**$ 4,380,000**	**$ 3,800,000**	**$ 6,100,000**	**$ -**

For capital cost comparison purposes, concrete storage tanks with booster pumps were compared. Determination of building materials and designs used for the chosen alternative will be evaluated based on location and specific needs of the City. The alternative with the lowest capital cost involved

increasing the firm pumping capacity through implementing WSu-5; standby generators are installed at two wells (WSu-1); and a one million gallon concrete storage tank is constructed.

c. Evaluation Matrix

Table VI-10 compares the alternatives against the objectives established for improvements to the storage component of the water system.

Table VI-10 Storage Capacity for Obligated Demand, Comparison with Objectives

Screening Criteria	Final Screening of Alternatives				
	Compliance	Increase firm capacity to 17,600 gpm (= MDD); do not provide additional standby power	Increase firm capacity to 17,600 gpm (= MDD); provide additional standby power to supply ADD	Increase firm capacity to 15,100 gpm provide additional standby power to supply ADD	NA
Compliance	Ability to meet IDWR regulations	0	0	0	
Compliance	Ability to meet IDEQ regulations	0	0	0	
Capacity	Firm Capacity for Current Demand	0	0	0	
Capacity	Firm Capacity for Future Demand	2	2	0	
Feasibility	Schedule - Implementation within two years	1	1	0	
Feasibility	Reliability - Implementation relies only upon City	1	1	-1	
Feasibility	Operation effort is minimized	1	1	2	
Cost	NPV or capital cost is affordable	1	2	-2	
City Preference	City officials and city staff approve the improvement	1	1	0	
TOTAL		**7**	**8**	**-1**	

+2	Significant beneficial impact to city compared to other alternatives
+1	Minimal beneficial impact to city compared to other alternatives
0	No impact to city compared to other alternatives
-1	Minimal adverse impact to city compared to other alternatives
-2	Significant adverse impact to city compared to other alternatives

The recommended alternative to correct insufficient storage to meet the future demand is to increase firm capacity to 17,600 gpm; provide additional standby power capable of producing at least 2,150 gpm; and to construct a 1 MG storage tank. This alternative is preferred because standby power is an immediate

need to the system and will be implemented as WSu-1. Cost is the other main factor scoring this alternative above the others.

E. Distribution System Alternatives

These alternatives offer potential solutions to the deficiencies previously identified related to water distribution system.

1. WD-1 Inadequate Fire Flow

The recommended alternative is for the City to include distribution improvements for fire flow in their system maintenance activities and capital improvements. For each deficient flow location, particular infrastructure improvements are recommended and described below.

a) Hydrant on Chinden between 45th and 46th has a deficient flow rate. This alternative is the replacement of the 2.5" water line from 45th Street to E. Ellen Street with a 6" line.

b) Hydrant on 31st Street just north of Chinden has a deficient flow rate. This alternative is the replacement of the 4" water line on 31st Street with an 8" line.

c) Hydrant on 34th Street and Brown Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 34th Street and Stockton with an 8" line.

d) Hydrant on 38th Street and W Kay Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 38th Street with an 8" line.

e) Hydrant on 35th Street and Brown Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 35th Street with a 6" line.

f) Hydrants on W Winterwood Lane, N Lakeview Place, E Adam Court, N Lakemont Place, and N Lakeshore Place have deficient flow rates. This alternative is the replacement of the 4" water line adjacent to these hydrants with a 6" line.

2. WD-2 Insufficient Line Sizes

Remedies for insufficient line sizes are infrastructure replacements of existing waterlines or looping of dead-end lines. The specific improvements included replacement of 4" lines connected to fire hydrants listed below. The general improvements are to replace all 4" and smaller pipes with 6" lines to dead ends and cul de sacs, 8" distribution lines, and 12" transmission lines.

a) Stockton Ave
b) 30th Street
c) 32nd Street
d) 33rd Street
e) 34th Street
f) 37th Street
g) W Elaynea Lane
h) W Cody Lane
i) W Quinella St
j) W. Mystic Cove Way
k) N Pebble Falls Lane
l) N Pebble Cove Lane
m) N Lakefront Place

n) N Lake Park Place

o) N Lakes Edge Place

After priority replacements have been made. A water line replacement program will be implemented to replace approximately 4,000 feet of water line per year with street replacement. Replacement may be less during years when other major system upgrades are being made like rehabilitating or drilling wells.

3. WD-3 Limited As-Built Drawings Alternatives

The recommended alternative is for City maintenance staff to perform record keeping activities as part of their system maintenance duties and include appropriate data collection as part of normal operation & maintenance. The City will maintain and improve mapping records by transferring as-built drawings, plans and other mapping records to digital format and maintain the mapping database over the long-term.

4. WD-4 Inadequate Pressure When Meeting Future Demands

The preferred alternatives chosen to address deficient future water supply (WSu-5) of drilling a new 2,500 gpm well and rehabilitating Wells #6 and #12 to meet the future MDD, and the preferred alternative to address meeting future needs related to water storage (WSt-1) also address this paucity.

F. Water Quality Alternatives

These alternatives offer potential solutions to the deficiencies previously identified related to water quality.

1. WQ-1 Conformance to Groundwater Rule Alternatives

The recommended alternative is for the City to include appropriate operation & maintenance activities as part of their typical duties. Garden City must also prepare an IDSE Plan and either a Standard Monitoring Plan or a System Specific Study under the Stage 2 Disinfectants/Disinfection By-Products Rule. Garden City will also be required to monitor TTHM and HAA5 and report results using a locational running annual average.

G. Public Input

A public meeting was held January 26, 2009 during the normally scheduled City Council meeting. Advertisement for the Public meeting was published in the Idaho Statesman on January 9, 2009, a copy is located in Appendix Q. Meeting minutes are also available for viewing in Appendix Q indicating that there was no public comment given.

VII. SELECTED PLAN DESCRIPTION AND IMPLEMENTATION

A. Justification and Description of Selected Plan

The purpose of this section is to summarize the necessary water system improvements required to correct deficiencies identified in the existing system, in the case of Garden City this includes improvement to the current water supply, as well as, deficiencies identified for future conditions as anticipated by projected growth within the community. The City has established providing safe and reliable drinking water from sources owned by the City, providing adequate fire protection as defined by the local fire marshal, compliance with state statutes regarding public water systems, and maintaining affordable rates as objectives for operation and maintenance of their water system. After reviewing the existing water system by components of water right/source, water pumping facilities, water storage facilities, water distribution system, and water quality; projecting future demands on the system from a historical perspective and an understanding of current demographics; developing alternatives to address each deficiency identified; and screening those alternatives based on the objectives established by the City; a plan has emerged that provides an example to make the necessary improvements. It should be noted that these suggestions are based on current conditions and knowledge of the system. Adjustments to the plan and changes in priorities may be necessary for the City to meet the goals listed above.

1. Description

The necessary improvements fall into two main categories: capital improvements and operational and maintenance improvements. Capital improvements are new capital-intensive water system improvements such as new wells, storage, and major distribution system improvements. Operational and maintenance improvements cover improvements to be executed by the City personnel. Necessary improvement suggestions are prioritized and justified based on current conditions and knowledge of the system, and placed in a reasonable schedule for implementation over the improvement program period. Each improvement has been assigned an anticipated year of construction, however, some of the listed improvements will be required only as growth occurs in the City. In this manner, the City has a referenced project cost that can be quickly located and adjusted to make management decisions or answer developer inquiries. Given the fact that growth may be faster or slower than what is anticipated in this plan, the implementation schedule is subject to change, with the possibility that some projects may be implemented prior to their target date, while others may be constructed after the target established in this plan. In the subsections below, the operation and maintenance improvements and the capital improvements are described separately. A suggested schedule is presented at the end of this section.

Suggestions are represented by the nomenclature established in Chapter 5 under Description of Problems/Deficiencies. The operation and maintenance improvements are listed in Table VII-1 and are summarized below.

a. Operation and Maintenance Efforts Summary

1) WR-1 Multiple Diversion Points Alternative

   Apply to IDWR requesting additional diversion points representing each well for each water right. The water right that was associated with Well #1 should also be transferred to each of the current system wells. An application is attached in Appendix K.

2) WR-2 Discrepancy for Water Right 63-5330 associated with Well #5

   File a “Late Objection” with the SRBA Court in Twin Falls. The City must provide evidence of water used at this location at the time listed as the priority date of the right to IDWR. Apply to IDWR to change the designation of this right to municipal.

3) WR-3 Discrepancy for Water Right 63-11487 associated with Well #10

   Contact the IDWR and inquire about the status of the water right license being issued since the Beneficial Use Field Report was completed in 1997. Confirm that the assigned diversion rate, place of use, and designation meet expectations of the City.

4) WR-4 Discrepancy for Water Rights 63-9144 and 63-8357 associated with Well #11 and #12

File a "Notice of Change of Water Right Ownership" with IDWR. A SBRA claim is not currently on file at IDWR for Right 63-8357. Verify if this claim has been submitted; if not, then submit a "Motion to File a Late Notice of Claim" with the SBRA court in Twin Falls.

5) WSu-3 Well Discharge Piping

The City is to include well piping improvements in their system maintenance activities to meet the requirements of IDEQ Sanitary Survey (see the Sanitary Survey form in Appendix I) that will take place in June 2009. Needed improvements noted on the field report for the Sanitary Survey taken in 2004 include:

a) A bacteria sampling tap of smooth nose type without threads is be provided on all the wells.

b) A valve exercising program is needed.

c) The well casing vents are to vent at 18 inches above the floor grade terminating downward with a 24 mesh corrosion resistant screen.

d) All non-sample taps installed in the well house must be equipped with a backflow prevention device.

e) Repaint rusty pipes.

f) A pump to waste configuration is to be provided for each well, to allow pumping to waste at design capacity before the first service connection.

6) WD-2 Insufficient Line Sizes

The suggested remedy for this deficiency is replacement of existing water lines or looping dead-end lines. The specific improvements include replacing 4-inch lines connected to fire hydrants listed below, and then replace all 4-inch and smaller lines with 6-inch lines that run to dead ends and cul de sacs, 8-inch distribution lines, and 12-inch transmission lines. After priority replacements have been made. A water line replacement program will be implemented to replace approximately 4,000 feet of water line per year with street replacement (see the example water system improvement plans in Appendix P). Replacement may be less during years when other major system upgrades are being made, such as, rehabilitating or drilling wells, or conducting alternate improvements based on more current information.

- Stockton Ave
- 30th Street
- 32nd Street
- 33rd Street
- 34th Street
- 37th Street
- W Elaynea Lane
- W Cody Lane
- W Quinella St
- W. Mystic Cove Way
- N Pebble Falls Lane
- N Pebble Cove Lane
- N Lakefront Place

- N Lake Park Place
- N Lakes Edge Place

7) WD-3 Limited As-Built Drawings Alternative

The recommended alternative is for City maintenance staff to perform record keeping activities as part of their system maintenance duties and include appropriate data collection as part of normal operation & maintenance duties. The City will maintain and improve mapping records by transferring as-built drawings, plans and other mapping records to digital format and maintain the mapping database over the long-term.

8) WQ-1 Conformance to Groundwater Rule Alternative

The City will develop formal monitoring plans for water quality components resulting from increased regulations stemming from the SDWA and those related to the Groundwater Rule. The Groundwater rule becomes effective December 1, 2009. It is therefore recommended the City begins Source Water Monitoring as part of the normal operations. This means each water sources is to be tested for total coliforms, triggered by a positive total coliform result in accordance with the routine TCR monthly testing. Other maintenance strategies recommended by EPA to mitigate total coliforms are:

- Periodic sanitary surveys
- Correction of all significant defects
- Eliminate the source of contamination

In addition, some future monitoring and reporting of the City's water quality will be required in the form of an IDSE Plan and either a Standard Monitoring Plan or a System Specific Study under the Stage 2 D/DBP. Garden City will also be required to monitor TTHM and HAA5 and report results using a locational running annual average.

Table VII-1 Operation and Maintenance Improvements (2008 Dollars)

Operation and Maintenance Improvements (2008 Dollars)					
Water System O&M Improvement Projects		**Unit Cost**	**Project Cost[a]**		
			2008-2013	**2014-2038**	**Total**
WR-1	Multiple Diversion Points	$6,000	$6,000	$0	$6,000
WR-2	Discrepancy for Water Right 63-5330	$11,000	$11,000	$0	$11,000
WR-3	Discrepancy for Water Right 63-11487	$3,000	$3,000	$0	$3,000
WR-4	Discrepancy for Water Rights 63-9144 and 63-8357	$8,000	$8,000	$0	$8,000
WSu-3	Well Discharge Piping	$33,000	$33,000	$120,000[b]	$153,000
WD-2	Insufficient Line Sizes	$2,400,000	$12,000,000	$60,000,000	$72,000,000
WD-3	Limited As-Built Drawings	$17,000	$17,000	$120,000[c]	$137,000
WQ-1	Conformance to Groundwater Rule	$79,000	$79,000	$144,000[d]	$223,000
Total Operation and Maintenance Improvements			$12,157,000	$60,384,000	$72,541,000

a) A more detailed opinion of probable cost is presented in Section C and Appendix N
b) Estimated at $5,000 per year to maintain piping in well houses.
c) Estimated at $5,000 per year to maintain data base.
d) $6,000 per year estimate.

Capital improvement are listed in Table VII-2, illustrated in Figure VII-1, and are summarized below.

b. Capital Improvement Suggestion Summary

1) WR-5 Insufficient Water Rights for Projected Demands

The recommended alternative is to apply for an additional water right and drill and new well. IDWR is accepting applications for new municipal water rights. The application process is estimated to take around one year. This alternative will be able to meet the current and future water demands since application will be made to IDWR based on need. The City should also implement a Water Conservation Program as outlined in the *Garden City Comprehensive Plan*.

2) WSu-1 Increase Pumping Capacity to Meet Allowable Water Right Diversion Rate

Rehabilitate Wells #3, #8, and #6 to increase production by at least 1,375 gpm. These wells are reaching the end of their useful life and will need upgraded; the rehabilitated wells would remain at their existing locations; and operation effort would be minimized since there would be no new wells added to the system to operate and maintain.

3) WSu-2 Increase Standby Pumping Capacity to Meet ADD and Fire Flow

Install standby generators at Wells #4 and #9. The current pumping capacity at Well # 4 is around 1,620 gpm and Well #9 is being rehabilitated and is anticipated to be able to produce approximately 2,000 gpm. This combination will produce enough additional flow (greater that 2,100 gpm for the current ADD) to meet the requirement until approximately 2019.

4) WSu-4 Facility Upgrade/Replacement

Upgrade or replace system facilities when they reach the end of their useful life. Upgrades will meet the current requirements of a public water system and will be performed at Wells #3, #6, and #8 as WSu-1 is implemented. Well #12 will be upgraded as WSu-5 is implemented.

5) WSu-5 Increase Water Production for Future Demands

Drill a new 2,500 gpm well; transfer right and abandon Wells #7 and #11; rehabilitate Wells #6 and #12 to produce 4,250 gpm between them; implement WSu-1; and provide water storage to meet the PHD.

This alternative satisfies the firm capacity for future MDD of 17,600 gpm by developing a new 2,500 gpm well and rehabilitating Well #6 and #12 to increase their production to around 4,250 gpm between them. This rehabilitation would result in similar water production at these wells compared to the other wells in the system. In addition, Wells #7 and #11 would not be upgraded due to location, low pump rates, and water quality issues. The water rights associated with these wells would be transferred to the other system wells as part of WR-1. The wells would then be abandoned. Since these wells produce less than 5% of the future MDD, operation and maintenance efforts are not commensurate to keeping these wells. This alternative would not be able to produce the required flow to meet the PHD necessitating the need for water storage to provide the difference.

6) WSt-1 Provide Storage Capacity for Projected Demand

Increase firm capacity to 17,600 gpm by implementing WSu-5; provide additional standby power capable of producing at least 2,150 gpm by implementing WSu-2; and to construct a 1 MG storage tank.

7) WD-1 Inadequate Fire Flow

Upgrade the distribution system to correct deficient fire flow (based on latest fire code requirements) at each of the following locations as shown in Figure VII-2. The estimated cost includes replacement of the street.

a) Hydrant on Chinden between 45th and 46th has a deficient flow rate. This alternative is the replacement of the 2.5" water line from 45th Street to E. Ellen Street with an 8" line.

b) Hydrant on 31st Street just north of Chinden has a deficient flow rate. This alternative is the replacement of the 4" water line on 31st Street with an 8" line.

c) Hydrant on 34th Street and Brown Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 34th Street and Stockton with an 8" line.

d) Hydrant on 38th Street and W Kay Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 38th Street with an 8" line.

e) Hydrant on 35th Street and Brown Street has a deficient flow rate. This alternative is the replacement of the 4" water line on 35th Street with a 6" line.

f) Hydrants on W Winterwood Lane, N Lakeview Place, E Adam Court, N Lakemont Place, and N Lakeshore Place have deficient flow rates. This alternative is the replacement of the 4" water line adjacent to these hydrants with a 6" line.

8) WD-4 Inadequate Pressure for Future Demands

Implement WSu-5 and WSt-1 to meet future demands. When future demands are met by implementing these alternatives, system pressure meets IDAPA requirements.

2. Justification

The justification for the recommended alternative results from evaluation of various alternatives considered against the screening criteria. The principal factors are the capital cost, the ability to comply with IDWR and IDEQ requirements for a public drinking water system, meeting capacity requirements for current and future demands, feasibility of implementing the alternative in a reasonable time frame.

3. Preliminary Design of Selected Plan

The anticipated preliminary design for the recommended capital improvements are presented for the components of the water system and are depicted in Figure VII-I.

4. Water Rights/Source (Point 1)

The recommended alternative for WR-5 is to apply for a new right and then drill a new well to help meet future demands. IDWR is currently accepting applications from municipalities for new water rights. Securing and optimizing current water rights are considered an administrative and management task and will not be elaborated herein.

The new well will conform to IDWR rules for aquifer protection, as well as, IDEQ rules for drinking water wells. The well is anticipated as a 24-inch diameter casing approximately 300 feet deep with a minimum production capacity of 2,500 gpm driven by a 250 HP pump. A well-siting study may be directed by the City to optimize the location. A location that may be considered is the area where the new Public Works "Shop" is planned at 270 E. 38th Street. Benefits of this location are its close proximity to the facility, increasing security and ease of operation. In addition, this location is in the neighborhood of Well #4, which can currently produce around this same rate of water with no history of water quality issues related to primary or secondary drinking water standards. Even though Garden City is relatively flat regarding elevation change, this location is on the higher elevation side of the City, minimizing the amount of water that must be pumped "uphill." A preliminary site plan is given in Figure VII-5

5. Pumping Facilities (Point 2)

The recommended alternative for WSu-1 and WSu-5 involve the rehabilitation of existing system Wells #3, #6, #8, and #12. These wells will be rehabilitated to conform to IDWR rules for aquifer protection, as well as, IDEQ rules for drinking water wells. A pump test will be performed to determine the flow rate that is attainable using the current hole. If the rate is around 2,250 gpm, then rehabilitation of the screen, casing, well house and all associated piping will be performed. If the well is unable to meet this flowrate due to casing size or well depth, the well will be abandoned and a new well drilled near the same location. Since Wells #6 and #12 currently have lower pumping rates, there is a good probability that these wells will need to be re-drilled.

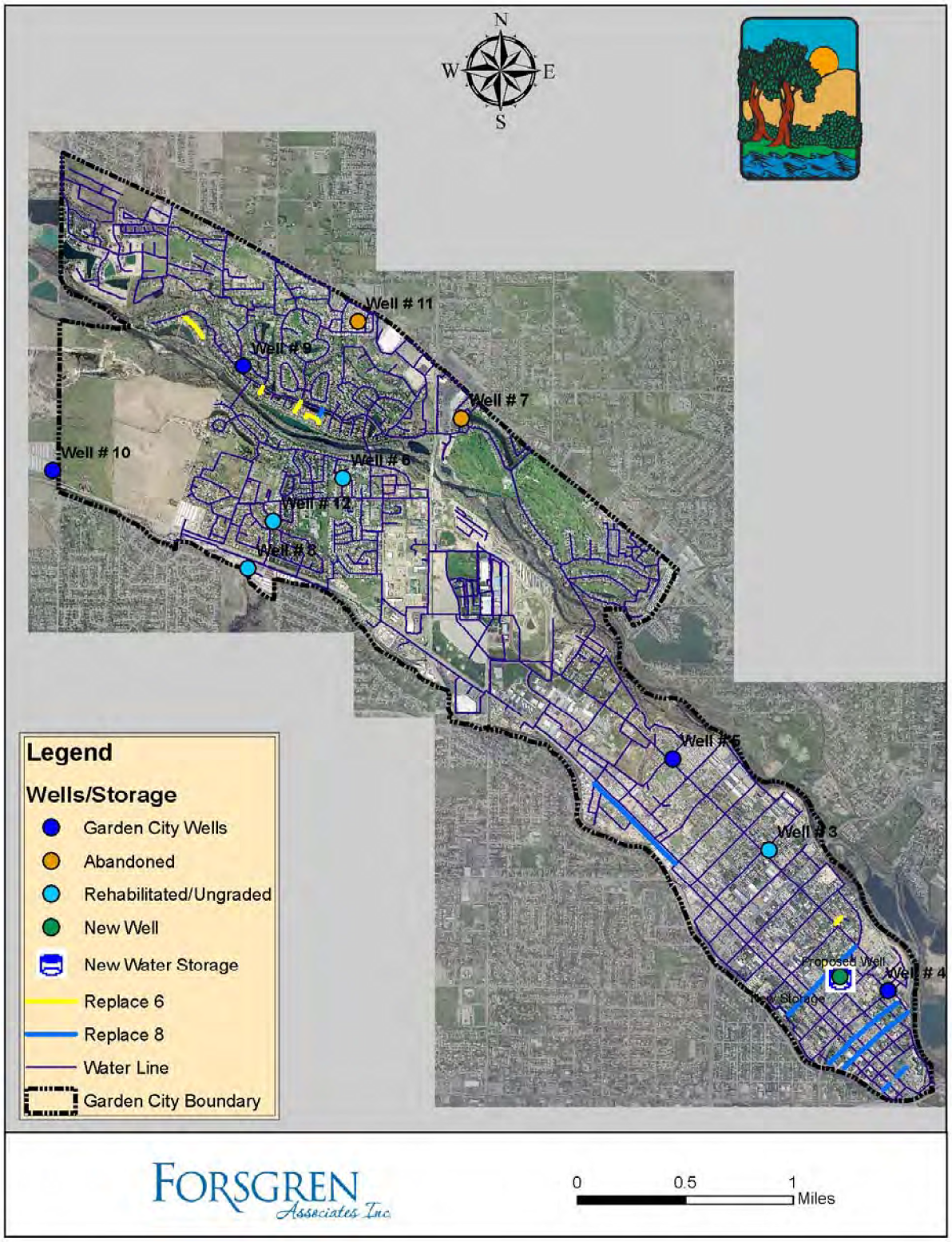


Figure VII-1 All Capital Improvement Areas

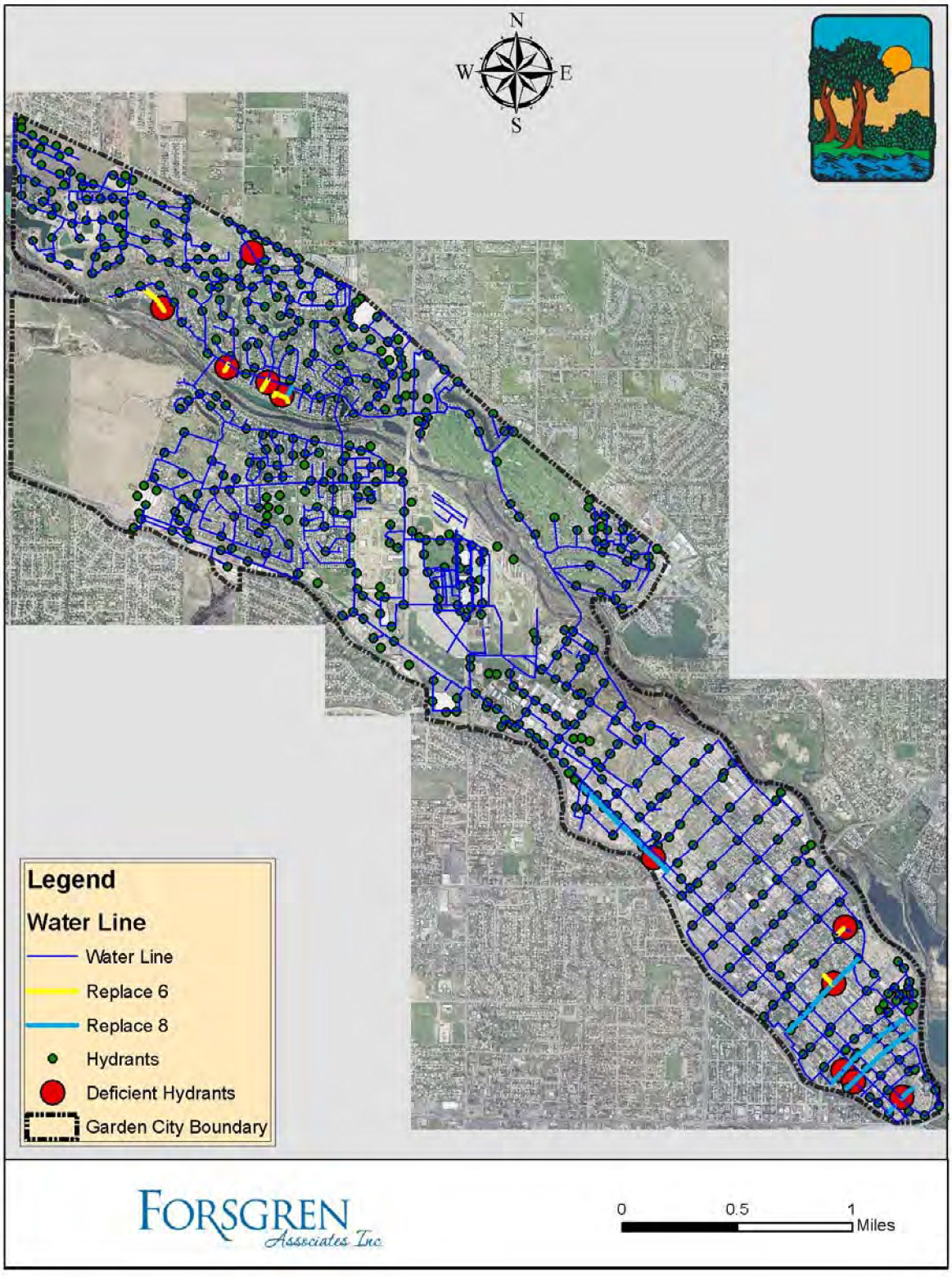


Figure VII-2 Improvement Areas to Meet Fire Flow Requirements

Table VII-2 Capital Improvement Projects

Capital Improvement Projects (2008 Dollars)					
Project Description		Item	2008-2013	2014-2038	Total
	Water Right Improvements				
WR-5a	Insufficient Water Rights for Future Demands – Apply for new right and drill well	$14,000	$14,000[a]	$0	$14,000
WR-5b	Implement a Water Conservation Program	$315,000	$315,000	$0	$315,000
	Water Right Subtotal:	$329,000	$329,000	$0	$329,000
	Water Supply Improvements				
WSu-1	Increase Pumping Capacity to Meet Diversion Rate	$736,000	$736,000	$0	$736,000
WSu-2	Increase Standby Pumping to Meet ADD and Fire Flow	$386,000	$0	$386,000	$386,000
WSu-4	Facility Upgrade/Replacement	$0[b]	$0	$0	$0
WSu-5	Increase Water Production for Future Demands	$1,717,000	$17,000[c]	$1,700,000[d]	$1,717,000
	Water Source Subtotal:	$2,839,000	$753,000	$2,086,000	$2,839,000
	Water Storage Improvements				
WSt-1	Provide Storage for Future Demands	$1,300,000	$1,300,000	$0	$1,300,000
	Water Storage Subtotal:	$1,300,000	$1,300,000	$0	$1,300,000
	Water Distribution Improvements				
WD-1	Inadequate Fire Flow	$7,473,000	$7,473,000	$0	$7,473,000
WD-4	Inadequate Pressure for Future Demands	$0[e]	$0	$0	$0
	Water Distribution Subtotal:	$7,473,000	$7,473,000	$0	$7,473,000
	Total Water System Capital Improvements	$11,941,000	$9,855,000	$2,086,000	$11,941,000

*A more detailed opinion of probable cost is presented in Section C and Appendix N
a) Amount to apply for water right only
b) Costs incorporated in WSu-1 and WSu-5.
c) Well # 11 abandonment
d) Drill new well; rehabilitate #6 and #12; abandon #7
e) Costs incorporated in WSu-5 and WSt-1

In order to meet the allowable water right diversion rate, Wells #3 and #8 will need to produce around 2,250 gpm each and Well #6 must produce around 900 gpm. However, to meet the future water demand, Well #6 will need to produce around 2,250 gpm along with Well #12. Rehabilitation of Well #12 to meet future demands will allow the City time to clear up the water right issues associated with it.

The wells are anticipated to be equipped with VFDs in order to help the system better meet changing demand patterns. The wells are also anticipated to be equipped with 250 HP pumps. By upgrading these existing facilities that are reaching the end of their useful lives, the city will be able to meet future water demands with a system of similar wells instead of maintaining many lower producing wells. Upgrading the existing facilities will also meet the recommended alternative for Wsu-4, Facility Upgrade/Replacement. Well facilities are projected to be of uniform design and also built to meet IDWR and IDEQ requirements. The recommended plan for a new well, rehabilitated wells, and abandoned wells are presented in Figure VII-3.

As discussed previously, Wells #7 and #11 will be abandoned mainly due to their unfavorable location and/or pumping capacities. Equipment associated with these wells will be removed and the wells abandoned in accordance with *Idaho Well Construction Standards* in order to prevent movement of fluids into or between drinking water and other groundwater sources.

Under IDAPA rules, water supplies must be able to provide the ADD plus fire flow with standby power. The preferred alternative for WSu-2 is to install standby generators at Wells #4 and #9. Well #4 is currently one of the most utilized wells in the system and rehabilitation of Well #9 will improve it to be one of the largest producers in the system. This alternative will also place standby power on both sides of the City. These generators are anticipated to be similar to the diesel powered generators that are currently at Wells #5 and #10; however, generators using natural gas are gaining popularity based on a favorable rating when assessing wellhead protection. A preliminary site plan for a standby generator is located in Figure VII-4.

6. Storage Facilities (Point 3)

A site study for the new 1 MG storage tank may be arranged by the City. A possible location for this tank is also at the location for the new Public Works "Shop." This location provides security and would be close to the new well if it is located here. In addition, the storage reservoir would be on the higher elevation side of the City. Detailed design may include and evaluation of steel versus concrete materials with respect to market conditions and the feasibility of using an elevated tank; however, the current plan suggests a reinforced concrete storage tank as most appropriate. A preliminary site plan is presented in Figure VII-5. This storage facility will also correct the WD-4 deficiency.

7. Distribution System (Point 4)

Several improvements are recommended for the distribution system. To achieve complete coverage for fire protection, several hydrants require replacement along with replacement of 4-inch or smaller line. Since providing a remedy for deficient fire flow is an immediate need, it is included as a capital improvement. Replacement of the other lines could be performed as a capital improvement, or as part of an ongoing operation and maintenance program to replace all deficient and aging lines in the system. Example distribution improvements are presented in Figure VII-6 and Appendix P.

8. Water Quality (Point 5)

Implementing testing procedures for water quality compliance is considered an operations task and will not be elaborated herein.

9. Water Capacity Summary

Table VII-3 provides a summary of the system's current and proposed capacities. This table is intended to provide a starting point for future declining balance reports. It is estimated that the City provides service to 5,340 residential units and 650 commercial units, which is equal to 6,000 ERU's (2.6 MGD divided by 437 gpd/ERU). The firm pumping capacity is currently 8,680 gpm which would provide the MDD plus the 3,500 gpm Fire Flow requirement for 7,270 ERU's.

Table VII-3 Capacity Summary Table

Item Description	Current ERU Estimate	Maximum ERU Capacity Added	Total ERU Capacity to Meet MDD plus Fire Flow	Remaining ERU Capacity
Current System Configuration	6,000	---	7,270 (supply) 0 (storage)	1,295 (supply) 0 (storage)
Converting Water Rights to Municipal	6,000	NA (this will allow 12,055 gpm to be diverted; however the system is limited by the 8,690 gpm Firm Pumping Capacity)	7,295 (supply) 0 (storage)	1,295 (supply) 0 (storage)
Rehabilitate Wells #3, #8, and #6 to add 1,375 gpm to system	6,000	1,930 (supply)	9,200 (supply) 0 (storage)	3,200 (supply) 0 (storage)
Conservation Program (locate leaking distribution lines)	6,000	362 (supply)	9,562 (supply) 0 (storage)	3,562(supply) 0 (storage)
Generator at Wells #4 and #9	6,000	No Impact on Capacity		
Rehabilitate Wells #6 and #12 to add 3,310 gpm to system	6,000	3,169 (supply)	1,2731 (supply) 0 (storage)	6,731(supply) 0 (storage)
Drill New Well	6,000	1,869 (supply)	14,600 (supply) 0 (storage)	8,600(supply) 0 (storage)
Construct Storage Reservoir (1 MG)	6,000	650 (storage)	14,600(supply) 650 (storage)	8,600(supply) 650(storage)

Assumptions:

1. Year 2009 unit connections = 5,340 residential; 650 commercial with 6,000 Equivalent Residential Units (ERU's).
2. ERU capacity added is the maximum expected additional capacity based on the Maximum Day Demand of 0.71 gpm per connection and the Fire Flow requirement. Actual capacity added must consider location of the new ERU's relative to the improvements. Additional improvements to the distribution system may be necessary prior to reaching the listed "Maximum ERU Capacity Added."
3. Conservation Program assumes that one-half of the volume discrepancy (372,500 gpd) between the well production and volume accounted for by the meters is saved.
4. ERU's for water storage are calculated with the assumption that 420,000 gallons of storage is used to meet the 3,500 gpm for 2 hour fire flow requirement; the remaining 580,000 gallons of storage is sufficient for a system total of 15,250 ERU's.

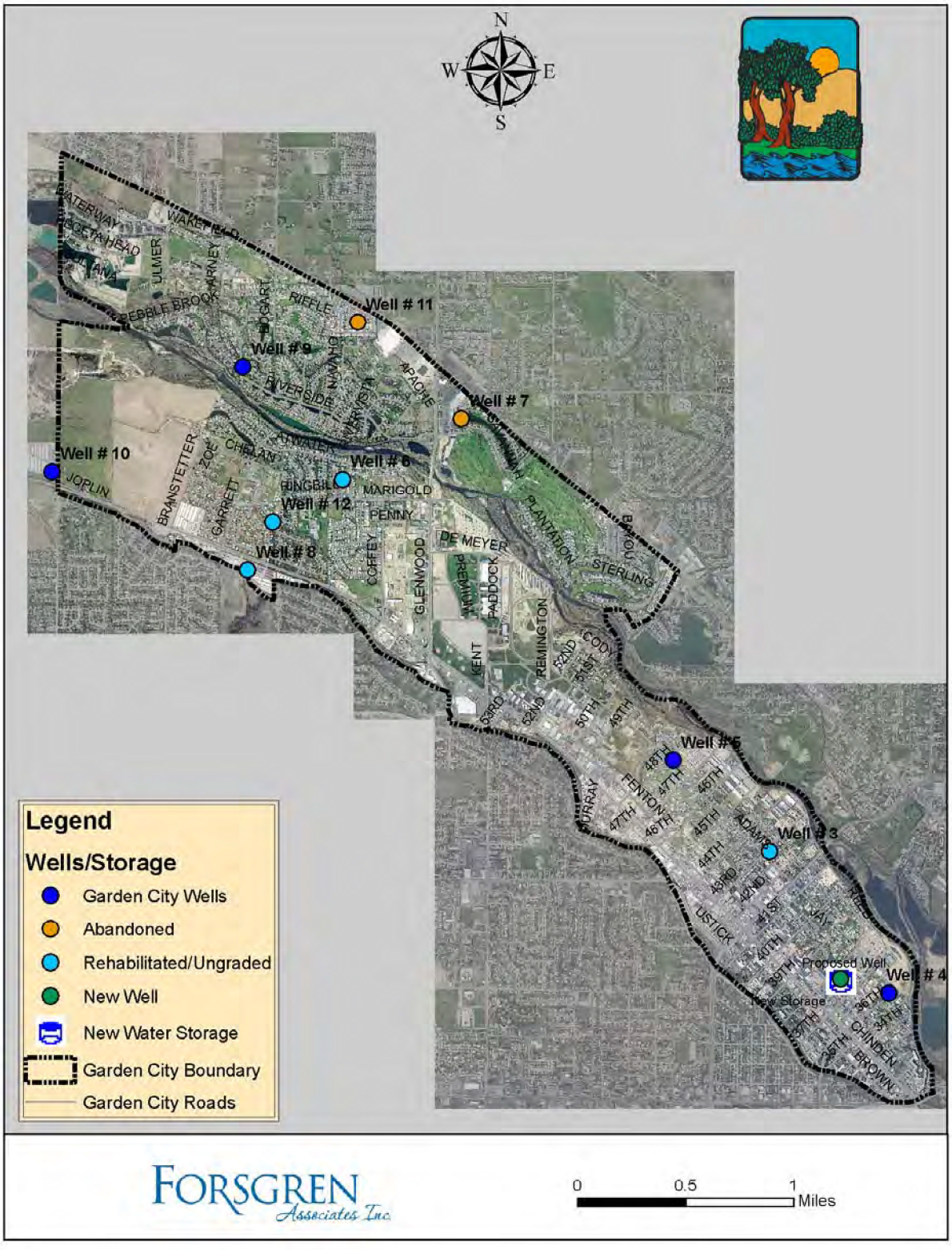


Figure VII-3 Pumping Facilities Improvements

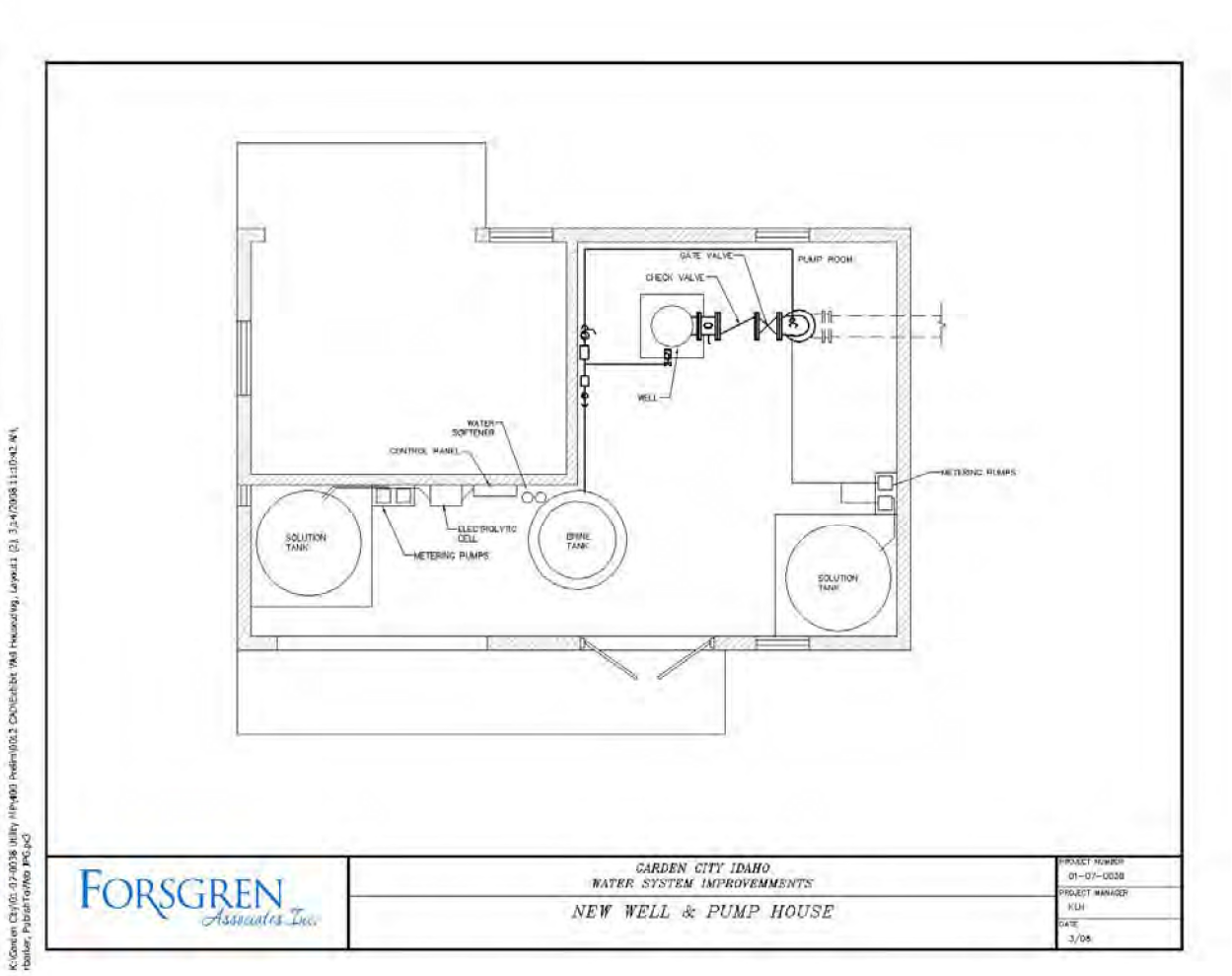


Figure VII-4 Typical Well House Layout with Generator Area



Figure VII-5 New Storage Tank and Well House Site Plan

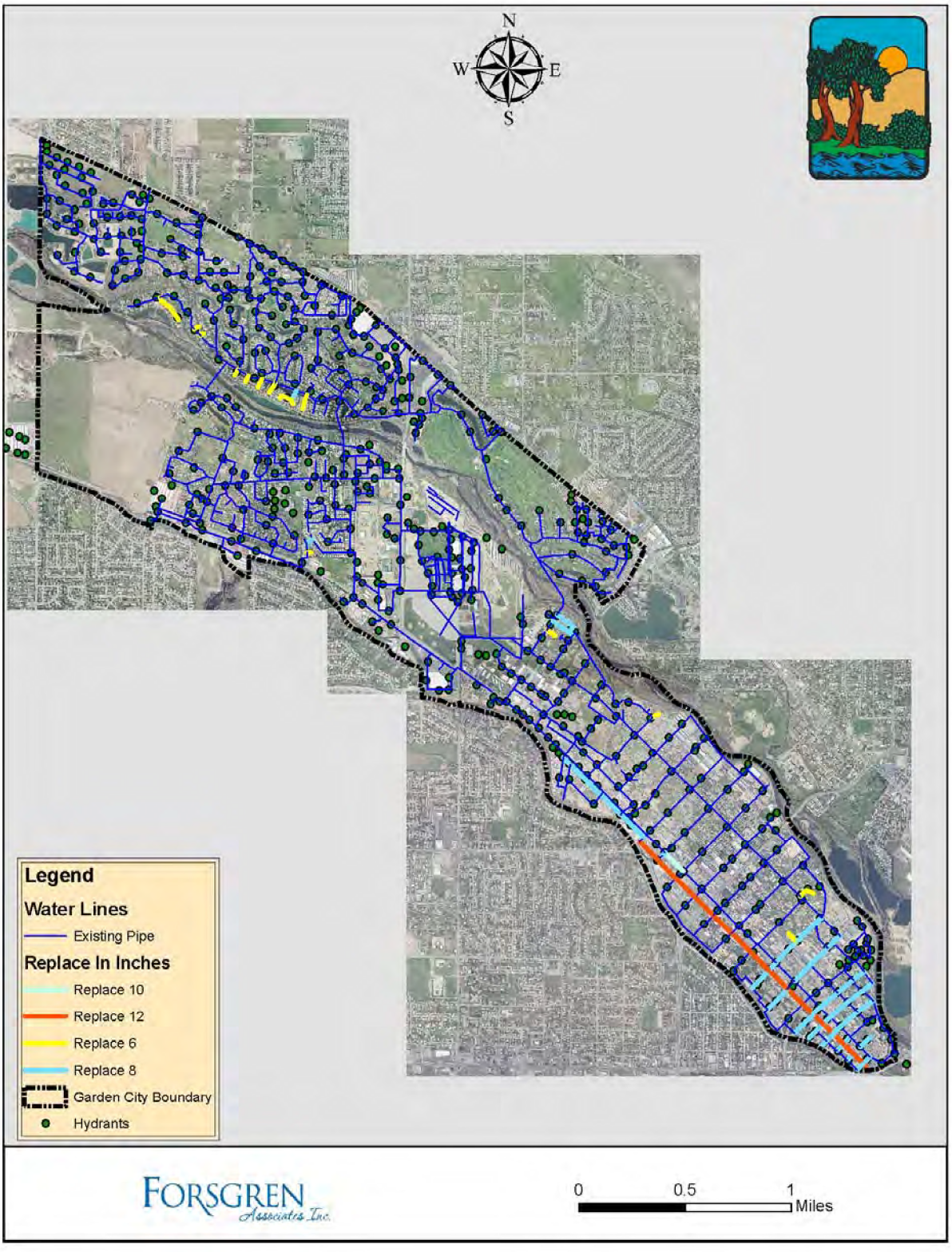


Figure VII-6 Recommended Water Line Improvement Areas

B. Opinion of Probable Cost for Selected Plan:

1. Cost Elements

a. Customer Base

To recap, as of December 2007, the City appears to have approximately 5,340 residential units connected to the water system split between single family homes, mobile homes and apartments and 650 commercial connections. The residential growth rate reported in the Garden City Comprehensive Plan is 4.5%, valid through 2027, after which this document used 1.66%. For purposes of financial modeling, the growth rate through 2027 used in this document is 2.25% and 1% in succeeding years. As the 4.5% growth rate is aggressive, this approach is intended to minimize the potential for financing planned improvements from growth that may not occur. According to the Garden City Comprehensive Plan, most of the growth will come from redevelopment within the existing City Limits and some potential expansion of the City to the West. Based on the classification presented in the user rate ordinance, the potential customer base is summarized in Table VII-3. This summary uses the assumed growth rate to predict a customer base across which both capital and operation and maintenance costs are allocated.

Table VII-4 Customer Base and Modeled Growth Rate

Customer Classification in Ordinance	Billing Category	Existing Initial Billings	Modeled Growth Rate	Number of Billings in 20 years	Number of Billings in 30 years
Residential	5/8” Meter	1,983	2.25%	3,094	3,648
	3/4” Meter	2,520	2.25%	3,932	4,636
	1” Meter	13	2.25%	20	24
	1.5” Meter	3	2.25%	5	6
	2” Meter	5	2.25%	8	9
Commercial	3/4” Meter	70	2.25%	105	130
	1” Meter	113	2.25%	164	201
	1.5” Meter	140	2.25%	203	249
	2” Meter	300	2.25%	468	571
	3” Meter	20	2.25%	31	38
	4” Meter	6	2.25%	9	11
	6” Meter	1	2.25%	2	2
Total		**5,174**		**8,041**	**9,525**

The connections to the system provide the revenue source for planned improvements to the system including well rehabilitation, drilling a new well, water storage, standby generators, and major line replacement.

b. Capital Cost

The Engineer’s Preliminary Opinion of Probable Cost for capital improvement projects is summarized in Table VII-2. The costs presented are for the type and number of system capital improvements presented in previous paragraphs. A more detailed Opinion of Probable Cost is located in Appendix N.

c. Opinion of Probable Operation & Maintenance Cost

The principal elements of O&M costs are annual labor, pipe replacement, road replacement (including storm drain, curb and gutter, and sidewalk), and materials and supplies required to operate the system. The estimated additional O&M costs through the planning period are presented in Table VII-1. Operation and maintenance improvements cover improvements to be executed by the City personnel. Necessary improvements are prioritized, justified, and placed in a reasonable schedule for implementation over the improvement program period.

2. Fee Structure

a. Monthly Base Charge & Disposal Fee

The monthly user charge consists of a fixed component or base rate and a variable or incremental rate based on the quantity of domestic water metered to the connection. The three basic components of a utility user rate are distributed among the base rate and incremental rate. Specifically, the debt service and capital reserve are assigned to the base rate, thus insuring that the debt obligation is serviced and the capital reserve is adequately funded in a consistent manner. The operation & maintenance is assigned to the incremental portion of the user rate allowing adjustments in operating costs to be paid by adjusting the incremental charge to each customer.

A typical residential single family water rate is currently estimated at $25.38. Costs are anticipated to escalate annually due to inflation, the need to provide funds for capital reserve and system replacement, and increases in operation costs common with aging infrastructure. The proposed improvements have an impact on the current fee structure, although the revenue derived from connection fees and increased monthly user revenue attributable to the assumed growth rate may provide a significant portion of the revenue necessary to finance the capital cost and operation costs of the improvements. In general, both the base rate component and the incremental component of the monthly user rate for all customer categories will be increased by $15.51 per month and $2.25 per 1000 gallons over the base rate, respectively, which results in a typical residential single family water rate of $39.14. If growth does not occur as projected, this value will increase, whereas, if the growth rate is higher than projected this rate may decrease. For Idaho, most federal agencies consider a rate in the range of $40-$42 affordable for low to moderate income households. The cash flow analysis will assume the system serves 5,340 active residential units billed through 4,420 residential accounts with an additional 650 commercial connections beginning in 2008.

1) Base Charge

Under the proposed fee structure, the base charge would need to pay for the debt service on the proposed capital improvements and proposed system replacement projects to the distribution system as well as the capital reserve account.

a) Debt Service

Garden City currently has debt service for the existing water system and is incurring cost of $205,000 annually, which is scheduled to terminate in 2021. However, the construction of a the proposed capital improvements will likely be financed by a debt instrument, probably a municipal bond sold to the State of Idaho, Department of Environmental Quality, State Revolving Fund as that presents the most attractive interest rate. The current interest rate for the SRF program is 3.00%. That value will be used in the financial analysis. The engineer's opinion of probable capital cost for the capital improvements is approximately $11.9 million. For financial modeling, $9.8 million will be used as the loan value representing the cost of the capital improvements needed immediately and assuming that approximately $1.5 million for future projects will come from reserves.

b) Capital Reserve

The capital reserve is a fund which must be of sufficient size to cover anticipated repairs/replacements of various system components within the water system, specifically older sections of distribution line, rehabilitation for source wells, and construction of

system storage. The anticipated monthly user charge to fund this reserve is suggested as a portion of the base user monthly charge. This portion is anticipated to provide approximately $2,400,000 per year to fund the needed repairs/replacements of various system components.

c) O&M Budget

The projected increase in the O&M budget, less the capital reserve fund is minimal, primarily due to inflation and not attributable to increased infrastructure or system complexity.

b. Water Development Fee/Impact Fee

The Incremental Impact Fee is a one-time charge imposed upon new development as a condition of development approval to pay for a proportionate share of the cost of improvements to the City's infrastructure necessary to serve new growth and development. Currently, Garden City equates all multi unit residential connections and commercial connections to a single family dwelling unit equivalence and then assesses a fixed fee for each equivalent unit. Increasing this fee provides additional funds from new development and thus allows for an incrementally lower fee for the base rate. The equivalent single family unit fee is suggested at $4,000.

c. Connection Fee

The connection fee typically describes the costs incurred by the jurisdiction for labor and materials associated with the physical connection of the customer to the municipal system and may include pipe, saddles, equipment rental, and labor costs for municipal employees, etc. Some jurisdictions elect to require the potential customer to hire private contractors approved by the jurisdiction while others provide the labor, equipment and materials in house. As presented herein, this fee is representative of a water department operating as an enterprise fund and does not affect the debt service or O&M components of the enterprise expenses and therefore is not paid through the monthly user rate. The water meter connection and water hook on fee was estimated based on recent bid tab from similar sized construction projects. The water meter connection fee is suggested at $1,000 and the water hook fee at $1,000.

d. Administration/Inspection Fee

An administration or inspection fee is often assessed by a jurisdiction to pay for costs associated with establishing a new account, inspection of the physical connection to ascertain its compliance with standards and specifications adopted by the municipality, and engineering and/or public works review of the proposed connection in the case of development projects. As presented herein, this fee is representative of a water department operating as an enterprise fund and does not affect the debt service or O&M components of the enterprise expenses and therefore is not paid through the monthly user rate.

C. Environmental Impacts of Selected Plan:

The environmental impacts of most wastewater projects will be less than that of not completing the project. Never-the-less, an Environmental Information Document (EID) must be prepared for the project if SRF financing is accessed. Many projects can be covered under a Categorical Exclusion. However, in those cases where more substantive environmental issues are identified a more thorough review may be necessary.

D. Implementation:

1. Financing Arrangements:

There are limited options available to Garden City for financing the project through grants. Garden City does not qualify for CDBG or USDA Rural Development funding based on the low-to moderate income threshold for Idaho. Further explanation of each potential program is presented in the ensuing paragraphs.

a. Idaho Dept. of Commerce

The Idaho Department of Commerce provides grant funding for public infrastructure through three grant programs; 1.) The Community Development Block Grant, Public Facility and Housing (PFH), the Community Development Block Grant, Economic Development (ED), and the Rural Development Block Grant (RDBG).

1) Community Development Block Grant, Public Facility

The Idaho Department of Commerce, Division of Economic Development, sponsors grant funding for communities annually on a competitive basis. The source of funds is the U.S. Department of Housing and Urban Development. ICDBG funds are intended for construction of projects that benefit low and moderate-income persons, help prevent or eliminate slum and blight conditions, or solve catastrophic health and safety threats in local areas.

According to the *2008 Action Plan*, Idaho expects to receive approximately $8.3M in funds in PY 2008-2009 of which the IDOC plans on budgeting about $4.3M for public infrastructure projects. Utility projects are eligible under the Public Facilities Construction and Improvements program. Although the maximum grant award is not specified, typically it is $500,000. Applications are due each year in November. Program requirements stipulate the funds must be used by an incorporated city or county, the city must be under 50,000 in population. In some cases where funds are not available for identified project, funds may be accessed to assist only the low to moderate income households with a portion of the project. For example, CDBG funds may be used to supplement an assessment to a low to moderate income household with construction of the on-lot service connection portion of a water system.

The IDOC reports from the 2000 Census that 42.98% of the households in Garden City are low to moderate income. It is unlikely that Garden City will qualify for the CDBG Program.

2) Community Development Block Grant, Economic Development

The Idaho Department of Commerce, Division of Economic Development, sponsors grant funding for economic development projects. The source of funds is the U.S. Department of Housing and Urban Development. The funds are available for two types of projects, public facilities and downtown revitalization. Public facilities grants are used for infrastructure such as roads, sewer, and water for a specific business or group of businesses in exchange for their promise to create a specific number of living wage jobs. Downtown revitalizations projects are awarded to communities to implement a plan to improve the business section of the town.

A local match is typically required though the amount is unspecified. Grant awards may be made each quarter.

Unless the project can be linked to job creation for an existing or new business enterprise, it is unlikely that Garden City will qualify for the ED Program.

3) Rural Development Block Grant

The Idaho State Legislature appropriates money to implement the Rural Development Block Program (RDBG) whose purpose is to provide funds to distressed rural areas for building public infrastructure in support of economic expansion and job creation. Eligible activities include extension of streets, water and sewer lines, and/or utilities to a site for a new business or industrial park; acquisition or construction of buildings for lease or purchase by a company; and provision of telecommunications, power, gas, and rail upgrades necessary for business expansions. The funds may also be used as match for other federal programs such as the Idaho Community Development Block Grant Program as well as grants or loans from the Economic Development Administration and USDA-Rural Development.

Program requirements stipulate the funds must be used by an incorporated city or county, the city must be under 10,000 in population, although cities contiguous to larger municipalities are not

eligible. A local match is required though the amount is unspecified. Selection criteria emphasize job creation in high unemployment areas.

Garden City does not qualify for the Rural Development Block Grant program.

b. United States Department of Agriculture

The Rural Utility Service (RUS) section of the Rural Development (RD) mission of the USDA sponsors the Water and Environmental Programs (WEP) which provides loans, grants and loan guarantees for drinking water, sanitary sewer, solid waste and storm drainage facilities in rural areas and cities and towns of 10,000 or less. The three funding avenues available to communities are the Water and Waste Disposal Loan, the Water and Waste Disposal Grant, and the Emergency Community Water Assistance Grant

1) Water and Waste Disposal Loan

RUS funds may be used to repair, modify, or expand the water or wastewater system of a rural community, defined as a municipality, county, or special district with a population of 10,000 or less. The funds are intended to assist communities that are unable to implement the necessary improvements to the utility system at an affordable rate. The interest rate applied is dependent upon the economic condition of the community and the costs of the project; it may be a poverty rate, currently set at 4.5%; a market rate; or an intermediate rate that may not exceed 7%. Applications are submitted to a local USDA office and are due each year in November.

Garden City does not qualify for the RUS Water and Waste Disposal Loan.

2) Water and Waste Disposal Grant

RUS may also award Water and Waste Disposal Grant to a community that qualifies based on the low to moderate income level of the community and the projected utility rates stemming from implementation of improvements to the utility. The grant award may be up to 75% of project costs. The program requirements are the same as those for the Water and Waste Disposal Loan.

Garden City does not qualify for the RUS Water and Waste Disposal Grant.

3) Emergency Community Water Assistance Grant

Emergency Community Water Assistance Grants may be available to rural communities when disaster strikes. Congress may appropriate funds for the program after a flood, earthquake, or other disaster if Federal assistance is warranted. The Funds may be used to: 1.) Extend, repair, or perform significant maintenance on existing water systems; construct new water lines, wells or other sources of water, reservoirs, and treatment plants; replace equipment; and pay costs associated with connection or tap fees; 2.) pay related expenses such as legal and engineering fees and environmental impact analyses, or acquire rights associated with developing sources of, treating, storing, or distributing water; or 3.) achieve compliance with the requirements of the Federal Water Pollution Control Act (33 U.S.C. l et seq.) or with the Safe Drinking Water Act when noncompliance is directly related to a recent decline in quality of potable water. Grants may be issued for up to 100% of the project costs, though the limit is $500,000.

The program is available to a municipality, county, or special district under 10,000 in population. The community must also demonstrate a significant decline in the quantity or quality of water within two years of the application date.

Garden City does not qualify for the Emergency Community Water Assistance Grant program.

c. Idaho Congressional Delegation – Special Appropriation

In recent years, special appropriations, or earmarks for specific projects amended to larger bills, have become an important funding source for infrastructure projects. In essence, congressmen from each state receive applications from their constituents petitioning them to appropriate money for their project in the Federal Budget. Congressmen respond to these requests by adding language to the various bills approved by the U.S. Congress wherein money is “earmarked” in the budget for the

project. The money typically is routed through an existing program such as the State and Tribal Assistance Grant (STAG) administered by the EPA or the Water Resources Development Act, Section 595 administered by the U.S. Army Corps of Engineers. These grants are highly subjective and are awarded based on a successful lobbying effort by the grantee. The congressional offices do appear to coordinate the appropriations with other traditional funding programs such as those offered by through the state DOCs and USDA.

1) EPA - State and Tribal Assistance Grant

Occasionally, the Idaho Congressmen steer funds to specific projects through the State and tribal Assistance Grant program, which is administered by the U.S. Environmental Protection Agency. Projects have included wastewater treatment and related facilities, water supply and related facilities, environmental restoration, and surface water resource protection and development

The program requirements stipulate that design and construction assistance may be provided only for projects that are owned by public entities and the grant requires a 45% match from the grantee.

Garden City qualifies for the Section 595 program. Appropriation of funds will depend upon aggressive lobbying from the political faction. The current model anticipates up to $5 million in Congressional Appropriation.

2) ACOE - Water Resources Development Act, Section 595

In 1999 Idaho was awarded $25M in congressional authorization through the Water Resources Development Act (WRDA), Section 595, which is administered by the U.S. Army Corps of Engineers. All $25M is earmarked for specific projects. However, in 2007, the WRDA was amended to increase the limit in Idaho to $55M. Projects may include wastewater treatment and related facilities, water supply and related facilities, environmental restoration, and surface water resource protection and development

The program requirements stipulate that design and construction assistance may be provided only for projects that are owned by public entities and the grant requires a 25% match from the grantee.

Garden City qualifies for the Section 595 program. Appropriation of funds will depend upon aggressive lobbying from the political faction. The current model anticipates up to $5 million in Congressional Appropriation.

d. Idaho Department of Environmental Quality – State Revolving Fund

The SRF Program was established in 1987 by Title VI of the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act-CWA). The intent of the SRF program is to help repair and build new drinking water facilities with self-sustaining revolving funds in each State. The SRFs provide loans for construction of drinking water facilities and other activities authorized under the Act

1) IDEQ – Drinking Water Construction Loan Fund (SRLF)

The State Revolving Loan Fund provides below-market-rate interest loans to help build new or repair existing water facilities. Community water systems and non-profit, non-community water systems are eligible to participate in the Drinking Water Loan Program. Community water systems serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents. Funds originate from Congress who appropriates funds to the EPA, which then allots those funds to the states based upon set formulas. Each state is required to provide a 20% match. Idaho's match comes from a transfer to the loan account from the Water Pollution Control Account. Loan repayments and interest earnings provide the other resources for new water pollution loans. The interest rate anticipated for 2008 is 3.0%.

The loans are available to municipalities, counties, and special districts. Though not stated in the requirements, an applicant is only eligible for funds after completing a Facilities Planning Study (FPS) and Environmental Information Document (EID), achieving approval of those documents by IDEQ, Receiving an environmental clearance from IDEQ which may be a Finding of No

Significant Impact (FONSI), submitting an letter of interest to IDEQ, and ranking sufficiently high on the priority list to qualify for funds available for that fiscal year. The City must also follow appropriate law to incur debt which in Idaho requires the public to authorize a revenue bond or a judge to declare the improvements ordinary and necessary. The loan terms are 20 years.

Garden City will qualify for the Water Pollution Control SRLF program and will likely use this program after a successful bond election. The current model anticipates up to $4.6 million in SRF loans.

e. Improvement Districts

Improvement districts are allowed under Idaho Statute for implementing improvements to public facilities that benefit all property owners within the district. One type of district often used for infrastructure improvements is the Local Improvement District (LID)

1) Local Improvement District

Local Improvement Districts (LID) may be created to finance certain improvements that benefit property owners within the district. Improvements specifically named in Idaho Code include streets, alleys, sewers, storm drainage, street lighting, landscaping, water lines, parking lots, parks and other recreational facilities, etc. LID improvements may be financed with bonds, and there is no statutory requirement for voter approval. LID bonds may be issued for up to 30 years, although such bonds are usually issued for 10 to 15 years. The district may be formed voluntarily by a petition signed by at least 60% of the resident property owners subject to assessment, or mandated by a resolution adopted by a majority vote of the City Council. Improvements are paid with assessments on the property owners within the district using a front-foot method, a square-foot method or a combination of both in proportion to the benefits derived from the improvements. The LID procedure is complicated and there are a number of statutory requirements for public notice and hearings that must be published and/or mailed to affected property owners.

Garden City may want to consider an LID to implement an assessment on each property such that monthly user rates are maintained at a more affordable level.

2. Financing Summary

The following table summarizes the funding programs and suggests a potential financing program for the recommended improvements.

Table VII-5 Anticipated Project Funding

Agency	Program	Type	Rate	Term	Amount
Idaho Dept. of Commerce	Community Development Block Grant (CDBG), Public Facility or Housing (PFH)	CDBG	Not Specified	NA	$0
Idaho Dept. of Commerce	Community Development Block Grant (CDBG), Economic Development (ED)	CDBG	$500,000	NA	$0
Idaho Dept. of Commerce	Rural Development Block Grant (RDBG)	CDBG	$500,000	NA	$0
USDA Rural Development	Rural Utility Service, Water and Waste Disposal Loan	Loan	$4.25%	30 years	$0
USDA Rural Development	Rural Utility Service, Water and Waste Disposal Grant	Grant	Not Specified	NA	$0
USDA Rural Development	Rural Utility Service, Emergency Community Water Service Grant	Grant	$500,000	NA	$0
EPA	State and Tribal Assistance (STAG)	Grant	Not Specified	NA	$0
ID Congressional Delegation	Special Appropriation EPA STAG Grant	Grant	Not Specified	NA	$0
ID Congressional Delegation	Special Appropriation ACOE Section 595 WRDA	Grant	Not Specified	NA	$5,000,000
IDEQ	State Revolving Fund (SRF)	Loan	3.00%	20 years	$4,600,000
of Garden City	Local Improvement District	Assessment	4.50%	30 years	$0
Private Bank	Municipal Loan	Loan	5.00%	30 years	$0
Garden City	Pre-paid connections	Reserves	NA	NA	$0
					$9,600,000

3. Cash Flow Statement:

A cash flow statement has been prepared on a pro-forma basis depicting the anticipated revenue, expense, net revenue and cash balance in a capital account and an operation account. The cash flow statement demonstrates the wastewater utility will be a solvent enterprise throughout the design life of the equipment and the financing term. A summary cash flow statement for the first 6 years is presented below while a more detailed document is included in Appendix O.

The cash flow spreadsheet depicts the various revenue and expense streams sorted according to operating and capital accounts. The total cash on hand tracks the impact of annual net income to a bank accounts for capital projects and operation and maintenance. The assumptions relevant to the cash flow presented are an annual increase of 1.33% for residential and 2.0% for commercial to both the fixed component (base rate) and the incremental component of the monthly user rate for the entire planning period. In addition, the connection fees are increased according to the same schedule. The population

Table VII-6: Water System Cash flow Statement - Five Years

	NET INCOME	2007	2008	2009	2010	2011	2012
334	OPERATING NET INCOME						
335	Operation & Maintenance - Income		$ 2,399,732	$ 2,486,361	$ 2,576,117	$ 2,669,112	$ 2,765,465
336	Debt Service - Income		$ 1,847,073	$ 1,913,751	$ 1,982,836	$ 2,054,415	$ 2,128,577
337	Other Income		$ 58,985	$ 60,421	$ 61,600	$ 63,094	$ 64,619
338	Personnel Expense		$ (786,754)	$ (810,357)	$ (834,667)	$ (859,707)	$ (885,499)
339	Operations Expense		$ (1,136,957)	$ (3,571,066)	$ (3,678,198)	$ (3,788,544)	$ (3,902,200)
340	Debt Service - Expense		$ (205,000)	$ (205,000)	$ (205,000)	$ (867,412)	$ (867,412)
341	**Subtotal Operating Net Income**		**$ 2,177,078**	**$ (125,890)**	**$ (97,313)**	**$ (729,043)**	**$ (696,449)**
342							
343	CAPITAL PROJECT NET INCOME						
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 278,900	$ 286,663	$ 303,618	$ 311,818	$ 320,182
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ 1,514,000	$ 8,341,000	$ -	$ -
348	Capital Project Expense		$ -	$ (1,514,000)	$ (8,341,000)	$ -	$ -
349	**Subtotal Capital Project Net Income**		**$ 278,900**	**$ 286,663**	**$ 303,618**	**$ 311,818**	**$ 320,182**
350							
351	TOTAL NET INCOME		**$ 2,455,978**	**$ 160,772**	**$ 206,305**	**$ (417,225)**	**$ (376,267)**
352							
353	**TOTAL CASH ON HAND**	2007	2008	2009	2010	2011	2012
354	Capital Fund	$ -	$ 278,900	$ 565,563	$ 869,180	$ 1,180,998	$ 1,501,180
355	Operating & Maintenance Fund		$ 2,177,078	$ 2,051,188	$ 1,953,875	$ 1,224,833	$ 528,384
356	~~Total Cash on Hand~~	~~$ -~~	~~$ 2,455,978~~	~~$ 2,616,751~~	~~$ 2,823,056~~	~~$ 2,405,831~~	~~$ 2,029,564~~

and corresponding connection growth rate for 20 years is modeled as 2.25%, after which 1% is used. A $9.86 million SRF loan is modeled with payments beginning in 2011.

4. Operation and Maintenance Requirements

The operation and maintenance of the facilities require manpower, electrical power, chemicals, outside services, and replacement or depreciation. The facilities will likely continue to operate at an equivalent cost as fiscal year 2007, see cash flow statement in Appendix O, with labor as the largest operation expense.

5. Project Schedule

The schedule presented on the following page offers a potential design and construction schedule for the proposed capital improvements although the schedule remains dependant upon project funding and approvals by the regulatory agencies and the City.

6. Certification of Operators:

The current staff has the level of certification stipulated by IDEQ. The recommended improvements do not increase the level of certification required for the facilities, thus certification of operations is adequate for the Garden City water system.

Phase I Project Milestones	Task Duration	3rd Quarter 2008	4th Quarter 2008	1st Quarter 2009	2nd Quarter 2009	3rd Quarter 2009	4th Quarter 2009	1st Quarter 2010	2nd Quarter 2010	3rd Quarter 2010	4th Quarter 2010	1st Quarter 2011	2nd Quarter 2011	3rd Quarter 2011	4th Quarter 2011	1st Quarter 2012	2nd Quarter 2012	3rd Quarter 2012	4th Quarter 2012	1st Quarter 2013	2nd Quarter 2013
Adoption of Master Plan	1 month																				
Develop Project Funding/Bonding	12 month																				
Notice to Proceed on Design	3 months																				
Design Capital Improvements	12 month																				
Agency Review	3 month																				
City Review and Approval	3 month																				
Bidding	2 month																				
Award Contract	1 month																				
Construction	12 month																				

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APPENDIX A
WATER METERING DATA

Garden City Water Use

Residential Meter Readings (1000 Gallons per Day)				
Month	2005	2006	2007	Average
January	797	724	621	714
February	920	753	593	755
March	1121	658	501	760
April	966	659	980	868
May	1265	1778	1935	1659
June	2418	2390	2362	2390
July	3273	3092	3565	3310
August	4086	3908	3413	3802
September	3507	2763	2068	2779
October	1728	1646		1687
November	1205	917		1061
December	623	521		572

Commercial Meter Readings (1000 Gallons per Day)				
Month	2005	2006	2007	Average
January	390	367	401	386
February	406	431	426	421
March	378	393	356	376
April	572	371	568	503
May	1282	879	1161	1107
June	874	1256	1424	1184
July	1574	1454	1897	1642
August	1831	1824	1839	1831
September	1642	1557	1277	1492
October	1050	1044		1047
November	729	648		688
December	391	311		351

Averages (1,000 Gallons per Day)			
Month	Residential	Commercial	Combined
January	714	386	1,100
February	755	421	1,176
March	760	376	1,136
April	868	503	1,372
May	1,659	1,107	2,767
June	2,390	1,184	3,574
July	3,310	1,642	4,952
August	3,802	1,831	5,634
September	2,779	1,492	4,271
October	1,687	1,047	2,733
November	1,061	688	1,749
December	572	351	923
		Average	2,616

APPENDIX B

GARDEN CITY 2005 WATER RIGHTS INVESTIGATION REPORT

Garden City Water Rights – A Preliminary Investigation

Purpose

The purpose of this report is to identify and list the known water rights, points of diversion, and the pumping capacities of wells used to supply the City of Garden City municipal water system. This report also seeks to suggest courses of action to protect existing water rights and to identify water right issues requiring further research, based upon information provided by Garden City and from records maintained by the Idaho Department of Water Resources (IDWR).

Introductory Information on Idaho Water Rights

All the waters in Idaho, when flowing in their natural channels, including the waters of all natural springs and lakes within the boundaries of the state, and ground waters of the state, are public waters by authority of the constitution and statutes of the State of Idaho.

The constitution of the State of Idaho along with state statutes guarantees individuals and lawful entities the right to appropriate the public waters of the State of Idaho. When a private right to the use of public waters is established by appropriation, a water right is established that is a real property right, much like property rights in land. The constitution and statutes of the state of Idaho protect private property rights, including water rights.

A water right is the right to divert the public waters of the state of Idaho and put them to a beneficial use, in accordance with one's priority date (IDWR, 2005).

Acquiring a water right in the State of Idaho consists of four consecutive components:

1. A Potential user must submit an application to the Department of Water Resources for specific water rights.
2. The Department of Water Resources grants a conditional permit for a specific development period.
3. The Potential user submits proof of beneficial use of the water.
4. The Department of Water Resources then performs a beneficial use exam and issues a water right license.

Priority Date

A priority date is the date the Department of Water Resources issues the conditional use permit. The priority date is used to determine who gets to use water when there is a shortage. If there is not enough water available to satisfy all of the water rights, then the individual or entity with the oldest (or senior) water rights get their water rights satisfied first and so on in order until there is no water left. It is the individual or entity with the new (or junior) water rights that do not get water when there is not enough to satisfy all

the water rights. This practice is often described by "first in time, first in line" under western water law (IDWR, 2005).

Beneficial Use

The state defines domestic use, irrigation, stock-watering, manufacturing, mining, hydropower, municipal use, aquaculture, recreation, and fish and wildlife as beneficial uses. The amount of the water right granted is the amount of water put to beneficial use. Due to the beneficial use requirement, a water right (or a portion of a water right) may be lost if it is not used for a continuous five-year period. (IDWR, 2005).

Diversion

A diversion is a structure used to divert the water from its natural source. Typical diversion structures include pumps, head gates, ditches, pipelines, and dams, or some combination thereof. A diversion is generally required to establish a water right. The Idaho Water Resource Board is authorized to acquire water rights without diversions. These water rights are called "instream flow" water rights, and are typically authorized for purposes of protecting some public interest in a natural stream or lake, such as recreation, wildlife, or natural beauty. A water right may also be acquired to water livestock directly from the stream, which is called an "instream livestock" water right.

Water law in Idaho is based on the appropriation doctrine, because water rights in Idaho are based upon diversion and beneficial use of water. The appropriation doctrine has also been called "first in time is first in right", because the priority date determines who gets water when there is not enough to go around. The water right is said to have "appropriated" water. A water right under the law of the state of Idaho can be established only by appropriation (IDWR, 2005).

Surface Water

Prior to May 20, 1971, there were two ways in which a right to surface water could be established. The first way was to simply divert water and apply it to beneficial use. These water rights are called "beneficial use", "historic use" or "constitutional" water rights. The priority date for a water right established by this method is the date water was first put to beneficial use.

The second way to establish a right to surface water was to comply with the statutory method in effect at the time the water right was established. The current statutory method is an application/permit/license procedure that is described further below. The priority date for a water right established by this method is the date of filing the application with IDWR, and this priority date is shown on the license that is issued when the process is completed. Prior to 1903, Idaho had a "posted notice" statute, which provided for posting of a notice at the point of diversion and recording the notice at the county recorder's office, followed by actual diversion and beneficial use of water, among other things. If the statutory requirements were met then the priority date for a water right established under the posted notice statute was the date of posting the notice. Water rights established

under the old statutory method are called "Posted Notice" water rights, but are considered beneficial use rights because they are not confirmed by a license or decree.

As of May 20, 1971, there is only one way to establish a right to surface water, and that is by following the application/permit/license procedure that is described further below. The one exception to this rule is for water rights used solely for instream watering of livestock. (IDWR, 2004).

Ground Water

Prior to March 25, 1963, there were two ways to establish rights to ground water, which are the same methods described above under Surface Water. As of March 25, 1963, there is only one way to establish a right to ground water, and that is by following the application/permit/license procedure that is described further below. There is one exception to this rule. A "beneficial use" right to ground water may still be established for domestic purposes. "Domestic purposes" is defined by statute as "(a) the use of water for homes, organization camps, public campgrounds, livestock and for any other purpose in connection therewith, including irrigation of up to one-half (1/2) acre of land, if the total use is not in excess of thirteen thousand (13,000) gallons per day, or (b) any other uses, if the total use does not exceed a diversion rate of four one-hundredths (0.04) cubic feet per second and a diversion volume of twenty-five hundred (2,500) gallons per day." The exception for domestic purposes does not include "water for multiple ownership subdivisions, mobile home parks, commercial or business establishments" unless the use does not exceed a diversion rate of four one-hundredths (0.04) cubic feet per second and a diversion volume of twenty-five hundred (2,500) gallons per day. (IDWR, 2004).

Issues Involved in Increasing the Pumping Capacity of a Well (Point of Diversion)

The State of Idaho issues permits to develop a water right at a point of diversion through the application/permit/license process. For licensing, the State of Idaho requires the submittal of a "proof of beneficial use" which represents the results of a flow test for the well. The license for the water right assigns a maximum diversion rate based on the IDWR's examination of the proof of beneficial use. The maximum diversion rate cannot exceed the calculated or actual flow from the well.

If later modifications to the well (more efficient pump, more powerful motor, or re-installed screen) result in a flow capacity that exceeds the maximum diversion rate stated in the license, the State of Idaho requires the submittal of an application for additional water right, which if granted, is added to the existing water right (Phone Conversation with IDWR, 8/8/05).

Garden City Water Rights and Water System Data

Demographics and Water System Data

Garden City has an estimated population of 10,985 persons and has approximately 3,319 residential connections, and an estimated 4,590 total connections. A typical Idaho household in the Boise area consumes approximately 450 gallons of water per day according to numbers published by United Water (large purveyor of municipal water in the Boise area). Other studies suggest the per capita domestic water consumption in Ada and Canyon Counties at 194 gallons per day. Communities that use their domestic water system for outdoor irrigation experience consumption rates during the summer months that approach five times winter water consumption rates. In addition, peaking factors for daily fluctuations range are on the order of 2 times the average daily demand. Estimated system demands using 450 gpd for each connection are presented in Table I below:

Table I – Municipal Water System Demand

Water System Parameter	Gallons Per Day (Millions)	Gallons Per Minute
Average Daily Demand (winter)	2.1	1,458
Average Daily Demand (summer)	10.5	7,290
Peak Daily Demand (summer)	21.0	14,580

The values presented above are based on published information in the Boise area. More refined data can be developed using the actual water records maintained by the City.

Garden City Water Rights Descriptions

Water Rights

Based on our research, the City of Garden City obtained 10 separate water rights by license which correspond to City wells 1-10, and is also using water from Wells #11 and #12 whose water rights appear to be owned by other parties (see Table II and footnotes). It is unclear at this time whether or not Garden City owns the properties or the water rights to wells #11 and #12, indeed, per the IDWR, the water right for Well #11 is owned by Green Acre Properties and the water right for Well #12 is owned by United Water.

Points of Diversion

The municipal drinking water system is currently supplied by wells 3, 5, 6, 7, 8, 10, 11 and 12 (Garden City Water System Consumer Confidence Report-July 2005). Wells #1 and #2 were taken out of service several years ago, and Well #2 was plugged and abandoned in 1990. The corresponding water rights for Well #1 may have expired, although it remains listed on the IDWR database. The diversion point for the water right associated with Well #2 is located in the same quarter, quarter section as the diversion point for Well #4. Under current procedures in the State of Idaho used to transfer water rights to a new diversion point, an application is not required if the diversion point lies within the same quarter, quarter section. Therefore, it is probable that the water right for Well #2 remains active and can be withdrawn from the diversion point associated with

Well #4. However, Well #4 has been inactive for a period of time and the pumping equipment may need to be overhauled before it is placed in service. Well #9 is not currently functional pending repairs (per Garden City staff).

Maximum Diversion Rates for Water Rights

The City of Garden City can divert up to 23.30 CFS (10,470 gpm) from the water rights associated with wells 3-10. Garden City has total maximum diversion rates 24.2 CFS (10,865 gpm) if water rights connected with wells #11 and #12 are included. Maximum diversion rates even without Well #11 or Well #12 exceed the average daily demand.

Pumping Capacities

Garden City currently has 6,300 gpm of pumping capacity from the wells that are now operational (see Table II). This total excludes estimated capacities of Wells #4 (800 gpm or more) and Well #9 (300 gpm).

Table II – Garden City Water Rights and Other Rights Associated with Wells 1-12

Water Right	Priority Date	Source/Original Point of Diversion	Type/ Beneficial Use	Maximum Diversion Rate (CFS)	Maximum Diversion Rate (GPM)
63-2872*	1951-08-04	Groundwater/Well #1	License/ Municipal	1.15	516
63-2895	1952-02-13	Groundwater/Well #2	License/Municipal	1.5	673
63-3124	1958-02-28	Groundwater/Well #3	License/Municipal	3.56	1,598
63-5330	1927-01-01	Groundwater (Well #5)	Statutory Claim/Municipal	1.95	875
63-7805	1973-06-01	Groundwater (Well #4)	License/Municipal and Irrigation of 978 acres	1.11	498
63-8005	1974-07-10	Groundwater (Well #9)	License/Municipal	4.80	2,154
63-9134	1978-06-27	Groundwater (Well #7)	License/Municipal	1.43	642
93-9136	1978-07-01	Groundwater (Well #6)	License/Municipal	1.38	619
63-10270	1984-10-18	Groundwater (Well #8)	License/Municipal	3.10	1,391
63-11487	1990-10-18	Groundwater (Well #10)	Permit	4.5	2,020
63-9144**	1978-04-25	Groundwater (Well #11)	License (Green Acre Properties)	1.2	539
63-8357**	1976-08-16	Groundwater (Well #12)	License (United Water)	1.18	530
Total Allowable Diversion Rate Wells 3-10 (Including right for #2)				23.3	10,470
Total Allowable Diversion Rate Wells 1-12				25.90	12,055

** These water rights have probably lapsed. ** These water rights do not appear to be owned by Garden City.*

An estimated pumping capacity of 14,600 gpm could be available if all wells were repaired and operated simultaneously, which would exceed the sum of maximum diversion rates from all water rights.

Footnotes on Points of Diversion Listed Above by Well Number:

Well #1, constructed in 1951, has had its equipment removed, and the property was sold to Western Building Maintenance. This was the sole point of diversion for the water right, and the well has not been used for well over five years. There is no record of a transfer of point of diversion, so this right may have lapsed.

Well #2, constructed in a city park in 1952, was abandoned in 1990 after Well #4 was constructed near the same location. It is assumed that the water right associated with Well #2 may be utilized through Well #4 although Well #4 was assigned its own water right as well.

Well #3 was constructed at East 43rd and Adams Streets in 1958 and is still in service.

Well #4, located at the city park, was drilled to replace well #2. Well #4 equipment is presently being overhauled, and is not currently in use. The maximum output for this well has been estimated to be at least 800 gpm and possibly significantly higher (B. Burger, correspondence, 8/2/05).

Well #5 was constructed by Garden City when water rights were transferred from Martin Zachreson. This is near the state fairgrounds, and is used for irrigation purposes.

Marigold Well #6; a rate of 3 CFM was requested but IDWR granted lower flow based on calculated pump yield.

Well #7, the water right was obtained by Gary Land Development Company in collaboration with Phillips Enterprises by the construction of the original well, located at Bunch Court/Gary Lane. A new well was constructed later in 1978, coincident to the transfer of the water right to the City of Garden City.

Well #8, is located on Garrett between Mtn. View and Chinden according to the driller's report.

Well #9, was constructed when Well #5 was being rehabilitated. Well #9 is not operating, pending repairs.

Well #10 (Joplin Well) Max output 1600 gpm.

Well #11 Shenandoah Mobile Home Park Hometown America. System is tied into Garden City at 3 points. Well #11 supplies supplemental water to Garden City water system. Any documentation within the IDWR files that ties Garden City to this well or water right has not been found.

Well #12 Millstream Subdivision Well. T4N R1E Sec 25 SW of NW. Well was apparently traded to Garden City by United Water at some time in the past. Details of the agreement are not well known, but a search of Garden City's files is recommended.

Well Pumping Rates –Limitations

The maximum diversion rate stated in each water right license governs the legal quantity of water a license holder for water right may use. Table III below summarizes the

amount of water that the City of Garden City can legally pump from the wells at any given time along with the reported pump capacities at each well. The last column in the table considers the limiting factor for each well, the physical means of extraction or the licensed diversion rate, to arrive at an available water flow.

Table III – Summary Legal and Practical Well Production Capacity

Water Right	Source/Original Point of Diversion	Well Physical Output (GPM)	Licensed Diversion Rate (GPM)	Maximum Available Diversion (Legal or Physical) (GPM)
63-2872	Groundwater/Well #1	0	Presumed Lapsed	0
63-2895	Groundwater/Well #2	Not in service	673	Transferred to Well #4
63-3124	Groundwater/Well #3	900	1,598	900
63-5330	Groundwater (Well #5)	1,400	875	875
63-7805	Groundwater (Well #4)	800*	498 + 673	498 + 302**
63-8005	Groundwater (Well #9)	300	2,154	300
63-9134	Groundwater (Well #7)	400	642	400
93-9136	Groundwater (Well #6)	400	619	400
63-10270	Groundwater (Well #8)	800	1391	800
63-11487	Groundwater (Well #10)	1,600	2,020	1,600
63-9144	Groundwater (Well #11)	400	539	400
63-8357	Groundwater (Well #12)	400	530	400
Totals		**7,400**	**11,539**	**6,875**

**Well #4 may have pumping capacity as high as 2600 GPM, but the more conservative number was used for this table. Well #2 was abandoned, therefore, assume the water right can be pumped from well #4 since the diversion points are in the same ¼, ¼ section. The maximum available diversion rate is equal to Well #4 total capacity plus the capacity from the licensed diversion rate for Well #2 that can be pumped using the physical equipment installed for Well #4.*

***Includes 498 gpm licensed for water right 63-7805 + 302 gpm utilized from water right 62-2895*

The data indicates the licensed diversion rate exceeds the ability of the pumping equipment to provide the prescribed quantity of water to the delivery system. However, there are a couple of anomalies in the data worthy of mention. The well equipment for Well #5 exceeds the licensed diversion rate.

The estimated average daily demand during the summer of 7,290 gpm is well below the allowed diversion rate of 11,539 gpm although the ownership of the water right for Well #11 and Well #12 has some uncertainty. The licensed diversion rate without including the water from these two wells still exceeds the average daily demand. However, the current maximum available diversion rate is insufficient to meet the average daily demand during the summer months and is well short of the peak daily summer demand

Well Equipment and Pumping Capacities

Beyond the right to extract water from the ground water resources of the State, an analysis of water supply should include the physical ability to provide water to the point of use through diversion apparatus, which in the case of this analysis for Garden City means pumping systems installed on groundwater wells. The total pumping capacity of the operating wells is shown in Table IV below. Wells #4 and #9 were not included in the total, because they are currently not in operation. Based on discussions with City staff, a minimum capacity of 800 gpm can be assumed for well #4 and a capacity of 300 gpm can be assumed for well #9 when they are returned to operation.

Table IV – Well Pump Production Capacity

Well Number	Pump Type	Motor MFG	HP	Reported Max GPM	Available Capacity GPM	Owned Available. Capacity GPM
3	Vertical Turbine	G.E.	130	900	900	900
4	Vertical Turbine?	Unknown	Unknown	* 800+		
5	Vertical Turbine	US Motors	125	1,400	1,400	1,400
6	Submersible	No Record	Unknown	400	400	400
7	Submersible	No Record	Unknown	400	400	400
8	Vertical Turbine	G.E.	150	800	800	800
9	Submersible	No Record	Unknown	*300		
10	Vertical Turbine	G.E. Tricad	250	1,600	1,600	1,600
11	Submersible	No Record	Unknown	400	400	
12	Submersible	No Record	Unknown	400	400	
Total				**7,400****	**6,300**	**5,500**

** Not operational; undergoing repairs. Capacity value is an estimate*
***Sum of Capacity from operational wells (on the date of this report).*

The data in Table IV suggest the total capacity of the existing pumps is roughly equivalent to the estimated demand for water. However, the currently available capacity is insufficient because of current maintenance and repair work on Well #4 and Well #9. The situation is further exacerbated if ownership or use agreements are not in place for Well #11 and Well #12.

SUMMARY OF FINDINGS

In summary, the current water rights analysis results in several conclusion concerning the water rights associated with the City of Garden City and introduces several more items that require additional information or should receive further attention to satisfactorily resolve before conclusions can be drawn. The conclusions drawn include:

- The water rights for the City of Garden City are not complete based on readily available data.

- The licensed diversion rate is sufficient for the water demand for an average day during the summer months but may fall short of the peak day demand during the summer months. This study did not address water storage capabilities, which may be a more cost effective way to meet the demand imposed by the customers on a peak summer day.
- The diversion equipment, if completely operational, appears to have nominal capacity to provide sufficient water to the distribution system for the demand of an average summer day. However, because of water right limitations, Well #5 is underutilized and the average daily summer demand cannot be met. In addition, the system has neither redundancy nor extra capacity to accommodate future growth.
- Due to maintenance and repair issues, the current capacity of the diversion equipment appears to be insufficient to provide adequate water to the delivery system for the demand associated with an average summer day. Storage facilities likely mitigate the full impact of this deficiency.
- Without the benefit of water associated with rights for Well #1 and Well #2 along with the questioned ownership of Well #11 and Well #12, the ability to physically provide adequate water to the distribution system appears to be impaired.

It is our suggestion that the following issues merit further examination. Some items may require a detailed search of Garden City records or other sources, others may require action on the part of Garden City to safeguard existing water rights, such as submittal of water right applications to IDWR for transfer of existing rights.

1. Additional research into water rights associated with Wells #1 and #2 to verify activity and ownership (IDWR records on-line do not indicate inactivity or transfer).

2. Protect the water right associated with Well #4 by the repair of the well, other construction of a new well (along with a Transfer of Water Right Application).

3. Verify ownership of water rights associated with Well #11 and Well #12 by a detailed examination of agreements between United Water and the City of Garden City and the agreement between Garden City and Shenandoah Mobile Home Court.

4. If the investigation identified in item #3 reveals Well #11 and/or Well #12 is leased, purchase the well property and water rights associated with the diversion points.

5. Submit a Transfer of Water Right application to IDWR to combine all water rights, listing all points of diversion (wells) to reflect the way in which water is distributed from wells to areas of use within the city limits.

6. Upgrade wells that produce significantly less flow than the maximum allowable diversion rate and if this allows the owner to retain the maximum diversion rate.

7. Apply for additional water right at Well #5 to bring the maximum allowable diversion rates up to match the well capacity.

8. Conduct a study to compare the expenses of acquiring additional water rights versus the construction of more storage facilities.

APPENDIX C
GARDEN CITY WATER SYSTEM ASSET LIST

GARDEN CITY WATER SYSTEM INVENTORY LIST

WELL #3									
Worksheet Date September 2006									
	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost		
Asset									
Well Building (block)	30	fair		20		20			
CI Room (wood)	30	fair/poor		5-10		7			
Well 250 hp GE	38844	good/fair		5		5	35k		
Pressure Tank							removal		
Electrical System	38941	good/fair		8		8	2k		
Distribution Piping (<4")	35-40	fair		30		30	6k		
Internal Plumbing (<4")	10-15	fair		7		5	750		
Pressure and Check Valves	10-15	fair		8		5	2k		
PO4 pump	10	fair		7		2	450		
Chem. Tanks	8	fair		8		5	350		
Meter									
Analyzers (42 pd p40/s40)	none								
System Inventory	System Inventory	SERIAL/AMPS	HERTZ	CATAOLOG#	PSI	RPM	VOLTS HP		
Well # 3	Well # 3		60	HS5F5AS			240/480 secondary voltage		
System Inventory Well #3	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
McCrometer Flow Meter	E02-00055	E7000-000					600		
Chlorine Feed Pump	F690	35E523W181	15/7.5	60	VL1309A		3450	115/220	115/220
Paco Pump Adapter	AG1B0019101	VM 10-4			VL 10-411	300 MAX			
Sprinkler Control Valve	170511	RD600-INT							
Pump Motor	FJH616102	5K6278XH508A							
Chemical Feed Pump								115	150
Safetronics	9709102730	CIMR-H3U 4075	0.8	50/60					
Mercury Pressure Switch	T09L				PXR105100A0010021	5-50			
Chart Recorder	931208133808	PXR 105							
Eyewash Station	AR8380	7260B							
Chlorine Gas Detector	AR 83850		0.5	50/60					115
Chlorinator	AT-38703	U-26363							
Scales	AT-15631	U-23338							
Cla-Valve		660-11-1G			8-660-11AB				
SYSTEM INVENTORY LIST	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
WELL #4									
Well Pump G.E.		BF77A			HO120S2SCH				
Pump Adaptor National Pump		N-8-280							
SYSTEM INVENTORY LIST									
WELL #4									
Worksheet September 2006	Expected Useful Life	Condition	ervice Histo	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost		
Asset									
Filter Building (block)									
Well and CI Room (wood)									
Well 250 hp GE									
Storage Tank									
Recycle Pump									
Generator									
Auto Transfer									
VFD									
Media Filters									
Pneumatic Values									
Electrical Panels									
Distribution Piping (>4")									
Internal Plumbing (<4")									
Pressure and Check valves									
CL and PO4 pumps									
Chem. Tanks									
Controllers									
Analyzers (PH, CL, Temp.)									
Compressor									

GARDEN CITY WATER SYSTEM INVENTORY LIST

Location 405 E. 48th Street
System Inventory List
Well #5

Assett	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Filter Building (block)	30+	Good		28	2	28	
Well 125 hp GE	3-7	Good/Fair			2	2-5	35k
Storage Tank	30	Good		28	2	28	200k
Recycle Pump	10	Fair/Poor		5-8	2	6	45k
Generator	20	Good/Fair		18	2	18	4k
Auto Transfer	7-10	Fair/Poor		6	2	6	25k
VFD	15	Good		12	2	12	150k
Filter Vessel	25	Good		23	2	23	20k
Filter Media	5-10	Fair/Poor		2-7	2	2-7	1k
Pneumatic Valves	8-12	Fair/Poor		6-8	2	6	3k
Electrical System	8-12	Good		6-8	2	6	12k
Distribution Piping (>4")	35-40	Good		32	2	32	1.5k
Internal Plumbing (<4")	10-15	Fair/Poor			2		
Pressure and Check Valves	10-15	Good		8	2	8	6k
CL and PO4 pumps	10	Good-Poor			2		1.8k
Chem. Tanks (3)	8	Fair		5	2	5	
Controllers		Good			2		5k
Analzers (PH, CL, Temp.)	8	Fair		5	2	2-5	2k
Compressor	10	Poor		5	2	1-4	

Pneumatic Valves		**Mag. Meters**		**Butterfly Valves**	
		1-12"		5-12"	1-8"
13-8"		2-10"		3-10"	2-6"
		1-8"			

System Inventory Well #5

	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
Qunicy Air Compressor	20021209-0052	0001006D00207							
Chemfeed VFD for Phos. Milton Roy	PP1918	SP10701571							
Baldor Motor	346794X269		3.4/1.7	60	VM 3546		1723	230/460	1
Pump	H0125V2SLG	AA88							
Kinetico Water Softner	60	546011							
Sod. Hypo Chlo. Generations	J/02/1277	CT-75							
Chlorec gen. cell power supply	104091	S55309B4							
Clortec Controller	PS751910	CT-AB-VO-BL-GC							
CL2 Pump Control	PP1773	SP10701500							
C/2 Feed Pumps	355617410261	952X8PM4NNN	3.2/1.8		VSWDM3546	150	1725	1	1
Pump 1	724058-2	C5							
Pump 2	35B517Y10261	G3XMLNN736605003			VSDWDM3546				
Back wash water meter	51031391000	50w2h-hr99/rc5b4aa							
Wash Flow Monitor	51031391000	50w2h-hr99/rc5b4aa							
Chlorine Sol. Storage Tank	V-03-01640								
Back wash water valve						230/250f			
Air Compressor/ Quincy	20021209-0052	0001006D00207							
Quincy Compressor									
Hach C12 Analyser CL17	21200006384								
Raw Water Prod. Meter Endress Hauser	51030D91000	Model Promag 50							
Raw Water Chlorine Analyzer	21200006381	CL 17							
Finished water Chlorine Analyzer. Hach	21200006384	CL 17							
Control Room Power Trans.	J03B05681				V48M28F45R				
Finished water turbidimeter. Hach	n/a	1720 D							
Filter 1 Production Meter	51030E91000	Promag 50							
Filter 2 Production Meter	51031191000	Promag 50							

System Inventory Well # 5

	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
Endress Hauser Promag 50	51030D91000	50w2h-hr99/rc5b4aa							
Hach CO C12 analyser	21200006381								
Backwash Valves on Filter 1	M19418								
Flow Meter	51030E91000	50w2f-hr991rc5b4aa							
Effluent Filter 1 Flow Monitor	51030E91000	50w2f-hr991rc5b4aa							
PH Monitor influent side	102-203946	54eph/orp							
Rana water flow monitor	51030D91000	50w3h-hr991rc5n4aa							
Backwash control valve	ML 935	SHE 90							
Backwash valves on filter 2	m19391								
Raw H20 valves on filter 1	9644683r001	seh90							
Irritrol rain dial spinkle control	31403	rd900-int							
Distribution Transformer	j03b05681	v45002			v48m28f45r				
Raw Water Valves on filter 2	m19387	sch90							
Liebert series surge sup.	220585	1m0602 77xarse							
Well 5 Motor specs		AA88	142	60	HQ125V2SL6		1785	460	125
Inverter Duty			149	180-1800					
95 Gallon Backwash Water Reclaim Tank									
Air Conditioner Amana	302116372	PTC153A35AD							
reclaim pump									

Location 6150 Riverglen

GARDEN CITY WATER SYSTEM INVENTORY LIST

System Inventory List

Well #6

Worksheet 2005 Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Well and CI Room (wood)	15+	Fair		7		7	
Well Submersible	5-8	Good		5		5	30k
Pressure Tank		Fair					remove
Electrical System	8-12	Fair		8		8	2k
Distribution Piping (>4")	35-40	Fair		30		30	6k
Internal Plumbing (<4")	10-15	Fair		7		5	750
Pressure and Check Valves	10-15	Fair		8		5	
PO4 Pump	10	Fair		7		2	450
Chem. Tanks	8	Fair		5		5	650
Meter							
Analyzers (PH, CL, Temp.)	none						
Check Valves	Press Regulator			PO4 pump 6gpd			
2-4"	1-4"						
1-6"							
System Inventory							
Well #6							

	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
McCrometer 6" Flow Meter	61-02-5B				#2.5"-61-02				
Pulsatron Chem Feed	920115337		6					115	
W & J V100 Chlorinator	AX 42871	Unit # V26363							
C12 Regulators					Kit # V25957				
Westinghouse transformer				60				204 X 480	
C12 Gas Detector	AR 82953		5		series 50-135			115	
W & T Scales	A-13535	V23338							
Power Meter									

Location 7201 Savanah Lane

System Inventory List

Well #7

Worksheet date August 2005

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Well and CI Room (wood)	15+	Fair/Poor		10		10	
Well Submersible	5-8						
Electrical System	8-12	Fair		7		5	2k
Distribution Piping (>4")	35-40	Fair		30		25	6k
Internal Plumbing (<4")	10-15	Fair/Poor		7		2	750
Pressure and Check Valves	10-15	Fair		8		8	
CL and PO4 pumps	10	Fair		7		2-5	450 each
Chem Tanks (2) 200g	8	Fair		5		5	350 each
Meter	10-15	Poor				0	700
Analyzers (PH, CL, Temp)	none						
PO4 pump 6 gpd 100s/92r	1-6 " Check Valve			4" Press. Actuator			
CI pump 24 gpd 100s/73r	1-6 " Gate Valve						
System Inventory	Well #7						

	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
Westinghouse Power Trans	JA3C4837	2520K11505NH260						240/480	
L2 Series E Plus	920218366								
P. 05 Chem Feed mp	920218368								
McCrometer Flow Meter	61-82-296				6-61-82				
Regal Chlorimeter	0198-0187	7001							
Vacuum L12									
Auto Transfer Switch ornam	C030482859	OTPLL-5602507	600		H55FLOAS				

Sys. Invent. Well #7	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
Micotel Auto Dialer	2051-02695	MCS250							
T Cylinder Scale #1	AX32800	V23338							
T Cylinder Scale #2	BC00621	V29438		series 55-340					
Dunfoss VFD							8000 aqua		
Licbir Surge Suppressor	220586	LMO60277XARSE			LM series				
Chessel Chart Rec	9207-4717								
Endresshauser Flow/Meter	55003616000			50w2f-h10a1re5b4aa					
C1 Press Pump	36C03W378F5	C4007072epl9a10			85.70008		3450	5/20-2	3
RO4 UFD US Filter	PP1755		5					230	1/2
PO4 Chem Pump	34679 4x26a		3.4/1.7		VM 3541		1725	230/460	1
Pump Motor General Elect.		5k5449d16026	285				1790		256
Pump	0483x5es5m2n	733225-1							
Cla Valve					3-61-2				

GARDEN CITY WATER SYSTEM INVENTORY LIST

Location 9162 Mountain View
System Inventory List
Well # 8
worksheet August 2005

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Well and CI Room (wood)	15+	Fair					
Well 150 hp Turbine	5-8	Fair		1		1	35k
Electrical System	8-12	Fair		7		5	2k
Distribution Piping (>4")	35-40	Poor		30		25	6k
Internal Plumbing (<4")	10-15	Fair/Poor		7		1	200
Pressure and Check Valves	10-15	Fair		8		8	
CL and PO4 pumps	10	Fair/Poor		7		2-5	450
Chem Tanks (2) 200g	8	Fair		5		5	350
Meter	10-15	Poor				0	700
Analyzers (PH, CL, Temp)	none						
PO4 pump 12 gpd 182s/90r		1-10" Check Valve		4" Press. Actuator			
CI pump 42 gpd 100s/80r		1-12" Gate Valve		1-8" Butterfly			

System Inventory
Well #8
worksheet August 2005

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Well and CI Room (wood)	15+	Fair					
Well 150 hp Turbine	5-8	Fair		1		1	35k
Electrical System	8-12	Fair		7		5	2k
Distribution Piping (>4")	35-40	Poor		30		25	6k
Internal Plumbing (<4")	10-15	Fair/Poor		7		1	200
Pressure and Check Valves	10-15	Fair		8		8	
CL and PO4 pumps	10	Fair/Poor		7		2-5	450
Chem Tanks (2) 200g	8	Fair		5		5	350
Meter	10-15	Poor				0	700
Analyzers (PH, CL, Temp)	none						
PO4		1-10" Check Valve		4" Press. Actuator			
CI pump 42 gpd 100/s/80r		1-12" Gate Valve		1-8" Butterfly			

System Inventory
Well #8

	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
C12 Chem Feed Pump	105101459	Sp04savtclv03							
Cla-val	61-02-14b				4-61-02				
Sparling Flow Meter	102805								
General Electric ???	BXJ222119	K6278XH625	173.5					460	
PO4 Pulsatron/Pulsafeeder	M40917053	LB03SAPVLXXX			Series Aplus				
Power Transformer	2551-12625-010		42/21		1051FH260			240X480	
Well Pump	BXJ222119	5K6278XH625 A							
Isco Sampler									
Monitor 5									
Vacuum Pump									
Pump 2									
EIT open channel flow recorder									
Honeywell									
Honeywell									
Pump 2									
Pump Adapter Peerless	232530								

GARDEN CITY WATER SYSTEM INVENTORY LIST

System Inventory List

Well #10

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Filter Building (block)	30+ yrs	Good	na	28 yrs	2 yrs	28 yrs	
Well and Cl Room (wood)	30+ yrs	Fair/Poor	na	28 yrs	2 yrs	28 yrs	
Well 250 hp GE	3-7 yrs	Good	05 rebuilt	5-7 yrs	.5yr	5-7yrs	35k
?	30 yrs	Good		28 yrs	2 yrs	28 yrs	200k
Recyle Pump	10 yrs	Good		8 yrs	2 yrs	8 yrs	3k
Generator	20 yrs	Good		18 yrs	2 yrs	18 yrs	45k
Auto Transfer	7-10 yrs	Fair		6 yrs	2 yrs	6 yrs	4k
VFD	15 yrs	Good		12 yrs	2 yrs	12 yrs	25k
Media Filter Vessels	25 yrs	Good		23 yrs	2 yrs	23 yrs	150k
Media	5-10 yrs	Good/Fair		6-8 yrs	2 yrs	6-8 yrs	20k
Pneumatic Valves	8-12 yrs	Good/Fair		6-8 yrs	2 yrs	6-8 yrs	1k each
Electrical System	8-12 yrs	Good/Fair		6-8 yrs	2 yrs	6-8 yrs	3k
Distribution Piping (>4")	35-40 yrs	Good/Fair		30 yrs	2 yrs	30 yrs	12k
Internal Pluming (<4")	10-15 yrs	Good/Fair		8 yrs	2 yrs	8 yrs	1.5k
Pressure and Check Valves	10-15 yrs	Good/Fair		8 yrs	2 yrs	8 yrs	
CL and P04 pumps	10 yrs	Fair		8 yrs	2 yrs	1-6 yrs	450.00 each
Chem. Tanks	8 yrs	Fair/Poor		6 yrs	2 yrs	1-2 yrs	350.00 each
Analyzers (PH, CL, Temp.)	8 yrs	Fair		5 yrs	2 yrs	2-5 yrs	5k
Compressor	10	Poor		5 yrs	2 yrs	1-4 yrs	2k

Pneumatic Values	**Check Valves**		**Mag. Meters**		**Butterfly Valves**		**Cla-Val**
13-8"	2-6"		3-10"		2-12"	1-8"	1-6"
	1-4"		1-8"		2-10"	2-6"	

Well #10 cont, inventory

	SERIAL #	MODEL#	APMS	HERTZ	CATALOG#	PSI	RPM	VOLTS	HP
Air Compressor	20021209-0016	0001006D00207							
Solenoid activated control valve					6-61-02				
Solenoid activated control valve					4-50-01B				
Motor GE Triclad		SKS449DT6026	285				1790	460	250
Frame 1449tp20 type KS	?XJ6492043								
Phosphate Chemical Feed Control Panel	SP 10701501	US Filter							
Phosphate Chemical Feed Pump	733225-1	733225-1							
Variable Frequency Drive		VLT 8000							
Plate Specifications									
Power Meter/Gas meter	442390								
Cla/val	50-401-53D				4-56-01B				
Cla/val	61-02-17E				6-61-02				
Filt House									
Control Panel -Us filter	502143				PC sle5/05			120	260
Endress Hauser Promag 50	50w2fhr991rc5b4aa								
RH Monitor	10705	54E Ph/orp							
RH Monitor	10106	54 E Ph/orp							
Hack c12 analyzer influent	21200006382	P # 54400-60							
Hack aquatrin/som	211000016148	P #51350-60							
Hack power supply HVCD	21200030654	P #5201060							
Endress Harser	51031291000	50w2fhr1rc5b4aa							
Flow Monitor									
Sprinkler Control Rain Dial									
Recycle pump	fn6262030002		46-23	60		3520	230/460	20	
Pump Ruhrpmper	03-400258					3550			
Filter #1	#1 m 19376								
	#2 19372								
	#3 19378								
Raw Water Actuator	#1 M19339	seh90							
	#2 19397								
	#3 19392								
Valve K									
Qunicy Air Compressor	023-15694-18	Qifd 0010							
Filter #2	#1 m 19277								
	#2 19296								
	#3 19471								
Raw Water Actuator	#1 m 19393								
	#2 19386								
	#3 19389								
Asco Air Solenoid				EF80172624solinoid					
Enders H	5103149100			50w2hhr99qre5b4aa					
Recycle tank disc valve	m20742	seh90							
Backwash control valve	19337	seh90							
Backwash tank discharge control valve	M20742	SHE 90							
Filter #2 Endress Hauser	51030F91000	50W2F-HR99IRC5B4AA							
Filter #1 production meter	51031291000	50W2F-HR99IRC5B4AA							
Well pump motor US Motors	5K5449D16825								
Backup Power Generator	DFEH-5602637	D030496250							
Reclaim pump		03-400258							
Chart Recorder	9207-4717	392							
Programmable logic controller	520203950005	US5500-14-N2-AAT2							
Raw Water production meter. Endress	5500361600	50W2F-HLOARC5BAA							
Gas Operated Room heater	30011021406-0724	PU 50SEM0163							
Air Actuator Solenoid		pme 112 caaa							

GARDEN CITY WATER SYSTEM INVENTORY LIST

System inventory list

Well #11

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Well Building(block)	30+	Good	na				
Well (submersible)	5-8	Fair/Poor	10			10	
Pressure Tank		Fair/Poor					removal
Electrical System	8-12	Poor	7			5	2k
Distribution Piping (>4")	35-40	Fair		30		25	6k
Internal Plumbing (<4")	10-15	Poor*		7		2	750.00
Pressure and Check valves	10-15	Fair		8		8	
CL and PO4	10	Fair/Poor		7		2-5	450.00 ea.
2-Chem. Tanks (200 gal/ea)	8	Fair		5		5	350.00 ea
Meter		none				0	700.00
Analyzers (PH, CL, Temp.)		none					

and repair. Parts in stock at Public Works.

HOA. They access and store stuff here.

System Inventory List

Well #12

Asset	Expected Useful Life	Condition	Service History	Adjusted Useful Life	Age	Remaining Useful Life	Replacement Cost
Well and CI Room(wood)	10 yrs	Fair					
Well Submersible	5-7 yrs	Fair		10		10	
Pressure Tank		Fair					removal
Electrical System	1-5 yrs	Fair		7		5	2k
Distribution Piping (>4")		Fair		30		25	6k
Internal Plumbing (<4")	1-2 yrs	Fair/Poor		7		2	750.00
Pressure and Check Valves		Fair/Poor		8		8	
CL and PO4 pumps		none		7		2-5	450.00 ea.
Chem. Tanks		none		5		5	350.00 ea.
Meter		none				0	700.00
Analyzers (PH, CL, Temp.)		none					

CL and PO4 pumps	**Gate Valve**	**Check Valve**
none	1-4"	1-4"
	1-6"	
	1-8"	

System Inventory Monitor 3

Isco Gis Sampler asset 800
Descrip.602954001 Mod GIs
12 vdl

Sanyo Fridge Asset 842
Isco high capacity power pack
s/n 11553-189 mfd 1-94

Enclos. Assett 840 rubbermaid

Eit open chain. Flow recorder
Mod 7960
s/n 0937

Honeywell Chart Rec
dr 4600 Gpi -00-bg-00000
s/n 9514518042200003

System Inventory Monitor 5

Isco Gis sampler assett 640

Sanyo Fridge 843

Power Pack
Desc 601684040

94 Grand prix 1500
Mod 6x4230

Eit
Mod 7960
s/n 934

Honey
Dr4200gpl-00-b400000
s/n 6511y5180416000007

System Inventory Monitor 8

Eit open channel
Flow recorder
Mod 7960
Ser 0935

Honeywell chart recorder
Dr. 4200 spi-00 bg0000
s/n 95144518042200009
V-120 50/60 h2

Power Meter

System Inventory Monitor 4

Eit Mod 7960
s/n 0930

Honeywell
Dr 4200 gpi 00bg00000
s/n 9511y518041600003

120v 50/60 Hz

System Inventory Monitor 7

Isco sampler
Mod 3710
Descrip. 603714001
Power 12VDL
s/n 266h00335

Power Meter
96113641

Isco High Capacity Power Pack
s/n 11553-093
MFD 1/94

Eit open channel flow recorder
Mod 7960
s/n 0936

Honeywell chart recorder
DR 4200GPI-00 by 000000
s/n 9514y51804220008
V-120 50/60 h2

APPENDIX D
WATER MODEL INPUT AND OUTPUT DATA

1. Current MDD Node Report

2. Future MDD Node Report

3. Water Node Maps

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT
CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1000	11.94	1,500.00	2,058.69	20.04
J1008	5.97	1,500.00	2,195.27	20.05
J1010	0.58	1,500.00	2,196.66	20.05
J1012	1.99	1,500.00	6,913.05	20.48
J1016	0.58	1,000.00	4,418.89	20.19
J1018	1.15	1,000.00	6,705.20	20.45
J102	6.02	1,500.00	851.47	20.01
J1020	9.22	1,000.00	6,028.00	20.36
J1028	8.64	1,000.00	4,901.64	20.24
J1030	4.03	1,000.00	4,759.02	20.22
J1034	2.88	1,000.00	2,862.00	20.08
J1036	4.61	1,000.00	3,032.01	20.09
J1038	1.15	1,000.00	2,821.83	20.08
J1044	4.03	1,000.00	2,767.07	20.08
J1050	4.29	1,000.00	4,563.85	20.21
J1052	1.15	1,000.00	6,018.58	20.36
J1054	2.3	1,000.00	5,918.77	20.35
J106	3.98	1,500.00	1,021.58	20.01
J1062	2.3	1,000.00	5,898.92	20.35
J1064	5.18	1,000.00	5,726.53	20.33
J1070	0.58	1,000.00	5,193.61	20.27
J1072	1.15	1,000.00	4,838.27	20.23
J1074	2.3	1,000.00	5,859.12	20.34
J1076	2.88	1,000.00	3,025.64	20.09
J1078	7.49	1,000.00	3,809.29	20.14
J1080	5.18	1,000.00	4,023.55	20.16
J1084	2.88	1,000.00	3,405.94	20.11
J1086	5.18	1,000.00	5,775.71	20.33
J1088	2.88	1,000.00	5,723.51	20.33
J1090	4.61	1,000.00	5,614.75	20.31
J1092	5.18	1,000.00	5,456.17	20.3
J1096	2.3	1,000.00	5,417.81	20.29
J1098	3.46	1,000.00	4,406.19	20.19
J1100	6.34	1,000.00	4,494.56	20.2
J1104	3.46	1,000.00	4,843.80	20.23
J1106	3.46	1,000.00	4,383.83	20.19
J1110	2.3	1,000.00	3,343.58	20.11
J1112	4.61	1,000.00	3,932.70	20.15
J1114	4.03	1,000.00	4,652.70	20.22
J1118	2.88	1,000.00	3,956.99	20.16
J1124	0	1,000.00	3,607.73	20.13
J1130	6.34	1,000.00	1,403.11	20.02
J1134	2.3	1,000.00	4,878.53	20.24
J1140	6.34	1,500.00	5,047.23	20.25
J1144	8.06	1,500.00	1,629.43	20.03
J1148	6.91	1,000.00	3,182.78	20.1
J1154	0	1,500.00	5,535.13	20.31
J1160	0.58	1,000.00	5,716.70	20.33
J1164	4.61	1,000.00	3,016.64	20.09
J1166	2.3	1,000.00	2,560.04	20.07
J1170	1.15	1,000.00	6,774.20	20.46
J1172	2.3	1,000.00	6,832.50	20.46
J1174	1.73	1,000.00	6,916.49	20.48
J1176	6.91	1,000.00	2,697.56	20.07
J1182	0.58	1,000.00	6,584.42	20.43
J1184	13.82	1,000.00	1,702.59	20.03
J1190	3.46	1,000.00	3,880.49	20.15
J1192	0	1,000.00	6,220.74	20.39
J1194	2.3	1,000.00	3,257.86	20.1
J1196	5.76	1,000.00	2,362.37	20.06
J1198	2.88	1,000.00	2,487.15	20.06
J1200	2.88	1,000.00	1,383.18	20.02
J1202	5.76	1,000.00	5,456.74	20.3
J1204	0.58	1,000.00	5,229.41	20.27
J1212	9.22	1,000.00	2,893.46	20.08
J1214	4.61	1,000.00	3,311.95	20.11
J1216	4.03	1,000.00	2,064.58	20.04
J1218	2.3	1,000.00	4,783.84	20.23
J1228	2.3	1,000.00	2,279.25	20.05
J1230	0	1,000.00	4,715.06	20.22
J1232	2.3	1,000.00	4,625.56	20.21
J1234	2.88	1,000.00	3,271.88	20.11
J1236	2.3	1,000.00	3,942.09	20.15
J1240	2.88	1,000.00	3,256.29	20.1
J1242	1.73	1,000.00	3,925.99	20.15
J1246	2.3	1,000.00	6,766.80	20.46

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT				
CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY				
ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1250	6.91	1,000.00	1,631.65	20.03
J1254	3.46	1,000.00	2,711.74	20.07
J1256	4.03	1,000.00	2,810.73	20.08
J1258	4.03	1,000.00	3,915.98	20.15
J1260	5.18	1,000.00	1,760.32	20.03
J1264	1.73	1,000.00	4,906.59	20.24
J1274	9.22	1,000.00	3,390.27	20.11
J1276	6.91	1,000.00	3,417.47	20.12
J1282	12.67	1,000.00	4,758.79	20.22
J1284	0.58	1,000.00	5,734.94	20.33
J1286	0	1,500.00	4,495.69	20.2
J1292	2.3	1,000.00	5,197.57	20.27
J1296	8.06	1,500.00	4,978.65	20.25
J1300	1.99	1,500.00	3,630.80	20.13
J1306	0	1,500.00	4,102.67	20.17
J1314	6.34	1,000.00	4,520.69	20.2
J1322	2.88	1,000.00	4,816.09	20.23
J1330	0	1,000.00	3,660.91	20.13
J1334	10.37	1,000.00	2,120.56	20.04
J1336	9.22	1,000.00	1,582.22	20.02
J1342	3.46	1,000.00	4,928.27	20.24
J1344	6.34	1,000.00	4,369.22	20.19
J1348	1.15	1,000.00	4,431.08	20.2
J1350	6.91	1,000.00	4,929.96	20.24
J1354	2.88	1,000.00	4,872.41	20.24
J1356	1.15	1,000.00	4,853.77	20.24
J1358	1.15	1,000.00	4,859.22	20.24
J136	15.08	1,500.00	1,189.27	20.01
J1360	1.15	1,000.00	5,633.19	20.32
J1370	5.76	1,000.00	3,447.38	20.12
J138	3.98	1,500.00	2,385.23	20.06
J1384	5.76	1,000.00	2,455.82	20.06
J1386	3.46	1,000.00	2,549.45	20.06
J1388	5.97	1,500.00	3,177.58	20.1
J1390	3.98	1,500.00	3,061.52	20.09
J1394	17.91	1,500.00	3,117.34	20.1
J1398	1.99	1,500.00	3,010.18	20.09
J1406	1.99	1,500.00	3,461.29	20.12
J1408	7.96	1,500.00	2,402.46	20.06
J1410	2.88	1,000.00	6,050.71	20.36
J1412	1.99	1,500.00	4,081.92	20.17
J1422	1.99	1,000.00	3,257.64	20.11
J1424	0	1,500.00	4,542.50	20.21
J1426	0	1,500.00	4,163.75	20.17
J1432	1.99	1,500.00	2,320.98	20.05
J1434	1.99	1,500.00	2,631.60	20.07
J1438	12.1	1,000.00	2,341.71	20.05
J144	9.95	1,500.00	755.02	20.01
J1440	1.73	1,000.00	2,122.54	20.04
J1442	2.57	1,000.00	1,901.57	20.04
J1446	3.98	1,000.00	1,496.49	20.02
J1452	1.99	1,000.00	3,767.66	20.14
J1458	1.15	1,000.00	4,117.28	20.17
J1460	11.52	1,000.00	3,852.11	20.15
J1462	0	1,000.00	5,035.97	20.25
J1466	0	1,000.00	5,410.67	20.29
J1470	1.15	1,000.00	5,822.71	20.34
J1472	2.88	1,000.00	5,302.90	20.28
J1474	11.52	1,000.00	1,887.75	20.03
J1476	2.3	1,000.00	5,412.64	20.29
J1478	9.79	1,000.00	3,524.35	20.12
J148	0	1,500.00	1,856.54	20.03
J1480	1.73	1,000.00	5,301.79	20.28
J1484	1.99	1,500.00	5,062.17	20.25
J1486	0	1,500.00	4,944.41	20.24
J1488	5.97	1,500.00	5,639.06	20.31
J1490	5.97	1,500.00	5,348.43	20.28
J1492	1.99	1,500.00	5,220.41	20.27
J1494	0	1,500.00	5,085.24	20.25
J1496	0	1,500.00	5,548.58	20.29
J1498	0	1,500.00	5,474.69	20.29
J150	1.99	1,500.00	1,940.08	20.04
J1500	0	1,000.00	5,720.68	20.31
J1502	5.97	1,500.00	4,400.88	20.18
J1506	1.15	1,000.00	7,334.75	20.52
J1510	0	1,500.00	5,406.53	20.29

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY				
ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1512	0	1,000.00	5,761.51	20.33
J1518	0	1,000.00	5,761.55	20.33
J152	2.88	1,000.00	982.86	20.01
J1522	1.15	1,000.00	6,258.01	20.39
J1526	1.15	1,000.00	5,417.42	20.29
J1528	9.22	1,000.00	4,270.73	20.18
J1530	4.61	1,000.00	4,173.99	20.17
J1538	1.73	1,000.00	4,772.53	20.23
J1542	2.3	1,000.00	4,715.11	20.22
J1546	6.91	1,000.00	4,372.88	20.19
J1552	0	1,000.00	5,458.39	20.3
J1554	1.73	1,000.00	2,969.92	20.09
J1556	6.34	1,000.00	3,853.14	20.15
J1560	1.15	1,000.00	5,646.23	20.32
J1562	2.3	1,000.00	5,463.73	20.29
J1568	2.3	1,000.00	5,231.79	20.27
J1574	0.58	1,000.00	5,379.33	20.29
J1580	5.76	1,000.00	723.5	20.01
J1582	0.58	1,000.00	6,042.75	20.36
J1584	0	1,000.00	6,031.53	20.36
J1586	4.03	1,000.00	4,848.48	20.23
J1588	2.88	1,000.00	6,150.18	20.37
J1590	2.3	1,000.00	6,178.46	20.37
J1594	2.88	1,000.00	4,471.17	20.2
J1604	5.18	1,000.00	4,601.34	20.21
J1612	4.61	1,000.00	4,382.25	20.19
J1614	7.49	1,000.00	4,341.66	20.19
J1616	5.76	1,000.00	4,505.00	20.2
J1618	6.91	1,000.00	4,465.18	20.19
J1620	3.46	1,000.00	4,415.65	20.19
J1622	2.88	1,000.00	4,510.99	20.19
J1628	4.61	1,000.00	5,370.65	20.29
J1632	1.15	1,000.00	6,429.15	20.41
J1642	3.46	1,000.00	6,219.03	20.37
J1646	0	1,000.00	5,615.17	20.31
J1652	1.15	1,000.00	5,627.42	20.31
J1656	0	1,000.00	5,616.91	20.31
J1660	4.03	1,000.00	4,828.60	20.23
J1662	3.46	1,000.00	3,634.19	20.13
J1664	1.73	1,000.00	3,149.65	20.1
J1666	2.3	1,000.00	3,015.37	20.09
J1668	3.46	1,000.00	2,732.33	20.07
J1670	1.15	1,000.00	3,533.07	20.12
J1672	4.03	1,000.00	2,426.90	20.06
J1674	4.03	1,000.00	2,481.76	20.06
J1678	2.3	1,000.00	4,955.92	20.24
J1684	7.49	1,000.00	2,906.96	20.08
J1688	7.49	1,000.00	2,299.97	20.05
J1690	6.91	1,000.00	2,533.12	20.06
J1692	5.18	1,000.00	532.84	20
J1698	2.3	1,000.00	4,399.59	20.19
J1700	1.73	1,000.00	4,391.28	20.19
J1702	0.58	1,000.00	4,321.45	20.18
J1704	2.88	1,000.00	3,219.77	20.1
J1708	2.3	1,000.00	3,534.26	20.12
J1710	1.73	1,000.00	4,135.52	20.17
J1712	0	1,000.00	3,786.11	20.14
J1720	2.3	1,000.00	3,593.10	20.13
J1722	2.3	1,000.00	3,641.92	20.13
J1730	0.58	1,000.00	3,452.87	20.12
J1734	4.03	1,000.00	2,926.96	20.09
J1736	0	1,000.00	3,636.72	20.13
J174	1.15	1,500.00	1,767.81	20.03
J1744	4.61	1,000.00	2,498.56	20.06
J1746	4.61	1,000.00	2,098.70	20.04
J1756	4.03	1,000.00	2,625.34	20.07
J1758	2.88	1,000.00	2,307.88	20.05
J176	25.82	1,500.00	1,444.18	20.02
J1768	1.99	1,000.00	2,993.12	20.09
J1772	1.15	1,000.00	5,874.23	20.34
J1774	5.76	1,000.00	6,333.21	20.4
J1776	2.3	1,000.00	5,076.73	20.25
J178	0	1,500.00	517.31	20
J1782	0.58	1,000.00	6,175.88	20.37
J1784	2.88	1,000.00	5,723.79	20.32
J1788	4.61	1,000.00	4,645.41	20.21

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT				
CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY				
ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1794	1.73	1,000.00	3,692.96	20.13
J1798	9.79	1,000.00	6,194.43	20.38
J1802	0	1,000.00	6,210.67	20.38
J1810	2.88	1,000.00	6,008.37	20.36
J1816	2.3	1,000.00	7,025.55	20.49
J182	13.93	1,500.00	2,214.32	20.05
J1820	1.15	1,000.00	7,918.52	20.6
J1822	5.76	1,000.00	7,686.85	20.57
J1824	3.46	1,000.00	3,762.75	20.14
J1828	3.46	1,000.00	5,582.93	20.31
J1830	5.18	1,000.00	3,382.23	20.11
J1832	3.46	1,000.00	6,364.38	20.4
J1834	6.34	1,000.00	3,634.85	20.13
J1836	3.46	1,000.00	5,187.86	20.27
J1838	3.46	1,000.00	6,303.44	20.4
J1844	2.3	1,000.00	6,056.62	20.37
J1846	1.73	1,000.00	6,133.49	20.38
J1850	5.76	1,000.00	3,780.16	20.14
J1862	13.09	1,000.00	2,885.76	20.08
J1864	3.46	1,000.00	3,170.21	20.1
J1868	4.03	1,000.00	3,118.70	20.1
J1870	2.88	1,000.00	3,151.86	20.1
J1878	4.03	1,000.00	3,092.11	20.1
J1880	0	1,000.00	3,152.43	20.1
J1882	7.96	1,000.00	3,216.81	20.1
J1890	2.88	1,000.00	3,327.29	20.11
J1892	1.73	1,000.00	3,405.44	20.11
J1894	1.15	1,000.00	3,413.31	20.12
J1898	0.58	1,000.00	3,445.78	20.12
J1902	1.73	1,000.00	3,359.85	20.11
J1914	1.73	1,000.00	3,221.40	20.1
J1920	1.15	1,000.00	3,180.25	20.1
J1922	6.34	1,000.00	3,210.23	20.1
J1924	1.99	1,000.00	3,300.50	20.11
J1926	4.03	1,000.00	2,922.70	20.09
J194	5.97	1,500.00	2,527.56	20.06
J1940	2.3	1,000.00	2,793.52	20.08
J1942	3.46	1,000.00	1,827.01	20.03
J1946	1.15	1,000.00	2,038.10	20.04
J1950	3.46	1,000.00	2,384.08	20.06
J1952	1.73	1,000.00	3,022.75	20.09
J1958	1.73	1,000.00	1,852.72	20.03
J1962	2.3	1,000.00	2,580.61	20.07
J1966	2.3	1,000.00	2,795.08	20.08
J1968	1.73	1,000.00	2,895.67	20.08
J1970	2.88	1,000.00	2,707.37	20.07
J1974	1.73	1,000.00	2,729.12	20.07
J198	1.99	1,500.00	1,946.84	20.04
J1984	4.61	1,000.00	2,739.37	20.07
J1986	8.06	1,000.00	2,682.92	20.07
J1988	2.3	1,000.00	3,339.03	20.11
J1992	2.88	1,000.00	3,285.17	20.11
J1994	5.76	1,000.00	3,252.91	20.11
J1996	22.73	1,000.00	3,110.18	20.1
J1998	6.91	1,000.00	3,128.70	20.1
J2004	1.15	1,000.00	3,243.65	20.11
J2006	2.88	1,000.00	3,019.86	20.09
J2008	1.73	1,000.00	2,928.78	20.09
J2012	0.58	1,000.00	2,818.04	20.08
J202	7.96	1,500.00	1,960.91	20.04
J2024	1.73	1,000.00	2,769.79	20.08
J2034	6.34	1,000.00	2,410.29	20.06
J2036	3.46	1,000.00	2,361.37	20.06
J2040	0	1,000.00	2,444.06	20.06
J2042	10.37	1,000.00	2,200.85	20.05
J2046	10.37	1,000.00	1,226.38	20.01
J2048	3.46	1,000.00	2,066.98	20.04
J2056	5.76	1,000.00	1,328.25	20.02
J2058	3.46	1,000.00	1,999.91	20.04
J2064	9.79	1,000.00	1,926.32	20.04
J2066	3.46	1,000.00	1,871.21	20.03
J2068	4.61	1,000.00	1,915.25	20.04
J2072	3.98	1,000.00	1,679.20	20.03
J2080	4.03	1,000.00	1,849.94	20.03
J2090	6.91	1,000.00	1,750.32	20.03
J2096	0.58	1,000.00	1,830.08	20.03

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY				
ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J2098	8.64	1,000.00	1,777.23	20.03
J2102	9.22	1,000.00	2,090.07	20.04
J2104	4.56	1,000.00	1,818.55	20.03
J2110	1.73	1,000.00	2,000.65	20.04
J2112	0	1,000.00	1,987.07	20.04
J2118	2.3	1,000.00	1,822.59	20.03
J2126	2.3	1,000.00	1,734.85	20.03
J2144	2.3	1,000.00	1,687.88	20.03
J2152	2.3	1,000.00	1,696.45	20.03
J2156	1.15	1,000.00	1,709.59	20.03
J216	16.6	1,500.00	1,237.44	20.01
J2162	1.99	1,500.00	3,326.30	20.11
J2164	1.99	1,500.00	1,945.50	20.04
J2180	5.97	1,000.00	3,441.64	20.12
J2194	3.98	1,500.00	4,760.91	20.23
J220	11.68	1,500.00	1,249.92	20.02
J2202	0	1,500.00	2,800.68	20.08
J222	1.99	1,500.00	1,763.03	20.03
J2246	1.99	1,500.00	2,309.12	20.05
J2258	0	1,500.00	3,750.68	20.14
J2266	9.95	1,500.00	3,756.46	20.14
J2268	1.99	1,500.00	4,040.53	20.16
J2272	3.98	1,500.00	3,785.89	20.14
J2274	1.99	1,500.00	4,015.99	20.16
J2278	13.93	1,500.00	3,673.66	20.13
J2280	0	1,500.00	3,749.22	20.14
J2294	1.99	1,500.00	2,947.04	20.09
J2306	1.73	1,500.00	4,266.56	20.18
J2308	3.46	1,000.00	2,894.63	20.08
J2310	1.15	1,000.00	2,746.09	20.08
J2314	12.36	1,500.00	3,978.55	20.16
J2320	12.36	1,500.00	3,917.80	20.15
J2330	3.98	1,500.00	3,904.76	20.15
J2332	10.05	1,500.00	3,960.63	20.16
J2340	2.3	1,500.00	4,377.59	20.19
J2342	1.99	1,500.00	3,266.60	20.11
J2344	3.98	1,500.00	3,301.86	20.11
J2352	1.99	1,500.00	3,709.44	20.14
J2356	15.92	1,500.00	2,119.81	20.04
J236	1.99	1,500.00	4,015.42	20.16
J2362	7.49	1,000.00	3,539.21	20.12
J2376	3.46	1,000.00	2,408.55	20.06
J2378	1.73	1,000.00	1,951.30	20.04
J2386	0.58	1,000.00	1,744.21	20.03
J2394	9.95	1,500.00	3,196.90	20.1
J2398	3.98	1,500.00	4,785.89	20.23
J2404	11.68	1,500.00	3,278.90	20.11
J2414	0.58	1,000.00	2,753.72	20.08
J2416	2.3	1,000.00	2,676.66	20.07
J2420	4.03	1,000.00	4,706.21	20.22
J2422	13.93	1,500.00	1,870.92	20.03
J2424	1.99	1,000.00	2,588.74	20.07
J2428	11.94	1,500.00	1,739.07	20.03
J2430	13.93	1,500.00	1,813.58	20.03
J2434	1.99	1,500.00	2,004.10	20.04
J244	0	1,500.00	2,431.36	20.06
J2442	37.44	1,500.00	1,713.24	20.03
J2444	13.93	1,500.00	2,901.47	20.08
J2446	18.43	1,500.00	2,756.34	20.07
J2454	11.42	1,500.00	1,592.30	20.03
J2456	18.43	1,500.00	1,524.01	20.02
J2464	25.19	1,500.00	1,632.12	20.03
J2468	13.46	1,500.00	1,480.23	20.02
J2470	15.08	1,500.00	1,619.29	20.03
J2472	5.97	1,500.00	2,925.56	20.09
J2476	13.93	1,500.00	1,991.35	20.04
J2478	7.96	1,500.00	1,501.97	20.02
J2482	28.8	1,000.00	1,478.96	20.02
J2490	15.92	1,500.00	2,831.58	20.08
J2492	21.57	1,000.00	2,273.10	20.05
J2496	2.88	1,000.00	1,967.32	20.04
J250	1.99	1,500.00	1,119.76	20.01
J2500	1.73	1,000.00	2,190.52	20.05
J2506	7.49	1,500.00	1,994.41	20.04
J2512	1.99	1,500.00	1,755.44	20.03
J2516	9.95	1,500.00	2,535.40	20.06

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT				
CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY				
ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J2518	7.96	1,500.00	2,467.18	20.06
J2520	0	1,500.00	2,742.03	20.08
J2528	0	1,500.00	1,990.69	20.04
J2532	11.94	1,500.00	2,154.50	20.05
J2540	6.55	1,500.00	1,962.35	20.04
J2548	4.87	1,500.00	2,037.84	20.04
J2550	11.1	1,500.00	2,048.27	20.04
J2552	7.96	1,500.00	2,197.08	20.05
J2554	1.99	1,000.00	1,967.02	20.04
J2558	1.99	1,500.00	2,016.10	20.04
J2572	4.61	1,000.00	5,078.99	20.26
J2592	8.64	1,000.00	2,805.80	20.08
J2606	13.93	1,500.00	1,295.40	20.02
J2608	15.08	1,500.00	1,911.99	20.04
J2612	5.97	1,500.00	2,260.02	20.05
J2616	6.34	1,000.00	3,382.66	20.11
J2618	2.3	1,000.00	4,235.73	20.18
J2620	2.88	1,000.00	3,121.62	20.1
J2622	1.99	1,500.00	6,948.72	20.48
J2624	8.06	1,000.00	2,448.36	20.06
J2626	1.99	1,500.00	4,277.79	20.18
J2628	0	1,000.00	3,253.38	20.11
J2640	2.57	1,500.00	2,206.02	20.05
J2642	2.57	1,500.00	2,088.46	20.04
J2644	4.61	1,000.00	2,114.24	20.04
J2648	1.15	1,000.00	6,806.17	20.46
J2656	0	1,500.00	2,852.27	20.08
J2666	1.99	1,500.00	3,205.68	20.1
J2700	3.46	1,000.00	5,808.24	20.34
J2702	2.88	1,000.00	2,665.09	20.07
J2704	5.18	1,000.00	2,632.80	20.07
J2710	2.88	1,000.00	3,374.27	20.11
J2714	2.88	1,000.00	3,755.44	20.14
J2718	0	1,000.00	3,857.36	20.15
J2732	7.96	1,500.00	1,551.10	20.02
J2734	7.96	1,500.00	5,759.52	20.33
J2738	15.55	1,000.00	6,856.55	20.47
J2744	15.81	1,000.00	6,368.69	20.4
J2746	1.73	1,000.00	6,805.43	20.46
J2748	0	1,000.00	6,864.00	20.47
J2750	4.03	1,000.00	3,136.31	20.1
J2752	2.3	1,000.00	2,032.01	20.04
J2754	4.03	1,000.00	1,895.31	20.03
J2756	2.3	1,000.00	3,018.00	20.09
J2758	7.96	1,500.00	1,866.41	20.03
J2764	9.22	1,000.00	1,638.09	20.03
J2766	1.99	1,000.00	1,788.97	20.03
J2768	4.61	1,000.00	6,146.07	20.38
J2770	3.46	1,000.00	4,576.68	20.21
J2774	0.58	1,500.00	5,992.56	20.36
J2776	3.46	1,000.00	6,368.88	20.4
J2780	7.96	1,000.00	4,847.45	20.23
J2784	16.5	1,000.00	5,941.00	20.34
J2790	1.99	1,000.00	1,748.55	20.03
J2792	1.99	1,500.00	5,054.97	20.25
J2794	1.99	1,500.00	4,855.04	20.23
J2796	0	1,000.00	4,463.84	20.2
J2798	7.44	1,000.00	2,564.59	20.07
J2800	25.97	1,000.00	1,675.73	20.03
J2814	1.5	1,000.00	2,350.29	20.06
J2822	1.5	1,000.00	1,980.61	20.04
J2830	3.46	1,000.00	3,251.23	20.11
J2832	19.58	1,000.00	3,154.63	20.1
J2834	16.13	1,000.00	3,144.33	20.1
J2836	1.99	1,000.00	2,756.52	20.08
J2838	1.99	1,000.00	4,044.22	20.16
J2840	0	1,000.00	4,010.54	20.16
J2842	0	1,000.00	2,733.37	20.07
J2846	3.98	1,000.00	420.28	20
J2850	4.61	1,000.00	693.97	20
J2854	0.5	1,000.00	1,837.54	20.03
J2856	2.88	1,000.00	1,703.58	20.03
J2858	8.06	1,000.00	1,553.49	20.02
J2860	2.3	1,000.00	1,592.54	20.03
J2864	8.06	1,000.00	1,514.92	20.02
J2866	2.88	1,000.00	1,705.30	20.03

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT				
CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY				
ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J2868	4.61	1,000.00	1,614.92	20.03
J2870	4.61	1,000.00	1,594.89	20.03
J2872	22.46	1,000.00	1,583.34	20.02
J2874	9.79	1,000.00	1,276.61	20.02
J2876	1.99	1,000.00	1,455.46	20.02
J2882	17.28	1,000.00	2,183.40	20.05
J2888	8.64	1,000.00	1,760.77	20.03
J2890	0	1,000.00	2,713.32	20.07
J2892	0	1,000.00	2,440.41	20.06
J2896	9.95	1,000.00	2,654.59	20.07
J2898	1.99	1,000.00	3,103.74	20.1
J2900	3.98	1,000.00	3,286.51	20.11
J2902	1.99	1,000.00	3,289.02	20.11
J2904	0	1,000.00	1,847.50	20.03
J2906	0	1,000.00	3,033.30	20.09
J2908	1.99	1,000.00	4,184.15	20.17
J2918	2.3	1,000.00	2,841.19	20.08
J2924	1.99	1,000.00	3,270.44	20.11
J2928	2.3	1,000.00	6,810.15	20.46
J2934	1.15	1,000.00	2,940.06	20.09
J2936	2.3	1,000.00	1,782.07	20.03
J2938	1.73	1,000.00	1,920.39	20.04
J2942	2.88	1,000.00	750.31	20.01
J2948	1.99	1,000.00	2,096.64	20.04
J2950	2.3	1,000.00	2,275.04	20.05
J2952	15.55	1,000.00	1,891.50	20.04
J2954	15.55	1,000.00	1,736.65	20.03
J2956	10.94	1,000.00	1,707.46	20.03
J2958	6.34	1,000.00	1,532.48	20.02
J2960	5.97	1,000.00	1,621.13	20.03
J2962	1.99	1,000.00	1,428.72	20.02
J2964	13.93	1,000.00	1,351.05	20.02
J2972	5.97	1,000.00	3,693.09	20.14
J2974	3.98	1,000.00	3,016.34	20.09
J2976	6.91	1,000.00	1,801.84	20.03
J330	2.3	1,000.00	1,587.42	20.02
J338	3.98	1,500.00	2,478.74	20.06
J344	4.56	1,500.00	3,749.09	20.14
J350	1.99	1,500.00	1,855.20	20.03
J352	5.97	1,500.00	2,373.37	20.06
J354	15.92	1,500.00	2,647.87	20.07
J356	7.96	1,500.00	4,610.91	20.21
J358	39.95	1,500.00	2,449.34	20.06
J362	7.96	1,500.00	1,402.92	20.02
J366	9.95	1,500.00	1,370.53	20.02
J368	0	1,500.00	2,486.11	20.06
J370	3.98	1,500.00	1,923.23	20.04
J376	0	1,000.00	1,932.62	20.04
J378	0	1,500.00	1,917.42	20.04
J380	3.98	1,500.00	1,288.78	20.02
J388	12.52	1,500.00	2,047.16	20.04
J392	14.35	1,500.00	2,033.32	20.04
J406	1.99	1,500.00	366.04	20
J420	9.95	1,500.00	4,436.07	20.2
J422	13.93	1,000.00	2,627.90	20.07
J432	0.58	1,000.00	2,492.10	20.06
J450	11.73	1,000.00	1,371.27	20.02
J452	17.54	1,000.00	1,695.54	20.03
J456	1.99	1,500.00	1,914.99	20.04
J458	0	1,500.00	1,880.80	20.04
J470	2.57	1,500.00	1,398.07	20.02
J480	2.3	1,000.00	4,710.83	20.22
J484	2.3	1,000.00	1,892.65	20.04
J492	1.99	1,500.00	3,671.52	20.13
J496	16.39	1,500.00	3,949.94	20.15
J500	2.88	1,000.00	2,328.12	20.05
J504	4.03	1,000.00	2,311.84	20.05
J506	2.88	1,000.00	2,866.30	20.08
J508	3.46	1,000.00	2,389.23	20.06
J518	2.3	1,500.00	5,652.32	20.32
J526	3.46	1,000.00	6,289.41	20.39
J528	2.3	1,000.00	2,230.78	20.05
J530	3.46	1,000.00	2,119.69	20.04
J536	5.97	1,500.00	1,628.69	20.03
J584	5.18	1,000.00	1,808.56	20.03
J592	0.58	1,000.00	2,641.61	20.07

GARDEN CITY INFOWATER INPUT AND OUTPUT REPORT				
CURRENT MDD AND FIREFLOW WITH FIRM CAPACITY				
ID	Static Demand (gpm)	Fire-Flow Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J604	1.73	1,500.00	2,733.77	20.07
J624	1.99	1,500.00	4,084.33	20.17
J626	9.95	1,500.00	3,761.92	20.14
J630	0	1,500.00	1,114.25	20.01
J638	0	1,500.00	3,367.64	20.11
J642	1.99	1,500.00	3,037.40	20.09
J646	0	1,000.00	3,074.45	20.09
J648	0	1,000.00	3,271.64	20.11
J656	5.97	1,500.00	3,632.07	20.13
J658	5.97	1,500.00	3,320.46	20.11
J666	0	1,500.00	4,617.94	20.21
J668	0.58	1,000.00	4,930.40	20.24
J672	0	1,500.00	5,546.16	20.31
J680	1.73	1,000.00	3,278.00	20.11
J688	1.99	1,500.00	5,496.57	20.3
J70	3.98	1,500.00	1,081.83	20.01
J710	4.03	1,000.00	2,024.05	20.04
J712	12.1	1,000.00	4,253.23	20.17
J722	9.22	1,000.00	4,153.17	20.17
J724	4.61	1,000.00	3,400.00	20.11
J756	1.99	1,000.00	1,947.67	20.04
J758	0	1,500.00	4,084.08	20.17
J760	1.99	1,500.00	4,314.54	20.19
J766	5.71	1,500.00	4,319.99	20.19
J778	7.96	1,500.00	2,129.03	20.04
J780	1.99	1,500.00	4,851.56	20.24
J784	6.91	1,000.00	4,838.23	20.23
J790	0	1,000.00	4,455.36	20.2
J796	1.99	1,500.00	4,840.42	20.23
J808	2.57	1,500.00	4,260.96	20.18
J810	1.99	1,500.00	3,904.64	20.15
J812	1.99	1,500.00	3,424.09	20.12
J814	1.99	1,500.00	4,030.60	20.16
J816	2.57	1,000.00	4,831.04	20.23
J830	3.98	1,500.00	5,084.72	20.26
J834	3.98	1,500.00	4,921.17	20.24
J836	0	1,500.00	4,373.24	20.19
J838	0	1,500.00	4,817.58	20.23
J840	1.99	1,500.00	4,779.71	20.23
J856	3.98	1,000.00	2,193.32	20.05
J858	1.99	1,000.00	2,384.17	20.06
J862	1.99	1,500.00	4,713.61	20.22
J864	0	1,500.00	4,365.53	20.19
J874	5.97	1,500.00	1,079.32	20.01
J876	1.99	1,500.00	1,308.65	20.02
J88	7.96	1,500.00	2,646.19	20.07
J882	1.99	1,500.00	1,381.16	20.02
J892	5.97	1,500.00	1,356.68	20.02
J906	7.96	1,500.00	2,029.46	20.04
J908	11.1	1,500.00	1,705.95	20.03
J912	0	1,500.00	2,333.51	20.05
J914	5.97	1,500.00	3,075.70	20.09
J916	9.95	1,500.00	1,869.74	20.03
J924	9.95	1,500.00	3,221.09	20.1
J928	3.98	1,500.00	2,301.48	20.05
J932	3.98	1,500.00	3,178.36	20.1
J938	5.97	1,500.00	3,574.99	20.13
J94	19.17	1,500.00	1,337.01	20.02
J940	7.96	1,500.00	1,953.10	20.04
J944	7.96	1,500.00	3,737.07	20.14
J946	5.97	1,500.00	2,226.10	20.05
J948	28.75	1,500.00	1,655.60	20.03
J952	6.91	1,000.00	2,638.68	20.07
J96	9.95	1,500.00	1,254.22	20.02
J978	15.55	1,000.00	2,521.79	20.06
J982	2.3	1,000.00	2,547.34	20.06
J984	18.9	1,500.00	4,031.71	20.16
J992	15.66	1,500.00	1,759.67	20.03

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J100	29.94	-3,279.52	19.89
J1000	49.3	-4,080.26	19.83
J1004	16.43	-6,331.72	19.6
J1008	24.65	-4,061.36	19.83
J1010	5.43	-1,687.69	19.97
J1012	8.22	-3,930.11	19.84
J1016	5.43	-4,656.67	19.78
J1018	10.86	-4,617.59	19.79
J102	46.24	-1,815.13	19.97
J1020	86.91	-4,462.46	19.79
J1022	21.73	-5,015.32	19.75
J1024	108.64	-2,837.91	19.91
J1026	16.3	-4,356.95	19.81
J1028	81.48	-4,488.14	19.79
J1030	38.02	-4,529.90	19.79
J1032	16.3	-4,971.61	19.75
J1034	27.16	-3,033.24	19.91
J1036	43.46	-3,049.06	19.91
J1038	10.86	-2,918.74	19.92
J1040	32.59	-2,247.79	19.95
J1042	21.73	-2,348.36	19.94
J1044	38.02	-2,889.04	19.92
J1046	27.16	-2,486.36	19.94
J1050	29.94	-4,914.15	19.76
J1052	10.86	-7,548.88	19.43
J1054	21.73	-7,454.20	19.44
J106	16.43	-2,299.42	19.95
J1062	21.73	-7,423.65	19.45
J1064	48.89	-7,345.65	19.45
J1070	5.43	-6,786.72	19.54
J1072	10.86	-6,346.81	19.6
J1074	21.73	-7,608.32	19.42
J1076	27.16	-4,149.37	19.83
J1078	70.62	-4,991.51	19.74
J1080	48.89	-5,299.16	19.71
J1084	27.16	-4,493.52	19.8
J1086	48.89	-7,204.45	19.47
J1088	27.16	-7,194.89	19.48
J1090	43.46	-7,050.33	19.5
J1092	48.89	-6,858.35	19.52
J1096	21.73	-6,556.66	19.57
J1098	32.59	-5,793.88	19.66
J110	5.43	-3,138.21	19.9
J1100	59.75	-5,853.17	19.65
J1104	32.59	-6,192.38	19.61
J1106	32.59	-5,654.69	19.68
J1110	21.73	-4,540.84	19.79
J1112	43.46	-5,158.63	19.73
J1114	38.02	-6,130.03	19.62
J1118	27.16	-5,417.68	19.7
J112	0	-1,302.53	19.98
J1120	27.16	-5,660.60	19.68
J1124	0	-4,458.38	19.8
J1128	48.89	-2,267.97	19.95
J1130	59.75	-2,000.35	19.96
J1134	21.73	-6,000.45	19.64
J1138	97.78	-3,024.85	19.9
J114	27.16	-1,135.25	19.99
J1140	59.75	-6,032.82	19.63
J1144	76.05	-2,190.81	19.95
J1148	65.18	-4,549.69	19.79
J1152	21.73	-8,336.36	19.3
J1154	0	-8,096.09	19.34
J1156	8.22	-7,926.25	19.37
J1158	5.43	-7,847.01	19.38
J1160	5.43	-8,052.35	19.35
J1162	59.75	-8,386.65	19.29
J1164	43.46	-3,138.04	19.9
J1166	21.73	-2,960.40	19.91
J1170	10.86	-5,738.49	19.67
J1172	21.73	-5,611.65	19.68
J1174	16.3	-5,379.82	19.71
J1176	65.18	-2,796.59	19.92
J1178	48.89	-2,835.25	19.92
J1180	21.73	-3,116.25	19.9
J1182	5.43	-5,817.97	19.66
J1184	130.37	-1,953.89	19.96
J1190	32.59	-4,625.26	19.78
J1192	0	-6,207.90	19.62
J1194	21.73	-4,231.43	19.82
J1196	54.32	-3,298.98	19.89
J1198	27.16	-3,464.18	19.88
J1200	27.16	-1,889.71	19.96
J1202	54.32	-6,869.72	19.52
J1204	5.43	-6,639.11	19.56
J1212	86.91	-2,694.00	19.92
J1214	43.46	-3,178.70	19.9
J1216	38.02	-1,959.75	19.96
J1218	21.73	-4,042.72	19.84
J1220	54.32	-1,209.91	19.98
J1226	21.73	-1,339.64	19.98
J1228	21.73	-2,117.34	19.95
J1230	0	-4,148.48	19.83
J1232	21.73	-3,509.83	19.88
J1234	27.16	-2,655.21	19.93
J1236	21.73	-3,186.91	19.9
J1238	0	-3,634.20	19.87
J1240	27.16	-2,644.54	19.93
J1242	16.3	-3,221.59	19.9
J1246	21.73	-5,748.23	19.67
J1248	10.86	-2,713.81	19.93
J1250	65.18	-1,474.44	19.98
J1252	32.59	-1,832.33	19.97
J1254	32.59	-2,232.21	19.95
J1256	38.02	-4,115.24	19.83
J1258	38.02	-5,494.37	19.69
J126	32.59	-6,365.18	19.59

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J218	0	-2,636.20	19.93
J2180	24.65	-6,039.94	19.63
J2184	8.22	-6,098.97	19.63
J2194	16.43	-8,004.52	19.36
J22	8.22	-3,079.09	19.9
J220	57.38	-2,681.38	19.93
J2202	0	-4,830.55	19.77
J222	8.22	-3,746.37	19.86
J2244	8.22	-4,412.33	19.8
J2246	8.22	-3,854.89	19.85
J2248	0	-3,645.48	19.87
J2254	0	-8,680.89	19.25
J2256	0	-6,650.18	19.56
J2258	0	-6,766.43	19.54
J226	0	-1,068.27	19.99
J2260	27.16	-3,428.09	19.88
J2266	41.08	-6,762.69	19.54
J2268	8.22	-7,236.02	19.48
J2272	16.43	-6,909.17	19.52
J2274	8.22	-7,305.59	19.47
J2278	57.51	-6,598.64	19.56
J228	29.94	-1,087.50	19.99
J2280	0	-6,862.48	19.53
J2294	8.22	-5,094.39	19.74
J230	32.86	-8,683.21	19.24
J2300	41.08	-6,922.04	19.52
J2306	16.3	-8,115.26	19.34
J2308	32.59	-6,239.71	19.61
J2310	10.86	-6,572.51	19.57
J2314	105.99	-7,393.39	19.44
J2320	105.99	-7,361.77	19.44
J2324	0	-4,839.77	19.77
J2330	16.43	-7,392.05	19.45
J2332	84.26	-7,449.53	19.43
J2340	21.73	-8,182.12	19.33
J2342	8.22	-5,916.25	19.65
J2344	16.43	-5,995.65	19.64
J2346	8.22	-6,462.14	19.58
J2352	8.22	-6,875.60	19.53
J2354	8.22	-4,898.42	19.76
J2356	65.73	-3,909.58	19.84
J2358	8.22	-3,803.48	19.85
J236	8.22	-6,999.58	19.51
J2360	8.22	-6,041.12	19.63
J2362	70.62	-6,687.28	19.54
J2364	0	-6,750.72	19.55
J2366	21.73	-7,239.88	19.47
J2368	5.43	-6,923.95	19.52
J2376	32.59	-4,474.23	19.8
J2378	16.3	-3,842.31	19.85
J238	82.16	-4,397.06	19.8
J2380	10.86	-3,810.83	19.85
J2382	38.02	-3,638.28	19.86
J2384	43.46	-3,573.46	19.87
J2386	5.43	-3,567.15	19.87
J2388	38.02	-3,273.29	19.89
J2390	21.73	-3,569.16	19.87
J2394	41.08	-5,747.96	19.66
J2398	16.43	-8,800.49	19.22
J2400	24.65	-6,413.79	19.59
J2404	57.38	-5,960.98	19.64
J2408	32.59	-3,833.83	19.85
J2412	59.75	-3,607.33	19.87
J2414	5.43	-5,117.22	19.74
J2416	21.73	-5,030.59	19.74
J242	0	-3,942.28	19.84
J2420	38.02	-8,031.75	19.35
J2422	57.51	-3,432.57	19.88
J2424	8.22	-4,805.47	19.77
J2426	152.1	-3,632.10	19.86
J2428	49.3	-3,381.86	19.88
J2430	57.51	-3,424.60	19.88
J2434	8.22	-3,775.89	19.86
J2436	16.43	-4,841.01	19.76
J2438	24.65	-3,489.32	19.88
J244	0	-4,307.06	19.81
J2442	353.08	-3,201.98	19.87
J2444	57.51	-5,477.74	19.69
J2446	173.82	-4,814.78	19.75
J2454	65.46	-3,259.93	19.89
J2456	173.82	-3,143.68	19.89
J2458	27.16	-3,984.93	19.84
J246	0	-3,828.90	19.85
J2464	174.23	-3,404.24	19.87
J2466	24.65	-3,850.29	19.85
J2468	95.26	-3,139.06	19.9
J2470	68.38	-3,514.29	19.87
J2472	24.65	-6,460.69	19.58
J2476	57.51	-4,286.69	19.81
J2478	32.86	-3,328.41	19.89
J2480	19.08	-3,961.40	19.84
J2482	271.6	-3,062.94	19.89
J2484	32.59	-3,961.91	19.84
J2486	116.86	-3,702.91	19.85
J2490	65.73	-6,115.20	19.62
J2492	192.9	-4,676.28	19.76
J2496	27.16	-4,314.17	19.81
J250	8.22	-2,075.83	19.96
J2500	16.3	-4,801.51	19.77
J2506	70.62	-4,255.16	19.81
J2510	24.65	-3,655.75	19.86
J2512	8.22	-3,660.86	19.87
J2514	0	-3,703.16	19.86
J2516	41.08	-5,292.19	19.72
J2518	32.86	-5,044.28	19.74
J2520	0	-4,612.44	19.79
J2528	0	-3,834.84	19.85

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1260	48.89	-2,653.44	19.93
J1262	27.16	-4,187.44	19.82
J1264	16.3	-6,045.86	19.63
J1266	38.02	-3,349.20	19.89
J1270	130.37	-5,920.57	19.63
J1272	27.16	-8,532.11	19.27
J1274	86.91	-5,231.45	19.72
J1276	65.18	-5,313.90	19.71
J1278	67.97	-5,812.10	19.65
J128	38.02	-1,717.31	19.97
J1280	0	-6,126.13	19.62
J1282	119.5	-7,193.13	19.47
J1284	5.43	-8,420.33	19.29
J1286	0	-7,021.52	19.51
J1290	8.22	-7,240.50	19.48
J1292	21.73	-7,748.45	19.4
J1296	76.05	-7,496.05	19.43
J1298	0	-8,169.38	19.33
J1300	8.22	-5,705.20	19.68
J1304	8.22	-6,107.08	19.63
J1306	0	-6,584.23	19.57
J1308	0	-6,448.73	19.58
J1310	8.22	-6,617.77	19.56
J1314	59.75	-6,942.85	19.51
J1316	0	-7,350.38	19.46
J1318	0	-7,377.86	19.46
J132	16.43	-3,386.69	19.88
J1320	38.02	-7,240.80	19.47
J1322	27.16	-7,381.38	19.45
J1324	81.48	-6,927.76	19.51
J1326	54.32	-7,463.95	19.44
J1328	8.22	-7,149.57	19.49
J1330	0	-5,749.72	19.67
J1332	0	-7,000.80	19.51
J1334	97.78	-3,442.56	19.87
J1336	86.91	-2,665.46	19.92
J1338	92.34	-6,396.85	19.58
J1340	5.43	-6,876.24	19.53
J1342	32.59	-7,460.81	19.44
J1344	59.75	-6,612.36	19.55
J1348	10.86	-6,822.10	19.54
J1350	65.18	-7,343.32	19.45
J1354	27.16	-7,280.39	19.47
J1356	10.86	-7,241.61	19.47
J1358	10.86	-7,222.57	19.48
J136	68.38	-2,462.46	19.94
J1360	10.86	-8,168.74	19.33
J1364	32.59	-2,936.45	19.91
J1366	10.86	-2,899.40	19.92
J1368	0	-3,334.45	19.89
J1370	54.32	-4,660.18	19.78
J1372	10.86	-2,839.66	19.92
J1374	27.16	-3,374.15	19.88
J1378	16.3	-4,039.75	19.84
J138	16.43	-5,035.36	19.74
J1380	16.3	-3,641.56	19.87
J1384	54.32	-4,030.31	19.83
J1386	32.59	-4,149.61	19.83
J1388	24.65	-5,232.64	19.72
J1390	16.43	-5,116.17	19.74
J1392	8.22	-5,178.72	19.73
J1394	73.94	-5,190.17	19.72
J1396	8.22	-5,178.63	19.73
J1398	8.22	-5,176.63	19.73
J140	49.3	-2,396.44	19.94
J1400	16.43	-5,309.21	19.72
J1406	8.22	-6,005.48	19.64
J1408	32.86	-4,169.63	19.82
J1410	27.16	-7,978.83	19.36
J1412	8.22	-6,405.96	19.59
J1416	0	-6,247.20	19.61
J1418	0	-6,698.19	19.55
J142	48.89	-1,059.73	19.99
J1420	8.22	-6,342.17	19.6
J1422	8.22	-4,729.14	19.78
J1424	0	-6,877.24	19.53
J1426	0	-6,536.60	19.57
J1428	32.86	-2,825.68	19.92
J1432	8.22	-3,407.90	19.88
J1434	8.22	-3,822.27	19.85
J1436	146.66	-4,958.90	19.74
J1438	114.07	-5,397.27	19.7
J144	41.08	-1,648.29	19.97
J1440	16.3	-4,662.49	19.78
J1442	13.65	-4,024.79	19.84
J1444	43.46	-4,029.23	19.83
J1446	16.43	-2,117.69	19.95
J1448	0	-5,961.59	19.64
J1450	0	-5,732.79	19.67
J1452	8.22	-5,268.03	19.72
J1454	32.86	-4,993.50	19.75
J1456	5.43	-5,672.55	19.68
J1458	10.86	-5,425.67	19.7
J1460	108.64	-5,190.40	19.72
J1462	0	-6,863.08	19.53
J1464	16.43	-6,488.77	19.58
J1466	0	-7,391.07	19.45
J1468	8.22	-4,112.73	19.83
J1470	10.86	-7,578.26	19.42
J1472	27.16	-7,218.28	19.48
J1474	108.64	-2,758.62	19.92
J1476	21.73	-7,436.26	19.44
J1478	92.34	-4,820.87	19.76
J148	0	-3,946.42	19.84
J1480	16.3	-7,244.40	19.47
J1484	8.22	-6,608.08	19.56
J1486	0	-6,339.76	19.6

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J2532	49.3	-4,248.10	19.82
J2536	16.43	-3,983.24	19.84
J2538	32.59	-4,700.97	19.78
J2540	30.08	-4,052.06	19.83
J2544	21.73	-3,889.46	19.85
J2546	54.59	-3,922.30	19.84
J2548	35.38	-3,902.99	19.84
J2550	51.94	-4,097.41	19.83
J2552	32.86	-4,702.22	19.78
J2554	8.22	-4,122.77	19.83
J2558	8.22	-4,386.25	19.81
J2570	0	-4,187.69	19.82
J2572	43.46	-8,553.64	19.26
J2574	10.86	-4,039.54	19.84
J2592	81.48	-6,503.38	19.57
J2600	8.22	-8,441.86	19.29
J2604	0	-8,566.13	19.27
J2606	57.51	-2,749.08	19.92
J2608	68.38	-4,043.48	19.83
J2610	32.86	-4,457.35	19.8
J2612	24.65	-4,631.07	19.78
J2614	41.08	-5,751.40	19.66
J2616	59.75	-5,238.89	19.72
J2618	21.73	-7,613.28	19.42
J2620	27.16	-5,746.07	19.67
J2622	8.22	-3,833.98	19.85
J2624	76.05	-3,986.16	19.84
J2626	8.22	-5,888.17	19.65
J2628	0	-6,584.25	19.57
J2630	32.59	-5,076.90	19.74
J2632	0	-5,259.06	19.72
J2638	0	-8,837.65	19.22
J2640	13.65	-4,599.37	19.79
J2642	13.65	-4,614.42	19.79
J2644	43.46	-4,768.28	19.77
J2648	10.86	-6,539.41	19.58
J2650	10.86	-5,234.12	19.72
J2652	48.89	-4,643.25	19.78
J2656	0	-4,803.62	19.77
J2666	8.22	-5,558.96	19.69
J2692	43.46	-6,037.04	19.63
J2700	32.59	-7,701.32	19.4
J2702	27.16	-3,699.13	19.86
J2704	48.89	-3,660.99	19.86
J2708	32.59	-6,167.58	19.62
J2710	27.16	-5,142.00	19.73
J2712	21.73	-1,566.49	19.97
J2714	27.16	-5,524.04	19.69
J2716	10.86	-1,843.03	19.97
J2718	0	-6,638.07	19.56
J2726	0	-4,726.02	19.78
J2730	32.59	-3,564.00	19.87
J2732	32.86	-3,200.96	19.9
J2734	32.86	-7,614.15	19.42
J2736	5.43	-338.82	20
J2738	146.66	-4,444.13	19.79
J2744	138.58	-4,518.56	19.78
J2746	16.3	-4,644.46	19.78
J2748	0	-4,593.27	19.79
J2750	38.02	-5,729.46	19.67
J2752	21.73	-3,249.61	19.89
J2754	38.02	-3,036.26	19.91
J2756	21.73	-5,681.28	19.67
J2758	32.86	-3,843.27	19.85
J2762	8.22	-4,618.92	19.79
J2764	86.91	-4,464.40	19.79
J2766	8.22	-4,975.47	19.75
J2768	43.46	-8,389.61	19.29
J2770	32.59	-4,071.33	19.83
J2772	0	-344.11	20
J2774	5.43	-260.92	20
J2776	32.59	-6,583.53	19.57
J2778	97.78	-6,521.06	19.57
J2780	32.86	-5,486.46	19.7
J2784	71.16	-6,502.73	19.57
J2790	8.22	-4,541.12	19.79
J2792	8.22	-3,679.29	19.86
J2794	8.22	-3,851.68	19.85
J2796	0	-4,603.67	19.79
J2798	49.02	-4,986.74	19.75
J2800	149.99	-3,217.60	19.89
J2802	8.22	-3,867.45	19.85
J2808	22.77	-5,414.24	19.7
J2810	14.55	-4,578.14	19.79
J2812	14.55	-3,926.70	19.84
J2814	14.55	-4,043.49	19.84
J2816	14.55	-4,326.72	19.81
J2818	14.55	-3,836.85	19.85
J2820	14.55	-3,614.92	19.87
J2822	14.55	-3,397.62	19.88
J2824	54.32	-5,388.77	19.7
J2826	59.75	-5,208.09	19.72
J2828	27.16	-6,337.11	19.59
J2830	32.59	-6,601.36	19.56
J2832	184.69	-5,726.95	19.65
J2834	152.1	-6,025.99	19.62
J2836	8.22	-3,484.93	19.88
J2838	8.22	-4,878.13	19.76
J2840	0	-4,861.94	19.76
J2842	0	-3,392.82	19.88
J2844	8.22	-6,208.67	19.61
J2846	16.43	-926.42	19.99
J2848	24.65	-2,252.54	19.95
J2850	43.46	-1,566.46	19.97
J2852	38.02	-1,165.89	19.99
J2854	4.85	-3,634.23	19.87
J2856	27.16	-3,403.89	19.88

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1488	24.65	-7,161.43	19.48
J1490	24.65	-6,859.56	19.53
J1492	8.22	-6,726.15	19.55
J1494	0	-6,388.48	19.59
J1496	0	-6,219.34	19.61
J1498	0	-6,359.19	19.6
J150	8.22	-4,261.71	19.82
J1500	0	-6,119.94	19.63
J1502	24.65	-4,844.26	19.76
J1506	10.86	-6,104.54	19.65
J1508	0	-6,165.65	19.63
J1510	0	-6,684.71	19.55
J1512	0	-7,448.52	19.45
J1514	10.86	-3,058.53	19.91
J1516	21.73	-4,340.70	19.81
J1518	0	-7,474.11	19.44
J152	27.16	-1,539.59	19.98
J1520	5.43	-3,128.88	19.9
J1522	10.86	-8,282.01	19.31
J1526	10.86	-7,211.14	19.48
J1528	86.91	-5,756.95	19.66
J1530	43.46	-5,659.71	19.67
J1532	43.46	-4,716.48	19.77
J1536	27.16	-4,566.73	19.79
J1538	16.3	-6,440.09	19.58
J1540	38.02	-4,394.12	19.8
J1542	21.73	-6,352.81	19.59
J1546	65.18	-5,894.38	19.64
J1550	21.73	-6,576.69	19.56
J1552	0	-7,420.24	19.45
J1554	16.3	-4,252.30	19.82
J1556	59.75	-5,297.95	19.71
J1558	43.46	-2,479.05	19.94
J156	32.59	-1,622.16	19.97
J1560	10.86	-7,325.86	19.46
J1562	21.73	-7,013.50	19.51
J1564	43.46	-3,002.52	19.91
J1566	65.18	-2,860.60	19.91
J1568	21.73	-7,018.26	19.5
J1570	59.75	-2,630.52	19.93
J1572	92.34	-1,009.31	19.99
J1574	5.43	-7,208.21	19.48
J1576	86.91	-859.12	19.99
J1580	54.32	-1,171.14	19.99
J1582	5.43	-8,182.91	19.33
J1584	0	-7,769.59	19.4
J1586	38.02	-5,892.61	19.65
J1588	27.16	-7,608.99	19.42
J1590	21.73	-7,369.93	19.45
J1592	59.75	-6,072.19	19.62
J1594	27.16	-5,885.24	19.65
J1596	38.02	-5,793.64	19.66
J1598	48.89	-5,728.48	19.67
J160	27.16	-3,807.45	19.85
J1600	38.02	-5,776.44	19.66
J1602	27.16	-5,830.39	19.66
J1604	48.89	-6,044.13	19.63
J1606	27.16	-6,731.86	19.54
J1608	21.73	-6,631.19	19.56
J1610	38.02	-6,243.66	19.61
J1612	43.46	-5,807.43	19.66
J1614	70.62	-5,639.25	19.67
J1616	54.32	-5,903.17	19.65
J1618	65.18	-5,349.32	19.71
J1620	32.59	-5,241.39	19.73
J1622	27.16	-5,276.61	19.72
J1628	43.46	-5,973.80	19.64
J1632	10.86	-7,347.31	19.46
J1634	10.86	-7,216.07	19.48
J1636	10.86	-7,138.47	19.49
J164	10.86	-955.23	19.99
J1642	32.59	-7,200.42	19.48
J1644	43.46	-7,201.54	19.48
J1646	0	-7,637.49	19.42
J1650	43.46	-1,300.39	19.98
J1652	10.86	-7,449.61	19.44
J1656	0	-7,694.39	19.41
J1660	38.02	-6,657.45	19.55
J1662	32.59	-5,091.99	19.74
J1664	16.3	-4,557.03	19.79
J1666	21.73	-4,285.77	19.81
J1668	32.59	-3,929.00	19.84
J1670	10.86	-4,982.40	19.75
J1672	38.02	-3,529.85	19.87
J1674	38.02	-3,597.61	19.87
J1676	27.16	-6,412.46	19.59
J1678	21.73	-7,281.83	19.47
J1684	70.62	-4,427.89	19.8
J1688	70.62	-3,443.03	19.88
J1690	65.18	-3,836.76	19.85
J1692	48.89	-1,009.81	19.99
J1698	21.73	-7,241.20	19.47
J170	16.3	-3,790.35	19.86
J1700	16.3	-7,321.95	19.46
J1702	5.43	-7,704.82	19.41
J1704	27.16	-4,963.14	19.75
J1708	21.73	-5,871.22	19.65
J1710	16.3	-7,678.27	19.41
J1712	0	-7,447.94	19.45
J1714	21.73	-7,332.23	19.46
J1716	5.43	-7,517.16	19.43
J172	21.73	-1,415.55	19.98
J1720	21.73	-7,152.09	19.49
J1722	21.73	-6,929.60	19.52
J1724	10.86	-6,985.94	19.51
J1730	5.43	-6,767.29	19.54
J1732	0	-6,844.32	19.53

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J2858	76.05	-3,026.26	19.9
J2860	21.73	-3,258.83	19.89
J2862	0	-3,064.04	19.91
J2864	76.05	-2,894.00	19.91
J2866	27.16	-3,346.13	19.89
J2868	43.46	-3,161.56	19.9
J2870	43.46	-3,133.73	19.9
J2872	211.85	-2,956.01	19.9
J2874	92.34	-2,500.40	19.93
J2876	8.22	-2,888.37	19.92
J2878	65.18	-4,778.47	19.77
J2880	70.62	-4,763.47	19.77
J2882	162.96	-5,432.65	19.69
J2884	54.32	-4,483.80	19.79
J2886	59.75	-4,285.89	19.81
J2888	81.48	-4,743.48	19.77
J2890	0	-4,720.28	19.78
J2892	0	-4,229.06	19.82
J2894	8.22	-2,939.29	19.91
J2896	41.08	-4,620.99	19.78
J2898	8.22	-5,384.39	19.71
J2900	16.43	-5,654.76	19.68
J2902	8.22	-5,505.59	19.7
J2904	0	-3,279.24	19.89
J2906	0	-5,153.87	19.73
J2908	8.22	-6,451.17	19.58
J2912	43.46	-6,332.24	19.59
J2916	65.18	-1,512.94	19.98
J2918	21.73	-3,983.06	19.84
J2920	21.73	-1,996.54	19.96
J2922	43.46	-1,886.15	19.96
J2924	8.22	-2,739.95	19.93
J2926	38.02	-1,550.55	19.97
J2928	21.73	-4,913.71	19.76
J2930	17.92	-7,335.61	19.46
J2932	21.73	-4,408.62	19.8
J2934	10.86	-4,170.37	19.83
J2936	21.73	-2,668.69	19.93
J2938	16.3	-2,819.62	19.92
J2940	16.3	-2,828.19	19.92
J2942	27.16	-1,324.36	19.98
J2944	27.16	-1,118.17	19.99
J2946	32.59	-5,668.61	19.67
J2948	8.22	-3,897.91	19.85
J2950	21.73	-4,364.04	19.81
J2952	146.66	-3,505.65	19.87
J2954	146.66	-3,217.10	19.89
J2956	103.21	-3,145.11	19.89
J2958	59.75	-2,801.61	19.92
J2960	24.65	-3,084.46	19.9
J2962	8.22	-2,726.02	19.93
J2964	57.51	-2,408.02	19.94
J2966	26.13	-8,263.69	19.31
J2968	47.41	-4,367.30	19.81
J2970	8.22	-3,693.43	19.86
J2972	24.65	-6,777.24	19.55
J2974	16.43	-5,551.63	19.69
J2976	65.18	-4,931.08	19.75
J2978	21.73	-5,794.33	19.66
J2980	0	-8,661.25	19.25
J2986	0	-2,448.95	19.94
J328	103.21	-3,856.10	19.84
J330	21.73	-3,127.74	19.9
J332	5.43	-6,582.92	19.57
J334	97.78	-2,752.33	19.92
J338	16.43	-4,640.22	19.78
J342	8.22	-4,464.71	19.8
J344	21.86	-6,844.60	19.53
J346	32.86	-6,684.85	19.55
J348	57.51	-3,226.01	19.89
J350	8.22	-3,531.87	19.87
J352	24.65	-4,473.29	19.8
J354	65.73	-4,906.14	19.75
J356	32.86	-8,472.93	19.28
J358	345.14	-3,791.58	19.83
J362	32.86	-2,897.44	19.91
J364	8.22	-4,866.36	19.76
J366	41.08	-2,818.23	19.92
J368	0	-4,476.34	19.8
J370	16.43	-3,500.90	19.88
J372	16.3	-4,576.29	19.79
J374	0	-4,120.33	19.83
J376	0	-4,162.97	19.83
J378	0	-4,094.30	19.83
J380	16.43	-2,777.43	19.92
J384	24.51	-3,416.88	19.88
J386	65.18	-2,838.54	19.92
J388	54.73	-4,036.82	19.83
J390	8.22	-3,734.82	19.86
J392	114.21	-3,681.95	19.86
J394	8.22	-4,372.95	19.81
J396	0	-3,659.93	19.87
J398	0	-4,122.74	19.83
J400	0	-3,599.34	19.87
J406	8.22	-761.29	19.99
J412	49.3	-3,965.98	19.84
J414	0	-3,040.06	19.91
J416	65.18	-5,063.07	19.74
J418	16.43	-4,848.96	19.76
J420	41.08	-8,302.66	19.3
J422	57.51	-4,814.94	19.76
J424	43.46	-7,428.97	19.44
J426	0	-5,045.46	19.75
J428	54.32	-3,380.35	19.88
J432	5.43	-4,826.35	19.77
J434	0	-4,895.54	19.76
J436	0	-4,429.46	19.8

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1734	38.02	-5,330.15	19.71
J1736	0	-7,156.67	19.49
J174	10.86	-3,866.04	19.85
J1740	5.43	-6,986.09	19.51
J1744	43.46	-4,270.92	19.81
J1746	43.46	-3,428.24	19.88
J1752	16.3	-5,307.30	19.72
J1754	21.73	-5,022.74	19.75
J1756	38.02	-4,581.57	19.79
J1758	27.16	-3,966.92	19.84
J176	201.26	-2,974.74	19.9
J1760	19.08	-6,604.09	19.56
J1762	5.43	-6,493.06	19.58
J1764	5.43	-6,470.33	19.58
J1766	10.86	-6,385.75	19.59
J1768	8.22	-5,722.75	19.67
J1772	10.86	-6,954.12	19.52
J1774	54.32	-7,467.44	19.44
J1776	21.73	-6,123.03	19.62
J1778	38.02	-5,970.81	19.64
J178	0	-1,172.99	19.99
J1780	5.43	-6,352.84	19.6
J1782	5.43	-6,837.31	19.53
J1784	27.16	-7,056.48	19.5
J1788	43.46	-6,978.09	19.51
J1794	16.3	-5,660.14	19.68
J1796	10.86	-6,551.36	19.57
J1798	92.34	-6,522.39	19.57
J1802	0	-6,637.86	19.56
J1804	10.86	-6,553.87	19.57
J1806	32.59	-6,452.63	19.58
J1808	10.86	-5,905.63	19.65
J1810	27.16	-6,167.01	19.62
J1812	48.89	-6,609.50	19.56
J1814	43.46	-6,511.23	19.58
J1816	21.73	-6,511.38	19.58
J1818	8.22	-6,109.86	19.63
J182	57.51	-4,598.13	19.78
J1820	10.86	-6,085.44	19.66
J1822	54.32	-5,615.61	19.7
J1824	32.59	-4,476.91	19.8
J1826	10.86	-5,466.74	19.7
J1828	32.59	-6,230.85	19.61
J1830	48.89	-4,163.45	19.82
J1832	32.59	-7,153.97	19.48
J1834	59.75	-4,540.80	19.79
J1836	32.59	-5,919.65	19.65
J1838	32.59	-7,284.37	19.47
J1840	21.73	-7,177.09	19.48
J1842	10.86	-7,808.72	19.39
J1844	21.73	-6,944.11	19.52
J1846	16.3	-7,035.10	19.5
J1850	54.32	-4,554.15	19.79
J1852	10.86	-5,167.18	19.73
J1854	38.02	-6,806.53	19.53
J1856	5.43	-6,719.38	19.55
J1858	5.43	-6,638.96	19.56
J186	8.22	-2,890.98	19.92
J1862	60.16	-5,104.35	19.73
J1864	32.59	-6,156.00	19.62
J1868	38.02	-6,078.60	19.63
J1870	27.16	-5,962.69	19.64
J1872	103.21	-5,949.90	19.63
J1876	0	-5,599.94	19.69
J1878	38.02	-5,883.41	19.65
J188	0	-3,095.24	19.9
J1880	0	-6,362.03	19.6
J1882	32.86	-6,447.44	19.58
J1884	10.86	-6,695.87	19.55
J1886	5.43	-6,697.71	19.55
J1888	5.43	-6,691.77	19.55
J1890	27.16	-6,699.24	19.55
J1892	16.3	-6,892.81	19.52
J1894	10.86	-6,931.61	19.52
J1898	5.43	-6,861.80	19.53
J190	8.22	-3,511.52	19.88
J1902	16.3	-6,677.43	19.55
J1906	76.05	-4,523.29	19.79
J1914	16.3	-6,565.80	19.57
J1918	5.43	-6,521.56	19.57
J192	0	-2,609.48	19.93
J1920	10.86	-6,511.17	19.57
J1922	59.75	-6,324.51	19.59
J1924	8.22	-6,541.95	19.57
J1926	38.02	-5,682.19	19.67
J1928	27.16	-5,360.75	19.71
J1932	10.86	-6,339.97	19.6
J1938	5.43	-5,574.65	19.69
J194	24.65	-5,409.03	19.7
J1940	21.73	-5,270.03	19.72
J1942	32.59	-3,206.64	19.9
J1944	21.73	-2,964.83	19.91
J1946	10.86	-3,643.43	19.87
J1948	21.73	-3,888.27	19.85
J1950	32.59	-4,300.49	19.81
J1952	16.3	-6,122.80	19.62
J1954	21.73	-3,342.50	19.89
J1956	16.3	-3,390.18	19.88
J1958	16.3	-3,106.46	19.9
J196	8.22	-4,151.15	19.83
J1960	32.59	-4,442.14	19.8
J1962	21.73	-4,818.83	19.77
J1964	16.3	-5,232.91	19.72
J1966	21.73	-5,373.03	19.71
J1968	16.3	-5,754.17	19.67
J1970	27.16	-5,266.96	19.72
J1972	32.59	-5,216.99	19.72

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J442	27.16	-3,197.20	19.9
J446	13.65	-3,087.94	19.9
J448	10.86	-3,064.62	19.91
J450	78.97	-2,992.79	19.91
J452	154.88	-3,739.16	19.85
J454	27.16	-3,384.22	19.88
J456	8.22	-3,987.03	19.84
J458	0	-4,129.68	19.83
J470	13.65	-3,104.35	19.9
J476	21.73	-3,368.54	19.89
J478	38.02	-4,242.37	19.82
J480	21.73	-7,196.48	19.48
J482	54.32	-2,756.17	19.92
J484	21.73	-3,157.82	19.9
J492	8.22	-3,774.00	19.86
J494	13.65	-3,793.60	19.86
J496	144.02	-3,678.65	19.85
J498	21.73	-3,803.82	19.85
J500	27.16	-3,817.46	19.85
J504	38.02	-3,799.63	19.85
J506	27.16	-4,658.85	19.78
J508	32.59	-3,950.41	19.84
J516	32.59	-3,445.71	19.88
J518	21.73	-6,094.85	19.63
J520	27.16	-2,955.42	19.91
J522	21.73	-2,795.36	19.92
J524	43.46	-2,989.71	19.91
J526	32.59	-6,120.22	19.62
J528	21.73	-2,774.31	19.92
J530	32.59	-2,777.43	19.92
J534	32.86	-3,853.74	19.85
J536	24.65	-3,484.46	19.88
J540	0	-2,967.56	19.91
J544	0	-2,963.34	19.91
J546	0	-2,973.54	19.91
J572	0	-4,976.28	19.75
J574	0	-4,754.66	19.77
J576	0	-4,601.93	19.79
J578	27.16	-4,399.26	19.8
J580	32.59	-4,181.10	19.82
J582	32.59	-3,649.82	19.86
J584	48.89	-3,576.23	19.87
J590	0	-6,406.30	19.59
J592	5.43	-6,415.29	19.59
J594	0	-6,246.72	19.61
J600	0	-2,809.51	19.92
J602	16.43	-2,946.65	19.91
J604	16.3	-4,618.50	19.79
J614	16.43	-4,609.34	19.79
J618	116.86	-7,682.08	19.39
J62	32.86	-3,407.08	19.88
J622	8.22	-7,536.17	19.43
J624	8.22	-7,550.59	19.43
J626	41.08	-6,835.25	19.53
J630	0	-2,474.00	19.94
J634	24.65	-2,288.93	19.95
J638	0	-6,129.83	19.63
J640	8.22	-6,522.56	19.57
J642	8.22	-5,493.70	19.7
J644	8.22	-6,410.63	19.59
J646	0	-5,184.97	19.73
J648	0	-5,963.40	19.65
J650	8.22	-5,401.63	19.71
J652	0	-6,427.16	19.59
J654	8.22	-5,799.93	19.67
J656	24.65	-6,152.73	19.62
J658	24.65	-5,685.09	19.68
J660	0	-7,374.18	19.46
J662	8.22	-6,642.27	19.56
J664	16.43	-7,043.84	19.5
J666	0	-7,677.48	19.41
J668	5.43	-6,363.78	19.59
J670	103.21	-3,354.33	19.88
J672	0	-6,263.31	19.61
J676	43.46	-4,010.80	19.84
J678	38.02	-4,334.25	19.81
J680	16.3	-3,888.93	19.85
J682	27.16	-3,145.70	19.9
J688	8.22	-6,326.25	19.6
J694	0	1,695.72	19.97
J696	0	-428.53	19.99
J698	0	-837.44	20
J70	16.43	-2,376.04	19.94
J700	0	-638.25	20
J702	16.3	-2,352.07	19.94
J704	48.89	-1,290.32	19.98
J706	0	-1,153.92	19.99
J710	38.02	-1,608.78	19.97
J712	114.07	-2,799.76	19.92
J716	48.89	-1,469.86	19.98
J720	38.02	-1,601.53	19.98
J722	86.91	-2,381.28	19.94
J724	43.46	-2,507.00	19.94
J726	27.16	-2,624.44	19.93
J732	38.02	-2,767.02	19.92
J744	0	-8,423.18	19.29
J750	8.22	-8,541.62	19.27
J756	8.22	-4,055.62	19.83
J758	0	-7,205.27	19.48
J76	10.86	-3,548.38	19.87
J760	8.22	-7,504.31	19.44
J766	32.73	-7,804.00	19.39
J768	19.08	-7,121.31	19.49
J770	0	-7,288.93	19.47
J778	32.86	-4,587.81	19.79
J780	8.22	-8,815.93	19.22
J784	65.18	-8,294.91	19.3

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J1974	16.3	-5,178.91	19.73
J198	8.22	-3,956.78	19.84
J1984	43.46	-5,105.77	19.73
J1986	76.05	-5,119.91	19.73
J1988	21.73	-6,717.66	19.55
J1990	32.59	-6,576.75	19.56
J1992	27.16	-6,486.69	19.58
J1994	54.32	-6,479.07	19.57
J1996	203.77	-5,785.60	19.64
J1998	65.18	-6,021.19	19.63
J2000	13.65	-6,552.48	19.57
J2002	0	-6,669.57	19.56
J2004	10.86	-6,517.63	19.57
J2006	27.16	-5,842.84	19.66
J2008	16.3	-5,611.80	19.68
J2010	16.3	-5,460.43	19.7
J2012	5.43	-5,319.31	19.72
J2014	21.73	-5,169.43	19.73
J2016	38.02	-3,891.77	19.85
J2018	5.43	-5,347.58	19.71
J202	32.86	-4,065.38	19.83
J2020	43.46	-3,705.15	19.86
J2024	16.3	-5,133.05	19.73
J2028	32.59	-3,800.73	19.85
J2032	0	-6,415.50	19.59
J2034	59.75	-5,782.00	19.66
J2036	32.59	-6,120.57	19.62
J204	0	-3,530.14	19.88
J2040	0	-6,249.55	19.61
J2042	97.78	-5,328.98	19.71
J2046	97.78	-2,617.59	19.93
J2048	32.59	-5,429.53	19.7
J2056	54.32	-3,011.81	19.91
J2058	32.59	-5,282.35	19.72
J206	0	-3,385.12	19.89
J2064	92.34	-5,107.99	19.73
J2066	32.59	-5,155.81	19.73
J2068	43.46	-5,281.22	19.72
J2070	21.73	-5,223.34	19.72
J2072	16.43	-4,436.16	19.8
J2080	38.02	-5,037.78	19.74
J2090	65.18	-4,841.82	19.76
J2092	21.73	-4,019.65	19.84
J2094	21.73	-4,905.07	19.76
J2096	5.43	-5,091.63	19.74
J2098	81.48	-4,820.84	19.76
J210	0	-2,559.06	19.93
J2102	86.91	-5,438.62	19.69
J2104	21.86	-4,780.57	19.77
J2106	21.73	-3,957.37	19.84
J2110	16.3	-5,231.15	19.72
J2112	0	-5,107.85	19.74
J2118	21.73	-4,540.46	19.79
J212	13.65	-2,467.91	19.94
J2120	70.62	-4,160.02	19.82
J2122	27.16	-6,234.35	19.61
J2124	32.59	-4,819.24	19.76
J2126	21.73	-4,798.36	19.77
J2130	54.32	-4,892.34	19.76
J2132	0	-4,998.01	19.75
J2134	48.89	-5,027.85	19.74
J2138	10.86	-4,760.72	19.77
J214	0	-2,644.53	19.93
J2140	0	-4,789.72	19.77
J2142	10.86	-4,719.43	19.78
J2144	21.73	-4,689.29	19.78
J2148	70.62	-4,636.15	19.78
J2150	38.02	-4,749.54	19.77
J2152	21.73	-4,608.18	19.79
J2154	10.86	-4,584.67	19.79
J2156	10.86	-4,684.34	19.78
J2158	0	-4,768.15	19.77
J216	114.34	-2,647.06	19.92
J2162	8.22	-5,561.25	19.69
J2164	8.22	-3,338.07	19.89
J2166	0	-4,818.21	19.77

INFOWATER INPUT AND OUTPUT REPORT FOR GARDEN CITY
FUTURE MDD AND FIREFLOW WITH FIRM CAPACITY

ID	Static Demand (gpm)	Available Flow @Hydrant (gpm)	Available Flow Pressure (psi)
J786	43.46	-7,463.84	19.44
J788	0	-7,260.66	19.47
J790	0	-7,603.25	19.42
J792	0	-7,153.10	19.49
J794	16.43	-6,840.74	19.53
J796	8.22	-8,668.21	19.25
J80	32.59	-3,341.65	19.89
J806	0	-6,679.85	19.56
J808	13.65	-7,857.54	19.38
J810	8.22	-6,464.01	19.59
J812	8.22	-5,995.08	19.64
J814	8.22	-6,612.48	19.57
J816	13.65	-7,174.40	19.48
J824	54.32	-7,534.52	19.42
J826	0	-7,996.71	19.36
J828	32.86	-3,209.30	19.9
J830	16.43	-3,178.96	19.9
J832	8.22	-2,880.48	19.92
J834	16.43	-3,113.71	19.9
J836	0	-2,705.88	19.93
J838	0	-8,523.46	19.28
J840	8.22	-8,542.76	19.27
J846	16.43	-8,197.62	19.33
J852	16.3	-4,764.35	19.77
J854	10.86	-5,010.41	19.75
J856	16.43	-4,854.88	19.76
J858	8.22	-5,121.65	19.74
J860	8.22	-7,392.91	19.45
J862	8.22	-7,349.92	19.46
J864	0	-7,219.93	19.49
J874	24.65	-2,411.06	19.94
J876	8.22	-2,900.02	19.92
J878	0	-2,754.08	19.92
J88	32.86	-5,641.58	19.68
J880	8.22	-2,922.77	19.91
J882	8.22	-3,002.28	19.91
J884	8.22	-3,015.55	19.91
J890	8.22	-1,426.71	19.98
J892	24.65	-2,871.14	19.92
J894	24.65	-4,006.82	19.84
J896	5.43	-1,664.98	19.97
J90	8.22	-1,104.82	19.99
J906	32.86	-4,343.94	19.81
J908	51.94	-3,524.49	19.87
J912	0	-4,942.61	19.76
J914	24.65	-6,641.50	19.56
J916	41.08	-3,737.85	19.86
J918	24.65	-2,011.51	19.96
J92	0	-919.39	19.99
J922	0	-5,162.17	19.73
J924	41.08	-6,870.18	19.52
J926	0	-4,155.35	19.83
J928	16.43	-4,633.97	19.78
J930	24.65	-5,058.57	19.74
J932	16.43	-6,440.27	19.58
J938	24.65	-7,297.93	19.46
J94	127.99	-2,774.08	19.92
J940	32.86	-3,879.73	19.85
J942	8.22	-3,493.27	19.88
J944	32.86	-7,420.80	19.44
J946	24.65	-4,466.15	19.8
J948	250.01	-3,236.27	19.88
J950	152.1	-3,414.25	19.87
J952	65.18	-4,904.72	19.75
J954	8.22	-3,879.75	19.85
J956	8.22	-4,727.94	19.78
J96	41.08	-2,678.44	19.93
J960	8.22	-1,235.51	19.98
J978	146.66	-4,667.50	19.77
J98	0	-1,925.75	19.96
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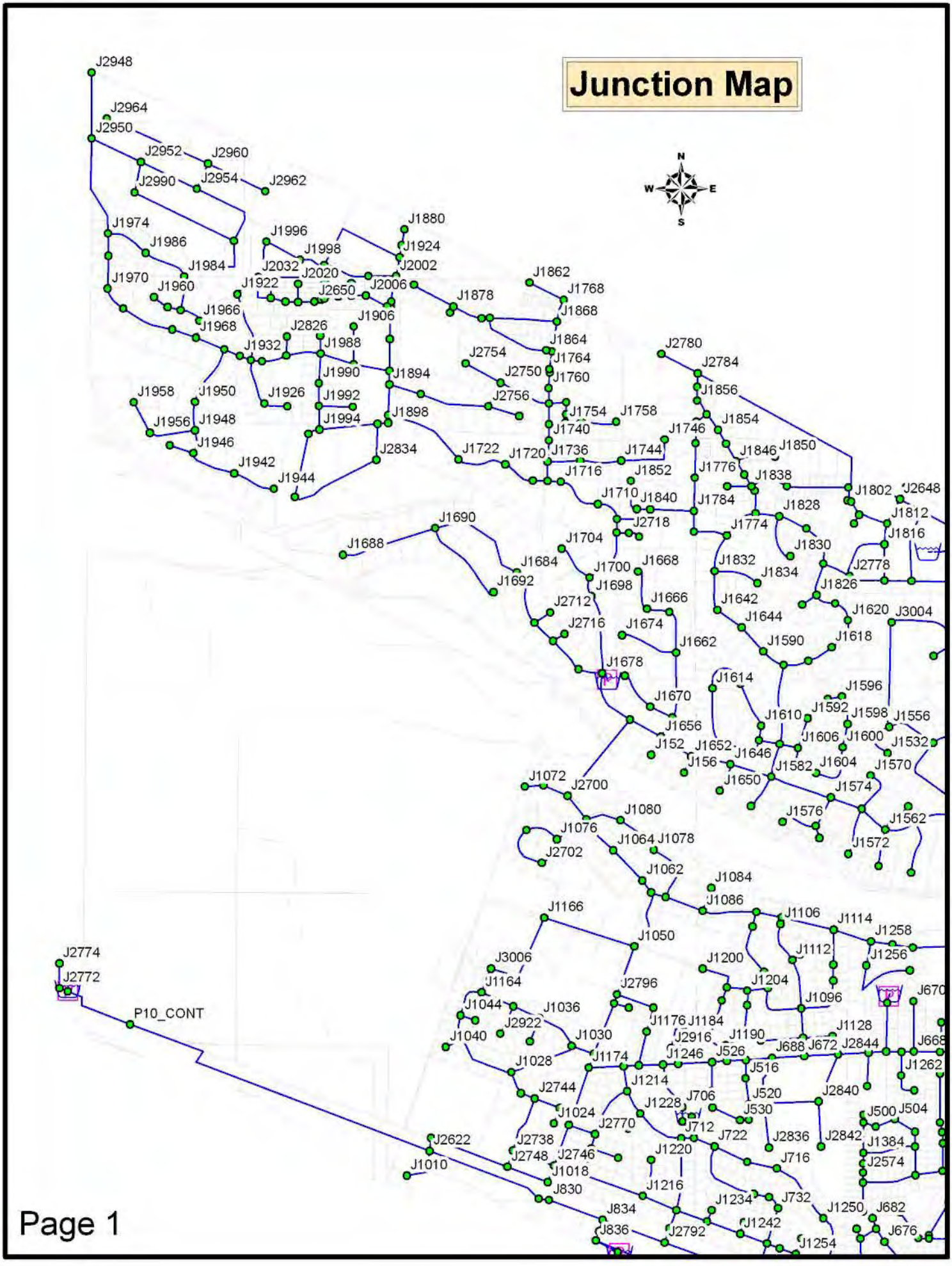
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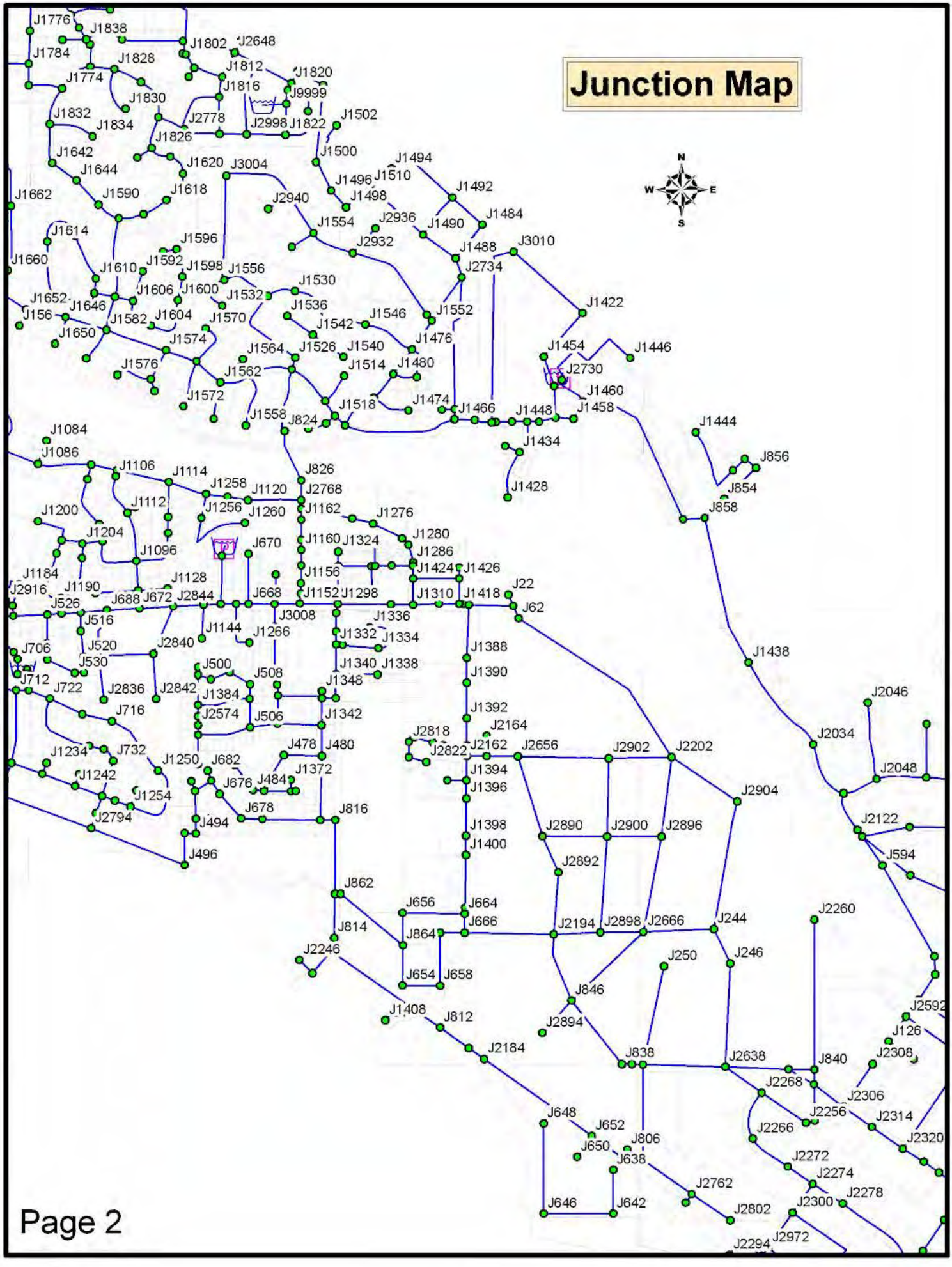
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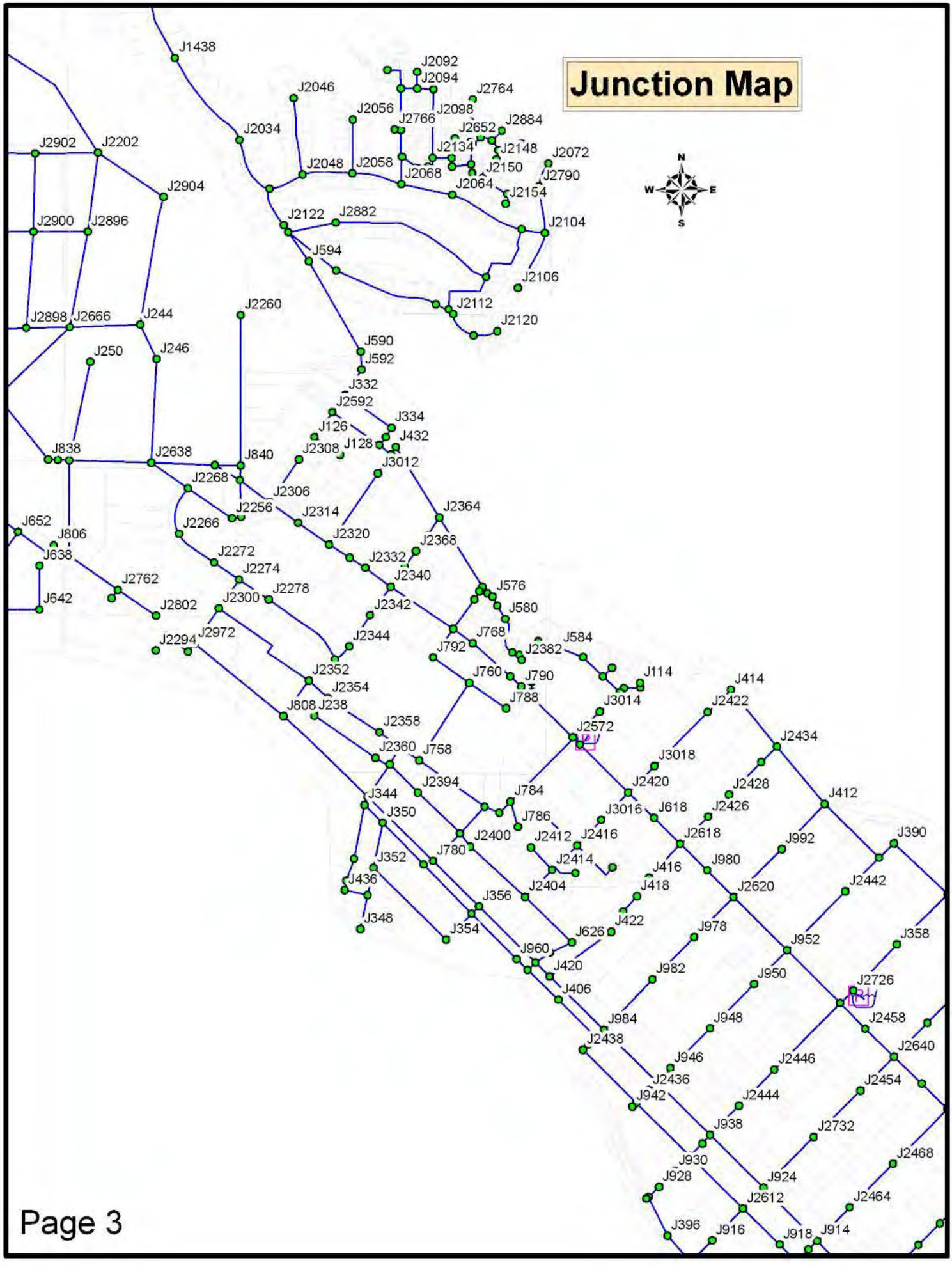
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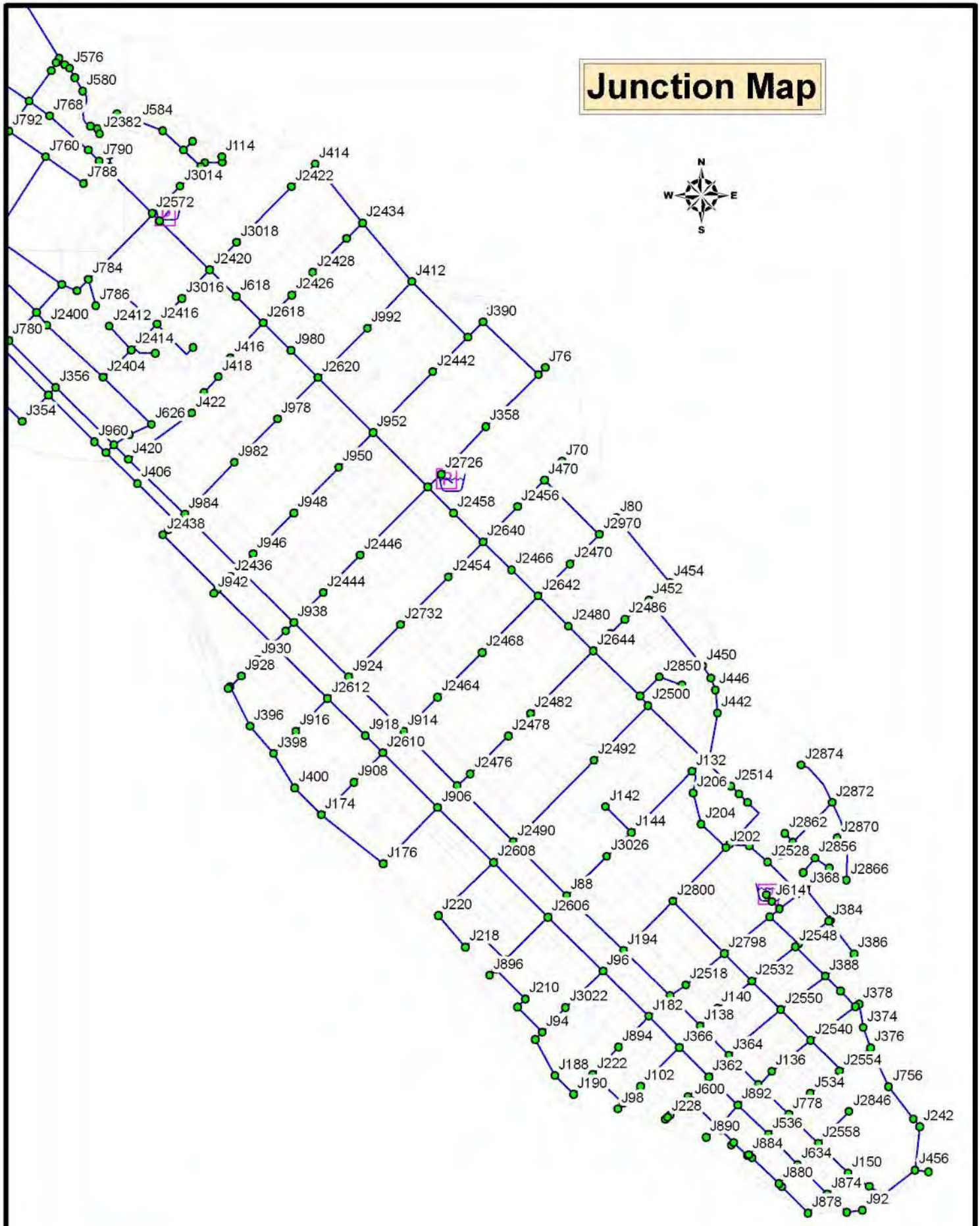

APPENDIX E
EPA QUICK REFERENCE GUIDES

1. Total Coliform Rule
2. IOC's, Fluoride, VOC's, and SOC's
3. Lead and Copper Rule
4. Stage 1 Disinfectant/Disinfection ion By-Product Rule
5. Stage 2 Disinfectant/Disinfection ion By-Product Rule
6. Radionuclide Rule
7. Arsenic Rule
8. Groundwater Rule

United States Environmental Protection Agency
Office of Water (4606)
EPA 816-F-01-035
November 2001
www.epa.gov/safewater



Total Coliform Rule: A Quick Reference Guide

Overview of the Rule

Title	**Total Coliform Rule (TCR) 54 FR 27544-27568, June 29, 1989, Vol. 54, No. 124[1]**
Purpose	**Improve public health protection by reducing fecal pathogens to minimal levels through control of total coliform bacteria, including fecal coliforms and *Escherichia coli (E. coli)*.**
General Description	**Establishes a maximum contaminant level (MCL) based on the presence or absence of total coliforms, modifies monitoring requirements including testing for fecal coliforms or *E. coli,* requires use of a sample siting plan, and also requires sanitary surveys for systems collecting fewer than five samples per month.**
Utilities Covered	**The TCR applies to all public water systems.**

Public Health Benefits

Implementation of the TCR has resulted in . . .	▸ **Reduction in risk of illness from disease causing organisms associated with sewage or animal wastes. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue.**

What are the Major Provisions?

ROUTINE Sampling Requirements

- **Total coliform samples must be collected at sites which are representative of water quality throughout the distribution system according to a written sample siting plan subject to state review and revision.**
- **Samples must be collected at regular time intervals throughout the month except groundwater systems serving 4,900 persons or fewer may collect them on the same day.**
- **Monthly sampling requirements are based on population served (see table on next page for the minimum sampling frequency).**
- **A reduced monitoring frequency may be available for systems serving 1,000 persons or fewer and using only ground water if a sanitary survey within the past 5 years shows the system is free of sanitary defects (the frequency may be no less than 1 sample/quarter for community and 1 sample/year for non-community systems).**
- **Each total coliform-positive routine sample must be tested for the presence of fecal coliforms or *E. coli*.**
- **If any routine sample is total coliform-positive, repeat samples are required.**

REPEAT Sampling Requirements

- **Within 24 hours of learning of a total coliform-positive ROUTINE sample result, at least 3 REPEAT samples must be collected and analyzed for total coliforms:**
  - **One REPEAT sample must be collected from the same tap as the original sample.**
  - **One REPEAT sample must be collected within five service connections upstream.**
  - **One REPEAT sample must be collected within five service connections downstream.**
  - **Systems that collect 1 ROUTINE sample per month or fewer must collect a 4th REPEAT sample.**
- **If any REPEAT sample is total coliform-positive:**
  - **The system must analyze that total coliform-positive culture for fecal coliforms or *E.coli*.**
  - **The system must collect another set of REPEAT samples, as before, unless the MCL has been violated and the system has notified the state.**

Additional ROUTINE Sample Requirements

- **A positive ROUTINE or REPEAT total coliform result requires a minimum of five ROUTINE samples be collected the following month the system provides water to the public unless waived by the state.**

[1] The June 1989 Rule was revised as follows: Corrections and Technical Amendments, 6/19/90 and Partial Stay of Certain Provisions (Variance Criteria) 56 FR 1556-1557, Vol 56, No 10.

Note: The TCR is currently undergoing the 6 year review process and may be subject to change.



For additional information on the TCR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater/mdbp/mdbp.html; or contact your state drinking water representative.

[2] The revised Public Notification Rule will extend the period allowed for public notice of monthly violations to 30 days and shorten the period for acute violations to 24 hours. These revisions are effective for all systems by May 6, 2002 and are detailed in 40 CFR Subpart Q.

Public Water System ROUTINE Monitoring Frequencies

Population	Minimum Samples/ Month	Population	Minimum Samples/ Month	Population	Minimum Samples/ Month
25-1,000*	1	21,501-25,000	25	450,001-600,000	210
1,001-2,500	2	25,001-33,000	30	600,001-780,000	240
2,501-3,300	3	33,001-41,000	40	780,001-970,000	270
3,301-4,100	4	41,001-50,000	50	970,001-1,230,000	300
4,101-4,900	5	50,001-59,000	60	1,230,001-1,520,000	330
4,901-5,800	6	59,001-70,000	70	1,520,001-1,850,000	360
5,801-6,700	7	70,001-83,000	80	1,850,001-2,270,000	390
6,701-7,600	8	83,001-96,000	90	2,270,001-3,020,000	420
7,601-8,500	9	96,001-130,000	100	3,020,001-3,960,000	450
8,501-12,900	10	130,001-220,000	120	[3] 3,960,001	480
12,901-17,200	15	220,001-320,000	150		
17,201-21,500	20	320,001-450,000	180		

*Includes PWSs which have at least 15 service connections, but serve <25 people.

What are the Other Provisions?

Systems collecting fewer than 5 ROUTINE samples per month . . .	Must have a sanitary survey every 5 years (or every 10 years if it is a non-community water system using protected and disinfected ground water).**
Systems using surface water or ground water under the direct influence of surface water (GWUDI) and meeting filtration avoidance criteria . . .	Must collect and have analyzed one coliform sample each day the turbidity of the source water exceeds 1 NTU. This sample must be collected from a tap near the first service connection.

** As per the IESWTR, states must conduct sanitary surveys for community surface water and GWUDI systems in this category every 3 years (unless reduced by the state based on outstanding performance).

How is Compliance Determined?

- Compliance is based on the presence or absence of total coliforms.
- Compliance is determined each calendar month the system serves water to the public (or each calendar month that sampling occurs for systems on reduced monitoring).
- The results of ROUTINE and REPEAT samples are used to calculate compliance.

A Monthly MCL Violation is Triggered if:

A system collecting fewer than 40 samples per month . . .	Has greater than 1 ROUTINE/REPEAT sample per month which is total coliform-positive.
A system collecting at least 40 samples per month . . .	Has greater than 5.0 percent of the ROUTINE/REPEAT samples in a month total coliform-positive.

An Acute MCL Violation is Triggered if:

Any public water system . . .	Has any fecal coliform- or *E. coli*-positive REPEAT sample *or* has a fecal coliform- or *E. coli*-positive ROUTINE sample followed by a total coliform-positive REPEAT sample.

What are the Public Notification and Reporting Requirements?

For a Monthly MCL Violation	▸ The violation must be reported to the state no later than the end of the next business day after the system learns of the violation. ▸ The public must be notified within 14 days.[2]
For an Acute MCL Violation	▸ The violation must be reported to the state no later than the end of the next business day after the system learns of the violation. ▸ The public must be notified within 72 hours.[2]
Systems with ROUTINE or REPEAT samples that are fecal coliform- or *E. coli*-positive . . .	Must notify the state by the end of the day they are notified of the result or by the end of the next business day if the state office is already closed.

EPA National Primary Drinking Water Standards

	Contaminant	MCL or TT[1] (mg/L)[2]	Potential health effects from exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal
OC	Acrylamide	TT[8]	Nervous system or blood problems;	Added to water during sewage/wastewater increased risk of cancer treatment	zero
OC	Alachlor	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops	zero
R	Alpha particles	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation	zero
IOC	Antimony	0.006	Increase in blood cholesterol; decrease in blood sugar	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	0.006
IOC	Arsenic	0.010 as of 1/23/06	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer	Erosion of natural deposits; runoff from orchards, runoff from glass & electronics production wastes	0
IOC	Asbestos (fibers >10 micrometers)	7 million fibers per Liter (MFL)	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits	7 MFL
OC	Atrazine	0.003	Cardiovascular system or reproductive problems	Runoff from herbicide used on row crops	0.003
IOC	Barium	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	2
OC	Benzene	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Discharge from factories; leaching from gas storage tanks and landfills	zero
OC	Benzo(a)pyrene (PAHs)	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution lines	zero
IOC	Beryllium	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries	0.004
R	Beta particles and photon emitters	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation	zero
DBP	Bromate	0.010	Increased risk of cancer	Byproduct of drinking water disinfection	zero
IOC	Cadmium	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints	0.005
OC	Carbofuran	0.04	Problems with blood, nervous system, or reproductive system	Leaching of soil fumigant used on rice and alfalfa	0.04
OC	Carbon tetrachloride	0.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities	zero
D	Chloramines (as Cl_2)	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort, anemia	Water additive used to control microbes	MRDLG=4[1]

LEGEND

D	Dinsinfectant	IOC	Inorganic Chemical	OC	Organic Chemical
DBP	Disinfection Byproduct	M	Microorganism	R	Radionuclides

	Contaminant	MCL or TT[1] (mg/L)[2]	Potential health effects from exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal
OC	Chlordane	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned termiticide	zero
D	Chlorine (as Cl_2)	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort	Water additive used to control microbes	MRDLG=4[1]
D	Chlorine dioxide (as ClO_2)	MRDL=0.8[1]	Anemia; infants & young children: nervous system effects	Water additive used to control microbes	MRDLG=0.8[1]
DBP	Chlorite	1.0	Anemia; infants & young children: nervous system effects	Byproduct of drinking water disinfection	0.8
OC	Chlorobenzene	0.1	Liver or kidney problems	Discharge from chemical and agricultural chemical factories	0.1
IOC	Chromium (total)	0.1	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits	0.1
IOC	Copper	TT[7]; Action Level = 1.3	Short term exposure: Gastrointestinal distress. Long term exposure: Liver or kidney damage. People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level	Corrosion of household plumbing systems; erosion of natural deposits	1.3
M	*Cryptosporidium*	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero
IOC	Cyanide (as free cyanide)	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories	0.2
OC	2,4-D	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops	0.07
OC	Dalapon	0.2	Minor kidney changes	Runoff from herbicide used on rights of way	0.2
OC	1,2-Dibromo-3-chloropropane (DBCP)	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards	zero
OC	o-Dichlorobenzene	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories	0.6
OC	p-Dichlorobenzene	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories	0.075
OC	1,2-Dichloroethane	0.005	Increased risk of cancer	Discharge from industrial chemical factories	zero
OC	1,1-Dichloroethylene	0.007	Liver problems	Discharge from industrial chemical factories	0.007
OC	cis-1,2-Dichloroethylene	0.07	Liver problems	Discharge from industrial chemical factories	0.07
OC	trans-1,2-Dichloroethylene	0.1	Liver problems	Discharge from industrial chemical factories	0.1
OC	Dichloromethane	0.005	Liver problems; increased risk of cancer	Discharge from drug and chemical factories	zero
OC	1,2-Dichloropropane	0.005	Increased risk of cancer	Discharge from industrial chemical factories	zero
OC	Di(2-ethylhexyl) adipate	0.4	Weight loss, live problems, or possible reproductive difficulties	Discharge from chemical factories	0.4
OC	Di(2-ethylhexyl) phthalate	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories	zero
OC	Dinoseb	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables	0.007
OC	Dioxin (2,3,7,8-TCDD)	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories	zero
OC	Diquat	0.02	Cataracts	Runoff from herbicide use	0.02
OC	Endothall	0.1	Stomach and intestinal problems	Runoff from herbicide use	0.1

LEGEND

D Dinsinfectant

DBP Disinfection Byproduct

IOC Inorganic Chemical

M Microorganism

OC Organic Chemical

R Radionuclides

	Contaminant	MCL or TT[1] (mg/L)[2]	Potential health effects from exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal
OC	Endrin	0.002	Liver problems	Residue of banned insecticide	0.002
OC	Epichlorohydrin	TT[8]	Increased cancer risk, and over a long period of time, stomach problems	Discharge from industrial chemical factories; an impurity of some water treatment chemicals	zero
OC	Ethylbenzene	0.7	Liver or kidneys problems	Discharge from petroleum refineries	0.7
OC	Ethylene dibromide	0.00005	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Discharge from petroleum refineries	zero
IOC	Fluoride	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories	4.0
M	*Giardia lamblia*	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero
OC	Glyphosate	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use	0.7
DBP	Haloacetic acids (HAA5)	0.060	Increased risk of cancer	Byproduct of drinking water disinfection	n/a[6]
OC	Heptachlor	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide	zero
OC	Heptachlor epoxide	0.0002	Liver damage; increased risk of cancer	Breakdown of heptachlor	zero
M	Heterotrophic plate count (HPC)	TT[3]	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	HPC measures a range of bacteria that are naturally present in the environment	n/a
OC	Hexachlorobenzene	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories	zero
OC	Hexachlorocyclopentadiene	0.05	Kidney or stomach problems	Discharge from chemical factories	0.05
IOC	Lead	TT[7]; Action Level = 0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities; Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits	zero
M	*Legionella*	TT[3]	Legionnaire's Disease, a type of pneumonia	Found naturally in water; multiplies in heating systems	zero
OC	Lindane	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens	0.0002
IOC	Mercury (inorganic)	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands	0.002
OC	Methoxychlor	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	0.04
IOC	Nitrate (measured as Nitrogen)	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	10
IOC	Nitrite (measured as Nitrogen)	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	1

LEGEND

D Dinsinfectant
IOC Inorganic Chemical
OC Organic Chemical
DBP Disinfection Byproduct
M Microorganism
R Radionuclides

	Contaminant	MCL or TT[1] (mg/L)[2]	Potential health effects from exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal
OC	Oxamyl (Vydate)	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes	0.2
OC	Pentachlorophenol	0.001	Liver or kidney problems; increased cancer risk	Discharge from wood preserving factories	zero
OC	Picloram	0.5	Liver problems	Herbicide runoff	0.5
OC	Polychlorinated biphenyls (PCBs)	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Runoff from landfills; discharge of waste chemicals	zero
R	Radium 226 and Radium 228 (combined)	5 pCi/L	Increased risk of cancer	Erosion of natural deposits	zero
IOC	Selenium	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines	0.05
OC	Simazine	0.004	Problems with blood	Herbicide runoff	0.004
OC	Styrene	0.1	Liver, kidney, or circulatory system problems	Discharge from rubber and plastic factories; leaching from landfills	0.1
OC	Tetrachloroethylene	0.005	Liver problems; increased risk of cancer	Discharge from factories and dry cleaners	zero
IOC	Thallium	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories	0.0005
OC	Toluene	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories	1
M	Total Coliforms (including fecal coliform and *E. coli*)	5.0%[4]	Not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present[5]	Coliforms are naturally present in the environment as well as feces; fecal coliforms and *E. coli* only come from human and animal fecal waste.	zero
DBP	Total Trihalomethanes (TTHMs)	0.10 0.080 after 12/31/03	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection	n/a[6]
OC	Toxaphene	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle	zero
OC	2,4,5-TP (Silvex)	0.05	Liver problems	Residue of banned herbicide	0.05
OC	1,2,4-Trichlorobenzene	0.07	Changes in adrenal glands	Discharge from textile finishing factories	0.07
OC	1,1,1-Trichloroethane	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories	0.20
OC	1,1,2-Trichloroethane	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories	0.003
OC	Trichloroethylene	0.005	Liver problems; increased risk of cancer	Discharge from metal degreasing sites and other factories	zero
M	Turbidity	TT[3]	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing micro-organisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	Soil runoff	n/a
R	Uranium	30 ug/L as of 12/08/03	Increased risk of cancer, kidney toxicity	Erosion of natural deposits	zero

LEGEND

D	Dinsinfectant	IOC	Inorganic Chemical	OC	Organic Chemical
DBP	Disinfection Byproduct	M	Microorganism	R	Radionuclides

	Contaminant	MCL or TT[1] (mg/L)[2]	Potential health effects from exposure above the MCL	Common sources of contaminant in drinking water	Public Health Goal
OC	Vinyl chloride	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from plastic factories	zero
M	Viruses (enteric)	TT3	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste	zero
OC	Xylenes (total)	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories	10

NOTES

1 Definitions

- Maximum Contaminant Level Goal (MCLG)—The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
- Maximum Contaminant Level (MCL)—The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
- Maximum Residual Disinfectant Level Goal (MRDLG)—The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- Maximum Residual Disinfectant Level (MRDL)—The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- Treatment Technique (TT)—A required process intended to reduce the level of a contaminant in drinking water.

2 Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (ppm).

3 EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- *Cryptosporidium* (as of 1/1/02 for systems serving >10,000 and 1/14/05 for systems serving <10,000) 99% removal.
- *Giardia lamblia*: 99.9% removal/inactivation
- Viruses: 99.99% removal/inactivation
- *Legionella:* No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated, *Legionella* will also be controlled.
- Turbidity: At no time can turbidity (cloudiness of water) go above 5 nephelolometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples in any month. As of January 1, 2002, for systems servicing >10,000, and January 14, 2005, for systems servicing <10,000, turbidity may never exceed 1 NTU, and must not exceed 0.3 NTU in 95% of daily samples in any month.
- HPC: No more than 500 bacterial colonies per milliliter
- Long Term 1 Enhanced Surface Water Treatment (Effective Date: January 14, 2005); Surface water systems or (GWUDI) systems serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, *Cryptosporidium* removal requirements, updated watershed control requirements for unfiltered systems).
- Filter Backwash Recycling: The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

4 No more than 5.0% samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli* if two consecutive TC-positive samples, and one is also positive for *E. coli* fecal coliforms, system has an acute MCL violation.

5 Fecal coliform and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a special health risk for infants, young children, and people with severely compromised immune systems.

6 Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L)
- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L)

7 Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.

8 Each water system must certify, in writing, to the state (using third-party or manufacturers certification) that when it uses acrylamide and/or epichlorohydrin to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows: Acrylamide = 0.05% dosed at 1 mg/L (or equivalent); Epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent).

LEGEND

D	Dinsinfectant	IOC	Inorganic Chemical	OC	Organic Chemical
DBP	Disinfection Byproduct	M	Microorganism	R	Radionuclides

National Secondary Drinking Water Standards

National Secondary Drinking Water Standards are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

Contaminant	Secondary Standard
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

Office of Water (4606M)
EPA 816-F-03-016
www.epa.gov/safewater
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Lead and Copper Rule: A Quick Reference Guide

Overview of the Rule

Title	**Lead and Copper Rule (LCR)[1], 56 FR 26460 - 26564, June 7, 1991**
Purpose	**Protect public health by minimizing lead (Pb) and copper (Cu) levels in drinking water, primarily by reducing water corrosivity. Pb and Cu enter drinking water mainly from corrosion of Pb and Cu containing plumbing materials.**
General Description	**Establishes action level (AL) of 0.015 mg/L for Pb and 1.3 mg/L for Cu based on 90th percentile level of tap water samples. An AL exceedance is not a violation but can trigger other requirements that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring/treatment, public education, and lead service line replacement (LSLR).**
Utilities Covered	**All community water systems (CWSs) and non-transient, non-community water systems (NTNCWSs) are subject to the LCR requirements.**

Public Health Benefits

Implementation of the LCR has resulted in . . .	▸ **Reduction in risk of exposure to Pb that can cause damage to brain, red blood cells, and kidneys, especially for young children and pregnant women.** ▸ **Reduction in risk of exposure to Cu that can cause stomach and intestinal distress, liver or kidney damage, and complications of Wilson's disease in genetically predisposed people.**

Lead and Copper Tap Sampling Requirements

- **First draw samples must be collected by all CWSs & NTNCWSs at cold water taps in homes/buildings that are at high risk of Pb/Cu contamination as identified in 40 CFR 141.86(a).**
- **Number of sample sites is based on system size (see Table 1).**
- **Systems must conduct monitoring every 6 months unless they qualify for reduced monitoring (see Table 2).**

Table 1: Pb and Cu Tap and WQP Tap Monitoring

Size Category	System Size	Number of Pb/Cu Tap Sample Sites		Number of WQP Tap Sampling Sites	
		Standard	Reduced	Standard	Reduced
Large	> 100K	100	50	25	10
	50,001-100K	60	30	10	7
Medium	10,001 - 50K	60	30	10	7
	3,301 - 10K	40	20	3	3
Small	501 - 3,300	20	10	2	2
	101 - 500	10	5	1	1
	≤ 100	5	5	1	1

Table 2: Criteria for Reduced Pb/Cu Tap Monitoring[a]

Can Monitor . . .	*If the System . . .*
Annually	1. Serves ≤ 50,000 and is ≤ both ALs for 2 consecutive 6-month monitoring periods; ***or***
	2. Meets Optimal Water Quality Parameter (OWQP) specifications for 2 consecutive 6-month monitoring periods.
Triennially	1. Serves ≤ 50,000 and is ≤ both ALs for 3 consecutive years of monitoring; ***or***
	2. Meets OWQP specifications for 3 consecutive years of monitoring; ***or***
	3. Has 90th percentile Pb levels ≤ 0.005 mg/L & 90th percentile Cu level ≤ 0.65 mg/L for 2 consecutive 6-month periods (*i.e*, accelerated reduced Pb/Cu tap monitoring), ***or***
	4. Meets the 40 CFR 141.81(b)(3) criteria.
Once every 9 years	Serves ≤ 3,300 and meets monitoring waiver criteria found at 40 CFR 141.86(g).

[a] Samples are collected at reduced number of sites (see Table 1 above).

Treatment Technique and Sampling Requirements

CORROSION CONTROL TREATMENT INSTALLATION: All large systems (except systems that meet the requirements of 40 CFR 141.81(b)(2) or (3)) must install CCT. Medium and small systems that exceed either AL must install CCT.

WATER QUALITY PARAMETER MONITORING: All large systems are required to do WQP monitoring. Medium and small systems that exceed either AL are required to do WQP monitoring.

[1]The June 1991 LCR was revised with the following Technical Amendments: 56 FR 32112, July 15, 1991; 57 FR 28785, June 29, 1992; 59 FR 33860, June 30, 1994; and the LCR Minor Revisions 65 FR 1950, January 12, 2000.



Treatment Technique and Sampling Requirements if the AL is Exceeded

❶ Water Quality Parameter (WQP) Monitoring

- All systems serving > 50,000 people, and those systems serving ≤ 50,000 people if 90th percentile tap level > either AL, must take WQP samples during the same monitoring periods as Pb/Cu tap sample.
- Used to determine water corrosivity, and if needed, to help identify type of CCT to be installed and how CCT should be operated (*i.e.*, establishes OWQP levels).
- WQPs include: pH, alkalinity, calcium, conductivity (initial WQP monitoring only), orthophosphate (if phosphate-based inhibitor is used); silica (if silicate-based inhibitor is used), and temperature (initial WQP monitoring only).
- Samples are collected within distribution system (*i.e.*, WQP tap samples), with number of sites based on system size (see Table 1), and at each entry point to distribution system (EPTDS).
- Systems installing CCT, must conduct follow-up monitoring for 2 consecutive 6-month periods – WQP tap monitoring is conducted semi-annually; EPTDS monitoring increases to every two weeks.
- After follow-up monitoring, State sets ranges of values for the OWQPs.
- Reduced WQP tap monitoring is available for systems in compliance with OWQPs; *Reduced monitoring does not apply to EPTDS monitoring.*
- For systems ≤ 50,000, WQP monitoring is not required whenever 90th percentile tap levels are ≤ both ALs.

❷ Public Education (PE)

- Only required if Pb AL is exceeded *(no public education is required if only Cu AL exceeded)*.
- Informs Public Water System's (PWS) customers about health effects, sources, and what can be done to reduce exposure.
- Includes billing inserts sent directly to customers, pamphlets or brochures distributed to hospitals & other locations that provide services to pregnant woman & children, and for some CWSs, newspaper notices and public service announcements (PSAs) submitted to TV/radio stations.
- System must begin delivering materials within 60 days of Pb AL exceedance and continue every 6 months for PSAs and annually for all other forms of delivery for as long as it exceeds Pb AL.
- Different delivery methods and mandatory language for CWSs & NTNCWSs.
- Can discontinue delivery whenever ≤ Pb AL; but must recommence if Pb AL subsequently exceeded.
- PE requirements are in addition to the Public Notification required in 40 CFR Subpart Q.

❸ Source Water Monitoring and Treatment

- All systems that exceed Pb or Cu AL must collect source water samples to determine contribution from source water to total tap water Pb/Cu levels and make a source water treatment (SOWT) recommendation within 6 months of the exceedance.
- One set of samples at each EPTDS is due within 6 months of first AL exceedance.
- If State requires SOWT; system has 24 months to install SOWT.
- After follow-up Pb/Cu tap and EPTDS monitoring, State sets maximum permissible levels for Pb & Cu in source.

❹ Corrosion Control Treatment

- Required for all large systems (except systems that meet the requirements of 40 CFR 141.81(b)(2) or (b)(3)) and medium/small systems that exceed either AL. The system shall recommend optimal CCT within 6 months.
- Corrosion control study required for large systems.
- If State requires study for medium or small systems, it must be completed within 18 months.
- Once State determines type of CCT to be installed, PWS has 24 months to install CCT.
- Systems installing CCT must conduct 2 consecutive 6-months of follow-up monitoring.
- After follow-up Pb/Cu tap & WQP monitoring, State sets OWQPs.
- Small & medium systems can stop CCT steps if ≤ both ALs for 2 consecutive 6-month monitoring periods.

If the system continues to exceed the AL after installing CCT and/or SOWT...

❺ Lead Service Line (LSL) Monitoring

- Two types of sampling associated with LSL replacement (LSLR):
  - *Optional* - Monitoring from LSL to determine need to replace line. If all Pb samples from line ≤ 0.015 mg/L then LSL does not need to be replaced and counts as replaced line.
  - *Required* - Monitoring if entire LSL is ***not*** replaced to determine impact from "partial" LSLR. Sample is collected that is representative of water in service line that is partially replaced.
- Monitoring only applies to system subject to LSLR.

❻ Lead Service Line Replacement

- System must replace LSLs that contribute more than 0.015 mg/L to tap water levels.
- Must replace 7% of LSL per year; State can require accelerated schedule.
- If only a portion of a LSL is replaced, PWS must:
  - Notify customers at least 45 days prior to replacement about the potential for increased Pb levels;
  - Collect sample within 72 hours of replacement and mail/post results within 3 days of receipt of results.
- Systems can discontinue LSLR whenever ≤ Pb AL in tap water for 2 consecutive monitoring periods.

For additional information on the LCR, call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater/lcrmr/implement.html; or contact your State drinking water representative.

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Stage 2 Disinfectants and Disinfection Byproducts Rule: A Quick Reference Guide For Schedule 1 Systems

Overview of the Rule

Title	Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) 71 FR 388, January 4, 2006, Vol. 71, No. 2
Purpose	To increase public health protection by reducing the potential risk of adverse health effects associated with disinfection byproducts (DBPs) throughout the distribution system. Builds on the Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR) by focusing on monitoring for and reducing concentrations of two classes of DBPs - TTHM and HAA5 - in drinking water.
General Description	Stage 2 DBPR requires systems to complete an Initial Distribution System Evaluation (IDSE) to characterize DBP levels in their distribution systems and identify locations to monitor DBPs for Stage 2 DBPR compliance. The Stage 2 DBPR bases TTHM and HAA5 compliance on a locational running annual average (LRAA) calculated at each monitoring location.
Utilities Covered	▸ All community water systems (CWSs) and nontransient noncommunity water systems (NTNCWSs) that either add a primary or residual disinfectant other than ultraviolet light, or deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light. ▸ Schedule 1 includes CWSs and NTNCWSs serving 100,000 or more people OR CWSs and NTNCWSs that are part of a combined distribution system in which the largest system serves 100,000 or more people.

Stage 2 DBPR Regulated Contaminants

Regulated Contaminants	MCLG (mg/L)	MCL (mg/L)
Total Trihalomethanes (TTHM)		**0.080 LRAA**
Chloroform	0.07	
Bromodichloromethane	zero	
Dibromochloromethane	0.06	
Bromoform	zero	
Five Haloacetic Acids (HAA5)		**0.060 LRAA**
Monochloroacetic acid	0.07	
Dichloroacetic acid	zero	
Trichloroacetic acid	0.02	
Bromoacetic acid	-	
Dibromoacetic acid	-	

IDSE Requirements*

IDSE Option	Description
Standard Monitoring	Standard monitoring is one year of increased monitoring for TTHM and HAA5 in addition to the data being collected under Stage 1 DBPR. These data will be used with Stage 1 DBPR data to select Stage 2 DBPR monitoring locations for DBP compliance monitoring. Any system may conduct standard monitoring to meet the IDSE requirements of the Stage 2 DBPR.
System Specific Study (SSS)	Systems that have extensive DBP data (including Stage 1 DBPR compliance data) or technical expertise to prepare a hydraulic model may choose to conduct a system specific study to select Stage 2 DBPR compliance monitoring locations.
40/30 Certification†	The term "40/30" refers to a system that during a specific time period has all individual Stage 1 DBPR compliance samples less than or equal to 0.040 mg/L for TTHM and 0.030 mg/L for HAA5 and has no monitoring violations during the same time period. These systems have no IDSE monitoring requirements, but will still need to conduct Stage 2 DBPR compliance monitoring.
Very Small System (VSS) Waiver†	Systems that serve fewer than 500 people and have DBP data can qualify for a VSS Waiver and would not be required to conduct IDSE monitoring. These systems have no IDSE monitoring requirements, but will still need to conduct Stage 2 DBPR compliance monitoring.
EPA has developed several tools to assist systems with complying with the Stage 2 DBPR IDSE requirements. These materials can be downloaded at www.epa.gov/safewater/disinfection/stage2.	

* NTNCWS serving < 10,000 people do not need to complete any of the IDSE options.
† Unless notified by EPA or the state that they must complete standard monitoring or system specific study.

For additional information on the Stage 2 DBPR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater; or contact your State drinking water representative.

Additional material is available at www.epa.gov/safewater/disinfection/stage2.

Compliance with Stage 2 DBPR MCLs (Routine Monitoring)

Source Water Type	Population Size Category	Monitoring Frequency [1]	Total Distribution System Monitoring Locations Per Monitoring Period [2]
Subpart H	<500	per year	2
	500-3,300	per quarter	2
	3,301-9,999	per quarter	2
	10,000-49,999		4
	50,000-249,999		8
	250,000-999,999		12
	1,000,000-4,999,999		16
	≥5,000,000		20
Ground Water	<500	per year	2
	500-9,999		2
	10,000-99,999	per quarter	4
	100,000-499,999		6
	≥500,000		8

Operational Evaluation

Systems must begin complying with rule requirements to determine compliance with the operational evaluation levels for TTHMs and HAA5s.

[1] All systems must monitor during month of highest DBP concentrations.

[2] Systems on quarterly monitoring must take dual sample sets every 90 days at each monitoring location, except for subpart H systems serving 500-3,300. Systems on annual monitoring and subpart H systems serving 500-3,300 are required to take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. If monitoring annually, only one location with a dual sample set per monitoring period is needed if highest TTHM and HAA5 concentrations occur at the same location, and month.

Critical Deadlines and Requirements

For Drinking Water Systems (Schedule 1)

January 4, 2006	Systems serving fewer than 500 people that have TTHM and HAA5 compliance data qualify for a VSS Waiver from conducting an IDSE, unless informed otherwise by U.S. EPA or state primacy agency.
October 1, 2006	Systems that do not receive a VSS Waiver must submit to the U.S EPA or state primacy agency either a: ▸ Standard monitoring plan, ▸ System specific study plan, or ▸ 40/30 certification.
October 1, 2007	Systems conducting standard monitoring or SSS begin collecting samples in accordance with their approved plan.
September 30 2008	No later than this date, systems conducting standard monitoring or a SSS complete their monitoring or study.
January 1, 2009	No later than this date, systems conducting standard monitoring or a SSS must submit their IDSE report.
April 1, 2009	Consecutive systems must begin monitoring for chlorine or chloramines as specified under the Stage 1 DBPR.
April 1, 2012	No later than this date, systems must: ▸ Complete their Stage 2 DBPR Compliance Monitoring Plan (Systems serving more than 3,300 people must submit their Monitoring Plan to the state.)* ▸ Begin complying with monitoring requirements of the Stage 2 DBPR.†
January 2013	Systems must begin complying with rule requirements to determine compliance with the operational evaluation levels for TTHMs and HAA5s.

For States

January - June 2006	States are encouraged to inform systems serving fewer than 500 people and do not qualify for a VSS Waiver from the IDSE requirements should begin complying with standard monitoring requirements.
September 30, 2007	States must approve the system's standard monitoring plan, 40/30 certification, or system specific study plan or notify the system that the state has not completed its review.
October 4, 2007	States are encouraged to submit final primacy applications or extension requests to EPA.
January 4, 2008	Final primacy applications must be submitted to EPA, unless granted an extension.
March 31, 2009	States must approve the system's IDSE report or notify the system that the state has not completed its review of the IDSE report.
January 4, 2010	Final primacy revision applications from states with approved 2-year extensions agreements must be submitted to EPA.

* A monitoring plan is not required if the IDSE report includes all information required in the monitoring plan.
† States may allow up to an additional 24 months for compliance with MCLs for systems requiring capital improvements.

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Long Term 2 Enhanced Surface Water Treatment Rule: A Quick Reference Guide For Schedule 2 Systems



Overview of the Rule

Title	Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) 71 FR 654, January 5, 2006, Vol. 71, No. 3
Purposes	Improve public health protection through the control of microbial contaminants by focusing on systems with elevated *Cryptosporidium* risk. Prevent significant increases in microbial risk that might otherwise occur when systems implement the Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR).
General Description	The LT2ESWTR requires systems to monitor their source water, calculate an average *Cryptosporidium* concentration, and use those results to determine if their source is vulnerable to contamination and may require additional treatment.
Utilities Covered	▸ Public water systems (PWSs) that use surface water or ground water under the direct influence of surface water (GWUDI). ▸ Schedule 2 systems include PWSs serving 50,000 to 99,999 people OR wholesale PWSs that are part of a combined distribution system in which the largest system serves 50,000 to 99,999 people.

Major Provisions

Control of *Cryptosporidium*

Source Water Monitoring	Filtered and unfiltered systems must conduct 24 months of source water monitoring for *Cryptosporidium*. Filtered systems must also record source water *E. coli* and turbidity levels. Systems will be classified into one of four "Bins" based on the results of their source water monitoring. These systems may also use previously collected data (i.e., Grandfathered data), instead of monitoring. Filtered systems providing at least 5.5 log of treatment for *Cryptosporidium* and unfiltered systems providing at least 3-log of treatment for *Cryptosporidium* and those systems that intend to install this level of treatment are not required to conduct source water monitoring.
Installation of Additional Treatment	Filtered systems must provide additional treatment for *Cryptosporidium* based on their bin classification (average source water *Cryptosporidium* concentration), using treatment options from the "microbial toolbox." Unfiltered systems must provide additional treatment for *Cryptosporidium* using chlorine dioxide, ozone, or UV.
Uncovered Finished Water Storage Facility	Systems with an uncovered finished water storage facility must either: ▸ Cover the uncovered finished water storage facility; or, ▸ Treat the discharge to achieve inactivation and/or removal of at least 4-log for viruses, 3-log for *Giardia lamblia*, and 2-log for *Crytosporidium*.

Disinfection Profiling and Benchmarking

After completing the initial round of source water monitoring any system that plans on making a significant change to their disinfection practices must:

- Create disinfection profiles for *Giardia lamblia* and viruses;
- Calculate a disinfection benchmark; and,
- Consult with the state prior to making a significant change in disinfection practice.

Bin Classification For Filtered Systems

Cryptosporidium Concentration (oocysts/L)	Bin Classification	Additional *Cryptosporidium* Treatment Required			Alternative Filtration
		Conventional Filtration	Direct Filtration	Slow Sand or Diatomaceous Earth Filtration	
< 0.075	Bin 1	No additional treatment required	No additional treatment required	No additional treatment required	No additional treatment required
0.075 to < 1.0	Bin 2	1 log	1.5 log	1 log	(1)
1.0 to < 3.0	Bin 3	2 log	2.5 log	2 log	(2)
≥ 3.0	Bin 4	2.5 log	3 log	2.5 log	(3)

(1) As determined by the state (or other primacy agency) such that the total removal/inactivation > 4.0-log.
(2) As determined by the state (or other primacy agency) such that the total removal/inactivation > 5.0-log.
(3) As determined by the state (or other primacy agency) such that the total removal/inactivation > 5.5-log.



Inactivation Requirements for Unfiltered Systems

Cryptosporidium Concentration (oocysts/L)	Required *Cryptosporidium* Inactivation
≤ 0.01	2-log
> 0.01	3-log

Critical Deadlines and Requirements

For Drinking Water Systems (Schedule 2)

January 1, 2007	**Systems must submit their:** ▸ **Sampling schedule that specifies the dates of sample collection and location of sampling for initial source water monitoring to EPA electronically; or** ▸ **Notify EPA or the state of the systems intent to submit results for grandfathering data; or** ▸ **Notify EPA or the state of the systems intent to provide at least 5.5 log of treatment for *Cryptosporidium*. Systems should consult with EPA or their state prior to submitting this notice.**
April 2007	**No later than this month, systems must begin 24 months of source water monitoring.**
June 10, 2007	**System submit results for first month of source water monitoring.**
June 1, 2007	**No later than this date, systems must submit monitoring results for data that they want to have grandfathered.**
April 1, 2008	**No later than this date, systems must notify the EPA or the state of all uncovered treated water storage facilities.**
March 2009	**No later than this month, systems must complete their inital round of source water monitoring.**
September 2009	**No later than this month, filtered systems must report their initial bin classification to the EPA or the state for approval.**
September 2009	**No later than this month, unfiltered systems must report the mean of all *Cryptosporidium* sample results to the EPA or the state.**
April 1, 2009	**No later than this date, uncovered finished water storage facilities must be covered, or the water must be treated before entry into the distribution system, or the system must be in compliance with a state approved schedule.**
September 30, 2012	**Systems must install and operate additional treatment in accordance with their bin classification.†**
July 1, 2015	**Systems must submit their sampling schedule that specifies the dates of sample collection and location of sampling for second round of source water monitoring to the state.**
Ocotber 1, 2015	▸ **Systems are required to begin conducting a second round of source water monitoring.** ▸ **Based on the results, systems must re-determine their bin classification and provide additional *Cryptosporidium* treatment, if necessary.**

For States

January - June 2006	**States are encouraged to communicate with affected systems regarding LT2ESWTR requirements.**
April 1, 2007	**States are encouraged to communicate LT2ESWTR requirements related to treatment, uncovered finished water reservoirs, and disinfection profiling to affected systems.**
October 5, 2007	**States are encouraged to submit final primacy applications or extension requests to EPA.**
January 5, 2008	**Final primacy applications must be submitted to EPA, unless granted an extension.**
December 31, 2008	**States should begin awarding *Cryptosporidium* treatment credit for primary treatments in place.**
January 5, 2010	**Final primacy revision applications from states with approved 2-year extensions agreements must be submitted to EPA.**
June 30, 2013	**States should award *Cryptosporidium* treatment credit for toolbox option implementation.**

† States may allow up to an additional 24 months for compliance for systems making capital improvements.

For additional information on the LT2ESWTR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater; or contact your State drinking water representative.

Additional material is available at www.epa.gov/safewater/disinfection/lt2.

United States Environmental Protection Agency
Office of Water (4606)
EPA 816-F-01-003
June 2001



Radionuclides Rule: A Quick Reference Guide

Overview of the Rule

Title	Radionuclides Rule 66 FR 76708 December 7, 2000 Vol. 65, No. 236
Purpose	Reducing the exposure to radionuclides in drinking water will reduce the risk of cancer. This rule will also improve public health protection by reducing exposure to all radionuclides.
General Description	The rule retains the existing MCLs for combined radium-226 and radium-228, gross alpha particle radioactivity, and beta particle and photon activity. The rule regulates uranium for the first time.
Utilities Covered	Community water systems, all size categories.

Public Health Benefits

Implementation of the Radionuclides Rule will result in . . .	Reduced uranium exposure for 620,000 persons, protection from toxic kidney effects of uranium, and a reduced risk of cancer.
Estimated impacts of the Radionuclides Rule include . . .	Annual compliance costs of $81 million. Only 795 systems will have to install treatment.

Regulated Contaminants

Regulated Radionuclide	MCL	MCLG
Beta/photon emitters*	4 mrem/yr	0
Gross alpha particle	15 pCi/L	0
Combined radium-226/228	5 pCi/L	0
Uranium	30 µg/L	0

*A total of 168 individual beta particle and photon emitters may be used to calculate compliance with the MCL.

Critical Deadlines & Requirements

For Drinking Water Systems

June 2000 - December 8, 2003	When allowed by the State, data collected between these dates may be eligible for use as grandfathered data (excluding beta particle and photon emitters).
December 8, 2003	Systems begin initial monitoring under State-specified monitoring plan unless the State permits use of grandfathered data.
December 31, 2007	All systems must complete initial monitoring.

For States

December 2000 - December 2003	States work with systems to establish monitoring schedules.
December 8, 2000	States should begin to update vulnerability assessments for beta photon and particle emitters and notify systems of monitoring requirements.
Spring 2001	EPA meets and works with States to explain new rules and requirements and to initiate adoption and implementation activities.
December 8, 2002	State submits primacy revision application to EPA. (EPA approves within 90 days.)



For additional information on the Radionuclides Rule

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA Web site at www.epa.gov/safewater; or contact your State drinking water representative. EPA will provide radionuclide training over the next year.

Monitoring Requirements

Gross Alpha, Combined Radium-226/228, and Uranium (1)	Beta Particle and Photon Radioactivity (1)
Initial Monitoring	
Four consecutive quarters of monitoring.	No monitoring required for most CWSs. Vulnerable CWSs (2) must sample for: • Gross beta: quarterly samples. • Tritium and Strontium-90: annual samples.
Reduced Monitoring	
If the average of the initial monitoring results for each contaminant is below the detection limit: One sample every 9 years. If the average of the initial monitoring results for each contaminant is greater than or equal to the detection limit, but less than or equal to one-half the MCL: One sample every 6 years. If the average of the initial monitoring results for each contaminant is greater than one-half the MCL, but less than or equal to the MCL: One sample every 3 years.	If the running annual average of the gross beta particle activity minus the naturally occurring potassium-40 activity is less than or equal to 50 pCi/L: One sample every 3 years.
Increased Monitoring	
A system with an entry point result above the MCL must return to quarterly sampling until 4 consecutive quarterly samples are below the MCL.	If gross beta particle activity minus the naturally occurring potassium-40 activity exceeds 50 pCi/L, the system must: • Speciate as required by the State. • Sample at the initial monitoring frequency.

(1) All samples must be collected at each entry point to the distribution system.
(2) The rule also contains requirements for CWSs using waters contaminated by effluents from nuclear facilities.

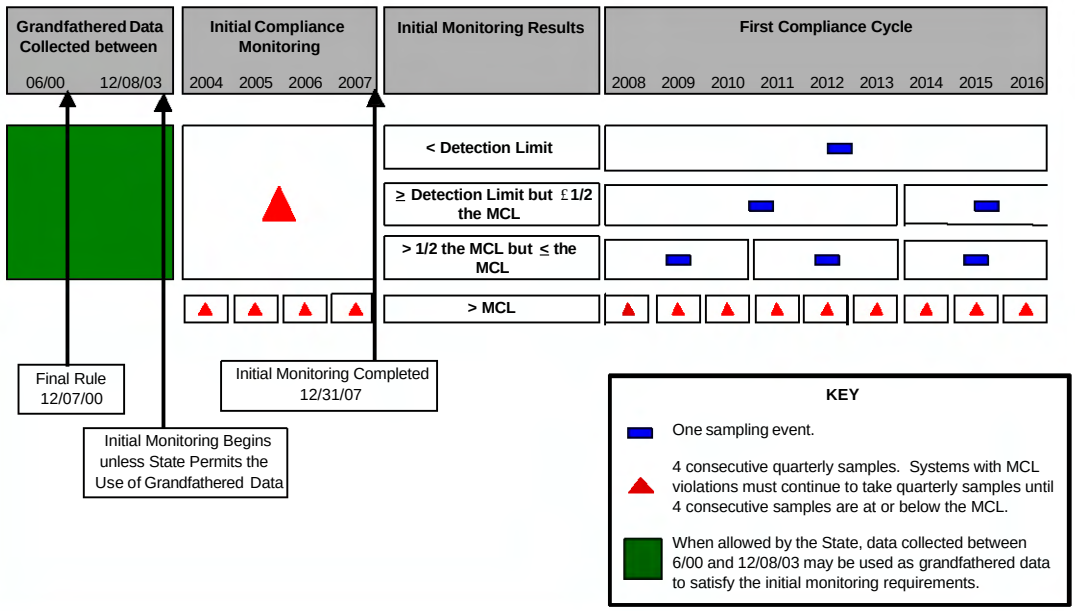
Grandfathering of Data

When allowed by the State, data collected between June, 2000 and December 8, 2003 may be used to satisfy the initial monitoring requirements if samples have been collected from:

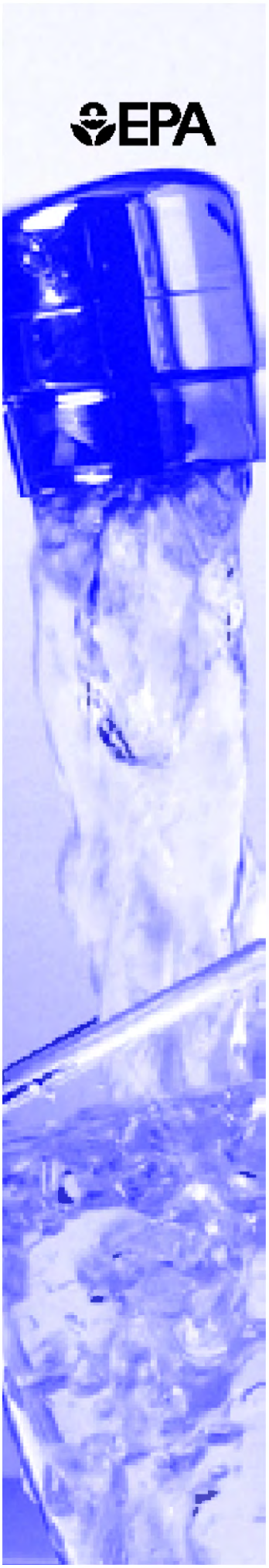
- Each entry point to the distribution system (EPTDS).
- The distribution system, provided the system has a single EPTDS.
- The distribution system, provided the State makes a written justification explaining why the sample is representative of all EPTDS.

Applicability of the Standardized Monitoring Framework to Radionuclides

(Excluding the Beta Particle and Photon Emitters)



United States Environmental Protection Agency
Office of Water (4606)
EPA 816-F-01-004
January 2001



Arsenic and Clarifications to Compliance and New Source Monitoring Rule: A Quick Reference Guide

Overview of the Rule

Title	**Arsenic and Clarifications to Compliance and New Source Monitoring Rule 66 FR 6976 (January 22, 2001)**
Purpose	**To improve public health by reducing exposure to arsenic in drinking water.**
General Description	**Changes the arsenic MCL from 50 µg/L to 10 µg/L; Sets arsenic MCLG at 0; Requires monitoring for new systems and new drinking water sources; Clarifies the procedures for determining compliance with the MCLs for IOCs, SOCs, and VOCs.**
Utilities Covered	**All community water systems (CWSs) and nontransient, noncommunity water systems (NTNCWSs) must comply with the arsenic requirements. EPA estimates that 3,024 CWSs and 1,080 NTNCWSs will have to install treatment to comply with the revised MCL.**

Public Health Benefits

Implementation of the Arsenic Rule will result in . . .	• **Avoidance of 16 to 26 non-fatal bladder and lung cancers per year.** • **Avoidance of 21 to 30 fatal bladder and lung cancers per year.** • **Reduction in the frequency of non-carcinogenic diseases.**

Critical Deadlines & Requirements

Consumer Confidence Report Requirements *

Report Due	*Report Requirements*
July 1, 2001	**For the report covering calendar year 2000, systems that detect arsenic between 25 µg/L and 50 µg/L must include an educational statement in the consumer confidence reports (CCRs).**
July 1, 2002 and beyond	**For reports covering calendar years 2001 and beyond, systems that detect arsenic between 5 µg/L and 10 µg/L must include an educational statement in the CCRs.**
July 1, 2002 - July 1, 2006	**For reports covering calendar years 2001 to 2005, systems that detect arsenic between 10 µg/L and 50 µg/L must include a health effects statement in their CCRs.**
July 1, 2007 and beyond	**For reports covering calendar year 2006 and beyond, systems that are in violation of the arsenic MLC (10 µg/L) must include a health effects statement in their CCRs.**

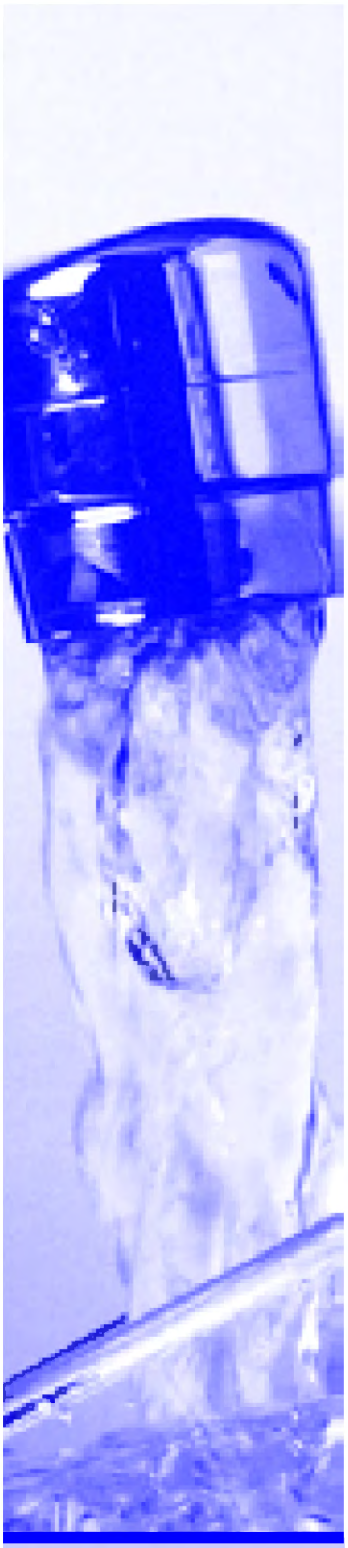
For Drinking Water Systems

Jan. 22, 2004	**All *NEW* systems/sources must collect initial monitoring samples for all IOCs, SOCs, and VOCs within a period and frequency determined by the State.**
Jan. 1, 2005	**When allowed by the State, systems may grandfather data collected after this date.**
Jan. 23, 2006	**The new arsenic MCL of 10 µg/L becomes effective. All systems must begin monitoring or when allowed by the State, submit data that meets grandfathering requirements.**
Dec. 31, 2006	**Surface water systems must complete initial monitoring or have a State approved waiver.**
Dec. 31, 2007	**Ground water systems must complete initial monitoring or have a State approved waiver.**

For States

Spring 2001	**EPA meets and works with States to explain new rules and requirements and to initiate adoption and implementation activities.**
Jan. 22, 2003	**State primacy revision applications due.**
Jan. 22, 2005	**State primacy revision applications due from States that received 2-year extensions.**

* For required educational and health effects statements, please see 40 CFR 141.154.



For additional information on the Arsenic Rule

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA Web site at www.epa.gov/safewater; or contact your State drinking water representative. EPA will provide arsenic training over the next year.

Compliance Determination (IOCs, VOCs, and SOCs)

1. Calculate compliance based on a running annual average at each sampling point.
2. Systems will not be in violation until 1 year of quarterly samples have been collected (unless fewer samples would cause the running annual average to be exceeded.)
3. If a system does not collect all required samples, compliance will be based on the running annual average of the samples collected.

Monitoring Requirements for Total Arsenic (1)

Initial Monitoring

One sample after the effective date of the MCL (January 23, 2006). Surface water systems must take annual samples. Ground water systems must take one sample between 2005 and 2007.

Reduced Monitoring

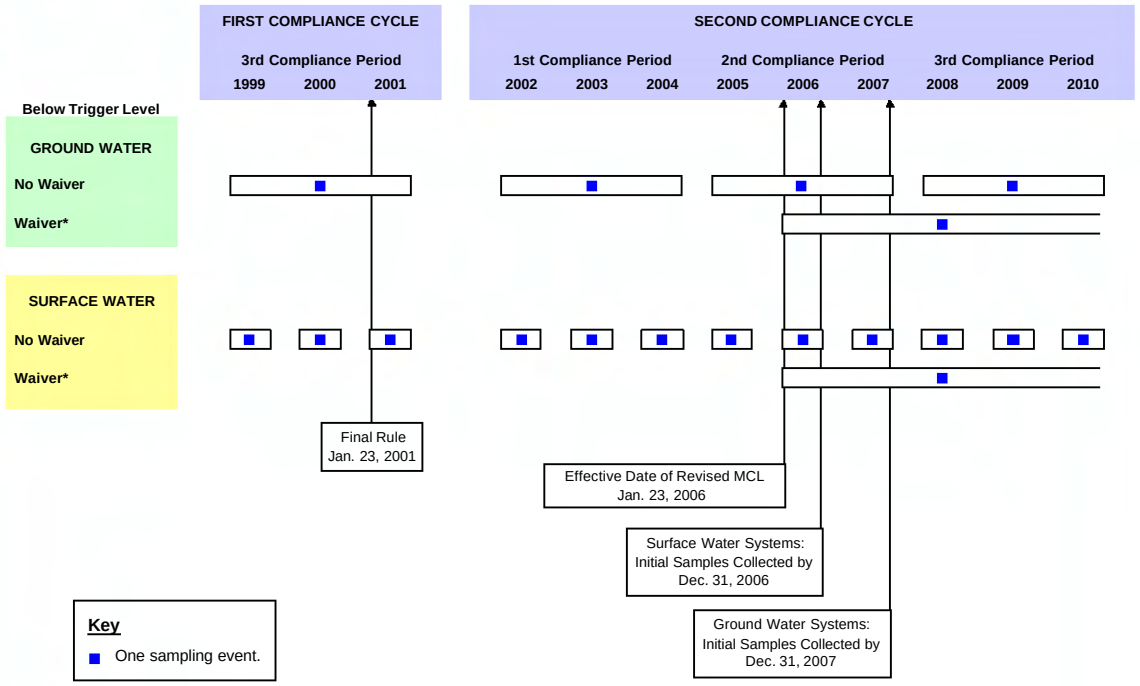
If the initial monitoring result for arsenic is less than the MCL . . .	Ground water systems must collect one sample every 3 years. Surface water systems must collect annual samples.

Increased Monitoring

A system with a sampling point result above the MCL must collect quarterly samples at that sampling point, until the system is reliably and consistently below the MCL.

(1) All samples must be collected at each entry point to the distribution system, unless otherwise specified by the State.

Applicability of the Standardized Monitoring Framework to Arsenic



*Waivers are not permitted under the current arsenic requirements. States may issue 9 year monitoring waivers under the revised final arsenic rule. To be eligible for a waiver, surface water systems must have monitored annually for at least 3 years. Ground water systems must conduct a minimum of 3 rounds of monitoring with detection limits below 10 µg/L.

United States
Environmental Protection
Agency

Final Ground Water Rule

Summary

The Environmental Protection Agency (EPA) promulgated the final Ground Water Rule (GWR) in October 2006 to reduce the risk of exposure to fecal contamination that may be present in public water systems that use ground water sources. EPA proposed the GWR on May 10, 2000 (65 *Federal Register* 30194). The rule establishes a risk-targeted strategy to identify ground water systems that are at high risk for fecal contamination. The GWR also specifies when corrective action (which may include disinfection) is required to protect consumers who receive water from ground water systems from bacteria and viruses.

Background

The 1996 Amendments to the Safe Drinking Water Act required EPA to develop regulations that require disinfection of ground water systems "as necessary" to protect the public health (section 1412(b)(8)).

Ground water occurrence studies and recent outbreak data show that pathogenic viruses and bacteria can occur in public water systems that use ground water and that people may become ill due to exposure to contaminated ground water.

Most cases of waterborne disease are characterized by gastrointestinal symptoms (e.g., diarrhea, vomiting, etc.) that are frequently self-limiting in healthy individuals and rarely require medical treatment. However, these same symptoms are much more serious and can be fatal for persons in sensitive subpopulations (such as young children, the elderly, and persons with compromised immune systems).

Viral and bacterial pathogens are present in human and animal feces, which can, in turn, contaminate drinking water. Fecal contamination can reach ground water sources, including drinking water wells, from failed septic systems, leaking sewer lines, and by passing through the soil and large cracks in the ground. Fecal contamination from the surface may also get into a drinking water well along its casing or through cracks if the well is not properly constructed, protected, or maintained.

EPA does not believe all ground water systems are fecally contaminated; data indicate that only a small percentage of ground water systems are fecally contaminated. However, the severity of health impacts and the number of people potentially exposed to microbial pathogens in ground water indicate that a regulatory response is warranted.

About this Regulation

The GWR applies to more than 147, 000 public water systems that use ground water (as of 2003). The rule also applies to any system that mixes surface and ground water if the ground water is added directly to the distribution system and provided to consumers without treatment equivalent to surface water treatment. In total, these systems provide drinking water to more than 100 million consumers.

***Final Requirements**:* The rule addresses risks through a risk-targeting approach that relies on four major components:

1. Periodic sanitary surveys of ground water systems that require the evaluation of eight critical elements and the identification of significant deficiencies (e.g., a well located near a leaking septic system). States must complete the initial survey by December 31, 2012 for most community water systems (CWSs) and by December 31, 2014 for CWSs with outstanding performance and for all non-community water systems.

2. Source water monitoring to test for the presence of *E. coli*, enterococci, or coliphage in the sample. There are two monitoring provisions:
   -*Triggered monitoring* for systems that do not already provide treatment that achieves at least 99.99 percent (4-log) inactivation or removal of viruses and that have a total coliform-positive routine sample under Total Coliform Rule sampling in the distribution system.
   -*Assessment monitoring*- As a complement to triggered monitoring, a State has the option to require systems, at any time, to conduct source water assessment monitoring to help identify high risk systems.

3. Corrective actions required for any system with a significant deficiency or source water fecal contamination. The system must implement one or more of the following correction action options:
   -correct all significant deficiencies,
   -eliminate the source of contamination,
   -provide an alternate source of water, or
   -provide treatment which reliably achieves 99.99 percent (4-log) inactivation or removal of viruses.

4. Compliance monitoring to ensure that treatment technology installed to treat drinking water reliably achieves at least 99.99 percent (4-log) inactivation or removal of viruses.

Environmental and Public Health Benefits

The GWR will reduce public health risk from contaminated ground water drinking water sources, especially in high-risk or high-priority systems. The GWR is estimated to reduce the average number of waterborne viral (rotovirus and echovirus) illnesses by nearly 42,000 illnesses each year from the current baseline estimate of approximately 185,000 (a 23 percent reduction in total illnesses). In addition, nonquantified benefits from the rule resulting in illness reduction from other viruses and bacteria are expected to be significant.

Cost of the Regulation

The GWR will result in increased costs to public water systems and States. The mean annualized present value national compliance costs of the final GWR are estimated to be approximately $62 million (using three percent discount rate). Public water systems will bear the majority of costs. The annual household costs for community water systems (including those that do not add treatment) range from $0.21 to $16.54. Annual household costs for the subset of systems that undertake corrective actions range from $0.45 to $52.38, with 90 percent having household cost increases of no more than $3.20.

How to Get Additional Information

For general information on the GWR, please contact the Safe Drinking Water Hotline, at (800) 426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding Federal holidays, from 10 a.m. to 4 p.m., Eastern time. For copies of the Federal Register notice of the final regulation, visit the EPA Safewater Web site, http://www.epa.gov/safewater/disinfection/gwr.

APPENDIX F
GARDEN CITY WATER QUALITY REPORTS 2006

Analytical Laboratories, Inc.

3086

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Attn: DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Collected By: LARRY BYBEE
Submitted By: LARRY BYBEE

Source of Sample:
WELL #4

Time of Collection: 14:12
Date of Collection: 8/25/2006
Date Received: 8/25/2006
Report Date: 9/20/2006

PWS: 4010066 **PWS Name** GARDEN CITY WATER & SE

Laboratory Analysis Report

Sample Number: 0627555

EPA 525.2 testing by Anatek Labs. (ATL)

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Nitrate (as N)	10	0.5	mg/L	0.2	EPA 300.0	8/25/2006	WW
Ethylene Dibromide	0.05	<0.02	ug/L	0.01	EPA 504	9/6/2006	CY
1,2-Dibromo-3-chloropropane	0.20	<0.02	ug/L	0.01	EPA 504	9/6/2006	CY
Bis(2-ethylhexyl)adipate	400	<2	ug/L	2	EPA 525.2	9/15/2006	ATL
Bis(2-ethylhexyl)phthalate	6.00	<0.6	ug/L	0.6	EPA 525.2	9/15/2006	ATL
Alachlor	2.00	<0.24	ug/L	0.24	EPA 508.1	9/1/2006	CY
Aldrin	UR	<0.02	ug/L	0.02	EPA 508.1	9/1/2006	CY
Atrazine	3.00	<0.17	ug/L	0.17	EPA 508.1	9/1/2006	CY
Butachlor	UR	<0.40	ug/L	0.4	EPA 508.1	9/1/2006	CY
gamma-BHC (Lindane)	0.20	<0.01	ug/L	0.01	EPA 508.1	9/1/2006	CY
Dieldrin	UR	<0.02	ug/L	0.02	EPA 508.1	9/1/2006	CY
Endrin	0.20	<0.01	ug/L	0.01	EPA 508.1	9/1/2006	CY
Heptachlor	0.40	<0.02	ug/L	0.02	EPA 508.1	9/1/2006	CY
Heptachlor epoxide	0.20	<0.01	ug/L	0.01	EPA 508.1	9/1/2006	CY
Hexachlorobenzene	1.00	<0.02	ug/L	0.02	EPA 508.1	9/1/2006	CY
Hexachlorocyclopentadiene	50.0	<0.02	ug/L	0.02	EPA 508.1	9/1/2006	CY
Metribuzin	UR	<0.40	ug/L	0.4	EPA 508.1	9/1/2006	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Date Report Printed: 9/20/2006 3:50:48 P

Laboratory Analysis Report

Sample Number: 0627555

EPA 525.2 testing by Anatek Labs. (ATL)

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Methoxychlor	40.0	<0.02	ug/L	0.02	EPA 508.1	9/1/2006	CY
Metolachlor	UR	<0.40	ug/L	0.4	EPA 508.1	9/1/2006	CY
Propachlor	UR	<0.05	ug/L	0.05	EPA 508.1	9/1/2006	CY
Simazine	4.00	<0.11	ug/L	0.11	EPA 508.1	9/1/2006	CY
Chlordane(Total)	2.00	<0.06	ug/L	0.06	EPA 508.1	9/1/2006	CY
Toxaphene	3.00	<1.00	ug/L	0.4	EPA 508.1	9/1/2006	CY
Total PCB	0.50	<0.10	ug/L	0.1	EPA 508.1	9/1/2006	CY
Dalapon	200	<0.07	ug/L	0.07	EPA 515.3	8/31/2006	CY
Dicamba	UR	<0.20	ug/L	0.2	EPA 515.3	8/31/2006	CY
2,4-Dichlorophenoxyacetic acid (2,4-D)	70.0	<0.13	ug/L	0.06	EPA 515.3	8/31/2006	CY
Dinoseb	7.00	<0.13	ug/L	0.07	EPA 515.3	8/31/2006	CY
Pentachlorophenol	1.00	<0.06	ug/L	0.06	EPA 515.3	8/31/2006	CY
Picloram	500	<0.13	ug/L	0.13	EPA 515.3	8/31/2006	CY
Silvex	50.0	<0.09	ug/L	0.09	EPA 515.3	8/31/2006	CY
Aldicarb	3.0	<2.0	ug/L	2	EPA 531.1	9/6/2006	CY
Aldicarb sulfone	2.0	<2.0	ug/L	2	EPA 531.1	9/6/2006	CY
Aldicarb sulfoxide	4.0	<2.0	ug/L	2	EPA 531.1	9/6/2006	CY
Carbaryl	UR	<2.0	ug/L	2	EPA 531.1	9/6/2006	CY
Carbofuran	40	<0.6	ug/L	0.6	EPA 531.1	9/6/2006	CY
3-Hydroxycarbofuran	UR	<1.5	ug/L	1.5	EPA 531.1	9/6/2006	CY
Methomyl	UR	<2.0	ug/L	2	EPA 531.1	9/6/2006	CY
Oxamyl	200	<0.4	ug/L	0.4	EPA 531.1	9/6/2006	CY
Glyphosate	700	<10.0	ug/L	5.6	EPA 547	9/7/2006	CY
Endothall	100	<7.9	ug/L	7.9	EPA 548.1	8/31/2006	CY
Diquat	20.0	<0.8	ug/L	0.8	EPA 549.2	9/5/2006	CY
Benzo(a)pyrene	0.20	<0.02	ug/L	0.01	EPA 550.1	9/5/2006	CY

Michelle Moore 9/25/2006

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

CC: DEQ - BOISE

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions concerning this report,

please contact: Sandy Koch

Date Report Printed: 9/20/2006 3:50:49 P

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 9/28/2006 12:52:4
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 0627556

Attn: DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Collected By: LARRY BYBEE
Submitted By: LARRY BYBEE

Source of Sample:
WELL #4

Time of Collection: 14:10
Date of Collection: 8/25/2006
Date Received: 8/25/2006
Report Date: 9/28/2006

PWS#: 4010066
PWS Name: GARDEN CITY WATER & SEWER SYSTEM

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Radium 226	----	0.05+/-0.05	pCi/L	0.77	EPA 903.0	9/21/2006	BMA
Radiologicl testing by Benchmark Analytics (BMA)							
Radium 228	----	1.26+/-0.77	pCi/L	0.56	EPA 904.0	9/13/2006	BMA
Radiologicl testing by Benchmark Analytics (BMA)							

CC: DEQ - BOISE

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact: Sandy Koch

Lab Federal ID#:	ID00020	Lab Sample	0627556
Date Lab Rec'd Sample:	8/25/2006	Date Reported by Lab:	09/28/06
Compliance Sample: [X] Yes [ ] No		Replacement Sample	[ ]
Collection Date:	8/25/2006	Time Collected:	14:10
Sample Type: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other			
PWS #: 4010066		PWS Name: GARDEN CITY WATER & SEWER SYS	
Sampling Point/Location: WELL #4		Tag # / Facility ID:	
Collector's Name: LARRY BYBEE		Contact Phone #: 2089415992	

Analytical Laboratories, Inc.
1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

PUBLIC DRINKING WATER SYSTEM RADIOLOGICAL ANALYSIS REPORT

FRDS Number	CONTAMINANT	Result ug/L	Result pCi/L	MCL	Analysis Date	Analyst	Method
4002	**Gross Alpha Activity** *(Includes Radium and Uranium)*		--				
4006	**Uranium** (measure if gross alpha exceeds 15 pCi/L; activity = 1.0 x concentration ug/L	--	--				
4000	**Adjusted Gross Alpha** (Subtract Uranium activity level from Gross Alpha Activity above)		--				
4020	**Radium-226** *(Required if Alpha activity is greater than 5pCi/L)*		0.05+/-0.05		9/21/2006	BMA	EPA 903.0
4030	**Radium-228** (measure if radium 226 exceeds 3 pCi/L)		1.26+/-0.77		9/13/2006	BMA	EPA 904.0
4010	**Total Measured Radium** (Sum of Ra-226 and Ra-228)		--				
4100	**Beta/Photon Activity** *(Measure major constituents if activity exceeds 50 pCi/L)*		--				

ND = Not detected within sensitivity of instrument
-- = No analysis performed for this contaminant

Lab Supervisor's Signature 9/29/06 Date

Attn: DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

CC: DEQ - BOISE

CLIENT CODE= GARDEN 08/25/06

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:	PROJECT INFORMATION:
Project Manager:	**Project Name:**
Company: Garden City	**PWS Number:** 4010064
Address: 201 E 46th ST	**Purchase Order Number:**
Garden City	**Required Due Date:**
Phone: 375-3194 **Fax:** 376-6934	**E-mail Address:** dmilan@gardencityidaho.org
Sampled by: *(Please print)* Larry Bybee	**Transported by:** *(Please print)* Larry Bybee

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	1,1-DCE	HAAs	Radium 226/228	SOCs	Nitrates						Remarks:
27554	8/25/06	1341	Lakeland well 10		X										2 vials .18Cl2
	8/25/06	1343	Lakeland well 10			X									3 vials .18Cl2
27556	8/25/06	1410	well 4				X								
27555	8/25/06	1412	well 4					X							End 1425
	8/25/06	~~1414~~ CLB	well 4						X						

Invoice to: *(If different than above address)*

Special Instructions:

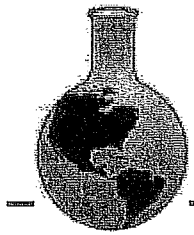
ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstance will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

Relinquished By: *(Signature)*	**Print Name:** Larry Bybee	**Company:** Garden City	**Date:** 8/25/06	**Time:** 1444
Received By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Relinquished By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Received at Laboratory By: *(Signature)* M. Roberts	**Print Name:**	**Company:** Analytical Laboratories	**Date:** 8/25/06	**Time:** 14:44
SAMPLE RECEIPT **Total # of Containers:**	**Chains of Custody Seals** Y / N / NA	**Intact:** Y / N / NA **Temperature Received:**	**Condition:**	

REV 10/04 WHITE: STAYS WITH SAMPLE(S) YELLOW: LAB PINK: SAMPLER

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0634626**
DATE LAB REC'D SAMPLE: 10/26/2006	DATE REPORTED BY LAB: 10/27/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 10/26/2006	COLLECTION TIME: 14:24 (24 hour clock)
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: WELL #12 MILLSTREAM	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # (208) 941-5992



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Date Report Printed: 10/27/2006

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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

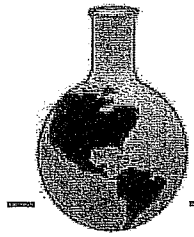
Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs							
1040	Nitrate	ND	EPA 300.0	10	0.2	10/26/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID, 83714

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Sandra A Koch 10/27/06
Signature of Laboratory Supervisor Date
Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0634757**
DATE LAB REC'D SAMPLE: 10/27/2006	DATE REPORTED BY LAB: 10/30/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 10/27/2006	COLLECTION TIME: 13:50 (24 hour clock)
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: WELL #11 SHENANDOAH	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # (208) 941-5992



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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs							
1040	Nitrate	ND	EPA 300.0	10	0.2	10/27/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID, 83714

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--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Signature of Laboratory Supervisor 10/30/2006 Date

Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0633941**
DATE LAB REC'D SAMPLE: 10/19/2006	DATE REPORTED BY LAB: 10/23/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 10/19/2006	COLLECTION TIME: (24 hour clock) 10:50
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: [redacted]	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # 2089415992

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10.31-06

Date Report Printed: 10/23/2006

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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs							
1040	Nitrate	ND	EPA 300.0	10	0.2	10/20/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID, 83714

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Signature of Laboratory Supervisor — Date: 10/25/06

Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0633942**
DATE LAB REC'D SAMPLE: 10/19/2006	DATE REPORTED BY LAB: 10/23/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 10/19/2006	COLLECTION TIME: 13:20 (24 hour clock)
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: [redacted]	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # 2089415992

10-31-06

Analytical Laboratories, Inc.

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Boise, Idaho 83703
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Date Report Printed: 10/23/2006

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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs							
1040	Nitrate	ND	EPA 300.0	10	0.2	10/20/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

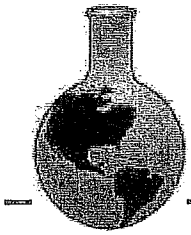
DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID, 83714

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Sandra A Koch 10/25/06
Signature of Laboratory Supervisor Date

Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0634625**
DATE LAB REC'D SAMPLE: 10/26/2006	DATE REPORTED BY LAB: 10/27/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 10/26/2006	COLLECTION TIME: 13:58 (24 hour clock)
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: WELL #7 SAVANNAH	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # (208) 941-5992



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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2			
1015	Cadmium	---		0.005			
1020	Chromium	---		0.1			
1035	Mercury	---		0.002			
1038	Tti(N02/N03)	---		10			
1040	Nitrate	0.4	EPA 300.0	10	0.2	10/26/2006	WW
1041	Nitrite	---		1.0			
1045	Selenium	---		0.05			
1024	Cyanide	---		0.2			
Secondary IOCs (optional)							
1050	Silver	---		0.1			
1049	Silica	---					
1042	Potassium	---					
1032	Manganese	---		0.05			
1031	Magnesium	---					
1028	Iron	---		0.3			
1027	Hydrogen Sulfide	---					
1022	Copper	---		1.0			
1017	Chloride	---		250			
1016	Calcium	---					
1003	Ammonia as N	---					
1002	Aluminum	---		0.2			

Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1085	Thallium	---		0.002			
1075	Beryllium	---		0.004			
1074	Antimony	---		0.006			
1036	Nickel	---		n/a			
Other IOCs							
1052	Sodium	---		n/a			
1025	Fluoride	---		4.0			
1005	Arsenic	---		0.01			
2905	Surfactants	---					
1997	Langlier Index	---					
1930	Dissolved Solids	---		500			
1927	Alkalinity as CaC03	---					
1926	Conductivity uS/cm	---					
1925	pH	---		6.5-8.			
1920	Odor (Threshold #)	---		3			
1915	Hardness as CaC03	---					
1905	Color	---		15c.u.			
1095	Zinc	---		5			
1055	Sulfate	---		250			

DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID, 83714

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--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Signature of Laboratory Supervisor 10/27/06 Date

Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0629734**
DATE LAB REC'D SAMPLE: 9/14/2006	DATE REPORTED BY LAB: 9/18/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 9/14/2006	COLLECTION TIME: (24 hour clock) 14:10
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: WELL #5	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # (208) 941-5992

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Boise, Idaho 83703
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Date Report Printed: 9/18/2006

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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs:							
1040	Nitrate	ND	EPA 300.0	10	0.2	9/15/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID, 83714

*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Signature of Laboratory Supervisor — Date

Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: ID00020	LAB SAMPLE #: 0627555
DATE LAB REC'D SAMPLE: 8/25/2006	DATE REPORTED BY LAB: 9/20/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 8/25/2006	COLLECTION TIME: (24 hour clock) 14:12
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: WELL #4	TAG #/FACILITY ID:
COLLECTOR'S NAME: LARRY BYBEE	CONTACT PHONE # 2089415992

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
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Date Report Printed: 9/20/2006

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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs							
1040	Nitrate	0.5	EPA 300.0	10	0.2	8/25/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

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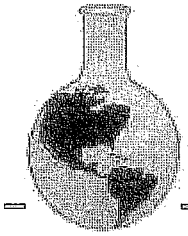
*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Signature of Laboratory Supervisor — Date: 9/25/2006

Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: ID00020	LAB SAMPLE #: 0627555
DATE LAB REC'D SAMPLE: 8/25/2006	DATE REPORTED BY LAB: 9/20/2006
COMPLIANCE SAMPLE: [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 8/25/2006	COLLECTION TIME: (24 hour clock) 14:12
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat X RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTEM
SAMPLING POINT/LOCATION: WELL #4	TAG #/FACILITY ID:
COLLECTOR'S NAME: LARRY BYBEE	CONTACT PHONE #: 2089415992



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Date Report Printed: 9/20/2006

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PUBLIC DRINKING WATER SYSTEM SYNTHETIC ORGANIC CHEMICAL (SOC) ANALYSIS REPORT:

FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
2046	Carbofuran	ND	EPA 531.1	40	0.6	9/6/2006	CY	2959	Chlordane	ND	EPA 508.1	2.0	0.06	9/1/2006	CY
2042	Hexachlorocyclopentadiene	ND	EPA 508.1	50	0.02	9/1/2006	CY	2946	EDB	ND	EPA 504	0.05	0.01	9/6/2006	CY
2041	Dinoseb	ND	EPA 515.3	7	0.07	8/31/2006	CY	2931	DBCP	ND	EPA 504	0.2	0.01	9/6/2006	CY
2040	Picloram	ND	EPA 515.3	500	0.13	8/31/2006	CY	2383	PCBs	ND	EPA 508.1	0.5	0.1	9/1/2006	CY
2037	Simazine	ND	EPA 508.1	4.0	0.11	9/1/2006	CY	2326	Pentachlorophenol	ND	EPA 515.3	1	0.06	8/31/2006	CY
2036	Oxamyl	ND	EPA 531.1	200	0.4	9/6/2006	CY	2306	Benzo[a]pyrene	ND	EPA 550.1	0.2	0.01	9/5/2006	CY
2035	Di(2-ethylhexyl)adipate	ND	EPA 525.2	400	2	9/15/2006	ATL	2039	Di(2-ethylhexyl)phthalate	ND	EPA 525.2	6.0	0.6	9/15/2006	ATL
2034	Glyphosate	ND	EPA 547	700	5.6	9/7/2006	CY	2274	Hexachlorobenzene	ND	EPA 508.1	1.0	0.02	9/1/2006	CY
2033	Endothall	ND	EPA 548.1	100	7.9	8/31/2006	CY	2110	2,4,5-TP	ND	EPA 515.3	50	0.09	8/31/2006	CY
2032	Diquat	ND	EPA 549.2	20	0.8	9/5/2006	CY	2105	2,4-D	ND	EPA 515.3	70	0.06	8/31/2006	CY
2031	Dalapon	ND	EPA 515.3	200	0.07	8/31/2006	CY	2067	Heptachlor epoxide	ND	EPA 508.1	0.2	0.01	9/1/2006	CY
2020	Toxaphene	ND	EPA 508.1	3.0	0.4	9/1/2006	CY	2065	Heptachlor	ND	EPA 508.1	0.4	0.02	9/1/2006	CY
2015	Methoxychlor	ND	EPA 508.1	40.0	0.02	9/1/2006	CY	2051	Alachlor	ND	EPA 508.1	2.0	0.24	9/1/2006	CY
2010	Lindane	ND	EPA 508.1	0.2	0.01	9/1/2006	CY	2050	Atrazine	ND	EPA 508.1	3.0	0.17	9/1/2006	CY
2005	Endrin	ND	EPA 508.1	2.0	0.01	9/1/2006	CY								

*Reported in ug/L unless otherwise noted
ND = Not detected within sensitivity of instrument (MDL)

--- = No analysis performed
MDL = Method detection limit

Michael McMoore 9/25/2006
Signature of Laboratory Supervisor Date

Staff Manager: **Sandy Koch**

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GARDEN CITY, ID, 83714

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0629733**
DATE LAB REC'D SAMPLE: 9/14/2006	DATE REPORTED BY LAB: 9/18/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 9/14/2006	COLLECTION TIME: 14:35 (24 hour clock)
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: WELL #3	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # (208) 941-5992



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Date Report Printed: 9/18/2006

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PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs							
1040	Nitrate	ND	EPA 300.0	10	0.2	9/15/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

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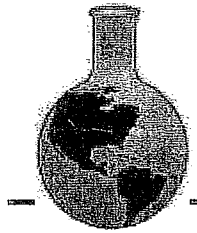
*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Signature of Laboratory Supervisor 9/19/06 Date

Staff Manager: **Sandy Koch**

LAB FEDERAL ID#: **ID00020**	LAB SAMPLE #: **0633779**
DATE LAB REC'D SAMPLE: 10/18/2006	DATE REPORTED BY LAB: 10/19/2006
COMPLIANCE SAMPLE [X] YES [ ] NO	REPLACEMENT SAMPLE [ ]
COLLECTION DATE: 10/18/2006	COLLECTION TIME: (24 hour clock) 13:24
SAMPLE TYPE: [ ] CO-confirmation [ ] RP-repeat [X] RT-routine [ ] DU-duplicate [ ] SP-special [ ] Other	
PWS#: 4010066	PWS NAME: GARDEN CITY WATER & SEWER SYSTE
SAMPLING POINT/LOCATION: WELL #6 (RIVERGLEN)	TAG #/FACILITY ID:
COLLECTOR'S NAME: L BYBEE	CONTACT PHONE # 2089415992



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DJM 10-25-06

Date Report Printed: 10/19/2006

CC: DEQ - BOISE

PUBLIC DRINKING WATER SYSTEM INORGANIC CHEMICAL (IOC) ANALYSIS REPORT:

Phase II								Phase V							
FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst	FRDS	Contaminant Name	Result*	Method	MCL*	MDL*	Analysis Date	Analyst
1010	Barium	---		2				1085	Thallium	---		0.002			
1015	Cadmium	---		0.005				1075	Beryllium	---		0.004			
1020	Chromium	---		0.1				1074	Antimony	---		0.006			
1035	Mercury	---		0.002				1036	Nickel	---		n/a			
1038	Ttl(N02/N03)	---		10				Other IOCs							
1040	Nitrate	ND	EPA 300.0	10	0.2	10/18/2006	WW	1052	Sodium	---		n/a			
1041	Nitrite	---		1.0				1025	Fluoride	---		4.0			
1045	Selenium	---		0.05				1005	Arsenic	---		0.01			
1024	Cyanide	---		0.2											
Secondary IOCs (optional)															
1050	Silver	---		0.1				2905	Surfactants	---					
1049	Silica	---						1997	Langlier Index	---					
1042	Potassium	---						1930	Dissolved Solids	---		500			
1032	Manganese	---		0.05				1927	Alkalinity as CaC03	---					
1031	Magnesium	---						1926	Conductivity uS/cm	---					
1028	Iron	---		0.3				1925	pH	---		6.5-8.			
1027	Hydrogen Sulfide	---						1920	Odor (Threshold #)	---		3			
1022	Copper	---		1.0				1915	Hardness as CaC03	---					
1017	Chloride	---		250				1905	Color	---		15c.u.			
1016	Calcium	---						1095	Zinc	---		5			
1003	Ammonia as N	---						1055	Sulfate	---		250			
1002	Aluminum	---		0.2											

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*Reported in mg/L unless otherwise noted
ND = Not detected within sensitivity of instrument
--- = No analysis performed
MDL = Method detection limit
MCL = Maximum Contaminant Level

Signature of Laboratory Supervisor 10/23/06 Date

Staff Manager: **Sandy Koch**

Lab Federal ID:	ID00020	Lab Sample #:	0627425
Date Lab Rec'd Sample:	8/24/2006	Date Reported by Lab:	9/11/2006
Compliance Sample: Yes [X] No [ ]		Replacement Sample:	
Collection Date:	8/24/2006	Collection Time:	13:19
Sample Type: [ ] CO-Confirmation [ ] RP-Repeat [X] RT-Routine [ ] DU-Duplicate [ ] SP-Special Other:_____			
PWS #:	4010066	PWS Name:	GARDEN CITY WATER & SEWER SYSTE
Sampling Point/Location:	200 W 42ND (WELL #3)	Tag # /Facility ID:	
Collector's Name:	L BYBEE	Contact Phone #:	(208) 941-5992

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PUBLIC DRINKING WATER SYSTEM DISINFECTION BYPRODUCT (DBP) REPORTING FORM

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (CL2) (mg/L)	--	4.0				
1006	Chloramine (CL2)	--	4.0				
1008	Chlorine Dioxide	--	0.8				
	Disinfection Byproducts						
2950	Total Trihalomethanes	ND	0.08	0.002	EPA 524.2	9/6/2006	DMB
	Haloacetic Acids (HAA5)						
2456	Total Haloacetic Acids	ND	0.060	0.010	SM6251 B	9/1/2006	CY

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Other DBP Analytes						
1009	Chlorite	--	1.0				
1011	Bromate	--	0.010				
1927	Alkalinity (CaCO3)	--					
2920	TOC (Source water)	--					

*Reported in mg/L unless otherwise noted.

ND = Not Detected within sensitivity of instrument

---- = No analysis performed
MDL = Method Detection Limit

CC: DEQ - BOISE

Signature of Laboratory Supervisor 9/11/06 Date

Staff Manager: **Sandy Koch**

Attn:

CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Date Report Printed: 9/11/2006 12:42:06 PM

Lab Federal ID: ID00020	Lab Sample #: 0627423
Date Lab Rec'd Sample: 8/24/2006	Date Reported by Lab: 9/11/2006
Compliance Sample: Yes [X] No [ ]	Replacement Sample:
Collection Date: 8/24/2006	Collection Time: 10:47
Sample Type: [ ] CO-Confirmation [ ] RP-Repeat	
[X] RT-Routine [ ] DU-Duplicate [ ] SP-Special Other:_____	
PWS #: 4010066	PWS Name: GARDEN CITY WATER & SEWER SYSTE
Sampling Point/Location: ECONO LODGE (WELL #4)	Tag # /Facility ID:
Collector's Name: L BYBEE	Contact Phone #: (208) 941-5992

Analytical Laboratories, Inc.

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Boise, Idaho 83703
Phone (208) 342-5515

PUBLIC DRINKING WATER SYSTEM DISINFECTION BYPRODUCT (DBP) REPORTING FORM

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (CL2) (mg/L)	--	4.0				
1006	Chloramine (CL2)	--	4.0				
1008	Chlorine Dioxide	--	0.8				
	Disinfection Byproducts						
2950	Total Trihalomethanes	ND	0.08	0.002	EPA 524.2	9/6/2006	DMB
	Haloacetic Acids (HAA5)						
2456	Total Haloacetic Acids	ND	0.060	0.010	SM6251 B	9/1/2006	CY

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Other DBP Analytes						
1009	Chlorite	--	1.0				
1011	Bromate	--	0.010				
1927	Alkalinity (CaCO3)	--	[redacted]				
2920	TOC (Source water)	--	[redacted]				

*Reported in mg/L unless otherwise noted.
ND = Not Detected within sensitivity of instrument
--- = No analysis performed
MDL = Method Detection Limit

CC: DEQ - BOISE

Signature of Laboratory Supervisor 9/11/06 Date

Staff Manager: **Sandy Koch**

Attn:
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Date Report Printed: 9/11/2006 12:16:23 PM

Lab Federal ID:	ID00020	Lab Sample #:	0627424
Date Lab Rec'd Sample:	8/24/2006	Date Reported by Lab:	9/11/2006
Compliance Sample: Yes [X] No [ ]		Replacement Sample:	
Collection Date:	8/24/2006	Collection Time:	11:33
Sample Type: [ ] CO-Confirmation [ ] RP-Repeat [X] RT-Routine [ ] DU-Duplicate [ ] SP-Special Other:_____			
PWS #:	4010066	PWS Name:	GARDEN CITY WATER & SEWER SYSTE
Sampling Point/Location:	PLANTATION & STATE (WELL #5)	Tag # /Facility ID:	
Collector's Name:	L BYBEE	Contact Phone #:	(208) 941-5992

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PUBLIC DRINKING WATER SYSTEM DISINFECTION BYPRODUCT (DBP) REPORTING FORM

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (CL2) (mg/L)	--	4.0				
1006	Chloramine (CL2)	--	4.0				
1008	Chlorine Dioxide	--	0.8				
	Disinfection Byproducts						
2950	Total Trihalomethanes	ND	0.08	0.002	EPA 524.2	9/6/2006	DMB
	Haloacetic Acids (HAA5)						
2456	Total Haloacetic Acids	ND	0.060	0.010	SM6251 B	9/1/2006	CY

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Other DBP Analytes						
1009	Chlorite	--	1.0				
1011	Bromate	--	0.010				
1927	Alkalinity (CaCO3)	--					
2920	TOC (Source water)	--					

*Reported In mg/L unless otherwise noted.

ND = Not Detected within sensitivity of instrument

--- = No analysis performed
MDL = Method Detection Limit

CC: DEQ - BOISE

Signature of Laboratory Supervisor 9/11/06
Date

Attn:
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Staff Manager: **Sandy Koch**

Date Report Printed: 9/11/2006 12:38:48 PM

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Boise, Idaho 83703
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Date Report Printed: 9/22/2006 8:31:24

Laboratory Analysis Report

Sample Number: 0627690

Attn:
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Collected By: L BYBEE
Submitted By: L BYBEE

Source of Sample
MILLSTREAM WELL 6

Time of Collection: 14:38
Date of Collection: 8/28/2006
Date Received: 8/28/2006
Report Date: 9/20/2006

PWS: 4010066

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Bromodichloromethane		<0.5	ug/l	0.5	EPA 524.2	9/8/2006	DMB
Bromoform		<0.5	ug/l	0.5	EPA 524.2	9/8/2006	DMB
Chloroform		<0.5	ug/l	0.5	EPA 524.2	9/8/2006	DMB
Dibromochloromethane		<0.5	ug/l	0.5	EPA 524.2	9/8/2006	DMB
Total THM's	80	<2.0	ug/l	2	EPA 524.2	9/8/2006	DMB
Monochloroacetic acid		<2.0	ug/L	2	SM6251 B	9/1/2006	CY
Dichloroacetic acid		<1.6	ug/L	1.6	SM6251 B	9/1/2006	CY
Trichloroacetic acid		1.7	ug/L	1.7	SM6251 B	9/1/2006	CY
Monobromoacetic acid		<2.0	ug/L	2	SM6251 B	9/1/2006	CY
Dibromoacetic acid		<1.7	ug/L	1.7	SM6251 B	9/1/2006	CY
Haloacetic acid 5 total	60	<10	ug/L	10	SM6251 B	9/1/2006	CY

Michael Moore 9/22/2006

CC: DEQ - BOISE

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact: Sandy Koch

Lab Federal ID: ID00020	Lab Sample #: 0627690
Date Lab Rec'd Sample: 8/28/2006	Date Reported by Lab: 9/20/2006
Compliance Sample: Yes [X] No [ ]	Replacement Sample:
Collection Date: 8/28/2006	Collection Time: 14:38
Sample Type: [ ] CO-Confirmation [ ] RP-Repeat [X] RT-Routine [ ] DU-Duplicate [ ] SP-Special Other:_____	
PWS #: 4010066	PWS Name: GARDEN CITY WATER & SEWER SYSTE
Sampling Point/Location: MILLSTREAM WELL 6	Tag # /Facility ID:
Collector's Name: L BYBEE	Contact Phone #: (208) 941-5992

Analytical Laboratories, Inc.
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Boise, Idaho 83703
Phone (208) 342-5515

PUBLIC DRINKING WATER SYSTEM DISINFECTION BYPRODUCT (DBP) REPORTING FORM

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (CL2) (mg/L)	--	4.0				
1006	Chloramine (CL2)	--	4.0				
1008	Chlorine Dioxide	--	0.8				
	Disinfection Byproducts						
2950	Total Trihalomethanes	ND	0.08	0.002	EPA 524.2	9/8/2006	DMB
	Haloacetic Acids (HAA5)						
2456	Total Haloacetic Acids	ND	0.060	0.010	SM6251 B	9/1/2006	CY

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Other DBP Analytes						
1009	Chlorite	--	1.0				
1011	Bromate	--	0.010				
1927	Alkalinity (CaCO3)	--	[redacted]				
2920	TOC (Source water)	--					

*Reported in mg/L unless otherwise noted.

ND = Not Detected within sensitivity of instrument

--- = No analysis performed
MDL = Method Detection Limit

CC: DEQ - BOISE

Signature of Laboratory Supervisor Date 9/22/2006

Attn:
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Staff Manager: **Sandy Koch**

Date Report Printed: 9/20/2006 11:32:01 AM

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515
http://www.analyticallaboratories.com

Date Report Printed: 9/22/2006 8:31:31

Laboratory Analysis Report

Sample Number: 0627850

Attn:
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Collected By:
Submitted By: L BYBEE

Source of Sample
ECHO FALLS WELL #8

Time of Collection: 15:50
Date of Collection: 8/29/2006
Date Received: 8/29/2006
Report Date: 9/20/2006

PWS: 4010066

HAA - 15:50; THM TIME 15:53; CL2 0.37

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Bromodichloromethane		<0.5	ug/l	0.5	EPA 524.2	9/11/2006	DMB
Bromoform		<0.5	ug/l	0.5	EPA 524.2	9/11/2006	DMB
Chloroform		<0.5	ug/l	0.5	EPA 524.2	9/11/2006	DMB
Dibromochloromethane		<0.5	ug/l	0.5	EPA 524.2	9/11/2006	DMB
Total THM's	80	<2.0	ug/l	2	EPA 524.2	9/11/2006	DMB
Monochloroacetic acid		<2.0	ug/L	2	SM6251 B	9/1/2006	CY
Dichloroacetic acid		<1.6	ug/L	1.6	SM6251 B	9/1/2006	CY
Trichloroacetic acid		<1.7	ug/L	1.7	SM6251 B	9/1/2006	CY
Monobromoacetic acid		<2.0	ug/L	2	SM6251 B	9/1/2006	CY
Dibromoacetic acid		<1.7	ug/L	1.7	SM6251 B	9/1/2006	CY
Haloacetic acid 5 total	60	<10	ug/L	10	SM6251 B	9/1/2006	CY

CC: DEQ - BOISE

Michael Moon 9/22/2006

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact: Sandy Koch

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Lab Federal ID:	ID00020	Lab Sample #:	0627850
Date Lab Rec'd Sample:	8/29/2006	Date Reported by Lab:	9/20/2006
Compliance Sample: Yes [X] No [ ]		Replacement Sample:	
Collection Date:	8/29/2006	Collection Time:	15:50
Sample Type: [ ] CO-Confirmation [ ] RP-Repeat			
[X] RT-Routine [ ] DU-Duplicate [ ] SP-Special Other:_____			
PWS #:	4010066	PWS Name:	GARDEN CITY WATER & SEWER SYSTE
Sampling Point/Location:	ECHO FALLS WELL #8	Tag # /Facility ID:	
Collector's Name:		Contact Phone #:	(208) 941-5992

Analytical Laboratories, Inc.
1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

PUBLIC DRINKING WATER SYSTEM DISINFECTION BYPRODUCT (DBP) REPORTING FORM

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (CL2) (mg/L)	--	4.0				
1006	Chloramine (CL2)	--	4.0				
1008	Chlorine Dioxide	--	0.8				
	Disinfection Byproducts						
2950	Total Trihalomethanes	ND	0.08	0.002	EPA 524.2	9/11/2006	DMB
	Haloacetic Acids (HAA5)						
2456	Total Haloacetic Acids	ND	0.060	0.010	SM6251 B	9/1/2006	CY

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Other DBP Analytes						
1009	Chlorite	--	1.0				
1011	Bromate	--	0.010				
1927	Alkalinity (CaCO3)	--	[redacted]				
2920	TOC (Source water)	--					

*Reported in mg/L unless otherwise noted.

HAA - 15:50; THM TIME 15:53; CL2 0.37

ND = Not Detected within sensitivity of instrument

--- = No analysis performed
MDL = Method Detection Limit

CC: DEQ - BOISE

Michael Mena 9/22/2006
Signature of Laboratory Supervisor Date

Staff Manager: **Sandy Koch**

Attn:
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Date Report Printed: 9/20/2006 11:44:56 AM

Lab Federal ID:	ID00020	Lab Sample #:	0627554
Date Lab Rec'd Sample:	8/25/2006	Date Reported by Lab:	9/11/2006
Compliance Sample: Yes [X] No [ ]		Replacement Sample:	
Collection Date:	8/25/2006	Collection Time:	13:41
Sample Type: [ ] CO-Confirmation [ ] RP-Repeat [X] RT-Routine [ ] DU-Duplicate [ ] SP-Special Other:_____			
PWS #:	4010066	PWS Name:	GARDEN CITY WATER & SEWER SYSTE
Sampling Point/Location:	LAKELAND (WELL #10)	Tag # /Facility ID:	
Collector's Name:	LARRY BYBEE	Contact Phone #:	2089415992

Analytical Laboratories, Inc.
1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

PUBLIC DRINKING WATER SYSTEM DISINFECTION BYPRODUCT (DBP) REPORTING FORM

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Disinfection Residual						
0999	Chlorine (CL2) (mg/L)	--	4.0				
1006	Chloramine (CL2)	--	4.0				
1008	Chlorine Dioxide	--	0.8				
	Disinfection Byproducts						
2950	Total Trihalomethanes	ND	0.08	0.002	EPA 524.2	9/6/2006	DMB
	Haloacetic Acids (HAA5)						
2456	Total Haloacetic Acids	ND	0.060	0.010	SM6251 B	9/1/2006	CY

FRDS	Contaminant	Result*	MCL/MRDL	MDL*	Method	Analysis Date	Analyst
	Other DBP Analytes						
1009	Chlorite	--	1.0				
1011	Bromate	--	0.010				
1927	Alkalinity (CaCO3)	--	[redacted]				
2920	TOC (Source water)	--	[redacted]				

*Reported in mg/L unless otherwise noted.

ND = Not Detected within sensitivity of instrument

--- = No analysis performed
MDL = Method Detection Limit

CC: DEQ - BOISE

Signature of Laboratory Supervisor Date

Staff Manager: **Sandy Koch**

Attn: DAVE MILAN
CITY OF GARDEN CITY
201 E 46TH ST
GARDEN CITY, ID 83714

Date Report Printed: 9/11/2006 12:43:42 PM

APPENDIX G
2006 CCR

Water Quality Table

The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Range Low	Range High	Sample Date	Violation	Typical Source
Inorganic Contaminants								
Arsenic (ppb)	0	50	8		8	2004	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2	2	0.02		0.02	2004	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Cadmium (ppb)	5	5	0.5		0.5	2004	No	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints
Fluoride (ppm)	4	4	0.47		0.47	2000	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate [measured as Nitrogen] (ppm)	10	10	0.5		0.5	2006	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Selenium (ppb)	50	50	6		6	2001	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Sodium (optional) (ppm)		MPL	26.8		26.8	2004	No	Erosion of natural deposits; Leaching

Contaminants	MCLG	AL	Your Water	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Inorganic Contaminants							
Copper - action level at consumer taps (ppm)	1.3	1.3	0.463	2006	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	0	2006	0	No	Corrosion of household plumbing systems; Erosion of natural deposits

Unit Descriptions	
Term	**Definition**
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (µg/L)
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.

Important Drinking Water Definitions	
Term	**Definition**
MCLG	MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
MCL	MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Variances and Exemptions	Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
MRDLG	MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
MRDL	MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

City of Garden City
6015 Glenwood Street
Garden City, Idaho 83714

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BOISE, IDAHO
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Consumer confidence report 2006

Spanish (Espanol)
Este informe contiene informacion muy importante sobre la calidad de su agua beber. Traduscalo o hable con alguien que lo entienda bien.

Is my water safe?
Last year, as in years past, your tap water met all U.S. Environmental Protection Agency (EPA) and state drinking water health standards. Local Water vigilantly safeguards its water supplies and once again we are proud to report that our system has not violated a maximum contaminant level or any other water quality standard.

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

Where does my water come from?
Garden city owns and operates 10 deep ground water wells at separate sites within the city limits. The wells capacities range from 400 gallons per minute (G.P.M.)to over 2000 G.P.M. The number of wells in operation at any time varies with demand. All of the wells produce very high quality water with concentrations of regulated contaminants well below the Maximum Contaminant level limits set by the E.P.A and our local Department of Environmental Quality

Source water contact information:
If you have any questions regarding our Consumer Confidence Report, please feel free to contact Larry Bybee Garden City public Works Water Supervisor, at 208-472-2900

Why are there contaminants in my drinking water?
Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:
microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

How can I get involved?
Garden City Council meetings are held on the second and fourth Mondays of each month

Other Information
Average annual Chlorine residual was .46 parts per million

Monitoring and reporting of compliance data violations
Garden city failed to collect samples for Radium 226 and 228 during the first quarter of the year, however samples have been collected for this quarter and we have returned to compliance. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.. The City of Garden City has not exceeded the MCL.

Additional Information for Arsenic
While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

APPENDIX H
CROSS CONNECTION ORDINANCE 6-5-2

GARDEN CITY, IDAHO

TITLE 6 WATER AND SEWER CHAPETER 5 CROSS CONNECTIONS

6-5-1: PURPOSE AND SCOPE:

The purpose of this chapter, in conjunction with the uniform plumbing code and Idaho Code section 37-2102, is to protect the health and safety of water consumers that are provided water service from the Garden City municipal water system by the control of actual and/or potential cross connections through the installation, inspection, and testing of approved backflow prevention devices. The city of Garden City is empowered to eliminate or control all cross connections throughout its service area. (Ord. 605, 5-12-1993)

6-5-2: DEFINITIONS:

BACKFLOW: The flow, other than the intended direction of flow, of any foreign liquids, gases or substances into the distribution system of a public water supply.

BACKFLOW PREVENTION DEVICE: A device to counteract back pressure or prevent back siphonage.

CONTAMINATION: The entry into or presence in a public water supply of any substances which may be deleterious to health and/or quality of the water.

CROSS CONNECTION: Any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture or other device which contains or may contain contaminated water, sewage or other waste or liquids of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as a result of backflow.

DIRECTOR: The director of the department of health and welfare of the state of Idaho, or his authorized agent.

ENGINEER: The city engineer of Garden City who shall be a registered professional engineer in the state of Idaho.

HEALTH OFFICER: The state of Idaho department of health and welfare health officer, or other authorized agent.

PUBLIC WATER SUPPLY: Any system of water supply intended or used for human consumption or other domestic uses, including source, treatment,

storage, transmission and distribution facilities, where water is furnished to any collection or number of individuals, or is made available to the public for human consumption or domestic use.

PURVEYOR: The city of Garden City or its authorized agent.

REGULATIONS: The Idaho regulations for public drinking water systems, 7-1-85 November 1977, division of environment, department of health and welfare, state of Idaho, and as may be subsequently amended or modified.

SUPERINTENDENT: The director of public works of the city of Garden City, or his authorized agent. (Ord. 429, 11-10-1980; amd. 1988 Code; Ord. 605, 5-12-1993)

6-5-3: PROTECTION OF WATER SUPPLY:

No water service connection to any premises shall be installed or continued in use by the purveyor unless the water supply is protected by backflow prevention devices whenever required by this chapter. The installation or maintenance of a cross connection which will endanger the water quality of the potable water supply of the city shall be unlawful and is prohibited and shall be penalized as hereinafter provided. Any such cross connection now existing or hereafter installed is hereby declared to be a public nuisance and the same shall be abated as provided by law for any public nuisance. The control or elimination of the cross connections shall be in accordance with this chapter and the regulations, together with the latest edition of appropriate manuals of standard practice pertaining to cross connections control, approved by the director. The engineer shall have the authority to establish requirements more stringent than state regulations, if he deems that the conditions so dictate. Such requirements shall be published and available to the public at the city hall of Garden City. The purveyor shall adopt and publish rules and regulations as necessary to carry out the provisions of this chapter, and shall have such rules and regulations available in published form to the public. Backflow prevention devices required by this chapter are intended to protect the Garden City municipal water system. Once water, supplied by the city, has been provided to a customer, and backflow prevention devices have been required and installed by the customer, that customer shall be responsible for the installation of any additional, on premises, backflow prevention devices for the further protection of waters supplied to the premises downstream of the backflow prevention device required by this chapter. (Ord. 429, 11-10-1980)

6-5-4: USE OF BACKFLOW PREVENTION DEVICES:

A. Location Of Backflow Prevention Devices: Backflow prevention devices shall be installed at the point of entry of any premises where, in the judgment of the purveyor or the health officer, the nature and extent of the activities or the

materials stored on the premises would present an immediate and/or dangerous hazard to health and/or be deleterious to the quality of the water should a cross connection occur; even though such cross connection does not exist at the time the backflow prevention device shall be installed in all premises under circumstances including, but not limited to, the following:

1. Premises having an auxiliary water supply.

2. Premises having internal cross connections that are not correctable, or intricate plumbing arrangements which make it impracticable to ascertain whether or not cross connections exist.

3. Premises where entry is restricted so that inspections for cross connections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross connections do not exist.

4. Premises having a repeated history of cross connections being established or reestablished.

5. Premises on which any substance is handled under pressure so as to permit entry into the public water supply, or where a cross connection could reasonably be expected to occur. This shall include the handling of process waters and cooling waters.

6. Premises where materials of a toxic or hazardous nature are handled or stored in such a manner that if backflow should occur, a serious health hazard might result.

7. The following types of facilities will fall into one of the above categories where a backflow prevention device is required to protect the public water supply. A backflow prevention device shall be installed at these facilities unless the purveyor and the director determines that no hazard exists:

Car washes.

Chemical plants using a water process.

Fire sprinkler systems.

Food or beverage processing plants.

Hospitals, mortuaries, clinics, laboratories.

Irrigation and/or residential sprinkler systems.

Metal plating industries.

Petroleum processing or storage plants.

Piers and docks.

Radioactive material processing plants.

Sewage treatment plants.

Water processing plants.

8. Other premises, as specified by the engineer, superintendent or health officer, where backflow prevention devices are required to protect the public water supply.

B. Type Of Device: The type of protective device required shall depend on the degree of hazard which exist. The following backflow prevention devices shall be installed in accordance with the current edition of the "Accepted Procedures And Practice In Cross Connection Control" manual of the American Water Works Association or the following requirements whichever is the more stringent. The following backflow prevention devices shall not be installed in such a manner as to be subject to flooding, freezing, incidental damage, or exposed to corrosive fumes:

1. Air Gap Separation: To be installed in situations where elimination of cross connection or backflow is critical. Separating between the end of the potable water system and the rim of the receiving vessel, tank, or fixture, shall be not less than one inch (1") or two (2) times the inside diameter of the potable water system piping, whichever is greater.

2. Reduced Pressure Backflow Assembly: To be installed where the public water supply may be contaminated with sewage, industrial waste of a toxic nature or other contaminant which, should backflow or cross connection occur, would create a serious threat to the public water supply. This device shall be installed, as a unit, between two (2) resilient seated valves, to allow testing, twelve inches (12") from the finish grade or floor to the bottom of the backflow assembly and not more than five feet (5') above finish grade. Must be installed horizontally.

3. Double Check Valve Assembly: Shall be installed, as a unit, between two (2) resilient seated valves, for testing, twelve inches (12") from the finish grade to the bottom of the backflow preventer, and not more than five feet (5') above finish grade. Must be installed horizontally.

4. Pressure Vacuum Breaker Assembly: Shall be installed, as a unit, between two (2) resilient seated valves, to allow testing, twelve inches (12") above all

downstream piping, openings, and sprinkler heads and not more than five feet (5') above finish grade.

5. Atmospheric Vacuum Breaker: Shall be installed twelve inches (12") above all downstream piping, openings, and sprinkler heads, and not more than five feet (5') high. There shall be no valves of any type or size downstream of an atmospheric breaker.

C. Location Requirement: Backflow prevention devices required by this chapter shall be located within the facility requiring the backflow prevention so as to be readily accessible for maintenance, testing, and inspection, furthermore, where no part of the device will be submerged. Installation in pits is prohibited.

D. Installation Requirement: Backflow prevention devices required by this chapter shall be installed under the supervision of and/or with the approval of the purveyor.

E. Device Approval: Any protective device required by this chapter shall be a model approved by the purveyor. A double check valve assembly or a reduced pressure principle backflow prevention device will be approved if it has successfully passed performance tests of the University of Southern California Engineering Center or meet AWWA C-506 standard, or another equal test. If atmospheric vacuum breakers or pressure vacuum breakers are used, they shall meet the minimum standards established by the American Society of Sanitary Engineering, or equal. These devices shall be furnished and installed by and at the expense of the customer.

F. Selection Chart For Backflow Prevention Devices: Chart indicates the minimum degree of protection allowed. When two (2) devices are indicated, determination of actual device to be used will be made by superintendent based upon degree of hazard within the premises or property.

Type Of Facility	Atmospheric Vacuum Breaker	Pressure Vacuum Breaker	Double Check Valve	Reduced Pressure Backflow Preventer	Air Gap
Animal watering	X	X			
Aspirators	X	X			
Autoclaves			X		
Autopsy		X			
Boilers			X		
Commercial dishwasher		X			

Fixing tees with steam			X		
Heat exchangers			X		
High rise buildings			X		
Irrigation and sprinkler systems	X1	X2			
Laundries		X			
Mobile home parks and RV parks (dependent on plumbing)		X			
Private water source				X	
Radiator vats				X	
Slaughterhouses				X	
Water boost pumps			X		

Notes:

1. No valves allowed downstream of backflow preventer.

2. With valves downstream.

G. Selection Chart For Backflow Prevention Devices: Chart indicates the minimum degree of protection allowed. When two (2) devices are indicated, determination of actual device to be used will be made by superintendent based upon degree of hazard within the premises or property.

Type Of Facility	Atmospheric Vacuum Breaker	Pressure Vacuum Breaker	Double Check Valve	Reduced Pressure Backflow Preventer	Air Gap
Car washes				X	
Chemical plants				X	
Docks and marinas			X		
Film labs				X	
Food processors			X		
Fertilizers plants				X	

Hospitals		X
Laboratories	X	
Meatpacking plants	X	
Medical building		X
Nonpotable water system		X
Oil refineries and storage facilities		X
Sanitariums	X	
Sewage plants		X
Truck fill station		X
Mortuaries	X	
Swimming pools	X	
Water heating and cooling system	X	

H. Inspections: Backflow prevention devices installed pursuant to this chapter, except atmospheric vacuum breakers, shall be inspected and tested upon installation and annually thereafter, or more often if necessary. Inspections, tests and maintenance shall be conducted by persons certified by the state of Idaho and shall be at the customer's expense. Whenever a device is found to be defective, they shall be repaired, overhauled, or replaced at the customer's expense. Copy of all test reports shall be sent to the Garden City public works department. Copy of all test reports shall be maintained at the premise and shall be available for inspection if so requested by the superintendent or state health official.

I. Underground Sprinkling Devices: No underground sprinkling device will be installed without adequate backflow prevention devices at the point from which the water for irrigation is taken from the public water supply.

J. Termination Of Water Service: Failure of the customer to cooperate in the installation, maintenance, testing or inspection of backflow prevention devices required by this chapter and the regulations, shall be grounds for termination of water service to the premises. (Ord. 429, 11-10-1980)

6-5-5: CROSS CONNECTION INSPECTIONS:

A. No water shall be delivered to any structure hereafter built within the city or within areas served by the city water until the same shall have been inspected by the purveyor for possible cross connections and have been approved as being free of the same.

B. Any construction for industrial or other purposes which is classified as hazardous facilities pursuant to section 6-5-4 of this chapter, where it is reasonable to anticipate intermittent cross connections, or as determined by the director, shall be protected by the installation of one or more backflow prevention devices at the point of entry from the public water supply into the premises or any other location designated by the purveyor.

C. Inspections shall be made periodically of all buildings, structures or improvements of any nature now receiving water through the city's system, for the purpose of ascertaining whether cross connections exist. Such inspections shall be made by the purveyor. (Ord. 429, 11-10-1980)

6-5-6: ADDITIONAL REMEDIES:

In the event an improper cross connection is not corrected within the time limit set by the superintendent, or in the event the purveyor is refused access to any property for the purpose of determining whether or not cross connections exist, delivery of water to the property shall cease until the deficiency is corrected to the purveyor's satisfaction. In addition, the purveyor may effect the necessary repairs or modifications at the expense of the property owner and refuse delivery of water to the property until the cost thereof shall have been paid. (Ord. 429, 11-10-1980)

6-5-7: VIOLATIONS AND PENALTIES:

Any person who violates, disobeys, omits, neglects or refuses to comply with, or resists the enforcement of any of the provisions of this chapter or the rules and regulations as adopted by this chapter, shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall for each offense be punished by a fine as provided in section 1-4-1 of this code. (Ord. 429, 11-10-1980; amd. 1988 Code)

APPENDIX I
SANITARY SURVEY INFORMATION

1. Incomplete Sanitary Survey Report 2004

2. Blank Sanitary Survey

3. Idaho Drinking Water Newsletter

State of Idaho Public Water System Enhanced Sanitary Survey

WATER SYSTEM INVENTORY INFORMATION

SURVEY DATE: 06-08-2004 (mm/dd/yyyy) | PWS #: 4010066

Name of Public Water System: Garden City Water + Sewer System

# of Groundwater Sources: | # of Storage Facilities:

# of Surface Water Sources: | Total Storage:

Date of Last Survey: 05-14-1990

Health District: ☒ N/A

DEQ Region: ☐ N/A 3RD

County: Ada

Number of Service Connections: 4500

Residential Population: 9000

Status: ☒ Approved ☐ Disapproved

Water Purchased From: ☒ N/A Name: PWS #:

Water Sold To: ☒ N/A Name: PWS #:

Owner Type: Regulated Public Utilities

Service Category: MK

☒ Community Water System
☐ Nontransient Noncommunity
☐ Transient Noncommunity - TNC

Combined Source? ☒ Yes ☐ No
If yes, ☐ Well Fields ☐ Manifolds

System Certification Class:

Seasonal Operation Dates: ☐ N/A
Date Open: 01/01 –
Date Closed: 12/31

Responsible Person In Charge (RIC): (Identify Operator here for TNC PWS)

☒ Mr. ☐ Ms. Larry Bybee

RIC Properly Certified? ☒ Yes ☐ No ☐ N/A-TNC | Certification Level: Dist II ☐ N/A

Mailing Address: 201 E. 46th St

City, State, Zip Code: Garden City, Id 83714

Telephone: Day: 208-375-3194 Night: 208-941-5985

E-mail: lbybee@gardencityidaho.org

Substitute (RIC): ☐ No Sub. RIC Identified (N/A for TNC PWS)

☒ Mr. ☐ Ms. Brian Burger

Sub.RIC Properly Certified? ☒ Yes ☐ No ☐ N/A-TNC | Certification Level: Dist II ☐ N/A

Mailing Address: 201 E. 46th St.

City, State, Zip Code: Garden City, Id 83714

Telephone: Day: 208-941-5881 Night:

E-mail: bburger@gardencityidaho.org

Legal Owner's Name: ☐ Mr. ☐ Ms. City of Garden City

Mailing Address: 201 E. 46th St.

City, State, Zip Code: Garden City, Id 83714

Telephone: Day: 208-375-3194 Night: 208-941-5995 Fax: 208-376-[illegible]

E-mail: lbybee@gardencityidaho.org

Personnel present during evaluation:

Name: Gary Todd Title: Water Operator

Name: Title:

Name: Title:

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

Samples taken at the time of survey by inspector?
☐ Yes ☒ No
If yes, what:

Survey performed by:
Name: Sandy Hemenway
Title: Water Quality Analyst
Phone #: (208) 373-0166

Agency:
☒ IDEQ
☐ Health Dept.
☐ Other:

General Information

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

Comments:
1) new mains w/ growth, + mains replaces
+ 2 treatment plants

Sanitary Survey Index

Modules used:
- ☐ General Information
- ☐ Groundwater Source
- ☐ Storage
- ☐ Hydropneumatic Tanks
- ☐ Distribution
- ☐ Pumping
- ☐ Financial Capacity
- ☐ Managerial Capacity
- ☐ Chemical Application
- ☐ Disinfection
- ☐ Treatment - Iron & Manganese
- ☐ Waste Handling and Disposal
- ☐ Notes
- ☐ Photo Log and Photos

DISTRIBUTION DATA

SURVEY DATE: 06-08-2024 (mm/dd/yyyy) | PWS #: 4010066

A separate distribution form must be filled out for **each** distribution system in the PWS.

What are water lines made of:

Material(s): ☐ Unk ☒ Steal ☐ HDPE (black) ☐ Asbestos/Cement ☒ PVC ☒ Cast Iron ☒ Other: ductile

Size(s): ☐ Unk 4-12"

How many services are metered? 9000 out of 9000

Number of Fire Hydrants:

yes	no	n/a	unk	note	DISTRIBUTION
☒	☐	☐	☐	☒	1. Have there been any interruptions in service during the past year? (including pressure loss)
☐	☐	☒	☐	☐	2. If a loss of pressure occurred, was the PWS placed on boil order?
☒	☐	☐	☐	☒	3. Are there areas with chronic low pressure problems?
☐	☐	☐	☐	☐	4. Was the pressure observed at a service connection?
					5. If yes, psi: _____ Location: _____ Time: _____ ☐ A.M. ☐ P.M.
☒	☐	☐	☐	☐	6. Do all water mains that provide fire flow have a diameter of at least 6 inches?
☐	☒	☐	☐	☐	7. Are there any main lines that have a diameter less than 3 inches?
☐	☒	☐	☐	☒	8. Are valves exercised regularly? If yes, how often? only in every day occurance
☐	☒	☐	☐	☒	9. Is there a leak detection program?
☐	☒	☐	☐	☐	10. Is 15% or more of the water unaccounted for?
☐	☒	☐	☐	☒	11. Is a water conservation program in effect?
☒	☐	☐	☐	☐	12. Is an adequate map of the distribution system maintained?
☒	☐	☐	☐	☐	13. Are all dead end water mains equipped with a means to flush
☒	☐	☐	☐	☐	14. If yes, are the deadends flushed at least semiannully?
☐	☒	☐	☐	☐	15. Are there any distribution materials used that should not be in contact with the drinking water? If yes, explain in comments section.
☐	☒	☒	☐	☐	16. Was asbestos/cement pipe used in the system?
☐	☐	☒	☐	☐	17. If yes, has asbestos analysis been done?
☒	☐	☐	☐	☐	18. Is system adequately protected from freezing?
☒	☐	☐	☐	☒	19. Is there a cross connection control program? (Community PWSs Only)
☒	☐	☐	☐	☐	20. Is the operator trained in cross connection control?
☐	☐	☐	☐	☐	21. Were any cross connections observed during the course of the survey?
☐	☐	☒	☐	☐	22. If a separate non-potable irrigation system is provided for the consumer, are all mains, hydrants, and appurtenances easily identified as non-potable? (Purple Tape or other)
☐	☐	☐	☒	☒	23. Are there any water supply wells that are no longer being used that need to be abandoned?

COMMENTS: (Please indicate the question number)

1) when a main line has been repaired, or when a well is shut down for work (no negative pressure ever though)

3) eastern most part of system 30th & 29th Street. (nothing less than 20 psi) Static runs about 50 psi

8) need a valve exercising program

9) only if increase in a bill, or surfacing of water

11) gave fact sheet from DEQ on water conservation

19) fact sheets from DEQ given

23) confirmed if well #1 & 2 have been abandoned or isolated & tagged "for nonpotable use only"

FINANCIAL CAPACITY

SURVEY DATE: 06-08-2004 (mm/dd/yyyy)

PWS #: 4010066

yes	no	n/a	unk	note	FINANCIAL CAPACITY
☒	☐	☐	☐	☐	1. Is the PWS current with the payment of drinking water fees?
☐	☐	☐	☐	☐	2. Does the PWS charge a drinking water fee to the user? If yes, what is the fee: $ _____
☐	☐	☐	☐	☐	3. Is the PWS in the business of selling water? - If no, identify why in the comments section and mark "N/A" on questions 4 - 21.
☒	☐	☐	☐	☐	4. Does the PWS provide and use an annual budget?
☒	☐	☐	☐	☐	5. Does the PWS use a chart of accounts for its books and records?
☒	☐	☐	☐	☐	6. Does the PWS use the modified accrual or accrual method of accounting?
☒	☐	☐	☐	☐	7. If applicable, Is the PWS fund separate from the waste water/sewer utility fund?
☐	☒	☐	☐	☒	8. Do water system revenues exceed expenditures?
☐	☐	☐	☐	☒	9. Are controls established to prevent expenditures from exceeding revenues? If yes, describe in the comments section.
☒	☐	☐	☐	☐	10. Has an independent financial audit been completed?
☒	☐	☐	☐	☐	11. If yes, is a copy of the most recent balance sheet for the water system available?
☒	☐	☐	☐	☐	12. Does the water system include a cash budget within its annual budget for cash flow?
☒	☐	☐	☐	☐	13. Does the water system management review the user fee, user charge, or rate system at least annually?
					14. When was the last user fee, user charge, or rate system adjustment? FEB. 2001 mm/dd/yyyy
☒	☐	☐	☐	☐	15. Does the water system management review financial reports at least monthly?
☒	☐	☐	☐	☐	16. Does the PWS provide and use a capital budget?
☐	☒	☐	☐	☐	17. Has this PWS produced and does it currently utilize a capital improvements plan?
					18. If yes, when was the capital improvements budget produced? _____ mm/dd/yyyy
☒	☐	☐	☐	☐	19. Has the capital improvement budget been updated in the last 18 months?
☒	☐	☐	☐	☐	20. Does the water system budget provide funding for depreciation of existing plant in service and/or for the funding of reserves for system replacement?
☒	☐	☐	☐	☐	21. Are there sufficient funds for training personnel?

COMMENTS:
(Please indicate the question number)

MANAGERIAL CAPACITY

SURVEY DATE 06-08-2004 (mm/dd/yyyy) PWS # 4010066

MANAGERIAL CAPACITY

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

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

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

yes	no	n/a	unk	note	
☒	☐	☐	☐	☐	5. Are the following records maintained onsite or located near by? - Bacteriological Analysis - **5 years retention.**
☒	☐	☐	☐	☐	- Chemical Analysis - **10 years retention.**
☒	☐	☐	☐	☐	- Records of actions taken to correct violations - **3 years retention.**
☐	☐	☐	☐	☐	- Copies of reports, summaries or communication related to sanitary surveys - **10 years retention.**
☒	☐	☐	☐	☐	- Reports concerning variances or exemptions - **5 years retention.**
☐	☐	☐	☐	☐	- Copies of public notices issued - **3 years retention.**
☒	☐	☐	☐	☐	6. Are routine operation and maintenance records kept?
☒	☐	☐	☐	☐	7. Are routine maintenance schedules established.
☒	☐	☐	☐	☐	8. Is there a clear plan of organization and control among the people responsible for management and operations of the water system?

yes	no	n/a	unk	note	9. Are any samples of the following parameters past due?
☐	☒	☐	☐	☐	Coliform
☐	☒	☐	☐	☐	IOCs
☐	☒	☐	☐	☐	Nitrates
☐	☒	☐	☐	☐	Radionuclide
☐	☒	☐	☐	☐	VOCs
☐	☒	☐	☐	☐	SOCs
☐	☒	☐	☐	☐	TTHM
☒	☐	☐	☐	☐	10. Is a total coliform rule (TCR) sample siting plan available for review?
☒	☐	☐	☐	☐	11. Does the (TCR) sample siting plan meet the minimum requirements?
☒	☐	☐	☐	☐	12. Does the system have a sufficient supply of approved sampling bottles properly stored?
☒	☐	☐	☐	☐	13. Does the PWS provide stairways, ladders and handrails where needed?
☒	☐	☐	☐	☐	14. Are treads of non-slip material provided where needed?
☐	☒	☐	☐	☐	15. Is a health hazard produced from inadequately protected electrical wiring?
☒	☐	☐	☐	☐	16. Are all confined space entry requirements considered?

COMMENTS:
(Please indicate the question number)

Idaho Department of Environmental Quality
Source Water Assessment Program
Public Water System Questionnaire

Date: 5-16-01

Please supply as much information as possible for each well. Copy this questionnaire if you have more than one well. If you have a well log, please enclose a copy. Well logs will not be returned, so please DO NOT send originals.

PWS No.: 4010066 Hydrologic Province: _____

Well Identification Number or Name: Well #12

Tag Number: _____

IDEQ Well Identifier: E0006307

Population Serviced by Well: 10,000

Latitude: _____ Longitude: _____

Township: 4N Range: 1E Section: 25 QTRQTR: SWNW

Owner/Operator: Garden City Public Works

Address: 201 E 50th City: Garden City State: ID

Phone Number: 376-3570 County: Ada

Drilling Contractor and Contact Information: Stevens & Sons

Permit Number: 63-8357

Date Well Was Drilled: 2-15-77

Are records kept for volumes of pumped water from the well? ? ☒ YES ☐ NO

If you answered YES: Please provide below any information on pumping volumes:

Average Monthly Volume During Summer (May - September) : 0 gallons

Average Monthly Volume During Winter (October - April) : 0 gallons

Total Volume for ~~1993~~ 2000: 0 gallons Strictly - Backup emergency

If you answered NO: Please provide estimates on pumping volumes:

Average Monthly Volume During Summer: _____ gallons

Average Monthly Volume During Winter: _____ gallons

Average Volume During 24-Hour Period: _____ gallons

Has well ever been deepened? ☐ YES ☒ NO

If you answered YES:

Date Well Was Deepened: _____

Interval of deepending (feet below ground surface): From: _____ To: _____

Is the well flowing artesian? ☒ YES ☐ NO

If you answered NO:

Depth of Static Water Below Land Surface (Feet): _____

OR

Depth of Static Water Below Top of Casing (Feet): _____

GROUNDWATER SOURCE

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

SURVEY DATE: 06-08-2004 (mm/dd/yyyy)

PWS #: 4010066

Tag #: E0006359

Common Name of Source: Well #10

Source: ☒ Well ☐ Spring ☐ Infiltration Gallery

Is this Source Treated? ☒ Yes ☐ No

Treatment Objective: ☐ N/A — taste, ↑ iron & manganese

Treatment Types: ☐ N/A — gas chlorine, polyphosphate

Physical Location: 10640 Joplin Rd.

Is there a well log for the groundwater source? ☒ Yes ☐ No ☐ Unk

Pump Capacity (GPM)	Casing Size (In)	Date Drilled:	Well Depth (Ft)	Casing Depth (Ft)	Grout Depth(Ft)	Static Water Depth (Ft)
2500 ☐ Unk	16 ☐ Unk	6-8-93 ☐ Unk	892 ☐ Unk	☐ Unk	600 ☐ Unk	20 ☐ Unk

Is the Casing Screened?	Screen Depth (Ft):	Is the Casing Perforated?	Perforation Depth (Ft):
☒ Yes ☐ No ☐ Unk ☐ N/A	☐ N/A ☐ Unk From: 570 To: 878	☐ Yes ☒ No ☐ Unk ☐ N/A	☐ N/A From: ☒ Unk To:

Latitude (Decimal):

Longitude (Decimal):

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

GROUNDWATER SOURCE

yes	no	n/a	unk	note		
					1. This source is: ☒ Active ☐ Proposed ☐ Inactive ☐ Emergency (<60 days per year)	year-round
☐	☐	☐	☐	☐	2. Has there been a Source Water Assessment conducted for the source? Date:	
☐	☐	☐	☐	☐	3. Has a final GWUDISW determination been done for this source? Date:	
☒	☐	☐	☐	☐	4. Is the well on a separate lot that is large enough to provide a minimum distance for 50 feet between the well and the nearest property line? (applicable if constructed after 11/1/77)	
☒	☐	☐	☐	☐	5. Is the well lot owned in fee simple by the supplier of water or controlled by lease with a term of not less than the usefull life of the well?	
					6. Are the following minimum distances from the PWS well being met?	
☒	☐	☐	☐	☐	- Sewer line.....50 Ft.	
☒	☐	☐	☐	☐	- Individual home septic tank.....100 Ft.	
☒	☐	☐	☐	☐	- Individual home disposal field.....100 Ft.	
☒	☐	☐	☐	☐	- Individual home seepage pit.....100 Ft.	
☒	☐	☐	☐	☐	- Privies.....100 Ft.	
☒	☐	☐	☐	☐	- Livestock.....50 Ft.	
☒	☐	☐	☐	☒	- Canals, streams, ditches, lakes, ponds and tanks used to store nonpotable substances.....50 Ft.	50' south is a canal
☐	☒	☐	☐	☒	- Any other potential source of contamination observed at time of inspection.....50 Ft.	Republic storage is located to the west 200' (unknown what could be stored there)
☐	☒	☐	☐	☐	7. Are pesticides, herbicides, fertilizers, portable containers of petroleum products, or other toxic or hazardous materials stored on the well lot?	
☐	☒	☐	☐	☐	8. Are pesticides, herbicides, or fertilizers applied to the well lot?	
☐	☒	☐	☐	☐	9. Is the well in a pit? If yes, Date constructed:	
☐	☐	☒	☐	☐	10. Was the well that is located in a pit installed after 11/5/64?	
☐	☐	☒	☐	☐	11. If pit was installed prior to 11/5/64 – Does the pit have water tight floors and wall construction and is an acceptable floor drain provided?	
☒	☐	☐	☐	☐	12. Is the source protected from unauthorized entry?	
☒	☐	☐	☐	☐	13. Does the casing extend a minimum of 12 inches above the finished ground surface and 6 inches above the well house floor?	(14) Need to install
☐	☒	☐	☐	☒	14. Is the well vented with the open end of the vent screened and terminated downward at least 18 inches above the floor?	
☒	☐	☐	☐	☐	15. Is the well cap sanitary seal properly installed and maintained?	
☒	☐	☐	☐	☐	16. Is the well cased and sealed in such a manner that surface water cannot enter the well?	

COMMENTS:
(Please indicate question number)

Well #10 is the main well for the west side of town

GROUNDWATER SOURCES PG. 2

Common Name: well #10 | SURVEY DATE: 06-08-2004 (mm/dd/yyyy) | PWS #: 4010066

yes	no	n/a	unk	note	GROUNDWATER SOURCE (cont.)
X				X	17. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment?
X					18. Is a totalizing flow meter installed on the discharge line of the well and is it maintained and working properly? 1103.8 gal/min
X					19. Is a pressure gauge provided at all installations and is it maintained and working properly? 91 psi.
X					20. Can the well be pumped to waste via an approved air gap?
	X				21. Has the source been known to have caving or sand problems?

yes	no	n/a	unk	note	WELL HOUSE
X					22. Is the source located in a well house?
X					23. Is the well house kept clean and in good repair?
X					24. Is the well house protected from unauthorized personnel?
	X			X	25. Are all non-sample taps installed in the well house equipped with an appropriate backflow prevention device?
X					26. Is ventilation provided in the well house to remove excess heat and moisture during peak summer temperatures?
X					27. Is a thermostatically regulated heater installed in the well house to prevent moisture buildup during cold weather?
X					28. Is the well house protected from flooding and does it have adequate drainage?
		X			29. Is the sump for well house floor drains closer than 30 feet from the well?
	X				30. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination?

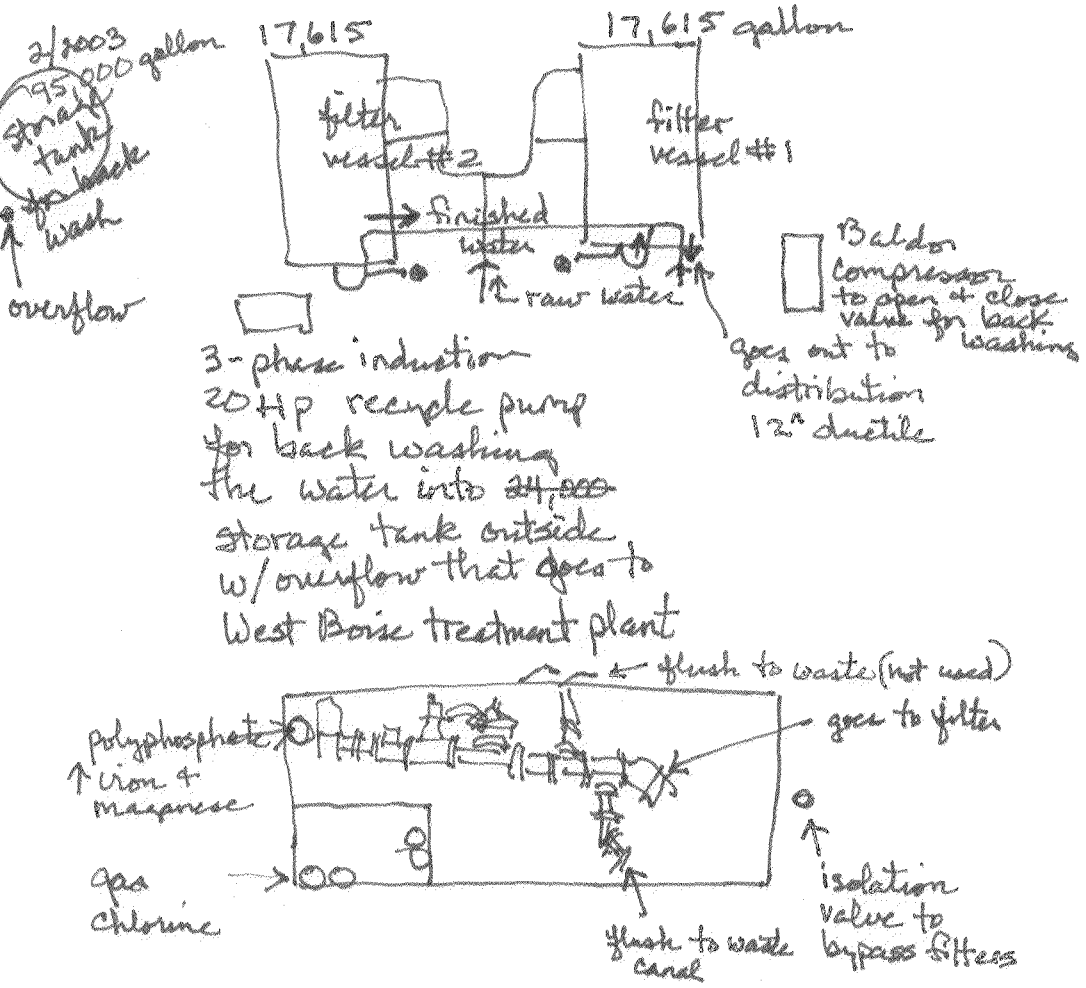
yes	no	n/a	unk	note	SPRING INFORMATION
		X			31. Is the entire area within one hundred (100) feet of the spring owned by the supplier or controlled by a long term lease?
		X			32. Is the entire area within a one hundred (100) foot radius of the spring box fenced to prevent trespassing of livestock and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

yes	no	n/a	unk	note	INFILTRATION GALLERY INFORMATION
		X			39. Is there a lid over the gallery?
		X			40. Is the lid watertight and locked?
		X			41. Is the collector in sound condition and maintained as necessary?

COMMENTS:
(Please indicate question number)

17. There is a raw water & finished water sample tap in the filter room.

(25) threaded tap with hose on it in the well house needs a backflow prevention device installed



GE 250 Hp turbine

1 Hp Baldor behind turbine booster pump for venturi from gas chlorination

Hach CL17
Chlorine Analyzer
for raw 0.82 to filter
for finished 0.39
out to the distribution

Hach 1720D turbidimeter
0.048

Rosemount model 54e
6.93 pH raw water
73.9° F
Rosemount model 54e
9.0 pH finished water
66.1° F
91 PSi (constant)
US Filter Control System

PUMPING DATA

SURVEY DATE (mm/dd/yyyy): 06-08-2004 | PWS #: 4010066

PUMPS, PUMPHOUSES, AND CONTROLS						
Pump ID#	Physical Location:	Type of Pump:	Brand:	Model:	Horsepower:	Purpose:
1	10640 Joplin St	turbine	GE		250	meet demand + fire protecti

yes	no	n/a	unk	note	PUMPING
☒	☐	☐	☐	☐	1. Is the pump(s) in good operating condition?
☒	☐	☐	☐	☐	2. Is the pumphouse(s) clean and orderly?
☐	☒	☐	☐	☐	3. Are there spare pump parts or a replacement pump that is capable of providing the maximum daily pumping demand?
☒	☐	☐	☐	☐	4. Are gate valves located on the suction and/or discharge sides of each pump?
☒	☐	☐	☐	☐	5. Is a positive-acting check valve located above ground on the discharge side between each pump and the shut-off valve?
☐	☒	☐	☐	☐	6. Does the pump(s) cycle excessively?
☒	☐	☐	☐	☐	7. Is the pump station(s) adequately lighted throughout?
☒	☐	☐	☐	☐	8. If the system has a vertical turbine motor driven pump(s), is an air release valve located between the source and check valve?
☐	☐	☒	☐	☒	9. If the pump(s) is "oil lubricated", is oil NSF approved and suitable for human consumption?
☒	☒	☐	☐	☐	10. Is there auxiliary power on-site?
☒	☐	☐	☐	☒	11. Is auxiliary power tested?
☒	☐	☐	☐	☐	12. If a diesel or gasoline fueled engine is used on the well lot; is the fuel tank and connecting piping double walled?
☒	☐	☐	☐	☐	13. Is the fuel tank above ground?
☒	☐	☐	☐	☐	14. Is a certified operator present during the filling of the fuel tank?
		☒			15. If the engine is in the well house;
☐	☐	☒	☐	☐	- Is the engine exhaust directly discharged outside the well house?
☐	☐	☒	☐	☐	- Is a spill containment structure surrounding all fuel tanks adequate? (Secondary containment - 150% fuel tank capacity)

COMMENTS:
(Please indicate the question number)

9) water-lube

11) weekly

PUMPING DATA PG. 2

SURVEY DATE 06-08-2024 (mm/dd/yyyy) PWS # 4010066

yes	no	n/a	unk	note	BOOSTER PUMPS
☐	☐	☐	☐	☐	16. Is the pump facility properly protected against unauthorized entry?
☐	☐	☐	☐	☐	17. Does the booster pump maintain an operating pressure of 20 psi or greater?
☐	☐	☐	☐	☐	18. Is a standard pressure gauge installed on the discharge line?
☐	☐	☐	☐	☐	19. Is the booster pump supplied with an automatic cutoff that activates when intake pressure is less than or equal to 5 psi ?
☐	☐	☐	☐	☐	20. Is the booster pump located on a suction line that is directly connected to any storage reservoir?
☐	☐	☐	☐	☐	21. If yes, is the booster pump supplied with an automatic cutoff when intake pressure is equal to or less than 2.5 psi?
☐	☐	☐	☐	☐	22. Is a water pressure relief valve installed where the pump is directly connected to the distribution system?
☐	☐	☐	☐	☐	23. Is an instantaneous and totalizing flow meter installed where the booster pump is directly connected to the distribution system?
☐	☐	☐	☐	☐	24. Is the building that encloses the booster pump provided with an electric ventilation fan or an automated air flow system that will remove heat and moisture during peak summer temperatures?
☐	☐	☐	☐	☐	25. Is a thermostatically regulated heater installed in the booster pump house to prevent moisture buildup during cold weather?
☐	☐	☐	☐	☐	26. Is proper drainage provided?
☐	☐	☐	☐	☐	27. Is the pump station properly protected from flooding?

COMMENTS:
(Please indicate the question number)

- only booster pump is for the gas chlorine
35

CHEMICAL APPLICATION

Survey Date (mm/dd/yyyy): 06-08-2004

PWS #: 4010066

Treatment Facility Name:	Treatment Facility Location:	Date Online:	Treated Water (GPD):
well #10	10640 Joplin Rd	6-2003 ☐ Unk	1-2 million ☐ Unk

Sources Treated by Facility: (Tag #)	Equipment Manufacturer:	Model #:
1. well #10	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

Chemical Trade Name:	Chemical Manufacturer:	Purpose:	NSF 60 Approved?
1. Gas chlorine	1.	1. taste + protection	☒ Yes ☐ No ☐ Unk
2. polyphosphate	2.	2. high iron + manganese	☒ Yes ☐ No ☐ Unk
3.	3.	3.	☐ Yes ☐ No ☐ Unk
4.	4.	4.	☐ Yes ☐ No ☐ Unk

yes	no	n/a	unk	note	CHEMICAL APPLICATION
☒	☐	☐	☐	☒	1. Are corrosive chemicals introduced in such a manner as to minimize potential for corrosion?
☒	☐	☐	☐	☐	2. Are spare parts available for all feeders to replace parts which are subject to wear and damage?
					3. Are the feeders manually or automatically controlled? ☐ Manual ☒ Automatic
☒	☐	☐	☐	☒	4. Is a means to measure water flow provided in order to determine chemical feed rates?
☒	☐	☐	☐	☐	5. Are provisions made for measuring the quantities of chemicals used?
☒	☐	☐	☐	☐	6. Is cross-connection control provided on the service water lines that discharge to the solution tanks?
☒	☐	☐	☐	☐	7. Is cross-connection control provided so that liquid chemical solutions cannot be siphoned through solution feeders into the water supply?
☒	☐	☐	☐	☐	8. Is the chemical feed equipment readily accessible for servicing, repair, and observation of operation?
☒	☐	☐	☐	☐	9. Is space provided for convenient/efficient storage and handling of chemicals?
☐	☒	☐	☐	☐	10. Are chemicals that are incompatible stored or handled together?
☒	☐	☐	☐	☐	11. Are chemical solution tanks kept covered?
☒	☐	☐	☐	☐	12. Are chemical solution tank overflow pipes, when provided, turned downward with the end screened?
☒	☐	☐	☐	☐	13. Do chemical solution tank overflow pipes, when provided, have free fall discharge?
☒	☐	☐	☐	☐	14. Are day tanks and tank refilling line entry points properly labeled to designate the chemical contained?
☒	☐	☐	☐	☐	15. Are feed lines made of durable, corrosion-resistant material?
☒	☐	☐	☐	☐	16. Are feed lines sloped upward from the chemical source to the feeder when conveying gases?
☐	☒	☐	☐	☐	17. Do feed lines have problems with scale-forming or solids deposits
☒	☐	☐	☐	☐	18. Are floor surfaces smooth and impervious, slip-proof and well drained with 3 inches per 10 feet minimum slope?
☒	☐	☐	☐	☐	19. Are vents from feeders, storage facilities and equipment exhaust discharged to the outside atmosphere above grade and remote from air intakes?
☒	☐	☐	☐	☐	20. Are chemical shipping containers fully labeled to include chemical name, purity, concentration, supplier name and address?
☐	☐	☒	☐	☐	21. Are acids and caustics kept in closed corrosion-resistant shipping containers or storage units?
☐	☐	☒	☐	☐	22. Are acids and caustics handled in open vessels?
☐	☒	☐	☐	☒	23. Are at least one pair of rubber gloves, a dust respirator of a type certified by NIOSH for toxic dusts, an apron or other protective clothing and goggles or face mask provided for each operator as required by the reviewing authority?
☐	☐	☒	☐	☐	24. Is a deluge shower and/or eyewashing device installed where strong acids and alkalis are used or stored?

Comments:
(Please indicate the question number)

1) polyphosphate

4) chlorine analyzer

23) one is not kept on-site but rather w/ the operator

TREATMENT - Iron and Manganese Control

Survey Date: 06-08-2006 (mm/dd/yyyy) | PWS #: 4010066

Treatment Facility Name:	Treatment Facility Location:	Date Online:	Treated Water (GPD):	Filtration Type:
well #10	1064D Joplin		1-2 million	anthracite sand

What is used in the treatment train for the iron and manganese control:

☐ Sedimentation Basin ☒ Filtration ☒ Oxidation ☐ Ion Exchange ☒ Sequestration by Polyphosphates
☐ Detention Basin ☐ Chemical Coagulation ☐ Softening ☐ Sequestration by Sodium Silicates

Sources Disinfected by Facility: (Tag #)	Disinfection Equipment Manufacturer:	Model #:
1. well #10	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

Chemical Trade Name:	Chemical Manufacturer:	NSF 60 Approved?
1.	1.	☒ Yes ☐ No ☐ Unk
2.	2.	☐ Yes ☐ No ☐ Unk
3.	3.	☐ Yes ☐ No ☐ Unk
4.	4.	☐ Yes ☐ No ☐ Unk

TREATMENT - Iron and Manganese Control

yes	no	n/a	unk	note		
					Oxidation	
☒	☐	☐	☐	☐	1. Is iron or manganese removed using oxidation?	
					Oxidation occures through: ☐ Aeration ☐ Potassium Permanganate ☒ Chlorine ☐ Ozone ☐ Chlorine Dioxide	
					Detention	
☐	☒	☐	☐	☐	2. Is iron or manganese removed using detention?	
☐	☐	☒	☐	☐	3. If yes, what is the size of the detention basin? *Gallons:*	
☐	☐	☒	☐	☐	4. If yes, what is the detention time? *Minutes:*	
☐	☐	☒	☐	☐	[redacted]	
☐	☐	☒	☐	☐	6. Are sedimentation basins provided where chemical coagulation is used to reduce the load on the filters?	
☒	☐	☐	☐	☒	7. Are provisions for sludge removal made? *(Fill out Waste Handling form)*	
					Filtration	
☒	☐	☐	☐	☐	8. Is iron or manganese removed using filtration?	
					Potassium Permanganate	
☐	☐	☒	☐	☐	9. Is a sample tap provided prior to application of permanganate?	
☐	☐	☒	☐	☐	10. Is a sample tap provided at the filter effluent?	
yes	no	n/a	unk	note	***Sequestration by Polyphosphates***	
☒	☐	☐	☐	☐	11. Where phosphate treatment is used, are satisfactory chlorine residuals maintained in the distribution system?	
☐	☒	☐	☐	☒	12. Are polyphosphates applied ahead of iron and manganese removal treatment?	
☐	☐	☒	☐	☐	13. If no iron or manganese removal treatment is provided, is the point of application of the polyphosphates prior to any aeration, oxidation or disinfection?	
yes	no	n/a	unk	note	***Sequestration by Sodium Silicates***	
☐	☐	☒	☐	☐	14. Are chlorine residuals maintained throughout the distribution system to prevent biological breakdown of the sequestered iron?	
☐	☐	☒	☐	☐	15. Is the amount of silicate added limited to 20 mg/l as SiO2?	
☐	☐	☒	☐	☐	16. Does the amount of added and naturally occurring silicate exceed 60 mg/l as SiO2?	
☐	☐	☒	☐	☐	17. Is sodium silicate applied ahead of iron or manganese removal treatment?	
yes	no	n/a	unk	note	***Sampling Taps***	
☒	☐	☐	☐	☐	18. Are smooth-nosed sampling taps provided?	
					Testing Equipment	
☒	☐	☐	☐	☐	19. Is testing equipment provided for all plants?	
☐	☐	☒	☐	☒	20. Does the equipment have the capacity to accurately measure the iron content to a minimum of 0.1 milligrams per liter and the manganese content to a minimum of 0.05 milligrams per liter?	
☒	☐	☐	☐	☐	21. Where polyphosphate sequestration is practiced, is appropriate phosphate testing equipment provided?	

Comments:
(Please indicate the question number)

7) put in storage tank & then sludge goes to west tunder Boise treatment Plant via a direct line to them

12) polyphosphates are introduced into the finished water

20) acteral concentration are measured at Alchem Lab

TREATMENT - Waste Handling and Disposal

Survey Date: 06-08-2004 (mm/dd/yyyy) | PWS #: 4010066

yes	no	n/a	unk	note		
X				X	1.	Are provisions made for proper disposal of water treatment plant waste such as sanitary, laboratory, clarification sludge, softening sludge, iron sludge, filter backwash water, and brines?
					Sanitary Waste	
					2.	Do sanitary waste from water treatment plants, pumping stations, and other waterworks installations receive treatment?
					3.	Is waste from these facilities discharged directly to a sanitary sewer system, when available and feasible, or to an adequate on-site waste treatment facility approved by the appropriate reviewing authority?
					Brine Waste	
					4.	Is brine waste produced?
					5.	Is the brine waste disposed of by controlled discharge to a stream?
					6.	What is the rate of discharge to the stream? _____ (GPM)
					7.	Is a holding tank of sufficient size provided to allow the brine to be discharged over a twenty-four hour period?
					8.	Is the brine discharged to a sanitary sewer?
					9.	Is a holding tank required to prevent the overloading of the sewer and/or interference with the waste treatment process?
					Lime Softening Sludge	
					10.	Are lagoons used for the removal of lime softening sludge?
					11.	Are at least two lagoons provided in order to give flexibility in operation?
					12.	Are temporary lagoons designed on the basis of 0.7 acres per million gallons per day per 100 milligrams per liter of hardness removed based on a usable lagoon depth of five feet?
					13.	Are provisions made for convenient cleaning?
					14.	Is an acceptable means of final sludge disposal provided?
					15.	Do permanent lagoons have a volume of at least four times that for temporary lagoons?
					16.	Is the location free from flooding?
					17.	Are dikes, deflecting gutters or other means of diverting surface water provided so that it does not flow into the lagoons?
					18.	Is there a minimum usable depth of five feet?
					19.	Is there adequate freeboard of at least two feet?
					20.	Is there an adjustable decanting device?
					21.	Is there an effluent sampling point?
					22.	Is there adequate safety provisions?
					23.	Are there parallel operation?
					24.	Is liquid lime sludge applied to farm land?
					25.	Is there a plan or design that prevents spillage or leakage during transport of sludge by vehicle or pipeline?
					26.	Are interim storage areas at the application site kept to a minimum?
					27.	Are facilities provided to prevent washoff of sludge or flooding at the interim storage area?
					28.	Is sludge being applied at times when washoff of sludge from the land can be expected?
					29.	Is sludge being applied to sloping land where washoff can be expected? (unless provisions are made, for suitable land, to immediately incorporate the sludge into the soil)
					30.	Are trace metals loading limited to prevent significant increases in trace metals in the food chain, phytotoxicity or water pollution?
					31.	Is each area of land to receive lime sludge considered individually and a determination made as to the amount of sludge needed to raise soil pH to the optimum for the crop to be grown?
					32.	Is the mixing of lime sludge with activated sludge waste conducted as a means of co-disposal?

Comments: (Please indicate the question number)

1) goes directly to the west Boise Treatment Plant

Survey Date: 06-08-2004 (mm/dd/yyyy) PWS #: 4010006

Treatment - Waste Handling and Disposal 2

yes	no	n/a	unk	note		Comments: (Please indicate the question number)
☐	☐	☒	☐	☐	33. Is the lime sludge being disposed of at a landfill?	
☐	☐	☒	☐	☐	34. If yes, is the sludge being disposed of as a liquid?	
☐	☐	☒	☐	☐	35. Is the sludge mechanically dewatered?	
☐	☐	☒	☐	☐	36. Is the sludge calcined?	
☐	☐	☒	☐	☐	37. Is the lime sludge dried in beds?	
					Alum Sludge	
☐	☐	☒	☐	☐	38. Are lagoons used as a method of handling alum sludge?	
☐	☐	☒	☐	☐	39. Is mechanical dewatering used on the alum sludge?	
☐	☐	☒	☐	☐	40. Is acid treatment of sludge for alum recovery used?	
☐	☐	☒	☐	☐	41. Is alum sludge discharged to a sanitary sewer?	
☐	☐	☒	☐	☐	42. Is the location free from flooding?	
☐	☐	☒	☐	☐	43. Are dikes, deflecting gutters or other means of diverting surface water provided so that it does not flow into the lagoons?	
☐	☐	☒	☐	☐	44. Is there a minimum usable depth of five feet?	
☐	☐	☒	☐	☐	45. Is there adequate freeboard of at least two feet?	
☐	☐	☒	☐	☐	46. Is there an adjustable decanting device?	
☐	☐	☒	☐	☐	47. Is there an effluent sampling point?	
☐	☐	☒	☐	☐	48. Are there adequate safety provisions?	
☐	☐	☒	☐	☐	49. Is there a minimum of two cells, each with appropriate inlet/outlet structures to facilitate independent filling/dewatering operations?	
					"Red Water" Waste - Sand Filters used to remove iron and manganese	
☒	☐	☐	☐	☐	50. Is the total filter area sufficient to adequately dewater applied solids?	
☒	☐	☐	☐	☐	51. Are two or more cells provided? (Unless the filter is small enough to be cleaned and returned to service in one day)?	
☒	☐	☐	☐	☐	52. Does the "red water" filter have sufficient capacity to contain, above the level of the sand, the entire volume of wash water produced by washing all of the production filters in the plant? (unless the production filters are washed on a rotating schedule and the flow through the production filters is regulated by true rate of flow controllers)	
☐	☐	☐	☒	☒	53. Is sufficient filter surface area provided so that, during any one filtration cycle, no more than two feet of backwash water will accumulate over the sand surface?	53) approved by DEQ engineers 7/03 when it all went on-line
☐	☒	☐	☐	☐	54. Is the filter subject to flooding by surface runoff or flood waters?	
☐	☐	☐	☒	☐	55. Is flash boards or other non-watertight devices used in the construction of filter side walls?	
☒	☐	☐	☐	☐	56. Does the filter media consist of a minimum of twelve inches of sand, three to four inches of supporting small gravel or torpedo sand, and nine inches of gravel in graded layers?	
☒	☐	☐	☐	☐	57. Has all sand and gravel been washed to remove fines?	
☒	☐	☐	☐	☐	58. Does the filter sand have an effective size of 0.3 to 0.5 mm and a uniformity coefficient not to exceed 3.5? (larger sized sands shall be justified by the designing engineer and reviewing authority)	
☒	☐	☐	☐	☐	59. Is the filter provided with an adequate under-drainage collection system to permit satisfactory discharge of filtrate?	
☒	☐	☐	☐	☐	60. Are provision made for the sampling of the filter effluent?	
☒	☐	☐	☐	☐	61. Are overflow devices from "red water" filters provided?	
☐	☒	☐	☐	☐	62. Is freezing a problem?	
☐	☐	☒	☐	☐	63. If yes, are provisions made for covering the filters during the winter months?	
☐	☐	☒	☐	☒	64. Is the finished water stored or conveyed in a compartment adjacent to unsafe water and do the two compartments only have a single wall separating them?	64) no finished water storage. It goes directly out to the system
☐	☒	☐	☐	☐	65. Is there a connection between the distribution system and any pipes, pumps, hydrants, or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into the system?	
☒	☐	☐	☐	☐	66. Does the PWS have a program conforming to state requirements to detect and eliminate cross connections?	

Treatment - Waste Handling and Disposal 3

Survey Date: 06-08-2004 (mm/dd/yyyy) PWS #: 4010066

yes	no	n/a	unk	note		
					"Red Water" Waste - Lagoons	
					67. Is the lagoon(s) designed with volume of 10 times the total quantity of wash water discharged during any 24-hour period?	
					68. Is the lagoon(s) designed with a minimum usable depth of three feet?	
					69. Is the length of the lagoon four times the width, and the width at least three times the depth, as measured at the operating water level?	
					70. Is the outlet of the lagoon at the end opposite the inlet?	
					71. Is a weir overflow device at the outlet end with weir length equal to or greater than the depth?	
					72. Is the velocity dissipated at the inlet end of the lagoon?	
					"Red Water" Waste - Discharge to Community Sanitary Sewer	
X					73. Is red water discharged to a community sewer?	
X					74. Is a holding tank provided to prevent overloading of the sewer?	
					Recycling "Red Water" Wastes	
	X			X	75. Is supernatant or filtrate from "red water" waste treatment facilities recycled to the head end of an iron removal plant?	75) flushed often to prevent iron build-up
					Waste Filter Wash Water	
		X			76. Are the suspended solids found in waste filter wash water from surface water treatment or lime softening plants reduced to a level acceptable to the regulatory agency before being discharged?	
			X		77. Has the plant constructed holding tanks and returned the filter wash water to the inlet end of the plant?	
X					78. Are holding tanks of such a size that it will contain the anticipated volume of waste wash water produced by the plant when operating at design capacity?	
X					79. If the plant has two filters, does it have a holding tank that will contain the total waste wash water from both filters?	
		X			80. Is filter backwash water recycled when the raw water contains excessive algae?	
			X		81. Is filter backwash water recycled when the finished water has taste and odor problems?	
		X	X		82. Is filter backwash water recycled when trihalomethane levels in the distribution system have exceeded allowable levels?	
		X			83. Is particular attention given to the presence of protozoans such as Giardia and Cryptosporidium concentrating in the waste water stream?	

Comments: (Please indicate the question number)

GROUNDWATER SOURCE

SURVEY DATE: 06-08-2004 (mm/dd/yyyy) | PWS #: 4010066

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

Tag #:	Common Name of Source: well #8	Source: ☒ Well ☐ Spring ☐ Infiltration Gallery	Is this Source Treated? ☒ Yes ☐ No Treatment Objective: ☐ N/A Treatment Types: ☐ N/A
Physical Location:			

Is there a well log for the groundwater source? ☐ Yes ☐ No ☐ Unk

Pump Capacity (GPM) ☐ Unk	Casing Size (In) ☐ Unk	Date Drilled: ☐ Unk	Well Depth (Ft) ☐ Unk	Casing Depth (Ft) ☐ Unk	Grout Depth(Ft) ☐ Unk	Static Water Depth (Ft) ☐ Unk

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

Latitude (Decimal):

Longitude (Decimal):

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

GROUNDWATER SOURCE

yes	no	n/a	unk	note		
					1. This source is: ☒ Active ☐ Proposed ☐ Inactive ☐ Emergency (<60 days per year)	Fire protection + Summer demand
☐	☐	☐	☐	☐	2. Has there been a Source Water Assessment conducted for the source? Date: _____	
☐	☐	☐	☐	☐	3. Has a final GWUDISW determination been done for this source? Date: _____	
☐	☒	☐	☐	☐	4. Is the well on a separate lot that is large enough to provide a minimum distance for 50 feet between the well and the nearest property line? (applicable if constructed after 11/1/77)	
☒	☐	☐	☐	☐	5. Is the well lot owned in fee simple by the supplier of water or controlled by lease with a term of not less than the usefull life of the well?	
					6. Are the following minimum distances from the PWS well being met?	
☒	☐	☐	☐	☐	- Sewer line.....50 Ft.	
☒	☐	☐	☐	☐	- Individual home septic tank.....100 Ft.	
☒	☐	☐	☐	☐	- Individual home disposal field.....100 Ft.	
☒	☐	☐	☐	☐	- Individual home seepage pit.....100 Ft.	
☒	☐	☐	☐	☐	- Privies.....100 Ft.	
☒	☐	☐	☐	☐	- Livestock.....50 Ft.	
☒	☐	☐	☐	☐	- Canals, streams, ditches, lakes, ponds and tanks used to store nonpotable substances.....50 Ft.	
☒	☐	☐	☐	☐	- Any other potential source of contamination observed at time of inspection.....50 Ft.	
☐	☒	☐	☐	☐	7. Are pesticides, herbicides, fertilizers, portable containers of petroleum products, or other toxic or hazardous materials stored on the well lot?	
☐	☒	☐	☐	☐	8. Are pesticides, herbicides, or fertilizers applied to the well lot?	
☐	☒	☐	☐	☐	9. Is the well in a pit? If yes, Date constructed: _____	
☐	☐	☒	☐	☐	10. Was the well that is located in a pit installed after 11/5/64?	
☐	☐	☒	☐	☐	11. If pit was installed prior to 11/5/64 – Does the pit have water tight floors and wall construction and is an acceptable floor drain provided?	
☒	☐	☐	☐	☐	12. Is the source protected from unauthorized entry?	
☒	☐	☐	☐	☐	13. Does the casing extend a minimum of 12 inches above the finished ground surface and 6 inches above the well house floor?	
☐	☒	☐	☐	☒	14. Is the well vented with the open end of the vent screened and terminated downward at least 18 inches above the floor?	(14) Need a vent 18" above ground, downward turned & screened
☒	☐	☐	☐	☐	15. Is the well cap sanitary seal properly installed and maintained?	
☒	☐	☐	☐	☐	16. Is the well cased and sealed in such a manner that surface water cannot enter the well?	

COMMENTS: (Please indicate question number)

GROUNDWATER SOURCES PG. 2

Common Name: well #8 | SURVEY DATE: 06-08-2004 (mm/dd/yyyy) | PWS #: 4010066

yes	no	n/a	unk	note	GROUNDWATER SOURCE (cont.)
☐	☒	☐	☐	☒	17. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment?
☒	☐	☐	☐	☐	18. Is a totalizing flow meter installed on the discharge line of the well and is it maintained and working properly? _____ gal.
☒	☐	☐	☐	☐	19. Is a pressure gauge provided at all installations and is it maintained and working properly? 80 psi.
☒	☐	☐	☐	☐	20. Can the well be pumped to waste via an approved air gap?
☐	☒	☐	☐	☐	21. Has the source been known to have caving or sand problems?

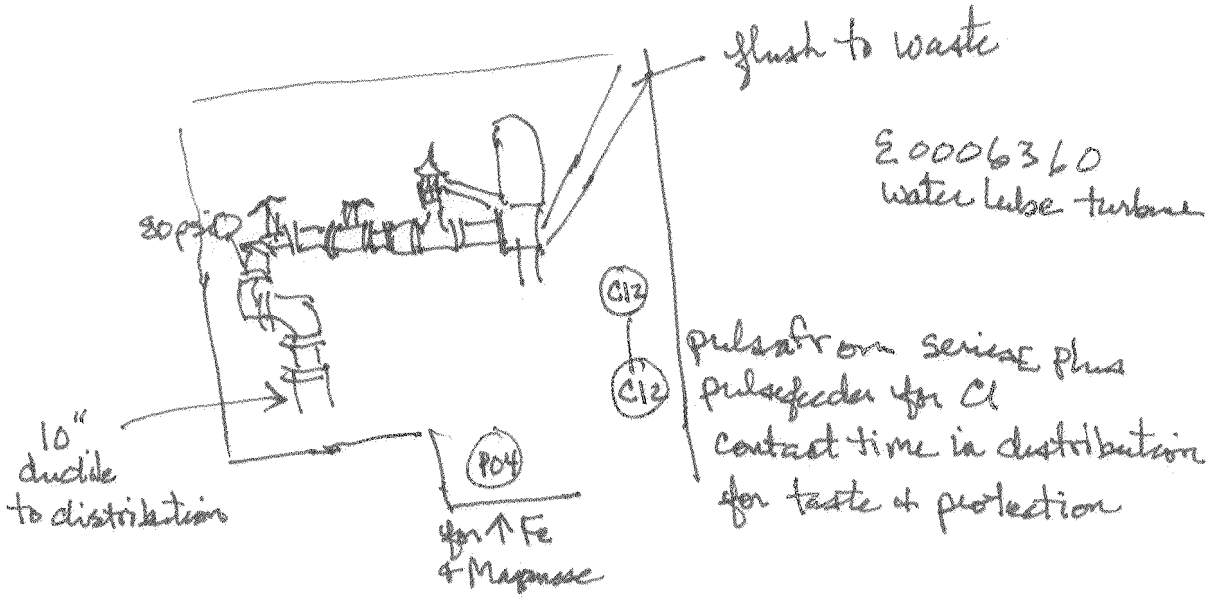
yes	no	n/a	unk	note	WELL HOUSE
☒	☐	☐	☐	☐	22. Is the source located in a well house?
☒	☐	☐	☐	☐	23. Is the well house kept clean and in good repair?
☒	☐	☐	☐	☐	24. Is the well house protected from unauthorized personnel?
☐	☒	☐	☐	☒	25. Are all non-sample taps installed in the well house equipped with an appropriate backflow prevention device?
☒	☐	☐	☐	☐	26. Is ventilation provided in the well house to remove excess heat and moisture during peak summer temperatures?
☒	☐	☐	☐	☐	27. Is a thermostatically regulated heater installed in the well house to prevent moisture buildup during cold weather?
☒	☐	☐	☐	☐	28. Is the well house protected from flooding and does it have adequate drainage?
☐	☐	☒	☐	☐	29. Is the sump for well house floor drains closer than 30 feet from the well?
☐	☒	☐	☐	☐	30. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination?

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

yes	no	n/a	unk	note	INFILTRATION GALLERY INFORMATION
☐	☐	☐	☐	☐	39. Is there a lid over the gallery?
☐	☐	☐	☐	☐	40. Is the lid watertight and locked?
☐	☐	☐	☐	☐	41. Is the collector in sound condition and maintained as necessary?

COMMENTS:
(Please indicate question number)

25+17 install a back-flow device on the treated tap since a hose is used on it for cleaning the pump house



* threaded faucet
* need downward turned & screened vent
* rusting out (repaint)
* fix leak on chlorine line

Well # 8 summer & fire demand

PUMPING DATA

SURVEY DATE (mm/dd/yyyy): 06-08-2016 PWS #: 4010066

PUMPS, PUMPHOUSES, AND CONTROLS

Pump ID#	Physical Location:	Type of Pump:	Brand:	Model:	Horsepower:	Purpose:
1		turbine				fire protection & summer demand

PUMPING

yes	no	n/a	unk	note		
☒	☐	☐	☐	☐	1.	Is the pump(s) in good operating condition?
☒	☐	☐	☐	☐	2.	Is the pumphouse(s) clean and orderly?
☐	☒	☐	☐	☐	3.	Are there spare pump parts or a replacement pump that is capable of providing the maximum daily pumping demand?
☒	☐	☐	☐	☐	4.	Are gate valves located on the suction and/or discharge sides of each pump?
☒	☐	☐	☐	☐	5.	Is a positive-acting check valve located above ground on the discharge side between each pump and the shut-off valve?
☐	☒	☐	☐	☐	6.	Does the pump(s) cycle excessively?
☒	☐	☐	☐	☐	7.	Is the pump station(s) adequately lighted throughout?
☒	☐	☐	☐	☐	8.	If the system has a vertical turbine motor driven pump(s), is an air release valve located between the source and check valve?
☐	☒	☐	☐	☒	9.	If the pump(s) is "oil lubricated", is oil NSF approved and suitable for human consumption?
☐	☒	☐	☐	☐	10.	Is there auxiliary power on-site?
☐	☐	☒	☐	☐	11.	Is auxiliary power tested?
☐	☐	☒	☐	☐	12.	If a diesel or gasoline fueled engine is used on the well lot; is the fuel tank and connecting piping double walled?
☐	☐	☒	☐	☐	13.	Is the fuel tank above ground?
☐	☐	☒	☐	☐	14.	Is a certified operator present during the filling of the fuel tank?
					15.	If the engine is in the well house;
☐	☐	☒	☐	☐		- Is the engine exhaust directly discharged outside the well house?
☐	☐	☒	☐	☐		- Is a spill containment structure surrounding all fuel tanks adequate? (Secondary containment - 150% fuel tank capacity)

COMMENTS:
(Please indicate the question number)

9) water lube

Garden City Water and Sewer

Idaho Department of Environmental Quality
Source Water Assessment Program
Public Water System Questionnaire

Date: 5-15-01

Please supply as much information as possible for each well. Copy this questionnaire if you have more than one well. If you have a well log, please enclose a copy. Well logs will not be returned, so please DO NOT send originals.

PWS No.: 4010066 Hydrologic Province: _____

Well Identification Number or Name: Well #6

Tag Number: E-0006360

IDEQ Well Identifier: _____

Population Serviced by Well: 10,000

Latitude: 43.65448 Longitude: 116.29645

Township: 4N Range: 1E Section: 26 QTRQTR: NESE

Owner/Operator: Garden City Public Works

Address: 201 E 50th City: Garden City State: ID

Phone Number: 376-3570 County: Ada

Drilling Contractor and Contact Information: Stevens & Sons

Permit Number: 63-10270

Date Well Was Drilled: 11-84

Are records kept for volumes of pumped water from the well? ? ☒ YES ☐ NO

If you answered YES: Please provide below any information on pumping volumes:

Average Monthly Volume During Summer (May - September) : 18.362 million gallons

Average Monthly Volume During Winter (October - April) : 0 gallons

Total Volume for ~~1999~~ 2000: 91.808 million gallons

If you answered NO: Please provide estimates on pumping volumes:

Average Monthly Volume During Summer: _____ gallons

Average Monthly Volume During Winter: _____ gallons

Average Volume During 24-Hour Period: _____ gallons

Has well ever been deepened? ~~☐~~ YES ☒ NO

If you answered YES:

Date Well Was Deepened: _____

Interval of deepending (feet below ground surface): From: _____ To: _____

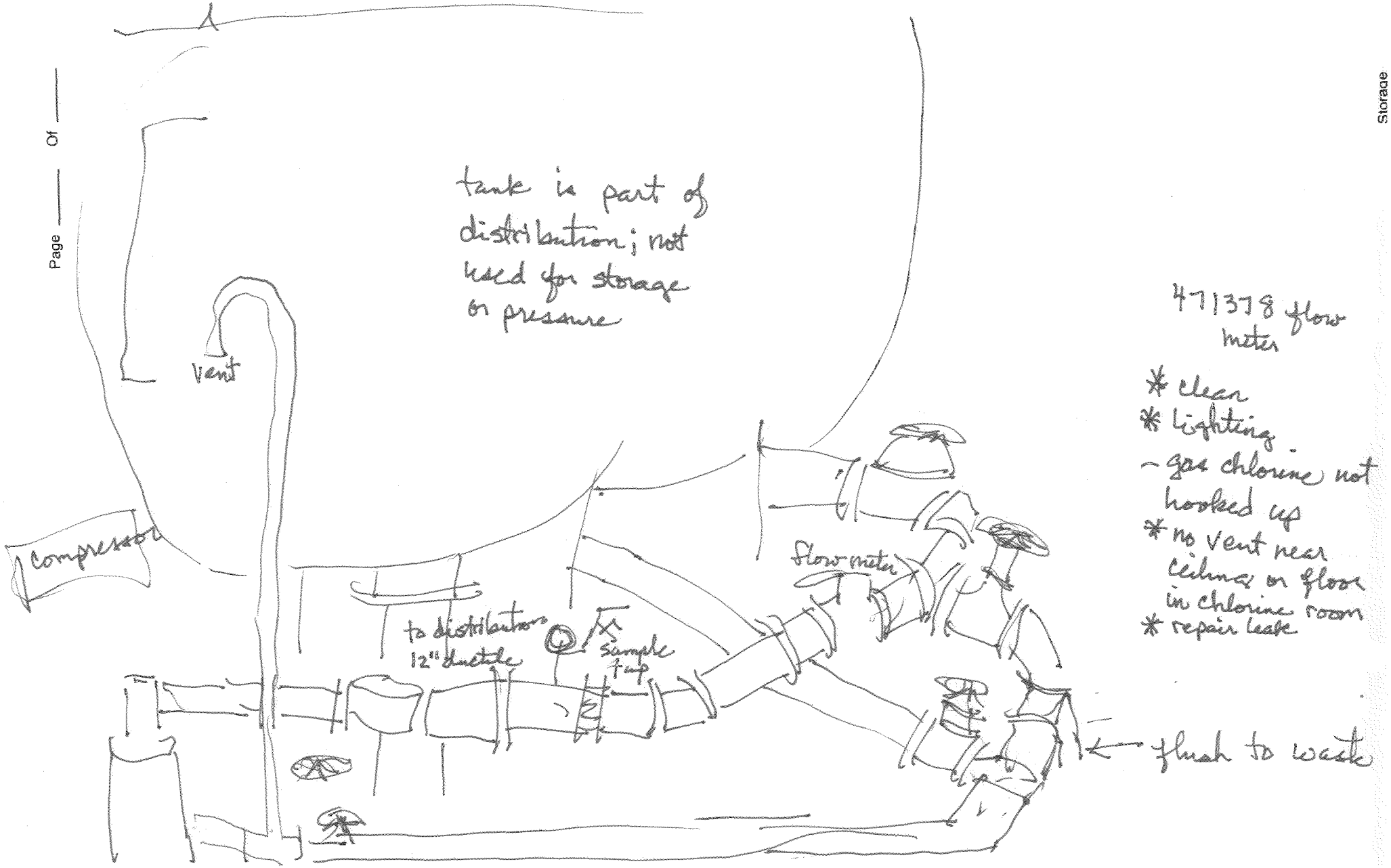
Is the well flowing artesian? ☒ YES ~~☐~~ NO

If you answered NO:

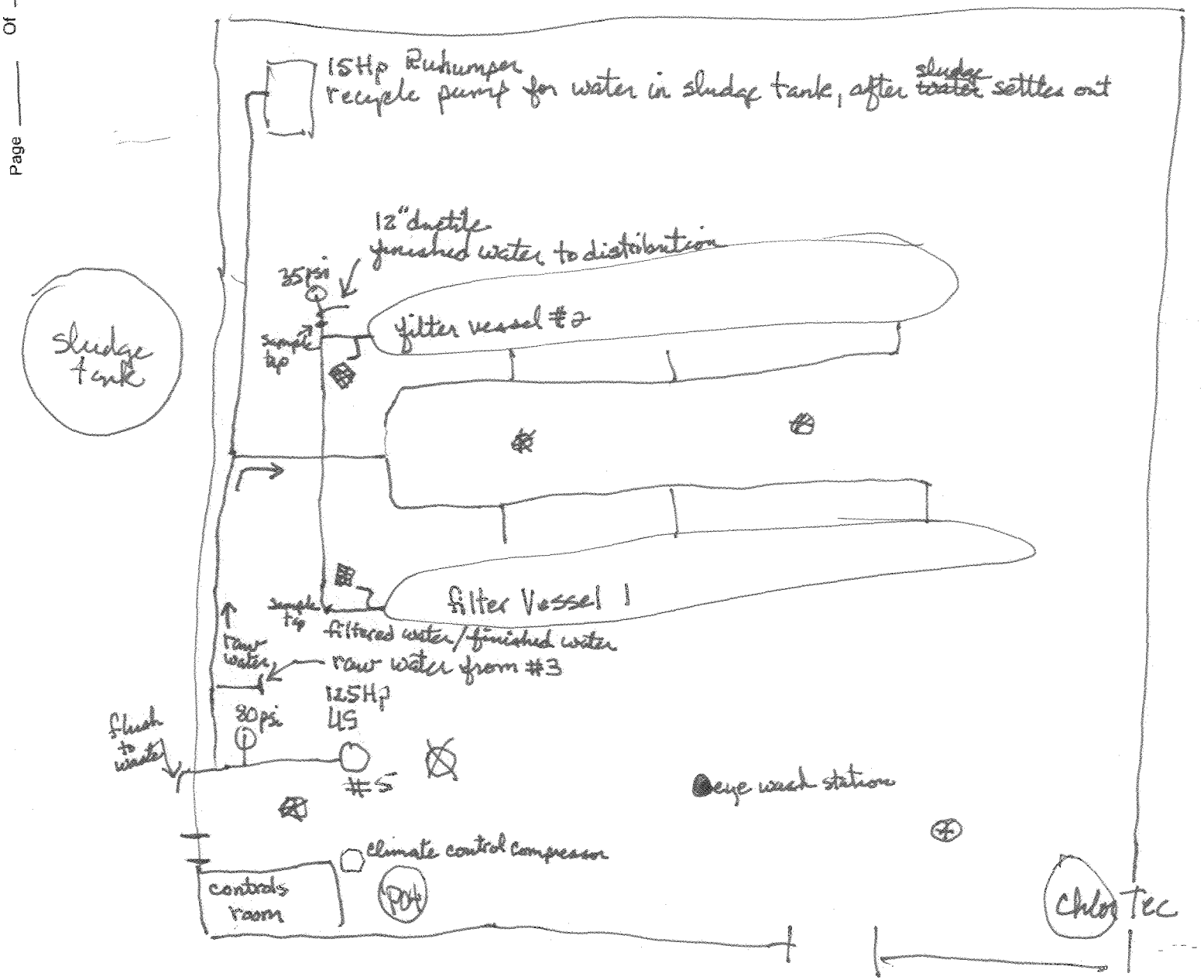
Depth of Static Water Below Land Surface (Feet): _____

OR

Depth of Static Water Below Top of Casing (Feet): _____

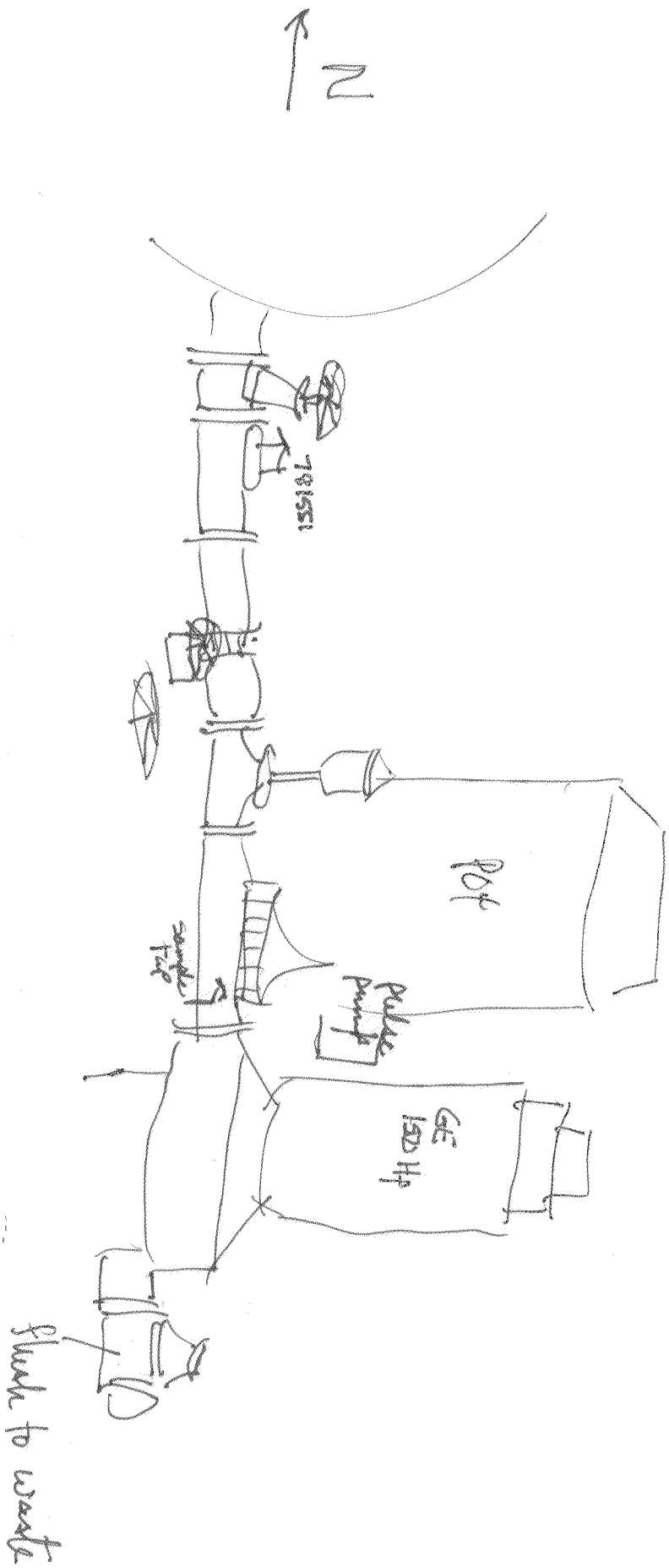


Well #12
E0006307



Rosemount
6.91 pH
Hach Cl 17
Clorine meter
767.15 gpm
502.424 mg/L

*vent
- goes down to 4' after back-washing & then recycles it back through filters; sludge released in the drain going to West Boise Trmt. plant
* is sampled when released

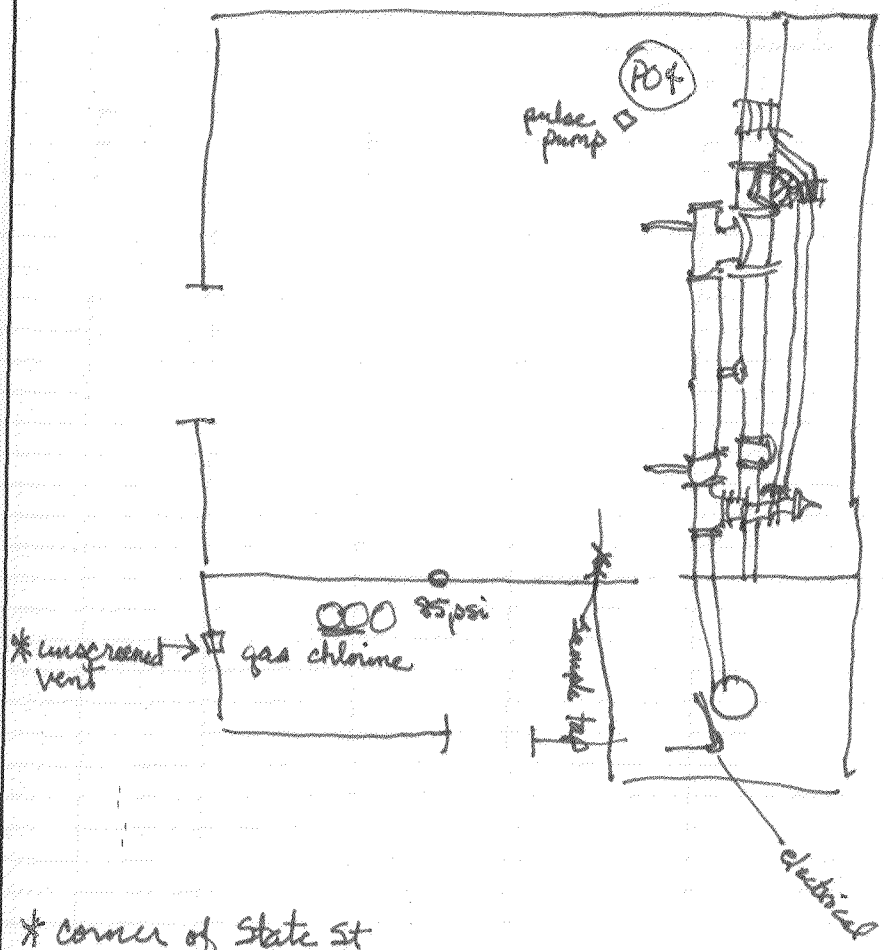

N
Pot
Pulse Pump
GE 150 Hp
Sample Tap
Flush to waste

State of Idaho
Department of Environmental Quality

Inspection Continuation

SURVEY DATE: 06-08-2004 (mm/dd/yyyy) | PWS #: 4010066

Name of Public Water System: Garden City



Pulsatron type PO4
Serial # 920218358

838386 gallons
85 psi

* < 6" above grd. (casing)
* no well vent
- sloped floor
- some rusting out on pipe
* threaded sample tap

* Corner of State St + N. Plantation Dr. is a valve (gate valve)
* flow meter in a vault (previously sold water to LWI)

Well #7
E0006378

Inspected by: Date:

Title:

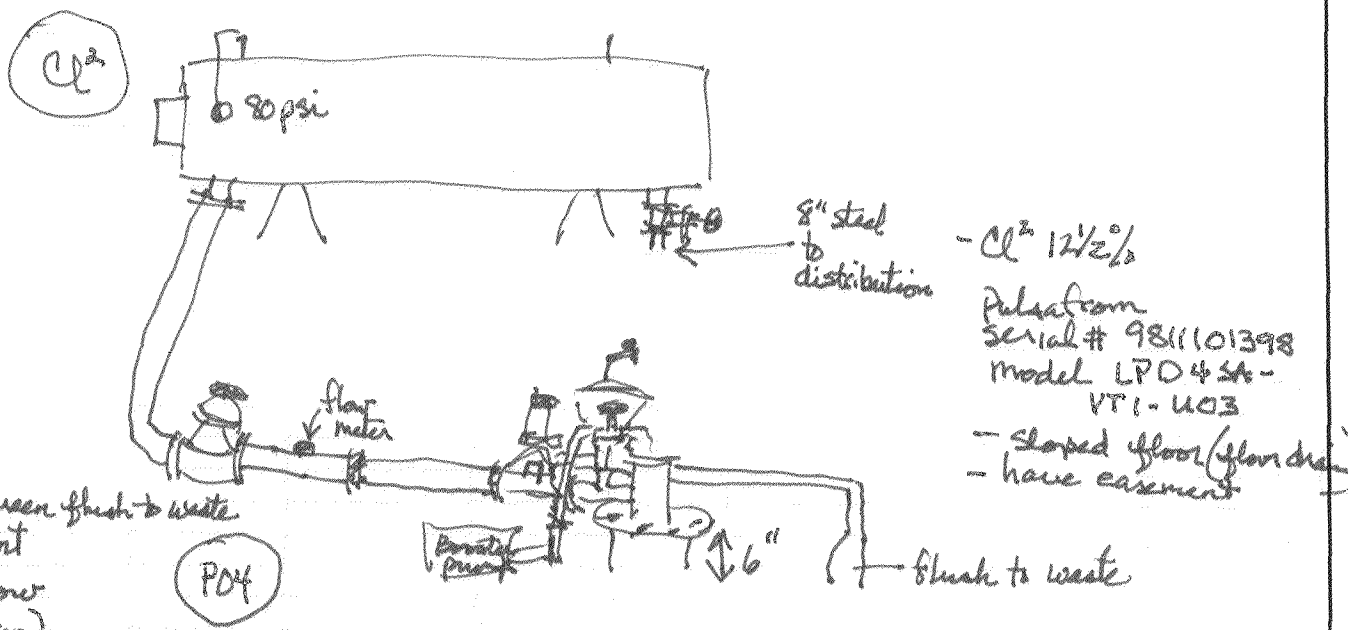
State of Idaho
Department of Environmental Quality

Inspection Continuation

SURVEY DATE	PWS #
06-08-2004 (mm/dd/yyyy)	4010066

Name of Public Water System:

Garden City



- Cl2 12½%
- Pulsafeeder serial # 9811101398 model LPD4SA-VT1-U03
- sloped floor (floor drain)
- have easement

* flap valve/screen flush to waste
* Need well vent
* replace flow meter (broken)
* remove nonpotable storage or separate
* clean
* Keep locked

well #11 E0006498

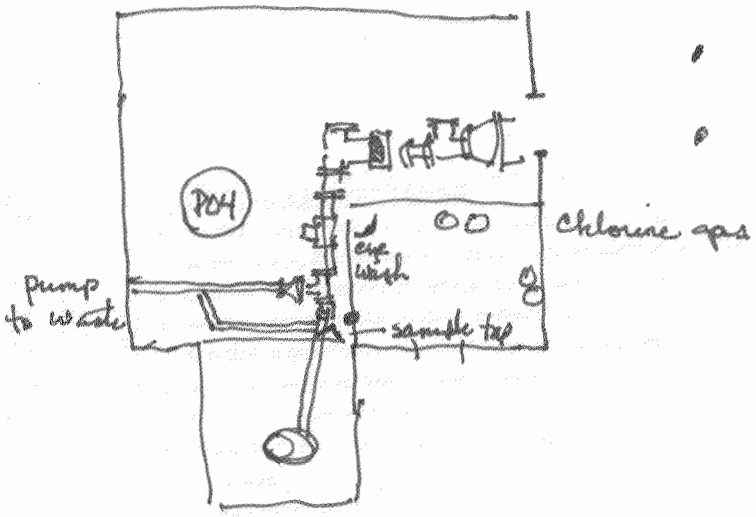
Inspected by:

Date:

Title:

Pond

47' from well



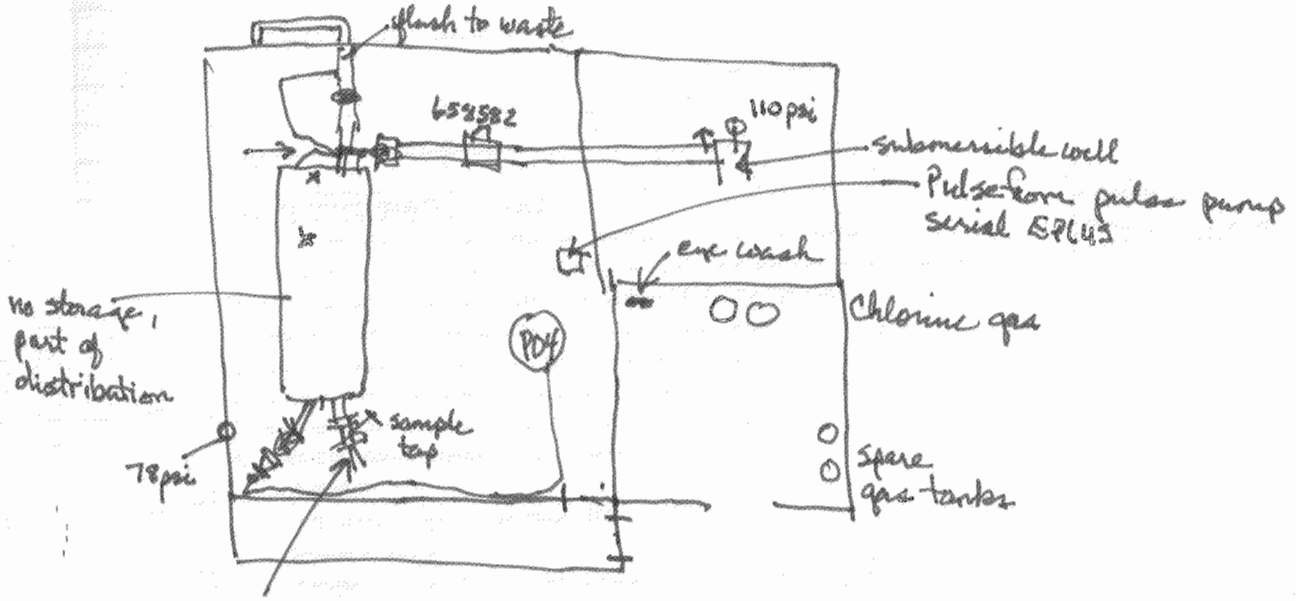
991454 flow meter
10psi (well off-line)
PO4 pulse pump serial # KLPA 25APACXXX

Well #9
E0006377

- submersible pump
* installation covering vents (both)
* chlorine vent tube extending outside building
* Needs cleaned
* rusting out/repaint
- sloped floor
- recommend removal of trees (difficulty w/ PO4 delivery)

Storage

drain gas to canal directly to the north



Well # 6
E 0006379

* leak
* enclose wiring opening going into casing
* need vent
- contact ↓ well & in distribution

State of Idaho Public Water System Enhanced Sanitary Survey

WATER SYSTEM INVENTORY INFORMATION

SURVEY DATE (mm/dd/yyyy) | PWS #

Name of Public Water System: | # of Groundwater Sources: | # of Storage Facilities:

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

Date of Last Survey: | Health District: ☐ N/A | DEQ Region: ☐ N/A | County:

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

Owner Type: | Legal Entity: | Water System Classification: ☐ Community Water System ☐ Nontransient Noncommunity ☐ Transient Noncommunity - NC | Combined Sources? ☐ Yes ☐ No If yes, ☐ Well Field ☐ Manifold/Spring Box Sources Combined: | System Classification: Distribution: Treatment: ☐ N/A | Seasonal Operation Dates: ☐ N/A Date Open: Date Closed:

Responsible Charge Operator (DO): ☐ No DO ☐ N/A - Identify Operator for GW-NC PWS

☐ Mr. ☐ Ms.

DO Properly Licensed? ☐ Yes ☐ No ☐ N/A-GW-NC | License Type: ☐ N/A

Mailing Address:

City, State, Zip Code: | Telephone Day: Night: Fax:

E-mail:

Substitute Responsible Charge Operator (OP): ☐ No OP ☐ N/A for GW-NC PWS

☐ Mr. ☐ Ms.

OP Properly Licensed? ☐ Yes ☐ No ☐ N/A-GW-NC | License Type: ☐ N/A

Mailing Address:

City, State, Zip Code: | Telephone Day: Night: Fax:

E-mail:

Legal Owner's Name:

☐ Mr. ☐ Ms.

Mailing Address:

City, State, Zip Code: | Telephone Day: Night: Fax:

E-mail:

Individuals present during inspection:

Name: | Title:

Name: | Title:

Name: | Title:

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

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

If yes, what:

Survey performed by: Name: Title: Phone #:

Agency: ☐ IDEQ ☐ Health Dept. ☐ Other:

General Information

yes	no	n/a	unk	note	
☐	☐	☐	☐	☐	1. Have previously required Significant Deficiencies & Deficiencies been addressed?
☐	☐	☐	☐	☐	2. Have modifications been made to the PWS since the last ESS?
☐	☐	☐	☐	☐	3. If yes, are the modifications considered to be significant?
☐	☐	☐	☐	☐	4. If yes, were plans and specs submitted to and approved by DEQ?

Comments:

Sanitary Survey Index

Modules used:	#
☐ General Information	
☐ Groundwater Source	
☐ Storage	
☐ Hydropneumatic Tanks	
☐ Distribution	
☐ Pumping	
☐ Financial Capacity	
☐ Managerial Capacity	
☐ Treatment Application	
☐ Disinfection	
☐ Notes	
☐ Photo Log	
Total Modules	0

FIELD GUIDE FOR GENERAL INFORMATION

Certified Operator:
Owners of all community and nontransient noncommunity water systems must place the direct supervision of their drinking water system, including each treatment facility and/or distribution system, under the responsible charge of an operator holding a valid certification equal to or greater than that classification of the drinking water system and/or distribution system.

A disapproved designation may be assigned to a PWS when:

Defects: There are design and/or construction defects.

Operating Procedures: Operation procedures constitute a health hazard.

Quality: Physical, chemical, microbological or radiological quality does not meet the requirements of the rules.

Monitoring: The required monitoring as specified in these rules has not been conducted.

Unapproved Source: An un approved source of drinking water is used or the system is interconnected with a disapproved water system.

Non-Payment Of Annual Fee Assessment: The annual drinking water system fee assessment is not paid as set forth in Section 010.

Legal Entity:
CM - Company
CP - Cooperation
CR - Corporation
GA - Government Agency
HA - Homeowners Association
IN - Individual
NP - Non-profit
OT - Other
RU - Rate Set Utility
TP - Treatment Plant
TR - Trust

Total Storage (gal):
Total Storage does **not** include hydropneumatic tanks, only elevated and ground-level tanks.

DEQ Regions:	Health Districts:	Owner Type	Status:
BRO	District 1- PHDHD	Federal Gov't	Active
PRO	District 2 - NCDHD	Private	Inactive
TFRO	District 3 - SWDHD	State Gov't	
IFRO	District 4 - CDHD	Local Gov't	
CRO	District 5 - SCDHD	Regulated Public Utilities	
LRO	District 6 - SEDHD		
	District 7 - EIPHD		

System Classification:

Distribution: Based on Population
VSWS - 500 or less w/ not treatment other than Disinfection (Chlorination) = VSWS
VSWS + Point of Use Treatment = VSWS
VSWS + any other type of treatment = TMT1 only (No VSWS)
DST1 - 501 to 1,500 w/ Treatment other than Disinfection = DST1 + TMT1 or highter treatment class
DST2 - 1,501 to 15,000
DST3 - 15,001 to 50,000
DST4 - 50,001 or greater

Treatment: (*)
TMT1
TMT2
TMT3
TMT4

(*See DW Treatment Classification Worksheet)

Recent Modifications:
If yes, see that the owner notified the State, see that the system is in conformance with design standards and see thatan engineering report has not been submitted to the Department.

Community Water System - A public water system, which serves at least fifteen (15) service connections, used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

Noncommunity Water System – A public water system that is not a community water system. A non-community water system is either a transient noncommunity water system or a non-transient noncommunity water system.

Transient Noncommunity Water System – A noncommunity water system, which does not regularly serve at least twenty-five (25) of the same persons over six (6) months per year.

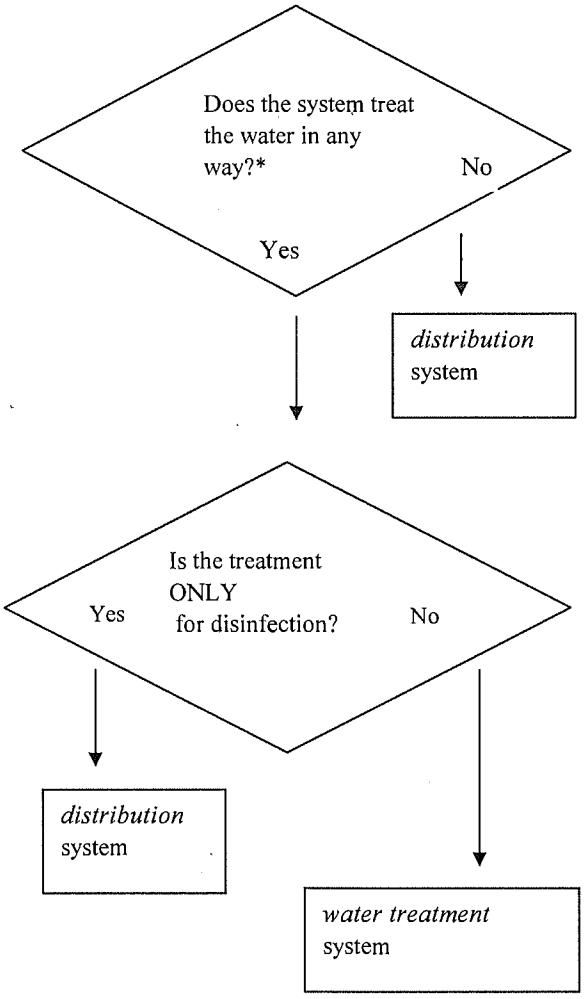
Nontransient Noncommunity Water System – A public water system that is not a community water system and that regularly serves at least twenty-five (25) of the same persons over six (6) months per year.

Knowing What License Your System's **Drinking Water** Operator Needs

First. Is it a *distribution* system or is it a *water treatment* system? Use this flowchart to decide.

Second. What is the systems classification? Use this flowchart to decide.

Distribution System or *Water Treatment* System?



* Inline units for chlorination, stabilization, booster pumping not included

System Classification of a Public Water System

Distribution System Classes determined by size only	*Water Treatment System Classes* determined by complexity also, see worksheets *
Very Small Water System 500 or less	
Distribution System I 501 – 1,500	Water Treatment System I
Distribution System II 1,501 – 15,000	Water Treatment System II
Distribution System III 15,001 – 50,000	Water Treatment System III
Distribution System IV 50,001 or more	Water Treatment System IV

* Worksheets for determining a System's Classification are online at:
http://www.idahocertificationtraining.com/dw_class.htm
Or:
- Call the Brown Environmental Help Desk, 1-800-543-4358 or 208-465-5725
- Call the nearest DEQ regional office.

Last. *You're done*. Any responsible charge operator needs a certificate/license with the same type and level as your system. Other operators need certificates/licenses with the same type as your system.

For Example: If the system treats only by adding chlorine it is a distribution system, and if it serves between 1,501 and 15,000 people it is a Class II distribution system. So it would need a certified Water Distribution System Operator II.

GROUNDWATER SOURCE - PG.1

SURVEY DATE: 1/0/1900 (mm/dd/yyyy) | PWS #: 0

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

Tag #: | Common Name of Source: (common name) | Source: ☐ Well → ☐ Manifold ☐ Spring → ☐ Spring Box | Is this Source Treated? ☐ Yes ☐ No | Treatment Objective: ☐ N/A

Physical Location:

☐ N/A
(Identify Treatment Train in Comments)

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

Pump Capacity (GPM) ☐ Unk	Casing Size (In) ☐ Unk	Date Drilled: ☐ Unk	Well Depth (Ft) ☐ Unk	Casing Depth (Ft) ☐ Unk	Grout Depth(Ft) ☐ Unk	Static Water Depth (Ft) ☐ Unk

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

Latitude (Decimal):

Longitude (Decimal):

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

All Sources

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

yes	no	n/a	unk	note	
☐	☐	☐	☐	☐	2. Has there been a Source Water Assessment conducted for the source? Date:
☐	☐	☐	☐	☐	3. Has a final GWUDI determination been done for this source? Date:

WELL INFORMATION

yes	no	n/a	unk	note	
☐	☐	☐	☐	☐	4. Is the well on a separate lot that is large enough to provide a minimum distance of 50 feet between the well and the nearest property line? (applicable if constructed after 11/1/77) ☐ Significant ☐ Deficiency
☐	☐	☐	☐	☐	5. Is the well lot owned in fee simple by the supplier of water or controlled by lease or easement with a term of not less than the useful life of the well?
					6. Are the following minimum distances from the PWS well being met?
☐	☐	☐	☐	☐	- Gravity sewer line.....50 Ft.
☐	☐	☐	☐	☐	- Pressure sewer line.....100 Ft.
☐	☐	☐	☐	☐	- Individual home septic tank.....100 Ft.
☐	☐	☐	☐	☐	- Individual home disposal field.....100 Ft.
☐	☐	☐	☐	☐	- Individual home seepage pit.....100 Ft.
☐	☐	☐	☐	☐	- Privies.....100 Ft.
☐	☐	☐	☐	☐	- Livestock.....50 Ft.
☐	☐	☐	☐	☐	- Canals, streams, ditches, lakes, ponds and tanks used to store nonpotable substances.....50 Ft.
☐	☐	☐	☐	☐	7. Are pesticides, herbicides, fertilizers, portable containers of petroleum products, or other toxic or hazardous materials stored on the well lot?
☐	☐	☐	☐	☐	8. Are pesticides, herbicides, or fertilizers applied to the well lot?
☐	☐	☐	☐	☐	9. Is the well in a pit? If yes, Date constructed:
☐	☐	☐	☐	☐	10. Was the well that is located in a pit installed after 11/5/64?
☐	☐	☐	☐	☐	11. If pit was installed prior to 11/5/64 – Has DEQ granted an exception and does the pit have water tight construction of pit walls and floor, a floor drain and an acceptable pit cover?
☐	☐	☐	☐	☐	12. Is the well protected from unauthorized entry? *(Recommended)*
☐	☐	☐	☐	☐	13. Does the casing extend a minimum of 18 inches above the final ground surface and/ or 12 inches above the pump house floor? ☐ Significant ☐ Deficiency
☐	☐	☐	☐	☐	14. Is the well vented with the open end of the vent screened and terminated downward at least 18 inches above the final ground surface?
☐	☐	☐	☐	☐	15. Is the well provided with a sanitary cap that prevents surface water entry?
☐	☐	☐	☐	☐	16. Is the well cased and sealed in such a manner that surface water cannot enter the well?

COMMENTS:
(Please indicate question number)

Common Name	SURVEY DATE		PWS #
(common name)	1/0/1900	*(mm/dd/yyyy)*	0

GROUNDWATER SOURCES - PG. 2

yes	no	n/a	unk	note		COMMENTS: (Please indicate question number)
					WELL INFORMATION (cont.)	
☐	☐	☐	☐	☐	17. Is there a smooth nosed sample tap provided on the well discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer)	
☐	☐	☐	☐	☐	18. Is an instantaneous and totalizing flow meter equipped with nonvolatile memory installed on the pump distribution line of the well and is it maintained and working properly? ☐ gallons ☐ Unnecessary	
☐	☐	☐	☐	☐	19. Is a pressure gauge provided at all installations and is it maintained and working properly? ☐ psi.	
☐	☐	☐	☐	☐	20. Can the well be pumped to waste at the design capacity of the well via an approved air gap at a location prior to the first service connection?	
☐	☐	☐	☐	☐	21. Has the source been known to have caving or sand problems?	
yes	no	n/a	unk	note	**PUMP HOUSE** *(Any structure containing important water system components)*	
☐	☐	☐	☐	☐	22. Is the source located in a pump house?	
☐	☐	☐	☐	☐	23. Is the pump house kept clean and in good repair? *(Floor cracks?)*	
☐	☐	☐	☐	☐	24. Is the pump house protected from unauthorized personnel?	
☐	☐	☐	☐	☐	25. Does the pump house have adequate lighting throughout? *(Recommended)*	
☐	☐	☐	☐	☐	26. Are all non-sample taps installed in the pump house equipped with an appropriate backflow prevention device?	
☐	☐	☐	☐	☐	27. Is adequate ventilation provided in the pump house for dissipation of excess heat and moisture from the equipment? ☐ Significant ☐ Deficiency	
☐	☐	☐	☐	☐	28. Is adequate heating provided in the pump house to provided safe and efficient operation of equipment to prevent freezing? ☐ Significant ☐ Deficiency	
☐	☐	☐	☐	☐	29. Is the pump house protected from flooding, have adequate drainage, is the floor surface at least six (6) inches above the final ground surface, and is the ground surface graded so as to lead surface water away from the pump house?	
☐	☐	☐	☐	☐	30. Is the sump for pump house floor drains closer than 30 feet from the well?	
☐	☐	☐	☐	☐	31. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination?	
yes	no	n/a	unk	note	**SPRING INFORMATION**	
☐	☐	☐	☐	☐	32. Is the entire area within one hundred (100) feet of the spring owned by the supplier or controlled by a long term lease?	
☐	☐	☐	☐	☐	33. Is the entire area within a one hundred (100) foot radius of the spring box fenced to prevent trespassing of livestock and void of buildings, dwellings and sources of contamination?	
☐	☐	☐	☐	☐	34. Is surface water diverted from the 100 foot protection zone around the spring?	
☐	☐	☐	☐	☐	35. Is the spring housed in a permanent structure and protected from contamination including the entry of surface water, animals and dust?	
☐	☐	☐	☐	☐	36. Is there a smooth nosed sample tap provided on the spring discharge pipe prior to treatment? (Threaded tap is approved with backflow preventer)	
☐	☐	☐	☐	☐	37. Is a flow meter or other flow measuring device provided?	
yes	no	n/a	unk	note	**SPRING BOX INFORMATION** *(Not all existing springs have a spring box)*	
☐	☐	☐	☐	☐	38 Is the spring box equipped with a screened overflow?	
☐	☐	☐	☐	☐	39. Is the supply intake located above the floor of the collection chamber?	
☐	☐	☐	☐	☐	40. Is the spring box protected from contamination including the entry of surface water, animals, and dust?	
☐	☐	☐	☐	☐	41. Is the access port watertight and locked?	
☐	☐	☐	☐	☐	42. Is the access port elevated at least twenty-four (24) inches above the top of the box or covering sod, whichever is higher?	

FIELD GUIDE FOR GROUNDWATER SOURCE

Potential Sources of Contamination:
Subsurface disposal systems
Sanitary sewer
Storm sewer
Waste lagoon
Surface water
Pesticides, Fertilizers
Petrolium products

LAT/LONG
The latitude and longitude should be as accurate as possible; in the format ± HHMMSSss for latitude and ± HHMMSSss for longitude; where (+) = north or east and (-) = south or west; where H = hours, M = minutes, S = seconds, s = decimal seconds.

Treatment Objective
disinfection by-products control (THM's)
disinfection
disinfection solely to protect the distribution system
corrosion control
dechlorination
iron removal
inorganics removal
manganese removal
no treatment at source
organics removal (color, THM's,VOC's)
particulate removal (turbidity reduction)
radio nuclides removal
softening (hardness removal)
taste/odor control
other

GWUDISW -Groundwater under the direct influence of surface water.
GPM - Gallons per minute
GPD - Gallons per day

Treatment Type
000 No treatment, not applicable
100 Activated alumina
121 Activated carbon, granular
125 Activated carbon, powdered
141 Aeration, cascade
143 Aeration, diffused
145 Aeration, packed tower
147 Aeration, slat tray
149 Aeration, spray
160 Algae control
180 Bone char
200 Chloramines
220 Chlorine dioxide
240 Coagulation
300 Distillation
320 Electrodialysis
341 Filtration, cartridge/bag
342 Filtration, diatomaceous earth
343 Filtration, greensand
344 Filtration, pressure sand
345 Filtration, rapid sand
346 Filtration, slow sand
347 Filtration, ultrafiltration
348 Filtered
349 Successfully avoiding filtration
350 Unfiltered, required to filter
351 Not subject to SWTR
360 Flocculation
401 Gaseous chlorination, post
403 Gaseous chlorination, pre
421 Hypochlorination, post
423 Hypochlorination, pre
441 Inhibitor, bimetalic phosphate
443 Inhibitor, hexametaphosphate
445 Inhibitor, orthorphosphate
447 Inhibitor, polyphosphate
449 Inhibitor, silicate
455 Iodination
460 Ion exchange
500 Lime-soda ash addition
520 Microscreening
541 Ozonation, post
543 Ozonation, pre
560 Permanganate
580 Peroxide
600 Rapid mix
620 Reducing agents
623 Reducing agent, sodium bisulfate
625 Reducing agent, sodium sulfate
627 Reducing agent, sulfur dioxide
640 Reverse osmosis
660 Sedimentation
680 Sequestration
700 Sludge treatment
720 U.V.
740 PH adjustment
741 PH adjustment, post
742 PH adjustment, pre
996 Treatment Applied by
997 Treatment Applied at point of entry
998 Treatment at point of entry

STORAGE

SURVEY DATE: 1/0/1900 (mm/dd/yyyy) | PWS #: 0

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

Storage Structure Name:	Storage Structure ID #:	COMMENTS: (Please indicate question number)
Physical Location:	Date in service: ☐ Unk	
	Volume (gal): ☐ Unk	

Storage Type: ☐ Reservoir/Tank ☐ Standpipe

Construction: ☐ Elevated ☐ Above Ground ☐ Partially Below Ground ☐ Below Ground

Type of material: ☐ Plastic ☐ Wood ☐ Fiberglass ☐ Metal ☐ Concrete ☐ Naturally Contained

Total Days Supply (This structure): ☐ Unk | Date Last: Inspected: ☐ Unk | Cleaned: ☐ Unk

How is the water level measured? ☐ Unk

yes	no	n/a	unk	note	**ALL STORAGE STRUCTURES**
☐	☐	☐	☐	☐	1. Is the storage structure safely accessible to the inspector?
☐	☐	☐	☐	☐	2. Is the PWS storage tank located within 500 feet of any municipal or Industrial wastewater treatment plant or any land which is spray irrigated with wastewater or used for sludge disposal?
☐	☐	☐	☐	☐	3. Is there a minimum distance of 50 feet between the reservoir and any sewer, drain, standing water or other possible source of contamination?
☐	☐	☐	☐	☐	4. Are any of the storage structure drains directly connected to a sewer or storm drain?
☐	☐	☐	☐	☐	5. Is an overflow provided that discharges to daylight in a way that will preclude the possibility of backflow to the reservoir and, where practical, provided with an expanded metal screen installed within the pipe that will exclude rodents and deter vandalism?
☐	☐	☐	☐	☐	6. Are overflows brought down to an elevation between 12 and 24 inches above the ground surface? *(2X the diameter of the discharge pipe above a basin rim)*
☐	☐	☐	☐	☐	7. Do overflows discharge over a drainage inlet structure or splash plate?(storm or sanitary)
☐	☐	☐	☐	☐	8. Is the storage structure secure from unauthorized access?
☐	☐	☐	☐	☐	9. Does the storage reservoir have a watertight roof or cover and is it sloped to facilitate drainage?
☐	☐	☐	☐	☐	10. Is the storage water protected from contamination?
☐	☐	☐	☐	☐	11. Is the storage structure structurally sound?
☐	☐	☐	☐	☐	12. Could vegetation in the area potentially impact the storage structure?*(Recommended)*
☐	☐	☐	☐	☐	13. Is the storage structure designed so that it can be isolated from the distribution system without necessitating loss of pressure in the distribution system?
☐	☐	☐	☐	☐	14. Is leakage evident at time of inspection?
☐	☐	☐	☐	☐	15. Is the storage structure interior coating or liner peeling or cracked?
☐	☐	☐	☐	☐	16. Is the storage structure used to store finished water?

yes	no	n/a	unk	note	**ELEVATED, ABOVE GROUND, and PARTIALLY ABOVE GROUND STORAGE**
☐	☐	☐	☐	☐	17. Are access manhole openings for the storage structure 4 inches or greater above the reservoir roof surface, with a lid 2 inches overlapping, water tight, and locked?
☐	☐	☐	☐	☐	18. Are all other manhole lids bolted and gasketed to make them water tight?
☐	☐	☐	☐	☐	19. Are all vents extended 12 inches above the roof and constructed to exclude potential sources of contamination? *(The overflow pipe shall not be considered a vent)*
☐	☐	☐	☐	☐	20. Do all vents open downward and are they fitted with a 4 mesh non-corrodible screen?

yes	no	n/a	unk	note	**ABOVE GROUND, PARTIALLY ABOVE GROUND, and BELOW GROUND STORAGE**
☐	☐	☐	☐	☐	21. Does the overflow for the storage structure open downward, provided with either a 24 mesh non-corrodible screen installed within the pipe when practical, or an expanded metal screen installed within the pipe plus a weighted flapper?

yes	no	n/a	unk	note	**BELOW GROUND LEVEL STORAGE**
☐	☐	☐	☐	☐	22. Is the area surrounding the below ground level storage structure graded in a manner that will prevent surface water from standing within 50 feet of it?
☐	☐	☐	☐	☐	23. Are "ALL" manholes for below ground level storage elevated 24 inches above the top of tank/covering sod, with a 2 inches overlapping lid, water tight, and locked?
☐	☐	☐	☐	☐	24. Are all vents for below ground level storage open downward with the opening at least 24 inches above the roof or sod and covered with 24 mesh non-corrodible screen to exclude potential contamination?

HYDROPNEUMATIC TANKS

SURVEY DATE: 1/0/1900 *(mm/dd/yyyy)* | PWS #: 0

One form for **all** Hydropneumatic Tanks.

Tank ID#:	Physical Location:	Brand:	Model:	Bladder:(yes/no)	Size:(gal.)	Installation Date:

yes	no	n/a	unk	note	**ALL HYDROPNEUMATIC TANKS**
☐	☐	☐	☐	☐	1. Do the tank(s) maintain adequate distribution system pressures?
☐	☐	☐	☐	☐	2. Is the tank(s) located above normal ground surface and completely housed?
☐ Significant			☐ Deficiency		
☐	☐	☐	☐	☐	3. Can the hydropneumatic tank(s) be isolated from the system, permitting operation of the system?
☐	☐	☐	☐	☐	4. Are the interior and/or exterior surfaces in good condition?
☐	☐	☐	☐	☐	5. Are tank supports structurally sound and adequate?
☐	☐	☐	☐	☐	6. Is the recharge air free of pollutants such as oil from an air compressor?
☐	☐	☐	☐	☐	7. Is there a pressure gauge and pressure operated start-stop controls?
☐	☐	☐	☐	☐	8. Does the PWS using the hydropneumatic (pressure) tank(s) serve less than 150 homes?
					Non-bladder Tanks Only
yes	no	n/a	unk	note	9. Do all non-bladder hydropneumatic tank(s) have the following?
☐	☐	☐	☐	☐	- A drain?
☐	☐	☐	☐	☐	- Means to add air?
☐	☐	☐	☐	☐	- Automatic or manual air blow-off?
☐	☐	☐	☐	☐	- An access manhole (24 inches in diameter where practical)?
☐	☐	☐	☐	☐	- Water sight glass?
☐	☐	☐	☐	☐	10. Has the non-bladder pressure tank(s) been tested for structural integrity in the past 5 years? *(Recommended)*

COMMENTS:
(Please indicate the question number)

DISTRIBUTION

SURVEY DATE: 1/0/1900 (mm/dd/yyyy) | PWS #: 0

One form for **all** distribution systems in the PWS.

What are water lines made of:

Material(s): ☐ Unk

☐ Steel ☐ HDPE (black) ☐ Asbestos/Cement

☐ PVC ☐ Ductile Iron ☐ Copper

☐ Other:

Size(s): ☐ Unk

How many services are metered? _____ out of

Number of Fire Hydrants:

COMMENTS: (Please indicate the question number)

DISTRIBUTION

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

yes	no	n/a	unk	note		
					Air/Vacuum Relief Valves - *Placed at high points in water mains.*	
☐	☐	☐	☐	☐	21.	Are all automatic air relief valves equipped with a means of backflow protection?

PUMPING - PG. 1

SURVEY DATE: 1/0/1900 (mm/dd/yyyy) | PWS #: 0

One form for all Pumps.

PUMPS, PUMPHOUSES, AND CONTROLS

Pump ID#:	Physical Location:	Type of Pump:	Brand:	Model:	Horsepower:	Purpose:

COMMENTS:
(Please indicate the question number)

yes no n/a unk note

ALL PUMPS

1. Are all pumps capable of providing the maximum pumping demand of the system?
2. Does the pump(s) cycle excessively? *(Recommended)*
3. Are all pumps provided with readily available spare parts and tools?
4. Is a water pressure relief valve installed where the pump is directly connected to the distribution system?
5. Is a standard pressure gauge installed on the discharge line?
6. Do all pumps maintain an operating pressure of 20 psi or greater?

yes no n/a unk note

WELL PUMPS

7. Is there an accessible check valve installed in the discharge line of each well.
8. If the system has a vertical turbine motor driven pump(s), is an air release-vacuum relief valve located upstream from the check valve, with exhaust/relief piping terminating in a down-turned position at least 18 inches above the floor and covered with a 24 mesh corrosion resistant screen?
9. If the pump(s) is "oil lubricated", is the oil NSF approved and suitable for human consumption?

yes no n/a unk note

WATER PUMPS *(not well pumps)*

10. Is a positive-acting check valve on the discharge side between the pump and the shut-off valve?

yes no n/a unk note

AUXILIARY POWER

11. Is there auxiliary power on-site?

☐ Significant ☐ Deficiency

12. Is auxiliary power tested? *(Recommended)*
13. If a diesel or gasoline fueled engine is used on the well lot; is the fuel tank and connecting piping double walled?
14. Is the fuel tank above ground?
15. Is a certified operator present during the filling of the fuel tank?

If the engine is in the well house;

16. Is the engine exhaust directly discharged outside the well house?
17. Is a spill containment structure surrounding all fuel tanks adequate? *(Secondary containment - 110% fuel tank volume)*

PUMPING - PG. 2

SURVEY DATE: 1/0/1900 (mm/dd/yyyy) | PWS #: 0

COMMENTS: (Please indicate the question number)

BOOSTER PUMPS

yes	no	n/a	unk	note		
☐	☐	☐	☐	☐	☐ Unnecessary	18. Is an instantaneous and totalizing flow meter installed where the booster pump is directly connected to the distribution system?
☐	☐	☐	☐	☐		19. Are all in-line booster pumps supplied with an automatic cutoff that activates when intake pressure is less than or equal to 5 psi?
☐	☐	☐	☐	☐		20. Is the booster pump located on a suction line that is directly connected to any storage reservoir?
☐	☐	☐	☐	☐		21. If yes, are all booster pumps protected by an automatic cutoff to prevent pump damage and avoid excessive reservoir drawdown?

PUMP HOUSE *(Only pump houses that don't contain a Groundwater Source)*

yes	no	n/a	unk	note		
☐	☐	☐	☐	☐		22. Is the pump house kept clean and in good repair? *(Floor cracks?)*
☐	☐	☐	☐	☐		23. Is the pump house protected from unauthorized personnel?
☐	☐	☐	☐	☐		24. Does the pump house have adequate lighting throughout? *(Recommended)*
☐	☐	☐	☐	☐		25. Are all non-sample taps installed in the pump house equipped with an appropriate backflow prevention device?
☐	☐	☐	☐	☐	☐ Significant ☐ Deficiency	26. Is adequate ventilation provided in the pump house for dissipation of excess heat and moisture from the equipment?
☐	☐	☐	☐	☐	☐ Significant ☐ Deficiency	27. Is adequate heating provided in the pump house to provided safe and efficient operation of equipment *(prevent moisture buildup and/or freezing)*?
☐	☐	☐	☐	☐		28. Is the pump house protected from flooding, have adequate drainage, is the floor surface at least six (6) inches above the final ground surface, and is the ground surface graded so as to lead surface water away from the pump house?

yes	no	n/a	unk	note	
☐	☐	☐	☐	☐	29. Is the sump for pump house floor drains closer than 30 feet from the well?
☐	☐	☐	☐	☐	30. Is the floor drain connected to sewer, storm drains, chlorination room drains, or any other source of contamination?

FINANCIAL CAPACITY

SURVEY DATE 1/0/1900 (mm/dd/yyyy) | PWS # 0

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

COMMENTS:
(Please indicate the question number)

MANAGERIAL CAPACITY

SURVEY DATE: 01/00/1900 (mm/dd/yyyy) | PWS #: 0

yes	no	n/a	unk	note	MANAGERIAL CAPACITY
☐	☐	☐	☐	☐	1. Is a properly licensed operator available at all times? (N/A for GW-NC PWS)
☐	☐	☐	☐	☐	2. Is there a Certified Drinking Water Protection Plan developed for this system? Date: ☐
☐	☐	☐	☐	☐	3. Does this PWS have a governing body or board of directors?

If no, please indicate:

- ☐ Sole Proprietorship
- ☐ Partnership
- ☐ Limited Liability Corp.
- ☐ Other: ☐

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

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

yes	no	n/a	unk	note	5. Are the following records maintained onsite or located near by?
☐	☐	☐	☐	☐	- Bacteriological Analysis - **5 years retention.**
☐	☐	☐	☐	☐	- Chemical Analysis - **10 years retention.**
☐	☐	☐	☐	☐	- Records of actions taken to correct violations - **3 years retention.**
☐	☐	☐	☐	☐	- Copies of reports, summaries or communication related to sanitary surveys - **10 years retention.**
☐	☐	☐	☐	☐	- Reports concerning variances or exemptions - **5 years retention.**
☐	☐	☐	☐	☐	- Copies of public notices issued - **3 years retention.**
☐	☐	☐	☐	☐	- Daily free chlorine residuals *(required disinfection)* - **1 year retention.**
☐	☐	☐	☐	☐	6. Are routine maintenance schedules established? *(Recommended)*
☐	☐	☐	☐	☐	7. Is an operation and maintenance manual(s) provided for the PWS and does it include; daily operating instructions, operator safety procedures, location of valves and other key system features, parts list and parts order form, and information for contacting the water system operator?
☐	☐	☐	☐	☐	8. Is there a clear plan of organization and control among the people responsible for management and operations of the water system? *(Recommended)*
yes	no	n/a	unk	note	9. Are any samples of the following parameters past due?
☐	☐	☐	☐	☐	Coliform
☐	☐	☐	☐	☐	Nitrates
☐	☐	☐	☐	☐	Nitrites
☐	☐	☐	☐	☐	Lead and Copper
☐	☐	☐	☐	☐	IOCs
☐	☐	☐	☐	☐	VOCs
☐	☐	☐	☐	☐	SOCs
☐	☐	☐	☐	☐	Disinfection Byproducts
☐	☐	☐	☐	☐	Radionuclide
☐	☐	☐	☐	☐	10. Is a written total coliform rule (TCR) sample site plan available for review?
☐	☐	☐	☐	☐	11. Does the (TCR) sample site plan meet the minimum requirements?
☐	☐	☐	☐	☐	12. Does the system have a sufficient supply of approved sampling bottles properly stored? *(Recommended)*
☐	☐	☐	☐	☐	13. Does the PWS provide stairways, ladders and handrails where needed?
☐	☐	☐	☐	☐	14. Are treads of non-slip material provided where needed?
☐	☐	☐	☐	☐	15. Is a health concern produced from inadequately protected electrical wiring?
☐	☐	☐	☐	☐	16. Are all confined space entry requirements considered?*(Recommended)*
☐	☐	☐	☐	☐	17. Are there any unused subsurface water storage tanks that need to be abandoned?
☐	☐	☐	☐	☐	18. Are there any water supply wells that are no longer being used that need to be abandoned?

COMMENTS:
(Please indicate the question number)

TREATMENT APPLICATION & CONTROL

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

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

Purpose of Treatment:	Treatment Facility Location:	Date Online: ☐ Unk	Treated Water (GPD): ☐ Unk

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

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

Sources Treated by Facility: (Tag #)	Equipment Manufacturer:	Model #:

Chemical Trade Name:	Chemical Manufacturer:	NSF/ANSI certified?
		☐ Yes ☐ No ☐ N/A ☐ Unk ☐ Yes ☐ No ☐ N/A ☐ Unk ☐ Yes ☐ No ☐ N/A ☐ Unk

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

DISINFECTION - PG. 1 - Systems Using Only Groundwater

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

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

Treatment Facility Name:	Treatment Facility Location: (Location)	Date Online: ☐ Unk	Treated Water (GPD): ☐ Unk
		1/0/1900	

Select all disinfection types used:

☐ Gas cl2 ☐ UV Light ☐ Sodium Hypochlorite ☐ Calcium Hypochlorite ☐ Miox ☐ Ozone ☐ Chlorine Dioxide ☐ Other

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

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

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

Comments:
(Please indicate the question number)

Treatment Facility Location: (Location) | Survey Date 1/0/1900 (mm/dd/yyyy) | PWS # 0

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

Comments: (Please indicate the question number)

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

State of Idaho
Department of Environmental Quality

Inspection Continuation

SURVEY DATE	1/0/1900	PWS #
1/0/1900	*(mm/dd/yyyy)*	0

Name of Public Water System:

Inspected by: Date:

Title:

State of Idaho
Department of Environmental Quality
Photo Log

Name of Facility:		Inspection Date		PWS#
		1/0/1900 *(mm/dd/yyyy)*		01/00/1900
Camera Type: ☐ Digital ☐ 35mm ☐ Other:	Camera Brand:	Camera Model:		Camera ID#:

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

See "Sanitary Surveys 101" - page 2

Technical Assistance for Public Water Systems

The Idaho Drinking Water Newsletter

Department of Environmental Quality Idaho Drinking Water Program

www.deq.idaho.gov/water/prog_issues.cfm

October 2007, Number 45

Deadline for filing - December 31, 2007

Time to renew SOC/VOC monitoring waivers for 2008-2010

Public water systems are responsible for conducting the monitoring of their drinking water to ensure that it meets all drinking water standards. DEQ may grant monitoring waivers, however, allowing a system to forgo certain sampling during a three-year monitoring period if a system meet specific conditions.

The objective of DEQ's monitoring waiver program is to reduce monitoring and laboratory costs for systems, while at the same time assuring the safety of public water supplies. But monitoring waivers require periodic renewal and are not automatically granted.

DEQ is now accepting requests for monitoring waivers for SOCs (synthetic organic chemicals) and VOCs (volatile organic chemicals). To renew a waiver (or to obtain a new waiver) requires a four-step process:

1. **Review your current Monitoring Reduction Questionnaire.** Review your last approved "Monitoring Reduction Questionnaire" and then submit in writing either: (a) a statement that there have been no changes to your system since the last questionnaire was filled out, or (b) make necessary changes to the form and submit a copy to DEQ. (If you are seeking a waiver for the first time, you must complete a Monitoring Reduction Questionnaire as well as the two documents below.)

2. **Complete a Monitoring Waiver Application.** Complete and submit this form, which calls for the name of each sampling point or source.

3. **Complete a Monitoring Waiver Agreement.** Review the waiver agreement, check the appropriate paragraphs, have the "authorized agent" for your system sign the document.

4. **Return all three documents to DEQ.** Mail the three documents listed above to your local DEQ regional office or district health department by December 31, 2007. (In the case of the Monitoring Reduction Questionnaire, either mail your updated form or insert a brief note stating, "System made no changes.")

(**Note:** The three documents referenced above are available at DEQ's web site at http://www.deq.idaho.gov/water/permits_forms/forms/drinking_water/forms.cfm.)

Monitoring waivers save you time and money. Remember - DEQ must receive your application *no later than December 31, 2007*, to be considered for the 2008-2010 monitoring period. If you have questions, please contact your regional DEQ office or local district health department. ■

IBOL reminds operators of education requirements

Water/wastewater operators/backflow assembly testers

The Idaho Bureau of Occupational Licenses (IBOL) reminds licensed drinking water and wastewater operators and licensed backflow assembly testers of the following education requirements:

- **Each licensed operator** must successfully complete a minimum of six (6) hours (0.6 CEUs) of approved Continuing Education Units (CEUs) annually for license renewal.

- **Backflow Assembly Testers** must complete an eight (8) hour refresher course every two (2) years for license renewal.

Operators with one or more licenses

- **An operator holding one (1) or more drinking water license(s)** shall be required to meet the annual continuing education requirement for only one license.

- **An operator holding both drinking water and wastewater class licenses** must complete a minimum of six (6) hours annually for the drinking water license *plus* six (6) hours annually for the wastewater license.

As always, continuing education units must be relevant to the field in which the license is issued. If you have questions, please contact IBOL at 208-334-3233. ■

A Drinking Water Sanitary Surveys 101 for Idaho PWSs

Plus preparing for a upcoming inspection

Is it time for your system's next sanitary survey? If so, there are some steps you can take ahead of time to prepare for the scheduled survey to make the process go much faster and smoother. First, however, a brief review of the sanitary survey process.

Definition and purpose of a sanitary survey

A sanitary survey is defined as a routine on-site inspection of the entire water system, including the water source, facilities, equipment, operation, and maintenance. The purpose of a sanitary survey is to protect public health by identifying system deficiencies and recommending possible solutions.

The inspections are conducted by a DEQ staff member or a representative of the local district health department. (DEQ contracts with Idaho's seven district health departments to assist the state in providing service to small public water systems.)

Frequency of sanitary surveys

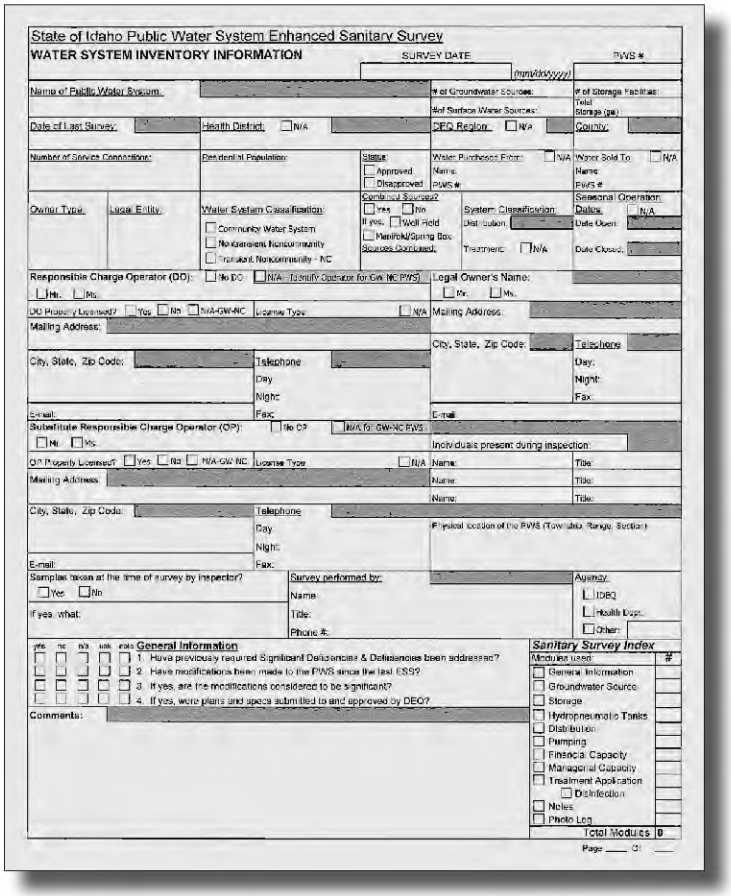
The *Idaho Rules for Public Water Systems* require DEQ to conduct a system sanitary survey every three or five years depending on the type of water system. All community surface water and GWUDI (Ground Water Under the Direct Influence) systems must have a sanitary survey inspection every three years. Non-community systems (e.g., schools, hospitals, motels) must be surveyed every five years.

For community water systems determined by the state to have an outstanding performance record, DEQ can decide to conduct sanitary surveys on an every five-year basis.

The nine components of Idaho's sanitary survey

Idaho's sanitary survey is based on the state's "Public Water System Enhanced Sanitary Survey" (ESS) form. The form is divided into nine areas of concern to be addressed during the sanitary survey inspection of a water system:

1. General Information
2. Groundwater Source
3. Storage
4. Hydropneumatic Tanks
5. Distribution
6. Pumping
7. Financial Capacity
8. Managerial Capacity
9. Treatment Application


State of Idaho Public Water System Enhanced Sanitary Survey
WATER SYSTEM INVENTORY INFORMATION
SURVEY DATE (mm/dd/yyyy)
PWS #
Name of Public Water System:
# of Groundwater Sources:
# of Surface Water Sources:
# of Storage Facilities:
Total Storage (gal.):
Date of Last Survey:
Health District: N/A
DEQ Region: N/A
County:
Number of Service Connections:
Residential Population:
Status: Approved, Disapproved
Water Purchased From: N/A
Name:
PWS #:
Water Sold To: N/A
Name:
PWS #:
Owner Type:
Local Entity
Water System Classification: Community Water System, Non-transient, Non-community, Transient, Non-community - NC
Combined Sources? Yes, No
If yes, Well Field, Manifold/Spring Box
Sources Combined:
System Classification: Distribution, Treatment: N/A
Seasonal Operation: Dates: N/A, Date Open:, Date Closed:
Responsible Charge Operator (DO): No DO, N/A - Identify Operator for GW NC PWS
Mr., Ms.
DO Properly Licensed? Yes, No, N/A-GW-NC
License Type:
N/A
Mailing Address:
City, State, Zip Code:
Telephone: Day:, Night:, Fax:
E-mail:
Substitute Responsible Charge Operator (OP): No OP, N/A for GW-NC PWS
Mr., Ms.
OP Properly Licensed? Yes, No, N/A-GW-NC
License Type:
N/A
Mailing Address:
City, State, Zip Code:
Telephone: Day:, Night:, Fax:
E-mail:
Legal Owner's Name:
Mr., Ms.
Mailing Address:
City, State, Zip Code:
Telephone: Day:, Night:, Fax:
E-mail:
Individuals present during inspection: Name:, Title:, Name:, Title:, Name:, Title:
Physical location of the PWS (Township, Range, Section):
Samples taken at the time of survey by inspector? Yes, No
If yes, what:
Survey performed by: Name:, Title:, Phone #:
Agency: IDEQ, Health Dept., Other:
yes, no, n/a, unk, was General Information
1. Have previously required Significant Deficiencies & Deficiencies been addressed?
2. Have modifications been made to the PWS since the last ESS?
3. If yes, are the modifications considered to be significant?
4. If yes, were plans and specs submitted to and approved by DEQ?
Comments:
Sanitary Survey Index
Modules used: #
General Information
Groundwater Source
Storage
Hydropneumatic Tanks
Distribution
Pumping
Financial Capacity
Managerial Capacity
Treatment Application
Disinfection
Notes
Photo Log
Total Modules: 0
Page ___ of ___

Steps to take to prepare for a sanitary survey

- Review your last sanitary survey report, which will help you to prepare for your upcoming inspection.
- Review past deficiencies (see your last sanitary survey) and be sure that they have been properly addressed.
- Have a map of your distribution system available.
- Have the following records ready for review:
  - monthly operational reports,
  - equipment calibration dates,
  - daily logs of laboratory test results,
  - as-built drawings of the water system,
  - your flushing and valve exercise programs, and the system's cross connection control program.
- Have the license number for each licensed operator available for review.
- Review the full sanitary survey form on DEQ's web site.

continued, page 3

You can review the complete copy of the "State of Idaho Public Water System Enhanced Sanitary Survey" form used by the inspectors by going to DEQ's web site at http://www.deq.idaho.gov/water/assist_business/pws/enhanced_sanitary_survey.pdf. You may want to use this form as a checklist in your preparation for your sanitary survey.

As a note, the questions covered under Section 7-Financial Capacity of the ESS form are often ones that operators are not familiar with. The Financial Capacity survey questions are posted at the web address above. You can provide this section to your system bookkeeper, treasurer, or accountant to be completed in advance of the inspection.

Remember, a comprehensive evaluation of your water system can be successfully completed in less time by having all of the necessary information listed above available at the time of inspection.

The purpose of a sanitary survey is to protect public health by identifying system deficiencies and recommending possible solutions.

Conducting the survey/significant deficiencies

When it is time for your sanitary survey, your local DEQ regional office or the local district health department will contact you by telephone to set up an appointment.

During the survey the inspector may identify "significant deficiencies," which will require corrective action.

A significant deficiency is any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that DEQ determines will cause, or have potential to cause, the introduction of contamination into water delivered to a system's customers.

Significant deficiencies include, but are not limited to, the location of a well near a source of fecal contamination (such as a failing septic system or a leaking sewer line); the inadequate application of treatment chemicals; the entrance of contaminants into the distribution system; inadequate cleaning and maintenance of storage tanks; inadequate record keeping; and the lack of operator licensing or training.

Deficiencies will be documented on DEQ's Preliminary Inspection Findings Form (PIFF) and a copy will be given to the public water system representative present at the time of the inspection. The PIFF form provides documentation listing "high priority" issues on which corrective action should begin immediately.

After the sanitary survey

After completion of the survey, the inspector sends a comprehensive follow-up letter and inspection report to the water system.

The letter provides a summary of all deficiencies, as well as recommendations for the necessary improvements to return the system to compliance with the state's drinking water rules.

The system must respond in writing no later than 45 days after receipt of the sanitary report describing how, and on what schedule, the system will address significant deficiencies identified in the survey.

This requirement does not mean that the deficiencies must be fixed within 45 days - it means that the system must have a plan within 45 days outlining how it will proceed.

Some deficiencies may require labor intensive activities or more capital to remedy. These items will need to be incorporated into long term planning associated with management of the system.

Benefits of a survey

Use the time during the sanitary survey to ask the inspector any questions you may have.

Use the time during the sanitary survey to ask questions. The inspector is there to help you ensure that your system is constructed, operated, and maintained in a manner that will provide safe drinking water to your customers.

Systems benefit by receiving one-on-one technical assistance, operator education, identification of operation and maintenance practices that need modification or correction, and explanation of new techniques or upcoming changes under state and federal laws.

Contact your inspector if you have questions before or after your sanitary survey. Inspectors are also available to assist you at other times and not just during a sanitary survey inspection.

Sanitary surveys can help spot problems before they occur and provide valuable technical assistance preventing possible severe public health impacts on consumers, as well as saving the system additional operating costs, fines, and possible lawsuits.

The major responsibility of a public water system owner is ensuring that customers get safe water to use and drink, and the sanitary survey helps to achieve this goal. ■

Training Schedule

Class/Sponsor	Location/Date
Building Budgets/Rate Structures (IRWA) - W/WW	Moscow, 10/3/07
VSWS Licensure Review (BE) - W	Nampa, 10/13/07
Water Treatment I & II (IRWA) - W	CDA, 10/24-25/07
Sampling Plans (BE) - W	Twin Falls, 10/30/07
Operation & Maintenance (BE) - W	Nampa, 10/31/07
Troubleshooting (BE) - W	Caldwell, 11/1/07
Basic Lab & Data Interpretation Training (IRWA) - W	Boise, 11/13/07
SWS Sanitary Survey/O&M (BE) - W	Wilder, 11/13/07
SWS Sanitary Survey/O&M (BE) - W	Lewiston, 11/14/07
Fire Hydrant & Valve Workshop (IRWA) - W	Payette, 11/15/07
SCADA (BE) - W/WW	Fruitland, 12/4/07
Operator's Bag of Tools (BE) - W	Paul, 12/5/07
Red, Black, Stinking Water (BE) - W	Arco, 12/6/07
Pumps & Motors O&M (IRWA) - W/WW	Lewiston, 12/12/07
Confined Space (IRWA) - W/WW	Meridian, 12/18/07
Pumps & Motors (BE) - W/WW	Boise, 12/20-21/07

(BE) = Brown Environmental, Inc.
(IRWA) = Idaho Rural Water Association,

For further information, contact the following:

Brown Environmental, Inc. *1-800-543-4358*
or for the Boise area, 1-208-465-5725.
Web site: www.idahooperatortraining.com/

Idaho Rural Water Association *1-800-962-3257*
or 1-208-343-7001, Fax: 1-208-343-1866.
E-mail: irwa@idahoruralwater.com.
Web site: www.idahoruralwater.com/irw.index.aspx

Costs associated with this publication are available from the Department of Environmental Quality. Cost per unit: $0.21 Printed on recycled paper.

APPENDIX J

USER RATE STRUCTURE/FIRE FLOW PROCEDURE

Garden City Permit Fee Schedule-2007

I. EROSION & SEDIMENT CONTROL

PERMIT FEES	1st	Multiplier (# of ea. review)	per acre	Multiplier # of acre
Less that 1.0 Acre	$82.69		n/a	
1.0 Acre or greater	$82.69		$55.13	
10 Acre up to 20 acre	$551.25		$55.13	
20 Acre and up	$1102.50		$55.13	
TI or >2yd. Utility Trench Exc.	$55.13		n/a	
Environmental Sensitive Site	$78.75		n/a	
Annual Permit Fee	$105.00		n/a	
Permit Transfer Fee	$55.13		n/a	
Modification Request Fee	$82.69		n/a	
Variance/Waiver Req. Fee	$82.69		n/a	
Additional Plan Review Fee	$55.13		n/a	
Initial Inspection	$82.69		n/a	
Re-inspection	$55.13		n/a	

II. WATER – SEWER UTILITIES :

A. SINGLE FAMILY-PLUMBING-TENANT IMPROVEMENTS

The fees listed below are for each connection, meter tap, review or inspection.

Water Hook on Fee	$529.20
Water Meter Connection 3/4 "	$226.01
Water Meter Connection 1"	$270.11
Water Meter Connection 1.5"	$667.01
Water Meter Connection 2"	$788.29
Sewer Trunk Connection	$1666.35
Sewer Treatment Connection	$2710.05
Fire Hydrant Connection	$3572.10
6" Fire Sprinkler Connection	$1819.13
8" Fire Sprinkler Connection	$2205.00
Engineering Plan Review	$121.30
Drainage- Review	$52.92
Cross Connection Plan Review	$52.92
Industrial Pretreatment Review	$52.92
Water Sewer Plan Review	$52.92
Drainage Observations	$52.92
Industrial Pretreatment Observations	$52.92
Cross Connection Observations	$52.92
Water Sewer Observations	$52.92
Water Capitalization Fee	$2844.81

B. COMMERCIAL PROJECTS - NON RESTAURANT

*All rates listed on the "Rate Table" above are **multiplied by** the "SFDE" or 1.0 which ever is greater; as described above.*

FIGURE OUT YOUR OWN "SFDE":
Total Fixture Units / 21; please use 1.0 for the SFDE, if SFDE figure is less than 1.0.

FIXTURE UNIT TABLE:

Hand Sink, Lavatory	1.00	Urinal-1.0 Gal/flush	4.00
Bar Sink-Faucet cnt (ESOF)	2.00	Water Closet/Tank 2.5g.	4.00
Janitor (Mop, Sunken Floor) Sink	3.00	Wtr Cl/Flushmtr Tnk >2.5g.	5.00
Kitchen Sink, Domestic-per faucet (ESOF)	2.00	Water Closet/Valve no tank	4.00
Laundry Tub per faucet(ESOF)	2.00	Drinking Ftn/per hd	0.50
Dental Circular Spray Sink	3.00	Dishwasher, domestic	2.00
Dental Flushing Rim Sink	6.00	Clothes Washer, dom.	3.00
Dr. Hosp.--Clinic Sink	6.00	Ice Machine	1.00
Shower (per faucet head)	2.00	Hose Bibb Interior only	2.50
Bathtub/Shower Combo.	3.00	Dental Unit -(Cusp.)	1.00

C. RESTAURANT - BAR

Restaurant connection fees are based on square footage of seating and outdoor seating areas. Bar and tavern fees additionally are based on the EFU's in the kitchen area. Restaurants that serve alcohol are based on a combination of the two.

Restaurant Connection Fees (per SFDE):

Water hook on fee (per SFDE)	$529.20
6" Fire Sprinkler connection	$1819.13
8" Fire Sprinkler connection	$2205.00
Fire Hydrant connection	$3572.10
Water Capitalization Fee	$2844.81

Sewer treatment connection and Water capitalization (per SFDE)

Full Service Restaurant	$3748.50
Fast Food Restaurant	$6819.75
Sewer Trunk Connection	$1666.35

D. MULTI-FAMILY DWELLING FEES

Add Water Capitalization Fee to all Multi-Family Dwelling

Water Capitalization Fee-PER UNIT	**$2844.81**
DUPLEX RATE FEE CALCULATIONS	**Fee**
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01

Water Service Connection 2"	$788.29
Sewer Trunk Connection	$1666.35
Sewer Treatment Connection	$2710.05
TRIPLEX UP TO 4 UNITS (PER UNIT) RATE FEE CALCULATIONS	
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01
Water Service Connection 2"	$788.29
Sewer Trunk Connection	$1666.35
Sewer Treatment Connection	$2710.05
OVER 4 UNITS UP TO 5 PER ACRE RATE FEE CALCULATIONS	
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01
Water Service Connection 2"	$788.29
Sewer Trunk Connection	$1522.50
Sewer Treatment Connection	$2058.00
OVER 5 UNITS UP TO 6 PER ACRE RATE FEE CALCULATIONS	
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01
Water Service Connection 2"	$788.29
Sewer Trunk Connection	$1253.70
Sewer Treatment Connection	$2058.00
OVER 6 UNITS UP TO 7 PER ACRE RATE FEE CALCULATIONS	
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01
Water Service Connection 2"	$788.29
Sewer Trunk Connection	$1075.20
Sewer Treatment Connection	$2058.00
OVER 7 UNITS UP TO 10 PER ACRE RATE FEE CALCULATIONS	
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01
Water Service Connection 2"	$788.29
Sewer Trunk Connection	$859.95
Sewer Treatment Connection	$2058.00
OVER 10 UNITS UP TO 13 PER ACRE RATE FEE CALCULATIONS	
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01

Water Service Connection 2"	$788.29
Sewer Trunk Connection	$672.00
Sewer Treatment Connection	$2058.00
OVER 13 UNITS PER ACRE RATE FEE CALCULATIONS	
Water Hook on Fee	$529.20
Water Service Connection 3/4"	$226.01
Water Service Connection 1"	$270.11
Water Service Connection 1.5"	$667.01
Water Service Connection 2"	$788.29
Sewer Trunk Connection	$466.20
Sewer Treatment Connection	$2058.00

III. BUILDING

Garden City Code section 1-11-1 (D) states, The City shall be reimbursed by the applicant for any direct costs incurred by the City in obtaining a review of any land use planning application, by architects, engineers, City Staff or other professionals necessary to enable the City to approve or disapprove the application.
Garden City Code section 7-4-2 (A) states, Fees paid for the permits associated with the construction of improvements to any building regulated under this title shall be refundable at a rate of eighty percent (80%) of the original permit. Refund requests must be made in writing and be accompanied by the original permit. Refunds cannot be granted for plan review fees or for permits which are expired or null and void for any reason.

A. VALUATION-PERMIT FEES

The building official shall use the valuation established by valuation data from the actual project cost.

The regional modifier shall be used on all occupancies for determination of value, and the additional costs per square foot for air conditioning shall not be used on group R, one and two family dwellings, and U occupancies only.

Permit Fees:

Permit fees shall be computed from table 1-A of the 1997 Uniform Building Code.

Total Valuation:	**Fee:**
$1.00 to $2K	$71.00
$2K to $100K	$71.00 for the first $500.00 plus $3.20 for each additional $1000.00 or fraction thereof; up to and including $100K.
Over $100K	$1043.44 plus $5.88 per 1K

B. INSPECTIONS

$52.50 per hour	-Inspections outside normal business hours (2hr minimum)
	-Re-inspection fees
	-Inspections for which no fee is specifically indicated
	-Additional plan review required by changes, additions or revisions to plans (1 hr minimum)
$121.28 or Actual Costs	-Outside consultants for plan checking and inspections, or both

C. PLAN REVIEW

Plan review fees for other than group R, one and two family dwellings, and U occupancies shall be calculated at a rate of sixty five percent (65%) of the actual permit fee computed from table 1-

Plan review fees for group R, one and two family dwellings, and U occupancies shall be calculated at a rate of fifty percent (50%) of the actual permit fee computed from table 1-A.

Additions to group R, one and two family dwellings:	$47.25per sq. ft.
Pole Buildings w/o concrete floor:	$11.55 per sq. ft.
Pole Buildings with concrete floor :	$15.75 per sq. ft.
Covered Porches:	$11.55 per sq. ft.
Decks:	$8.40 per sq. ft.
Covered Decks:	$11.55 per sq. ft.
Storage Sheds:	$11.55 per sq. ft.
Move On storage buildings:	$8.40 per sq. ft.
Moved Buildings:	Actual project cost
Tenant Improvements:	Actual project cost
Commercial Re-roof:	Actual project cost
Commercial or Residential remodels:	Actual project cost

D. MANUFACTURED HOMES

Permit Fee = Base Fee + Valuation Fee Computed from Valuation Table.

BASE FEES:

Placement:		**Removal:**	
Single Wide	$220.50	Single or Double	$84.00
Double Wide	$267.75		

VALUATION FEE: Use Valuation Table

IV. MECHANICAL

A. PERMIT

Permit fees shall be computed from Table 1-A of the 1997 Uniform Mechanical Code.

RESIDENTIAL

Base permit fee:	$26.25
Furnace to 100,000 btu, each:	$15.54
Furnace over 100,000 btu, each	$19.11
Compressor to 3 hp, each	$15.44
Compressor over 3 to 15 hp, each	$28.51
Gas piping to 5 outlets	$5.78
Ventilation system, each:	$7.61
Woodstove or fireplace, each:	$11.18

COMMERCIAL

Up to 500K	$23.10 + 1.5%
500K to 1M	$11,410.88 + 1.63%
1M and Up	$19,969.04 + 1.09%

B. INSPECTIONS

Inspections outside of normal business hours, per hour (2hr minimum):	$52.50*
Reinspection	$52.50*
Inspections for which no fee is specifically indicated:	$52.50*

Additional plan review required for changes, alterations or revisions to plans which an initial review has been completed: $52.50*

*per hour

V. PLUMBING

A. PERMIT

Residential:

$31.50 base fee

$10.50 per fixture

$39.90 sprinkler line

$39.90 Water Line

$39.90 Sewer Line

Commercial:

$52.50 base fee + 3% of plumbing contract value; up to $20K

$661.50 base fee + 2% of plumbing contract value; 20K to 100K

$2341.50 base fee + 1.5% of plumbing contract value; 100K to 200K

$3391.50 base fee + 0.5% of plumbing contract value; Over 200K

B. INSPECTIONS

Inspections outside of normal business hours, per hour:	$39.90/hr
Reinspection fee:	$39.90/hr
Inspections for which no fee is specifically indicated:	$39.90/hr
Additional plan review required for changes, alterations or revisions to plans which an initial review has been completed:	$39.90/hr

VI. PLANNING & DEVELOPMENT SERVICES

Garden City Code section 1-11-1 (D) states, The City shall be reimbursed by the applicant for any direct costs incurred by the City in obtaining a review of any land use planning application, by architects, engineers, City Staff or other professionals necessary to enable the City to approve or disapprove the application.

A. PERMIT

Preliminary Plat	$1338.75 + $31.50/lot
Final Plat	$761.25 + $31.50/lot
Variance	$630.00
Lot Line Adjustment	$236.25
PUD	$1338.75 + $105.00/exception
Appeal	$210.00
Conditional Use	$971.25
CU DayCare or Modification	$262.50
Design Review	$525.00
Modification	$262.50
Flood Plain Development	
(10 acres or less)	$262.50
(> 10 acres)	$525.00
Annexation	
(10 acres or less)	$951.00
(>10 acres)	$1050.00 + $31.50/acre
Zoning/Rezone	
(10 acres or less)	$951.30 + $10.50/acre
(>10 acres)	$1050.00 + $31.50/acre

Per Resolution #866-07 effective on July 1st, 2007

Zoning Certificate	$210.00
Manufactured Home Park	$1338.75 + $31.50/space
Contracted Services	$121.28 / hour **or At Cost**

VII. SIGN PERMIT

On Premise:	
Lighted	$262.50 + $0.80/sq.ft. surface area
Unlighted	$157.50.00 + $0.26/sq.ft. surface area
Off Premise:	
Lighted	$525.00 + $1.60/sq.ft. surface area
Unlighted	$315.00 + $0.53/sq.ft. surface area
Temporary:	
Lighted	$157.50
Unlighted	$52.50

Kevin Harris

From: Ron Amandus [RonA@nacfire.org]
Sent: Thursday, July 09, 2009 12:20 PM
To: Kevin Harris
Attachments: Fire Flow Procedures.doc

Kevin

The attached letter documents the North Ada County Fire Rescue fire flow requirements. As I stated in my last e-mail, I will try and detail the plan review process for you as follows. I hope this information will be of help to you.

The applicant requests a fire flow from Garden City to determine the available fire flow at the development location. The City performs a fire flow test to determine the available fire flow at the development location. An area flow may be required to obtain an accurate flow at 20 residual as per 2007 NFPA 921.

The number of hydrants to be used in any test depends upon the strength of the distribution system in the vicinity of the test location. 2007 Edition NFPA 921-4.3.5

To obtain satisfactory test results of theoretical calculation of expected flows or rated capacities, sufficient discharge should be achieved to cause a drop in pressure at the residual hydrant of at least 25 percent, or to flow the total demand necessary for fire- fighting purposes. 2007 Edition NFPA 921-4.3.6

If the mains are small and the system is weak, only one or two hydrants need to be flowed. 2007 NFPA 921-4.3.7

If on the other hand, the mains are large and the system strong, it may be necessary to flow as many as seven or eight hydrants. 2007 NFPA 921-4.3.8

When the flow is completed, Garden City sends the "ability to serve for fire flow" information via e-mail to my office to file. The applicant will also, submit the fire flow information to North Ada County Fire & Rescue along with building plans, square footage, construction type, if a sprinkler system will be used, and any additional information requested by North Ada County Fire Rescue. Using this information, North Ada County Fire & Rescue determines the fire flow

requirements based on the 2006 International Fire Code Section B105. If the project does not comply with the required fire flow the plans will be disapproved. North Ada County Fire Rescue documents the deficiencies and contacts the applicant to pick up the plan review. If the installation of water mains, a fire sprinkler system or installing area separation walls brings this building into compliance with the fire flow requirements, the applicant corrects the deficiencies and re-submits for approval.

If you need anything further, please contact my office so I may be of assists to you.

Thank You,

Ron Amandus

Deputy Chief Fire Marshal

North Ada County Fire & Rescue

5800 Glenwood

Garden City, Idaho 83714

208-375-0906

Michael G. Irvan
Commissioner

Margaret Dimmick
Commissioner

Jeff Ramey
Commissioner

NORTH ADA COUNTY
Fire & Rescue District

Martin B. Knoelk
Fire Chief

Ron Amandus
Fire Marshal

July 8, 2009

Kevin L. Harris, P.E.
Forsgren Associates Inc.
350 North 2nd East
Rexburg, Id 83440
< kharris@forsgren.com >
208-356-9201 office
208-351-9484 cell

Dear Mr. Harris,

I appreciate the opportunity to work with you concerning Garden City fire flows for their Utility Master Plan. The development of a plan to maintain and improve the water system for Garden City is of upmost importance for life safety and property protection. North Ada County Fire Rescue would like to help you in any way we can. North Ada County Fire Rescue has not approved a reduction for fire flow requirements in the water system for Garden City. It is the position of North Ada County Fire Rescue that the provisions of the 2006 International Fire Code are complied with to maintain the minimum requirements for providing a reasonable level of life safety and property protection in our District. Therefore the 2006 International Fire Code fire flow requirements are as follows:

An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings or portions of buildings are hereafter constructed or moved into or within the jurisdiction. 2006 International Fire Code Section 508.1

The minimum fire flow required for buildings or portions of building hereafter constructed shall be in accordance with appendix B of the 2006 International Fire Code. 2006 International Fire Code Section B101.1.

The minimum fire-flow requirements for one- and two-family dwellings having a fire-flow calculation area which does not exceed 3,600 square feet shall be 1,000 gallons per minute. Fire-flow and flow duration for dwellings having a fire-flow calculation area in excess of 3,600 square feet shall not be less than that specified in Table B105.1. A reduction in required fire flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system. 2006 International Fire Code Section B105.1

The minimum fire-flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table B105.1. A reduction in required fire-flow of up to 75 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system

installed in accordance with Section 903.3.1.1 or 903.3.1.2. The resulting fire-flow shall not be less than 1,500 gallons per minute for the prescribed duration as specified in Table B105.1.

TABLE B105.1
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS[a]

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[c]	FLOW DURATION (hours)
Type IA and IB[b]	Type IIA and IIIA[b]	Type IV and V-A[b]	Type IIB and IIIB[b]	Type V-B[b]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.
a. The minimum required fire flow shall be allowed to be reduced by 25 percent for Group R.
b. Types of construction are based on the *International Building Code*.
c. Measured at 20 psi.

If you have any questions, please contact my office so I may assist you.

Thank You,

Ron Amandus
Deputy Chief Fire Marshal
North Ada County Fire Rescue

APPENDIX K
WATER RIGHT TRANSFER APPLICATION

Form 222 10/07

Page _____ of _____

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

Transfer No. _____

APPLICATION FOR TRANSFER OF WATER RIGHT
PART 1

Name of Applicant _____ Phone _____

Mailing address _____ Email _____

A. PURPOSE OF TRANSFER

1. ☐ Change point of diversion ☐ Add diversion point(s) ☐ Change place of use

   ☐ Change nature of use ☐ Change period of use ☐ Other _____

2. Describe the reason for the proposed changes _____

   _____

   _____

   _____

B. DESCRIPTION OF RIGHT(S) OR PORTION THEREOF, AFTER THE REQUESTED CHANGE

1. Right Number | Priority | Amount (cfs/ac-ft) | Nature of Use | Period of Use

   _____ _____ _____ _____ _____ to _____

   _____ _____ _____ _____ _____ to _____

   _____ _____ _____ _____ _____ to _____

   _____ _____ _____ _____ _____ to _____

2. Total amount of water being transferred _____ cubic feet per second and/or _____ acre-feet per annum.
3. Source of water _____ tributary to _____
4. Point(s) of Diversion:

Lot	¼	¼	¼	Sec	Twp	Rge	County	Local name for diversion

5. Lands irrigated or place of use:

Twp	Rge	Sec	NE ¼				NW ¼				SW ¼				SE ¼				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

Total Acres _____

PART 1

6. General Information:
   a. Description of diversion system _____
   _____
   _____

   b. Are the lands from which you propose to transfer the water right subject to any liens, deeds of trust, mortgages, or contracts? _____ Yes _____ No. If yes, provide a notarized statement from the holder of the lien, deed of trust, mortgage or contract agreeing to the proposed changes.
   c. Describe the affect on the land now irrigated if the place of use is changed pursuant to this transfer:
   _____
   _____
   _____
   _____
   d. Remarks:
   _____
   _____
   _____

ACTION OF THE DIRECTOR, DEPARTMENT OF WATER RESOURCES

This is to certify that I have examined Application for Transfer of Water Rights No. _____

And the said application is hereby _____, subject to the following conditions:

_____

_____

_____

_____

_____

_____

_____

_____

Witness my hand this _____ day of _____ , 20 _____.

_____
For the Director

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

APPLICATION FOR TRANSFER OF WATER RIGHT
PART 2
(Attach one copy for each right)

A. DESCRIPTION OF RIGHT AS RECORDED

1. Right as evidenced by:
   a. Decree No. _____ Decreed to _____
      in case of _____ vs. _____
      dated _____ in _____ county of _____
   b. License No. _____ issued by the Idaho Department of Water Resources.
   c. Claim No. _____ on file with the Idaho Department of Water Resources.
   d. Transfer No. _____which produced this right.
2. Attach copy of last year's tax notice for the property to which the water right is appurtenant or other documents which show ownership. Label document as attachment A. Check appropriate box below:

   ☐ Tax Notice ☐ Warranty Deed ☐ Other _____

3. Source of water_____ tributary to _____
4. Date or priority _____
5. Water is used for the following purposes:

   amount_____ for _____purposes from _____ to _____
   (cfs/ac-ft)
   amount_____ for _____purposes from _____ to _____
   (cfs/ac-ft)
   amount_____ for _____purposes from _____ to _____
   (cfs/ac-ft)

6. Total amount of water under right _____ cubic feet per second and/or _____ acre-feet per annum.
7. Point(s) of Diversion:

Lot	¼	¼	¼	Sec	Twp	Rge	County	Local name for diversion

8. Lands irrigated or place of use:

Twp	Rge	Sec	NE ¼				NW ¼				SW ¼				SE ¼				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

Total Acres _____

9. Describe any other water rights used for the same purpose as described above _____
   _____

PART 2

10. To your knowledge, has any portion of this water right undergone a period of five or more consecutive years of non-use?

_____ If yes, describe _____

B. DESCRIPTION OF PORTION OF RIGHT BEING TRANSFERRED

(If the entire right is to be changed by the applicant, omit part B and C.)

1. amount_____ for _____purposes from _____ to _____ (cfs/ac-ft)
   amount_____ for _____purposes from _____ to _____ (cfs/ac-ft)
   amount_____ for _____purposes from _____ to _____ (cfs/ac-ft)

2. Point(s) of Diversion:

Lot	¼	¼	¼	Sec	Twp	Rge	County	Local name for diversion

3. Lands irrigated or place of use:

Twp	Rge	Sec	NE ¼				NW ¼				SW ¼				SE ¼				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

Total Acres _____

C. DESCRIPTION OF UNCHANGED PORTION OF RIGHT *(omit if there is no change)*

1. amount_____ for _____purposes from _____ to _____ (cfs/ac-ft)
   amount_____ for _____purposes from _____ to _____ (cfs/ac-ft)
   amount_____ for _____purposes from _____ to _____ (cfs/ac-ft)

2. Point(s) of Diversion:

Lot	¼	¼	¼	Sec	Twp	Rge	County	Local name for diversion

3. Lands irrigated or place of use:

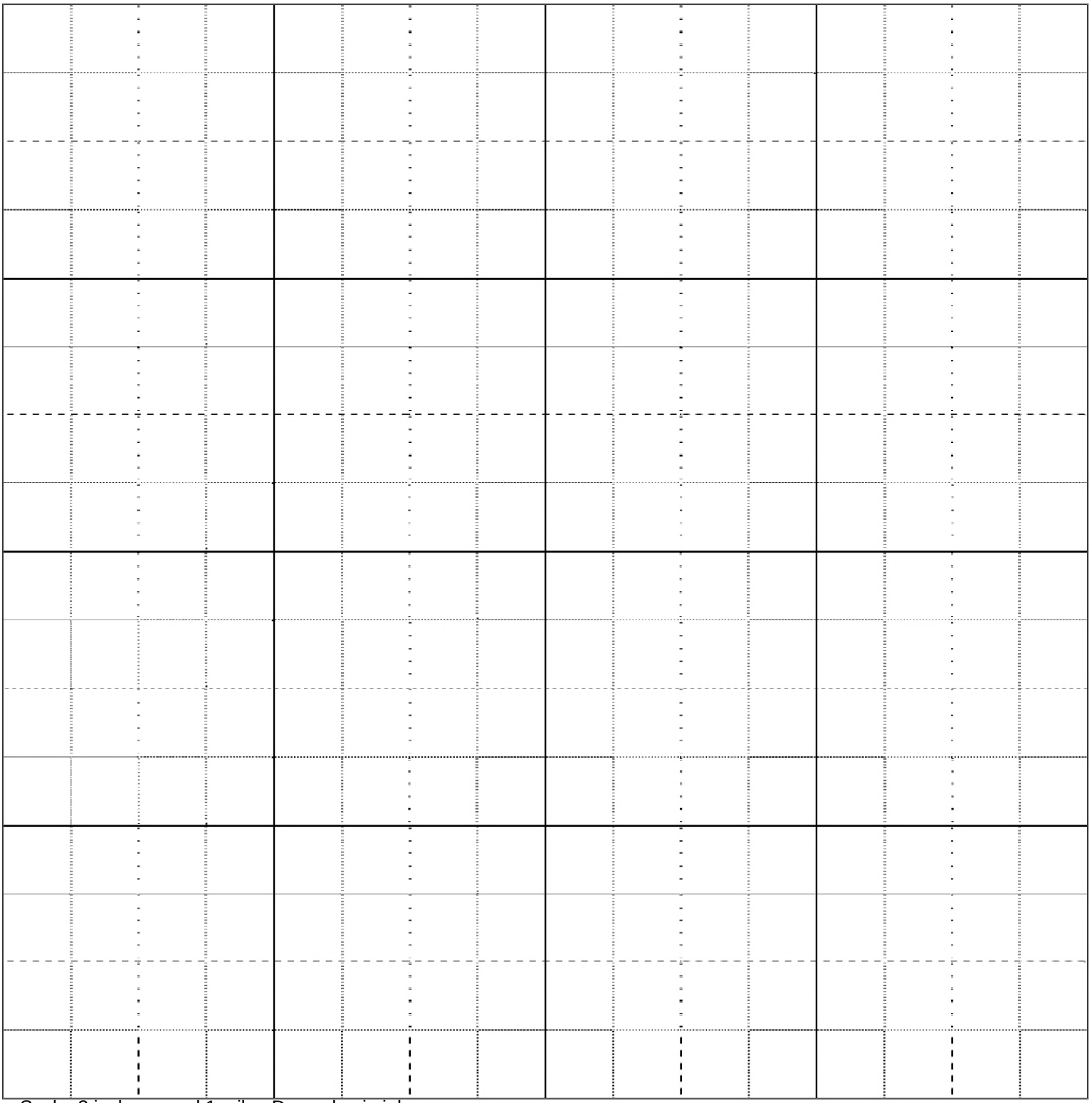
Twp	Rge	Sec	NE ¼				NW ¼				SW ¼				SE ¼				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

Transfer No. _____
Total Acres _____

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

APPLICATION FOR TRANSFER OF WATER RIGHT
PART 3

A. Draw a map or attach a USGS map indicating the new point(s) of diversion and/or the new place of use for the rights described in part 1. Clearly depict the land by section, township and range number.



Scale: 2 inches equal 1 mile. Draw plan in ink.

PART 3

B. CHANGES IN NATURE OF USE

1.

New Nature of Use	Amount(cfs/af-ft)	Hours/days/year	Period of Use
_____	_____	_____	_____ to _____
_____	_____	_____	_____ to _____

2. Quantity and quality of return flows and location of discharge: _____

_____

_____

3. Describe effects on other water uses resulting from the proposed change:

_____

_____

_____

_____

I hereby assert that no one will be injured by such change and that the change does not constitute an enlargement in use of the original right. The information contained in this application is true to the best of my knowledge.

I understand that any willful misrepresentations made in this application may result in voiding its approval.

_____ _____

(Signature of Applicant) Print Name (and title, if applicable)

Subscribed and sworn to before me this _____ day of _____ , 20 _____.

_____

(Notary Public)

My commission expires _____

FOR DEPARTMENT USE ONLY

Transfer contains _____ pages and _____ attachments

Received by _____ Date _____ Protest filed by _____

Prelim. Check by _____ Fee _____ _____

Receipted by _____ Date _____ _____

Published in _____ Copies of protest forwarded by _____

Pub. Dates _____ Hearing held by _____ Date _____

Watermaster recommendations requested on _____ Recommended for ☐ approval ☐ denial

_____ received _____ by _____

Copy of transfer sent to lien holder _____

APPENDIX L
WATER RIGHT OWNERSHIP TRANSFER APPLICATION

Form 42-248/42-1409(6) 10/07

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
NOTICE OF CHANGE IN WATER RIGHT OWNERSHIP

Please print or type. Attach pages with additional information. Instructions are included at the end of this form. Incomplete forms will be returned.

1. Please list the water right number(s) and/or adjudication claim number(s) (if any) for each water right to be changed. List just the adjudication claim number if there is no corresponding water right record on file with the department. Indicate, by checking in the space provided (under the "split" heading), if the change in ownership is limited to a portion of a water right in which case IDWR will produce new water right number(s) for the split(s).

Water Right No(s).	Adjudication Claim No(s).	Split(s)	Water Right No(s).	Adjudication Claim No(s).	Split(s)

2. The following **REQUIRED** information must be submitted with this form:

   A. The appropriate **FILING FEE**. See instructions for fee amounts.

   B. A copy of the most recent **DEED, TITLE POLICY, CONTRACT OF SALE** or other legal document indicating your ownership of the property and water right(s) or claim(s) in question, **WITH ATTACHED LEGAL DESCRIPTION**.

   C. Either of the following (if necessary to clarify division of water rights or other complex property descriptions):
   PLAT OF PROPERTY or **SURVEY MAP** clearly showing the location of the point(s) of diversion and place of use of your water right(s) and/or adjudication claim(s) (these are on file with the county Planning and Zoning or Recorder's Office).

   OR

   D. If your water right(s) and/or adjudication claim(s) is for ten or more acres of irrigation, you must submit a USDA Farm Service Agency or equivalent **AERIAL PHOTO** with the irrigated acres outlined and point(s) of diversion clearly marked. The AERIAL PHOTO should be submitted in place of the PLAT OF PROPERTY or SURVEY MAP.

3. Name and Address of Former Owner/Claimant(s) _____

   _____

   _____

4. New Owner/Claimant(s) _____

   Name Connector (Check one): [ ] and, [ ] or, [ ] and/or

   New Mailing Address _____

   City, State and ZIP Code _____

   New Telephone Number ( )_____ Email: _____

5. Date you acquired the property _____

6. **If the change in ownership affects the entire water right for each water right or adjudication claim number listed in line 1, then skip this line and go to line 7.** If the change in ownership divides the water right(s) among multiple owners, you must describe, in detail, your portion of each water right after the change. Fill in the appropriate spaces in the box(es) below to describe your water right(s) after the change (you may copy this page, if necessary). If your quantity of water is greater than a proportionate split, you must attach documentation to show justification for a larger amount. If you are not sure how to identify your portion of the original water right or adjudication claim records, please contact the nearest IDWR office for assistance.

DESCRIPTION OF YOUR PORTION OF WATER RIGHT
(If the right will not be split, skip this area and proceed to line 7)

Water Use	**Diversion Rate or Volume** (cubic feet per second or acre-feet per annum)	**Description** (acres, number and type of stock, homes, etc)
Water Right and/or Adjudication Claim Number _____		
Irrigation		
Stock		
Domestic		
Other		
Totals		
Water Right and/or Adjudication Claim Number _____		
Irrigation		
Stock		
Domestic		
Other		
Totals		
Water Right and/or Adjudication Claim Number _____		
Irrigation		
Stock		
Domestic		
Other		
Totals		

For Snake River Basin Adjudication Claims: Please attach a Notice of Appearance completed by your attorney, if you wish IDWR to correspond with him/her for all matters related to your claims.

7. **Signature(s) of New Owner(s) or Claimant(s)**_____, _____
(title if applicable)
_____, _____
(title if applicable)

IT IS IMPORTANT TO FILE THIS COMPLETED FORM AT THE APPROPRIATE IDWR OFFICE, WITH PAYMENT OF THE FILING FEE AND THE OWNERSHIP DOCUMENT(S), AS REFERRED TO IN LINE 2.

For IDWR Office Use Only:

Received by _____ Date _____ Receipt Amt. _____
Receipted by _____ Date _____ Receipt No. _____
Processed by _____AJ Date _____ WR _____ Date _____

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

INSTRUCTIONS FOR FILING
NOTICE OF CHANGE IN WATER RIGHT OWNERSHIP

This form has been prepared to assist all claimants and owners of water rights to comply with the requirements of Sections 42-248 and 42-1409(6), Idaho Code. All claimants and owners of water rights are required to notify the Department of Water Resources (IDWR) of any change in mailing address or change in ownership of all or part of a water right. In addition, all purchasers of water rights within a pending general adjudication area must inquire whether a notice of claim has been filed and, if not, shall file a notice of claim if necessary. Please attach additional sheets to the form if you require additional space to describe or explain any of the questions on the form.

Effective July 1, 2000, the Idaho Legislature amended Section 42-248, Idaho Code to include a provision for fees to file a Notice of Change in Water Right Ownership. Please see details at Line 8, below, to determine if fees are required for your filing.

Separate brochures are available from IDWR describing the adjudication of water rights and the requirement to notify IDWR of changes in ownership. Please contact your nearest IDWR office if you would like more information or need help completing this form (a list of our offices are listed on page 2 of these instructions), or call 1-800-451-4129. Water right information can be found on the Department's website using the "On-Line Data" search at: **www.idwr.idaho.gov**.

LINE INSTRUCTIONS:

1. If there are water rights associated with the property, **the seller should be able to provide you with the water right or adjudication claim number(s)**. Corresponding water right and adjudication claim numbers should be listed next to each other on the form. You may have purchased only a portion of the water right(s) held by the seller. If so, the water right(s) held by the seller may need to be "split" to provide you your share of each right. Indicate if a split is required by checking in the space provided next to each water right.

If you receive water from a municipal provider, an irrigation district or other water delivery organization, where the water rights are held by the organization, please do not use this form to record a change. You may need to contact the water delivery organization to determine if any action is necessary.

If you or the seller believes there are water rights for the property but the numbers are unknown, you may wish to contact IDWR for assistance in identifying the water rights for the property in question. If adjudication claims for the rights are required and have not been filed, IDWR will so advise you.

2. IDWR cannot process this change without documentation of ownership. The preferred types of documentation are listed. Contact IDWR if you have difficulty obtaining this information. **Do not** obtain a new survey for purposes of this form before contacting IDWR.

3. Please provide the name and address of the former owner/claimant(s) of the water right(s).

4. Enter the name, mailing address, and telephone numbers of the new owner/claimant(s) and indicate the relationship between multiple owners by using the connector "and", "or", or "and/or"as indicated on your deed or other evidence of ownership

5. Provide the date the property in question was acquired. This may be the date of "closing" in the case of a real estate transaction or the date of court order for other types of ownership changes.

6. You may have purchased only a portion of the water right(s) held by the seller. If this change in ownership divides the water right(s) among multiple owners, you must describe, in detail, your portion of each water right after the change. For each water right requiring a split between owners, fill in the appropriate spaces. Copy the page as many times as necessary to fully describe each water right after the change. Include documentation as necessary to describe nonstandard agreements or arrangements regarding division of the water right(s). **If the water right(s) will not be split, skip line 6 and go to line 7**.

7. The new owner(s) must sign the form in the space(s) provided. If someone other than the owner signs the notice, evidence of authority to sign for the owner must be attached. If the new owner is a corporation or other organization, the person signing the notice must be an officer of the corporation or otherwise have authority to sign for the organization and must include their title with the signature.

8. The Legislature has waived the fee to file a Notice of Change in Water Right Ownership for any water right pending in a general water right adjudication such as the Snake River Basin Adjudication. This waiver ends when a partial decree is issued for the water right that has been claimed. For water rights not pending in a general adjudication, the filing fee is $25 per water right, except for those water rights that will be divided as a result of the change in ownership. The filing fee for division of a water right is $100 per water right to be divided.

9. When complete, retain a copy and **file the original form with the IDWR office nearest you, with copies of your ownership documents and the appropriate filing fee**:

IDWR Northern Region
7600 Mineral Dr., Suite 100
Coeur d'Alene, ID 83815
(208) 762-2800

IDWR Western Region
2735 Airport Way
Boise, ID 83705-5082
(208) 334-2190

IDWR Eastern Region
900 N. Skyline Dr., Suite A
Idaho Falls, ID 83402-1718
(208) 525-7161

IDWR Southern Region
1341 Fillmore St., Suite 200
Twin Falls, ID 83301-3380
(208) 736-3033

- OR -

IDWR State Office
322 East Front St
Sixth Floor
P.O. Box 83720
Boise, ID 83720-0098
(208) 287-4800

APPENDIX M
POTENTIAL FOR NEW WATER RIGHTS CONVERSATIONS

1. IDWR Conversation

2. Garden City Water Rights Email

FORSGREN Associates Inc.

RECORD OF PHONE CONVERSATION

Date: **March 5, 2008**
Time: **4:45 p.m.**

Person(s) Speaking: **Kevin Harris - Forsgren Associates**
Jan Shurte - Idaho Department of Water Resources

Project: **Garden City WMP**
Subject: **Water Rights in the Treasure Valley**

CONVERSATION DETAILS:
This telephone conversation was placed to determine the status of municipalities obtaining new groundwater rights in the Treasure Valley Area. Ms. Shurte from IDWR informed me that there has been a moritorium on new rights since 1996 that has recently been lifted to allow municipalities to apply for new water rights. IDWR has started to process applications that were submitted before and during the moritorium.

I asked what the time frame would be to getting a right after application is made. Ms. Shurte estimated that the time frame would probably be around one year after the application is made.

I asked if she had a feel for the price of purchasing water rights in the Ada County area. She told me that she has heard of $3,000 to $5,000 per inch.

From: Shurte, Jan [Jan.Shurte@idwr.idaho.gov]
Sent: Wednesday, March 05, 2008 3:54 PM
To: Kevin Harris
Subject: City of Garden City claim questions

Kevin,

Here is the information we discussed concerning the three City of Garden City water rights:

63-5330 – This right was recommended as disallowed in the Snake River Basin Adjudication (SRBA) in December 2006. The objection deadline was June 2007. However, you can still file a Late Objection with the SRBA Court in Twin Falls. You can do this by completing an objection form and sending it along with a letter requesting a Motion to file the late objection to the court. See the Court's webpage for this form and all the forms spoke of in this email. SRBA webpage is http://www.srba.state.id.us . It appears this right was disallowed due to lack of evidence of priority being submitted for the claim. Evidence of priority is evidence of the date of the first use of the water as claimed on the right.

63-8357 – This right needs to have an SRBA claim filed. For some reason it was missed during the claims filing in approximately 1990. There is a Motion to file a Late Notice of Claim on the court's webpage with instructions.

63-9144 – This is the right in the name of Shenandoah Park Investors. This right has been decreed. If the City of Garden City purchased the land, then they need to file a Change of Ownership form for this right. This form can be found on the Department's webpage.

Hope this helps with your report and research. If you have any questions, please feel free to call.

Jan Shurte

Adjudication Supervisor

Western Regional Office

2735 Airport Way

Boise, ID 83705

(208) 888-4534

APPENDIX N
ENGINEER'S OPINION OF PROBABLE COST

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement-1,000 feet of 10 inch with Street Replacment — Date: 24-Apr-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1	☑	MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	5	%		$ 19,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 8,000
4		**Subtotal**				**$ 27,000**
5	☑	Road Replacement				
6		Clear and Grub	1	LS	$1,022	$ 1,022
7		Excavation Above Subgrade	2,797	CY	$11	$ 30,767
8		Unsuitable Material Excavation	620	CY	$15	$ 9,300
9		Removal of Obstructions	1	LS	$8,670	$ 8,670
10		12" PVC Storm Drain	200	LF	$27	$ 5,400
11		15" PVC Storm Drain	461	LF	$30	$ 13,830
12		24" PVC Storm Drain	38	LF	$72	$ 2,736
13		12" C900, DR-18, PVC Pipe	70	LF	$44	$ 3,080
14		12" C905, DR-18, PVC Pipe	31	LF	$55	$ 1,705
15		48" Storm Drain Catch MH	2	EA	$2,100	$ 4,200
16		St. Inlet Catch Basin, Type I	5	EA	$804	$ 4,020
17		St. Inlet Catch Basin, Type III	2	EA	$804	$ 1,608
18		Precast Sediment Box - 1000 gal	2	EA	$2,668	$ 5,336
19		Concrete Irrigation Box (4'x4')	4	EA	$1,900	$ 7,600
20		6" Concrete Vertical Curb (no gutter)	35	LF	$20	$ 700
21		Stan. 6" Vertical Curb & Gutter	1,207	LF	$10	$ 12,070
22		Concrete Valley Gutters	3,527	SF	$5	$ 17,635
23		Concrete Sidewalks, 4" thickness	539	SY	$32	$ 17,248
24		Concrete Driveway Approach	81	SY	$37	$ 2,997
25		Concrete Repair	1	SY	$18	$ 18
26		6" Minus Uncrushed Aggregate Base	1,879	TN	$12	$ 22,548
27		3/4" Minus Crushed Gravel	1,250	TN	$16	$ 20,000
28		3" Thick Asphalt Pavement	567	TN	$56	$ 31,752
29		Traffic Control Signs	187	SF	$8	$ 1,496
30		Terminus Barricade, Type III	3	EA	$94	$ 282
31		7' Term. Sec. Jersey Barrier	2	EA	$275	$ 550
32		10' Concrete Jersey Barrier	1	EA	$473	$ 473
33		Reflect Pavement Markers	148	SF	$11	$ 1,628
34		Traffic Sign Installation (one metal post)	4	EA	$79	$ 316
35		Roadside Sign Face	26	SF	$10	$ 260
36		Manhole, Adjust to grade	3	EA	$365	$ 1,095
37		Adjust Monitor Well to grade	2	EA	$288	$ 576
38		Remove Traffic Sign	2	EA	$79	$ 158
39		Modified Driveway Approach	10	EA	$670	$ 6,700
40		Combination Sidewalk/Retaining Wall	41	SY	$82	$ 3,362
41		Connect Pipe to Existing Structure	1	EA	$850	$ 850
42		Modify Inlet	1	EA	$683	$ 683
43		Asphalt Driveway Repair	826	SY	$24	$ 19,824
44		Gravel Driveway Repair	31	SY	$16	$ 496
45		Mailbox remove/Reset	5	EA	$132	$ 660
46		Adjust Sprinkler System	202	LF	$13	$ 2,626
47		Remove Tree (6+")	1	EA	$365	$ 365
48		Abandon Existing Seepage Bed	3	EA	$830	$ 2,490
49		Stabilized Constuction Entrance	2	EA	$1,420	$ 2,840
50		Curb Inlet Sediment Barrier	8	EA	$99	$ 792
51		**Subtotal**				**$ 273,000**
52	☐	Sewer Replacement				
53		Trenching	870	LF	$35	$ -
54		Type P Surface Res (asphalt roadway)	1,667	SY	$37	$ -
55		CCTV Inspection 8"	870	LF	$2	$ -
56		Sanitary Sewer Manhole - Type A	3	EA	$2,899	$ -
57		Replace Sewer Pipe-8" PVC	870	LF	$19	$ -
58		Replace Sewer Pipe-4" PVC	168	LF	$42	$ -
59		Replace Sewer Pipe-6" PVC	105	LF	$45	$ -

60		Remove Manhole	3	EA	$959	$	-
61		Rechannel Manhole (new pipe connection)	1	EA	$2,011	$	-
62		Sewage Flow Control	1	LS	$5,850	$	-
63		**Subtotal**				**$**	**-**
64	☑	Water Line Replacement					
65		Type P Surface Res (asphalt roadway)	1,667	SY	$27	$	-
66		Water Main Pipe	1,000	LF	$46	$	46,000
67		Water Main Pipe 4" PVC	150	LF	$23	$	3,450
68		Water Main Fittings- cross w reducers	1	EA	$3,000	$	3,000
69		Water Main Fittings- tee w reducers	1	EA	$1,785	$	1,785
70		Water Main Fittings- tee	7	EA	$662	$	4,634
71		Valve (large gate valve)	2	EA	$1,811	$	3,622
72		Valve (small gate valve)	7	EA	$575	$	4,025
73		Hydrant with Storz Adapter	3	EA	$3,300	$	9,900
74		Water Service Connection-2 inch	12	EA	$1,000	$	12,000
75		**Subtotal**				**$**	**88,000**
76	☑	Abandonment of Existing Water Line					
77		Existing Fire Hydrants	2	EA	$575	$	1,150
78		Existing Water Valves	2	EA	$400	$	800
79		Existing Water Services	12	EA	$210	$	2,520
80		Water Line Connection - to Major Street	1	LS	$2,100	$	2,100
81		Water Line Connection - to Medium Street	1	LS	$2,150	$	2,150
82		Reconnection of Existing Fire Services	3	EA	$520	$	1,560
83		Interim Water Service	1	LS	$7,300	$	7,300
84		**Subtotal**				**$**	**18,000**
85		**TOTAL CONSTRUCTION COSTS**					
86		SUBTOTAL CONSTRUCTION COST				**$**	**406,000**
87		Confidence Factor	80%	%		**$**	**81,000**
88		**TOTAL CONSTRUCTION COST**				**$**	**487,000**
ENGINEERING & CONSTRUCTION OBSERVATION							
1		Design Services	9%	%			40,000
2		Bid Services	10%	%			5,000
3		Construction Observation/Inspection	9%	%			40,000
4		Post Construction Services	1.5%	%			7,000
		SUBTOTAL OTHER PROJECT COSTS					92,000
OTHER PROJECT COSTS							
1		PER/Facility Planning Study					-
2		Water Sampling and Testing					-
3		Pilot Testing					-
4		Equipment Preselection Support					-
5		Legal/Bonding & Audit					500
6		Surveying					1,250
7		Geotechnical Investigation					1,250
8		Contract Administration and Funding Support	1.00%	%			5,000
9		SUBTOTAL OTHER PROJECT COSTS					8,000
PROJECT CONTINGENCY							
1		Contingency on project costs	5.00%	%			20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$**	**607,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement - 1,000 feet of 10 inch pipe — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 2,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 2,000
4		**Subtotal**				**$ 4,000**
5		FITTINGS				
6		8x6 Tee		EACH	$1,000	$ -
7		10 and Larger Tee	2	EACH	$1,320	$ 2,640
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	2	EACH	$1,250	$ 2,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	24	EACH	$500	$ 12,000
15		**Subtotal**				**$ 17,000**
16	00200	PIPE				
17		Abandon Water Mains	1,000	LF	$2	$ 2,000
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation		LF	$12	$ -
22		10 inch dia C900 PVC Distribution Main, material and installation	1,000	LF	$14	$ 14,000
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 16,000**
29	00200	EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	1,000	LF	$20	$ 20,000
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 20,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	2	EACH	$3,500	$ 7,000
40		Fire Hydrants	1	EACH	$3,500	$ 3,500
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	24	EACH	$500	$ 12,000
43		Stops and Saddles	24	EACH	$200	$ 2,880
44		**Subtotal**				**$ 25,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	1350	SY	$20	$ 27,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 27,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	12	EACH	$1,500	$ 18,000
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	$20,000	$ -
73		Dust Control		EACH	$15,000	$ -
74		Sanitary Facility		EACH	$5,000	$ -
75		**Subtotal**				**$ 21,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 130,000**
78		Confidence Factor			75%	**$ 33,000**
79		**TOTAL CONSTRUCTION COST**				**$ 163,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				10,000
2		Bid Services				2,000
3		Construction Observation/Inspection				10,000
4		Post Construction Services				2,000
		SUBTOTAL OTHER PROJECT COSTS				24,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			2,000
		SUBTOTAL OTHER PROJECT COSTS				5,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		10,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 202,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement-1,000 feet of 12 inch with Street Replacment — Date: 24-Apr-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1	☑	MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	5	%		$ 19,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 8,000
4		**Subtotal**				**$ 27,000**
5	☑	Road Replacement				
6		Clear and Grub	1	LS	$1,022	$ 1,022
7		Excavation Above Subgrade	2,797	CY	$11	$ 30,767
8		Unsuitable Material Excavation	620	CY	$15	$ 9,300
9		Removal of Obstructions	1	LS	$8,670	$ 8,670
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13		12" C900, DR-18, PVC Pipe	70	LF	$44	$ 3,080
14		12" C905, DR-18, PVC Pipe	31	LF	$55	$ 1,705
15		48" Storm Drain Catch MH	2	EA	$2,100	$ 4,200
16		St. Inlet Catch Basin, Type I	5	EA	$804	$ 4,020
17		St. Inlet Catch Basin, Type III	2	EA	$804	$ 1,608
18		Precast Sediment Box - 1000 gal	2	EA	$2,668	$ 5,336
19		Concrete Irrigation Box (4'x4')	4	EA	$1,900	$ 7,600
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21		Stan. 6" Vertical Curb & Gutter	1,207	LF	$10	$ 12,070
22		Concrete Valley Gutters	3,527	SF	$5	$ 17,635
23		Concrete Sidewalks, 4" thickness	539	SY	$32	$ 17,248
24		Concrete Driveway Approach	81	SY	$37	$ 2,997
25		Concrete Repair	1	SY	$18	$ 18
26		6" Minus Uncrushed Aggregate Base	1,879	TN	$12	$ 22,548
27		3/4" Minus Crushed Gravel	1,250	TN	$16	$ 20,000
28		3" Thick Asphalt Pavement	567	TN	$56	$ 31,752
29		Traffic Control Signs	187	SF	$8	$ 1,496
30		Terminus Barricade, Type III	3	EA	$94	$ 282
31		7' Term. Sec. Jersey Barrier	2	EA	$275	$ 550
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33		Reflect Pavement Markers	148	SF	$11	$ 1,628
34		Traffic Sign Installation (one metal post)	4	EA	$79	$ 316
35		Roadside Sign Face	26	SF	$10	$ 260
36		Manhole, Adjust to grade	3	EA	$365	$ 1,095
37		Adjust Monitor Well to grade	2	EA	$288	$ 576
38		Remove Traffic Sign	2	EA	$79	$ 158
39		Modified Driveway Approach	10	EA	$670	$ 6,700
40		Combination Sidewalk/Retaining Wall	41	SY	$82	$ 3,362
41		Connect Pipe to Existing Structure	1	EA	$850	$ 850
42		Modify Inlet	1	EA	$683	$ 683
43		Asphalt Driveway Repair	826	SY	$24	$ 19,824
44		Gravel Driveway Repair	31	SY	$16	$ 496
45		Mailbox remove/Reset	5	EA	$132	$ 660
46		Adjust Sprinkler System	202	LF	$13	$ 2,626
47		Remove Tree (6+")	1	EA	$365	$ 365
48		Abandon Existing Seepage Bed	3	EA	$830	$ 2,490
49		Stabilized Constuction Entrance	2	EA	$1,420	$ 2,840
50		Curb Inlet Sediment Barrier	8	EA	$99	$ 792
51		**Subtotal**				**$ 273,000**
52	☐	Sewer Replacement				
53		Trenching	870	LF	$35	$ -
54		Type P Surface Res (asphalt roadway)	1,667	SY	$37	$ -
55		CCTV Inspection 8"	870	LF	$2	$ -
56		Sanitary Sewer Manhole - Type A	3	EA	$2,899	$ -
57		Replace Sewer Pipe-8" PVC	870	LF	$19	$ -
58		Replace Sewer Pipe-4" PVC	168	LF	$42	$ -
59		Replace Sewer Pipe-6" PVC	105	LF	$45	$ -

60		Remove Manhole	3	EA	$959	$	-
61		Rechannel Manhole (new pipe connection)	1	EA	$2,011	$	-
62		Sewage Flow Control	1	LS	$5,850	$	-
63		**Subtotal**				**$**	**-**
64	☑	Water Line Replacement					
65		Type P Surface Res (asphalt roadway)	1,667	SY	$27	$	-
66		Water Main Pipe	1,000	LF	$48	$	48,000
67		Water Main Pipe 4" PVC	150	LF	$23	$	3,450
68		Water Main Fittings- cross w reducers	1	EA	$3,000	$	3,000
69		Water Main Fittings- tee w reducers	1	EA	$1,785	$	1,785
70		Water Main Fittings- tee	7	EA	$662	$	4,634
71		Valve (large gate valve)	2	EA	$1,811	$	3,622
72		Valve (small gate valve)	7	EA	$575	$	4,025
73		Hydrant with Storz Adapter	3	EA	$3,300	$	9,900
74		Water Service Connection-2 inch	12	EA	$1,000	$	12,000
75		**Subtotal**				**$**	**90,000**
76	☑	Abandonment of Existing Water Line					
77		Existing Fire Hydrants	2	EA	$575	$	1,150
78		Existing Water Valves	2	EA	$400	$	800
79		Existing Water Services	12	EA	$210	$	2,520
80		Water Line Connection - to Major Street	1	LS	$2,100	$	2,100
81		Water Line Connection - to Medium Street	1	LS	$2,150	$	2,150
82		Reconnection of Existing Fire Services	3	EA	$520	$	1,560
83		Interim Water Service	1	LS	$7,300	$	7,300
84		**Subtotal**				**$**	**18,000**
85		**TOTAL CONSTRUCTION COSTS**					
86		SUBTOTAL CONSTRUCTION COST				**$**	**408,000**
87		Confidence Factor	80%	%		**$**	**82,000**
88		**TOTAL CONSTRUCTION COST**				**$**	**490,000**
ENGINEERING & CONSTRUCTION OBSERVATION							
1		Design Services	9%	%			40,000
2		Bid Services	10%	%			5,000
3		Construction Observation/Inspection	9%	%			40,000
4		Post Construction Services	1.5%	%			7,000
		SUBTOTAL OTHER PROJECT COSTS					92,000
OTHER PROJECT COSTS							
1		PER/Facility Planning Study					-
2		Water Sampling and Testing					-
3		Pilot Testing					-
4		Equipment Preselection Support					-
5		Legal/Bonding & Audit					500
6		Surveying					1,250
7		Geotechnical Investigation					1,250
8		Contract Administration and Funding Support	1.00%	%			5,000
9		SUBTOTAL OTHER PROJECT COSTS					8,000
PROJECT CONTINGENCY							
1		Contingency on project costs	5.00%	%			20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$**	**610,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement - 1,000 feet of 12 inch pipe — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 2,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 2,000
4		**Subtotal**				**$ 4,000**
5		FITTINGS				
6		8x6 Tee		EACH	$1,000	$ -
7		10 and Larger Tee	2	EACH	$1,320	$ 2,640
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	2	EACH	$1,250	$ 2,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	24	EACH	$500	$ 12,000
15		**Subtotal**				**$ 17,000**
16		PIPE				
17		Abandon Water Mains	1,000	LF	$2	$ 2,000
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation		LF	$12	$ -
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation	1,000	LF	$16	$ 16,000
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 18,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	1,000	LF	$20	$ 20,000
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 20,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	2	EACH	$3,500	$ 7,000
40		Fire Hydrants	1	EACH	$3,500	$ 3,500
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	24	EACH	$500	$ 12,000
43		Stops and Saddles	24	EACH	$200	$ 2,880
44		**Subtotal**				**$ 25,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	1350	SY	$20	$ 27,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 27,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	12	EACH	$1,500	$ 18,000
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 21,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 132,000**
78		Confidence Factor			75%	**$ 33,000**
79		**TOTAL CONSTRUCTION COST**				**$ 165,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				10,000
2		Bid Services				2,000
3		Construction Observation/Inspection				10,000
4		Post Construction Services				2,000
		SUBTOTAL OTHER PROJECT COSTS				24,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			2,000
		SUBTOTAL OTHER PROJECT COSTS				5,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		10,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 204,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement-1,000 feet of 16 inch with Street Replacment — Date: 24-Apr-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1	☑	MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	5	%		$ 19,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 8,000
4		**Subtotal**				**$ 27,000**
5	☑	Road Replacement				
6		Clear and Grub	1	LS	$1,022	$ 1,022
7		Excavation Above Subgrade	2,797	CY	$11	$ 30,767
8		Unsuitable Material Excavation	620	CY	$15	$ 9,300
9		Removal of Obstructions	1	LS	$8,670	$ 8,670
10		12" PVC Storm Drain	200	LF	$27	$ 5,400
11		15" PVC Storm Drain	461	LF	$30	$ 13,830
12		24" PVC Storm Drain	38	LF	$72	$ 2,736
13		12" C900, DR-18, PVC Pipe	70	LF	$44	$ 3,080
14		12" C905, DR-18, PVC Pipe	31	LF	$55	$ 1,705
15		48" Storm Drain Catch MH	2	EA	$2,100	$ 4,200
16		St. Inlet Catch Basin, Type I	5	EA	$804	$ 4,020
17		St. Inlet Catch Basin, Type III	2	EA	$804	$ 1,608
18		Precast Sediment Box - 1000 gal	2	EA	$2,668	$ 5,336
19		Concrete Irrigation Box (4'x4')	4	EA	$1,900	$ 7,600
20		6" Concrete Vertical Curb (no gutter)	35	LF	$20	$ 700
21		Stan. 6" Vertical Curb & Gutter	1,207	LF	$10	$ 12,070
22		Concrete Valley Gutters	3,527	SF	$5	$ 17,635
23		Concrete Sidewalks, 4" thickness	539	SY	$32	$ 17,248
24		Concrete Driveway Approach	81	SY	$37	$ 2,997
25		Concrete Repair	1	SY	$18	$ 18
26		6" Minus Uncrushed Aggregate Base	1,879	TN	$12	$ 22,548
27		3/4" Minus Crushed Gravel	1,250	TN	$16	$ 20,000
28		3" Thick Asphalt Pavement	567	TN	$56	$ 31,752
29		Traffic Control Signs	187	SF	$8	$ 1,496
30		Terminus Barricade, Type III	3	EA	$94	$ 282
31		7' Term. Sec. Jersey Barrier	2	EA	$275	$ 550
32		10' Concrete Jersey Barrier	1	EA	$473	$ 473
33		Reflect Pavement Markers	148	SF	$11	$ 1,628
34		Traffic Sign Installation (one metal post)	4	EA	$79	$ 316
35		Roadside Sign Face	26	SF	$10	$ 260
36		Manhole, Adjust to grade	3	EA	$365	$ 1,095
37		Adjust Monitor Well to grade	2	EA	$288	$ 576
38		Remove Traffic Sign	2	EA	$79	$ 158
39		Modified Driveway Approach	10	EA	$670	$ 6,700
40		Combination Sidewalk/Retaining Wall	41	SY	$82	$ 3,362
41		Connect Pipe to Existing Structure	1	EA	$850	$ 850
42		Modify Inlet	1	EA	$683	$ 683
43		Asphalt Driveway Repair	826	SY	$24	$ 19,824
44		Gravel Driveway Repair	31	SY	$16	$ 496
45		Mailbox remove/Reset	5	EA	$132	$ 660
46		Adjust Sprinkler System	202	LF	$13	$ 2,626
47		Remove Tree (6+")	1	EA	$365	$ 365
48		Abandon Existing Seepage Bed	3	EA	$830	$ 2,490
49		Stabilized Constuction Entrance	2	EA	$1,420	$ 2,840
50		Curb Inlet Sediment Barrier	8	EA	$99	$ 792
51		**Subtotal**				**$ 273,000**
52	☐	Sewer Replacement				
53		Trenching	870	LF	$35	$ -
54		Type P Surface Res (asphalt roadway)	1,667	SY	$37	$ -
55		CCTV Inspection 8"	870	LF	$2	$ -
56		Sanitary Sewer Manhole - Type A	3	EA	$2,899	$ -
57		Replace Sewer Pipe-8" PVC	870	LF	$19	$ -
58		Replace Sewer Pipe-4" PVC	168	LF	$42	$ -
59		Replace Sewer Pipe-6" PVC	105	LF	$45	$ -

60		Remove Manhole	3	EA	$959	$	-
61		Rechannel Manhole (new pipe connection)	1	EA	$2,011	$	-
62		Sewage Flow Control	1	LS	$5,850	$	-
63		**Subtotal**				**$**	**-**
64	☑	Water Line Replacement					
65		Type P Surface Res (asphalt roadway)	1,667	SY	$27	$	-
66		Water Main Pipe	1,000	LF	$56	$	56,000
67		Water Main Pipe 4" PVC	150	LF	$23	$	3,450
68		Water Main Fittings- cross w reducers	1	EA	$3,000	$	3,000
69		Water Main Fittings- tee w reducers	1	EA	$1,785	$	1,785
70		Water Main Fittings- tee	7	EA	$662	$	4,634
71		Valve (large gate valve)	2	EA	$1,811	$	3,622
72		Valve (small gate valve)	7	EA	$575	$	4,025
73		Hydrant with Storz Adapter	3	EA	$3,300	$	9,900
74		Water Service Connection-2 inch	12	EA	$1,000	$	12,000
75		**Subtotal**				**$**	**98,000**
76	☑	Abandonment of Existing Water Line					
77		Existing Fire Hydrants	2	EA	$575	$	1,150
78		Existing Water Valves	2	EA	$400	$	800
79		Existing Water Services	12	EA	$210	$	2,520
80		Water Line Connection - to Major Street	1	LS	$2,100	$	2,100
81		Water Line Connection - to Medium Street	1	LS	$2,150	$	2,150
82		Reconnection of Existing Fire Services	3	EA	$520	$	1,560
83		Interim Water Service	1	LS	$7,300	$	7,300
84		**Subtotal**				**$**	**18,000**
85		**TOTAL CONSTRUCTION COSTS**					
86		SUBTOTAL CONSTRUCTION COST				**$**	**416,000**
87		Confidence Factor	80%	%		**$**	**83,000**
88		**TOTAL CONSTRUCTION COST**				**$**	**499,000**
ENGINEERING & CONSTRUCTION OBSERVATION							
1		Design Services	9%	%			40,000
2		Bid Services	10%	%			5,000
3		Construction Observation/Inspection	9%	%			40,000
4		Post Construction Services	1.5%	%			7,000
		SUBTOTAL OTHER PROJECT COSTS					92,000
OTHER PROJECT COSTS							
1		PER/Facility Planning Study					-
2		Water Sampling and Testing					-
3		Pilot Testing					-
4		Equipment Preselection Support					-
5		Legal/Bonding & Audit					500
6		Surveying					1,250
7		Geotechnical Investigation					1,250
8		Contract Administration and Funding Support	1.00%	%			5,000
9		SUBTOTAL OTHER PROJECT COSTS					8,000
PROJECT CONTINGENCY							
1		Contingency on project costs	5.00%	%			20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$**	**619,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement - 1,000 feet of 16 inch pipe — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 2,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 2,000
4		**Subtotal**				**$ 4,000**
5		FITTINGS				
6		8x6 Tee		EACH	$1,000	$ -
7		10 and Larger Tee	2	EACH	$1,320	$ 2,640
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	2	EACH	$1,250	$ 2,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	24	EACH	$500	$ 12,000
15		**Subtotal**				**$ 17,000**
16		PIPE				
17		Abandon Water Mains	1,000	LF	$2	$ 2,000
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation		LF	$12	$ -
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation	1,000	LF	$24	$ 24,000
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 26,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	1,000	LF	$20	$ 20,000
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 20,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	2	EACH	$3,500	$ 7,000
40		Fire Hydrants	1	EACH	$3,500	$ 3,500
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	24	EACH	$500	$ 12,000
43		Stops and Saddles	24	EACH	$200	$ 2,880
44		**Subtotal**				**$ 25,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	1350	SY	$20	$ 27,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 27,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repari Driveway Crossing	12	EACH	$1,500	$ 18,000
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	$20,000	$ -
73		Dust Control		EACH	15000	$ -
74		Sanitary Facility		EACH	5000	$ -
75		**Subtotal**				**$ 21,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 140,000**
78		Confidence Factor			75%	**$ 35,000**
79		**TOTAL CONSTRUCTION COST**				**$ 175,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				20,000
2		Bid Services				2,000
3		Construction Observation/Inspection				20,000
4		Post Construction Services				3,000
		SUBTOTAL OTHER PROJECT COSTS				45,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			2,000
		SUBTOTAL OTHER PROJECT COSTS				5,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		10,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 235,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement-1,000 ft of 6-inch with Street Replacement — Date: 24-Apr-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1	☑	MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	5	%		$ 18,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 7,000
4		**Subtotal**				**$ 25,000**
5	☑	Road Replacement				
6		Clear and Grub	1	LS	$1,022	$ 1,022
7		Excavation Above Subgrade	2,797	CY	$11	$ 30,767
8		Unsuitable Material Excavation	620	CY	$15	$ 9,300
9		Removal of Obstructions	1	LS	$8,670	$ 8,670
10		12" PVC Storm Drain	200	LF	$27	$ 5,400
11		15" PVC Storm Drain	461	LF	$30	$ 13,830
12		24" PVC Storm Drain	38	LF	$72	$ 2,736
13		12" C900, DR-18, PVC Pipe	70	LF	$44	$ 3,080
14		12" C905, DR-18, PVC Pipe	31	LF	$55	$ 1,705
15		48" Storm Drain Catch MH	2	EA	$2,100	$ 4,200
16		St. Inlet Catch Basin, Type I	5	EA	$804	$ 4,020
17		St. Inlet Catch Basin, Type III	2	EA	$804	$ 1,608
18		Precast Sediment Box - 1000 gal	2	EA	$2,668	$ 5,336
19		Concrete Irrigation Box (4'x4')	4	EA	$1,900	$ 7,600
20		6" Concrete Vertical Curb (no gutter)	35	LF	$20	$ 700
21		Stan. 6" Vertical Curb & Gutter	1,207	LF	$10	$ 12,070
22		Concrete Valley Gutters	3,527	SF	$5	$ 17,635
23		Concrete Sidewalks, 4" thickness	539	SY	$32	$ 17,248
24		Concrete Driveway Approach	81	SY	$37	$ 2,997
25		Concrete Repair	1	SY	$18	$ 18
26		6" Minus Uncrushed Aggregate Base	1,879	TN	$12	$ 22,548
27		3/4" Minus Crushed Gravel	1,250	TN	$16	$ 20,000
28		3" Thick Asphalt Pavement	567	TN	$56	$ 31,752
29		Traffic Control Signs	187	SF	$8	$ 1,496
30		Terminus Barricade, Type III	3	EA	$94	$ 282
31		7' Term. Sec. Jersey Barrier	2	EA	$275	$ 550
32		10' Concrete Jersey Barrier	1	EA	$473	$ 473
33		Reflect Pavement Markers	148	SF	$11	$ 1,628
34		Traffic Sign Installation (one metal post)	4	EA	$79	$ 316
35		Roadside Sign Face	26	SF	$10	$ 260
36		Manhole, Adjust to grade	3	EA	$365	$ 1,095
37		Adjust Monitor Well to grade	2	EA	$288	$ 576
38		Remove Traffic Sign	2	EA	$79	$ 158
39		Modified Driveway Approach	10	EA	$670	$ 6,700
40		Combination Sidewalk/Retaining Wall	41	SY	$82	$ 3,362
41		Connect Pipe to Existing Structure	1	EA	$850	$ 850
42		Modify Inlet	1	EA	$683	$ 683
43		Asphalt Driveway Repair	826	SY	$24	$ 19,824
44		Gravel Driveway Repair	31	SY	$16	$ 496
45		Mailbox remove/Reset	5	EA	$132	$ 660
46		Adjust Sprinkler System	202	LF	$13	$ 2,626
47		Remove Tree (6+")	1	EA	$365	$ 365
48		Abandon Existing Seepage Bed	3	EA	$830	$ 2,490
49		Stabilized Constuction Entrance	2	EA	$1,420	$ 2,840
50		Curb Inlet Sediment Barrier	8	EA	$99	$ 792
51		**Subtotal**				**$ 273,000**
52	☐	Sewer Replacement				
53		Trenching	870	LF	$35	$ -
54		Type P Surface Res (asphalt roadway)	1,667	SY	$37	$ -
55		CCTV Inspection 8"	870	LF	$2	$ -
56		Sanitary Sewer Manhole - Type A	3	EA	$2,899	$ -
57		Replace Sewer Pipe-8" PVC	870	LF	$19	$ -
58		Replace Sewer Pipe-4" PVC	168	LF	$42	$ -
59		Replace Sewer Pipe-6" PVC	105	LF	$45	$ -

60		Remove Manhole	3	EA	$959	$	-
61		Rechannel Manhole (new pipe connection)	1	EA	$2,011	$	-
62		Sewage Flow Control	1	LS	$5,850	$	-
63		**Subtotal**				**$**	**-**
64	☑	Water Line Replacement					
65		Type P Surface Res (asphalt roadway)	1,667	SY	$27	$	-
66		Water Main Pipe	1,000	LF	$34	$	34,000
67		Water Main Pipe 4" PVC	150	LF	$23	$	3,450
68		Water Main Fittings- cross w reducers	1	EA	$3,000	$	3,000
69		Water Main Fittings- tee w reducers	1	EA	$1,785	$	1,785
70		Water Main Fittings- tee	7	EA	$662	$	4,634
71		Valve (large gate valve)	2	EA	$1,811	$	3,622
72		Valve (small gate valve)	7	EA	$575	$	4,025
73		Hydrant with Storz Adapter	3	EA	$3,300	$	9,900
74		Water Service Connection-2 inch	12	EA	$1,000	$	12,000
75		**Subtotal**				**$**	**76,000**
76	☑	Abandonment of Existing Water Line					
77		Existing Fire Hydrants	2	EA	$575	$	1,150
78		Existing Water Valves	2	EA	$400	$	800
79		Existing Water Services	12	EA	$210	$	2,520
80		Water Line Connection - to Major Street	1	LS	$2,100	$	2,100
81		Water Line Connection - to Medium Street	1	LS	$2,150	$	2,150
82		Reconnection of Existing Fire Services	3	EA	$520	$	1,560
83		Interim Water Service	1	LS	$7,300	$	7,300
84		**Subtotal**				**$**	**18,000**
85		**TOTAL CONSTRUCTION COSTS**					
86		SUBTOTAL CONSTRUCTION COST				**$**	**392,000**
87		Confidence Factor	80%	%		**$**	**78,000**
88		**TOTAL CONSTRUCTION COST**				**$**	**470,000**
ENGINEERING & CONSTRUCTION OBSERVATION							
1		Design Services	9%	%			40,000
2		Bid Services	10%	%			5,000
3		Construction Observation/Inspection	9%	%			40,000
4		Post Construction Services	1.5%	%			7,000
		SUBTOTAL OTHER PROJECT COSTS					92,000
OTHER PROJECT COSTS							
1		PER/Facility Planning Study					-
2		Water Sampling and Testing					-
3		Pilot Testing					-
4		Equipment Preselection Support					-
5		Legal/Bonding & Audit					500
6		Surveying					1,250
7		Geotechnical Investigation					1,250
8		Contract Administration and Funding Support	1.00%	%			5,000
9		SUBTOTAL OTHER PROJECT COSTS					8,000
PROJECT CONTINGENCY							
1		Contingency on project costs	5.00%	%			20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$**	**590,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement - 1,000 feet of 6 inch pipe — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 2,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 2,000
4		**Subtotal**				**$ 4,000**
5		FITTINGS				
6		8x6 Tee	2	EACH	$1,000	$ 2,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	2	EACH	$1,250	$ 2,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	24	EACH	$500	$ 12,000
15		**Subtotal**				**$ 17,000**
16		PIPE				
17		Abandon Water Mains	1,000	LF	$2	$ 2,000
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation	1,000	LF	$9	$ 9,000
21		8 inch dia C900 PVC Distribution Main, material and installation		LF	$12	$ -
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 11,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	1,000	LF	$20	$ 20,000
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 20,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	2	EACH	$3,500	$ 7,000
40		Fire Hydrants	1	EACH	$3,500	$ 3,500
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	24	EACH	$500	$ 12,000
43		Stops and Saddles	24	EACH	$200	$ 2,880
44		**Subtotal**				**$ 25,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	1350	SY	$20	$ 27,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 27,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	12	EACH	$1,500	$ 18,000
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 21,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 125,000**
78		Confidence Factor			75%	**$ 31,000**
79		**TOTAL CONSTRUCTION COST**				**$ 156,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				10,000
2		Bid Services				2,000
3		Construction Observation/Inspection				10,000
4		Post Construction Services				2,000
		SUBTOTAL OTHER PROJECT COSTS				24,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			2,000
		SUBTOTAL OTHER PROJECT COSTS				5,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		10,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 195,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement-1,000 feet of 8 inch with Street Replacment — Date: 24-Apr-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1	☑	MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	5	%		$ 19,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 7,000
4		**Subtotal**				**$ 26,000**
5	☑	Road Replacement				
6		Clear and Grub	1	LS	$1,022	$ 1,022
7		Excavation Above Subgrade	2,797	CY	$11	$ 30,767
8		Unsuitable Material Excavation	620	CY	$15	$ 9,300
9		Removal of Obstructions	1	LS	$8,670	$ 8,670
10		12" PVC Storm Drain	200	LF	$27	$ 5,400
11		15" PVC Storm Drain	461	LF	$30	$ 13,830
12		24" PVC Storm Drain	38	LF	$72	$ 2,736
13		12" C900, DR-18, PVC Pipe	70	LF	$44	$ 3,080
14		12" C905, DR-18, PVC Pipe	31	LF	$55	$ 1,705
15		48" Storm Drain Catch MH	2	EA	$2,100	$ 4,200
16		St. Inlet Catch Basin, Type I	5	EA	$804	$ 4,020
17		St. Inlet Catch Basin, Type III	2	EA	$804	$ 1,608
18		Precast Sediment Box - 1000 gal	2	EA	$2,668	$ 5,336
19		Concrete Irrigation Box (4'x4')	4	EA	$1,900	$ 7,600
20		6" Concrete Vertical Curb (no gutter)	35	LF	$20	$ 700
21		Stan. 6" Vertical Curb & Gutter	1,207	LF	$10	$ 12,070
22		Concrete Valley Gutters	3,527	SF	$5	$ 17,635
23		Concrete Sidewalks, 4" thickness	539	SY	$32	$ 17,248
24		Concrete Driveway Approach	81	SY	$37	$ 2,997
25		Concrete Repair	1	SY	$18	$ 18
26		6" Minus Uncrushed Aggregate Base	1,879	TN	$12	$ 22,548
27		3/4" Minus Crushed Gravel	1,250	TN	$16	$ 20,000
28		3" Thick Asphalt Pavement	567	TN	$56	$ 31,752
29		Traffic Control Signs	187	SF	$8	$ 1,496
30		Terminus Barricade, Type III	3	EA	$94	$ 282
31		7' Term. Sec. Jersey Barrier	2	EA	$275	$ 550
32		10' Concrete Jersey Barrier	1	EA	$473	$ 473
33		Reflect Pavement Markers	148	SF	$11	$ 1,628
34		Traffic Sign Installation (one metal post)	4	EA	$79	$ 316
35		Roadside Sign Face	26	SF	$10	$ 260
36		Manhole, Adjust to grade	3	EA	$365	$ 1,095
37		Adjust Monitor Well to grade	2	EA	$288	$ 576
38		Remove Traffic Sign	2	EA	$79	$ 158
39		Modified Driveway Approach	10	EA	$670	$ 6,700
40		Combination Sidewalk/Retaining Wall	41	SY	$82	$ 3,362
41		Connect Pipe to Existing Structure	1	EA	$850	$ 850
42		Modify Inlet	1	EA	$683	$ 683
43		Asphalt Driveway Repair	826	SY	$24	$ 19,824
44		Gravel Driveway Repair	31	SY	$16	$ 496
45		Mailbox remove/Reset	5	EA	$132	$ 660
46		Adjust Sprinkler System	202	LF	$13	$ 2,626
47		Remove Tree (6+")	1	EA	$365	$ 365
48		Abandon Existing Seepage Bed	3	EA	$830	$ 2,490
49		Stabilized Constuction Entrance	2	EA	$1,420	$ 2,840
50		Curb Inlet Sediment Barrier	8	EA	$99	$ 792
51		**Subtotal**				**$ 273,000**
52	☐	Sewer Replacement				
53		Trenching	870	LF	$35	$ -
54		Type P Surface Res (asphalt roadway)	1,667	SY	$37	$ -
55		CCTV Inspection 8"	870	LF	$2	$ -
56		Sanitary Sewer Manhole - Type A	3	EA	$2,899	$ -
57		Replace Sewer Pipe-8" PVC	870	LF	$19	$ -
58		Replace Sewer Pipe-4" PVC	168	LF	$42	$ -
59		Replace Sewer Pipe-6" PVC	105	LF	$45	$ -

60		Remove Manhole	3	EA	$959	$	-
61		Rechannel Manhole (new pipe connection)	1	EA	$2,011	$	-
62		Sewage Flow Control	1	LS	$5,850	$	-
63		**Subtotal**				**$**	**-**
64	☑	Water Line Replacement					
65		Type P Surface Res (asphalt roadway)	1,667	SY	$27	$	-
66		Water Main Pipe	1,000	LF	$38	$	38,000
67		Water Main Pipe 4" PVC	150	LF	$23	$	3,450
68		Water Main Fittings- cross w reducers	1	EA	$3,000	$	3,000
69		Water Main Fittings- tee w reducers	1	EA	$1,785	$	1,785
70		Water Main Fittings- tee	7	EA	$662	$	4,634
71		Valve (large gate valve)	2	EA	$1,811	$	3,622
72		Valve (small gate valve)	7	EA	$575	$	4,025
73		Hydrant with Storz Adapter	3	EA	$3,300	$	9,900
74		Water Service Connection-2 inch	12	EA	$1,000	$	12,000
75		**Subtotal**				**$**	**80,000**
76	☑	Abandonment of Existing Water Line					
77		Existing Fire Hydrants	2	EA	$575	$	1,150
78		Existing Water Valves	2	EA	$400	$	800
79		Existing Water Services	12	EA	$210	$	2,520
80		Water Line Connection - to Major Street	1	LS	$2,100	$	2,100
81		Water Line Connection - to Medium Street	1	LS	$2,150	$	2,150
82		Reconnection of Existing Fire Services	3	EA	$520	$	1,560
83		Interim Water Service	1	LS	$7,300	$	7,300
84		**Subtotal**				**$**	**18,000**
85		**TOTAL CONSTRUCTION COSTS**					
86		SUBTOTAL CONSTRUCTION COST				**$**	**397,000**
87		Confidence Factor	80%	%		**$**	**79,000**
88		**TOTAL CONSTRUCTION COST**				**$**	**476,000**
ENGINEERING & CONSTRUCTION OBSERVATION							
1		Design Services	9%	%			40,000
2		Bid Services	10%	%			5,000
3		Construction Observation/Inspection	9%	%			40,000
4		Post Construction Services	1.5%	%			7,000
		SUBTOTAL OTHER PROJECT COSTS					92,000
OTHER PROJECT COSTS							
1		PER/Facility Planning Study					-
2		Water Sampling and Testing					-
3		Pilot Testing					-
4		Equipment Preselection Support					-
5		Legal/Bonding & Audit					500
6		Surveying					1,250
7		Geotechnical Investigation					1,250
8		Contract Administration and Funding Support	1.00%	%			5,000
9		SUBTOTAL OTHER PROJECT COSTS					8,000
PROJECT CONTINGENCY							
1		Contingency on project costs	5.00%	%			20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$**	**596,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Water Line Replacement - 1,000 feet of 8 inch pipe — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 2,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 2,000
4		**Subtotal**				**$ 4,000**
5		FITTINGS				
6		8x6 Tee	2	EACH	$1,000	$ 2,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	2	EACH	$1,250	$ 2,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	24	EACH	$500	$ 12,000
15		**Subtotal**				**$ 17,000**
16		PIPE				
17		Abandon Water Mains	1,000	LF	$2	$ 2,000
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation	1,000	LF	$12	$ 12,000
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 14,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	1,000	LF	$20	$ 20,000
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 20,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	2	EACH	$3,500	$ 7,000
40		Fire Hydrants	1	EACH	$3,500	$ 3,500
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	24	EACH	$500	$ 12,000
43		Stops and Saddles	24	EACH	$200	$ 2,880
44		**Subtotal**				**$ 25,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	1350	SY	$20	$ 27,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 27,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	12	EACH	$1,500	$ 18,000
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	$5,000	$ -
75		**Subtotal**				**$ 21,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 128,000**
78		Confidence Factor			75%	**$ 32,000**
79		**TOTAL CONSTRUCTION COST**				**$ 160,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				10,000
2		Bid Services				2,000
3		Construction Observation/Inspection				10,000
4		Post Construction Services				2,000
		SUBTOTAL OTHER PROJECT COSTS				24,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			2,000
		SUBTOTAL OTHER PROJECT COSTS				5,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		10,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 199,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER SOURCE/RIGHTS ALTERNATIVES
O & M PROBABLE COST
GARDEN CITY WATER RIGHTS

Project No.	**01-07-0038**		
Project:	**Garden City - WMP**	Prepared by:	10-Mar-08
Client:	**Garden City**	Date:	KLH

ALTERNATIVE DESIG.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
WR-1	WATER RIGHT - Multiple Diversion Points for Each Right	1	LS	$ 3,000.00	$ 3,000
WR-2	WATER RIGHT - Discrepency for 63-5330	1	LS	$ 7,500.00	$ 7,500
WR-3	WATER RIGHT - Discrepency for 63-11487	1	LS	$ 1,000.00	$ 1,000
WR-4	WATER RIGHT - Discrepency for 63-9144 and 63-8357	1	LS	$ 5,000.00	$ 5,000
WR-5	WATER RIGHT - Apply for New Right	1	LS	$ 10,000.00	$ 10,000
TOTAL CONSTRUCTION COSTS		4			
	SUBTOTAL CONSTRUCTION COST				**$ 26,500**
	Confidence Factor			80%	**$ 5,300**
	TOTAL CONSTRUCTION COST				**$ 31,800**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				-
	Water Sampling and Testing				-
	Legal/Bonding & Audit				10,000
	Geotechnical Investigation				-
	Contract Administration and Funding Support				
	SUBTOTAL INCIDENTAL PROJECT COSTS				10,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 42,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER SYSTEM REPLACEMENT COST AND CURRENT VALUE

INCLUDES STREET REPLACEMENT

Project No.	**01-07-0038**		
Project:	**Garden City WMP**	Prepared by:	1-May-08
Client:	**Garden City**	Date:	KLH

Components	Date Installed	System Life	Expended Life	System Depreciation Percent	Replacement Cost	Current Value
Evaluation Year	**2008**					
WATER LINES	1906	120	102	85.0%	$1,149,728	$172,459
including service connections	1908	120	100	83.3%	$164,716	$27,453
valves and restoration, hydrants,	1911	120	97	80.8%	$2,843,002	$544,909
tees and fittings	1945	75	63	84.0%	$4,764,285	$762,286
	1947	75	61	81.3%	$5,796,591	$1,082,030
	1948	75	60	80.0%	$209,423	$41,885
	1949	75	59	78.7%	$3,915,335	$835,271
	1952	75	56	74.7%	$36,957	$9,362
	1955	75	53	70.7%	$143,484	$42,089
	1964	75	44	58.7%	$523,384	$216,332
	1973	75	35	46.7%	$105,430	$56,229
	1977	75	31	41.3%	$964,360	$565,758
	1978	75	30	40.0%	$2,507,928	$1,504,757
	1979	75	29	38.7%	$134,228	$82,327
	1980	75	28	37.3%	$499,552	$313,053
	1981	75	27	36.0%	$1,077,351	$689,505
	1984	75	24	32.0%	$430,211	$292,543
	1986	75	22	29.3%	$255,024	$180,217
	1987	75	21	28.0%	$351,165	$252,839
	1988	75	20	26.7%	$380,944	$279,359
	1989	75	19	25.3%	$823,981	$615,239
	1990	75	18	24.0%	$1,687,953	$1,282,844
	1991	75	17	22.7%	$1,078,132	$833,755
	1992	75	16	21.3%	$1,767,724	$1,390,610
	1993	75	15	20.0%	$1,323,292	$1,058,634
	1994	75	14	18.7%	$477,222	$388,141
	1995	75	13	17.3%	$588,800	$486,741
	1996	75	12	16.0%	$737,858	$619,801
	1997	75	11	14.7%	$20,800	$17,749
	1998	75	10	13.3%	$369,760	$320,459
	1999	75	9	12.0%	$286,886	$252,460
	2000	75	8	10.7%	$876,321	$782,847
	2001	75	7	9.3%	$932,264	$845,253
	2002	75	6	8.0%	$478,195	$439,939
	2003	75	5	6.7%	$397,516	$371,015
	2004	75	4	5.3%	$161,118	$152,525
	2005	75	3	4.0%	$449,602	$431,618
	2006	75	2	2.7%	$671,712	$653,800
(UNKNOWN INSTALLATION DATE)	1988	75	20	26.7%	$9,157,922	$6,715,809
WATER LINES SUB-TOTAL					$48,540,156	$25,609,900
WELL # 3	1957	40	51	100.0%	$425,469	$0
WELL # 4	2006	40	2	5.0%	$425,469	$404,195
WELL # 5	1993	40	15	37.5%	$405,469	$253,418
WELL # 6	1978	40	30	75.0%	$387,969	$96,992
WELL # 7	1978	40	30	75.0%	$387,969	$96,992
WELL # 8	1985	40	23	57.5%	$409,219	$173,918
WELL # 9	1990	40	18	45.0%	$419,219	$230,570
WELL # 10	1993	40	15	37.5%	$452,969	$283,105
WELL # 11	1979	40	29	72.5%	$387,969	$106,691
WELL # 12	1977	40	31	77.5%	$387,969	$87,293
WELLS SUB-TOTAL					$4,089,688	$1,733,176
WATER TREATMENT WELL #5	2001	20	7	35.0%	$ 1,554,000.00	$1,010,100
WATER TREATMENT WELL #10	2001	20	7	35.0%	$ 1,554,000.00	$1,010,100
WATER TREATMENT Hypo and P	2001	20	7	35.0%	$ 100,800.00	$65,520
WATER TREATMENT SUB-TOTAL					$3,208,800	$2,085,720
STREET REPLACEMENT COSTS	2008	30	30	100.0%	$ 123,585,000	$ -
STREET REPLACEMENT COSTS - SUB-TOTAL					$ 123,585,000	$ -
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$180,000,000**	**$29,000,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Replace 2.5 inch Water Line from 45th to E. Ellen
Client: Garden City, Idaho
Date: 11-Mar-08
Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 4,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 4,000
4		**Subtotal**				**$ 8,000**
5		FITTINGS				
6		8x6 Tee	4	EACH	$1,000	$ 4,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	4	EACH	$1,250	$ 5,000
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	30	EACH	$500	$ 15,000
15		**Subtotal**				**$ 24,000**
16		PIPE				
17		Abandon Water Mains	2,555	LF	$2	$ 5,110
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation	2,555	LF	$12	$ 30,660
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 36,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	2,555	LF	$20	$ 51,100
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 51,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	4	EACH	$3,500	$ 14,000
40		Fire Hydrants	3	EACH	$3,500	$ 10,500
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	30	EACH	$500	$ 15,000
43		Stops and Saddles	30	EACH	$200	$ 4,500
44		**Subtotal**				**$ 44,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	3400	SY	$20	$ 68,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 68,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	15	EACH	$1,500	$ 22,500
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 25,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 256,000**
78		Confidence Factor			75%	**$ 64,000**
79		**TOTAL CONSTRUCTION COST**				**$ 320,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				30,000
2		Bid Services				3,000
3		Construction Observation/Inspection				30,000
4		Post Construction Services				5,000
		SUBTOTAL OTHER PROJECT COSTS				68,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			3,000
		SUBTOTAL OTHER PROJECT COSTS				6,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 414,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Replace 4 inch water line on 31st Street
Client: Garden City, Idaho
Date: 11-Mar-08
Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 1,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 1,000
4		**Subtotal**				**$ 2,000**
5		FITTINGS				
6		8x6 Tee	2	EACH	$1,000	$ 2,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	2	EACH	$1,250	$ 2,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	8	EACH	$500	$ 4,000
15		**Subtotal**				**$ 9,000**
16		PIPE				
17		Abandon Water Mains	620	LF	$2	$ 1,240
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation	620	LF	$12	$ 7,440
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 9,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	620	LF	$20	$ 12,400
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 12,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	2	EACH	$3,500	$ 7,000
40		Fire Hydrants	2	EACH	$3,500	$ 7,000
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	8	EACH	$500	$ 4,000
43		Stops and Saddles	8	EACH	$200	$ 320
44		**Subtotal**				**$ 18,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	1000	SY	$20	$ 20,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 20,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	4	EACH	$1,500	$ 6,000
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 9,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 79,000**
78		Confidence Factor			75%	**$ 20,000**
79		**TOTAL CONSTRUCTION COST**				**$ 99,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				10,000
2		Bid Services				1,000
3		Construction Observation/Inspection				10,000
4		Post Construction Services				1,000
		SUBTOTAL OTHER PROJECT COSTS				22,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			1,000
		SUBTOTAL OTHER PROJECT COSTS				4,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		-
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 125,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Replace 4 inch water line on 34th Street — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 4,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 4,000
4		**Subtotal**				**$ 8,000**
5		FITTINGS				
6		8x6 Tee	6	EACH	$1,000	$ 6,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	6	EACH	$1,250	$ 7,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	26	EACH	$500	$ 13,000
15		**Subtotal**				**$ 27,000**
16		PIPE				
17		Abandon Water Mains	2,085	LF	$2	$ 4,170
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation	2,085	LF	$12	$ 25,020
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 29,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	2,085	LF	$20	$ 41,700
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 42,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	5	EACH	$3,500	$ 17,500
40		Fire Hydrants	4	EACH	$3,500	$ 14,000
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	26	EACH	$500	$ 13,000
43		Stops and Saddles	26	EACH	$200	$ 3,380
44		**Subtotal**				**$ 48,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	3500	SY	$20	$ 70,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 70,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	13	EACH	$1,500	$ 19,500
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 22,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 246,000**
78		Confidence Factor			75%	**$ 62,000**
79		**TOTAL CONSTRUCTION COST**				**$ 308,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				30,000
2		Bid Services				3,000
3		Construction Observation/Inspection				30,000
4		Post Construction Services				5,000
		SUBTOTAL OTHER PROJECT COSTS				68,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			3,000
		SUBTOTAL OTHER PROJECT COSTS				6,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 402,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Replace 4 inch water line on 38th Street — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 5,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 5,000
4		**Subtotal**				**$ 10,000**
5		FITTINGS				
6		8x6 Tee	6	EACH	$1,000	$ 6,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	6	EACH	$1,250	$ 7,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	30	EACH	$500	$ 15,000
15		**Subtotal**				**$ 29,000**
16		PIPE				
17		Abandon Water Mains	2,466	LF	$2	$ 4,932
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation	2,466	LF	$12	$ 29,592
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 35,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	2,466	LF	$20	$ 49,320
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 49,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	5	EACH	$3,500	$ 17,500
40		Fire Hydrants	4	EACH	$3,500	$ 14,000
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	30	EACH	$500	$ 15,000
43		Stops and Saddles	30	EACH	$200	$ 4,500
44		**Subtotal**				**$ 51,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	4000	SY	$20	$ 80,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 80,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	15	EACH	$1,500	$ 22,500
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 25,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 279,000**
78		Confidence Factor			75%	**$ 70,000**
79		**TOTAL CONSTRUCTION COST**				**$ 349,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				30,000
2		Bid Services				3,000
3		Construction Observation/Inspection				30,000
4		Post Construction Services				5,000
		SUBTOTAL OTHER PROJECT COSTS				68,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			3,000
		SUBTOTAL OTHER PROJECT COSTS				6,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 443,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Replace 4 inch water line on 35th Street — Date: 11-Mar-08
Client: Garden City, Idaho — Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 5,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 5,000
4		**Subtotal**				**$ 10,000**
5		FITTINGS				
6		8x6 Tee	6	EACH	$1,000	$ 6,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	6	EACH	$1,250	$ 7,500
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	30	EACH	$500	$ 15,000
15		**Subtotal**				**$ 29,000**
16		PIPE				
17		Abandon Water Mains	2,327	LF	$2	$ 4,654
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation	2,327	LF	$12	$ 27,924
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 33,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	2,327	LF	$20	$ 46,540
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 47,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	5	EACH	$3,500	$ 17,500
40		Fire Hydrants	4	EACH	$3,500	$ 14,000
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	30	EACH	$500	$ 15,000
43		Stops and Saddles	30	EACH	$200	$ 4,500
44		**Subtotal**				**$ 51,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	3900	SY	$20	$ 78,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 78,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	15	EACH	$1,500	$ 22,500
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 25,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 273,000**
78		Confidence Factor			75%	**$ 68,000**
79		**TOTAL CONSTRUCTION COST**				**$ 341,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				30,000
2		Bid Services				3,000
3		Construction Observation/Inspection				30,000
4		Post Construction Services				5,000
		SUBTOTAL OTHER PROJECT COSTS				68,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			3,000
		SUBTOTAL OTHER PROJECT COSTS				6,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 435,000**

FORSGREN Associates Inc.

ENGINEER'S OPINION OF PROBABLE COST
CAPITAL COST

Project No. 01-07-0038
Project: Replace 4 inch water line Winterwood, Lakeview, Adam Court, Lakemont, Lakeshore 11-Mar-08
Client: Garden City, Idaho Prepared by: KLH

Line No.	Spec No.	UNIT PROCESS / ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COSTS						
1		MOBILIZATION				
2	00000	Mobilization, Bonding & Insurance, Bidding, Etc	2	%		$ 5,000
3	00100	Shop Dwgs, O&M Manuals, Startup, Construction Facilities, etc	2	%		$ 5,000
4		**Subtotal**				**$ 10,000**
5		FITTINGS				
6		8x6 Tee	4	EACH	$1,000	$ 4,000
7		10 and Larger Tee		EACH	$1,320	$ -
8		8x4 Tee		EACH	$700	$ -
9		Reducer		EACH	$450	$ -
10		Cap		EACH	$400	$ -
11		Thrust Block	4	EACH	$1,250	$ 5,000
12		Bend	0	EACH	$450	$ -
13		Cross	0	EACH	$700	$ -
14		Residential Service Pipe	30	EACH	$500	$ 15,000
15		**Subtotal**				**$ 24,000**
16		PIPE				
17		Abandon Water Mains	2,534	LF	$2	$ 5,068
18		3 inch Schedule 40 PVC, material and installation		LF	$4	$ -
19		4 inch dia C900 PVC , material and installation		LF	$6	$ -
20		6 inch dia C900 Distribution Main, material and installation		LF	$9	$ -
21		8 inch dia C900 PVC Distribution Main, material and installation	2,534	LF	$12	$ 30,408
22		10 inch dia C900 PVC Distribution Main, material and installation		LF	$14	$ -
23		12 inch dia C900 PVC Distribution Main, material and installation		LF	$16	$ -
24		14 inch dia C905 PVC Distribution Main, material and installation		LF	$20	$ -
25		16 inch dia C905 PVC Distribution Main, material and installation		LF	$24	$ -
26		18 inch dia C905 PVC Distribution Main, material and installation		LF	$45	$ -
27		Combination Air Relief Valve and Valve Vault		EACH	$6,000	$ -
28		**Subtotal**				**$ 35,000**
29		EXCAVATION				
30		6'-9' trench excavation, bedding, haunching & backfill	2,534	LF	$20	$ 50,680
31		9'-12' trench excavation, bedding, haunching & backfill		LF	$30	$ -
32		12'-15' trench excavation, bedding, haunching & backfill		LF	$45	$ -
33		15'-18' trench excavation, bedding, haunching & backfill		LF	$80	$ -
34		18'-21' trench excavation, bedding, haunching & backfill		LF	$120	$ -
35		21'-24' trench excavation, bedding, haunching & backfill		LF	$200	$ -
36		**Subtotal**				**$ 51,000**
37		VALVES AND METERS				
38		Gate Valve and Box		EACH	$1,500	$ -
39		Valve Box	4	EACH	$3,500	$ 14,000
40		Fire Hydrants	3	EACH	$3,500	$ 10,500
41		Blow-Off Assembly		EACH	$1,000	$ -
42		Residential Water Meter with Box and Lid	30	EACH	$500	$ 15,000
43		Stops and Saddles	30	EACH	$200	$ 4,500
44		**Subtotal**				**$ 44,000**
45		BOOSTER STATION				
46		1-5 HP		EACH	$250,000	$ -
47		6-20 HP		EACH	$350,000	$ -
48		20-40 HP		EACH	$500,000	$ -
49		**Subtotal**				**$ -**
50		BORING				
51		2 inch directional bore		LF	$60	$ -
52		3 inch Directional Bore		LF	$80	$ -
53		4 inch Directional Bore		LF	$100	$ -
54		24" (11.5" min I.D.) carrier pipe and spacers, slope tolerance 0.22%to 1%		LF	$60	$ -
55		Bore, jack & steel casing for 24" equivalent carrier pipe		LF	$440	$ -
56		Boot end seals		EACH	$500	$ -
57		Excavate and backfill launching and receiving pits for each bore location		EACH	$750	$ -
58		**Subtotal**				**$ -**
59		SURFACE REPAIR				
60		Surface Repair - Class A (12" Pit Run, 4" Road Base, 3" asphalt)	4200	SY	$20	$ 84,000
61		Surface Repair - Class B (6" Road Base)		SY	$8	$ -
62		Surface Repair - Class C (6" Top Soil, Sod)		SY	$3	$ -
63		Surface Repair - Class D (Native Soil)		SY	$1	$ -
64		**Subtotal**				**$ 84,000**
65		MISCELLANEOUS				
66		Traffic Control	1	KLF	$2,500	$ 2,500
67		Brace Power Poles		EACH	$500	$ -
68		Fencing		LF	$24	$ -
69		Repair Driveway Crossing	15	EACH	$1,500	$ 22,500
70		Repair/Restore Mailbox		EACH	$250	$ -
71		Dewatering		LS	$20,000	$ -
72		Force Account		LS	20,000	$ -
73		Dust Control		EACH	15,000	$ -
74		Sanitary Facility		EACH	5,000	$ -
75		**Subtotal**				**$ 25,000**
76		**TOTAL CONSTRUCTION COSTS**				
77		SUBTOTAL CONSTRUCTION COST				**$ 273,000**
78		Confidence Factor			75%	**$ 68,000**
79		**TOTAL CONSTRUCTION COST**				**$ 341,000**
ENGINEERING & CONSTRUCTION OBSERVATION						
1		Design Services				30,000
2		Bid Services				3,000
3		Construction Observation/Inspection				30,000
4		Post Construction Services				5,000
		SUBTOTAL OTHER PROJECT COSTS				68,000
OTHER PROJECT COSTS						
1		PER/Facility Planning Study				-
2		Water Sampling and Testing				-
3		Pilot Testing				-
4		Equipment Preselection Support				-
5		Legal/Bonding & Audit				500
6		Surveying				1,250
7		Geotechnical Investigation				1,250
8		Contract Administration and Funding Support	1.00%			3,000
		SUBTOTAL OTHER PROJECT COSTS				6,000
PROJECT CONTINGENCY						
		Contingency on project costs		5.00%		20,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST						**$ 435,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER DISTRIBUTION ALTERNATIVES
O & M PROBABLE COST
GARDEN CITY WATER SUPPLY

Project No.	**01-07-0038**				
Project:	**Garden City - WMP**			Prepared by:	10-Mar-08
Client:	**Garden City**			Date:	KLH
ALTERNATIVE DESIG.	**DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
WD-3	WATER DIST - Scan all as-built drawings	100	Hour	$ 60.00	$ 6,000
	WATER DIST - Implement Record Keeping Program	80	Hour	$ 100.00	$ 8,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 14,000**
	Confidence Factor			80%	**$ 2,800**
	TOTAL CONSTRUCTION COST				**$ 16,800**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				-
	Water Sampling and Testing				-
	Legal/Bonding & Audit				
	Geotechnical Investigation				-
	Contract Administration and Funding Support				
	SUBTOTAL INCIDENTAL PROJECT COSTS				-
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$16,800**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER QUALITY ALTERNATIVES
O & M PROBABLE COST
GARDEN CITY WATER SUPPLY

Project No.	**01-07-0038**		
Project:	**Garden City - WMP**	Prepared by:	10-Mar-08
Client:	**Garden City**	Date:	KLH

ALTERNATIVE DESIG.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
WQ-1	WATER QUALITY - Prepare an ISDE per Stage 2 DBPR	1	LS	$ 20,000.00	$ 20,000
	WATER QUALITY - Prepare Monitoring Plan	1	LS	$ 40,000.00	$ 40,000
	WATER QUALITY - Prepare for Sanitary Survey	80	Hour	$ 75.00	$ 6,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 66,000**
	Confidence Factor			80%	**$ 13,200**
	TOTAL CONSTRUCTION COST				**$ 79,200**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				-
	Water Sampling and Testing				-
	Legal/Bonding & Audit				
	Geotechnical Investigation				-
	Contract Administration and Funding Support				
	SUBTOTAL INCIDENTAL PROJECT COSTS				-
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 79,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER SOURCE/RIGHTS ALTERNATIVES WR-5
WR-5 INSUFFICIENT WATER RIGHTS
WATER CONSERVATION /METERS

Project No.	**01-07-0038**		
Project:	**Garden City WMP**	Prepared by:	10-Jan-08
Client:	**Garden City**	Date:	WJC

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
	Utility Water Conservation Program	25000	LS	$ 1.00	$ 25,000
	Metering Program	100	Each	$ 1,000.00	$ 100,000
	Data Management Program	1	Each	$ 1,000.00	$ 1,000
	Unmetered Use	1	Each	$ 2,500.00	$ 2,500
	Consumer Education Program	1	Each	$ 2,500.00	$ 2,500
	Financial Incentive Program	25	Each	$ 1,000.00	$ 25,000
TOTAL CAPITAL COSTS					
	SUBTOTAL CAPITAL COST				**$ 156,000**
	Confidence Factor			80%	**$ 31,200**
	TOTAL CONSTRUCTION COST				**$ 187,200**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				
	Water Sampling and Testing				
	Pilot Testing				
	Equipment Preselection Support				
	Legal/Bonding & Audit				
	Preparation of final design and contract documents				
	Construction Observation/Inspection				
	Contract Administration and Funding Support				
	SUBTOTAL INCIDENTAL PROJECT COSTS				-
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$187,200**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER SOURCE/RIGHTS ALTERNATIVES WR-5
WR-5 INSUFFICIENT WATER RIGHTS
APPLY FOR NEW WATER RIGHT THROUGH IDWR AND DRILL WELL

Project No.	**01-07-0038**		
Project:	**Garden City WMP**	Prepared by:	28-Feb-08
Client:	**Garden City**	Date:	KLH

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1 - GENERAL	CONSULTING AND LEGAL EXPENSES	1	LS	$ 1,000,000.00	$ 1,000,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 1,000,000**
	Confidence Factor			50%	**$ 500,000**
	TOTAL CONSTRUCTION COST				**$ 1,500,000**
INCIDENTAL PROJECT COSTS					
	Legal/Bonding & Audit				30,000
	Surveying				50,000
	SUBTOTAL INCIDENTAL PROJECT COSTS				80,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$1,580,000**

FORSGREN Associates Inc.

OPINION OF PROBABLE COST

OPERATION AND MAINTENANCE

WR-5 INSUFFICIENT WATER RIGHTS

MUNICIPAL SECONDARY IRRIGATION SYSTEM

Project No. 01-07-0038

Project: Garden City WMP

Client: Garden City

Prepared by: 28-Jan-08

Date: KLH

Variables:

Working Days	200	Days/Year
Power Cost	0.07	$/KWH
Flowrate	2	MG/Day
Discount Rate	5	%

Item No.	Description	Quantity	Units	Operation Time	Units	Unit Cost	Unit	Estimated Annual Cost
	LABOR							
	Superindentent	1	Person	1	Per Day	$ 40	Hour	$ 4,000
	Grade IV Operator	0	Person	8	Per Day	$ 50	Hour	$ -
	Grade III Operator	0	Person	8	Per Day	$ 40	Hour	$ -
	Grade II Operator	1	Person	4	Per Day	$ 30	Hour	$ 24,000
	Grade I Operator	0	Person	8	Per Day	$ 20	Hour	$ -
	Lab Tech	0	Person	4	Per Day	$ 30	Hour	$ -
	Mechanic	0	Person	1	Per Day	$ 40	Hour	$ -
	Laborer	1	Person	4	Per Day	$ 20	Hour	$ 16,000
								$ 44,000
	UTILITIES			***Power***		***Oper. Time***		
	Power - Rapid Mixer	0	Each	5.0	HP	24	Hours/Day	$ -
	Power - Reactor Turbine	0	Each	7.5	HP	24	Hours/Day	$ -
	Power - Scraper Drive	0	Each	0.5	HP	24	Hours/Day	$ -
	Power - Recycle Pump	0	Each	7.5	HP	24	Hours/Day	$ -
	Power - Sludge Pump	0	Each	5.0	HP	2	Hours/Day	$ -
	Power - Controls	0	Each	0.2	KW	24	Hours/Day	$ -
	Power - Lighting	0	Each	0.5	KW	24	Hours/Day	$ -
								$ -
	MATERIALS	***Dose***		***Concen\ration***				
	Chemical Coagulant Aluminum Sulfate-Liquic	0.0	mg/l	50.0	%	$ 0.15	LB	$ -
	Chemical Coagulant Polymerized Alum	0.0	mg/l	100.0	%	$ 1.10	LB	$ -
	Chemical Polymer (dry)	0.0	mg/l	100.0	%	$ 1.00	LB	$ -
	Chemical Polymer (emulsion)	0.0	mg/l	100.0	%	$ 1.00	LB	$ -
	Chemical Oxidant Pottasium Permanganate	0.0	mg/l	2.0	%	$ 1.90	LB	$ -
	Chemical Disinfectant Sodium Hypochlorite-L	0.0	mg/l	12.5	%	$ 0.12	LB	$ -
	Chemical Disinfectant Gaseous Chlorine	0.0	mg/l	100.0	%	$ 0.45	LB	$ -
	Chemical Disinfectant Salt	0.0	mg/l	0.5	%	$ 0.02	LB	$ -
								$ -
	OUTSIDE SERVICES	***No. Tests***		***Samples***				
	Compliance Testing	0	constituents	1	samples/week	$ 20.00	Per Sample	$ -
								$ -
	MISCELLANEOUS EXPENSES							
	Memberships	0.0	People	1	Organizations	$ 150.00	$/Year	$ -
	Vehicles	1.0	Vehicles	24	Hours/Day	$ 0.07	$/Year	$ 457
	Fuel - Diesel	60.0	Miles/Day	14	MPG	$ 3.00	$/Gallon	$ 2,571
	Sludge Disposal	0.0	Trucks/Day	8,000	Lbs/Truck	$ 15.00	$/Ton	$ -
								$ 3,029
	REPLACEMENT COSTS			***Interval***				
	Pipe	500	LF	1	Years	$ 60.00	$/LF	$ 30,000
	Meters	5	Each	1	Years	$ 500.00	$/Each	$ 2,500
	Valves	2	Each	1	Years	$ 500.00	$/Each	$ 1,000
								$ 33,500
	TOTAL OPERATION & MAINTENANCE COSTS							
	Total							**$ 114,029**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER SOURCE/RIGHTS ALTERNATIVES WR-5
WR-5 INSUFFICIENT WATER RIGHTS
PURCHASE EXISTING RIGHT IN VICINITY OF GARDEN CITY

Project No.	**01-07-0038**		
Project:	**Garden City WMP**	Prepared by:	10-Jan-08
Client:	**Garden City**	Date:	WJC

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1 - GENERAL	WATER RIGHT - OBLIGATED DEMAND	0	AFY	$ 1,250.00	$ -
1 - GENERAL	WATER RIGHT - PROJECTED DEMAND	8890	AFY	$ 1,250.00	$ 11,112,500
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 11,112,500**
	Confidence Factor			80%	**$ 2,222,500**
	TOTAL CONSTRUCTION COST				**$ 13,335,000**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				-
	Water Sampling and Testing				-
	Legal/Bonding & Audit				30,000
	Geotechnical Investigation				-
	Contract Administration and Funding Support				50,000
	SUBTOTAL INCIDENTAL PROJECT COSTS				80,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$13,415,000**

FORSGREN Associates Inc.

OPINION OF PROBABLE COST

OPERATION AND MAINTENANCE

WR-5 INSUFFICIENT WATER RIGHTS

WATER CONSERVATION /METERS

Project No. 01-07-0038

Project: Garden City WMP

Client: Garden City

Prepared by: 1-Feb-06

Date: BEC

Variables:

Working Days	270	Days/Year
Power Cost	0.07	$/KWH
Flowrate	2	MG/Day
Discount Rate	5	%

Item No.	Description	Quantity	Units	Operation Time	Units	Unit Cost	Unit	Estimated Annual Cost
	LABOR							
	Superindentent	1	Person	2	Per Day	$ 40	Hour	$ 21,600
	Grade IV Operator		Person	8	Per Day	$ 50	Hour	$ -
	Grade III Operator	0	Person	1	Per Day	$ 40	Hour	$ -
	Grade II Operator	1	Person	8	Per Day	$ 30	Hour	$ 64,800
	Grade I Operator	0	Person	4	Per Day	$ 20	Hour	$ -
	Lab Tech	0	Person	4	Per Day	$ 30	Hour	$ -
	Mechanic	0	Person	2	Per Day	$ 40	Hour	$ -
	Laborer	2	Person	4	Per Day	$ 25	Hour	$ 54,000
								$ 140,400
	UTILITIES			***Power***		***Oper. Time***		
	Power - Rapid Mixer	0	Each	5.0	HP	24	Hours/Day	$ -
	Power - Reactor Turbine	0	Each	7.5	HP	24	Hours/Day	$ -
	Power - Scraper Drive	0	Each	0.5	HP	24	Hours/Day	$ -
	Power - Vacuum Pump	0	Each	7.5	HP	24	Hours/Day	$ -
	Power - Sludge Pump	0	Each	5.0	HP	2	Hours/Day	$ -
	Power - Controls	0	Each	0.2	KW	24	Hours/Day	$ -
	Power - Lighting	0	Each	0.5	KW	24	Hours/Day	$ -
								$ -
	MATERIALS							
	Fliers and mailers	1	LS	0.0		$ 2,500.00	Meter	$ 2,500
	NEW INSTALLATIONS	0	LS	50.0	#/Yr	$ 800.00	Meter	$ -
								$ 2,500
	OUTSIDE SERVICES	***No. Tests***		***Samples***				
	Compliance Testing	0	constituents	1	samples/week	$ 20.00	Per Sample	$ -
								$ -
	MISCELLANEOUS EXPENSES							
	Memberships	0.0	People	1	Organizations	$ 150.00	$/Year	$ -
	Vehicles	1.0	Vehicles	8	Hours/Day	$ 0.07	$/Year	$ 152
	Fuel - Diesel	30.0	Miles/Day	8,100	Miles/yr	$ 0.55	$/mile	$ 4,455
								$ 4,607
	REPLACEMENT COSTS			***Interval***				
	Meter Parts	0	Each	40	Years	$ 800.00	Meter	$ -
		0	Lbs/Year	20	Years	$ -		$ -
		100	Each	1	Years	$ 1,000.00		$ 100,000
								$ 100,000
	REVENUE			***Interval***				
	INITIAL INCREASED REVENUE	100	MONTHS	12	LS	$ (5.00)	Meter	$ (6,000)
	FINAL INCREASED REVENUE	0	MONTHS	2,240	CONNECT	$ (17.57)		$ -
		0		20		$ -		$ -
								$ (6,000)
	TOTAL OPERATION & MAINTENANCE COSTS							
	Total							**$ 341,507**
	Cost per Thousand Gallons							

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER RIGHT ALTERNATIVES
O & M PROBABLE COST
GARDEN CITY WATER SUPPLY

Project No.	**01-07-0038**				
Project:	**Garden City - WMP**			Prepared by:	10-Mar-08
Client:	**Garden City**			Date:	KLH
ALTERNATIVE DESIG.	**DESCRIPTION - Implement Water Conservation Program**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
WR-5	WATER RIGHTS - Leak Detection	375000	LF	$ 0.07	$ 26,250
	WATER RIGHTS - Implement Education Program	100	Hour	$ 75.00	$ 7,500
	WATER RIGHTS - Account for unmetered use study	80	Hour	$ 100.00	$ 8,000
	WATER RIGHTS - Meter Assessment/Replacement	1250	Hour	$ 75.00	$ 93,750
	WATER RIGHTS - Replacement Meters (assume 5% of system)	250	Each	$ 500.00	$ 125,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 260,500**
	Confidence Factor			80%	**$ 52,100**
	TOTAL CONSTRUCTION COST				**$ 312,600**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				
	Water Sampling and Testing				
	Legal/Bonding & Audit				
	Geotechnical Investigation				
	Contract Administration and Funding Support			1%	$ 2,600
	SUBTOTAL INCIDENTAL PROJECT COSTS				2,600
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 315,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER STORAGE ALTERNATIVES

WSt-4 INSUFFICIENT STORAGE CAPACITY FOR OBLIGATED DEMAND

1.5 MG WATER TANK

Project No.	**01-07-0038**
Project:	**Garden City WMP**
Client:	**Garden City**

Prepared by: 8-Jan-08

Date: WJC

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 4,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 2,000
2 - SITE WORK	DEMOLITION OF EXISTING TANK	0	LS	$ 40,000.00	$ -
2 - SITE WORK	EXCAVATION, BACKFILL, SITE GRADING	4,350	CY	$ 8.00	$ 34,800
2 - SITE WORK	EROSION & SEDIMENT CONTROL	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	FOUNDATION DRAIN SYSTEM	1	LS	$ 9,000.00	$ 9,000
2 - SITE WORK	STRUCTURAL FILL	600	CY	$ 18.00	$ 10,800
2 - SITE WORK	AGGREGATE BASE COURSE	800	CY	$ 24.00	$ 19,200
2 - SITE WORK	EXIT END OVERFLOW IMPROVEMENTS	1	LS	$ 15,000.00	$ 15,000
2 - SITE WORK	DISINFECTION & TESTING	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	CLEANING	1	LS	$ 10,000.00	$ 10,000
3 - CONCRETE	TANK FOUNDATION	300	CY	$ 500.00	$ 150,000
3 - CONCRETE	TANK WALLS	100	CY	$ 600.00	$ 60,000
3 - CONCRETE	TANK ROOF	400	CY	$ 700.00	$ 280,000
5 - METALS	TANK HARDWARE	1	LS	$ 30,000.00	$ 30,000
13 - SPECIAL CONDIT	TELEMETRY	1	LS	$ 10,000.00	$ 10,000
15 - MECHANICAL	BOOSTER PUMP	2	LS	$ 45,000.00	$ 90,000
15 - MECHANICAL	SITE PIPING	1	LS	$ 60,000.00	$ 60,000
15 - MECHANICAL	VALVES & FITTINGS	1	LS	$ 60,000.00	$ 60,000
16 - ELECTRICAL	ELECTRICAL	1%			$ 3,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 867,800**
	Confidence Factor			75%	**$ 216,950**
	TOTAL CONSTRUCTION COST				**$ 1,084,750**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				
	Legal/Bonding & Audit				$ -
	Surveying				$ 10,000.00
	Geotechnical Investigation				$ 10,000.00
	Preparation of final design and contract documents				$ 100,000.00
	Construction Observation/Inspection				$ 100,000.00
	Contract Administration and Funding Support				$ -
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 220,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 1,300,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER STORAGE ALTERNATIVES
WSt-4 INSUFFICIENT STORAGE CAPACITY FOR OBLIGATED DEMAND
2.0 MG WATER TANK

Project No.	**01-07-0038**		
Project:	**Garden City WMP**	Prepared by:	8-Jan-08
Client:	**Garden City**	Date:	WJC

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 20,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 10,000
2 - SITE WORK	DEMOLITION OF EXISTING TANK	1	LS	$ 40,000.00	$ 40,000
2 - SITE WORK	EXCAVATION, BACKFILL, SITE GRADING	9,000	CY	$ 8.00	$ 72,000
2 - SITE WORK	EROSION & SEDIMENT CONTROL	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	FOUNDATION DRAIN SYSTEM	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	STRUCTURAL FILL	950	CY	$ 18.00	$ 17,100
2 - SITE WORK	AGGREGATE BASE COURSE	1,700	CY	$ 24.00	$ 40,800
2 - SITE WORK	EXIT END OVERFLOW IMPROVEMENTS	1	LS	$ 15,000.00	$ 15,000
2 - SITE WORK	DISINFECTION & TESTING	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	CLEANING	1	LS	$ 10,000.00	$ 10,000
3 - CONCRETE	TANK FOUNDATION	600	CY	$ 500.00	$ 300,000
3 - CONCRETE	TANK WALLS	200	CY	$ 600.00	$ 120,000
3 - CONCRETE	TANK ROOF	800	CY	$ 700.00	$ 560,000
5 - METALS	TANK HARDWARE	1	LS	$ 35,000.00	$ 35,000
13 - SPECIAL CONDIT	TELEMETRY	1	LS	$ 10,000.00	$ 10,000
15 - MECHANICAL	BOOSTER PUMP	2	LS	$ 45,000.00	$ 90,000
15 - MECHANICAL	SITE PIPING	1	LS	$ 70,000.00	$ 70,000
15 - MECHANICAL	VALVES & FITTINGS	1	LS	$ 70,000.00	$ 70,000
16 - ELECTRICAL	ELECTRICAL	1%			$ 5,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 1,514,900**
	Confidence Factor			75%	**$ 378,725**
	TOTAL CONSTRUCTION COST				**$ 1,893,625**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				
	Legal/Bonding & Audit				$ -
	Surveying				$ 10,000.00
	Geotechnical Investigation				$ 10,000.00
	Preparation of final design and contract documents				$ 170,000.00
	Construction Observation/Inspection				$ 170,000.00
	Contract Administration and Funding Support	1.00%			$ 19,000.00
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 379,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 2,272,625**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER STORAGE ALTERNATIVES

WSt-4 INSUFFICIENT STORAGE CAPACITY FOR OBLIGATED DEMAND

3.5 MG WATER TANK

Project No.	**01-07-0038**				
Project:	**Garden City WMP**			Prepared by:	8-Jan-08
Client:	**Garden City**			Date:	WJC
DIVISION NUMBER	**SPEC SECTION AND DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 42,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 21,000
2 - SITE WORK	DEMOLITION OF EXISTING TANK	1	LS	$ 40,000.00	$ 40,000
2 - SITE WORK	EXCAVATION, BACKFILL, SITE GRADING	13,000	CY	$ 8.00	$ 104,000
2 - SITE WORK	EROSION & SEDIMENT CONTROL	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	FOUNDATION DRAIN SYSTEM	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	STRUCTURAL FILL	1,200	CY	$ 18.00	$ 21,600
2 - SITE WORK	AGGREGATE BASE COURSE	3,000	CY	$ 24.00	$ 72,000
2 - SITE WORK	EXIT END OVERFLOW IMPROVEMENTS	1	LS	$ 15,000.00	$ 15,000
2 - SITE WORK	DISINFECTION & TESTING	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	CLEANING	1	LS	$ 10,000.00	$ 10,000
3 - CONCRETE	TANK FOUNDATION	900	CY	$ 500.00	$ 450,000
3 - CONCRETE	TANK WALLS	300	CY	$ 600.00	$ 180,000
3 - CONCRETE	TANK ROOF	1,600	CY	$ 700.00	$ 1,120,000
5 - METALS	TANK HARDWARE	1	LS	$ 40,000.00	$ 40,000
13 - SPECIAL CONDIT	TELEMETRY	1	LS	$ 10,000.00	$ 10,000
15 - MECHANICAL	BOOSTER PUMP	2	LS	$ 45,000.00	$ 90,000
15 - MECHANICAL	SITE PIPING	1	LS	$ 75,000.00	$ 75,000
15 - MECHANICAL	VALVES & FITTINGS	1	LS	$ 75,000.00	$ 75,000
16 - ELECTRICAL	ELECTRICAL	1%			$ 9,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 2,404,600**
	Confidence Factor			75%	**$ 601,150**
	TOTAL CONSTRUCTION COST				**$ 3,005,750**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				
	Legal/Bonding & Audit				$ -
	Surveying				$ 10,000.00
	Geotechnical Investigation				$ 10,000.00
	Preparation of final design and contract documents				$ 270,000.00
	Construction Observation/Inspection				$ 270,000.00
	Contract Administration and Funding Support	2.00%			$ 60,000.00
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 620,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 3,625,750**

FORSGREN Associates Inc.

OPINION OF PROBABLE COST

OPERATION & MAINTENANCE

WSu-1 INSUFFICIENT PUMPING CAPACITY FOR ALLOWED DIVERSION RATE

REHABILITATE WELLS #3, #8, #6

Project No. 01-07-0038

Project: Garden City WMP

Client: Garden City

Prepared by: 1-Feb-06

Date: BEC

Variables:

Working Days	270	Days/Year
Power Cost	0.07	$/KWH
Flowrate	2	MG/Day
Discount Rate	5	%

Item No.	Description	Quantity	Units	Operation Time	Units	Unit Cost	Unit	Estimated Annual Cost
	LABOR							
	Superindentent	1	Person	0	Per Day	$ 40	Hour	$ 3,240
	Grade IV Operator		Person	8	Per Day	$ 50	Hour	$ -
	Grade III Operator	1	Person	1	Per Day	$ 40	Hour	$ 6,480
	Grade II Operator		Person	8	Per Day	$ 30	Hour	$ -
	Grade I Operator	1	Person	3	Per Day	$ 20	Hour	$ 16,200
	Lab Tech	0	Person	4	Per Day	$ 30	Hour	$ -
	Mechanic	1	Person	0	Per Day	$ 40	Hour	$ -
	Laborer	2	Person	0	Per Day	$ 25	Hour	$ -
								$ 25,920
	UTILITIES			***Power***		***Oper. Time***		
	Power - Well Pump	1	Each	250.0	HP	24	Hours/Day	$ 114,318
		1	Each	250.0	HP	24	Hours/Day	$ 114,318
		1	Each	100.0	HP	24	Hours/Day	$ 45,727
		0	Each	7.5	HP	24	Hours/Day	$ -
		0	Each	5.0	HP	2	Hours/Day	$ -
		0	Each	0.2	KW	24	Hours/Day	$ -
	Power - Lighting	1	Each	0.5	KW	24	Hours/Day	$ 307
								$ 274,669
	MATERIALS							
		0	LS	2.5	%	$ 800.00	Meter	$ -
	NEW INSTALLATIONS	0	LS	50.0	#/Yr	$ 800.00	Meter	$ -
								$ -
	OUTSIDE SERVICES	***No. Tests***		***Samples***				
	Compliance Testing	4	constituents	3	amples/quarte	$ 20.00	Per Sample	$ 960
								$ 960
	MISCELLANEOUS EXPENSES							
	Memberships	0.0	People	1	Organizations	$ 150.00	$/Year	$ -
	Vehicles	0.0	Vehicles	8	Hours/Day	$ 0.07	$/Year	$ -
	Fuel - Diesel	3.0	Miles/Day	810	Miles/yr	$ 0.55	$/mile	$ 446
								$ 446
	REPLACEMENT COSTS			***Interval***				
	Meter Parts	1	Each	0	Years	$ 800.00	Meter	$ 160
		0	Lbs/Year	20	Years	$ -		$ -
		0	Each	20	Years	$ -		$ -
								$ 160
	TOTAL OPERATION & MAINTENANCE COSTS							
	Total							**$ 302,315**
	Cost per Thousand Gallons							

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER PUMPING CAPACITY ALTERNATIVES

Wsu-1 INSUFFICIENT PUMPING CAPACITY FOR OBLIGATED DEMAND

REHABILITATE WELLS #3, #6, AND #8

Project No.	**01-07-0038**				
Project:	**Garden City WMP**			Prepared by:	8-Jan-08
Client:	**Garden City**			Date:	WJC
DIVISION NUMBER	**SPEC SECTION AND DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	3%			$ 22,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	3%			$ 22,000
2 - SITE WORK	REMOVE EXISTING WELL, MOTOR, & CASING	3	LS	$ 6,000.00	$ 18,000
2 - SITE WORK	DRILL 24-INCH DIAMETER BOREHOLE	945	LF	$ 200.00	$ 189,000
2 - SITE WORK	WELL DEVELOPMENT	30	HR	$ 235.00	$ 7,050
2 - SITE WORK	MOBILIZATION AND SET TEST PUMP	3	LS	$ 4,350.00	$ 13,050
2 - SITE WORK	CONDUCT AQUIFER TEST	144	HR	$ 175.00	$ 25,200
3 - CONCRETE	BENTONITE GROUT SEAL	3	LS	$ 6,080.00	$ 18,240
3 - CONCRETE	WELL HOUSE FOUNDATION	90	CY	$ 600.00	$ 54,000
4 - MASONRY	(20'x24'x10') 8" CMU(W/ GROUT AND REINFORCING)	3,240	SF	$ 20.00	$ 64,800
5 - METALS	WELL CASING 16"	825	LF	$ 75.00	$ 61,875
5 - METALS	TELESCOPING SCREEN 16"	120	LF	$ 300.00	$ 36,000
5 - METALS	DISCHARGE PIPING	300	LF	$ 100.00	$ 30,000
11 - EQUIPMENT	WELL PUMP	3	LS	$ 32,000.00	$ 96,000
11 - EQUIPMENT	PUMP VFD	3	LS	$ 20,000.00	$ 60,000
15 - HVAC	HEATING	2%			$ 12,000
16 - ELECTRICAL	LIGHTING	1%			$ 5,000
16 - ELECTRICAL	PROCESS ELECTRICAL	10%			$ 60,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 794,215**
	Confidence Factor			75%	**$ 198,554**
	TOTAL CONSTRUCTION COST				**$ 992,769**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				$ 7,000
	Legal/Bonding & Audit				$ -
	Surveying				$ 4,000
	Geotechnical Investigation				$ -
	Preparation of final design and contract documents				$ 40,000
	Construction Observation/Inspection				$ 40,000
	Contract Administration and Funding Support	2.00%			$ 20,000
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 111,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 1,100,000**

FORSGREN Associates Inc.

OPINION OF PROBABLE COST

OPERATION & MAINTENANCE

Wsu-1 INSUFFICIENT PUMPING CAPACITY FOR DIVERSION RATE

NEW WELL 1,375 GPM

Project No. 01-07-0038

Project: Garden City WMP

Client: Garden City

Prepared by: 1-Feb-06

Date: BEC

Variables:

Working Days	270	Days/Year
Power Cost	0.07	$/KWH
Flowrate	2	MG/Day
Discount Rate	5	%

Item No.	Description	Quantity	Units	Operation Time	Units	Unit Cost	Unit	Estimated Annual Cost
	LABOR							
	Superindentent	1	Person	0	Per Day	$ 40	Hour	$ 1,080
	Grade IV Operator		Person	8	Per Day	$ 50	Hour	$ -
	Grade III Operator	1	Person	0	Per Day	$ 40	Hour	$ 2,160
	Grade II Operator		Person	8	Per Day	$ 30	Hour	$ -
	Grade I Operator	1	Person	1	Per Day	$ 20	Hour	$ 5,400
	Lab Tech	0	Person	4	Per Day	$ 30	Hour	$ -
	Mechanic	1	Person	0	Per Day	$ 40	Hour	$ -
	Laborer	2	Person	0	Per Day	$ 25	Hour	$ -
								$ 8,640
	UTILITIES			***Power***		***Oper. Time***		
	Power - Well Pump	1	Each	200.0	HP	24	Hours/Day	$ 91,454
		0	Each	7.5	HP	24	Hours/Day	$ -
		0	Each	0.5	HP	24	Hours/Day	$ -
		0	Each	7.5	HP	24	Hours/Day	$ -
		0	Each	5.0	HP	2	Hours/Day	$ -
		0	Each	0.2	KW	24	Hours/Day	$ -
	Power - Lighting	1	Each	0.5	KW	24	Hours/Day	$ 307
								$ 91,761
	MATERIALS							
		0	LS	2.5	%	$ 800.00	Meter	$ -
	NEW INSTALLATIONS	0	LS	50.0	#/Yr	$ 800.00	Meter	$ -
								$ -
	OUTSIDE SERVICES	***No. Tests***		***Samples***				
	Compliance Testing	4	constituents	1	amples/quarte	$ 20.00	Per Sample	$ 320
								$ 320
	MISCELLANEOUS EXPENSES							
	Memberships	0.0	People	1	Organizations	$ 150.00	$/Year	$ -
	Vehicles	0.0	Vehicles	8	Hours/Day	$ 0.07	$/Year	$ -
	Fuel - Diesel	1.0	Miles/Day	270	Miles/yr	$ 0.55	$/mile	$ 149
								$ 149
	REPLACEMENT COSTS			***Interval***				
	Meter Parts	1	Each	0	Years	$ 800.00	Meter	$ 160
		0	Lbs/Year	20	Years	$ -		$ -
		0	Each	20	Years	$ -		$ -
								$ 160
	TOTAL OPERATION & MAINTENANCE COSTS							
	Total							**$ 101,189**
	Cost per Thousand Gallons							

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER PUMPING CAPACITY ALTERNATIVES WR-1
Wsu-1 INSUFFICIENT PUMPING CAPACITY FOR OBLIGATED DEMAND
NEW WELL (GROVER SUBDIVISION) 2,500 GPM

Project No.	**01-07-0038**				
Project:	**Garden City WMP**			Prepared by: 8-Jan-08	
Client:	**Garden City**			Date: WJC	
DIVISION NUMBER	**SPEC SECTION AND DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 8,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 4,000
2 - SITE WORK	LAND PURCHASE	1.0	AC	$ 100,000.00	$ 100,000
2 - SITE WORK	FENCING	850	LF	$ 20.00	$ 17,000
2 - SITE WORK	CLEAR AND GRUB SITE	1	LS	$ 2,000.00	$ 2,000
2 - SITE WORK	TEST WELL	1	LS	$ 76,000.00	$ 76,000
2 - SITE WORK	DRILL 30-INCH DIAMETER BOREHOLE	250	LF	$ 250.00	$ 62,500
2 - SITE WORK	WELL DEVELOPMENT	10	HR	$ 235.00	$ 2,350
2 - SITE WORK	MOBILIZATION AND SET TEST PUMP	1	LS	$ 5,000.00	$ 5,000
2 - SITE WORK	CONDUCT AQUIFER TEST	48	HR	$ 175.00	$ 8,400
3 - CONCRETE	WELL HOUSE FOUNDATION	60	CY	$ 600.00	$ 36,000
3 - CONCRETE	BENTONITE GROUT SEAL	1	LS	$ 6,000.00	$ 6,000
4 - MASONRY	(20'x24'x10') 8" CMU(W/ GROUT AND REINFORCING)	1,080	SF	$ 20.00	$ 21,600
5 - METALS	WELL CASING 24"	250	LF	$ 180.00	$ 45,000
5 - METALS	TELESCOPING SCREEN 24"	60	LF	$ 500.00	$ 30,000
5 - METALS	DISCHARGE PIPING	100	LF	$ 150.00	$ 15,000
11 - EQUIPMENT	WELL PUMP	1	LS	$ 32,000.00	$ 32,000
11 - EQUIPMENT	PITLESS ADAPTER	1	LS	$ 10,000.00	$ 10,000
15 - HVAC	HEATING	2%			$ 7,000
16 - ELECTRICAL	LIGHTING	1%			$ 3,000
16 - ELECTRICAL	PROCESS ELECTRICAL	10%			$ 35,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 525,850**
	Confidence Factor			75%	**$ 131,463**
	TOTAL CONSTRUCTION COST				**$ 657,313**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				-
	Water Sampling and Testing				$ 7,000
	Legal/Bonding & Audit				$ 50,000
	Surveying				$ 1,000
	Geotechnical Investigation				$ -
	Preparation of final design and contract documents				$ 50,000
	Construction Observation/Inspection				$ 50,000
	Contract Administration and Funding Support	2.00%			$ 13,000
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 171,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 828,313**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER STORAGE ALTERNATIVES

WSt-4 INSUFFICIENT STORAGE CAPACITY FOR OBLIGATED DEMAND

STANDBY POWER SUPPLY NATURAL GAS

Project No.	**01-07-0038**				
Project:	**Garden City WMP**			Prepared by:	8-Jan-08
Client:	**Garden City**			Date:	WJC
DIVISION NUMBER	**SPEC SECTION AND DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 5,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 2,000
2 - SITE WORK	SITE GRADING	1	LS	$ 5,000	$ 5,000
	FENCING	220	LF	$ 15	$ 3,300
		0	LF	$ 20	$ -
3 - CONCRETE					
	GENERATOR FOUNDATION	20	cYD	$ 450	$ 9,000
	WALLS /CONTAINMENT	5	cYD	$ 500	$ 2,500
		0	cYD	$ 600	$ -
15 - MECHANICAL					
	WELL 4 STANDBY POWER GENERATION	1	LS	$ 95,000	$ 95,000
	WELL 9 STANDBY POWER GENERATION	1	LS	$ 110,000	$ 110,000
16 - ELECTRICAL					
	PROCESS ELECTRICAL	5%			$ 11,000
	TIE INTO SCADA	1%			$ 2,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 244,800**
	Confidence Factor			75%	**$ 61,200**
	TOTAL CONSTRUCTION COST				**$ 306,000**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				
	Legal/Bonding & Audit				$ -
	Surveying				$ 10,000.00
	Geotechnical Investigation				$ 10,000.00
	Preparation of final design and contract documents				$ 30,000.00
	Construction Observation/Inspection				$ 30,000.00
	Contract Administration and Funding Support				$ -
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 80,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 386,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER STORAGE ALTERNATIVES

WSt-4 INSUFFICIENT STORAGE CAPACITY FOR OBLIGATED DEMAND

STANDBY POWER SUPPLY DIESEL

Project No.	**01-07-0038**				
Project:	**Garden City WMP**			Prepared by:	8-Jan-08
Client:	**Garden City**			Date:	WJC
DIVISION NUMBER	**SPEC SECTION AND DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 7,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 3,000
2 - SITE WORK	SITE GRADING	1	LS	$ 5,000	$ 5,000
	FENCING	220	LF	$ 15	$ 3,300
		0	LF	$ 20	$ -
3 - CONCRETE					
	GENERATOR FOUNDATION	20	cYD	$ 450	$ 9,000
	WALLS /CONTAINMENT	5	cYD	$ 500	$ 2,500
		0	cYD	$ 600	$ -
15 - MECHANICAL					
	WELL 3 STANDBY POWER GENERATION	1	LS	$ 110,000	$ 110,000
	WELL 4 STANDBY POWER GENERATION	1	LS	$ 95,000	$ 95,000
	WELL 8 STANDBY POWER GENERATION	1	LS	$ 95,000	$ 95,000
16 - ELECTRICAL					
	PROCESS ELECTRICAL	5%			$ 16,000
	TIE INTO SCADA	1%			$ 3,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 348,800**
	Confidence Factor			75%	**$ 87,200**
	TOTAL CONSTRUCTION COST				**$ 436,000**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				
	Legal/Bonding & Audit				$ -
	Surveying				$ 10,000.00
	Geotechnical Investigation				$ 10,000.00
	Preparation of final design and contract documents				$ 40,000.00
	Construction Observation/Inspection				$ 40,000.00
	Contract Administration and Funding Support				$ -
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 100,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 536,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER SOURCE/RIGHTS ALTERNATIVES
O & M PROBABLE COST
GARDEN CITY WATER SUPPLY

Project No.	**01-07-0038**				
Project:	**Garden City - WMP**			Prepared by:	10-Mar-08
Client:	**Garden City**			Date:	KLH
ALTERNATIVE DESIG.	**DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
WSu-3	WATER SUPPLY - Well Discharge Piping	6	LS	$ 2,500.00	$ 15,000
	WATER SUPPLY - Sample Ports	10	LS	$ 100.00	$ 1,000
	WATER SUPPLY - Backflow Prevention	10	LS	$ 100.00	$ 1,000
	WATER SUPPLY - Maintenance/Housekeeping	7	LS	$ 1,450.00	$ 10,150
TOTAL CONSTRUCTION COSTS		4			
	SUBTOTAL CONSTRUCTION COST				**$ 27,150**
	Confidence Factor			80%	**$ 5,430**
	TOTAL CONSTRUCTION COST				**$ 32,580**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				-
	Water Sampling and Testing				-
	Legal/Bonding & Audit				
	Geotechnical Investigation				-
	Contract Administration and Funding Support				
	SUBTOTAL INCIDENTAL PROJECT COSTS				-
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 33,000**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER PUMPING CAPACITY ALTERNATIVES WSu-5
Wsu-1 INSUFFICIENT PUMPING CAPACITY FOR OBLIGATED DEMAND
NEW WELL 2,600 GPM

Project No.	**01-07-0038**
Project:	**Garden City WMP**
Client:	**Garden City**

Prepared by: 8-Jan-08
Date: WJC

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 10,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 5,000
2 - SITE WORK	LAND PURCHASE	0.5	AC	$ 110,000.00	$ 55,000
2 - SITE WORK	FENCING	850	LF	$ 20.00	$ 17,000
2 - SITE WORK	CLEAR AND GRUB SITE	1	LS	$ 2,000.00	$ 2,000
2 - SITE WORK	TEST WELL	1	LS	$ 76,000.00	$ 76,000
2 - SITE WORK	DRILL 30-INCH DIAMETER BOREHOLE	500	LF	$ 250.00	$ 125,000
2 - SITE WORK	WELL DEVELOPMENT	10	HR	$ 235.00	$ 2,350
2 - SITE WORK	MOBILIZATION AND SET TEST PUMP	1	LS	$ 5,000.00	$ 5,000
2 - SITE WORK	CONDUCT AQUIFER TEST	48	HR	$ 175.00	$ 8,400
3 - CONCRETE	WELL HOUSE FOUNDATION	60	CY	$ 600.00	$ 36,000
3 - CONCRETE	BENTONITE GROUT SEAL	1	LS	$ 8,000.00	$ 8,000
4 - MASONRY	(20'x24'x10') 8" CMU(W/ GROUT AND REINFORCING)	1,080	SF	$ 20.00	$ 21,600
5 - METALS	WELL CASING 24"	500	LF	$ 180.00	$ 90,000
5 - METALS	TELESCOPING SCREEN 24"	60	LF	$ 500.00	$ 30,000
5 - METALS	DISCHARGE PIPING	100	LF	$ 150.00	$ 15,000
11 - EQUIPMENT	WELL PUMP	1	LS	$ 32,000.00	$ 32,000
11 - EQUIPMENT	PITLESS ADAPTER	1	LS	$ 10,000.00	$ 10,000
15 - HVAC	HEATING	2%			$ 9,000
16 - ELECTRICAL	LIGHTING	1%			$ 4,000
16 - ELECTRICAL	PROCESS ELECTRICAL	10%			$ 46,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 607,350**
	Confidence Factor			75%	**$ 151,838**
	TOTAL CONSTRUCTION COST				**$ 759,188**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				-
	Water Sampling and Testing				$ 7,000
	Legal/Bonding & Audit				$ -
	Surveying				$ 4,000
	Geotechnical Investigation				$ -
	Preparation of final design and contract documents				$ 76,000
	Construction Observation/Inspection				$ 76,000
	Contract Administration and Funding Support	2.00%			$ 15,000
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 178,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 937,188**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER PUMPING CAPACITY ALTERNATIVES

Wsu-1 INSUFFICIENT PUMPING CAPACITY FOR OBLIGATED DEMAND

REHABILITATE WELLS #6 & 12 TO 4,250 GPM

Project No.	**01-07-0038**		
Project:	**Garden City WMP**	Prepared by:	8-Jan-08
Client:	**Garden City**	Date:	WJC

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	3%			$ 19,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	3%			$ 19,000
2 - SITE WORK	REMOVE EXISTING WELL, MOTOR, & CASING WELL #6	1	LS	$ 6,000.00	$ 6,000
2 - SITE WORK	REMOVE EXISTING WELL, MOTOR, & CASING WELL #7	0	LS	$ 6,000.00	$ -
2 - SITE WORK	REMOVE EXISTING WELL, MOTOR, & CASING WELL #12	1	LS	$ 6,000.00	$ 6,000
2 - SITE WORK	DRILL 24-INCH DIAMETER BOREHOLE WELL #6	425	LF	$ 200.00	$ 85,000
2 - SITE WORK	DRILL 24-INCH DIAMETER BOREHOLE WELL #7	0	LF	$ 200.00	$ -
2 - SITE WORK	DRILL 24-INCH DIAMETER BOREHOLE WELL #12	425	LF	$ 200.00	$ 85,000
2 - SITE WORK	WELL DEVELOPMENT WELL #6	10	HR	$ 235.00	$ 2,350
2 - SITE WORK	WELL DEVELOPMENT WELL #7	0	HR	$ 235.00	$ -
2 - SITE WORK	WELL DEVELOPMENT WELL #12	10	HR	$ 235.00	$ 2,350
2 - SITE WORK	MOBILIZATION AND SET TEST PUMP WELL	2	LS	$ 4,350.00	$ 8,700
2 - SITE WORK	CONDUCT AQUIFER TEST	144	HR	$ 175.00	$ 25,200
3 - CONCRETE	BENTONITE GROUT SEAL	2	LS	$ 6,080.00	$ 12,160
5 - METALS	WELL CASING 24"	850	LF	$ 180.00	$ 153,000
3 - CONCRETE	WELL HOUSE FOUNDATION	120	CY	$ 600.00	$ 72,000
4 - MASONRY	(20'x24'x10') 8" CMU(W/ GROUT AND REINFORCING)	2,160	SF	$ 20.00	$ 43,200
5 - METALS	TELESCOPING SCREEN 16"	80	LF	$ 300.00	$ 24,000
5 - METALS	DISCHARGE PIPING	200	LF	$ 100.00	$ 20,000
11 - EQUIPMENT	WELL PUMP	2	LS	$ 35,000.00	$ 70,000
11 - EQUIPMENT	PUMP VFD	2	LS	$ 20,000.00	$ 40,000
15 - HVAC	HEATING	2%			$ 10,000
16 - ELECTRICAL	LIGHTING	1%			$ 5,000
16 - ELECTRICAL	PROCESS ELECTRICAL	10%			$ 52,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 759,960**
	Confidence Factor			75%	**$ 189,990**
	TOTAL CONSTRUCTION COST				**$ 949,950**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				$ 7,000
	Legal/Bonding & Audit				$ -
	Surveying				$ 4,000
	Geotechnical Investigation				$ -
	Preparation of final design and contract documents				$ 95,000
	Construction Observation/Inspection				$ 95,000
	Contract Administration and Funding Support	2.00%			$ 19,000
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 220,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 1,169,950**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER PUMPING CAPACITY ALTERNATIVES

Wsu-1 INSUFFICIENT PUMPING CAPACITY FOR OBLIGATED DEMAND

ABANDON WELLS # 7 AND # 11

Project No.	**01-07-0038**				
Project:	**Garden City WMP**			Prepared by:	8-Jan-08
Client:	**Garden City**			Date:	WJC
DIVISION NUMBER	**SPEC SECTION AND DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	3%			$ 1,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	3%			$ 1,000
2 - SITE WORK	REMOVE EXISTING WELL, MOTOR, & EQUIPMENT WELL #7	1	LS	$ 5,000.00	$ 5,000
2 - SITE WORK	REMOVE EXISTING WELL, MOTOR, & EQUIPMENT WELL #11	1	LS	$ 5,000.00	$ 5,000
2 - SITE WORK	PLUG AND ABANDON WELL	2	LS	$ 5,500.00	$ 11,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 23,000**
	Confidence Factor			75%	**$ 5,750**
	TOTAL CONSTRUCTION COST				**$ 28,750**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				$ 500
	Legal/Bonding & Audit				$ -
	Surveying				$ -
	Geotechnical Investigation				$ -
	Preparation of final design and contract documents				$ 2,000
	Construction Observation/Inspection				$ 1,000
	Contract Administration and Funding Support	2.00%			$ 1,000
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 5,000
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 33,750**

FORSGREN Associates Inc.

ENGINEERS PRELIMINARY OPINION OF PROBABLE COST

WATER SUPPLY ALTERNATIVES

WSu-5 INSUFFICIENT WATER PRODUCTION FOR FUTURE DEMAND

0.6 MG WATER TANK

Project No.	**01-07-0038**
Project:	**Garden City WMP**
Client:	**Garden City**

Prepared by: 8-Jan-08

Date: WJC

DIVISION NUMBER	SPEC SECTION AND DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
0 - BIDDING	MOBILIZATION, BOND & INSURANCE, BIDDING, ETC	2%			$ 14,000
1 - GENERAL	SHOP DWGS, O&M MANUALS, STARTUP, CONST FACILITIES	1%			$ 2,000
2 - SITE WORK	DEMOLITION OF EXISTING TANK	0	LS	$ 40,000.00	$ -
2 - SITE WORK	EXCAVATION, BACKFILL, SITE GRADING	3,600	CY	$ 8.00	$ 28,800
2 - SITE WORK	EROSION & SEDIMENT CONTROL	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	FOUNDATION DRAIN SYSTEM	1	LS	$ 8,000.00	$ 8,000
2 - SITE WORK	STRUCTURAL FILL	600	CY	$ 18.00	$ 10,800
2 - SITE WORK	AGGREGATE BASE COURSE	600	CY	$ 24.00	$ 14,400
2 - SITE WORK	EXIT END OVERFLOW IMPROVEMENTS	1	LS	$ 15,000.00	$ 15,000
2 - SITE WORK	DISINFECTION & TESTING	1	LS	$ 10,000.00	$ 10,000
2 - SITE WORK	CLEANING	1	LS	$ 10,000.00	$ 10,000
3 - CONCRETE	TANK FOUNDATION	200	CY	$ 500.00	$ 100,000
3 - CONCRETE	TANK WALLS	100	CY	$ 600.00	$ 60,000
3 - CONCRETE	TANK ROOF	300	CY	$ 700.00	$ 210,000
5 - METALS	TANK HARDWARE	1	LS	$ 25,000.00	$ 25,000
13 - SPECIAL CONDIT	TELEMETRY	1	LS	$ 10,000.00	$ 10,000
15 - MECHANICAL	BOOSTER PUMP	2	LS	$ 45,000.00	$ 90,000
15 - MECHANICAL	SITE PIPING	1	LS	$ 50,000.00	$ 50,000
15 - MECHANICAL	VALVES & FITTINGS	1	LS	$ 50,000.00	$ 50,000
16 - ELECTRICAL	ELECTRICAL	2%			$ 4,000
TOTAL CONSTRUCTION COSTS					
	SUBTOTAL CONSTRUCTION COST				**$ 722,000**
	Confidence Factor			75%	**$ 180,500**
	TOTAL CONSTRUCTION COST				**$ 902,500**
INCIDENTAL PROJECT COSTS					
	Facility Planning Study				$ -
	Water Sampling and Testing				
	Legal/Bonding & Audit				$ -
	Surveying				$ 10,000.00
	Geotechnical Investigation				$ 10,000.00
	Preparation of final design and contract documents				$ 80,000.00
	Construction Observation/Inspection				$ 80,000.00
	Contract Administration and Funding Support				$ -
	SUBTOTAL INCIDENTAL PROJECT COSTS				$ 180,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COST					**$ 1,082,500**

APPENDIX O
CASH FLOW STATEMENT

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2008	2009	2010	2011	2012	2013
	ASSUMPTIONS							
1	**CONNECTIONS**	RATE	RATE	RATE	ERU	ADDITIONAL	2007	BASE
2	GROWTH RATE	PERIOD 1	PERIOD 2	PERIOD 3	ASSIGNED	ERU	CONNECTIONS	CHARGE
3	RESIDENTIAL	(percent)	(percent)	(percent)	(each)	(each)	(#)	($)
4	5/8 inch meter	4.50%	1.66%	2.25%	1.00	0.50	1983	$ 27.00
5	3/4 inch meter	4.50%	1.66%	2.25%	1.00	0.50	2520	$ 27.00
6	1 inch meter	4.50%	1.66%	2.25%	1.00	0.50	13	$ 27.00
7	1.5 inch meter	4.50%	1.66%	2.25%	1.00	0.50	3	$ 27.00
8	2 inch meter	4.50%	1.66%	2.25%	1.00	0.50	5	$ 27.00
9	COMMERCIAL	(percent)	(percent)	(percent)	(per acre)	(per acre)	4524	($)
10	3/4 inch meter	2.00%	2.00%	2.25%	1.00	0.50	70	$ 27.00
11	1 inch meter	2.00%	2.00%	2.25%	1.00	0.50	113	$ 32.88
12	1.5 inch meter	2.00%	2.00%	2.25%	1.00	0.50	140	$ 39.78
13	2 inch meter	2.00%	2.00%	2.25%	1.00	0.50	300	$ 49.45
14	3 inch meter	2.00%	2.00%	2.25%	1.00	0.50	20	$ 78.15
15	4 inch meter	2.00%	2.00%	2.25%	1.00	0.50	6	$ 104.56
16	6 inch meter	2.00%	2.00%	2.25%	1.00	0.50	1	$ 187.68
17							650	
18	CONNECTIONS/EDUs							
19	RESIDENTIAL (estimated connections)		3	3	3	3	3	3
20	5/8 inch meter	1983	2028	2073	2120	2168	2216	2266
21	3/4 inch meter	2520	2577	2635	2694	2755	2817	2880
22	1 inch meter	13	13	14	14	14	15	15
23	1.5 inch meter	3	3	3	3	3	3	3
24	2 inch meter	5	5	5	5	5	6	6
25	Subtotal Residential SFDE	4524	4626	4730	4836	4945	5056	5170
26	COMMERCIAL		3	3	3	3	3	3
27	3/4 inch meter	70	72	73	75	77	78	80
28	1 inch meter	113	116	118	121	124	126	129
29	1.5 inch meter	140	143	146	150	153	156	160
30	2 inch meter	300	307	314	321	328	335	343
31	3 inch meter	20	20	21	21	22	22	23
32	4 inch meter	6	6	6	6	7	7	7
33	6 inch meter	1	1	1	1	1	1	1
34	Subtotal Commerical SFDE	650	665	680	695	711	726	743
35	Total SFDE	5174	5290	5409	5531	5656	5783	5913
36								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2008	2009	2010	2011	2012	2013
36	**FEE STRUCTURE**	2007	2008	2009	2010	2011	2012	2013
37	USER RATES:							
38	RESDIENTIALINCREMENTAL CHARGE - O&M							
39	5/8 inch meter	1.33%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
40	3/4 inch meter	1.33%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
41	1 inch meter	1.33%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
42	1.5 inch meter	1.33%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
43	2 inch meter	1.33%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
44	COMMERCIAL INCREMENTAL CHARGE - O&M							
45	3/4 inch meter	2.00%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
46	1 inch meter	2.00%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
47	1.5 inch meter	2.00%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
48	2 inch meter	2.00%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
49	3 inch meter	2.00%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
50	4 inch meter	2.00%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
51	6 inch meter	2.00%	$ 3.60	$ 3.65	$ 3.70	$ 3.75	$ 3.80	$ 3.85
52								
53	RESDIENTIAL BASE RATE - DEBT SERVICE							
54	5/8 inch meter	1.33%	$ 27.00	$ 27.36	$ 27.72	$ 28.09	$ 28.47	$ 28.84
55	3/4 inch meter	1.33%	$ 27.00	$ 27.36	$ 27.72	$ 28.09	$ 28.47	$ 28.84
56	1 inch meter	1.33%	$ 27.00	$ 27.36	$ 27.72	$ 28.09	$ 28.47	$ 28.84
57	1.5 inch meter	1.33%	$ 27.00	$ 27.36	$ 27.72	$ 28.09	$ 28.47	$ 28.84
58	2 inch meter	1.33%	$ 27.00	$ 27.36	$ 27.72	$ 28.09	$ 28.47	$ 28.84
59	COMMERCIAL BASE RATE - DEBT SERVICE							
60	3/4 inch meter	2.00%	$ 27.00	$ 27.36	$ 27.72	$ 28.09	$ 28.47	$ 28.84
61	1 inch meter	2.00%	$ 32.88	$ 33.32	$ 33.76	$ 34.21	$ 34.66	$ 35.13
62	1.5 inch meter	2.00%	$ 39.78	$ 40.31	$ 40.85	$ 41.39	$ 41.94	$ 42.50
63	2 inch meter	2.00%	$ 49.45	$ 50.11	$ 50.77	$ 51.45	$ 52.13	$ 52.83
64	3 inch meter	2.00%	$ 78.15	$ 79.19	$ 80.24	$ 81.31	$ 82.39	$ 83.49
65	4 inch meter	2.00%	$ 104.56	$ 105.95	$ 107.36	$ 108.79	$ 110.23	$ 111.70
66	6 inch meter	2.00%	$ 187.68	$ 190.18	$ 192.71	$ 195.27	$ 197.87	$ 200.50
67								
68	RESDIENTIAL BASE RATE - CAPITAL RESERVE							
69	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
70	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
71	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
72	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
73	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
74	COMMERCIAL BASE RATE - CAPITAL RESERVE							
75	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
76	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
77	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
78	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
79	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
80	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
81	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
82								
83	CONNECTION FEE (IMPACT FEE)							
84	RESDIENTIAL CONNECTION FEE							
85	5/8 inch meter	1.33%	$ 2,000.00	$ 2,026.60	$ 2,053.55	$ 2,080.87	$ 2,108.54	$ 2,136.59
86	3/4 inch meter	1.33%	$ 2,000.00	$ 2,026.60	$ 2,053.55	$ 2,080.87	$ 2,108.54	$ 2,136.59
87	1 inch meter	1.33%	$ 2,000.00	$ 2,026.60	$ 2,053.55	$ 2,080.87	$ 2,108.54	$ 2,136.59
88	1.5 inch meter	1.33%	$ 2,045.00	$ 2,072.20	$ 2,099.76	$ 2,127.69	$ 2,155.98	$ 2,184.66
89	2 inch meter	1.33%	$ 2,800.00	$ 2,837.24	$ 2,874.98	$ 2,913.21	$ 2,951.96	$ 2,991.22
90	COMMERCIAL CONNECTION FEE							
91	3/4 inch meter	2.00%	$ 6,000.00	$ 6,079.80	$ 6,160.66	$ 6,242.60	$ 6,325.62	$ 6,409.76
92	1 inch meter	2.00%	$ 6,000.00	$ 6,079.80	$ 6,160.66	$ 6,242.60	$ 6,325.62	$ 6,409.76
93	1.5 inch meter	2.00%	$ 6,700.00	$ 6,789.11	$ 6,879.41	$ 6,970.90	$ 7,063.61	$ 7,157.56
94	2 inch meter	2.00%	$ 6,800.00	$ 6,890.44	$ 6,982.08	$ 7,074.94	$ 7,169.04	$ 7,264.39
95	3 inch meter	2.00%	$ 7,150.00	$ 7,245.10	$ 7,341.45	$ 7,439.10	$ 7,538.04	$ 7,638.29
96	4 inch meter	2.00%	$ 7,300.00	$ 7,397.09	$ 7,495.47	$ 7,595.16	$ 7,696.18	$ 7,798.54
97	6 inch meter	2.00%	$ 8,100.00	$ 8,207.73	$ 8,316.89	$ 8,427.51	$ 8,539.59	$ 8,653.17
98								
99	TREATMENT SPECIAL ASSESSMENT							
100	RESDIENTIAL CONNECTION FEE							
101	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
102	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
103	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
104	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
105	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
106	COMMERCIAL CONNECTION FEE							
107	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
108	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
109	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
110	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
111	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
112	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
113	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
114								
115	OTHER FEES							
116	Interest on Investments	3.00%	$ 10,000.00	$ 10,133.00	$ 10,267.77	$ 10,404.33	$ 10,542.71	$ 10,682.93
117	Engineering Plan Revew	3.00%	$ 121.28	$ 122.89	$ 124.53	$ 126.18	$ 127.86	$ 129.56
118	Water Plan Review	3.00%	$ 52.92	$ 53.62	$ 54.34	$ 55.06	$ 55.79	$ 56.53
119	Late Charges	3.00%	$ 1,500.00	$ 1,519.95	$ 1,540.17	$ 1,560.65	$ 1,581.41	$ 1,602.44
120	Cross Connection Plan Review	3.00%	$ 52.92	$ 53.62	$ 54.34	$ 55.06	$ 55.79	$ 56.53
121	Water Observations	3.00%	$ 52.92	$ 53.62	$ 54.34	$ 55.06	$ 55.79	$ 56.53
122								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2008	2009	2010	2011	2012	2013
123	**REVENUE**	2007	2008	2009	2010	2011	2012	2013
124	OPERATION & MAINTENANCE REVENUES:							
125	RESDIENTIALINCREMENTAL CHARGE - O&M							
126	5/8 inch meter		$ 919,727	$ 952,929	$ 987,329	$ 1,022,971	$ 1,059,899	$ 1,098,161
127	3/4 inch meter		$ 1,168,791	$ 1,210,984	$ 1,254,699	$ 1,299,993	$ 1,346,922	$ 1,395,545
128	1 inch meter		$ 6,029	$ 6,247	$ 6,473	$ 6,706	$ 6,948	$ 7,199
129	1.5 inch meter		$ 1,391	$ 1,442	$ 1,494	$ 1,548	$ 1,603	$ 1,661
130	2 inch meter		$ 2,319	$ 2,403	$ 2,489	$ 2,579	$ 2,672	$ 2,769
131	Sutbotal Residential Incremental Charge - O&M		$ 2,098,258	$ 2,174,004	$ 2,252,484	$ 2,333,797	$ 2,418,045	$ 2,505,335
132	COMMERCIAL INCREMENTAL CHARGE - O&M							
133	3/4 inch meter		$ 32,466	$ 33,638	$ 34,853	$ 36,111	$ 37,414	$ 38,765
134	1 inch meter		$ 52,410	$ 54,302	$ 56,262	$ 58,293	$ 60,398	$ 62,578
135	1.5 inch meter		$ 64,933	$ 67,277	$ 69,706	$ 72,222	$ 74,829	$ 77,530
136	2 inch meter		$ 139,142	$ 144,165	$ 149,369	$ 154,761	$ 160,348	$ 166,136
137	3 inch meter		$ 9,276	$ 9,611	$ 9,958	$ 10,317	$ 10,690	$ 11,076
138	4 inch meter		$ 2,783	$ 2,883	$ 2,987	$ 3,095	$ 3,207	$ 3,323
139	6 inch meter		$ 464	$ 481	$ 498	$ 516	$ 534	$ 554
140	Subtotal Commercial Incremental Charge - O&M		$ 301,474	$ 312,357	$ 323,633	$ 335,316	$ 347,420	$ 359,962
141	TOTAL OPERATION & MAINTENANCE REVENUE		**$ 2,399,732**	**$ 2,486,361**	**$ 2,576,117**	**$ 2,669,112**	**$ 2,765,465**	**$ 2,865,297**
142								
143	DEBT SERVICE REVENUE							
144	RESDIENTIAL BASE CHARGE - DEBT SERVICE							
145	5/8 inch meter		$ 656,948	$ 680,663	$ 705,235	$ 730,693	$ 757,071	$ 784,400
146	3/4 inch meter		$ 834,851	$ 864,988	$ 896,214	$ 928,566	$ 962,087	$ 996,818
147	1 inch meter		$ 4,307	$ 4,462	$ 4,623	$ 4,790	$ 4,963	$ 5,142
148	1.5 inch meter		$ 994	$ 1,030	$ 1,067	$ 1,105	$ 1,145	$ 1,187
149	2 inch meter		$ 1,656	$ 1,716	$ 1,778	$ 1,842	$ 1,909	$ 1,978
150	Sutbotal Residential Incremental Charge - O&M		$ 1,498,756	$ 1,552,860	$ 1,608,917	$ 1,666,998	$ 1,727,175	$ 1,789,525
151	COMMERCIAL BASE CHARGE - DEBT SERVICE							
152	3/4 inch meter		$ 23,190	$ 24,027	$ 24,895	$ 25,794	$ 26,725	$ 27,689
153	1 inch meter		$ 45,588	$ 47,234	$ 48,939	$ 50,706	$ 52,536	$ 54,433
154	1.5 inch meter		$ 68,334	$ 70,801	$ 73,357	$ 76,005	$ 78,749	$ 81,591
155	2 inch meter		$ 182,025	$ 188,596	$ 195,405	$ 202,459	$ 209,767	$ 217,340
156	3 inch meter		$ 19,178	$ 19,870	$ 20,588	$ 21,331	$ 22,101	$ 22,899
157	4 inch meter		$ 7,698	$ 7,976	$ 8,264	$ 8,562	$ 8,871	$ 9,191
158	6 inch meter		$ 2,303	$ 2,386	$ 2,472	$ 2,561	$ 2,654	$ 2,750
159	Subtotal Commercial Incremental Charge - O&M		$ 348,317	$ 360,891	$ 373,919	$ 387,417	$ 401,402	$ 415,893
160	TOTAL DEBT SERVICE REVENUE		**$ 1,847,073**	**$ 1,913,751**	**$ 1,982,836**	**$ 2,054,415**	**$ 2,128,577**	**$ 2,205,417**
161								
162	CAPITAL RESERVE REVENUE:							
163	RESDIENTIAL BASE CHARGE - CAPITAL RESERVE							
164	5/8 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
165	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
166	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
167	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
168	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
169	Sutbotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
170	COMMERCIAL BASE CHARGE - CAPITAL RESERVE							
171	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
172	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
173	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
174	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
175	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
176	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
177	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
178	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
179	TOTAL CAPITAL RESERVE REVENUE		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
180								
181	CONNECTION FEE (IMPACT/TAP FEE) REVENUE							
182	RESDIENTIAL CONNECTION FEE							
183	5/8 inch meter		$ 88,000	$ 91,197	$ 94,463	$ 97,801	$ 101,210	$ 104,693
184	3/4 inch meter		$ 112,000	$ 115,516	$ 121,160	$ 124,852	$ 128,621	$ 134,605
185	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
186	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
187	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
188	Sutbotal Residential Incremental Charge - O&M		$ 200,000	$ 206,713	$ 215,623	$ 222,653	$ 229,831	$ 239,298
189	COMMERCIAL CONNECTION FEE - O&M							
190	3/4 inch meter		$ 6,000	$ 6,080	$ 6,161	$ 6,243	$ 6,326	$ 6,410
191	1 inch meter		$ 12,000	$ 12,160	$ 12,321	$ 12,485	$ 12,651	$ 12,820
192	1.5 inch meter		$ 20,100	$ 20,367	$ 20,638	$ 20,913	$ 21,191	$ 21,473
193	2 inch meter		$ 40,800	$ 41,343	$ 48,875	$ 49,525	$ 50,183	$ 50,851
194	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
195	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
196	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
197	Subtotal Commercial Incremental Charge - O&M		$ 78,900	$ 79,949	$ 87,995	$ 89,165	$ 90,351	$ 91,353
198	TOTAL CONNECTION FEE (IMPACT FEE) REVENUE		**$ 278,900**	**$ 286,663**	**$ 303,618**	**$ 311,818**	**$ 320,182**	**$ 330,650**
199								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

			2007	2008	2009	2010	2011	2012	2013
200	SPECIAL ASSESSMENT REVENUE								
201	RESDIENTIAL SPECIAL ASSESSMENT								
202	5/8 inch meter			$ -					
203	3/4 inch meter			$ -					
204	1 inch meter			$ -					
205	1.5 inch meter			$ -					
206	2 inch meter			$ -					
207	Subtotal Residential Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
208	COMMERCIAL SPECIAL ASSESSMENT								
209	3/4 inch meter			$ -					
210	1 inch meter			$ -					
211	1.5 inch meter			$ -					
212	2 inch meter			$ -					
213	3 inch meter			$ -					
214	4 inch meter			$ -					
215	6 inch meter			$ -					
216	Subtotal Commercial Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
217	TOTAL SPECIAL ASSESSMENT REVENUE			$ -	$ -	$ -	$ -	$ -	$ -
218									
219	OTHER REVENUE:								
220	Interest on Investments			$ 10,000	$ 10,133	$ 10,268	$ 10,404	$ 10,543	$ 10,683
221	Engineering Plan Revew			$ 14,068	$ 14,624	$ 15,068	$ 15,647	$ 16,238	$ 16,843
222	Water Plan Review			$ 6,139	$ 6,381	$ 6,575	$ 6,827	$ 7,086	$ 7,349
223	Late Charges			$ 1,500	$ 1,520	$ 1,540	$ 1,561	$ 1,581	$ 1,602
224	Cross Connection Plan Review			$ 6,139	$ 6,381	$ 6,575	$ 6,827	$ 7,086	$ 7,349
225	Water Observations			$ 6,139	$ 6,381	$ 6,575	$ 6,827	$ 7,086	$ 7,349
	Interest	3.00%		$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
226	**Subtotal Other Revenue**			58,985	60,421	61,600	63,094	64,619	66,177
227									
228	**TOTAL REVENUE**			4,584,690	$ 4,747,195	$ 4,924,170	$ 5,098,439	$ 5,278,844	$ 5,467,741
229									
230	GRANT/LOAN PROCEEDS	Term			Term				
231	STAG Grant								
232	ACOE Section 595 Grant								
233	Other Grant								
234	State Revolving Fund - 1	20			$ 1,514,000	8,341,000			
235	State Revolving Fund - 2								
236	**Subtotal Financing**			-	$ 1,514,000	$ 8,341,000	$ -	$ -	$ -
237									
238	**SUBTOTAL AVAILABLE CAPITAL**		$ -	$ 278,900	$ 1,800,663	$ 8,644,618	$ 311,818	$ 320,182	$ 330,850
239									

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

				2007	2008	2009	2010	2011	2012	2013
240	**EXPENSES**			2007	2008	2009	2010	2011	2012	2013
241	PERSONNEL EXPENXES		Number	12	12	12	12	12	12	12
242	30-81-401	Personnel - Salaries	3.00%	$ 543,942	$ 560,260	$ 577,068	$ 594,380	$ 612,212	$ 630,578	
243	30-81-410	Personnel - Overtime	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
244	30-81-420	Employers Benefit Package	3.00%	$ 124,787	$ 128,531	$ 132,387	$ 136,358	$ 140,449	$ 144,662	
245	30-81-421	Employers Medical Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
246	30-81-422	Employers Life Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
247	30-81-423	Employers Dental Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
248	30-81-424	Employers Disability Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
249	30-81-425	Employers Vision	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
250	30-81-426	Workers Compensation Insurance	3.00%	$ 15,897	$ 16,374	$ 16,865	$ 17,371	$ 17,892	$ 18,429	
251	30-81-427	State Unemployment Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
252	30-81-428	Employers EAP	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
253	30-81-430	Retirement - PERSI	3.00%	$ 56,516	$ 58,211	$ 59,958	$ 61,757	$ 63,609	$ 65,518	
254	30-81-435	Social Security	3.00%	$ 41,612	$ 42,860	$ 44,146	$ 45,471	$ 46,835	$ 48,240	
255	30-81-439	Employers Self Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
256	30-81-469	Clothing Allowance	3.00%	$ 4,000	$ 4,120	$ 4,244	$ 4,371	$ 4,502	$ 4,637	
257	30-81-475	Vacation Accrual	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
258	30-81-490	Employee Recognition	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
259	**Subtotal Personnel Expenses**			**$ 786,754**	**$ 810,357**	**$ 834,667**	**$ 859,707**	**$ 885,499**	**$ 912,064**	
260										
261	OPERATIONS EXPENSE									
262	30-81-500	Supplies - Office/Operating	3.00%	42,950	$ 44,239	45,566	46,933	48,341	49,791	
263	30-81-501	Supplies - Books and Manuals	3.00%	400	$ 412	424	437	450	464	
264	30-81-525	Postage	3.00%	3,500	$ 3,605	3,713	3,825	3,939	4,057	
265	30-81-526	Freight	3.00%	500	$ 515	530	546	563	580	
266	30-81-535	Minor Equipment	3.00%	5,250	$ 5,408	5,570	5,737	5,909	6,086	
267	30-81-540	Petroloeum and Oil	3.00%	9,400	$ 9,682	9,972	10,272	10,580	10,897	
268	30-81-560	Repair/Maint - Grounds	3.00%	7,000	$ 7,210	7,426	7,649	7,879	8,115	
269	30-81-561	Repair/Maint - Buildings	3.00%	12,000	$ 12,360	12,731	13,113	13,506	13,911	
270	30-81-562	Repair/Maint - Cross Connections	3.00%	1,500	$ 1,545	1,591	1,639	1,688	1,739	
271	30-81-565	Repair/Maint - Vehicles	3.00%	19,750	$ 20,343	20,953	21,581	22,229	22,896	
272	30-81-580	Repair/Maint - Water	3.00%	200,000	$ 206,000	212,180	218,545	225,102	231,855	
273	30-81-581	Purch/Repair/Maint - Office Furn & Equip	3.00%	12,550	$ 12,927	13,314	13,714	14,125	14,549	
274	30-81-599	Repair/Maint - Other Equipment	3.00%	500	$ 515	530	546	563	580	
275			3.00%	-	$ -	-	-	-	-	
276	30-81-610	Legal Services	3.00%	-	$ -	-	-	-	-	
277	30-81-612	Computer Services	3.00%	39,000	$ 40,170	41,375	42,616	43,895	45,212	
278	30-81-615	Ada County Base Map Compass	3.00%	-	$ -	-	-	-	-	
279	30-81-619	Professional Services	3.00%	48,000	$ 49,440	50,923	52,451	54,024	55,645	
280	30-81-623	Professional Services - Cross Connection	3.00%	-	$ -	-	-	-	-	
281	30-81-631	Other Purchased Services	3.00%	-	$ -	-	-	-	-	
282	30-81-635	Other Permits	3.00%	4,500	$ 4,635	4,774	4,917	5,065	5,217	
283	30-81-640	Advertising & Publications	3.00%	4,500	$ 4,635	4,774	4,917	5,065	5,217	
284	30-81-641	Printing & Binding	3.00%	1,050	$ 1,082	1,114	1,147	1,182	1,217	
285	30-81-642	Travel and Meetings	3.00%	2,000	$ 2,060	2,122	2,185	2,251	2,319	
286	30-81-643	Dues and Membership	3.00%	1,550	$ 1,597	1,644	1,694	1,745	1,797	
287	30-81-644	Personnal Training	3.00%	3,150	$ 3,245	3,342	3,442	3,545	3,652	
288	30-81-659	Other Misc Expenses	3.00%	2,892	$ 2,979	3,068	3,160	3,255	3,353	
289	30-81-661	Rental - Vehicles	3.00%	1,250	$ 1,288	1,326	1,366	1,407	1,449	
290	30-81-669	Rental - Other	3.00%	6,000	$ 6,180	6,365	6,556	6,753	6,956	
291	30-81-691	Bank/Merchant Account Fees	3.00%	-	$ -	-	-	-	-	
292	30-81-803	Capital - Vehicles	3.00%	74,850	$ 77,096	79,408	81,791	84,244	86,772	
293	30-81-879	Capital - Other	3.00%	-	$ -	-	-	-	-	
294	30-81-770	Telephone & Communications	3.00%	13,500	$ 13,905	14,322	14,752	15,194	15,650	
295	30-81-771	Utilities	3.00%	57,750	$ 59,483	61,267	63,105	64,998	66,948	
296		Water System Maintenance Improvement	3.00%	-	$ 2,400,000	2,472,000	2,546,160	2,622,545	2,701,221	
297	30-81-906	Amortization - Bond Issuance	3.00%	-	$ -	-	-	-	-	
298	30-81-950	Administrative Overhead Charge	3.00%	315,856	$ 325,332	335,092	345,144	355,499	366,164	
299	30-81-951	Billing Expenses	3.00%	9,000	$ 9,270	9,548	9,835	10,130	10,433	
300	30-81-948	Tranfer to P&Z	3.00%	134,309	$ 138,339	142,489	146,763	151,166	155,701	
301	30-81-953	Interfund Transfer to Capital Fund	3.00%	-	$ -	-	-	-	-	
302	30-81-954	Bad Debt Expense	3.00%	2,500	$ 2,575	2,652	2,732	2,814	2,898	
303	30-81-955	Depreciation Expense	3.00%	100,000	$ 103,000	106,090	109,273	112,551	115,927	
304	**Subtotal Administration Expense**			**$ 1,136,957**	**$ 3,571,066**	**$ 3,678,198**	**$ 3,788,544**	**$ 3,902,200**	**$ 4,019,266**	
305										
306	**Total Administration & Operating Expenses**			**$ 1,923,711**	**$ 4,381,423**	**$ 4,512,865**	**$ 4,648,251**	**$ 4,787,699**	**$ 4,931,330**	
307										
308	PROJECT DEBT SERVICE									
309	30-81-900	Debt Service Principal 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
310	30-81-901	Debt Service Interest 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
311	30-81-904	Debt Service Principal 2001 Bond	3.00%	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	
312	30-81-905	Debt Service Interest 2001 Bond	3.00%	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	
313	Subtotal Previous Bond Payment			$ 205,000	$ 205,000	$ 205,000	$ 205,000	$ 205,000	$ 205,000	
314										
315		2009 Bond Principal	3.00%				$ 366,762	$ 377,764	$ 389,097	
316		2009 Bond Interest	3.00%				$ 295,651	$ 284,648	$ 273,315	
317	Subtotal Payment 1 SRF						$ 662,412	$ 662,412	$ 662,412	
318										
319		2009 Bond Principal	3.00%							
320		2009 Bond Interest	3.00%							
321	Subtotal Payment 2 SRF					$0.00	$ -	$ -	$ -	$ -
322										
323	**Subtotal Debt Service**			**$ 205,000**	**$ 205,000**	**$ 205,000**	**$ 867,412**	**$ 867,412**	**$ 867,412**	
324										
325	SUBTOTAL EXPENSE			**$ 2,128,711**	**$ 4,586,423**	**$ 4,717,865**	**$ 5,515,663**	**$ 5,655,111**	**$ 5,798,742**	
326										
327	CAPITAL PROJECTS									
328	Well Rehabilitation				$ 80,000	656,000				
329	Well				$ 14,000	332,000				

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2008	2009	2010	2011	2012	2013
330	Water Storage		$	130,000	1,170,000			
331	Line/Hydrant Replacement		$	1,290,000	6,183,000			
332	**Subtotal Capital Projects**	**$ -**	**$ -**	**$ 1,514,000**	**$ 8,341,000**	**$ -**	**$ -**	**$ -**

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Project No. 01-07-0038
Project: Garden City, Idaho
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		2007	2008	2009	2010	2011	2012	2013
333	**NET INCOME**	2007	2008	2009	2010	2011	2012	2013
334	OPERATING NET INCOME							
335	Operation & Maintenance - Income		$ 2,399,732	$ 2,486,361	$ 2,576,117	$ 2,669,112	$ 2,765,465	$ 2,865,297
336	Debt Service - Income		$ 1,847,073	$ 1,913,751	$ 1,982,836	$ 2,054,415	$ 2,128,577	$ 2,205,417
337	Other Income		$ 58,985	$ 60,421	$ 61,600	$ 63,094	$ 64,619	$ 66,177
338	Personnel Expense		$ (786,754)	$ (810,357)	$ (834,667)	$ (859,707)	$ (885,499)	$ (912,064)
339	Operations Expense		$ (1,136,957)	$ (3,571,066)	$ (3,678,198)	$ (3,788,544)	$ (3,902,200)	$ (4,019,266)
340	Debt Service - Expense		$ (205,000)	$ (205,000)	$ (205,000)	$ (867,412)	$ (867,412)	$ (867,412)
341	**Subtotal Operating Net Income**		**$ 2,177,078**	**$ (125,890)**	**$ (97,313)**	**$ (729,043)**	**$ (696,449)**	**$ (661,851)**
342								
343	CAPITAL PROJECT NET INCOME							
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 278,900	$ 286,663	$ 303,618	$ 311,818	$ 320,182	$ 330,850
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ 1,514,000	$ 8,341,000	$ -	$ -	$ -
348	Capital Project Expense		$ -	$ (1,514,000)	$ (8,341,000)	$ -	$ -	$ -
349	**Subtotal Capital Project Net Income**		**$ 278,900**	**$ 286,663**	**$ 303,618**	**$ 311,818**	**$ 320,182**	**$ 330,850**
350								
351	TOTAL NET INCOME		**$ 2,455,978**	**$ 160,772**	**$ 206,305**	**$ (417,225)**	**$ (376,267)**	**$ (331,001)**
352								
353	**TOTAL CASH ON HAND**	2007	2008	2009	2010	2011	2012	2013
354	Capital Fund	$ -	$ 278,900	$ 565,563	$ 869,180	$ 1,180,998	$ 1,501,180	$ 1,832,031
355	Operating & Maintenance Fund		$ 2,177,078	$ 2,051,188	$ 1,953,875	$ 1,224,833	$ 528,384	$ (133,468)
356	**Total Cash on Hand**	**$ -**	**$ 2,455,978**	**$ 2,616,751**	**$ 2,823,056**	**$ 2,405,831**	**$ 2,029,564**	**$ 1,698,563**

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2014	2015	2016	2017	2018	2019	
	ASSUMPTIONS								
1	**CONNECTIONS**	RATE	INCREMENTAL	WATER METER	WATER HOOK	INCREMENTAL	ADD		
2	GROWTH RATE	PERIOD 1	CHARGE	CONNECTION	FEE	IMPACT FEE	WATER USE		
3	RESIDENTIAL	(percent)	($/1000 gal)	($/UNIT)	($/UNIT)	($/UNIT)	(GAL/MO)		
4	5/8 inch meter	4.50%	$ 3.60	$ 1,000.00	$ 1,000.00	$ 4,000.00	10,500	Capacity at Build	
5	3/4 inch meter	4.50%	$ 3.60	$ 1,000.00	$ 1,000.00	$ 4,000.00	10,500		
6	1 inch meter	4.50%	$ 3.60	$ 1,045.00	$ 1,000.00	$ 4,000.00	10,500		
7	1.5 inch meter	4.50%	$ 3.60	$ 1,700.00	$ 1,000.00	$ 4,000.00	10,500		
8	2 inch meter	4.50%	$ 3.60	$ 1,800.00	$ 1,000.00	$ 4,000.00	10,500		
9	COMMERCIAL	(percent)	($/1000 gal)	($/UNIT)	($/UNIT)	($/UNIT)	(GAL/MO)		
10	3/4 inch meter	2.00%	$ 3.60	$ 1,000.00	$ 1,000.00	$ 4,000.00	37,800		
11	1 inch meter	2.00%	$ 3.60	$ 1,000.00	$ 1,000.00	$ 4,000.00	37,800	Capacity at Build	
12	1.5 inch meter	2.00%	$ 3.60	$ 1,700.00	$ 1,000.00	$ 4,000.00	37,800	Capacity at Build	
13	2 inch meter	2.00%	$ 3.60	$ 1,800.00	$ 1,000.00	$ 4,000.00	37,800		
14	3 inch meter	2.00%	$ 3.60	$ 2,150.00	$ 1,000.00	$ 4,000.00	37,800		
15	4 inch meter	2.00%	$ 3.60	$ 2,300.00	$ 1,000.00	$ 4,000.00	37,800		
16	6 inch meter	2.00%	$ 3.60	$ 3,100.00	$ 1,000.00	$ 4,000.00	37,800		
17									
18	CONNECTIONS/EDUs								
19	RESIDENTIAL (estimated connections)		3	3	3	2	2	2	
20	5/8 inch meter	1983	2317	2369	2423	2463	2504	2545	
21	3/4 inch meter	2520	2945	3011	3079	3130	3182	3235	
22	1 inch meter	13	15	16	16	16	16	17	
23	1.5 inch meter	3	4	4	4	4	4	4	
24	2 inch meter	5	6	6	6	6	6	6	
25	Subtotal Residential SFDE	4524	5286	5405	5527	5619	5712	5807	
26	COMMERCIAL		3	3	3	3	3	3	
27	3/4 inch meter	70	82	84	86	87	89	91	
28	1 inch meter	113	132	135	138	141	144	148	
29	1.5 inch meter	140	164	167	171	175	179	183	
30	2 inch meter	300	351	358	367	375	383	392	
31	3 inch meter	20	23	24	24	25	26	26	
32	4 inch meter	6	7	7	7	7	8	8	
33	6 inch meter	1	1	1	1	1	1	1	
34	Subtotal Commerical SFDE	650	760	777	794	812	830	849	
35	Total SFDE	5174	6046	6182	6321	6431	6542	6656	
36									

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
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		2007	2014	2015	2016	2017	2018	2019
36	**FEE STRUCTURE**	2007	2014	2015	2016	2017	2018	2019
37	USER RATES:							
38	RESDIENTIALINCREMENTAL CHARGE - O&M							
39	5/8 inch meter	1.33%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
40	3/4 inch meter	1.33%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
41	1 inch meter	1.33%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
42	1.5 inch meter	1.33%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
43	2 inch meter	1.33%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
44	COMMERCIAL INCREMENTAL CHARGE - O&M							
45	3/4 inch meter	2.00%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
46	1 inch meter	2.00%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
47	1.5 inch meter	2.00%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
48	2 inch meter	2.00%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
49	3 inch meter	2.00%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
50	4 inch meter	2.00%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
51	6 inch meter	2.00%	$ 3.90	$ 3.95	$ 4.00	$ 4.05	$ 4.11	$ 4.16
52								
53	RESDIENTIAL BASE RATE - DEBT SERVICE							
54	5/8 inch meter	1.33%	$ 29.23	$ 29.62	$ 30.01	$ 30.41	$ 30.81	$ 31.22
55	3/4 inch meter	1.33%	$ 29.23	$ 29.62	$ 30.01	$ 30.41	$ 30.81	$ 31.22
56	1 inch meter	1.33%	$ 29.23	$ 29.62	$ 30.01	$ 30.41	$ 30.81	$ 31.22
57	1.5 inch meter	1.33%	$ 29.23	$ 29.62	$ 30.01	$ 30.41	$ 30.81	$ 31.22
58	2 inch meter	1.33%	$ 29.23	$ 29.62	$ 30.01	$ 30.41	$ 30.81	$ 31.22
59	COMMERCIAL BASE RATE - DEBT SERVICE							
60	3/4 inch meter	2.00%	$ 29.23	$ 29.62	$ 30.01	$ 30.41	$ 30.81	$ 31.22
61	1 inch meter	2.00%	$ 35.59	$ 36.07	$ 36.55	$ 37.03	$ 37.52	$ 38.02
62	1.5 inch meter	2.00%	$ 43.06	$ 43.63	$ 44.21	$ 44.80	$ 45.40	$ 46.00
63	2 inch meter	2.00%	$ 53.53	$ 54.24	$ 54.96	$ 55.69	$ 56.43	$ 57.19
64	3 inch meter	2.00%	$ 84.60	$ 85.72	$ 86.86	$ 88.02	$ 89.19	$ 90.37
65	4 inch meter	2.00%	$ 113.19	$ 114.69	$ 116.22	$ 117.76	$ 119.33	$ 120.92
66	6 inch meter	2.00%	$ 203.16	$ 205.87	$ 208.60	$ 211.38	$ 214.19	$ 217.04
67								
68	RESDIENTIAL BASE RATE - CAPITAL RESERVE							
69	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
70	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
71	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
72	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
73	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
74	COMMERCIAL BASE RATE - CAPITAL RESERVE							
75	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
76	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
77	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
78	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
79	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
80	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
81	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
82								
83	CONNECTION FEE (IMPACT FEE)							
84	RESDIENTIAL CONNECTION FEE							
85	5/8 inch meter	1.33%	$ 2,165.00	$ 2,193.80	$ 2,222.97	$ 2,252.54	$ 2,282.50	$ 2,312.86
86	3/4 inch meter	1.33%	$ 2,165.00	$ 2,193.80	$ 2,222.97	$ 2,252.54	$ 2,282.50	$ 2,312.86
87	1 inch meter	1.33%	$ 2,165.00	$ 2,193.80	$ 2,222.97	$ 2,252.54	$ 2,282.50	$ 2,312.86
88	1.5 inch meter	1.33%	$ 2,213.71	$ 2,243.16	$ 2,272.99	$ 2,303.22	$ 2,333.85	$ 2,364.89
89	2 inch meter	1.33%	$ 3,031.00	$ 3,071.31	$ 3,112.16	$ 3,153.56	$ 3,195.50	$ 3,238.00
90	COMMERCIAL CONNECTION FEE							
91	3/4 inch meter	2.00%	$ 6,495.01	$ 6,581.39	$ 6,668.92	$ 6,757.62	$ 6,847.49	$ 6,938.57
92	1 inch meter	2.00%	$ 6,495.01	$ 6,581.39	$ 6,668.92	$ 6,757.62	$ 6,847.49	$ 6,938.57
93	1.5 inch meter	2.00%	$ 7,252.76	$ 7,349.22	$ 7,446.96	$ 7,546.01	$ 7,646.37	$ 7,748.07
94	2 inch meter	2.00%	$ 7,361.01	$ 7,458.91	$ 7,558.11	$ 7,658.63	$ 7,760.49	$ 7,863.71
95	3 inch meter	2.00%	$ 7,739.88	$ 7,842.82	$ 7,947.13	$ 8,052.83	$ 8,159.93	$ 8,268.46
96	4 inch meter	2.00%	$ 7,902.26	$ 8,007.36	$ 8,113.85	$ 8,221.77	$ 8,331.12	$ 8,441.92
97	6 inch meter	2.00%	$ 8,768.26	$ 8,884.87	$ 9,003.04	$ 9,122.78	$ 9,244.12	$ 9,367.06
98								
99	TREATMENT SPECIAL ASSESSMENT							
100	RESDIENTIAL CONNECTION FEE							
101	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
102	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
103	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
104	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
105	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
106	COMMERCIAL CONNECTION FEE							
107	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
108	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
109	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
110	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
111	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
112	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
113	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
114								
115	OTHER FEES							
116	Interest on Investments	3.00%	$ 10,825.01	$ 10,968.98	$ 11,114.87	$ 11,262.70	$ 11,412.49	$ 11,564.28
117	Engineering Plan Revew	3.00%	$ 131.29	$ 133.03	$ 134.80	$ 136.59	$ 138.41	$ 140.25
118	Water Plan Review	3.00%	$ 57.29	$ 58.05	$ 58.82	$ 59.60	$ 60.39	$ 61.20
119	Late Charges	3.00%	$ 1,623.75	$ 1,645.35	$ 1,667.23	$ 1,689.40	$ 1,711.87	$ 1,734.64
120	Cross Connection Plan Review	3.00%	$ 57.29	$ 58.05	$ 58.82	$ 59.60	$ 60.39	$ 61.20
121	Water Observations	3.00%	$ 57.29	$ 58.05	$ 58.82	$ 59.60	$ 60.39	$ 61.20
122								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2014	2015	2016	2017	2018	2019
123	**REVENUE**	2007	2014	2015	2016	2017	2018	2019
124	OPERATION & MAINTENANCE REVENUES:							
125	RESDIENTIALINCREMENTAL CHARGE - O&M							
126	5/8 inch meter		$ 1,137,803	$ 1,178,877	$ 1,221,434	$ 1,258,224	$ 1,296,123	$ 1,335,163
127	3/4 inch meter		$ 1,445,923	$ 1,498,119	$ 1,552,200	$ 1,598,954	$ 1,647,116	$ 1,696,728
128	1 inch meter		$ 7,459	$ 7,728	$ 8,007	$ 8,249	$ 8,497	$ 8,753
129	1.5 inch meter		$ 1,721	$ 1,783	$ 1,848	$ 1,904	$ 1,961	$ 2,020
130	2 inch meter		$ 2,869	$ 2,972	$ 3,080	$ 3,173	$ 3,268	$ 3,367
131	Sutbotal Residential Incremental Charge - O&M		$ 2,595,775	$ 2,689,481	$ 2,786,569	$ 2,870,503	$ 2,956,965	$ 3,046,031
132	COMMERCIAL INCREMENTAL CHARGE - O&M							
133	3/4 inch meter		$ 40,165	$ 41,614	$ 43,117	$ 44,673	$ 46,286	$ 47,957
134	1 inch meter		$ 64,837	$ 67,178	$ 69,603	$ 72,115	$ 74,719	$ 77,416
135	1.5 inch meter		$ 80,329	$ 83,229	$ 86,233	$ 89,346	$ 92,572	$ 95,913
136	2 inch meter		$ 172,134	$ 178,348	$ 184,786	$ 191,456	$ 198,368	$ 205,529
137	3 inch meter		$ 11,476	$ 11,890	$ 12,319	$ 12,764	$ 13,225	$ 13,702
138	4 inch meter		$ 3,443	$ 3,567	$ 3,696	$ 3,829	$ 3,967	$ 4,111
139	6 inch meter		$ 574	$ 594	$ 616	$ 638	$ 661	$ 685
140	Subtotal Commercial Incremental Charge - O&M		$ 372,956	$ 386,420	$ 400,369	$ 414,822	$ 429,797	$ 445,312
141	TOTAL OPERATION & MAINTENANCE REVENUE		**$ 2,968,732**	**$ 3,075,901**	**$ 3,186,938**	**$ 3,285,325**	**$ 3,386,762**	**$ 3,491,343**
142								
143	DEBT SERVICE REVENUE							
144	RESDIENTIAL BASE CHARGE - DEBT SERVICE							
145	5/8 inch meter		$ 812,717	$ 842,055	$ 872,453	$ 898,732	$ 925,802	$ 953,688
146	3/4 inch meter		$ 1,032,802	$ 1,070,085	$ 1,108,715	$ 1,142,110	$ 1,176,511	$ 1,211,949
147	1 inch meter		$ 5,328	$ 5,520	$ 5,720	$ 5,892	$ 6,069	$ 6,252
148	1.5 inch meter		$ 1,230	$ 1,274	$ 1,320	$ 1,360	$ 1,401	$ 1,443
149	2 inch meter		$ 2,049	$ 2,123	$ 2,200	$ 2,266	$ 2,334	$ 2,405
150	Sutbotal Residential Incremental Charge - O&M		$ 1,854,125	$ 1,921,058	$ 1,990,407	$ 2,050,359	$ 2,112,118	$ 2,175,736
151	COMMERCIAL BASE CHARGE - DEBT SERVICE							
152	3/4 inch meter		$ 28,689	$ 29,725	$ 30,798	$ 31,909	$ 33,061	$ 34,255
153	1 inch meter		$ 56,398	$ 58,434	$ 60,543	$ 62,729	$ 64,993	$ 67,339
154	1.5 inch meter		$ 84,537	$ 87,588	$ 90,750	$ 94,026	$ 97,421	$ 100,937
155	2 inch meter		$ 225,185	$ 233,314	$ 241,737	$ 250,463	$ 259,505	$ 268,873
156	3 inch meter		$ 23,725	$ 24,582	$ 25,469	$ 26,389	$ 27,341	$ 28,328
157	4 inch meter		$ 9,523	$ 9,867	$ 10,223	$ 10,592	$ 10,974	$ 11,370
158	6 inch meter		$ 2,849	$ 2,952	$ 3,058	$ 3,169	$ 3,283	$ 3,402
159	Subtotal Commercial Incremental Charge - O&M		$ 430,906	$ 446,461	$ 462,578	$ 479,277	$ 496,579	$ 514,505
160	TOTAL DEBT SERVICE REVENUE		**$ 2,285,031**	**$ 2,367,519**	**$ 2,452,985**	**$ 2,529,636**	**$ 2,608,696**	**$ 2,690,241**
161								
162	CAPITAL RESERVE REVENUE:							
163	RESDIENTIAL BASE CHARGE - CAPITAL RESERVE							
164	5/8 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
165	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
166	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
167	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
168	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
169	Sutbotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
170	COMMERCIAL BASE CHARGE - CAPITAL RESERVE							
171	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
172	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
173	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
174	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
175	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
176	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
177	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
178	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
179	TOTAL CAPITAL RESERVE REVENUE		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
180								
181	CONNECTION FEE (IMPACT/TAP FEE) REVENUE							
182	RESDIENTIAL CONNECTION FEE							
183	5/8 inch meter		$ 108,250	$ 114,077	$ 117,818	$ 90,102	$ 91,300	$ 94,827
184	3/4 inch meter		$ 138,560	$ 144,791	$ 148,939	$ 114,880	$ 116,407	$ 120,268
185	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
186	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
187	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
188	Sutbotal Residential Incremental Charge - O&M		$ 246,810	$ 258,868	$ 266,757	$ 204,981	$ 207,707	$ 215,096
189	COMMERCIAL CONNECTION FEE - O&M							
190	3/4 inch meter		$ 6,495	$ 6,581	$ 6,669	$ 6,758	$ 6,847	$ 13,877
191	1 inch meter		$ 12,990	$ 13,163	$ 20,007	$ 20,273	$ 20,542	$ 20,816
192	1.5 inch meter		$ 21,758	$ 22,048	$ 22,341	$ 22,638	$ 22,939	$ 30,992
193	2 inch meter		$ 51,527	$ 52,212	$ 60,465	$ 61,269	$ 62,084	$ 62,910
194	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
195	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
196	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
197	Subtotal Commercial Incremental Charge - O&M		$ 92,770	$ 94,004	$ 109,481	$ 110,938	$ 112,413	$ 128,595
198	TOTAL CONNECTION FEE (IMPACT FEE) REVENUE		**$ 339,581**	**$ 352,872**	**$ 376,238**	**$ 315,919**	**$ 320,120**	**$ 343,690**
199								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2014	2015	2016	2017	2018	2019
200	SPECIAL ASSESSMENT REVENUE							
201	RESDIENTIAL SPECIAL ASSESSMENT							
202	5/8 inch meter							
203	3/4 inch meter							
204	1 inch meter							
205	1.5 inch meter							
206	2 inch meter							
207	Subtotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
208	COMMERCIAL SPECIAL ASSESSMENT							
209	3/4 inch meter							
210	1 inch meter							
211	1.5 inch meter							
212	2 inch meter							
213	3 inch meter							
214	4 inch meter							
215	6 inch meter							
216	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
217	TOTAL SPECIAL ASSESSMENT REVENUE		$ -	$ -	$ -	$ -	$ -	$ -
218								
219	OTHER REVENUE:							
220	Interest on Investments		$ 10,825	$ 10,969	$ 11,115	$ 11,263	$ 11,412	$ 11,564
221	Engineering Plan Revew		$ 17,461	$ 18,092	$ 18,737	$ 14,889	$ 15,364	$ 15,848
222	Water Plan Review		$ 7,619	$ 7,895	$ 8,176	$ 6,497	$ 6,704	$ 6,915
223	Late Charges		$ 1,624	$ 1,645	$ 1,667	$ 1,689	$ 1,712	$ 1,735
224	Cross Connection Plan Review		$ 7,619	$ 7,895	$ 8,176	$ 6,497	$ 6,704	$ 6,915
225	Water Observations		$ 7,619	$ 7,895	$ 8,176	$ 6,497	$ 6,704	$ 6,915
	Interest	3.00%	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
226	**Subtotal Other Revenue**		**67,767**	**69,390**	**71,047**	**62,331**	**63,599**	**64,894**
227								
228	**TOTAL REVENUE**		**$ 5,661,110**	**$ 5,865,682**	**$ 6,087,209**	**$ 6,193,211**	**$ 6,379,178**	**$ 6,590,168**
229								
230	GRANT/LOAN PROCEEDS	Term						
231	STAG Grant							
232	ACOE Section 595 Grant							
233	Other Grant							
234	State Revolving Fund - 1	20						
235	State Revolving Fund - 2							
236	**Subtotal Financing**		$ -	$ -	$ -	$ -	$ -	$ -
237								
238	**SUBTOTAL AVAILABLE CAPITAL**	$ -	**$ 339,581**	**$ 352,872**	**$ 376,238**	**$ 315,919**	**$ 320,120**	**$ 343,690**
239								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

				2007	2014	2015	2016	2017	2018	2019
240	**EXPENSES**			2007	2014	2015	2016	2017	2018	2019
241	PERSONNEL EXPENXES		Number	12	12	12	12	12	12	12
242	30-81-401	Personnel - Salaries	3.00%	$ 649,495	$ 668,980	$ 689,049	$ 709,721	$ 731,013	$ 752,943	
243	30-81-410	Personnel - Overtime	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
244	30-81-420	Employers Benefit Package	3.00%	$ 149,002	$ 153,472	$ 158,076	$ 162,819	$ 167,703	$ 172,734	
245	30-81-421	Employers Medical Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
246	30-81-422	Employers Life Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
247	30-81-423	Employers Dental Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
248	30-81-424	Employers Disability Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
249	30-81-425	Employers Vision	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
250	30-81-426	Workers Compensation Insurance	3.00%	$ 18,982	$ 19,551	$ 20,138	$ 20,742	$ 21,364	$ 22,005	
251	30-81-427	State Unemployment Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
252	30-81-428	Employers EAP	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
253	30-81-430	Retirement - PERSI	3.00%	$ 67,483	$ 69,508	$ 71,593	$ 73,741	$ 75,953	$ 78,231	
254	30-81-435	Social Security	3.00%	$ 49,687	$ 51,178	$ 52,713	$ 54,294	$ 55,923	$ 57,601	
255	30-81-439	Employers Self Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
256	30-81-469	Clothing Allowance	3.00%	$ 4,776	$ 4,919	$ 5,067	$ 5,219	$ 5,376	$ 5,537	
257	30-81-475	Vacation Accrual	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
258	30-81-490	Employee Recognition	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
259	**Subtotal Personnel Expenses**			**$ 939,425**	**$ 967,608**	**$ 996,636**	**$ 1,026,536**	**$ 1,057,332**	**$ 1,089,052**	
260										
261	OPERATIONS EXPENSE									
262	30-81-500	Supplies - Office/Operating	3.00%	51,285	52,823	54,408	56,040	57,721	59,453	
263	30-81-501	Supplies - Books and Manuals	3.00%	478	492	507	522	538	554	
264	30-81-525	Postage	3.00%	4,179	4,305	4,434	4,567	4,704	4,845	
265	30-81-526	Freight	3.00%	597	615	633	652	672	692	
266	30-81-535	Minor Equipment	3.00%	6,269	6,457	6,651	6,850	7,056	7,267	
267	30-81-540	Petroloeum and Oil	3.00%	11,224	11,561	11,908	12,265	12,633	13,012	
268	30-81-560	Repair/Maint - Grounds	3.00%	8,358	8,609	8,867	9,133	9,407	9,690	
269	30-81-561	Repair/Maint - Buildings	3.00%	14,329	14,758	15,201	15,657	16,127	16,611	
270	30-81-562	Repair/Maint - Cross Connections	3.00%	1,791	1,845	1,900	1,957	2,016	2,076	
271	30-81-565	Repair/Maint - Vehicles	3.00%	23,583	24,290	25,019	25,769	26,542	27,339	
272	30-81-580	Repair/Maint - Water	3.00%	238,810	245,975	253,354	260,955	268,783	276,847	
273	30-81-581	Purch/Repair/Maint - Office Furn & Equip	3.00%	14,985	15,435	15,898	16,375	16,866	17,372	
274	30-81-599	Repair/Maint - Other Equipment	3.00%	597	615	633	652	672	692	
275			3.00%		-	-	-	-		
276	30-81-610	Legal Services	3.00%	-	-	-	-	-	-	
277	30-81-612	Computer Services	3.00%	46,568	47,965	49,404	50,886	52,413	53,985	
278	30-81-615	Ada County Base Map Compass	3.00%	-	-	-	-	-	-	
279	30-81-619	Professional Services	3.00%	57,315	59,034	60,805	62,629	64,508	66,443	
280	30-81-623	Professional Services - Cross Connection	3.00%	-	-	-	-	-	-	
281	30-81-631	Other Purchased Services	3.00%	-	-	-	-	-	-	
282	30-81-635	Other Permits	3.00%	5,373	5,534	5,700	5,871	6,048	6,229	
283	30-81-640	Advertising & Publications	3.00%	5,373	5,534	5,700	5,871	6,048	6,229	
284	30-81-641	Printing & Binding	3.00%	1,254	1,291	1,330	1,370	1,411	1,453	
285	30-81-642	Travel and Meetings	3.00%	2,388	2,460	2,534	2,610	2,688	2,768	
286	30-81-643	Dues and Membership	3.00%	1,851	1,906	1,963	2,022	2,083	2,146	
287	30-81-644	Personnal Training	3.00%	3,761	3,874	3,990	4,110	4,233	4,360	
288	30-81-659	Other Misc Expenses	3.00%	3,453	3,557	3,663	3,773	3,887	4,003	
289	30-81-661	Rental - Vehicles	3.00%	1,493	1,537	1,583	1,631	1,680	1,730	
290	30-81-669	Rental - Other	3.00%	7,164	7,379	7,601	7,829	8,063	8,305	
291	30-81-691	Bank/Merchant Account Fees	3.00%	-	-	-	-	-	-	
292	30-81-803	Capital - Vehicles	3.00%	89,375	92,056	94,818	97,662	100,592	103,610	
293	30-81-879	Capital - Other	3.00%	-	-	-	-	-	-	
294	30-81-770	Telephone & Communications	3.00%	16,120	16,603	17,101	17,614	18,143	18,687	
295	30-81-771	Utilities	3.00%	68,957	71,025	73,156	75,351	77,611	79,940	
296		Water System Maintenance Improvement	3.00%	2,782,258	2,865,726	2,951,697	3,040,248	3,131,456	3,225,399	
297	30-81-906	Amortization - Bond Issuance	3.00%	-	-	-	-	-	-	
298	30-81-950	Administrative Overhead Charge	3.00%	377,149	388,463	400,117	412,120	424,484	437,219	
299	30-81-951	Billing Expenses	3.00%	10,746	11,069	11,401	11,743	12,095	12,458	
300	30-81-948	Tranfer to P&Z	3.00%	160,372	165,184	170,139	175,243	180,501	185,916	
301	30-81-953	Interfund Transfer to Capital Fund	3.00%	-	-	-	-	-	-	
302	30-81-954	Bad Debt Expense	3.00%	2,985	3,075	3,167	3,262	3,360	3,461	
303	30-81-955	Depreciation Expense	3.00%	119,405	122,987	126,677	130,477	134,392	138,423	
304	**Subtotal Administration Expense**			**$ 4,139,844**	**$ 4,264,040**	**$ 4,391,961**	**$ 4,523,720**	**$ 4,659,431**	**$ 4,799,214**	
305										
306	**Total Administration & Operating Expenses**			**$ 5,079,270**	**$ 5,231,648**	**$ 5,388,597**	**$ 5,550,255**	**$ 5,716,763**	**$ 5,888,266**	
307										
308	PROJECT DEBT SERVICE									
309	30-81-900	Debt Service Principal 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
310	30-81-901	Debt Service Interest 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
311	30-81-904	Debt Service Principal 2001 Bond	3.00%	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	
312	30-81-905	Debt Service Interest 2001 Bond	3.00%	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	$ 105,000	
313	Subtotal Previous Bond Payment			$ 205,000	$ 205,000	$ 205,000	$ 205,000	$ 205,000	$ 205,000	
314										
315		2009 Bond Principal	3.00%	$ 400,770	$ 412,793	$ 425,177	$ 437,932	$ 451,070	$ 464,603	
316		2009 Bond Interest	3.00%	$ 261,642	$ 249,619	$ 237,235	$ 224,480	$ 211,342	$ 197,810	
317	Subtotal Payment 1 SRF			$ 662,412	$ 662,412	$ 662,412	$ 662,412	$ 662,412	$ 662,412	
318										
319		2009 Bond Principal	3.00%							
320		2009 Bond Interest	3.00%							
321	Subtotal Payment 2 SRF			$ -	$ -	$ -	$ -	$ -	$ -	
322										
323	**Subtotal Debt Service**			**$ 867,412**	**$ 867,412**	**$ 867,412**	**$ 867,412**	**$ 867,412**	**$ 867,412**	
324										
325	SUBTOTAL EXPENSE			**$ 5,946,682**	**$ 6,099,060**	**$ 6,256,009**	**$ 6,417,667**	**$ 6,584,175**	**$ 6,755,678**	
326										
327	CAPITAL PROJECTS									
328	Well Rehabilitation				370,000					756,000
329	Well				17,000					

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2014	2015	2016	2017	2018	2019
330	Water Storage							
331	Line/Hydrant Replacement							
332	**Subtotal Capital Projects**	$ -	$ 387,000	$ -	$ -	$ -	$ -	$ 756,000

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2014	2015	2016	2017	2018	2019
333	**NET INCOME**	2007	2014	2015	2016	2017	2018	2019
334	OPERATING NET INCOME							
335	Operation & Maintenance - Income		$ 2,968,732	$ 3,075,901	$ 3,186,938	$ 3,285,325	$ 3,386,762	$ 3,491,343
336	Debt Service - Income		$ 2,285,031	$ 2,367,519	$ 2,452,985	$ 2,529,636	$ 2,608,696	$ 2,690,241
337	Other Income		$ 67,767	$ 69,390	$ 71,047	$ 62,331	$ 63,599	$ 64,894
338	Personnel Expense		$ (939,425)	$ (967,608)	$ (996,636)	$ (1,026,536)	$ (1,057,332)	$ (1,089,052)
339	Operations Expense		$ (4,139,844)	$ (4,264,040)	$ (4,391,961)	$ (4,523,720)	$ (4,659,431)	$ (4,799,214)
340	Debt Service - Expense		$ (867,412)	$ (867,412)	$ (867,412)	$ (867,412)	$ (867,412)	$ (867,412)
341	**Subtotal Operating Net Income**		**$ (625,152)**	**$ (586,250)**	**$ (545,039)**	**$ (540,375)**	**$ (525,118)**	**$ (509,200)**
342								
343	CAPITAL PROJECT NET INCOME							
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 339,581	$ 352,872	$ 376,238	$ 315,919	$ 320,120	$ 343,690
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ -	$ -	$ -	$ -	$ -
348	Capital Project Expense		$ (387,000)	$ -	$ -	$ -	$ -	$ (756,000)
349	**Subtotal Capital Project Net Income**		**$ (47,419)**	**$ 352,872**	**$ 376,238**	**$ 315,919**	**$ 320,120**	**$ (412,310)**
350								
351	TOTAL NET INCOME		**$ (672,571)**	**$ (233,378)**	**$ (168,800)**	**$ (224,457)**	**$ (204,997)**	**$ (921,510)**
352								
353	**TOTAL CASH ON HAND**	2007	2014	2015	2016	2017	2018	2019
354	Capital Fund	$ -	$ 1,784,611	$ 2,137,483	$ 2,513,721	$ 2,829,640	$ 3,149,760	$ 2,737,451
355	Operating & Maintenance Fund		$ (758,620)	$ (1,344,869)	$ (1,889,908)	$ (2,430,283)	$ (2,955,401)	$ (3,464,601)
356	**Total Cash on Hand**	**$ -**	**$ 1,025,992**	**$ 792,614**	**$ 623,813**	**$ 399,357**	**$ 194,359**	**$ (727,151)**

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2020	2021	2022	2023	2024	2025
	ASSUMPTIONS							
1	**CONNECTIONS**	RATE						
2	GROWTH RATE	PERIOD 1						
3	RESIDENTIAL	(percent)						
4	5/8 inch meter	4.50%	out	14,500	EDU			
5	3/4 inch meter	4.50%						
6	1 inch meter	4.50%						
7	1.5 inch meter	4.50%						
8	2 inch meter	4.50%						
9	COMMERCIAL	(percent)						
10	3/4 inch meter	2.00%						
11	1 inch meter	2.00%	out	14,500	EDU			
12	1.5 inch meter	2.00%	out	5,500	EDU			
13	2 inch meter	2.00%						
14	3 inch meter	2.00%						
15	4 inch meter	2.00%						
16	6 inch meter	2.00%						
17								
18	CONNECTIONS/EDUs							
19	RESIDENTIAL (estimated connections)		2	2	2	2	2	2
20	5/8 inch meter	1983	2588	2631	2674	2719	2764	2810
21	3/4 inch meter	2520	3288	3343	3398	3455	3512	3570
22	1 inch meter	13	17	17	18	18	18	18
23	1.5 inch meter	3	4	4	4	4	4	4
24	2 inch meter	5	7	7	7	7	7	7
25	Subtotal Residential SFDE	4524	5903	6001	6101	6202	6305	6410
26	COMMERCIAL		3	3	3	3	3	3
27	3/4 inch meter	70	93	96	98	100	102	104
28	1 inch meter	113	151	154	158	161	165	169
29	1.5 inch meter	140	187	191	195	200	204	209
30	2 inch meter	300	401	410	419	428	438	448
31	3 inch meter	20	27	27	28	29	29	30
32	4 inch meter	6	8	8	8	9	9	9
33	6 inch meter	1	1	1	1	1	1	1
34	Subtotal Commerical SFDE	650	868	888	908	928	949	970
35	Total SFDE	5174	6771	6889	7008	7130	7254	7380
36								

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
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		2007	2020	2021	2022	2023	2024	2025
36	**FEE STRUCTURE**	2007	2020	2021	2022	2023	2024	2025
37	USER RATES:							
38	RESDIENTIALINCREMENTAL CHARGE - O&M							
39	5/8 inch meter	1.33%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
40	3/4 inch meter	1.33%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
41	1 inch meter	1.33%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
42	1.5 inch meter	1.33%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
43	2 inch meter	1.33%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
44	COMMERCIAL INCREMENTAL CHARGE - O&M							
45	3/4 inch meter	2.00%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
46	1 inch meter	2.00%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
47	1.5 inch meter	2.00%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
48	2 inch meter	2.00%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
49	3 inch meter	2.00%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
50	4 inch meter	2.00%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
51	6 inch meter	2.00%	$ 4.22	$ 4.27	$ 4.33	$ 4.39	$ 4.45	$ 4.51
52								
53	RESDIENTIAL BASE RATE - DEBT SERVICE							
54	5/8 inch meter	1.33%	$ 31.64	$ 32.06	$ 32.49	$ 32.92	$ 33.36	$ 33.80
55	3/4 inch meter	1.33%	$ 31.64	$ 32.06	$ 32.49	$ 32.92	$ 33.36	$ 33.80
56	1 inch meter	1.33%	$ 31.64	$ 32.06	$ 32.49	$ 32.92	$ 33.36	$ 33.80
57	1.5 inch meter	1.33%	$ 31.64	$ 32.06	$ 32.49	$ 32.92	$ 33.36	$ 33.80
58	2 inch meter	1.33%	$ 31.64	$ 32.06	$ 32.49	$ 32.92	$ 33.36	$ 33.80
59	COMMERCIAL BASE RATE - DEBT SERVICE							
60	3/4 inch meter	2.00%	$ 31.64	$ 32.06	$ 32.49	$ 32.92	$ 33.36	$ 33.80
61	1 inch meter	2.00%	$ 38.53	$ 39.04	$ 39.56	$ 40.09	$ 40.62	$ 41.16
62	1.5 inch meter	2.00%	$ 46.61	$ 47.23	$ 47.86	$ 48.50	$ 49.14	$ 49.80
63	2 inch meter	2.00%	$ 57.95	$ 58.72	$ 59.50	$ 60.29	$ 61.09	$ 61.90
64	3 inch meter	2.00%	$ 91.58	$ 92.79	$ 94.03	$ 95.28	$ 96.55	$ 97.83
65	4 inch meter	2.00%	$ 122.52	$ 124.15	$ 125.81	$ 127.48	$ 129.17	$ 130.89
66	6 inch meter	2.00%	$ 219.92	$ 222.85	$ 225.81	$ 228.82	$ 231.86	$ 234.94
67								
68	RESDIENTIAL BASE RATE - CAPITAL RESERVE							
69	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
70	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
71	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
72	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
73	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
74	COMMERCIAL BASE RATE - CAPITAL RESERVE							
75	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
76	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
77	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
78	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
79	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
80	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
81	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
82								
83	CONNECTION FEE (IMPACT FEE)							
84	RESDIENTIAL CONNECTION FEE							
85	5/8 inch meter	1.33%	$ 2,343.62	$ 2,374.79	$ 2,406.37	$ 2,438.38	$ 2,470.81	$ 2,503.67
86	3/4 inch meter	1.33%	$ 2,343.62	$ 2,374.79	$ 2,406.37	$ 2,438.38	$ 2,470.81	$ 2,503.67
87	1 inch meter	1.33%	$ 2,343.62	$ 2,374.79	$ 2,406.37	$ 2,438.38	$ 2,470.81	$ 2,503.67
88	1.5 inch meter	1.33%	$ 2,396.35	$ 2,428.22	$ 2,460.51	$ 2,493.24	$ 2,526.40	$ 2,560.00
89	2 inch meter	1.33%	$ 3,281.06	$ 3,324.70	$ 3,368.92	$ 3,413.73	$ 3,459.13	$ 3,505.14
90	COMMERCIAL CONNECTION FEE							
91	3/4 inch meter	2.00%	$ 7,030.85	$ 7,124.36	$ 7,219.11	$ 7,315.13	$ 7,412.42	$ 7,511.00
92	1 inch meter	2.00%	$ 7,030.85	$ 7,124.36	$ 7,219.11	$ 7,315.13	$ 7,412.42	$ 7,511.00
93	1.5 inch meter	2.00%	$ 7,851.11	$ 7,955.53	$ 8,061.34	$ 8,168.56	$ 8,277.20	$ 8,387.29
94	2 inch meter	2.00%	$ 7,968.30	$ 8,074.27	$ 8,181.66	$ 8,290.48	$ 8,400.74	$ 8,512.47
95	3 inch meter	2.00%	$ 8,378.43	$ 8,489.86	$ 8,602.78	$ 8,717.19	$ 8,833.13	$ 8,950.61
96	4 inch meter	2.00%	$ 8,554.20	$ 8,667.97	$ 8,783.25	$ 8,900.07	$ 9,018.44	$ 9,138.39
97	6 inch meter	2.00%	$ 9,491.65	$ 9,617.88	$ 9,745.80	$ 9,875.42	$ 10,006.77	$ 10,139.85
98								
99	TREATMENT SPECIAL ASSESSMENT							
100	RESDIENTIAL CONNECTION FEE							
101	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
102	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
103	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
104	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
105	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
106	COMMERCIAL CONNECTION FEE							
107	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
108	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
109	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
110	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
111	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
112	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
113	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
114								
115	OTHER FEES							
116	Interest on Investments	3.00%	$ 11,718.08	$ 11,873.93	$ 12,031.86	$ 12,191.88	$ 12,354.03	$ 12,518.34
117	Engineering Plan Revew	3.00%	$ 142.12	$ 144.01	$ 145.92	$ 147.86	$ 149.83	$ 151.82
118	Water Plan Review	3.00%	$ 62.01	$ 62.84	$ 63.67	$ 64.52	$ 65.38	$ 66.25
119	Late Charges	3.00%	$ 1,757.71	$ 1,781.09	$ 1,804.78	$ 1,828.78	$ 1,853.10	$ 1,877.75
120	Cross Connection Plan Review	3.00%	$ 62.01	$ 62.84	$ 63.67	$ 64.52	$ 65.38	$ 66.25
121	Water Observations	3.00%	$ 62.01	$ 62.84	$ 63.67	$ 64.52	$ 65.38	$ 66.25
122								

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2020	2021	2022	2023	2024	2025
123	**REVENUE**	2007	2020	2021	2022	2023	2024	2025
124	OPERATION & MAINTENANCE REVENUES:							
125	RESDIENTIALINCREMENTAL CHARGE - O&M							
126	5/8 inch meter		$ 1,375,379	$ 1,416,807	$ 1,459,482	$ 1,503,443	$ 1,548,728	$ 1,595,377
127	3/4 inch meter		$ 1,747,835	$ 1,800,481	$ 1,854,713	$ 1,910,578	$ 1,968,126	$ 2,027,408
128	1 inch meter		$ 9,017	$ 9,288	$ 9,568	$ 9,856	$ 10,153	$ 10,459
129	1.5 inch meter		$ 2,081	$ 2,143	$ 2,208	$ 2,274	$ 2,343	$ 2,414
130	2 inch meter		$ 3,468	$ 3,572	$ 3,680	$ 3,791	$ 3,905	$ 4,023
131	Sutbotal Residential Incremental Charge - O&M		$ 3,137,780	$ 3,232,292	$ 3,329,651	$ 3,429,943	$ 3,533,255	$ 3,639,680
132	COMMERCIAL INCREMENTAL CHARGE - O&M							
133	3/4 inch meter		$ 49,688	$ 51,482	$ 53,340	$ 55,266	$ 57,261	$ 59,328
134	1 inch meter		$ 80,210	$ 83,106	$ 86,106	$ 89,214	$ 92,435	$ 95,772
135	1.5 inch meter		$ 99,376	$ 102,963	$ 106,680	$ 110,531	$ 114,521	$ 118,655
136	2 inch meter		$ 212,948	$ 220,635	$ 228,600	$ 236,853	$ 245,403	$ 254,262
137	3 inch meter		$ 14,197	$ 14,709	$ 15,240	$ 15,790	$ 16,360	$ 16,951
138	4 inch meter		$ 4,259	$ 4,413	$ 4,572	$ 4,737	$ 4,908	$ 5,085
139	6 inch meter		$ 710	$ 735	$ 762	$ 790	$ 818	$ 848
140	Subtotal Commercial Incremental Charge - O&M		$ 461,388	$ 478,043	$ 495,300	$ 513,180	$ 531,706	$ 550,900
141	TOTAL OPERATION & MAINTENANCE REVENUE		**$ 3,599,167**	**$ 3,710,335**	**$ 3,824,952**	**$ 3,943,123**	**$ 4,064,961**	**$ 4,190,580**
142								
143	DEBT SERVICE REVENUE							
144	RESDIENTIAL BASE CHARGE - DEBT SERVICE							
145	5/8 inch meter		$ 982,414	$ 1,012,005	$ 1,042,487	$ 1,073,888	$ 1,106,234	$ 1,139,555
146	3/4 inch meter		$ 1,248,453	$ 1,286,058	$ 1,324,795	$ 1,364,699	$ 1,405,804	$ 1,448,148
147	1 inch meter		$ 6,440	$ 6,634	$ 6,834	$ 7,040	$ 7,252	$ 7,471
148	1.5 inch meter		$ 1,486	$ 1,531	$ 1,577	$ 1,625	$ 1,674	$ 1,724
149	2 inch meter		$ 2,477	$ 2,552	$ 2,629	$ 2,708	$ 2,789	$ 2,873
150	Sutbotal Residential Incremental Charge - O&M		$ 2,241,271	$ 2,308,780	$ 2,378,322	$ 2,449,959	$ 2,523,754	$ 2,599,771
151	COMMERCIAL BASE CHARGE - DEBT SERVICE							
152	3/4 inch meter		$ 35,491	$ 36,773	$ 38,100	$ 39,475	$ 40,900	$ 42,377
153	1 inch meter		$ 69,770	$ 72,289	$ 74,899	$ 77,602	$ 80,404	$ 83,306
154	1.5 inch meter		$ 104,581	$ 108,357	$ 112,268	$ 116,321	$ 120,520	$ 124,871
155	2 inch meter		$ 278,579	$ 288,636	$ 299,055	$ 309,851	$ 321,036	$ 332,625
156	3 inch meter		$ 29,351	$ 30,410	$ 31,508	$ 32,646	$ 33,824	$ 35,045
157	4 inch meter		$ 11,781	$ 12,206	$ 12,647	$ 13,103	$ 13,576	$ 14,066
158	6 inch meter		$ 3,524	$ 3,652	$ 3,783	$ 3,920	$ 4,061	$ 4,208
159	Subtotal Commercial Incremental Charge - O&M		$ 533,078	$ 552,322	$ 572,260	$ 592,918	$ 614,322	$ 636,499
160	TOTAL DEBT SERVICE REVENUE		**$ 2,774,349**	**$ 2,861,102**	**$ 2,950,582**	**$ 3,042,877**	**$ 3,138,076**	**$ 3,236,270**
161								
162	CAPITAL RESERVE REVENUE:							
163	RESDIENTIAL BASE CHARGE - CAPITAL RESERVE							
164	5/8 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
165	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
166	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
167	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
168	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
169	Sutbotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
170	COMMERCIAL BASE CHARGE - CAPITAL RESERVE							
171	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
172	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
173	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
174	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
175	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
176	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
177	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
178	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
179	TOTAL CAPITAL RESERVE REVENUE		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
180								
181	CONNECTION FEE (IMPACT/TAP FEE) REVENUE							
182	RESDIENTIAL CONNECTION FEE							
183	5/8 inch meter		$ 98,432	$ 99,741	$ 103,474	$ 107,289	$ 111,186	$ 112,665
184	3/4 inch meter		$ 124,212	$ 128,238	$ 132,350	$ 136,549	$ 140,836	$ 145,213
185	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
186	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
187	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
188	Sutbotal Residential Incremental Charge - O&M		$ 222,644	$ 227,979	$ 235,824	$ 243,838	$ 252,022	$ 257,878
189	COMMERCIAL CONNECTION FEE - O&M							
190	3/4 inch meter		$ 14,062	$ 14,249	$ 14,438	$ 14,630	$ 14,825	$ 15,022
191	1 inch meter		$ 21,093	$ 21,373	$ 21,657	$ 21,945	$ 22,237	$ 22,533
192	1.5 inch meter		$ 31,404	$ 31,822	$ 32,245	$ 32,674	$ 33,109	$ 33,549
193	2 inch meter		$ 63,746	$ 72,668	$ 73,635	$ 74,614	$ 75,607	$ 76,612
194	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
195	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
196	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
197	Subtotal Commercial Incremental Charge - O&M		$ 130,305	$ 140,112	$ 141,976	$ 143,864	$ 145,778	$ 147,716
198	TOTAL CONNECTION FEE (IMPACT FEE) REVENUE		**$ 352,949**	**$ 368,092**	**$ 377,800**	**$ 387,702**	**$ 397,800**	**$ 405,594**
199								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

			2007	2020	2021	2022	2023	2024	2025
200	SPECIAL ASSESSMENT REVENUE								
201	RESDIENTIAL SPECIAL ASSESSMENT								
202	5/8 inch meter								
203	3/4 inch meter								
204	1 inch meter								
205	1.5 inch meter								
206	2 inch meter								
207	Subtotal Residential Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
208	COMMERCIAL SPECIAL ASSESSMENT								
209	3/4 inch meter								
210	1 inch meter								
211	1.5 inch meter								
212	2 inch meter								
213	3 inch meter								
214	4 inch meter								
215	6 inch meter								
216	Subtotal Commercial Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
217	TOTAL SPECIAL ASSESSMENT REVENUE			$ -	$ -	$ -	$ -	$ -	$ -
218									
219	OTHER REVENUE:								
220	Interest on Investments			$ 11,718	$ 11,874	$ 12,032	$ 12,192	$ 12,354	$ 12,518
221	Engineering Plan Revew			$ 16,343	$ 16,849	$ 17,365	$ 17,891	$ 18,429	$ 19,130
222	Water Plan Review			$ 7,131	$ 7,352	$ 7,577	$ 7,807	$ 8,041	$ 8,347
223	Late Charges			$ 1,758	$ 1,781	$ 1,805	$ 1,829	$ 1,853	$ 1,878
224	Cross Connection Plan Review			$ 7,131	$ 7,352	$ 7,577	$ 7,807	$ 8,041	$ 8,347
225	Water Observations			$ 7,131	$ 7,352	$ 7,577	$ 7,807	$ 8,041	$ 8,347
	Interest		3.00%	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
226	**Subtotal Other Revenue**			66,213	67,560	68,933	70,333	71,760	73,567
227									
228	**TOTAL REVENUE**			$ 6,792,678	$ 7,007,089	$ 7,222,267	$ 7,444,035	$ 7,672,597	$ 7,906,011
229									
230	GRANT/LOAN PROCEEDS		Term						
231	STAG Grant								
232	ACOE Section 595 Grant								
233	Other Grant								
234	State Revolving Fund - 1		20						
235	State Revolving Fund - 2								
236	**Subtotal Financing**			$ -	$ -	$ -	$ -	$ -	$ -
237									
238	**SUBTOTAL AVAILABLE CAPITAL**	$	-	$ 352,949	$ 368,092	$ 377,800	$ 387,702	$ 397,800	$ 405,594
239									

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

				2007	2020	2021	2022	2023	2024	2025
240	**EXPENSES**			2007	2020	2021	2022	2023	2024	2025
241	PERSONNEL EXPENXES		Number	12	12	12	12	12	12	12
242	30-81-401	Personnel - Salaries	3.00%	$ 775,531	$ 798,797	$ 822,761	$ 847,444	$ 872,867	$ 899,053
243	30-81-410	Personnel - Overtime	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
244	30-81-420	Employers Benefit Package	3.00%	$ 177,916	$ 183,254	$ 188,752	$ 194,414	$ 200,247	$ 206,254
245	30-81-421	Employers Medical Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
246	30-81-422	Employers Life Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
247	30-81-423	Employers Dental Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
248	30-81-424	Employers Disability Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
249	30-81-425	Employers Vision	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
250	30-81-426	Workers Compensation Insurance	3.00%	$ 22,665	$ 23,345	$ 24,046	$ 24,767	$ 25,510	$ 26,275
251	30-81-427	State Unemployment Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
252	30-81-428	Employers EAP	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
253	30-81-430	Retirement - PERSI	3.00%	$ 80,578	$ 82,996	$ 85,486	$ 88,050	$ 90,692	$ 93,412
254	30-81-435	Social Security	3.00%	$ 59,329	$ 61,109	$ 62,942	$ 64,830	$ 66,775	$ 68,778
255	30-81-439	Employers Self Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
256	30-81-469	Clothing Allowance	3.00%	$ 5,703	$ 5,874	$ 6,050	$ 6,232	$ 6,419	$ 6,611
257	30-81-475	Vacation Accrual	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
258	30-81-490	Employee Recognition	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
259	**Subtotal Personnel Expenses**			**$ 1,121,723**	**$ 1,155,375**	**$ 1,190,036**	**$ 1,225,737**	**$ 1,262,509**	**$ 1,300,384**
260									
261	OPERATIONS EXPENSE								
262	30-81-500	Supplies - Office/Operating	3.00%	61,236	63,074	64,966	66,915	68,922	70,990
263	30-81-501	Supplies - Books and Manuals	3.00%	570	587	605	623	642	661
264	30-81-525	Postage	3.00%	4,990	5,140	5,294	5,453	5,616	5,785
265	30-81-526	Freight	3.00%	713	734	756	779	802	826
266	30-81-535	Minor Equipment	3.00%	7,485	7,710	7,941	8,179	8,425	8,677
267	30-81-540	Petroloeum and Oil	3.00%	13,402	13,804	14,218	14,645	15,084	15,537
268	30-81-560	Repair/Maint - Grounds	3.00%	9,980	10,280	10,588	10,906	11,233	11,570
269	30-81-561	Repair/Maint - Buildings	3.00%	17,109	17,622	18,151	18,696	19,256	19,834
270	30-81-562	Repair/Maint - Cross Connections	3.00%	2,139	2,203	2,269	2,337	2,407	2,479
271	30-81-565	Repair/Maint - Vehicles	3.00%	28,159	29,004	29,874	30,770	31,693	32,644
272	30-81-580	Repair/Maint - Water	3.00%	285,152	293,707	302,518	311,593	320,941	330,570
273	30-81-581	Purch/Repair/Maint - Office Furn & Equip	3.00%	17,893	18,430	18,983	19,552	20,139	20,743
274	30-81-599	Repair/Maint - Other Equipment	3.00%	713	734	756	779	802	826
275			3.00%	-	-	-	-	-	-
276	30-81-610	Legal Services	3.00%	-	-	-	-	-	-
277	30-81-612	Computer Services	3.00%	55,605	57,273	58,991	60,761	62,584	64,461
278	30-81-615	Ada County Base Map Compass	3.00%	-	-	-	-	-	-
279	30-81-619	Professional Services	3.00%	68,437	70,490	72,604	74,782	77,026	79,337
280	30-81-623	Professional Services - Cross Connection	3.00%	-	-	-	-	-	-
281	30-81-631	Other Purchased Services	3.00%	-	-	-	-	-	-
282	30-81-635	Other Permits	3.00%	6,416	6,608	6,807	7,011	7,221	7,438
283	30-81-640	Advertising & Publications	3.00%	6,416	6,608	6,807	7,011	7,221	7,438
284	30-81-641	Printing & Binding	3.00%	1,497	1,542	1,588	1,636	1,685	1,735
285	30-81-642	Travel and Meetings	3.00%	2,852	2,937	3,025	3,116	3,209	3,306
286	30-81-643	Dues and Membership	3.00%	2,210	2,276	2,345	2,415	2,487	2,562
287	30-81-644	Personnal Training	3.00%	4,491	4,626	4,765	4,908	5,055	5,206
288	30-81-659	Other Misc Expenses	3.00%	4,123	4,247	4,374	4,506	4,641	4,780
289	30-81-661	Rental - Vehicles	3.00%	1,782	1,836	1,891	1,947	2,006	2,066
290	30-81-669	Rental - Other	3.00%	8,555	8,811	9,076	9,348	9,628	9,917
291	30-81-691	Bank/Merchant Account Fees	3.00%	-	-	-	-	-	-
292	30-81-803	Capital - Vehicles	3.00%	106,718	109,920	113,217	116,614	120,112	123,716
293	30-81-879	Capital - Other	3.00%	-	-	-	-	-	-
294	30-81-770	Telephone & Communications	3.00%	19,248	19,825	20,420	21,033	21,664	22,313
295	30-81-771	Utilities	3.00%	82,338	84,808	87,352	89,973	92,672	95,452
296		Water System Maintenance Improvement	3.00%	3,322,161	3,421,826	3,524,481	3,630,215	3,739,122	3,851,295
297	30-81-906	Amortization - Bond Issuance	3.00%	-	-	-	-	-	-
298	30-81-950	Administrative Overhead Charge	3.00%	450,335	463,845	477,761	492,093	506,856	522,062
299	30-81-951	Billing Expenses	3.00%	12,832	13,217	13,613	14,022	14,442	14,876
300	30-81-948	Tranfer to P&Z	3.00%	191,493	197,238	203,155	209,250	215,527	221,993
301	30-81-953	Interfund Transfer to Capital Fund	3.00%	-	-	-	-	-	-
302	30-81-954	Bad Debt Expense	3.00%	3,564	3,671	3,781	3,895	4,012	4,132
303	30-81-955	Depreciation Expense	3.00%	142,576	146,853	151,259	155,797	160,471	165,285
304	**Subtotal Administration Expense**			**$ 4,943,191**	**$ 5,091,486**	**$ 5,244,231**	**$ 5,401,558**	**$ 5,563,605**	**$ 5,730,513**
305									
306	**Total Administration & Operating Expenses**			**$ 6,064,914**	**$ 6,246,861**	**$ 6,434,267**	**$ 6,627,295**	**$ 6,826,114**	**$ 7,030,897**
307									
308	PROJECT DEBT SERVICE								
309	30-81-900	Debt Service Principal 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
310	30-81-901	Debt Service Interest 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -
311	30-81-904	Debt Service Principal 2001 Bond	3.00%	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -
312	30-81-905	Debt Service Interest 2001 Bond	3.00%	$ 105,000	$ 105,000	$ -	$ -	$ -	$ -
313	Subtotal Previous Bond Payment			$ 205,000	$ 205,000	$ -	$ -	$ -	$ -
314									
315		2009 Bond Principal	3.00%	$ 478,541	$ 492,897	$ 507,684	$ 522,914	$ 538,602	$ 554,760
316		2009 Bond Interest	3.00%	$ 183,872	$ 169,515	$ 154,728	$ 139,498	$ 123,810	$ 107,652
317	Subtotal Payment 1 SRF			$ 662,412	$ 662,412	$ 662,412	$ 662,412	$ 662,412	$ 662,412
318									
319		2009 Bond Principal	3.00%						
320		2009 Bond Interest	3.00%						
321	Subtotal Payment 2 SRF			$ -	$ -	$ -	$ -	$ -	$ -
322									
323	**Subtotal Debt Service**			**$ 867,412**	**$ 867,412**	**$ 662,412**	**$ 662,412**	**$ 662,412**	**$ 662,412**
324									
325	SUBTOTAL EXPENSE			**$ 6,932,326**	**$ 7,114,273**	**$ 7,096,679**	**$ 7,289,707**	**$ 7,488,526**	**$ 7,693,309**
326									
327	CAPITAL PROJECTS								
328	Well Rehabilitation								
329	Well								

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2020	2021	2022	2023	2024	2025
330	Water Storage							
331	Line/Hydrant Replacement							
332	**Subtotal Capital Projects**	$ -	$ -	$ -	$ -	$ -	$ -	$ -

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PROPOSED FEE STRUCTURE
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Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
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		2007	2020	2021	2022	2023	2024	2025
333	**NET INCOME**	2007	2020	2021	2022	2023	2024	2025
334	OPERATING NET INCOME							
335	Operation & Maintenance - Income		$ 3,599,167	$ 3,710,335	$ 3,824,952	$ 3,943,123	$ 4,064,961	$ 4,190,580
336	Debt Service - Income		$ 2,774,349	$ 2,861,102	$ 2,950,582	$ 3,042,877	$ 3,138,076	$ 3,236,270
337	Other Income		$ 66,213	$ 67,560	$ 68,933	$ 70,333	$ 71,760	$ 73,567
338	Personnel Expense		$ (1,121,723)	$ (1,155,375)	$ (1,190,036)	$ (1,225,737)	$ (1,262,509)	$ (1,300,384)
339	Operations Expense		$ (4,943,191)	$ (5,091,486)	$ (5,244,231)	$ (5,401,558)	$ (5,563,605)	$ (5,730,513)
340	Debt Service - Expense		$ (867,412)	$ (867,412)	$ (662,412)	$ (662,412)	$ (662,412)	$ (662,412)
341	**Subtotal Operating Net Income**		**$ (492,596)**	**$ (475,277)**	**$ (252,213)**	**$ (233,374)**	**$ (213,728)**	**$ (192,892)**
342								
343	CAPITAL PROJECT NET INCOME							
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 352,949	$ 368,092	$ 377,800	$ 387,702	$ 397,800	$ 405,594
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ -	$ -	$ -	$ -	$ -
348	Capital Project Expense		$ -	$ -	$ -	$ -	$ -	$ -
349	**Subtotal Capital Project Net Income**		**$ 352,949**	**$ 368,092**	**$ 377,800**	**$ 387,702**	**$ 397,800**	**$ 405,594**
350								
351	TOTAL NET INCOME		**$ (139,647)**	**$ (107,185)**	**$ 125,588**	**$ 154,328**	**$ 184,072**	**$ 212,702**
352								
353	**TOTAL CASH ON HAND**	2007	2020	2021	2022	2023	2024	2025
354	Capital Fund	$ -	$ 3,090,399	$ 3,458,491	$ 3,836,292	$ 4,223,993	$ 4,621,793	$ 5,027,387
355	Operating & Maintenance Fund		$ (3,957,197)	$ (4,432,474)	$ (4,684,687)	$ (4,918,061)	$ (5,131,789)	$ (5,324,681)
356	**Total Cash on Hand**	**$ -**	**$ (866,798)**	**$ (973,983)**	**$ (848,395)**	**$ (694,067)**	**$ (509,996)**	**$ (297,294)**

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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2026	2027	2028	2029	2030	2031
	ASSUMPTIONS							
1	**CONNECTIONS**	RATE						
2	GROWTH RATE	PERIOD 1						
3	RESIDENTIAL	(percent)						
4	5/8 inch meter	4.50%					-	-
5	3/4 inch meter	4.50%						
6	1 inch meter	4.50%						
7	1.5 inch meter	4.50%						
8	2 inch meter	4.50%						
9	COMMERCIAL	(percent)						
10	3/4 inch meter	2.00%						
11	1 inch meter	2.00%						
12	1.5 inch meter	2.00%						
13	2 inch meter	2.00%						
14	3 inch meter	2.00%						
15	4 inch meter	2.00%						
16	6 inch meter	2.00%						
17								
18	CONNECTIONS/EDUs							
19	RESIDENTIAL (estimated connections)		2	2	2	2	2	2
20	5/8 inch meter	1983	2856	2904	2952	3001	3051	3101
21	3/4 inch meter	2520	3630	3690	3751	3813	3877	3941
22	1 inch meter	13	19	19	19	20	20	20
23	1.5 inch meter	3	4	4	4	5	5	5
24	2 inch meter	5	7	7	7	8	8	8
25	Subtotal Residential SFDE	4524	6516	6624	6734	6846	6960	7075
26	COMMERCIAL		3	3	2	2	2	2
27	3/4 inch meter	70	107	109	111	114	116	118
28	1 inch meter	113	172	176	180	183	187	191
29	1.5 inch meter	140	214	218	223	227	232	236
30	2 inch meter	300	458	468	478	487	497	507
31	3 inch meter	20	31	31	32	32	33	34
32	4 inch meter	6	9	9	10	10	10	10
33	6 inch meter	1	2	2	2	2	2	2
34	Subtotal Commerical SFDE	650	992	1014	1035	1055	1076	1098
35	Total SFDE	5174	7508	7639	7769	7901	8036	8173
36								

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PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
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Date: 1-Mar-08
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		2007	2026	2027	2028	2029	2030	2031
36	**FEE STRUCTURE**	2007	2026	2027	2028	2029	2030	2031
37	USER RATES:							
38	RESDIENTIALINCREMENTAL CHARGE - O&M							
39	5/8 inch meter	1.33%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
40	3/4 inch meter	1.33%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
41	1 inch meter	1.33%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
42	1.5 inch meter	1.33%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
43	2 inch meter	1.33%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
44	COMMERCIAL INCREMENTAL CHARGE - O&M							
45	3/4 inch meter	2.00%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
46	1 inch meter	2.00%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
47	1.5 inch meter	2.00%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
48	2 inch meter	2.00%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
49	3 inch meter	2.00%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
50	4 inch meter	2.00%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
51	6 inch meter	2.00%	$ 4.57	$ 4.63	$ 4.69	$ 4.75	$ 4.81	$ 4.88
52								
53	RESDIENTIAL BASE RATE - DEBT SERVICE							
54	5/8 inch meter	1.33%	$ 34.25	$ 34.70	$ 35.17	$ 35.63	$ 36.11	$ 36.59
55	3/4 inch meter	1.33%	$ 34.25	$ 34.70	$ 35.17	$ 35.63	$ 36.11	$ 36.59
56	1 inch meter	1.33%	$ 34.25	$ 34.70	$ 35.17	$ 35.63	$ 36.11	$ 36.59
57	1.5 inch meter	1.33%	$ 34.25	$ 34.70	$ 35.17	$ 35.63	$ 36.11	$ 36.59
58	2 inch meter	1.33%	$ 34.25	$ 34.70	$ 35.17	$ 35.63	$ 36.11	$ 36.59
59	COMMERCIAL BASE RATE - DEBT SERVICE							
60	3/4 inch meter	2.00%	$ 34.25	$ 34.70	$ 35.17	$ 35.63	$ 36.11	$ 36.59
61	1 inch meter	2.00%	$ 41.71	$ 42.26	$ 42.82	$ 43.39	$ 43.97	$ 44.56
62	1.5 inch meter	2.00%	$ 50.46	$ 51.13	$ 51.81	$ 52.50	$ 53.20	$ 53.91
63	2 inch meter	2.00%	$ 62.73	$ 63.56	$ 64.41	$ 65.26	$ 66.13	$ 67.01
64	3 inch meter	2.00%	$ 99.13	$ 100.45	$ 101.79	$ 103.14	$ 104.51	$ 105.90
65	4 inch meter	2.00%	$ 132.63	$ 134.40	$ 136.18	$ 138.00	$ 139.83	$ 141.69
66	6 inch meter	2.00%	$ 238.07	$ 241.24	$ 244.44	$ 247.69	$ 250.99	$ 254.33
67								
68	RESDIENTIAL BASE RATE - CAPITAL RESERVE							
69	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
70	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
71	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
72	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
73	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
74	COMMERCIAL BASE RATE - CAPITAL RESERVE							
75	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
76	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
77	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
78	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
79	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
80	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
81	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
82								
83	CONNECTION FEE (IMPACT FEE)							
84	RESDIENTIAL CONNECTION FEE							
85	5/8 inch meter	1.33%	$ 2,536.97	$ 2,570.71	$ 2,604.90	$ 2,639.54	$ 2,674.65	$ 2,710.22
86	3/4 inch meter	1.33%	$ 2,536.97	$ 2,570.71	$ 2,604.90	$ 2,639.54	$ 2,674.65	$ 2,710.22
87	1 inch meter	1.33%	$ 2,536.97	$ 2,570.71	$ 2,604.90	$ 2,639.54	$ 2,674.65	$ 2,710.22
88	1.5 inch meter	1.33%	$ 2,594.05	$ 2,628.55	$ 2,663.51	$ 2,698.93	$ 2,734.83	$ 2,771.20
89	2 inch meter	1.33%	$ 3,551.75	$ 3,598.99	$ 3,646.86	$ 3,695.36	$ 3,744.51	$ 3,794.31
90	COMMERCIAL CONNECTION FEE							
91	3/4 inch meter	2.00%	$ 7,610.90	$ 7,712.13	$ 7,814.70	$ 7,918.63	$ 8,023.95	$ 8,130.67
92	1 inch meter	2.00%	$ 7,610.90	$ 7,712.13	$ 7,814.70	$ 7,918.63	$ 8,023.95	$ 8,130.67
93	1.5 inch meter	2.00%	$ 8,498.84	$ 8,611.87	$ 8,726.41	$ 8,842.47	$ 8,960.08	$ 9,079.25
94	2 inch meter	2.00%	$ 8,625.69	$ 8,740.41	$ 8,856.66	$ 8,974.45	$ 9,093.81	$ 9,214.76
95	3 inch meter	2.00%	$ 9,069.66	$ 9,190.28	$ 9,312.51	$ 9,436.37	$ 9,561.87	$ 9,689.05
96	4 inch meter	2.00%	$ 9,259.93	$ 9,383.09	$ 9,507.88	$ 9,634.34	$ 9,762.47	$ 9,892.31
97	6 inch meter	2.00%	$ 10,274.72	$ 10,411.37	$ 10,549.84	$ 10,690.15	$ 10,832.33	$ 10,976.40
98								
99	TREATMENT SPECIAL ASSESSMENT							
100	RESDIENTIAL CONNECTION FEE							
101	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
102	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
103	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
104	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
105	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
106	COMMERCIAL CONNECTION FEE							
107	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
108	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
109	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
110	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
111	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
112	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
113	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
114								
115	OTHER FEES							
116	Interest on Investments	3.00%	$ 12,684.83	$ 12,853.54	$ 13,024.49	$ 13,197.72	$ 13,373.25	$ 13,551.11
117	Engineering Plan Revew	3.00%	$ 153.84	$ 155.89	$ 157.96	$ 160.06	$ 162.19	$ 164.35
118	Water Plan Review	3.00%	$ 67.13	$ 68.02	$ 68.93	$ 69.84	$ 70.77	$ 71.71
119	Late Charges	3.00%	$ 1,902.73	$ 1,928.03	$ 1,953.67	$ 1,979.66	$ 2,005.99	$ 2,032.67
120	Cross Connection Plan Review	3.00%	$ 67.13	$ 68.02	$ 68.93	$ 69.84	$ 70.77	$ 71.71
121	Water Observations	3.00%	$ 67.13	$ 68.02	$ 68.93	$ 69.84	$ 70.77	$ 71.71
122								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2026	2027	2028	2029	2030	2031
123	**REVENUE**	2007	2026	2027	2028	2029	2030	2031
124	OPERATION & MAINTENANCE REVENUES:							
125	RESDIENTIALINCREMENTAL CHARGE - O&M							
126	5/8 inch meter		$ 1,643,431	$ 1,692,932	$ 1,743,925	$ 1,796,453	$ 1,850,564	$ 1,906,304
127	3/4 inch meter		$ 2,088,475	$ 2,151,381	$ 2,216,183	$ 2,282,936	$ 2,351,700	$ 2,422,535
128	1 inch meter		$ 10,774	$ 11,098	$ 11,433	$ 11,777	$ 12,132	$ 12,497
129	1.5 inch meter		$ 2,486	$ 2,561	$ 2,638	$ 2,718	$ 2,800	$ 2,884
130	2 inch meter		$ 4,144	$ 4,269	$ 4,397	$ 4,530	$ 4,666	$ 4,807
131	Sutbotal Residential Incremental Charge - O&M		$ 3,749,310	$ 3,862,242	$ 3,978,576	$ 4,098,413	$ 4,221,861	$ 4,349,026
132	COMMERCIAL INCREMENTAL CHARGE - O&M							
133	3/4 inch meter		$ 61,469	$ 63,688	$ 65,826	$ 68,036	$ 70,319	$ 72,680
134	1 inch meter		$ 99,229	$ 102,811	$ 106,262	$ 109,829	$ 113,516	$ 117,326
135	1.5 inch meter		$ 122,939	$ 127,377	$ 131,652	$ 136,071	$ 140,639	$ 145,359
136	2 inch meter		$ 263,440	$ 272,950	$ 282,112	$ 291,581	$ 301,369	$ 311,484
137	3 inch meter		$ 17,563	$ 18,197	$ 18,807	$ 19,439	$ 20,091	$ 20,766
138	4 inch meter		$ 5,269	$ 5,459	$ 5,642	$ 5,832	$ 6,027	$ 6,230
139	6 inch meter		$ 878	$ 910	$ 940	$ 972	$ 1,005	$ 1,038
140	Subtotal Commercial Incremental Charge - O&M		$ 570,787	$ 591,392	$ 611,243	$ 631,760	$ 652,965	$ 674,883
141	TOTAL OPERATION & MAINTENANCE REVENUE		**$ 4,320,097**	**$ 4,453,634**	**$ 4,589,818**	**$ 4,730,173**	**$ 4,874,826**	**$ 5,023,909**
142								
143	DEBT SERVICE REVENUE							
144	RESDIENTIAL BASE CHARGE - DEBT SERVICE							
145	5/8 inch meter		$ 1,173,879	$ 1,209,237	$ 1,245,660	$ 1,283,181	$ 1,321,831	$ 1,361,646
146	3/4 inch meter		$ 1,491,768	$ 1,536,701	$ 1,582,988	$ 1,630,668	$ 1,679,785	$ 1,730,382
147	1 inch meter		$ 7,696	$ 7,927	$ 8,166	$ 8,412	$ 8,666	$ 8,927
148	1.5 inch meter		$ 1,776	$ 1,829	$ 1,885	$ 1,941	$ 2,000	$ 2,060
149	2 inch meter		$ 2,960	$ 3,049	$ 3,141	$ 3,235	$ 3,333	$ 3,433
150	Sutbotal Residential Incremental Charge - O&M		$ 2,678,078	$ 2,758,744	$ 2,841,840	$ 2,927,438	$ 3,015,615	$ 3,106,447
151	COMMERCIAL BASE CHARGE - DEBT SERVICE							
152	3/4 inch meter		$ 43,907	$ 45,492	$ 47,019	$ 48,597	$ 50,228	$ 51,914
153	1 inch meter		$ 86,314	$ 89,429	$ 92,431	$ 95,534	$ 98,740	$ 102,055
154	1.5 inch meter		$ 129,378	$ 134,049	$ 138,548	$ 143,199	$ 148,005	$ 152,973
155	2 inch meter		$ 344,633	$ 357,074	$ 369,059	$ 381,447	$ 394,251	$ 407,484
156	3 inch meter		$ 36,310	$ 37,621	$ 38,884	$ 40,189	$ 41,538	$ 42,932
157	4 inch meter		$ 14,574	$ 15,100	$ 15,607	$ 16,131	$ 16,673	$ 17,232
158	6 inch meter		$ 4,360	$ 4,517	$ 4,669	$ 4,826	$ 4,988	$ 5,155
159	Subtotal Commercial Incremental Charge - O&M		$ 659,476	$ 683,282	$ 706,218	$ 729,922	$ 754,423	$ 779,746
160	TOTAL DEBT SERVICE REVENUE		**$ 3,337,554**	**$ 3,442,027**	**$ 3,548,057**	**$ 3,657,361**	**$ 3,770,038**	**$ 3,886,193**
161								
162	CAPITAL RESERVE REVENUE:							
163	RESDIENTIAL BASE CHARGE - CAPITAL RESERVE							
164	5/8 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
165	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
166	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
167	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
168	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
169	Sutbotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
170	COMMERCIAL BASE CHARGE - CAPITAL RESERVE							
171	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
172	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
173	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
174	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
175	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
176	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
177	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
178	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
179	TOTAL CAPITAL RESERVE REVENUE		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
180								
181	CONNECTION FEE (IMPACT/TAP FEE) REVENUE							
182	RESDIENTIAL CONNECTION FEE							
183	5/8 inch meter		$ 116,700	$ 120,823	$ 125,035	$ 129,338	$ 131,058	$ 135,511
184	3/4 inch meter		$ 149,681	$ 154,243	$ 158,899	$ 163,652	$ 168,503	$ 173,454
185	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
186	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
187	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
188	Sutbotal Residential Incremental Charge - O&M		$ 266,382	$ 275,066	$ 283,934	$ 292,989	$ 299,561	$ 308,965
189	COMMERCIAL CONNECTION FEE - O&M							
190	3/4 inch meter		$ 15,222	$ 15,424	$ 15,629	$ 15,837	$ 16,048	$ 16,261
191	1 inch meter		$ 22,833	$ 23,136	$ 23,444	$ 23,756	$ 24,072	$ 24,392
192	1.5 inch meter		$ 33,995	$ 34,447	$ 34,906	$ 35,370	$ 35,840	$ 36,317
193	2 inch meter		$ 86,257	$ 87,404	$ 79,710	$ 80,770	$ 81,844	$ 82,933
194	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
195	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
196	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
197	Subtotal Commercial Incremental Charge - O&M		$ 158,307	$ 160,412	$ 153,689	$ 155,733	$ 157,804	$ 159,903
198	TOTAL CONNECTION FEE (IMPACT FEE) REVENUE		**$ 424,688**	**$ 435,478**	**$ 437,623**	**$ 448,722**	**$ 457,365**	**$ 468,869**
199								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

			2007	2026	2027	2028	2029	2030	2031
200	SPECIAL ASSESSMENT REVENUE								
201	RESDIENTIAL SPECIAL ASSESSMENT								
202	5/8 inch meter								
203	3/4 inch meter								
204	1 inch meter								
205	1.5 inch meter								
206	2 inch meter								
207	Subtotal Residential Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
208	COMMERCIAL SPECIAL ASSESSMENT								
209	3/4 inch meter								
210	1 inch meter								
211	1.5 inch meter								
212	2 inch meter								
213	3 inch meter								
214	4 inch meter								
215	6 inch meter								
216	Subtotal Commercial Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
217	TOTAL SPECIAL ASSESSMENT REVENUE			$ -	$ -	$ -	$ -	$ -	$ -
218									
219	OTHER REVENUE:								
220	Interest on Investments			$ 12,685	$ 12,854	$ 13,024	$ 13,198	$ 13,373	$ 13,551
221	Engineering Plan Revew			$ 19,692	$ 20,265	$ 20,535	$ 21,128	$ 21,734	$ 22,516
222	Water Plan Review			$ 8,592	$ 8,843	$ 8,960	$ 9,219	$ 9,483	$ 9,825
223	Late Charges			$ 1,903	$ 1,928	$ 1,954	$ 1,980	$ 2,006	$ 2,033
224	Cross Connection Plan Review			$ 8,592	$ 8,843	$ 8,960	$ 9,219	$ 9,483	$ 9,825
225	Water Observations			$ 8,592	$ 8,843	$ 8,960	$ 9,219	$ 9,483	$ 9,825
	Interest		3.00%	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
226	**Subtotal Other Revenue**			75,056	76,575	77,394	78,963	80,563	82,573
227									
228	**TOTAL REVENUE**			$ 8,157,396	$ 8,407,714	$ 8,652,893	$ 8,915,219	$ 9,182,792	$ 9,461,545
229									
230	GRANT/LOAN PROCEEDS		Term						
231	STAG Grant								
232	ACOE Section 595 Grant								
233	Other Grant								
234	State Revolving Fund - 1		20						
235	State Revolving Fund - 2								
236	**Subtotal Financing**			$ -	$ -	$ -	$ -	$ -	$ -
237									
238	**SUBTOTAL AVAILABLE CAPITAL**	$	-	$ 424,688	$ 435,478	$ 437,623	$ 448,722	$ 457,365	$ 468,869
239									

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

				2007	2026	2027	2028	2029	2030	2031
240	**EXPENSES**			2007	2026	2027	2028	2029	2030	2031
241	PERSONNEL EXPENXES		Number		12	12	12	12	12	12
242	30-81-401	Personnel - Salaries	3.00%		$ 926,025	$ 953,806	$ 982,420	$ 1,011,892	$ 1,042,249	$ 1,073,517
243	30-81-410	Personnel - Overtime	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
244	30-81-420	Employers Benefit Package	3.00%		$ 212,442	$ 218,815	$ 225,379	$ 232,141	$ 239,105	$ 246,278
245	30-81-421	Employers Medical Insurance	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
246	30-81-422	Employers Life Insurance	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
247	30-81-423	Employers Dental Insurance	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
248	30-81-424	Employers Disability Insurance	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
249	30-81-425	Employers Vision	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
250	30-81-426	Workers Compensation Insurance	3.00%		$ 27,064	$ 27,875	$ 28,712	$ 29,573	$ 30,460	$ 31,374
251	30-81-427	State Unemployment Insurance	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
252	30-81-428	Employers EAP	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
253	30-81-430	Retirement - PERSI	3.00%		$ 96,215	$ 99,101	$ 102,074	$ 105,136	$ 108,291	$ 111,539
254	30-81-435	Social Security	3.00%		$ 70,842	$ 72,967	$ 75,156	$ 77,411	$ 79,733	$ 82,125
255	30-81-439	Employers Self Insurance	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
256	30-81-469	Clothing Allowance	3.00%		$ 6,810	$ 7,014	$ 7,224	$ 7,441	$ 7,664	$ 7,894
257	30-81-475	Vacation Accrual	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
258	30-81-490	Employee Recognition	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
259	**Subtotal Personnel Expenses**				**$ 1,339,396**	**$ 1,379,578**	**$ 1,420,965**	**$ 1,463,594**	**$ 1,507,502**	**$ 1,552,727**
260										
261	OPERATIONS EXPENSE									
262	30-81-500	Supplies - Office/Operating	3.00%		73,119	75,313	$ 77,572	$ 79,900	$ 82,297	$ 84,766
263	30-81-501	Supplies - Books and Manuals	3.00%		681	701	$ 722	$ 744	$ 766	$ 789
264	30-81-525	Postage	3.00%		5,959	6,137	$ 6,321	$ 6,511	$ 6,706	$ 6,908
265	30-81-526	Freight	3.00%		851	877	$ 903	$ 930	$ 958	$ 987
266	30-81-535	Minor Equipment	3.00%		8,938	9,206	$ 9,482	$ 9,767	$ 10,060	$ 10,361
267	30-81-540	Petroloeum and Oil	3.00%		16,003	16,483	$ 16,977	$ 17,487	$ 18,011	$ 18,552
268	30-81-560	Repair/Maint - Grounds	3.00%		11,917	12,275	$ 12,643	$ 13,022	$ 13,413	$ 13,815
269	30-81-561	Repair/Maint - Buildings	3.00%		20,429	21,042	$ 21,673	$ 22,324	$ 22,993	$ 23,683
270	30-81-562	Repair/Maint - Cross Connections	3.00%		2,554	2,630	$ 2,709	$ 2,790	$ 2,874	$ 2,960
271	30-81-565	Repair/Maint - Vehicles	3.00%		33,623	34,632	$ 35,671	$ 36,741	$ 37,843	$ 38,978
272	30-81-580	Repair/Maint - Water	3.00%		340,487	350,701	$ 361,222	$ 372,059	$ 383,221	$ 394,717
273	30-81-581	Purch/Repair/Maint - Office Furn & Equip	3.00%		21,366	22,007	$ 22,667	$ 23,347	$ 24,047	$ 24,769
274	30-81-599	Repair/Maint - Other Equipment	3.00%		851	877	$ 903	$ 930	$ 958	$ 987
275			3.00%		-			$ -	$ -	$ -
276	30-81-610	Legal Services	3.00%		-	-	$ -	$ -	$ -	$ -
277	30-81-612	Computer Services	3.00%		66,395	68,387	$ 70,438	$ 72,551	$ 74,728	$ 76,970
278	30-81-615	Ada County Base Map Compass	3.00%		-	-	$ -	$ -	$ -	$ -
279	30-81-619	Professional Services	3.00%		81,717	84,168	$ 86,693	$ 89,294	$ 91,973	$ 94,732
280	30-81-623	Professional Services - Cross Connection	3.00%		-	-	$ -	$ -	$ -	$ -
281	30-81-631	Other Purchased Services	3.00%		-	-	$ -	$ -	$ -	$ -
282	30-81-635	Other Permits	3.00%		7,661	7,891	$ 8,128	$ 8,371	$ 8,622	$ 8,881
283	30-81-640	Advertising & Publications	3.00%		7,661	7,891	$ 8,128	$ 8,371	$ 8,622	$ 8,881
284	30-81-641	Printing & Binding	3.00%		1,788	1,841	$ 1,896	$ 1,953	$ 2,012	$ 2,072
285	30-81-642	Travel and Meetings	3.00%		3,405	3,507	$ 3,612	$ 3,721	$ 3,832	$ 3,947
286	30-81-643	Dues and Membership	3.00%		2,639	2,718	$ 2,799	$ 2,883	$ 2,970	$ 3,059
287	30-81-644	Personnal Training	3.00%		5,363	5,524	$ 5,689	$ 5,860	$ 6,036	$ 6,217
288	30-81-659	Other Misc Expenses	3.00%		4,923	5,071	$ 5,223	$ 5,380	$ 5,541	$ 5,708
289	30-81-661	Rental - Vehicles	3.00%		2,128	2,192	$ 2,258	$ 2,325	$ 2,395	$ 2,467
290	30-81-669	Rental - Other	3.00%		10,215	10,521	$ 10,837	$ 11,162	$ 11,497	$ 11,842
291	30-81-691	Bank/Merchant Account Fees	3.00%		-	-	$ -	$ -	$ -	$ -
292	30-81-803	Capital - Vehicles	3.00%		127,427	131,250	$ 135,187	$ 139,243	$ 143,420	$ 147,723
293	30-81-879	Capital - Other	3.00%		-	-	$ -	$ -	$ -	$ -
294	30-81-770	Telephone & Communications	3.00%		22,983	23,672	$ 24,383	$ 25,114	$ 25,867	$ 26,643
295	30-81-771	Utilities	3.00%		98,316	101,265	$ 104,303	$ 107,432	$ 110,655	$ 113,975
296		Water System Maintenance Improvement	3.00%		3,966,834	4,085,839	4,208,415	4,334,667	4,464,707	4,598,648
297	30-81-906	Amortization - Bond Issuance	3.00%		-	-	$ -	$ -	$ -	$ -
298	30-81-950	Administrative Overhead Charge	3.00%		537,724	553,855	$ 570,471	$ 587,585	$ 605,213	$ 623,369
299	30-81-951	Billing Expenses	3.00%		15,322	15,782	$ 16,255	$ 16,743	$ 17,245	$ 17,762
300	30-81-948	Tranfer to P&Z	3.00%		228,653	235,512	$ 242,578	$ 249,855	$ 257,351	$ 265,071
301	30-81-953	Interfund Transfer to Capital Fund	3.00%		-	-	$ -	$ -	$ -	$ -
302	30-81-954	Bad Debt Expense	3.00%		4,256	4,384	$ 4,515	$ 4,651	$ 4,790	$ 4,934
303	30-81-955	Depreciation Expense	3.00%		170,243	175,351	$ 180,611	$ 186,029	$ 191,610	$ 197,359
304	**Subtotal Administration Expense**				**$ 5,902,428**	**$ 6,079,501**	**$ 6,261,886**	**$ 6,449,743**	**$ 6,643,235**	**$ 6,842,532**
305										
306	**Total Administration & Operating Expenses**				**$ 7,241,824**	**$ 7,459,079**	$ 7,682,851	$ 7,913,337	$ 8,150,737	$ 8,395,259
307										
308	PROJECT DEBT SERVICE									
309	30-81-900	Debt Service Principal 77 Bond	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
310	30-81-901	Debt Service Interest 77 Bond	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
311	30-81-904	Debt Service Principal 2001 Bond	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
312	30-81-905	Debt Service Interest 2001 Bond	3.00%		$ -	$ -	$ -	$ -	$ -	$ -
313	Subtotal Previous Bond Payment				$ -	$ -	$ -	$ -	$ -	$ -
314										
315		2009 Bond Principal	3.00%		$ 571,403	$ 588,545	$ 606,201	$ 624,387	$ 643,119	$ -
316		2009 Bond Interest	3.00%		$ 91,010	$ 73,868	$ 56,211	$ 38,025	$ 19,294	$ -
317	Subtotal Payment 1 SRF				$ 662,412	$ 662,412	$ 662,412	$ 662,412	$ 662,412	$ -
318										
319		2009 Bond Principal	3.00%							
320		2009 Bond Interest	3.00%							
321	Subtotal Payment 2 SRF				$ -	$ -	$ -	$ -	$ -	$ -
322										
323	**Subtotal Debt Service**				**$ 662,412**	**$ 662,412**	**$ 662,412**	**$ 662,412**	**$ 662,412**	**$ -**
324										
325	SUBTOTAL EXPENSE				**$ 7,904,236**	**$ 8,121,491**	**$ 8,345,263**	**$ 8,575,749**	**$ 8,813,149**	**$ 8,395,259**
326										
327	CAPITAL PROJECTS									
328	Well Rehabilitation									
329	Well					937,000				

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2026	2027	2028	2029	2030	2031
330	Water Storage							
331	Line/Hydrant Replacement							
332	**Subtotal Capital Projects**	$ -	$ -	$ 937,000	$ -	$ -	$ -	$ -

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2026	2027	2028	2029	2030	2031
333	**NET INCOME**	2007	2026	2027	2028	2029	2030	2031
334	OPERATING NET INCOME							
335	Operation & Maintenance - Income		$ 4,320,097	$ 4,453,634	$ 4,589,818	$ 4,730,173	$ 4,874,826	$ 5,023,909
336	Debt Service - Income		$ 3,337,554	$ 3,442,027	$ 3,548,057	$ 3,657,361	$ 3,770,038	$ 3,886,193
337	Other Income		$ 75,056	$ 76,575	$ 77,394	$ 78,963	$ 80,563	$ 82,573
338	Personnel Expense		$ (1,339,396)	$ (1,379,578)	$ (1,420,965)	$ (1,463,594)	$ (1,507,502)	$ (1,552,727)
339	Operations Expense		$ (5,902,428)	$ (6,079,501)	$ (6,261,886)	$ (6,449,743)	$ (6,643,235)	$ (6,842,532)
340	Debt Service - Expense		$ (662,412)	$ (662,412)	$ (662,412)	$ (662,412)	$ (662,412)	$ -
341	**Subtotal Operating Net Income**		**$ (171,529)**	**$ (149,255)**	**$ (129,994)**	**$ (109,252)**	**$ (87,722)**	**$ 597,417**
342								
343	CAPITAL PROJECT NET INCOME							
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 424,688	$ 435,478	$ 437,623	$ 448,722	$ 457,365	$ 468,869
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ -	$ -	$ -	$ -	$ -
348	Capital Project Expense		$ -	$ (937,000)	$ -	$ -	$ -	$ -
349	**Subtotal Capital Project Net Income**		**$ 424,688**	**$ (501,522)**	**$ 437,623**	**$ 448,722**	**$ 457,365**	**$ 468,869**
350								
351	TOTAL NET INCOME		**$ 253,160**	**$ (650,777)**	**$ 307,629**	**$ 339,470**	**$ 369,643**	**$ 1,066,286**
352								
353	**TOTAL CASH ON HAND**	2007	2026	2027	2028	2029	2030	2031
354	Capital Fund	$ -	$ 5,452,076	$ 4,950,553	$ 5,388,176	$ 5,836,899	$ 6,294,264	$ 6,763,133
355	Operating & Maintenance Fund		$ (5,496,210)	$ (5,645,465)	$ (5,775,459)	$ (5,884,711)	$ (5,972,433)	$ (5,375,016)
356	**Total Cash on Hand**	**$ -**	**$ (44,135)**	**$ (694,912)**	**$ (387,283)**	**$ (47,812)**	**$ 321,831**	**$ 1,388,117**

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 18-Jun-07
Prepared by: BEC

		2007	2032	2033	2034	2035	2036	2037
	ASSUMPTIONS							
1	**CONNECTIONS**	RATE						
2	GROWTH RATE	PERIOD 1						
3	RESIDENTIAL	(percent)						
4	5/8 inch meter	4.50%	-	-	-	-		
5	3/4 inch meter	4.50%						
6	1 inch meter	4.50%						
7	1.5 inch meter	4.50%						
8	2 inch meter	4.50%						
9	COMMERCIAL	(percent)						
10	3/4 inch meter	2.00%						
11	1 inch meter	2.00%						
12	1.5 inch meter	2.00%						
13	2 inch meter	2.00%						
14	3 inch meter	2.00%						
15	4 inch meter	2.00%						
16	6 inch meter	2.00%						
17								
18	CONNECTIONS/EDUs							
19	RESIDENTIAL (estimated connections)		2	2	2	2	2	2
20	5/8 inch meter	1983	3153	3205	3258	3312	3367	3423
21	3/4 inch meter	2520	4007	4073	4141	4209	4279	4350
22	1 inch meter	13	21	21	21	22	22	22
23	1.5 inch meter	3	5	5	5	5	5	5
24	2 inch meter	5	8	8	8	8	8	9
25	Subtotal Residential SFDE	4524	7193	7312	7434	7557	7682	7810
26	COMMERCIAL		2	2	2	2	2	2
27	3/4 inch meter	70	121	123	125	128	131	133
28	1 inch meter	113	195	199	203	207	211	215
29	1.5 inch meter	140	241	246	251	256	261	266
30	2 inch meter	300	517	527	538	549	559	571
31	3 inch meter	20	34	35	36	37	37	38
32	4 inch meter	6	10	11	11	11	11	11
33	6 inch meter	1	2	2	2	2	2	2
34	Subtotal Commerical SFDE	650	1120	1142	1165	1188	1212	1236
35	Total SFDE	5174	8313	8454	8599	8745	8895	9046
36								

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 18-Jun-07
Prepared by: BEC

		2007	2032	2033	2034	2035	2036	2037
36	**FEE STRUCTURE**	2007	2032	2033	2034	2035	2036	2037
37	USER RATES:							
38	RESDIENTIALINCREMENTAL CHARGE - O&M							
39	5/8 inch meter	1.33%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
40	3/4 inch meter	1.33%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
41	1 inch meter	1.33%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
42	1.5 inch meter	1.33%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
43	2 inch meter	1.33%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
44	COMMERCIAL INCREMENTAL CHARGE - O&M							
45	3/4 inch meter	2.00%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
46	1 inch meter	2.00%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
47	1.5 inch meter	2.00%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
48	2 inch meter	2.00%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
49	3 inch meter	2.00%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
50	4 inch meter	2.00%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
51	6 inch meter	2.00%	$ 4.94	$ 5.01	$ 5.08	$ 5.14	$ 5.21	$ 5.28
52								
53	RESDIENTIAL BASE RATE - DEBT SERVICE							
54	5/8 inch meter	1.33%	$ 37.07	$ 37.57	$ 38.07	$ 38.57	$ 39.09	$ 39.61
55	3/4 inch meter	1.33%	$ 37.07	$ 37.57	$ 38.07	$ 38.57	$ 39.09	$ 39.61
56	1 inch meter	1.33%	$ 37.07	$ 37.57	$ 38.07	$ 38.57	$ 39.09	$ 39.61
57	1.5 inch meter	1.33%	$ 37.07	$ 37.57	$ 38.07	$ 38.57	$ 39.09	$ 39.61
58	2 inch meter	1.33%	$ 37.07	$ 37.57	$ 38.07	$ 38.57	$ 39.09	$ 39.61
59	COMMERCIAL BASE RATE - DEBT SERVICE							
60	3/4 inch meter	2.00%	$ 37.07	$ 37.57	$ 38.07	$ 38.57	$ 39.09	$ 39.61
61	1 inch meter	2.00%	$ 45.15	$ 45.75	$ 46.36	$ 46.97	$ 47.60	$ 48.23
62	1.5 inch meter	2.00%	$ 54.62	$ 55.35	$ 56.09	$ 56.83	$ 57.59	$ 58.35
63	2 inch meter	2.00%	$ 67.90	$ 68.80	$ 69.72	$ 70.65	$ 71.59	$ 72.54
64	3 inch meter	2.00%	$ 107.31	$ 108.74	$ 110.18	$ 111.65	$ 113.13	$ 114.64
65	4 inch meter	2.00%	$ 143.57	$ 145.48	$ 147.42	$ 149.38	$ 151.37	$ 153.38
66	6 inch meter	2.00%	$ 257.71	$ 261.14	$ 264.61	$ 268.13	$ 271.70	$ 275.31
67								
68	RESDIENTIAL BASE RATE - CAPITAL RESERVE							
69	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
70	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
71	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
72	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
73	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
74	COMMERCIAL BASE RATE - CAPITAL RESERVE							
75	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
76	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
77	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
78	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
79	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
80	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
81	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
82								
83	CONNECTION FEE (IMPACT FEE)							
84	RESDIENTIAL CONNECTION FEE							
85	5/8 inch meter	1.33%	$ 2,746.27	$ 2,782.79	$ 2,819.81	$ 2,857.31	$ 2,895.31	$ 2,933.82
86	3/4 inch meter	1.33%	$ 2,746.27	$ 2,782.79	$ 2,819.81	$ 2,857.31	$ 2,895.31	$ 2,933.82
87	1 inch meter	1.33%	$ 2,746.27	$ 2,782.79	$ 2,819.81	$ 2,857.31	$ 2,895.31	$ 2,933.82
88	1.5 inch meter	1.33%	$ 2,808.06	$ 2,845.41	$ 2,883.25	$ 2,921.60	$ 2,960.46	$ 2,999.83
89	2 inch meter	1.33%	$ 3,844.78	$ 3,895.91	$ 3,947.73	$ 4,000.23	$ 4,053.44	$ 4,107.35
90	COMMERCIAL CONNECTION FEE							
91	3/4 inch meter	2.00%	$ 8,238.81	$ 8,348.38	$ 8,459.42	$ 8,571.93	$ 8,685.93	$ 8,801.46
92	1 inch meter	2.00%	$ 8,238.81	$ 8,348.38	$ 8,459.42	$ 8,571.93	$ 8,685.93	$ 8,801.46
93	1.5 inch meter	2.00%	$ 9,200.00	$ 9,322.36	$ 9,446.35	$ 9,571.98	$ 9,699.29	$ 9,828.29
94	2 inch meter	2.00%	$ 9,337.31	$ 9,461.50	$ 9,587.34	$ 9,714.85	$ 9,844.06	$ 9,974.98
95	3 inch meter	2.00%	$ 9,817.91	$ 9,948.49	$ 10,080.80	$ 10,214.88	$ 10,350.74	$ 10,488.40
96	4 inch meter	2.00%	$ 10,023.88	$ 10,157.20	$ 10,292.29	$ 10,429.18	$ 10,567.88	$ 10,708.44
97	6 inch meter	2.00%	$ 11,122.39	$ 11,270.32	$ 11,420.21	$ 11,572.10	$ 11,726.01	$ 11,881.96
98								
99	TREATMENT SPECIAL ASSESSMENT							
100	RESDIENTIAL CONNECTION FEE							
101	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
102	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
103	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
104	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
105	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
106	COMMERCIAL CONNECTION FEE							
107	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
108	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
109	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
110	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
111	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
112	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
113	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
114								
115	OTHER FEES							
116	Interest on Investments	3.00%	$ 13,731.34	$ 13,913.97	$ 14,099.03	$ 14,286.54	$ 14,476.55	$ 14,669.09
117	Engineering Plan Revew	3.00%	$ 166.53	$ 168.75	$ 170.99	$ 173.27	$ 175.57	$ 177.91
118	Water Plan Review	3.00%	$ 72.67	$ 73.63	$ 74.61	$ 75.60	$ 76.61	$ 77.63
119	Late Charges	3.00%	$ 2,059.70	$ 2,087.10	$ 2,114.85	$ 2,142.98	$ 2,171.48	$ 2,200.36
120	Cross Connection Plan Review	3.00%	$ 72.67	$ 73.63	$ 74.61	$ 75.60	$ 76.61	$ 77.63
121	Water Observations	3.00%	$ 72.67	$ 73.63	$ 74.61	$ 75.60	$ 76.61	$ 77.63
122								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 18-Jun-07
Prepared by: BEC

		2007	2032	2033	2034	2035	2036	2037
123	**REVENUE**	2007	2032	2033	2034	2035	2036	2037
124	OPERATION & MAINTENANCE REVENUES:							
125	RESDIENTIALINCREMENTAL CHARGE - O&M							
126	5/8 inch meter		$ 1,963,723	$ 2,022,872	$ 2,083,803	$ 2,146,569	$ 2,211,225	$ 2,277,829
127	3/4 inch meter		$ 2,495,503	$ 2,570,670	$ 2,648,100	$ 2,727,863	$ 2,810,029	$ 2,894,669
128	1 inch meter		$ 12,874	$ 13,261	$ 13,661	$ 14,072	$ 14,496	$ 14,933
129	1.5 inch meter		$ 2,971	$ 3,060	$ 3,153	$ 3,247	$ 3,345	$ 3,446
130	2 inch meter		$ 4,951	$ 5,101	$ 5,254	$ 5,412	$ 5,575	$ 5,743
131	Sutbotal Residential Incremental Charge - O&M		$ 4,480,023	$ 4,614,964	$ 4,753,971	$ 4,897,164	$ 5,044,670	$ 5,196,620
132	COMMERCIAL INCREMENTAL CHARGE - O&M							
133	3/4 inch meter		$ 75,119	$ 77,641	$ 80,247	$ 82,940	$ 85,724	$ 88,602
134	1 inch meter		$ 121,264	$ 125,334	$ 129,541	$ 133,889	$ 138,384	$ 143,029
135	1.5 inch meter		$ 150,239	$ 155,281	$ 160,494	$ 165,881	$ 171,449	$ 177,204
136	2 inch meter		$ 321,940	$ 332,746	$ 343,915	$ 355,459	$ 367,390	$ 379,722
137	3 inch meter		$ 21,463	$ 22,183	$ 22,928	$ 23,697	$ 24,493	$ 25,315
138	4 inch meter		$ 6,439	$ 6,655	$ 6,878	$ 7,109	$ 7,348	$ 7,594
139	6 inch meter		$ 1,073	$ 1,109	$ 1,146	$ 1,185	$ 1,225	$ 1,266
140	Subtotal Commercial Incremental Charge - O&M		$ 697,536	$ 720,949	$ 745,149	$ 770,161	$ 796,012	$ 822,731
141	TOTAL OPERATION & MAINTENANCE REVENUE		**$ 5,177,559**	**$ 5,335,914**	**$ 5,499,120**	**$ 5,667,325**	**$ 5,840,682**	**$ 6,019,350**
142								
143	DEBT SERVICE REVENUE							
144	RESDIENTIAL BASE CHARGE - DEBT SERVICE							
145	5/8 inch meter		$ 1,402,660	$ 1,444,909	$ 1,488,431	$ 1,533,263	$ 1,579,446	$ 1,627,020
146	3/4 inch meter		$ 1,782,502	$ 1,836,193	$ 1,891,500	$ 1,948,474	$ 2,007,163	$ 2,067,621
147	1 inch meter		$ 9,195	$ 9,472	$ 9,758	$ 10,052	$ 10,354	$ 10,666
148	1.5 inch meter		$ 2,122	$ 2,186	$ 2,252	$ 2,320	$ 2,389	$ 2,461
149	2 inch meter		$ 3,537	$ 3,643	$ 3,753	$ 3,866	$ 3,982	$ 4,102
150	Sutbotal Residential Incremental Charge - O&M		$ 3,200,016	$ 3,296,403	$ 3,395,693	$ 3,497,974	$ 3,603,336	$ 3,711,871
151	COMMERCIAL BASE CHARGE - DEBT SERVICE							
152	3/4 inch meter		$ 53,657	$ 55,458	$ 57,319	$ 59,243	$ 61,232	$ 63,287
153	1 inch meter		$ 105,480	$ 109,021	$ 112,680	$ 116,463	$ 120,372	$ 124,412
154	1.5 inch meter		$ 158,108	$ 163,415	$ 168,900	$ 174,570	$ 180,429	$ 186,486
155	2 inch meter		$ 421,162	$ 435,299	$ 449,910	$ 465,011	$ 480,620	$ 496,753
156	3 inch meter		$ 44,373	$ 45,863	$ 47,402	$ 48,993	$ 50,638	$ 52,337
157	4 inch meter		$ 17,811	$ 18,408	$ 19,026	$ 19,665	$ 20,325	$ 21,007
158	6 inch meter		$ 5,328	$ 5,507	$ 5,692	$ 5,883	$ 6,080	$ 6,284
159	Subtotal Commercial Incremental Charge - O&M		$ 805,919	$ 832,970	$ 860,930	$ 889,828	$ 919,696	$ 950,566
160	TOTAL DEBT SERVICE REVENUE		**$ 4,005,935**	**$ 4,129,374**	**$ 4,256,623**	**$ 4,387,802**	**$ 4,523,032**	**$ 4,662,438**
161								
162	CAPITAL RESERVE REVENUE:							
163	RESDIENTIAL BASE CHARGE - CAPITAL RESERVE							
164	5/8 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
165	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
166	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
167	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
168	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
169	Sutbotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
170	COMMERCIAL BASE CHARGE - CAPITAL RESERVE							
171	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
172	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
173	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
174	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
175	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
176	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
177	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
178	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
179	TOTAL CAPITAL RESERVE REVENUE		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
180								
181	CONNECTION FEE (IMPACT/TAP FEE) REVENUE							
182	RESDIENTIAL CONNECTION FEE							
183	5/8 inch meter		$ 140,060	$ 144,705	$ 149,450	$ 154,295	$ 156,347	$ 161,360
184	3/4 inch meter		$ 178,507	$ 183,664	$ 188,927	$ 194,297	$ 199,776	$ 208,301
185	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
186	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
187	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
188	Sutbotal Residential Incremental Charge - O&M		$ 318,567	$ 328,370	$ 338,377	$ 348,592	$ 356,123	$ 369,661
189	COMMERCIAL CONNECTION FEE - O&M							
190	3/4 inch meter		$ 16,478	$ 16,697	$ 16,919	$ 17,144	$ 17,372	$ 17,603
191	1 inch meter		$ 24,716	$ 25,045	$ 25,378	$ 34,288	$ 34,744	$ 35,206
192	1.5 inch meter		$ 36,800	$ 37,289	$ 37,785	$ 47,860	$ 48,496	$ 49,141
193	2 inch meter		$ 93,373	$ 94,615	$ 95,873	$ 97,148	$ 98,441	$ 109,725
194	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
195	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
196	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
197	Subtotal Commercial Incremental Charge - O&M		$ 171,367	$ 173,646	$ 175,956	$ 196,440	$ 199,053	$ 211,675
198	TOTAL CONNECTION FEE (IMPACT FEE) REVENUE		**$ 489,934**	**$ 502,016**	**$ 514,332**	**$ 545,032**	**$ 555,176**	**$ 581,336**
199								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 18-Jun-07
Prepared by: BEC

			2007	2032	2033	2034	2035	2036	2037
200	SPECIAL ASSESSMENT REVENUE								
201	RESDIENTIAL SPECIAL ASSESSMENT								
202	5/8 inch meter								
203	3/4 inch meter								
204	1 inch meter								
205	1.5 inch meter								
206	2 inch meter								
207	Subtotal Residential Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
208	COMMERCIAL SPECIAL ASSESSMENT								
209	3/4 inch meter								
210	1 inch meter								
211	1.5 inch meter								
212	2 inch meter								
213	3 inch meter								
214	4 inch meter								
215	6 inch meter								
216	Subtotal Commercial Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
217	TOTAL SPECIAL ASSESSMENT REVENUE			$ -	$ -	$ -	$ -	$ -	$ -
218									
219	OTHER REVENUE:								
220	Interest on Investments			$ 13,731	$ 13,914	$ 14,099	$ 14,287	$ 14,477	$ 14,669
221	Engineering Plan Revew			$ 23,148	$ 23,794	$ 24,623	$ 25,297	$ 26,160	$ 26,864
222	Water Plan Review			$ 10,101	$ 10,382	$ 10,744	$ 11,038	$ 11,415	$ 11,722
223	Late Charges			$ 2,060	$ 2,087	$ 2,115	$ 2,143	$ 2,171	$ 2,200
224	Cross Connection Plan Review			$ 10,101	$ 10,382	$ 10,744	$ 11,038	$ 11,415	$ 11,722
225	Water Observations			$ 10,101	$ 10,382	$ 10,744	$ 11,038	$ 11,415	$ 11,722
	Interest	3.00%		$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
226	**Subtotal Other Revenue**			84,241	85,941	88,069	89,841	92,053	93,899
227									
228	**TOTAL REVENUE**			$ 9,757,669	$ 10,053,245	$ 10,358,145	$ 10,690,000	$ 11,010,943	$ 11,357,023
229									
230	GRANT/LOAN PROCEEDS	Term							
231	STAG Grant								
232	ACOE Section 595 Grant								
233	Other Grant								
234	State Revolving Fund - 1	20							
235	State Revolving Fund - 2								
236	**Subtotal Financing**			$ -	$ -	$ -	$ -	$ -	$ -
237									
238	**SUBTOTAL AVAILABLE CAPITAL**		$ -	$ 489,934	$ 502,016	$ 514,332	$ 545,032	$ 555,176	$ 581,336
239									

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 18-Jun-07
Prepared by: BEC

				2007	2032	2033	2034	2035	2036	2037
240	**EXPENSES**			2007	2032	2033	2034	2035	2036	2037
241	PERSONNEL EXPENXES		Number	12	12	12	12	12	12	12
242	30-81-401	Personnel - Salaries	3.00%	$ 1,105,722	$ 1,138,894	$ 1,173,061	$ 1,208,252	$ 1,244,500	$ 1,281,835	
243	30-81-410	Personnel - Overtime	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
244	30-81-420	Employers Benefit Package	3.00%	$ 253,666	$ 261,276	$ 269,115	$ 277,188	$ 285,504	$ 294,069	
245	30-81-421	Employers Medical Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
246	30-81-422	Employers Life Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
247	30-81-423	Employers Dental Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
248	30-81-424	Employers Disability Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
249	30-81-425	Employers Vision	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
250	30-81-426	Workers Compensation Insurance	3.00%	$ 32,315	$ 33,285	$ 34,283	$ 35,312	$ 36,371	$ 37,462	
251	30-81-427	State Unemployment Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
252	30-81-428	Employers EAP	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
253	30-81-430	Retirement - PERSI	3.00%	$ 114,885	$ 118,332	$ 121,882	$ 125,538	$ 129,305	$ 133,184	
254	30-81-435	Social Security	3.00%	$ 84,589	$ 87,126	$ 89,740	$ 92,432	$ 95,205	$ 98,061	
255	30-81-439	Employers Self Insurance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
256	30-81-469	Clothing Allowance	3.00%	$ 8,131	$ 8,375	$ 8,626	$ 8,885	$ 9,152	$ 9,426	
257	30-81-475	Vacation Accrual	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
258	30-81-490	Employee Recognition	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
259	**Subtotal Personnel Expenses**			**$ 1,599,309**	**$ 1,647,288**	**$ 1,696,707**	**$ 1,747,608**	**$ 1,800,036**	**$ 1,854,037**	
260										
261	OPERATIONS EXPENSE									
262	30-81-500	Supplies - Office/Operating	3.00%	$ 87,309	$ 89,928	$ 92,626	$ 95,404	$ 98,266	$ 101,214	
263	30-81-501	Supplies - Books and Manuals	3.00%	$ 813	$ 838	$ 863	$ 889	$ 915	$ 943	
264	30-81-525	Postage	3.00%	$ 7,115	$ 7,328	$ 7,548	$ 7,775	$ 8,008	$ 8,248	
265	30-81-526	Freight	3.00%	$ 1,016	$ 1,047	$ 1,078	$ 1,111	$ 1,144	$ 1,178	
266	30-81-535	Minor Equipment	3.00%	$ 10,672	$ 10,992	$ 11,322	$ 11,662	$ 12,012	$ 12,372	
267	30-81-540	Petroloeum and Oil	3.00%	$ 19,108	$ 19,682	$ 20,272	$ 20,880	$ 21,507	$ 22,152	
268	30-81-560	Repair/Maint - Grounds	3.00%	$ 14,230	$ 14,656	$ 15,096	$ 15,549	$ 16,015	$ 16,496	
269	30-81-561	Repair/Maint - Buildings	3.00%	$ 24,394	$ 25,125	$ 25,879	$ 26,655	$ 27,455	$ 28,279	
270	30-81-562	Repair/Maint - Cross Connections	3.00%	$ 3,049	$ 3,141	$ 3,235	$ 3,332	$ 3,432	$ 3,535	
271	30-81-565	Repair/Maint - Vehicles	3.00%	$ 40,148	$ 41,352	$ 42,593	$ 43,870	$ 45,187	$ 46,542	
272	30-81-580	Repair/Maint - Water	3.00%	$ 406,559	$ 418,756	$ 431,318	$ 444,258	$ 457,586	$ 471,313	
273	30-81-581	Purch/Repair/Maint - Office Furn & Equip	3.00%	$ 25,512	$ 26,277	$ 27,065	$ 27,877	$ 28,713	$ 29,575	
274	30-81-599	Repair/Maint - Other Equipment	3.00%	$ 1,016	$ 1,047	$ 1,078	$ 1,111	$ 1,144	$ 1,178	
275			3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
276	30-81-610	Legal Services	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
277	30-81-612	Computer Services	3.00%	$ 79,279	$ 81,657	$ 84,107	$ 86,630	$ 89,229	$ 91,906	
278	30-81-615	Ada County Base Map Compass	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
279	30-81-619	Professional Services	3.00%	$ 97,574	$ 100,501	$ 103,516	$ 106,622	$ 109,821	$ 113,115	
280	30-81-623	Professional Services - Cross Connection	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
281	30-81-631	Other Purchased Services	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
282	30-81-635	Other Permits	3.00%	$ 9,148	$ 9,422	$ 9,705	$ 9,996	$ 10,296	$ 10,605	
283	30-81-640	Advertising & Publications	3.00%	$ 9,148	$ 9,422	$ 9,705	$ 9,996	$ 10,296	$ 10,605	
284	30-81-641	Printing & Binding	3.00%	$ 2,134	$ 2,198	$ 2,264	$ 2,332	$ 2,402	$ 2,474	
285	30-81-642	Travel and Meetings	3.00%	$ 4,066	$ 4,188	$ 4,313	$ 4,443	$ 4,576	$ 4,713	
286	30-81-643	Dues and Membership	3.00%	$ 3,151	$ 3,245	$ 3,343	$ 3,443	$ 3,546	$ 3,653	
287	30-81-644	Personnal Training	3.00%	$ 6,403	$ 6,595	$ 6,793	$ 6,997	$ 7,207	$ 7,423	
288	30-81-659	Other Misc Expenses	3.00%	$ 5,879	$ 6,055	$ 6,237	$ 6,424	$ 6,617	$ 6,815	
289	30-81-661	Rental - Vehicles	3.00%	$ 2,541	$ 2,617	$ 2,696	$ 2,777	$ 2,860	$ 2,946	
290	30-81-669	Rental - Other	3.00%	$ 12,197	$ 12,563	$ 12,940	$ 13,328	$ 13,728	$ 14,139	
291	30-81-691	Bank/Merchant Account Fees	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
292	30-81-803	Capital - Vehicles	3.00%	$ 152,155	$ 156,719	$ 161,421	$ 166,263	$ 171,251	$ 176,389	
293	30-81-879	Capital - Other	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
294	30-81-770	Telephone & Communications	3.00%	$ 27,443	$ 28,266	$ 29,114	$ 29,987	$ 30,887	$ 31,814	
295	30-81-771	Utilities	3.00%	$ 117,394	$ 120,916	$ 124,543	$ 128,279	$ 132,128	$ 136,092	
296		Water System Maintenance Improvement	3.00%	4,736,608	4,878,706	5,025,067	5,175,819	5,331,094	5,491,026	
297	30-81-906	Amortization - Bond Issuance	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
298	30-81-950	Administrative Overhead Charge	3.00%	$ 642,070	$ 661,332	$ 681,172	$ 701,607	$ 722,656	$ 744,335	
299	30-81-951	Billing Expenses	3.00%	$ 18,295	$ 18,844	$ 19,409	$ 19,992	$ 20,591	$ 21,209	
300	30-81-948	Tranfer to P&Z	3.00%	$ 273,023	$ 281,214	$ 289,650	$ 298,340	$ 307,290	$ 316,509	
301	30-81-953	Interfund Transfer to Capital Fund	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
302	30-81-954	Bad Debt Expense	3.00%	$ 5,082	$ 5,234	$ 5,391	$ 5,553	$ 5,720	$ 5,891	
303	30-81-955	Depreciation Expense	3.00%	$ 203,279	$ 209,378	$ 215,659	$ 222,129	$ 228,793	$ 235,657	
304	**Subtotal Administration Expense**			**$ 7,047,808**	**$ 7,259,242**	**$ 7,477,019**	**$ 7,701,330**	**$ 7,932,370**	**$ 8,170,341**	
305										
306	**Total Administration & Operating Expenses**			$ 8,647,117	$ 8,906,530	$ 9,173,726	$ 9,448,938	$ 9,732,406	$ 10,024,378	
307										
308	PROJECT DEBT SERVICE									
309	30-81-900	Debt Service Principal 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
310	30-81-901	Debt Service Interest 77 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
311	30-81-904	Debt Service Principal 2001 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
312	30-81-905	Debt Service Interest 2001 Bond	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
313	Subtotal Previous Bond Payment			$ -	$ -	$ -	$ -	$ -	$ -	
314										
315		2009 Bond Principal	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
316		2009 Bond Interest	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
317	Subtotal Payment 1 SRF			$ -	$ -	$ -	$ -	$ -	$ -	
318										
319		2009 Bond Principal	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
320		2009 Bond Interest	3.00%	$ -	$ -	$ -	$ -	$ -	$ -	
321	Subtotal Payment 2 SRF			$ -	$ -	$ -	$ -	$ -	$ -	
322										
323	**Subtotal Debt Service**			**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
324										
325	SUBTOTAL EXPENSE			**$ 8,647,117**	**$ 8,906,530**	**$ 9,173,726**	**$ 9,448,938**	**$ 9,732,406**	**$ 10,024,378**	
326										
327	CAPITAL PROJECTS									
328	Well Rehabilitation									
329	Well									

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 18-Jun-07
Prepared by: BEC

		2007	2032	2033	2034	2035	2036	2037
330	Water Storage							
331	Line/Hydrant Replacement							
332	**Subtotal Capital Projects**	$ -	$ -	$ -	$ -	$ -	$ -	$ -

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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 18-Jun-07
Prepared by: BEC

		2007	2032	2033	2034	2035	2036	2037
333	**NET INCOME**	2007	2032	2033	2034	2035	2036	2037
334	OPERATING NET INCOME							
335	Operation & Maintenance - Income		$ 5,177,559	$ 5,335,914	$ 5,499,120	$ 5,667,325	$ 5,840,682	$ 6,019,350
336	Debt Service - Income		$ 4,005,935	$ 4,129,374	$ 4,256,623	$ 4,387,802	$ 4,523,032	$ 4,662,438
337	Other Income		$ 84,241	$ 85,941	$ 88,069	$ 89,841	$ 92,053	$ 93,899
338	Personnel Expense		$ (1,599,309)	$ (1,647,288)	$ (1,696,707)	$ (1,747,608)	$ (1,800,036)	$ (1,854,037)
339	Operations Expense		$ (7,047,808)	$ (7,259,242)	$ (7,477,019)	$ (7,701,330)	$ (7,932,370)	$ (8,170,341)
340	Debt Service - Expense		$ -	$ -	$ -	$ -	$ -	$ -
341	**Subtotal Operating Net Income**		**$ 620,618**	**$ 644,698**	**$ 670,086**	**$ 696,030**	**$ 723,361**	**$ 751,309**
342								
343	CAPITAL PROJECT NET INCOME							
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 489,934	$ 502,016	$ 514,332	$ 545,032	$ 555,176	$ 581,336
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ -	$ -	$ -	$ -	$ -
348	Capital Project Expense		$ -	$ -	$ -	$ -	$ -	$ -
349	**Subtotal Capital Project Net Income**		**$ 489,934**	**$ 502,016**	**$ 514,332**	**$ 545,032**	**$ 555,176**	**$ 581,336**
350								
351	TOTAL NET INCOME		**$ 1,110,552**	**$ 1,146,714**	**$ 1,184,418**	**$ 1,241,062**	**$ 1,278,537**	**$ 1,332,645**
352								
353	**TOTAL CASH ON HAND**	2007	2032	2033	2034	2035	2036	2037
354	Capital Fund	$ -	$ 7,253,067	$ 7,755,083	$ 8,269,415	$ 8,814,447	$ 9,369,623	$ 9,950,959
355	Operating & Maintenance Fund		$ (4,754,398)	$ (4,109,700)	$ (3,439,614)	$ (2,743,584)	$ (2,020,223)	$ (1,268,914)
356	**Total Cash on Hand**	**$ -**	**$ 2,498,669**	**$ 3,645,383**	**$ 4,829,802**	**$ 6,070,863**	**$ 7,349,400**	**$ 8,682,045**

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

			2007	2038	2039	2040	2041	2042	2043
	ASSUMPTIONS								
1	**CONNECTIONS**		RATE						
2		GROWTH RATE	PERIOD 1						
3		RESIDENTIAL	(percent)						
4		5/8 inch meter	4.50%						
5		3/4 inch meter	4.50%						
6		1 inch meter	4.50%						
7		1.5 inch meter	4.50%						
8		2 inch meter	4.50%						
9		COMMERCIAL	(percent)						
10		3/4 inch meter	2.00%						
11		1 inch meter	2.00%						
12		1.5 inch meter	2.00%						
13		2 inch meter	2.00%						
14		3 inch meter	2.00%						
15		4 inch meter	2.00%						
16		6 inch meter	2.00%						
17									
18		CONNECTIONS/EDUs							
19		RESIDENTIAL (estimated connections)		2	2	2	2	2	2
20		5/8 inch meter	1983	3480	3538	3597	3656	3717	3779
21		3/4 inch meter	2520	4423	4496	4571	4646	4724	4802
22		1 inch meter	13	23	23	24	24	24	25
23		1.5 inch meter	3	5	5	5	6	6	6
24		2 inch meter	5	9	9	9	9	9	10
25		Subtotal Residential SFDE	4524	7940	8071	8205	8342	8480	8621
26		COMMERCIAL		2	2	2	2	2	2
27		3/4 inch meter	70	136	139	141	144	147	150
28		1 inch meter	113	219	224	228	233	237	242
29		1.5 inch meter	140	272	277	283	288	294	300
30		2 inch meter	300	582	594	606	618	630	643
31		3 inch meter	20	39	40	40	41	42	43
32		4 inch meter	6	12	12	12	12	13	13
33		6 inch meter	1	2	2	2	2	2	2
34		Subtotal Commerical SFDE	650	1261	1286	1312	1338	1365	1392
35		Total SFDE	5174	9201	9358	9517	9680	9845	10013
36									

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2038	2039	2040	2041	2042	2043
36	**FEE STRUCTURE**	2007	2038	2039	2040	2041	2042	2043
37	USER RATES:							
38	RESDIENTIALINCREMENTAL CHARGE - O&M							
39	5/8 inch meter	1.33%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
40	3/4 inch meter	1.33%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
41	1 inch meter	1.33%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
42	1.5 inch meter	1.33%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
43	2 inch meter	1.33%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
44	COMMERCIAL INCREMENTAL CHARGE - O&M							
45	3/4 inch meter	2.00%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
46	1 inch meter	2.00%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
47	1.5 inch meter	2.00%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
48	2 inch meter	2.00%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
49	3 inch meter	2.00%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
50	4 inch meter	2.00%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
51	6 inch meter	2.00%	$ 5.35	$ 5.42	$ 5.49	$ 5.57	$ 5.64	$ 5.72
52								
53	RESDIENTIAL BASE RATE - DEBT SERVICE							
54	5/8 inch meter	1.33%	$ 40.13	$ 40.67	$ 41.21	$ 41.76	$ 42.31	$ 42.87
55	3/4 inch meter	1.33%	$ 40.13	$ 40.67	$ 41.21	$ 41.76	$ 42.31	$ 42.87
56	1 inch meter	1.33%	$ 40.13	$ 40.67	$ 41.21	$ 41.76	$ 42.31	$ 42.87
57	1.5 inch meter	1.33%	$ 40.13	$ 40.67	$ 41.21	$ 41.76	$ 42.31	$ 42.87
58	2 inch meter	1.33%	$ 40.13	$ 40.67	$ 41.21	$ 41.76	$ 42.31	$ 42.87
59	COMMERCIAL BASE RATE - DEBT SERVICE							
60	3/4 inch meter	2.00%	$ 40.13	$ 40.67	$ 41.21	$ 41.76	$ 42.31	$ 42.87
61	1 inch meter	2.00%	$ 48.87	$ 49.52	$ 50.18	$ 50.85	$ 51.53	$ 52.21
62	1.5 inch meter	2.00%	$ 59.13	$ 59.92	$ 60.71	$ 61.52	$ 62.34	$ 63.17
63	2 inch meter	2.00%	$ 73.50	$ 74.48	$ 75.47	$ 76.48	$ 77.49	$ 78.52
64	3 inch meter	2.00%	$ 116.16	$ 117.71	$ 119.27	$ 120.86	$ 122.47	$ 124.10
65	4 inch meter	2.00%	$ 155.42	$ 157.49	$ 159.58	$ 161.70	$ 163.85	$ 166.03
66	6 inch meter	2.00%	$ 278.97	$ 282.68	$ 286.44	$ 290.25	$ 294.11	$ 298.02
67								
68	RESDIENTIAL BASE RATE - CAPITAL RESERVE							
69	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
70	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
71	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
72	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
73	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
74	COMMERCIAL BASE RATE - CAPITAL RESERVE							
75	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
76	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
77	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
78	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
79	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
80	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
81	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
82								
83	CONNECTION FEE (IMPACT FEE)							
84	RESDIENTIAL CONNECTION FEE							
85	5/8 inch meter	1.33%	$ 2,972.84	$ 3,012.38	$ 3,052.44	$ 3,093.04	$ 3,134.18	$ 3,175.86
86	3/4 inch meter	1.33%	$ 2,972.84	$ 3,012.38	$ 3,052.44	$ 3,093.04	$ 3,134.18	$ 3,175.86
87	1 inch meter	1.33%	$ 2,972.84	$ 3,012.38	$ 3,052.44	$ 3,093.04	$ 3,134.18	$ 3,175.86
88	1.5 inch meter	1.33%	$ 3,039.73	$ 3,080.16	$ 3,121.12	$ 3,162.63	$ 3,204.70	$ 3,247.32
89	2 inch meter	1.33%	$ 4,161.97	$ 4,217.33	$ 4,273.42	$ 4,330.25	$ 4,387.85	$ 4,446.21
90	COMMERCIAL CONNECTION FEE							
91	3/4 inch meter	2.00%	$ 8,918.51	$ 9,037.13	$ 9,157.32	$ 9,279.12	$ 9,402.53	$ 9,527.58
92	1 inch meter	2.00%	$ 8,918.51	$ 9,037.13	$ 9,157.32	$ 9,279.12	$ 9,402.53	$ 9,527.58
93	1.5 inch meter	2.00%	$ 9,959.01	$ 10,091.46	$ 10,225.68	$ 10,361.68	$ 10,499.49	$ 10,639.13
94	2 inch meter	2.00%	$ 10,107.65	$ 10,242.08	$ 10,378.30	$ 10,516.33	$ 10,656.20	$ 10,797.93
95	3 inch meter	2.00%	$ 10,627.90	$ 10,769.25	$ 10,912.48	$ 11,057.61	$ 11,204.68	$ 11,353.70
96	4 inch meter	2.00%	$ 10,850.86	$ 10,995.18	$ 11,141.41	$ 11,289.59	$ 11,439.74	$ 11,591.89
97	6 inch meter	2.00%	$ 12,039.99	$ 12,200.13	$ 12,362.39	$ 12,526.81	$ 12,693.41	$ 12,862.24
98								
99	TREATMENT SPECIAL ASSESSMENT							
100	RESDIENTIAL CONNECTION FEE							
101	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
102	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
103	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
104	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
105	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -	$ -
106	COMMERCIAL CONNECTION FEE							
107	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
108	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
109	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
110	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
111	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
112	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
113	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -	$ -
114								
115	OTHER FEES							
116	Interest on Investments	3.00%	$ 14,864.19	$ 15,061.88	$ 15,262.21	$ 15,465.20	$ 15,670.88	$ 15,879.31
117	Engineering Plan Revew	3.00%	$ 180.27	$ 182.67	$ 185.10	$ 187.56	$ 190.06	$ 192.58
118	Water Plan Review	3.00%	$ 78.66	$ 79.71	$ 80.77	$ 81.84	$ 82.93	$ 84.03
119	Late Charges	3.00%	$ 2,229.63	$ 2,259.28	$ 2,289.33	$ 2,319.78	$ 2,350.63	$ 2,381.90
120	Cross Connection Plan Review	3.00%	$ 78.66	$ 79.71	$ 80.77	$ 81.84	$ 82.93	$ 84.03
121	Water Observations	3.00%	$ 78.66	$ 79.71	$ 80.77	$ 81.84	$ 82.93	$ 84.03
122								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2038	2039	2040	2041	2042	2043
123	**REVENUE**	2007	2038	2039	2040	2041	2042	2043
124	OPERATION & MAINTENANCE REVENUES:							
125	RESDIENTIALINCREMENTAL CHARGE - O&M							
126	5/8 inch meter		$ 2,346,439	$ 2,417,115	$ 2,489,921	$ 2,564,919	$ 2,642,176	$ 2,721,761
127	3/4 inch meter		$ 2,981,859	$ 3,071,674	$ 3,164,196	$ 3,259,504	$ 3,357,682	$ 3,458,819
128	1 inch meter		$ 15,383	$ 15,846	$ 16,323	$ 16,815	$ 17,321	$ 17,843
129	1.5 inch meter		$ 3,550	$ 3,657	$ 3,767	$ 3,880	$ 3,997	$ 4,118
130	2 inch meter		$ 5,916	$ 6,095	$ 6,278	$ 6,467	$ 6,662	$ 6,863
131	Sutbotal Residential Incremental Charge - O&M		$ 5,353,146	$ 5,514,387	$ 5,680,485	$ 5,851,585	$ 6,027,840	$ 6,209,403
132	COMMERCIAL INCREMENTAL CHARGE - O&M							
133	3/4 inch meter		$ 91,576	$ 94,650	$ 97,827	$ 101,110	$ 104,504	$ 108,012
134	1 inch meter		$ 147,829	$ 152,792	$ 157,920	$ 163,221	$ 168,700	$ 174,362
135	1.5 inch meter		$ 183,152	$ 189,299	$ 195,653	$ 202,221	$ 209,008	$ 216,024
136	2 inch meter		$ 392,468	$ 405,641	$ 419,257	$ 433,330	$ 447,875	$ 462,908
137	3 inch meter		$ 26,165	$ 27,043	$ 27,950	$ 28,889	$ 29,858	$ 30,861
138	4 inch meter		$ 7,849	$ 8,113	$ 8,385	$ 8,667	$ 8,957	$ 9,258
139	6 inch meter		$ 1,308	$ 1,352	$ 1,398	$ 1,444	$ 1,493	$ 1,543
140	Subtotal Commercial Incremental Charge - O&M		$ 850,346	$ 878,889	$ 908,390	$ 938,881	$ 970,395	$ 1,002,968
141	TOTAL OPERATION & MAINTENANCE REVENUE		**$ 6,203,492**	**$ 6,393,276**	**$ 6,588,875**	**$ 6,790,466**	**$ 6,998,235**	**$ 7,212,371**
142								
143	DEBT SERVICE REVENUE							
144	RESDIENTIAL BASE CHARGE - DEBT SERVICE							
145	5/8 inch meter		$ 1,676,028	$ 1,726,511	$ 1,778,515	$ 1,832,085	$ 1,887,269	$ 1,944,115
146	3/4 inch meter		$ 2,129,899	$ 2,194,053	$ 2,260,140	$ 2,328,217	$ 2,398,345	$ 2,470,585
147	1 inch meter		$ 10,988	$ 11,319	$ 11,659	$ 12,011	$ 12,372	$ 12,745
148	1.5 inch meter		$ 2,536	$ 2,612	$ 2,691	$ 2,772	$ 2,855	$ 2,941
149	2 inch meter		$ 4,226	$ 4,353	$ 4,484	$ 4,619	$ 4,759	$ 4,902
150	Sutbotal Residential Incremental Charge - O&M		$ 3,823,676	$ 3,938,848	$ 4,057,489	$ 4,179,704	$ 4,305,600	$ 4,435,288
151	COMMERCIAL BASE CHARGE - DEBT SERVICE							
152	3/4 inch meter		$ 65,411	$ 67,607	$ 69,876	$ 72,222	$ 74,646	$ 77,151
153	1 inch meter		$ 128,588	$ 132,904	$ 137,365	$ 141,976	$ 146,742	$ 151,667
154	1.5 inch meter		$ 192,745	$ 199,215	$ 205,902	$ 212,813	$ 219,956	$ 227,339
155	2 inch meter		$ 513,427	$ 530,660	$ 548,472	$ 566,882	$ 585,910	$ 605,577
156	3 inch meter		$ 54,094	$ 55,910	$ 57,786	$ 59,726	$ 61,731	$ 63,803
157	4 inch meter		$ 21,712	$ 22,441	$ 23,194	$ 23,973	$ 24,778	$ 25,609
158	6 inch meter		$ 6,495	$ 6,713	$ 6,939	$ 7,172	$ 7,412	$ 7,661
159	Subtotal Commercial Incremental Charge - O&M		$ 982,473	$ 1,015,451	$ 1,049,535	$ 1,084,764	$ 1,121,175	$ 1,158,809
160	TOTAL DEBT SERVICE REVENUE		**$ 4,806,149**	**$ 4,954,299**	**$ 5,107,024**	**$ 5,264,468**	**$ 5,426,775**	**$ 5,594,096**
161								
162	CAPITAL RESERVE REVENUE:							
163	RESDIENTIAL BASE CHARGE - CAPITAL RESERVE							
164	5/8 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
165	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
166	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
167	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
168	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
169	Sutbotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
170	COMMERCIAL BASE CHARGE - CAPITAL RESERVE							
171	3/4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
172	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
173	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
174	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
175	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
176	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
177	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
178	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -	$ -
179	TOTAL CAPITAL RESERVE REVENUE		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
180								
181	CONNECTION FEE (IMPACT/TAP FEE) REVENUE							
182	RESDIENTIAL CONNECTION FEE							
183	5/8 inch meter		$ 166,479	$ 171,705	$ 177,042	$ 182,489	$ 188,051	$ 193,728
184	3/4 inch meter		$ 214,044	$ 219,904	$ 225,881	$ 231,978	$ 241,332	$ 247,717
185	1 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
186	1.5 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
187	2 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
188	Sutbotal Residential Incremental Charge - O&M		$ 380,523	$ 391,609	$ 402,922	$ 414,467	$ 429,382	$ 441,445
189	COMMERCIAL CONNECTION FEE - O&M							
190	3/4 inch meter		$ 17,837	$ 18,074	$ 18,315	$ 18,558	$ 18,805	$ 19,055
191	1 inch meter		$ 35,674	$ 36,149	$ 36,629	$ 37,116	$ 37,610	$ 38,110
192	1.5 inch meter		$ 49,795	$ 50,457	$ 51,128	$ 51,808	$ 52,497	$ 53,196
193	2 inch meter		$ 111,184	$ 112,663	$ 114,161	$ 126,196	$ 127,874	$ 129,575
194	3 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
195	4 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
196	6 inch meter		$ -	$ -	$ -	$ -	$ -	$ -
197	Subtotal Commercial Incremental Charge - O&M		$ 214,490	$ 217,343	$ 220,234	$ 233,679	$ 236,787	$ 239,936
198	TOTAL CONNECTION FEE (IMPACT FEE) REVENUE		**$ 595,014**	**$ 608,952**	**$ 623,156**	**$ 648,146**	**$ 666,169**	**$ 681,381**
199								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

			2007	2038	2039	2040	2041	2042	2043
200	SPECIAL ASSESSMENT REVENUE								
201	RESDIENTIAL SPECIAL ASSESSMENT								
202	5/8 inch meter								
203	3/4 inch meter								
204	1 inch meter								
205	1.5 inch meter								
206	2 inch meter								
207	Subtotal Residential Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
208	COMMERCIAL SPECIAL ASSESSMENT								
209	3/4 inch meter								
210	1 inch meter								
211	1.5 inch meter								
212	2 inch meter								
213	3 inch meter								
214	4 inch meter								
215	6 inch meter								
216	Subtotal Commercial Incremental Charge - O&M			$ -	$ -	$ -	$ -	$ -	$ -
217	TOTAL SPECIAL ASSESSMENT REVENUE			$ -	$ -	$ -	$ -	$ -	$ -
218									
219	OTHER REVENUE:								
220	Interest on Investments			$ 14,864	$ 15,062	$ 15,262	$ 15,465	$ 15,671	$ 15,879
221	Engineering Plan Revew			$ 27,762	$ 28,679	$ 29,431	$ 30,385	$ 31,359	$ 32,354
222	Water Plan Review			$ 12,114	$ 12,514	$ 12,842	$ 13,258	$ 13,684	$ 14,118
223	Late Charges			$ 2,230	$ 2,259	$ 2,289	$ 2,320	$ 2,351	$ 2,382
224	Cross Connection Plan Review			$ 12,114	$ 12,514	$ 12,842	$ 13,258	$ 13,684	$ 14,118
225	Water Observations			$ 12,114	$ 12,514	$ 12,842	$ 13,258	$ 13,684	$ 14,118
	Interest	3.00%		$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
226	**Subtotal Other Revenue**			96,197	98,543	100,509	102,945	105,431	107,968
227									
228	**TOTAL REVENUE**			$ 11,700,852	$ 12,055,069	$ 12,419,563	$ 12,806,025	$ 13,196,610	$ 13,595,816
229									
230	GRANT/LOAN PROCEEDS	Term							
231	STAG Grant								
232	ACOE Section 595 Grant								
233	Other Grant								
234	State Revolving Fund - 1	20							
235	State Revolving Fund - 2								
236	**Subtotal Financing**			$ -	$ -	$ -	$ -	$ -	$ -
237									
238	**SUBTOTAL AVAILABLE CAPITAL**		$ -	$ 595,014	$ 608,952	$ 623,156	$ 648,146	$ 666,169	$ 681,381
239									

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

				2007	2038	2039	2040	2041	2042	2043
240	**EXPENSES**			2007	2038	2039	2040	2041	2042	2043
241	PERSONNEL EXPENXES			Number	12	12	12	12	12	12
242	30-81-401	Personnel - Salaries		3.00%	$ 1,320,290	$ 1,359,899	$ 1,400,696	$ 1,442,717	$ 1,485,998	$ 1,530,578
243	30-81-410	Personnel - Overtime		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
244	30-81-420	Employers Benefit Package		3.00%	$ 302,891	$ 311,978	$ 321,337	$ 330,977	$ 340,906	$ 351,133
245	30-81-421	Employers Medical Insurance		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
246	30-81-422	Employers Life Insurance		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
247	30-81-423	Employers Dental Insurance		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
248	30-81-424	Employers Disability Insurance		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
249	30-81-425	Employers Vision		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
250	30-81-426	Workers Compensation Insurance		3.00%	$ 38,586	$ 39,744	$ 40,936	$ 42,164	$ 43,429	$ 44,732
251	30-81-427	State Unemployment Insurance		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
252	30-81-428	Employers EAP		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
253	30-81-430	Retirement - PERSI		3.00%	$ 137,179	$ 141,295	$ 145,533	$ 149,899	$ 154,396	$ 159,028
254	30-81-435	Social Security		3.00%	$ 101,003	$ 104,033	$ 107,154	$ 110,369	$ 113,680	$ 117,090
255	30-81-439	Employers Self Insurance		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
256	30-81-469	Clothing Allowance		3.00%	$ 9,709	$ 10,000	$ 10,300	$ 10,609	$ 10,928	$ 11,255
257	30-81-475	Vacation Accrual		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
258	30-81-490	Employee Recognition		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
259	**Subtotal Personnel Expenses**				**$ 1,909,658**	**$ 1,966,948**	**$ 2,025,957**	**$ 2,086,735**	**$ 2,149,337**	**$ 2,213,818**
260										
261	OPERATIONS EXPENSE									
262	30-81-500	Supplies - Office/Operating		3.00%	$ 104,251	$ 107,378	$ 110,600	$ 113,918	$ 117,335	$ 120,855
263	30-81-501	Supplies - Books and Manuals		3.00%	$ 971	$ 1,000	$ 1,030	$ 1,061	$ 1,093	$ 1,126
264	30-81-525	Postage		3.00%	$ 8,495	$ 8,750	$ 9,013	$ 9,283	$ 9,562	$ 9,849
265	30-81-526	Freight		3.00%	$ 1,214	$ 1,250	$ 1,288	$ 1,326	$ 1,366	$ 1,407
266	30-81-535	Minor Equipment		3.00%	$ 12,743	$ 13,125	$ 13,519	$ 13,925	$ 14,343	$ 14,773
267	30-81-540	Petroloeum and Oil		3.00%	$ 22,816	$ 23,501	$ 24,206	$ 24,932	$ 25,680	$ 26,450
268	30-81-560	Repair/Maint - Grounds		3.00%	$ 16,991	$ 17,501	$ 18,026	$ 18,566	$ 19,123	$ 19,697
269	30-81-561	Repair/Maint - Buildings		3.00%	$ 29,127	$ 30,001	$ 30,901	$ 31,828	$ 32,783	$ 33,766
270	30-81-562	Repair/Maint - Cross Connections		3.00%	$ 3,641	$ 3,750	$ 3,863	$ 3,979	$ 4,098	$ 4,221
271	30-81-565	Repair/Maint - Vehicles		3.00%	$ 47,938	$ 49,377	$ 50,858	$ 52,384	$ 53,955	$ 55,574
272	30-81-580	Repair/Maint - Water		3.00%	$ 485,452	$ 500,016	$ 515,017	$ 530,467	$ 546,381	$ 562,772
273	30-81-581	Purch/Repair/Maint - Office Furn & Equip		3.00%	$ 30,462	$ 31,376	$ 32,317	$ 33,287	$ 34,285	$ 35,314
274	30-81-599	Repair/Maint - Other Equipment		3.00%	$ 1,214	$ 1,250	$ 1,288	$ 1,326	$ 1,366	$ 1,407
275				3.00%	$ -	$ -	$ -	$ -	$ -	$ -
276	30-81-610	Legal Services		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
277	30-81-612	Computer Services		3.00%	$ 94,663	$ 97,503	$ 100,428	$ 103,441	$ 106,544	$ 109,741
278	30-81-615	Ada County Base Map Compass		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
279	30-81-619	Professional Services		3.00%	$ 116,509	$ 120,004	$ 123,604	$ 127,312	$ 131,131	$ 135,065
280	30-81-623	Professional Services - Cross Connection		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
281	30-81-631	Other Purchased Services		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
282	30-81-635	Other Permits		3.00%	$ 10,923	$ 11,250	$ 11,588	$ 11,936	$ 12,294	$ 12,662
283	30-81-640	Advertising & Publications		3.00%	$ 10,923	$ 11,250	$ 11,588	$ 11,936	$ 12,294	$ 12,662
284	30-81-641	Printing & Binding		3.00%	$ 2,549	$ 2,625	$ 2,704	$ 2,785	$ 2,869	$ 2,955
285	30-81-642	Travel and Meetings		3.00%	$ 4,855	$ 5,000	$ 5,150	$ 5,305	$ 5,464	$ 5,628
286	30-81-643	Dues and Membership		3.00%	$ 3,762	$ 3,875	$ 3,991	$ 4,111	$ 4,234	$ 4,361
287	30-81-644	Personnal Training		3.00%	$ 7,646	$ 7,875	$ 8,112	$ 8,355	$ 8,606	$ 8,864
288	30-81-659	Other Misc Expenses		3.00%	$ 7,020	$ 7,230	$ 7,447	$ 7,671	$ 7,901	$ 8,138
289	30-81-661	Rental - Vehicles		3.00%	$ 3,034	$ 3,125	$ 3,219	$ 3,315	$ 3,415	$ 3,517
290	30-81-669	Rental - Other		3.00%	$ 14,564	$ 15,000	$ 15,450	$ 15,914	$ 16,391	$ 16,883
291	30-81-691	Bank/Merchant Account Fees		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
292	30-81-803	Capital - Vehicles		3.00%	$ 181,681	$ 187,131	$ 192,745	$ 198,527	$ 204,483	$ 210,618
293	30-81-879	Capital - Other		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
294	30-81-770	Telephone & Communications		3.00%	$ 32,768	$ 33,751	$ 34,764	$ 35,807	$ 36,881	$ 37,987
295	30-81-771	Utilities		3.00%	$ 140,174	$ 144,380	$ 148,711	$ 153,172	$ 157,768	$ 162,501
296		Water System Maintenance Improvement		3.00%	5,655,757	5,825,430	6,000,193	6,180,199	6,365,605	6,556,573
297	30-81-906	Amortization - Bond Issuance		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
298	30-81-950	Administrative Overhead Charge		3.00%	$ 766,665	$ 789,665	$ 813,355	$ 837,756	$ 862,889	$ 888,775
299	30-81-951	Billing Expenses		3.00%	$ 21,845	$ 22,501	$ 23,176	$ 23,871	$ 24,587	$ 25,325
300	30-81-948	Tranfer to P&Z		3.00%	$ 326,004	$ 335,784	$ 345,858	$ 356,233	$ 366,920	$ 377,928
301	30-81-953	Interfund Transfer to Capital Fund		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
302	30-81-954	Bad Debt Expense		3.00%	$ 6,068	$ 6,250	$ 6,438	$ 6,631	$ 6,830	$ 7,035
303	30-81-955	Depreciation Expense		3.00%	$ 242,726	$ 250,008	$ 257,508	$ 265,234	$ 273,191	$ 281,386
304	**Subtotal Administration Expense**				**$ 8,415,451**	**$ 8,667,915**	**$ 8,927,952**	**$ 9,195,791**	**$ 9,471,664**	**$ 9,755,814**
305										
306	**Total Administration & Operating Expenses**				$ 10,325,110	$ 10,634,863	$ 10,953,909	$ 11,282,526	$ 11,621,002	$ 11,969,632
307										
308	PROJECT DEBT SERVICE									
309	30-81-900	Debt Service Principal 77 Bond		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
310	30-81-901	Debt Service Interest 77 Bond		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
311	30-81-904	Debt Service Principal 2001 Bond		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
312	30-81-905	Debt Service Interest 2001 Bond		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
313	Subtotal Previous Bond Payment				$ -	$ -	$ -	$ -	$ -	$ -
314										
315		2009 Bond Principal		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
316		2009 Bond Interest		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
317	Subtotal Payment 1 SRF				$ -	$ -	$ -	$ -	$ -	$ -
318										
319		2009 Bond Principal		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
320		2009 Bond Interest		3.00%	$ -	$ -	$ -	$ -	$ -	$ -
321	Subtotal Payment 2 SRF				$ -	$ -	$ -	$ -	$ -	$ -
322										
323	**Subtotal Debt Service**				**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
324										
325	SUBTOTAL EXPENSE				**$ 10,325,110**	**$ 10,634,863**	**$ 10,953,909**	**$ 11,282,526**	**$ 11,621,002**	**$ 11,969,632**
326										
327	CAPITAL PROJECTS									
328	Well Rehabilitation									
329	Well									

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2038	2039	2040	2041	2042	2043
330	Water Storage							
331	Line/Hydrant Replacement							
332	**Subtotal Capital Projects**	$ -	$ -	$ -	$ -	$ -	$ -	$ -

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PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
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		2007	2038	2039	2040	2041	2042	2043
333	**NET INCOME**	2007	2038	2039	2040	2041	2042	2043
334	OPERATING NET INCOME							
335	Operation & Maintenance - Income		$ 6,203,492	$ 6,393,276	$ 6,588,875	$ 6,790,466	$ 6,998,235	$ 7,212,371
336	Debt Service - Income		$ 4,806,149	$ 4,954,299	$ 5,107,024	$ 5,264,468	$ 5,426,775	$ 5,594,096
337	Other Income		$ 96,197	$ 98,543	$ 100,509	$ 102,945	$ 105,431	$ 107,968
338	Personnel Expense		$ (1,909,658)	$ (1,966,948)	$ (2,025,957)	$ (2,086,735)	$ (2,149,337)	$ (2,213,818)
339	Operations Expense		$ (8,415,451)	$ (8,667,915)	$ (8,927,952)	$ (9,195,791)	$ (9,471,664)	$ (9,755,814)
340	Debt Service - Expense		$ -	$ -	$ -	$ -	$ -	$ -
341	**Subtotal Operating Net Income**		**$ 780,729**	**$ 811,255**	**$ 842,499**	**$ 875,353**	**$ 909,439**	**$ 944,803**
342								
343	CAPITAL PROJECT NET INCOME							
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 595,014	$ 608,952	$ 623,156	$ 648,146	$ 666,169	$ 681,381
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ -	$ -	$ -	$ -	$ -
348	Capital Project Expense		$ -	$ -	$ -	$ -	$ -	$ -
349	**Subtotal Capital Project Net Income**		**$ 595,014**	**$ 608,952**	**$ 623,156**	**$ 648,146**	**$ 666,169**	**$ 681,381**
350								
351	TOTAL NET INCOME		**$ 1,375,743**	**$ 1,420,207**	**$ 1,465,655**	**$ 1,523,499**	**$ 1,575,609**	**$ 1,626,184**
352								
353	**TOTAL CASH ON HAND**	2007	2038	2039	2040	2041	2042	2043
354	Capital Fund	$ -	$ 10,545,973	$ 11,154,925	$ 11,778,081	$ 12,426,227	$ 13,092,396	$ 13,773,777
355	Operating & Maintenance Fund		$ (488,185)	$ 323,070	$ 1,165,568	$ 2,040,921	$ 2,950,361	$ 3,895,164
356	**Total Cash on Hand**	**$ -**	**$ 10,057,788**	**$ 11,477,994**	**$ 12,943,649**	**$ 14,467,148**	**$ 16,042,757**	**$ 17,668,941**

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2044	2045	2046	2047	2048
	ASSUMPTIONS						
1	**CONNECTIONS**	RATE					
2	GROWTH RATE	PERIOD 1					
3	RESIDENTIAL	(percent)					
4	5/8 inch meter	4.50%					
5	3/4 inch meter	4.50%					
6	1 inch meter	4.50%					
7	1.5 inch meter	4.50%					
8	2 inch meter	4.50%					
9	COMMERCIAL	(percent)					
10	3/4 inch meter	2.00%					
11	1 inch meter	2.00%					
12	1.5 inch meter	2.00%					
13	2 inch meter	2.00%					
14	3 inch meter	2.00%					
15	4 inch meter	2.00%					
16	6 inch meter	2.00%					
17							
18	CONNECTIONS/EDUs						
19	RESIDENTIAL (estimated connections)		2	2	2	2	2
20	5/8 inch meter	1983	3841	3905	3970	4036	4103
21	3/4 inch meter	2520	4882	4963	5045	5129	5214
22	1 inch meter	13	25	26	26	26	27
23	1.5 inch meter	3	6	6	6	6	6
24	2 inch meter	5	10	10	10	10	10
25	Subtotal Residential SFDE	4524	8764	8909	9057	9208	9360
26	COMMERCIAL		2	2	2	2	2
27	3/4 inch meter	70	153	156	159	162	166
28	1 inch meter	113	247	252	257	262	267
29	1.5 inch meter	140	306	312	318	325	331
30	2 inch meter	300	656	669	682	696	710
31	3 inch meter	20	44	45	45	46	47
32	4 inch meter	6	13	13	14	14	14
33	6 inch meter	1	2	2	2	2	2
34	Subtotal Commerical SFDE	650	1420	1449	1478	1507	1537
35	Total SFDE	5174	10184	10358	10535	10715	10898
36							

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2044	2045	2046	2047	2048
36	**FEE STRUCTURE**	2007	2044	2045	2046	2047	2048
37	USER RATES:						
38	RESDIENTIALINCREMENTAL CHARGE - O&M						
39	5/8 inch meter	1.33%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
40	3/4 inch meter	1.33%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
41	1 inch meter	1.33%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
42	1.5 inch meter	1.33%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
43	2 inch meter	1.33%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
44	COMMERCIAL INCREMENTAL CHARGE - O&M						
45	3/4 inch meter	2.00%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
46	1 inch meter	2.00%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
47	1.5 inch meter	2.00%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
48	2 inch meter	2.00%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
49	3 inch meter	2.00%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
50	4 inch meter	2.00%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
51	6 inch meter	2.00%	$ 5.79	$ 5.87	$ 5.95	$ 6.03	$ 6.11
52							
53	RESDIENTIAL BASE RATE - DEBT SERVICE						
54	5/8 inch meter	1.33%	$ 43.44	$ 44.02	$ 44.61	$ 45.20	$ 45.80
55	3/4 inch meter	1.33%	$ 43.44	$ 44.02	$ 44.61	$ 45.20	$ 45.80
56	1 inch meter	1.33%	$ 43.44	$ 44.02	$ 44.61	$ 45.20	$ 45.80
57	1.5 inch meter	1.33%	$ 43.44	$ 44.02	$ 44.61	$ 45.20	$ 45.80
58	2 inch meter	1.33%	$ 43.44	$ 44.02	$ 44.61	$ 45.20	$ 45.80
59	COMMERCIAL BASE RATE - DEBT SERVICE						
60	3/4 inch meter	2.00%	$ 43.44	$ 44.02	$ 44.61	$ 45.20	$ 45.80
61	1 inch meter	2.00%	$ 52.91	$ 53.61	$ 54.32	$ 55.04	$ 55.78
62	1.5 inch meter	2.00%	$ 64.01	$ 64.86	$ 65.72	$ 66.60	$ 67.48
63	2 inch meter	2.00%	$ 79.57	$ 80.63	$ 81.70	$ 82.78	$ 83.89
64	3 inch meter	2.00%	$ 125.75	$ 127.42	$ 129.11	$ 130.83	$ 132.57
65	4 inch meter	2.00%	$ 168.24	$ 170.48	$ 172.75	$ 175.04	$ 177.37
66	6 inch meter	2.00%	$ 301.99	$ 306.00	$ 310.07	$ 314.20	$ 318.38
67							
68	RESDIENTIAL BASE RATE - CAPITAL RESERVE						
69	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
70	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
71	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
72	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
73	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
74	COMMERCIAL BASE RATE - CAPITAL RESERVE						
75	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
76	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
77	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
78	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
79	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
80	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
81	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
82							
83	CONNECTION FEE (IMPACT FEE)						
84	RESDIENTIAL CONNECTION FEE						
85	5/8 inch meter	1.33%	$ 3,218.10	$ 3,260.90	$ 3,304.27	$ 3,348.22	$ 3,392.75
86	3/4 inch meter	1.33%	$ 3,218.10	$ 3,260.90	$ 3,304.27	$ 3,348.22	$ 3,392.75
87	1 inch meter	1.33%	$ 3,218.10	$ 3,260.90	$ 3,304.27	$ 3,348.22	$ 3,392.75
88	1.5 inch meter	1.33%	$ 3,290.51	$ 3,334.27	$ 3,378.62	$ 3,423.55	$ 3,469.09
89	2 inch meter	1.33%	$ 4,505.34	$ 4,565.26	$ 4,625.98	$ 4,687.50	$ 4,749.85
90	COMMERCIAL CONNECTION FEE						
91	3/4 inch meter	2.00%	$ 9,654.30	$ 9,782.70	$ 9,912.81	$ 10,044.65	$ 10,178.25
92	1 inch meter	2.00%	$ 9,654.30	$ 9,782.70	$ 9,912.81	$ 10,044.65	$ 10,178.25
93	1.5 inch meter	2.00%	$ 10,780.63	$ 10,924.02	$ 11,069.31	$ 11,216.53	$ 11,365.71
94	2 inch meter	2.00%	$ 10,941.54	$ 11,087.06	$ 11,234.52	$ 11,383.94	$ 11,535.35
95	3 inch meter	2.00%	$ 11,504.71	$ 11,657.72	$ 11,812.77	$ 11,969.88	$ 12,129.08
96	4 inch meter	2.00%	$ 11,746.06	$ 11,902.29	$ 12,060.59	$ 12,220.99	$ 12,383.53
97	6 inch meter	2.00%	$ 13,033.30	$ 13,206.65	$ 13,382.30	$ 13,560.28	$ 13,740.63
98							
99	TREATMENT SPECIAL ASSESSMENT						
100	RESDIENTIAL CONNECTION FEE						
101	5/8 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
102	3/4 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
103	1 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
104	1.5 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
105	2 inch meter	1.33%	$ -	$ -	$ -	$ -	$ -
106	COMMERCIAL CONNECTION FEE						
107	3/4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
108	1 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
109	1.5 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
110	2 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
111	3 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
112	4 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
113	6 inch meter	2.00%	$ -	$ -	$ -	$ -	$ -
114							
115	OTHER FEES						
116	Interest on Investments	3.00%	$ 16,090.50	$ 16,304.50	$ 16,521.35	$ 16,741.09	$ 16,963.74
117	Engineering Plan Revew	3.00%	$ 195.15	$ 197.74	$ 200.37	$ 203.04	$ 205.74
118	Water Plan Review	3.00%	$ 85.15	$ 86.28	$ 87.43	$ 88.59	$ 89.77
119	Late Charges	3.00%	$ 2,413.57	$ 2,445.68	$ 2,478.20	$ 2,511.16	$ 2,544.56
120	Cross Connection Plan Review	3.00%	$ 85.15	$ 86.28	$ 87.43	$ 88.59	$ 89.77
121	Water Observations	3.00%	$ 85.15	$ 86.28	$ 87.43	$ 88.59	$ 89.77
122							

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2044	2045	2046	2047	2048
123	**REVENUE**	2007	2044	2045	2046	2047	2048
124	OPERATION & MAINTENANCE REVENUES:						
125	RESDIENTIALINCREMENTAL CHARGE - O&M						
126	5/8 inch meter		$ 2,803,742	$ 2,888,193	$ 2,975,188	$ 3,064,803	$ 3,157,117
127	3/4 inch meter		$ 3,563,001	$ 3,670,321	$ 3,780,874	$ 3,894,757	$ 4,012,070
128	1 inch meter		$ 18,381	$ 18,934	$ 19,505	$ 20,092	$ 20,697
129	1.5 inch meter		$ 4,242	$ 4,369	$ 4,501	$ 4,637	$ 4,776
130	2 inch meter		$ 7,069	$ 7,282	$ 7,502	$ 7,728	$ 7,960
131	Subtotal Residential Incremental Charge - O&M		$ 6,396,435	$ 6,589,100	$ 6,787,569	$ 6,992,016	$ 7,202,621
132	COMMERCIAL INCREMENTAL CHARGE - O&M						
133	3/4 inch meter		$ 111,637	$ 115,385	$ 119,258	$ 123,261	$ 127,398
134	1 inch meter		$ 180,215	$ 186,264	$ 192,516	$ 198,978	$ 205,657
135	1.5 inch meter		$ 223,275	$ 230,769	$ 238,515	$ 246,521	$ 254,796
136	2 inch meter		$ 478,446	$ 494,506	$ 511,104	$ 528,260	$ 545,992
137	3 inch meter		$ 31,896	$ 32,967	$ 34,074	$ 35,217	$ 36,399
138	4 inch meter		$ 9,569	$ 9,890	$ 10,222	$ 10,565	$ 10,920
139	6 inch meter		$ 1,595	$ 1,648	$ 1,704	$ 1,761	$ 1,820
140	Subtotal Commercial Incremental Charge - O&M		$ 1,036,633	$ 1,071,429	$ 1,107,393	$ 1,144,563	$ 1,182,982
141	TOTAL OPERATION & MAINTENANCE REVENUE		**$ 7,433,068**	**$ 7,660,529**	**$ 7,894,962**	**$ 8,136,579**	**$ 8,385,603**
142							
143	DEBT SERVICE REVENUE						
144	RESDIENTIAL BASE CHARGE - DEBT SERVICE						
145	5/8 inch meter		$ 2,002,673	$ 2,062,995	$ 2,125,134	$ 2,189,145	$ 2,255,084
146	3/4 inch meter		$ 2,545,001	$ 2,621,658	$ 2,700,624	$ 2,781,969	$ 2,865,764
147	1 inch meter		$ 13,129	$ 13,524	$ 13,932	$ 14,351	$ 14,784
148	1.5 inch meter		$ 3,030	$ 3,121	$ 3,215	$ 3,312	$ 3,412
149	2 inch meter		$ 5,050	$ 5,202	$ 5,358	$ 5,520	$ 5,686
150	Subtotal Residential Incremental Charge - O&M		$ 4,568,882	$ 4,706,500	$ 4,848,264	$ 4,994,297	$ 5,144,729
151	COMMERCIAL BASE CHARGE - DEBT SERVICE						
152	3/4 inch meter		$ 79,741	$ 82,418	$ 85,184	$ 88,043	$ 90,999
153	1 inch meter		$ 156,758	$ 162,020	$ 167,458	$ 173,079	$ 178,889
154	1.5 inch meter		$ 234,970	$ 242,857	$ 251,009	$ 259,434	$ 268,143
155	2 inch meter		$ 625,904	$ 646,913	$ 668,627	$ 691,070	$ 714,267
156	3 inch meter		$ 65,945	$ 68,158	$ 70,446	$ 72,810	$ 75,254
157	4 inch meter		$ 26,469	$ 27,357	$ 28,276	$ 29,225	$ 30,206
158	6 inch meter		$ 7,918	$ 8,184	$ 8,459	$ 8,743	$ 9,036
159	Subtotal Commercial Incremental Charge - O&M		$ 1,197,705	$ 1,237,907	$ 1,279,459	$ 1,322,405	$ 1,275,795
160	TOTAL DEBT SERVICE REVENUE		**$ 5,766,587**	**$ 5,944,408**	**$ 6,127,723**	**$ 6,316,703**	**$ 6,420,524**
161							
162	CAPITAL RESERVE REVENUE:						
163	RESDIENTIAL BASE CHARGE - CAPITAL RESERVE						
164	5/8 inch meter		$ -	$ -	$ -	$ -	$ -
165	3/4 inch meter		$ -	$ -	$ -	$ -	$ -
166	1 inch meter		$ -	$ -	$ -	$ -	$ -
167	1.5 inch meter		$ -	$ -	$ -	$ -	$ -
168	2 inch meter		$ -	$ -	$ -	$ -	$ -
169	Subtotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -
170	COMMERCIAL BASE CHARGE - CAPITAL RESERVE						
171	3/4 inch meter		$ -	$ -	$ -	$ -	$ -
172	1 inch meter		$ -	$ -	$ -	$ -	$ -
173	1.5 inch meter		$ -	$ -	$ -	$ -	$ -
174	2 inch meter		$ -	$ -	$ -	$ -	$ -
175	3 inch meter		$ -	$ -	$ -	$ -	$ -
176	4 inch meter		$ -	$ -	$ -	$ -	$ -
177	6 inch meter		$ -	$ -	$ -	$ -	$ -
178	Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -
179	TOTAL CAPITAL RESERVE REVENUE		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
180							
181	CONNECTION FEE (IMPACT/TAP FEE) REVENUE						
182	RESDIENTIAL CONNECTION FEE						
183	5/8 inch meter		$ 199,522	$ 205,437	$ 211,473	$ 217,634	$ 223,921
184	3/4 inch meter		$ 254,230	$ 264,133	$ 270,950	$ 277,902	$ 288,384
185	1 inch meter		$ -	$ -	$ -	$ -	$ -
186	1.5 inch meter		$ -	$ -	$ -	$ -	$ -
187	2 inch meter		$ -	$ -	$ -	$ -	$ -
188	Subtotal Residential Incremental Charge - O&M		$ 453,752	$ 469,570	$ 482,424	$ 495,536	$ 512,305
189	COMMERCIAL CONNECTION FEE - O&M						
190	3/4 inch meter		$ 19,309	$ 29,348	$ 29,738	$ 30,134	$ 30,535
191	1 inch meter		$ 38,617	$ 39,131	$ 49,564	$ 50,223	$ 50,891
192	1.5 inch meter		$ 53,903	$ 65,544	$ 66,416	$ 67,299	$ 68,194
193	2 inch meter		$ 131,298	$ 144,132	$ 146,049	$ 147,991	$ 149,959
194	3 inch meter		$ -	$ -	$ -	$ -	$ -
195	4 inch meter		$ -	$ -	$ -	$ -	$ -
196	6 inch meter		$ -	$ -	$ -	$ -	$ -
197	Subtotal Commercial Incremental Charge - O&M		$ 243,127	$ 278,155	$ 291,767	$ 295,648	$ 299,580
198	TOTAL CONNECTION FEE (IMPACT FEE) REVENUE		**$ 696,880**	**$ 747,725**	**$ 774,191**	**$ 791,184**	**$ 811,885**
199							

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

			2007	2044	2045	2046	2047	2048
200		SPECIAL ASSESSMENT REVENUE						
201		RESDIENTIAL SPECIAL ASSESSMENT						
202		5/8 inch meter						
203		3/4 inch meter						
204		1 inch meter						
205		1.5 inch meter						
206		2 inch meter						
207		Subtotal Residential Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -
208		COMMERCIAL SPECIAL ASSESSMENT						
209		3/4 inch meter						
210		1 inch meter						
211		1.5 inch meter						
212		2 inch meter						
213		3 inch meter						
214		4 inch meter						
215		6 inch meter						
216		Subtotal Commercial Incremental Charge - O&M		$ -	$ -	$ -	$ -	$ -
217		TOTAL SPECIAL ASSESSMENT REVENUE		$ -	$ -	$ -	$ -	$ -
218								
219		OTHER REVENUE:						
220		Interest on Investments		$ 16,090	$ 16,305	$ 16,521	$ 16,741	$ 16,964
221		Engineering Plan Revew		$ 33,175	$ 34,209	$ 35,265	$ 36,343	$ 37,444
222		Water Plan Review		$ 14,476	$ 14,927	$ 15,388	$ 15,858	$ 16,339
223		Late Charges		$ 2,414	$ 2,446	$ 2,478	$ 2,511	$ 2,545
224		Cross Connection Plan Review		$ 14,476	$ 14,927	$ 15,388	$ 15,858	$ 16,339
225		Water Observations		$ 14,476	$ 14,927	$ 15,388	$ 15,858	$ 16,339
		Interest	3.00%	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
226		**Subtotal Other Revenue**		110,106	112,740	115,428	118,171	120,968
227								
228		**TOTAL REVENUE**		$ 14,006,641	$ 14,465,402	$ 14,912,304	$ 15,362,636	$ 15,738,979
229								
230		GRANT/LOAN PROCEEDS	Term					
231		STAG Grant						
232		ACOE Section 595 Grant						
233		Other Grant						
234		State Revolving Fund - 1	20					
235		State Revolving Fund - 2						
236		**Subtotal Financing**		$ -	$ -	$ -	$ -	$ -
237								
238		**SUBTOTAL AVAILABLE CAPITAL**	$ -	$ 696,880	$ 747,725	$ 774,191	$ 791,184	$ 811,885
239								

FORSGREN ASSOCIATES / INC.
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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

				2007	2044	2045	2046	2047	2048
240	**EXPENSES**			2007	2044	2045	2046	2047	2048
241	PERSONNEL EXPENXES			Number	12	12	12	12	12
242	30-81-401	Personnel - Salaries	3.00%		$ 1,576,495	$ 1,623,790	$ 1,672,504	$ 1,722,679	$ 1,774,359
243	30-81-410	Personnel - Overtime	3.00%		$ -	$ -	$ -	$ -	$ -
244	30-81-420	Employers Benefit Package	3.00%		$ 361,667	$ 372,517	$ 383,693	$ 395,204	$ 407,060
245	30-81-421	Employers Medical Insurance	3.00%		$ -	$ -	$ -	$ -	$ -
246	30-81-422	Employers Life Insurance	3.00%		$ -	$ -	$ -	$ -	$ -
247	30-81-423	Employers Dental Insurance	3.00%		$ -	$ -	$ -	$ -	$ -
248	30-81-424	Employers Disability Insurance	3.00%		$ -	$ -	$ -	$ -	$ -
249	30-81-425	Employers Vision	3.00%		$ -	$ -	$ -	$ -	$ -
250	30-81-426	Workers Compensation Insurance	3.00%		$ 46,074	$ 47,456	$ 48,880	$ 50,346	$ 51,857
251	30-81-427	State Unemployment Insurance	3.00%		$ -	$ -	$ -	$ -	$ -
252	30-81-428	Employers EAP	3.00%		$ -	$ -	$ -	$ -	$ -
253	30-81-430	Retirement - PERSI	3.00%		$ 163,799	$ 168,713	$ 173,774	$ 178,988	$ 184,357
254	30-81-435	Social Security	3.00%		$ 120,603	$ 124,221	$ 127,948	$ 131,786	$ 135,740
255	30-81-439	Employers Self Insurance	3.00%		$ -	$ -	$ -	$ -	$ -
256	30-81-469	Clothing Allowance	3.00%		$ 11,593	$ 11,941	$ 12,299	$ 12,668	$ 13,048
257	30-81-475	Vacation Accrual	3.00%		$ -	$ -	$ -	$ -	$ -
258	30-81-490	Employee Recognition	3.00%		$ -	$ -	$ -	$ -	$ -
259	**Subtotal Personnel Expenses**				**$ 2,280,232**	**$ 2,348,639**	**$ 2,419,098**	**$ 2,491,671**	**$ 2,566,421**
260									
261	OPERATIONS EXPENSE								
262	30-81-500	Supplies - Office/Operating	3.00%		$ 124,481	$ 128,215	$ 132,062	$ 136,024	$ 140,105
263	30-81-501	Supplies - Books and Manuals	3.00%		$ 1,159	$ 1,194	$ 1,230	$ 1,267	$ 1,305
264	30-81-525	Postage	3.00%		$ 10,144	$ 10,448	$ 10,762	$ 11,085	$ 11,417
265	30-81-526	Freight	3.00%		$ 1,449	$ 1,493	$ 1,537	$ 1,584	$ 1,631
266	30-81-535	Minor Equipment	3.00%		$ 15,216	$ 15,672	$ 16,143	$ 16,627	$ 17,126
267	30-81-540	Petroloeum and Oil	3.00%		$ 27,244	$ 28,061	$ 28,903	$ 29,770	$ 30,663
268	30-81-560	Repair/Maint - Grounds	3.00%		$ 20,288	$ 20,897	$ 21,523	$ 22,169	$ 22,834
269	30-81-561	Repair/Maint - Buildings	3.00%		$ 34,779	$ 35,823	$ 36,897	$ 38,004	$ 39,144
270	30-81-562	Repair/Maint - Cross Connections	3.00%		$ 4,347	$ 4,478	$ 4,612	$ 4,751	$ 4,893
271	30-81-565	Repair/Maint - Vehicles	3.00%		$ 57,241	$ 58,958	$ 60,727	$ 62,549	$ 64,425
272	30-81-580	Repair/Maint - Water	3.00%		$ 579,656	$ 597,045	$ 614,957	$ 633,405	$ 652,408
273	30-81-581	Purch/Repair/Maint - Office Furn & Equip	3.00%		$ 36,373	$ 37,465	$ 38,589	$ 39,746	$ 40,939
274	30-81-599	Repair/Maint - Other Equipment	3.00%		$ 1,449	$ 1,493	$ 1,537	$ 1,584	$ 1,631
275			3.00%		$ -	$ -	$ -	$ -	$ -
276	30-81-610	Legal Services	3.00%		$ -	$ -	$ -	$ -	$ -
277	30-81-612	Computer Services	3.00%		$ 113,033	$ 116,424	$ 119,917	$ 123,514	$ 127,219
278	30-81-615	Ada County Base Map Compass	3.00%		$ -	$ -	$ -	$ -	$ -
279	30-81-619	Professional Services	3.00%		$ 139,117	$ 143,291	$ 147,590	$ 152,017	$ 156,578
280	30-81-623	Professional Services - Cross Connection	3.00%		$ -	$ -	$ -	$ -	$ -
281	30-81-631	Other Purchased Services	3.00%		$ -	$ -	$ -	$ -	$ -
282	30-81-635	Other Permits	3.00%		$ 13,042	$ 13,434	$ 13,837	$ 14,252	$ 14,679
283	30-81-640	Advertising & Publications	3.00%		$ 13,042	$ 13,434	$ 13,837	$ 14,252	$ 14,679
284	30-81-641	Printing & Binding	3.00%		$ 3,043	$ 3,134	$ 3,229	$ 3,325	$ 3,425
285	30-81-642	Travel and Meetings	3.00%		$ 5,797	$ 5,970	$ 6,150	$ 6,334	$ 6,524
286	30-81-643	Dues and Membership	3.00%		$ 4,492	$ 4,627	$ 4,766	$ 4,909	$ 5,056
287	30-81-644	Personnal Training	3.00%		$ 9,130	$ 9,403	$ 9,686	$ 9,976	$ 10,275
288	30-81-659	Other Misc Expenses	3.00%		$ 8,382	$ 8,633	$ 8,892	$ 9,159	$ 9,434
289	30-81-661	Rental - Vehicles	3.00%		$ 3,623	$ 3,732	$ 3,843	$ 3,959	$ 4,078
290	30-81-669	Rental - Other	3.00%		$ 17,390	$ 17,911	$ 18,449	$ 19,002	$ 19,572
291	30-81-691	Bank/Merchant Account Fees	3.00%		$ -	$ -	$ -	$ -	$ -
292	30-81-803	Capital - Vehicles	3.00%		$ 216,936	$ 223,444	$ 230,148	$ 237,052	$ 244,164
293	30-81-879	Capital - Other	3.00%		$ -	$ -	$ -	$ -	$ -
294	30-81-770	Telephone & Communications	3.00%		$ 39,127	$ 40,301	$ 41,510	$ 42,755	$ 44,038
295	30-81-771	Utilities	3.00%		$ 167,376	$ 172,397	$ 177,569	$ 182,896	$ 188,383
296		Water System Maintenance Improvement	3.00%		6,753,270	6,955,868	7,164,544	7,379,480	7,600,865
297	30-81-906	Amortization - Bond Issuance	3.00%		$ -	$ -	$ -	$ -	$ -
298	30-81-950	Administrative Overhead Charge	3.00%		$ 915,439	$ 942,902	$ 971,189	$ 1,000,324	$ 1,030,334
299	30-81-951	Billing Expenses	3.00%		$ 26,085	$ 26,867	$ 27,673	$ 28,503	$ 29,358
300	30-81-948	Tranfer to P&Z	3.00%		$ 389,266	$ 400,944	$ 412,972	$ 425,361	$ 438,122
301	30-81-953	Interfund Transfer to Capital Fund	3.00%		$ -	$ -	$ -	$ -	$ -
302	30-81-954	Bad Debt Expense	3.00%		$ 7,246	$ 7,463	$ 7,687	$ 7,918	$ 8,155
303	30-81-955	Depreciation Expense	3.00%		$ 289,828	$ 298,523	$ 307,478	$ 316,703	$ 326,204
304	**Subtotal Administration Expense**				**$ 10,048,489**	**$ 10,349,943**	**$ 10,660,442**	**$ 10,980,255**	**$ 11,309,663**
305									
306	**Total Administration & Operating Expenses**				$ 12,328,721	$ 12,698,582	$ 13,079,540	$ 13,471,926	$ 13,876,084
307									
308	PROJECT DEBT SERVICE								
309	30-81-900	Debt Service Principal 77 Bond	3.00%		$ -	$ -	$ -	$ -	$ -
310	30-81-901	Debt Service Interest 77 Bond	3.00%		$ -	$ -	$ -	$ -	$ -
311	30-81-904	Debt Service Principal 2001 Bond	3.00%		$ -	$ -	$ -	$ -	$ -
312	30-81-905	Debt Service Interest 2001 Bond	3.00%		$ -	$ -	$ -	$ -	$ -
313	Subtotal Previous Bond Payment				$ -	$ -	$ -	$ -	$ -
314									
315		2009 Bond Principal	3.00%		$ -	$ -	$ -	$ -	$ -
316		2009 Bond Interest	3.00%		$ -	$ -	$ -	$ -	$ -
317	Subtotal Payment 1 SRF				$ -	$ -	$ -	$ -	$ -
318									
319		2009 Bond Principal	3.00%		$ -	$ -	$ -	$ -	$ -
320		2009 Bond Interest	3.00%		$ -	$ -	$ -	$ -	$ -
321	Subtotal Payment 2 SRF				$ -	$ -	$ -	$ -	$ -
322									
323	**Subtotal Debt Service**				**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
324									
325	SUBTOTAL EXPENSE				**$ 12,328,721**	**$ 12,698,582**	**$ 13,079,540**	**$ 13,471,926**	**$ 13,876,084**
326									
327	CAPITAL PROJECTS								
328	Well Rehabilitation								
329	Well								

FORSGREN ASSOCIATES / INC.
A COMPANY OF PROFESSIONAL CONSULTANTS

CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2044	2045	2046	2047	2048
330	Water Storage						
331	Line/Hydrant Replacement						
332	**Subtotal Capital Projects**	$ -	$ -	$ -	$ -	$ -	$ -

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CASH FLOW STATEMENT
PROPOSED FEE STRUCTURE
WATER SYSTEM

Project No. 01-07-0038
Project: Garden City, Idaho
Client: Garden City, Idaho

Date: 1-Mar-08
Prepared by: BEC

		2007	2044	2045	2046	2047	2048
333	**NET INCOME**	2007	2044	2045	2046	2047	2048
334	OPERATING NET INCOME						
335	Operation & Maintenance - Income		$ 7,433,068	$ 7,660,529	$ 7,894,962	$ 8,136,579	$ 8,385,603
336	Debt Service - Income		$ 5,766,587	$ 5,944,408	$ 6,127,723	$ 6,316,703	$ 6,420,524
337	Other Income		$ 110,106	$ 112,740	$ 115,428	$ 118,171	$ 120,968
338	Personnel Expense		$ (2,280,232)	$ (2,348,639)	$ (2,419,098)	$ (2,491,671)	$ (2,566,421)
339	Operations Expense		$ (10,048,489)	$ (10,349,943)	$ (10,660,442)	$ (10,980,255)	$ (11,309,663)
340	Debt Service - Expense		$ -	$ -	$ -	$ -	$ -
341	**Subtotal Operating Net Income**		**$ 981,040**	**$ 1,019,095**	**$ 1,058,573**	**$ 1,099,526**	**$ 1,051,011**
342							
343	CAPITAL PROJECT NET INCOME						
344	Capital Reserve		$ -	$ -	$ -	$ -	$ -
345	Connection (Impact/Tap Fee) Net Income		$ 696,880	$ 747,725	$ 774,191	$ 791,184	$ 811,885
346	Special Assessment Net Income		$ -	$ -	$ -	$ -	$ -
347	Grant/Loan Proceeds		$ -	$ -	$ -	$ -	$ -
348	Capital Project Expense		$ -	$ -	$ -	$ -	$ -
349	**Subtotal Capital Project Net Income**		**$ 696,880**	**$ 747,725**	**$ 774,191**	**$ 791,184**	**$ 811,885**
350							
351	TOTAL NET INCOME		**$ 1,677,920**	**$ 1,766,820**	**$ 1,832,764**	**$ 1,890,710**	**$ 1,862,896**
352							
353	**TOTAL CASH ON HAND**	2007	2044	2045	2046	2047	2048
354	Capital Fund	$ -	$ 14,470,657	$ 15,218,381	$ 15,992,572	$ 16,783,756	$ 17,595,640
355	Operating & Maintenance Fund		$ 4,876,204	$ 5,895,300	$ 6,953,873	$ 8,053,399	$ 9,104,410
356	**Total Cash on Hand**	**$ -**	**$ 19,346,861**	**$ 21,113,681**	**$ 22,946,444**	**$ 24,837,155**	**$ 26,700,050**

APPENDIX P
EXAMPLE WATER SYSTEM IMPROVEMENT PLANS

Table CIP-1. Garden City Capital Improvement Projects Summary

Year	Project Description	Cost (2008 Dollars)
2009	Replacement of 2.5" water line from 45th St. to E. Ellen St. with 8" line Replacement of 4" water line on 31st St. with 8" line Replacement of 4" water line on 34th St. and Stockton with 8" line Replacement of 4" water line on 38th St. with 8" line Replacement of 4" water line on 35th St. with 6" line Replacement of 4" water lines on W. Winterwood Ln, N Lakeview Pl., E Adam Ct., N Lakemont Pl, and N Lakeshore Pl with 6" line	$7,473,000
	Abandon Well #11	$17,000
	Construct a 1 Million Gallon Storage Tank	$1,300,000
	Rehabilitate and Upgrade Wells #3 and #8	$736,000
	Implement a Water Conservation Program	$315,000
2014	Rehabilitate and Upgrade Well #6	$370,000
	Abandon Well #7	$17,000
2019	Rehabilitate and Upgrade Well #12	$370,000
	Install Standby Power Generators at Wells #4 and #9	$386,000
2027	Drill a New Well	$937,000

Table WSI-2009. 2009 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-1	Replacement of 2.5" water line from 45th St. to E. Ellen St. with 8" line	CIP	2,555	$1,522,780
WD-1	Replacement of 4" water line on 31st St. with 8" line	CIP	620	$369,520
WD-1	Replacement of 4" water line on 34th St. and Stockton with 8" line	CIP	2,085	$1,242,660
WD-1	Replacement of 4" water line on 38th St. with 8" line	CIP	2,466	$1,469,736
WD-1	Replacement of 4" water line on 35th St. with 6" line	CIP	2,327	$1,372,930
WD-1	Replacement of 4" water lines on W. Winterwood Ln, N Lakeview Pl., E Adam Ct., N Lakemont Pl, Kay St., and N Lakeshore Pl with 6" line	CIP	2,534	$1,495,060
WD-2	Replacement of 4" water line on Stockton from 39th St. to 45th St. with 12" line	O&M	3,900	$2,379,000
WQ-1	Develop Formal Monitoring Plans to meet increased regulations stemming from the Groundwater Rule	O&M	NA	$79,000
WR-1	Apply to IDWR to add Multiple Diversion Points to Each Well	O&M	NA	$6,000
WR-2	Correct Discrepancy for Water Right 63-5330 Associated with Well #5	O&M	NA	$11,000
WR-3	Inquire to IDWR Regarding Status of Water Right 63-11487 associated with Well #10	O&M	NA	$3,000
WR-4	File a "Notice of Change of Water Right Ownership" with IDWR for Water Rights 63-9144 and 63-8357 associated with Well #11 and #12	O&M	NA	$8,000
WR-5	Implement a Water Conservation Program and Apply for New Water Right	CIP	NA	$329,000
WSu-1	Rehabilitate and Upgrade Wells #3 and #8	CIP	NA	$736,000
WSu-3	Perform System Maintenance Activities to Meet Requirements of IDEQ Sanitary Survey	O&M	NA	$33,000
WSu-5	Abandon Well #11	CIP	NA	$17,000
WSt-1	Construct a 1 Million Gallon Storage Tank	CIP	NA	$1,300,000
			Total Water System Improvement Cost	**$12,374,000**

Table WSI-2010. 2010 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 4" water line on Stockton from 30th St. to 39th St. with 12" line	O&M	3,980	$2,427,800
WD-3	Transfer as-built drawings, plans, and other records to digital format; develop and maintain database	O&M	NA	$17,000
			Total Water System Improvement Cost	**$2,444,800**

Table WSI-2011. 2011 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 4" water line on 30th St. with 8" line	O&M	380	$226,480
WD-2	Replacement of 4" water line on 32nd St. with 8" line	O&M	1,300	$774,800
WD-2	Replacement of 4" water line on 33rd St. with 8" line	O&M	1,670	$995,320
WD-2	Replacement of 4" water line on 37th St. Southwest of Stockton with 8" line	O&M	775	$461,900
			Total Water System Improvement Cost	**$2,458,500**

Table WSI-2012. 2012 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 4" water line on W Elaynea Ln. with 6" line	O&M	685	$404,150
WD-2	Replacement of 4" water line on W Cody Ln. with 6" line	O&M	635	$374,650
WD-2	Replacement of 4" water line on W Quinella St. with 6" line	O&M	285	$168,150
WD-2	Replacement of 4" water line in cul de sac at the intersection of 48th St. and W Mystic Cove Way with 6" line	O&M	185	$109,150
WD-2	Replacement of 4" water line on N Pebble Falls Ln. with 6" line	O&M	185	$109,150
WD-2	Replacement of 4" water line on N Pebble Cove Ln. with 6" line	O&M	135	$79,650
WD-2	Replacement of 4" water line on N Lakefront Pl. with 6" line	O&M	150	$88,500
WD-2	Replacement of 4" water line on N Lake Park Pl. with 6" line	O&M	235	$138,650
WD-2	Replacement of 4" water line on N Lakes Edge Pl. with 6" line	O&M	395	$233,050
WD-2	Replacement of 4" water line on N Willowcrest Pl. and Willowcrest Way with 6" line	O&M	300	$177,000
			Total Water System Improvement Cost	**$1,882,100**

Table WSI-2013. 2013 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 4" water line on 37th St. Northeast of Chindon with 8" line	O&M	1,625	$968,500
WD-2	Replacement of 6" water line on Adams from 37th St. to 43rd St. with 8" line	O&M	3,880	$2,312,480
			Total Water System Improvement Cost	**$3,280,980**

Table WSI-2014. 2014 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 6" water line Adams from 43rd St. to 47th St. with 8" line	O&M	2,600	$1,549,600
WSu-1	Rehabilitate and Upgrade Well #6	O&M	NA	$370,000
WSu-5	Abandon Well #7	O&M	NA	$17,000
			Total Water System Improvement Cost	**$1,936,600**

Table WSI-2015. 2015 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 6” water line on Clay St with 8” line	O&M	2,010	$1,197,960
WD-2	Replacement of 6” water line on Carr St with 8” line	O&M	1,025	$610,900
WD-2	Replacement of 8” water line on East 52nd St. with 10” line	O&M	1,430	$868,010
		Total Water System Improvement Cost		**$2,676,870**

Table WSI-2016. 2016 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 6" water line on 40th St. and 41st St. Northeast of Adams with the line that connects these two streets with 8" line	O&M	2,540	$1,513,840
WD-2	Replacement of 6" water line on Reed St with 8" line	O&M	1,550	$923,800
WD-2	Replacement of 6" water line connecting to 37th St. approximately halfway between Adams and Clay St. with 8" line	O&M	840	$500,640
			Total Water System Improvement Cost	**$2,938,280**

Table WSI-2017. 2017 Water System Improvements

Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 6" water line on 40th St. Southwest of Stockton and the line connecting this to 41st St. with 8" line	O&M	1,575	$938,700
WD-2	Replacement of 6" water line on 39th St. Southwest of Stockton and the line connecting this to 38th St. with 8" line	O&M	1,480	$882,080
WD-2	Replacement of 6" water line on 38th St. line connecting with 37th St. with 8" line	O&M	900	$536,400
WD-2	Replacement of 6" water line on 37th St line connecting with 35th St. with 8" line	O&M	1,040	$619,840
			Total Water System Improvement Cost	**$2,977,020**

Table WSI-2018. 2018 Water System Improvements

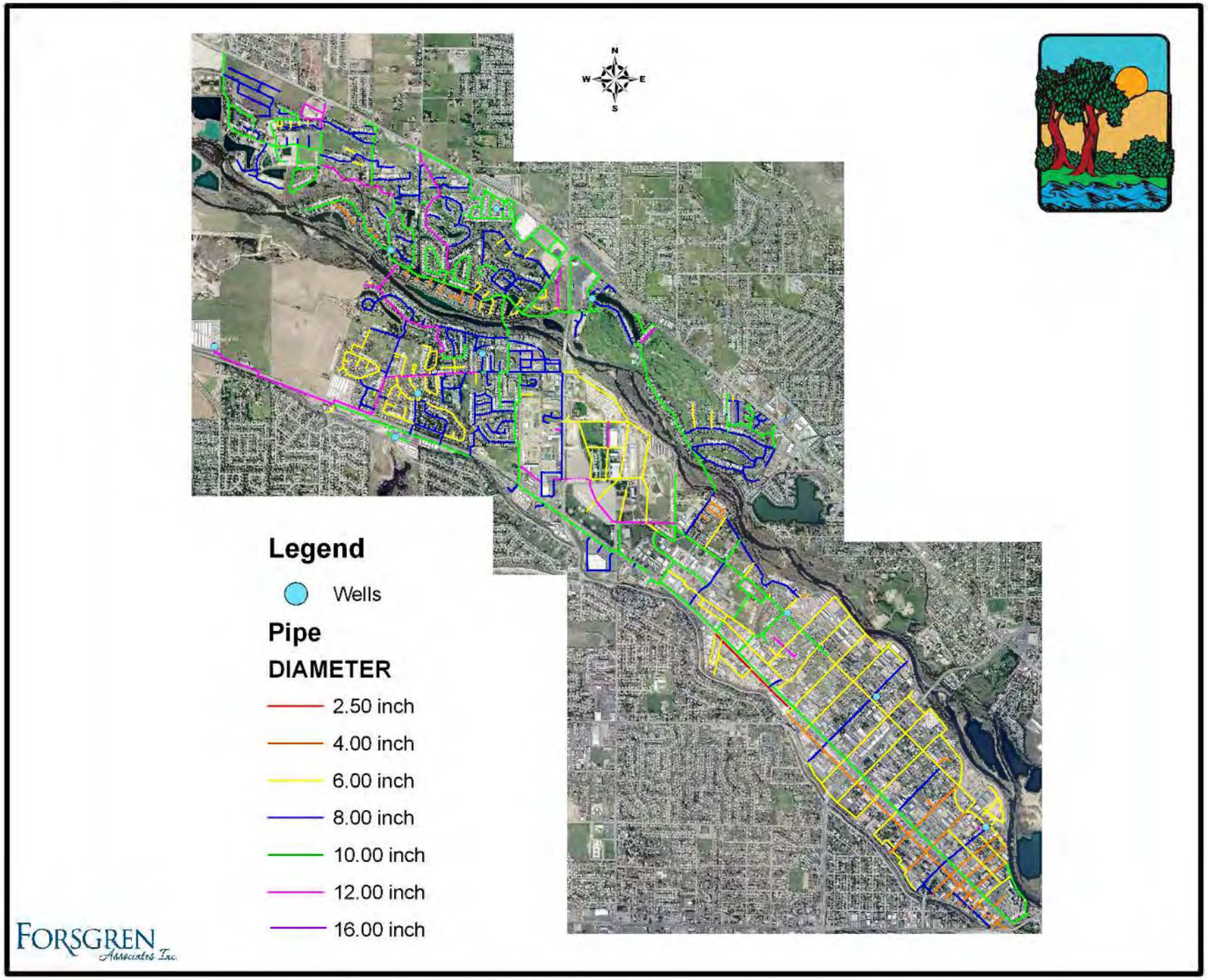
Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
	Replacement of 6" water line on 41st St. Southwest of Adams	O&M	2,670	$1,591,320
WD-2	Replacement of 6" water line on 40th St. Southwest of Adams to Stockton	O&M	1,850	$1,102,600
			Total Water System Improvement Cost	**$2,693,920**

Table WSI-2019. 2019 Water System Improvements

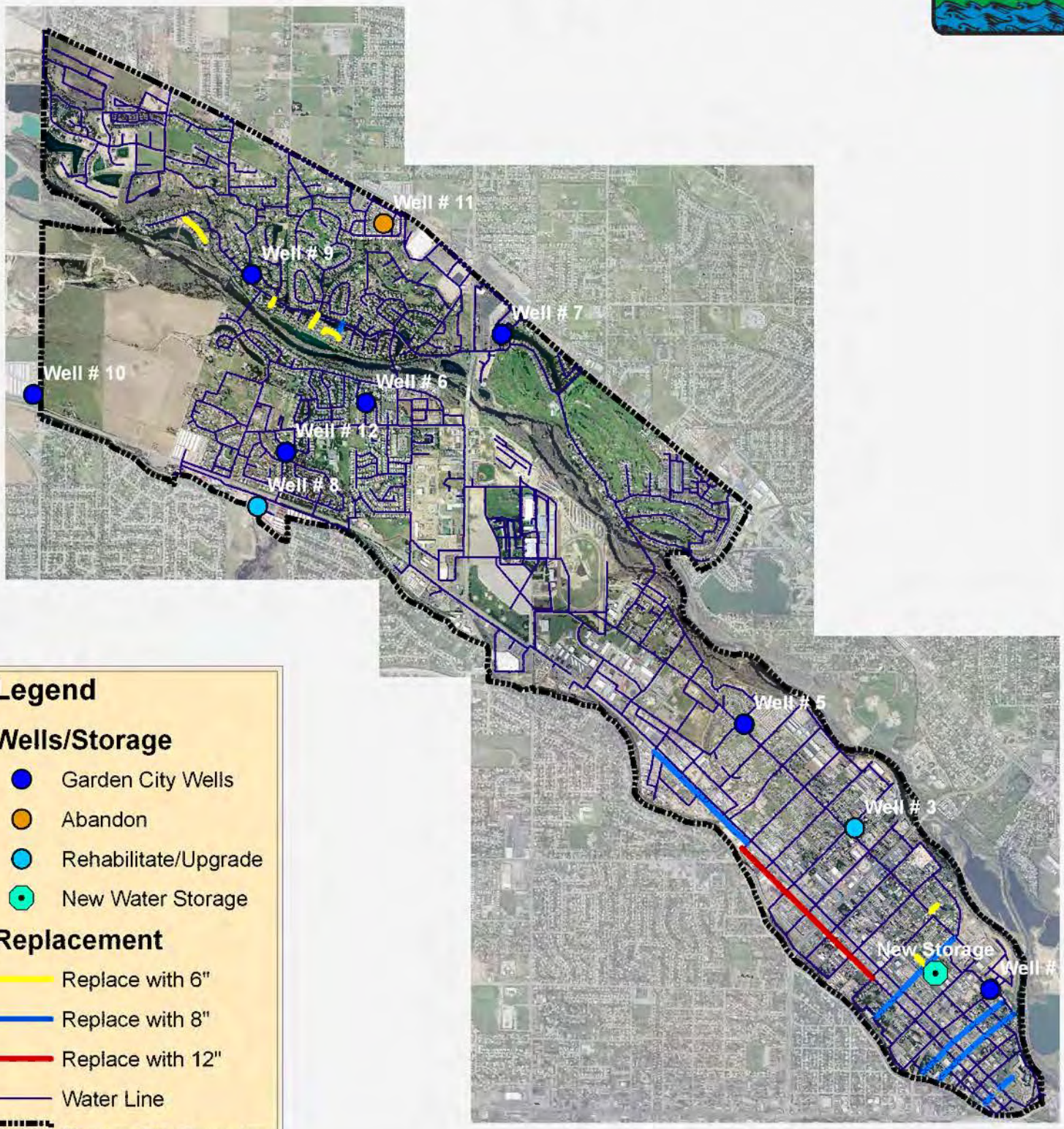
Project	Description	Project Type	Length of Pipe Replacement (feet)	Cost (2008 Dollars)
WD-2	Replacement of 6" water line that connects 33rd St. and 37th St. Northeast of Carr St.	O&M	1,450	$864,200
WSu-1	Rehabilitate and Upgrade Well #12	O&M	NA	$370,000
WSu-5	Install Standby Power Generators at Wells #4 and #9	O&M	NA	$386,000
	Total Water System Improvement Cost			**$1,620,200**

Table. OMI-Summary

Project	Description	Cost (2008 Dollars)
2009	Replacement of 4" water line on Stockton from 39th St. to 45th St. with 12" line; Develop formal monitoring plans to meet increased regulations stemming from the Groundwater Rule; Apply to IDWR to add multiple diversion points to each well; Correct discrepancy for Water Right 63-5330 associated with Well #5; Inquire to IDWR regarding the status of Water Right 63-11487 associated with Well #10; File a "Notice to Change Water Right Ownership" with IDWR for Water Rights 63-9144 and 63-8357 associated with Wells #11 and #12; and Perform system maintenance activities to meet requirements of IDEQ Sanitary Survey	$2,519,000
2010	Replacement of 4" water line on Stockton from 30th St. to 39th St. with 12" line; and Transfer as-built drawings, plans, and other records to digital format, develop and maintain database	$2,444,800
2011	Replacement of 4" water line on 30th St., 32nd St., 33rd St., and 37th St. southwest of Stockton with 8" line	$2,458,000
2012	Replacement of 4" water line on W Elaynea Ln., W Cody Ln., W Quinella St., in the cul de sac at the intersection of 48th St. and W Mystic Cove Way, N Pebble Falls Ln., N Pebble Cove Ln., N Lakefront Pl., N Lake Park Pl., N Lakes Edge Pl., and N Willowcrest Pl and Willowcrest Way with 6" line	$1,882,100
2013	Replacement of 4" water line on 37th St. Northeast of Chindon; and 6" water line on Adams from 37th St. to 43rd St. with 8" line	$3,280,980
2014	Replacement of 6" water line Adams from 43rd St. to 47th St. with 8" line; Rehabilitate and upgrade Well #6; and Abandon Well #7	$1,936,600
2015	Replacement of 6" water line on Clay St. and 6" water line on Carr St. with 8" line; Replacement of 8" water line on E 52nd St. with 10" line	$2,676,870
2016	Replacement of 6" water line on 40th St. and 41st St. Northeast of Adams with the line that connects these two streets; Reed St. and the line connecting to 37th St. approximately halfway between Adams and Clay St. with 8" line	$2,938,280
2017	Replacement of 6" water line on 40th St. Southwest of Stockton and the line connecting this to 41st St.; 39th St. Southwest of Stockton and the line connecting this to 38th St.; 38th St. line connecting with 37th St.; and 37th St line connecting with 35th St. with 8" line	$2,977,020
2018	Replacement of 6" water line 41st St. Southwest of Adams and 40th St. Southwest of Adams to Stockton	$2,693,920
2019	Replacement of 6" water line that connects 33rd St. and 37th St. Northeast of Carr St.; Rehabilitate and upgrade Well #12; Install standby power generators at Wells #4 and #9	$1,620,200
	Total Water System O&M Improvement Cost	**$27,428,800**



Garden City Water System Lines



Legend

Wells/Storage

- Garden City Wells
- Abandon
- Rehabilitate/Upgrade
- New Water Storage

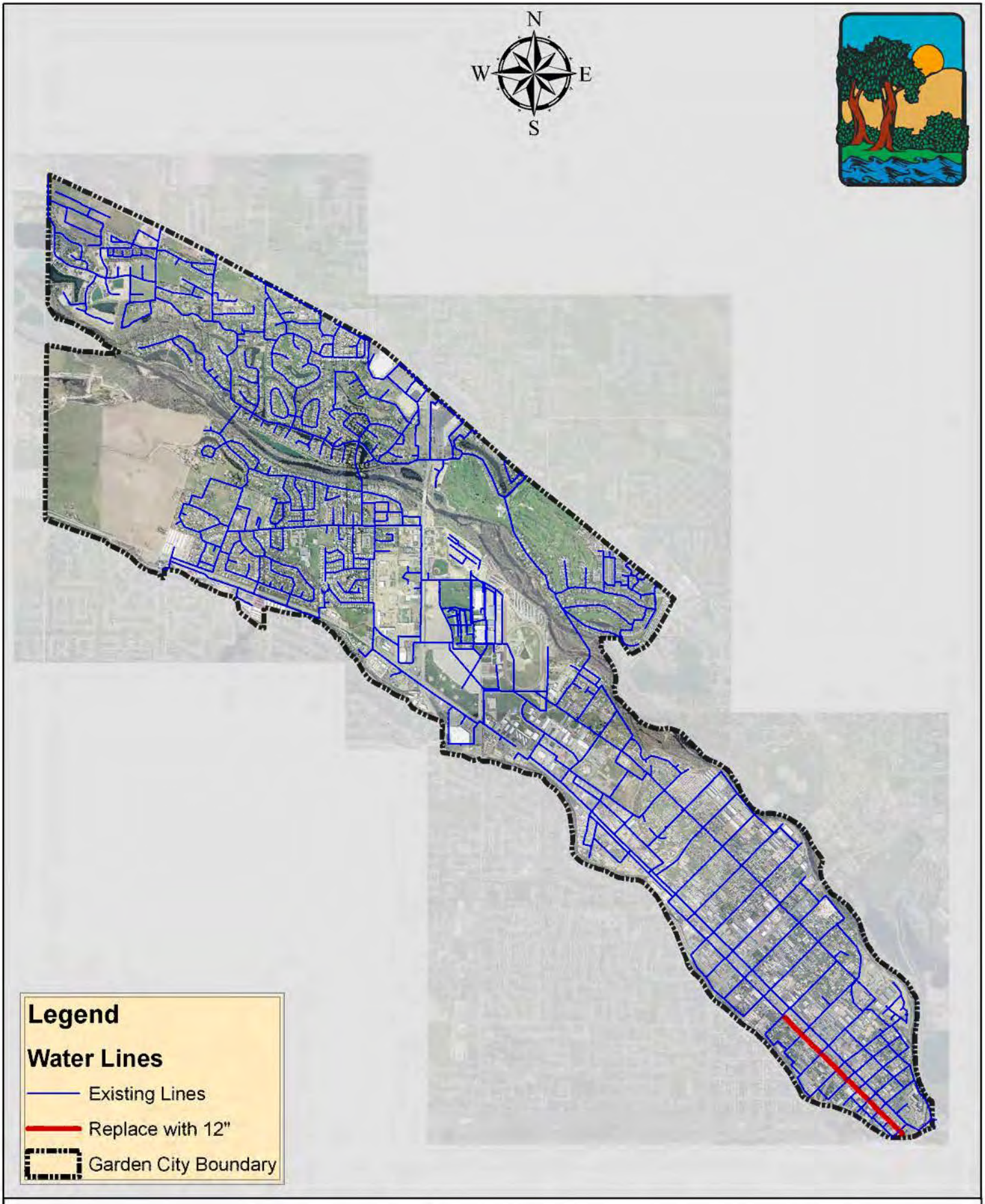
Replacement

- Replace with 6"
- Replace with 8"
- Replace with 12"
- Water Line
- Garden City Boundary

Water System Improvements 2009

FORSGREN Associates Inc.

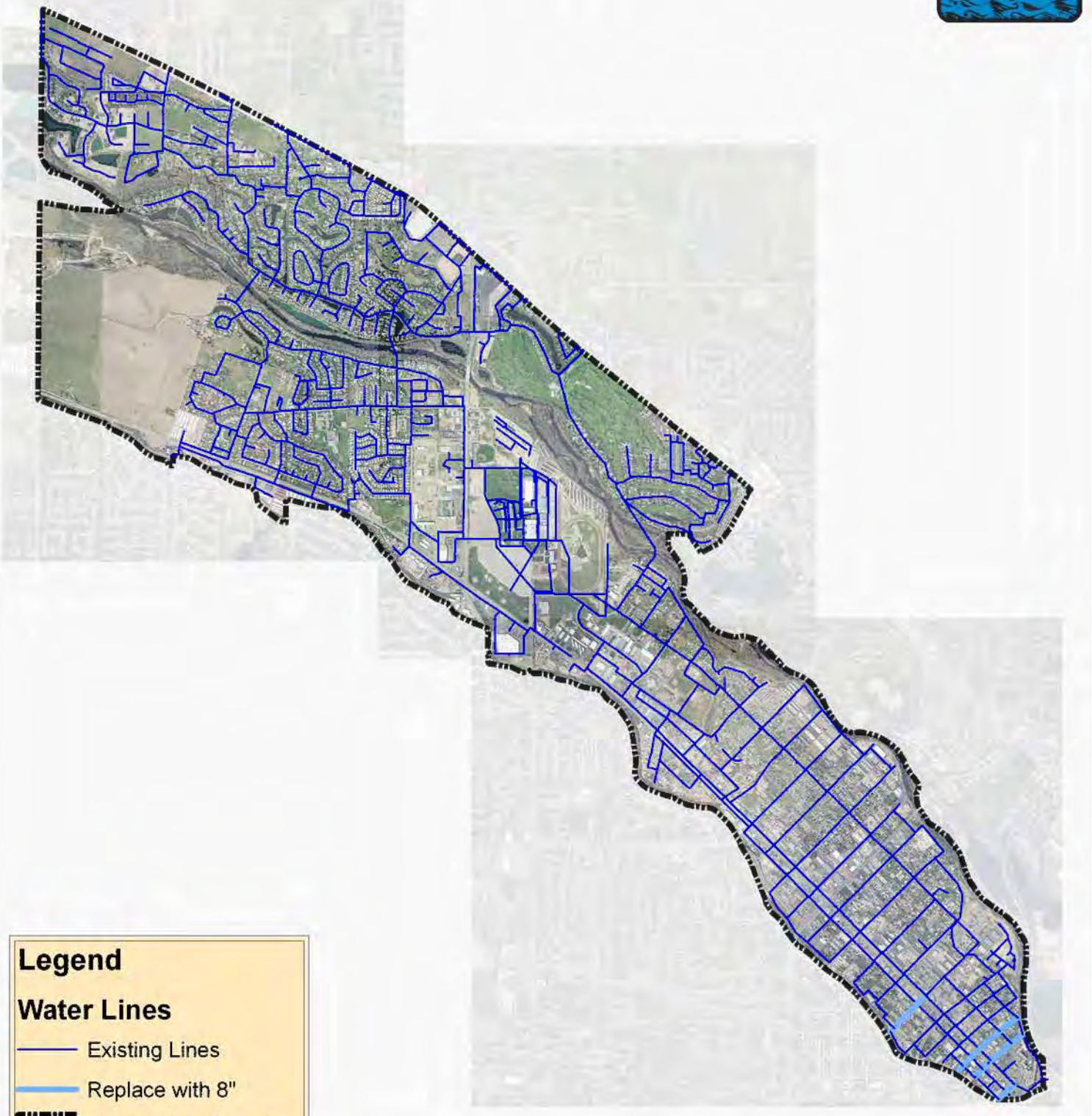
0 0.5 1 Miles



Water System Improvements 2010

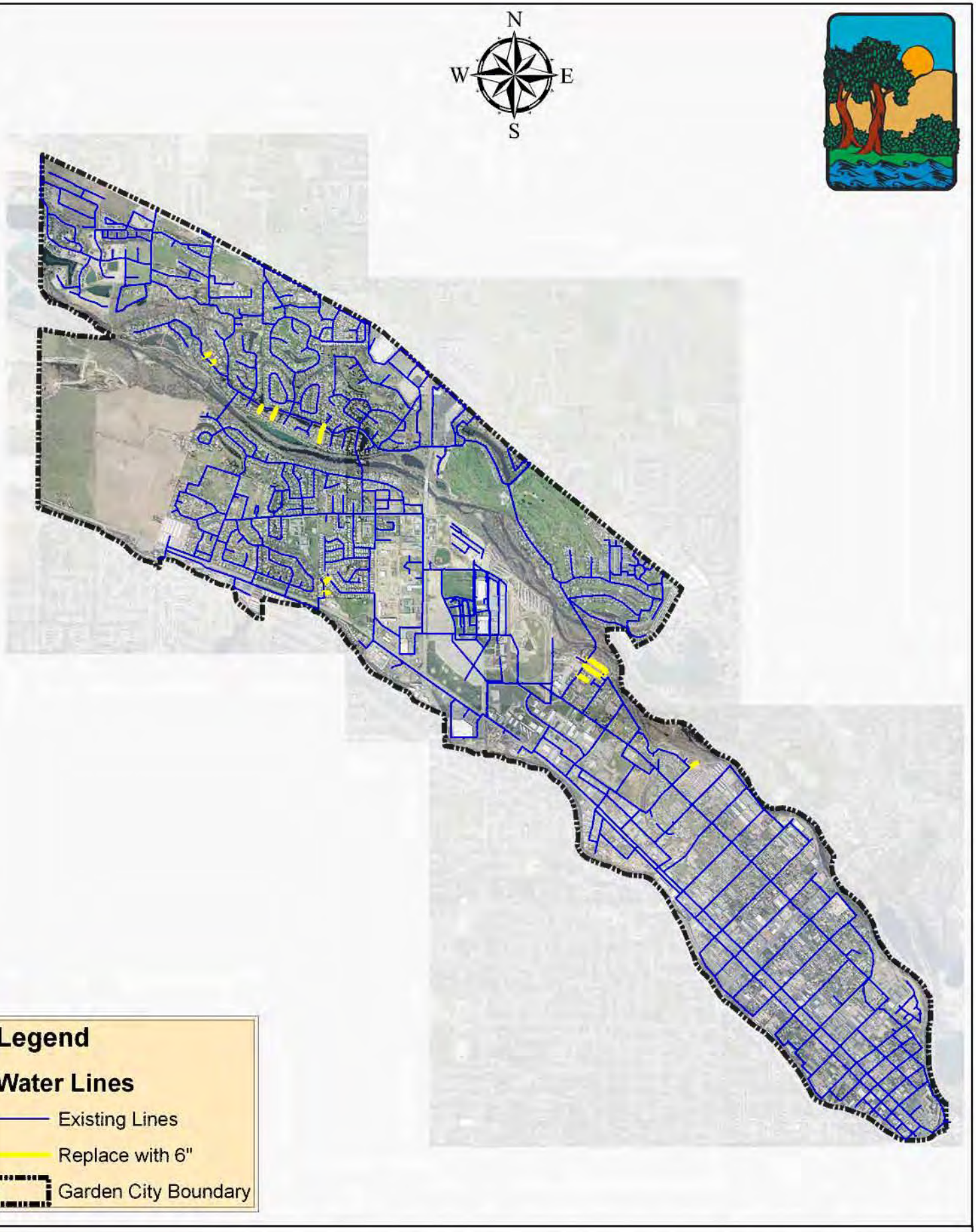
FORSGREN Associates Inc.

0 0.5 1 Miles



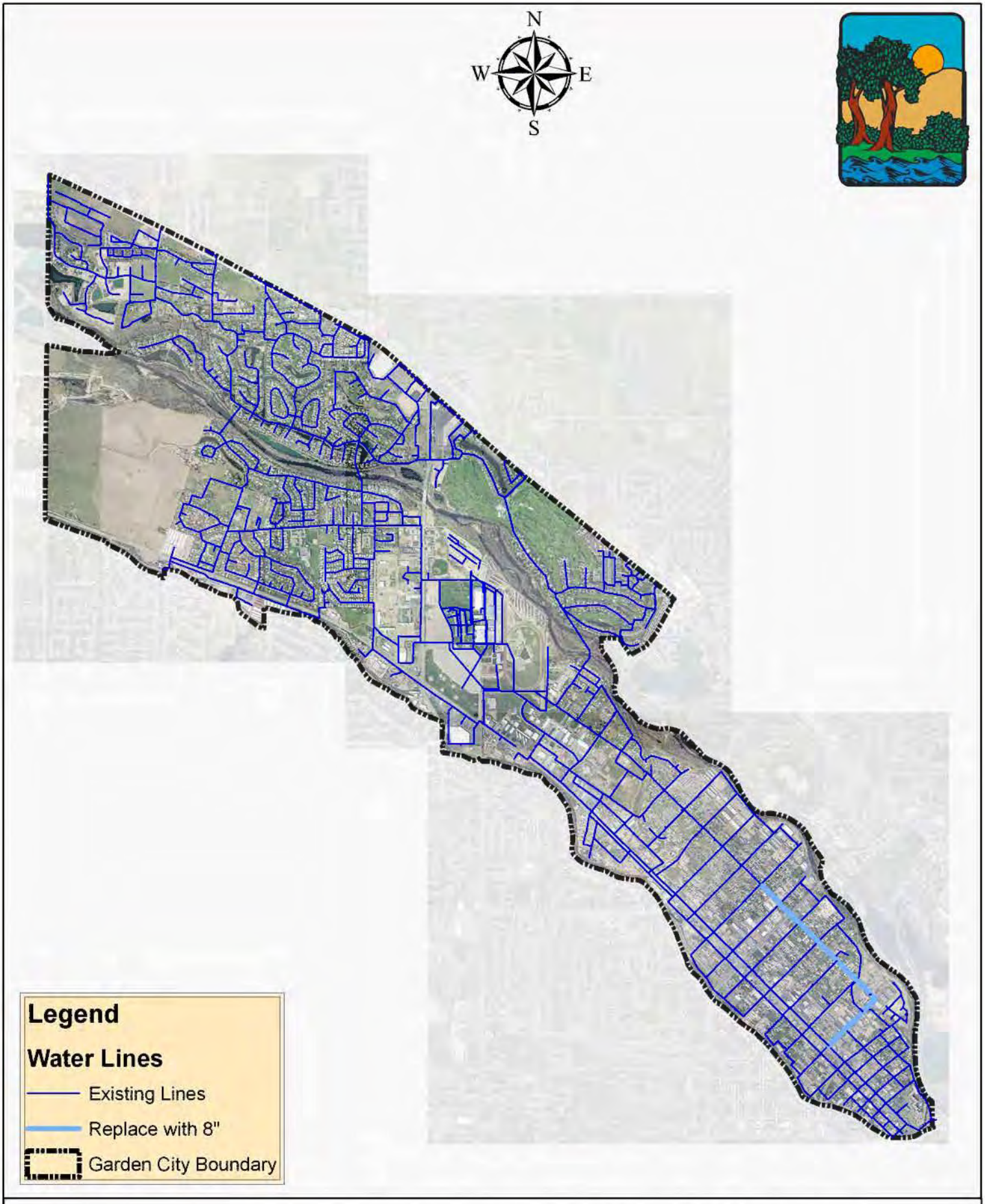
Water System Improvements 2011

FORSGREN Associates Inc.



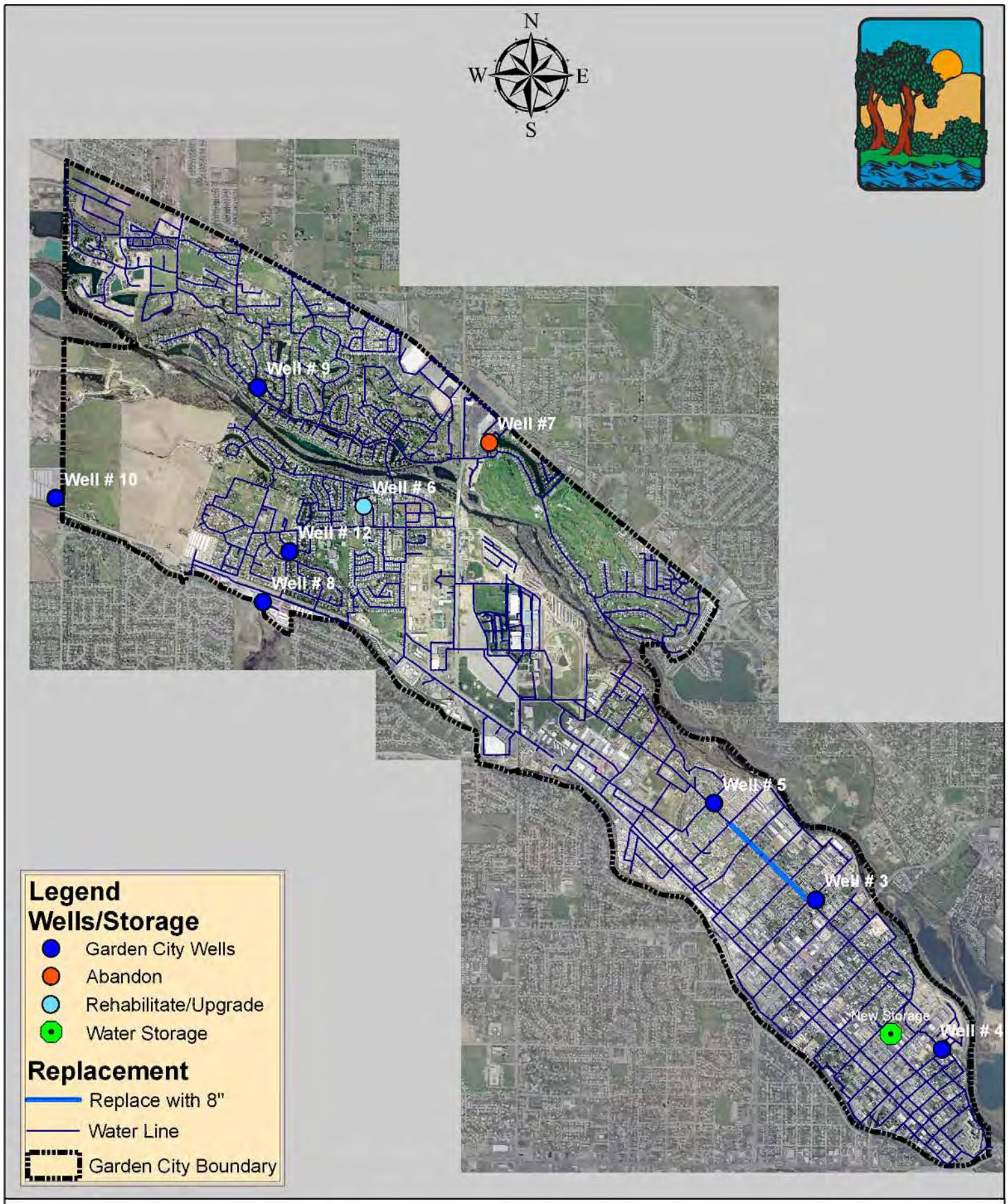
Water System Improvements 2012

FORSGREN Associates Inc.



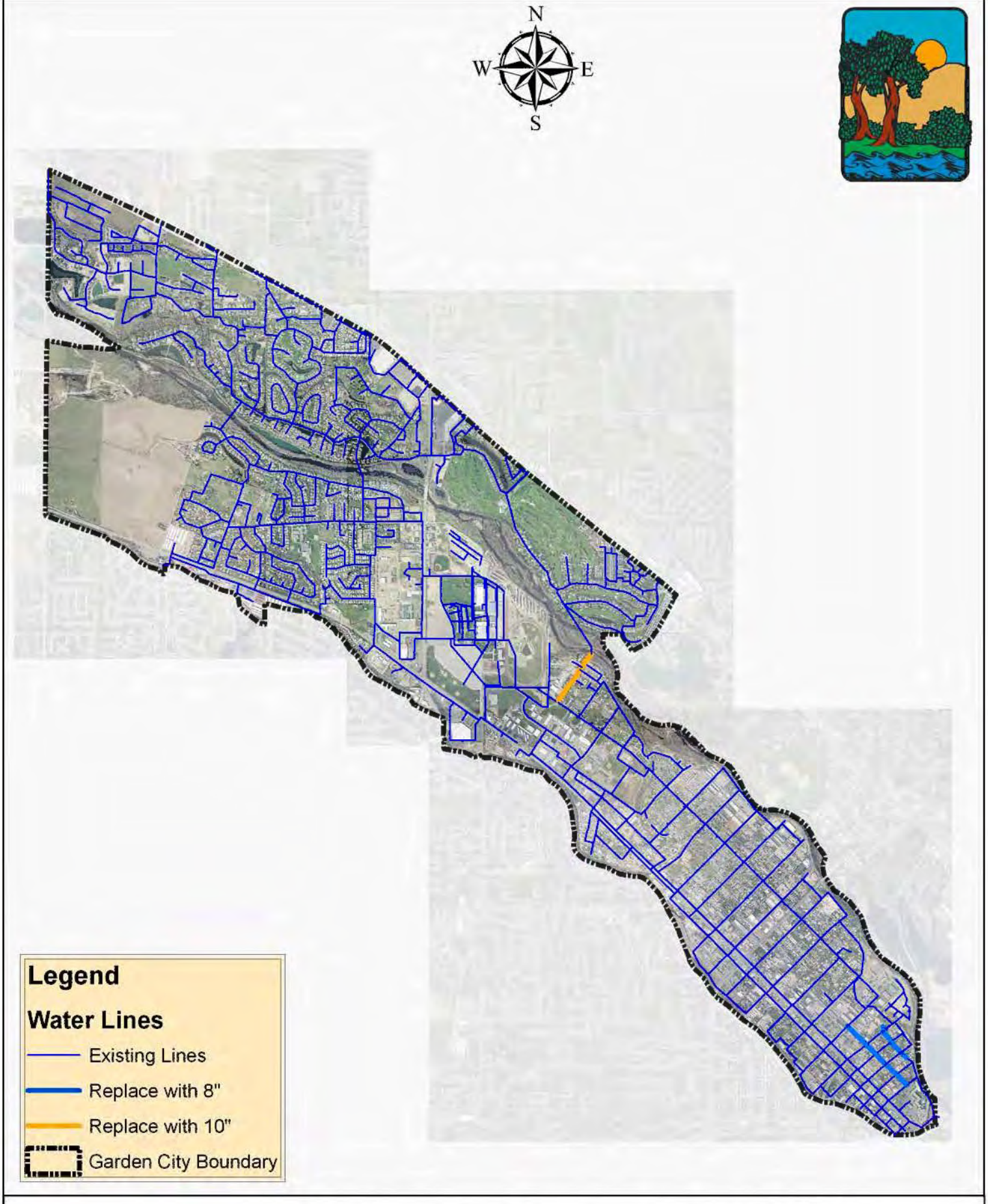
Water System Improvements 2013

FORSGREN Associates Inc.



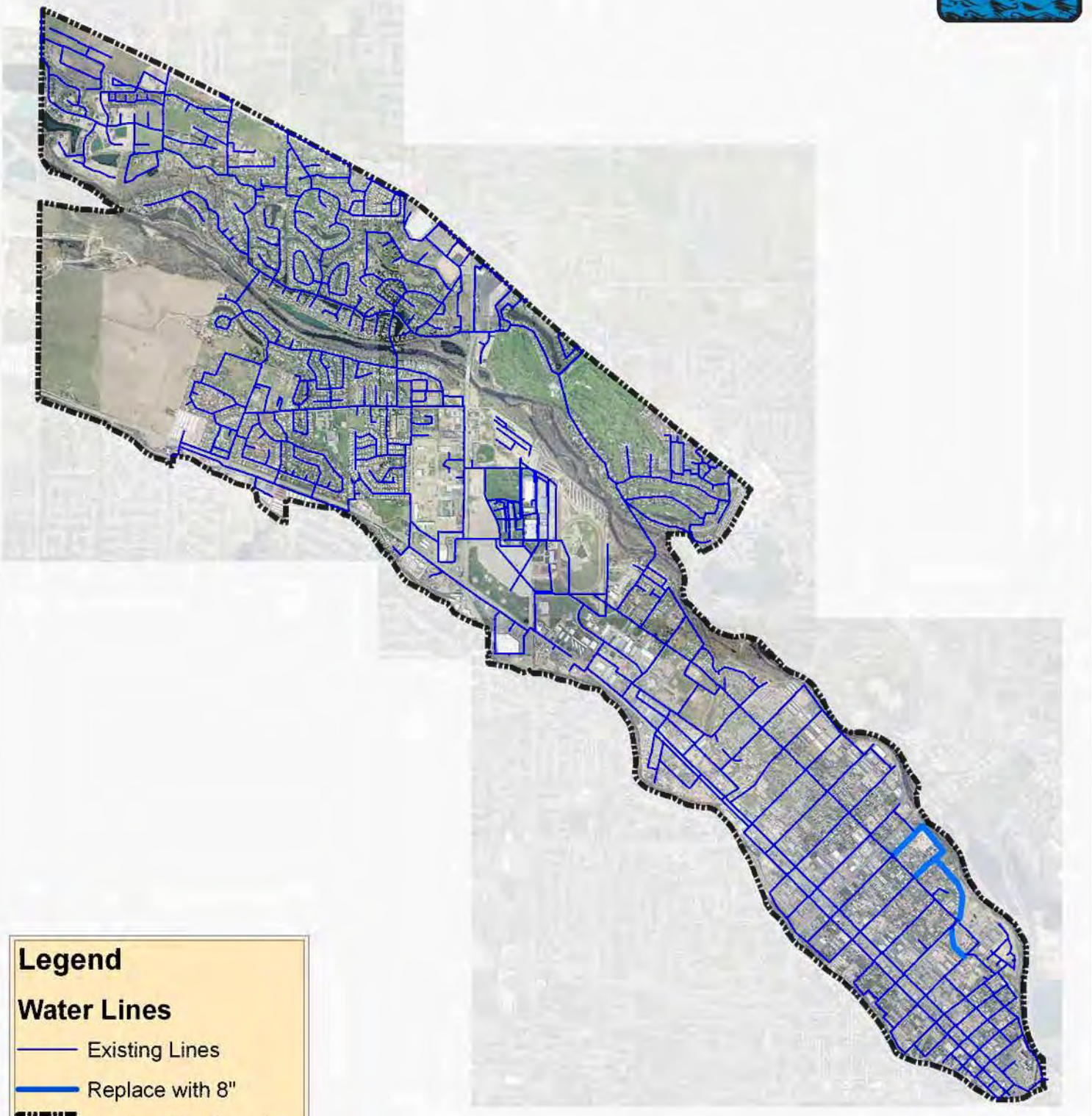
Water System Improvements 2014

FORSGREN Associates Inc.



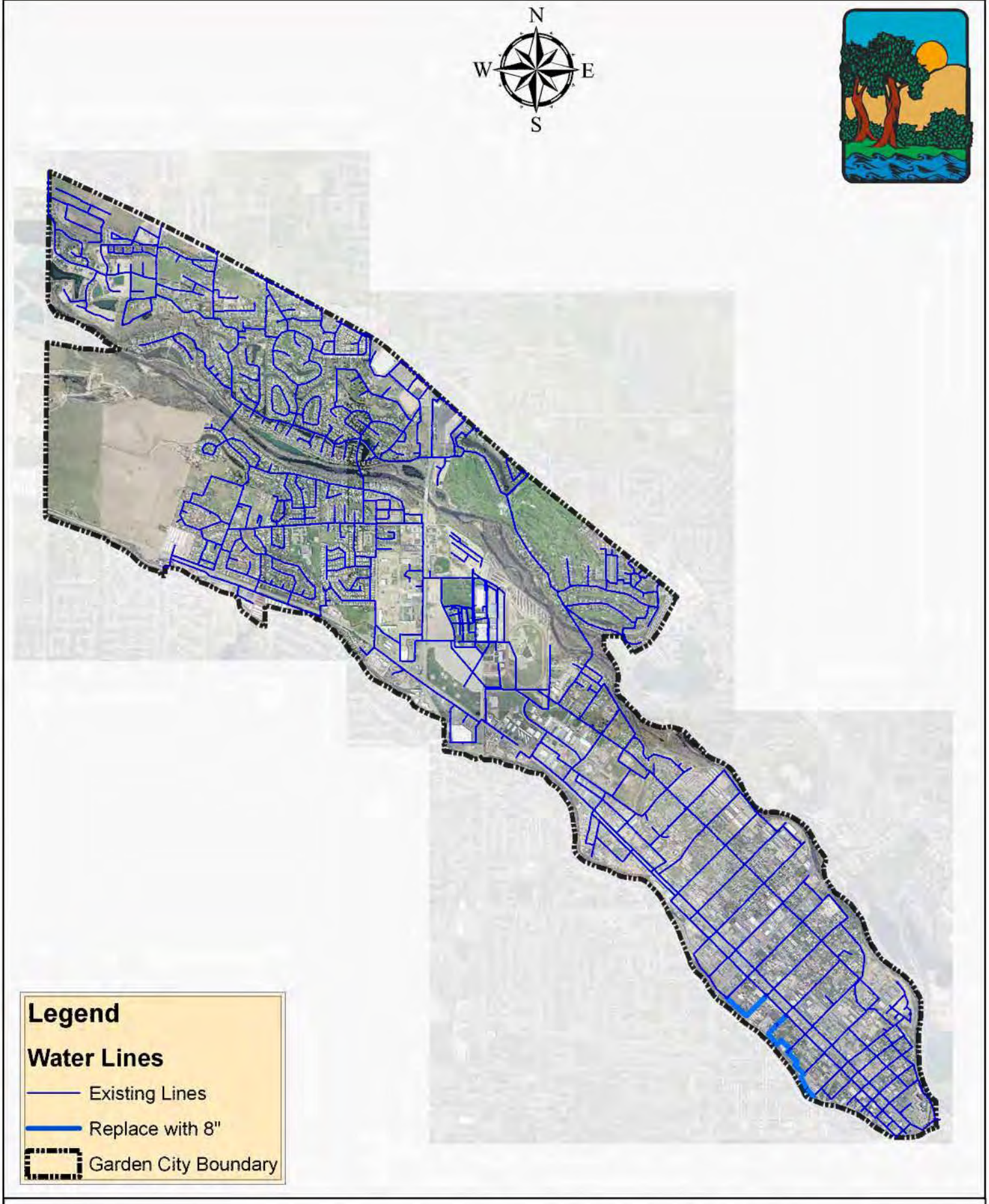
Water System Improvements 2015

FORSGREN Associates Inc.



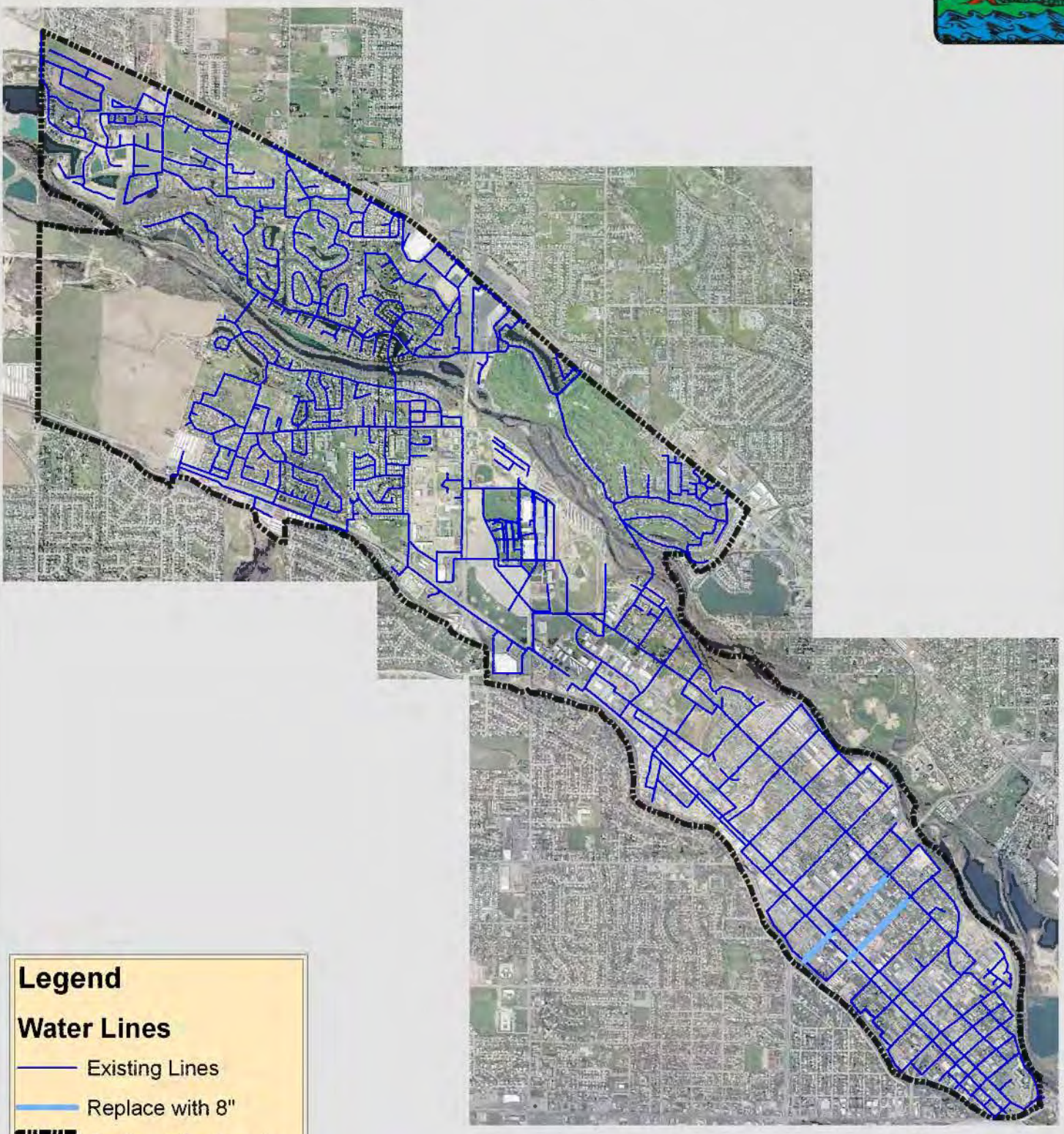
Water System Improvements 2016

FORSGREN Associates Inc.



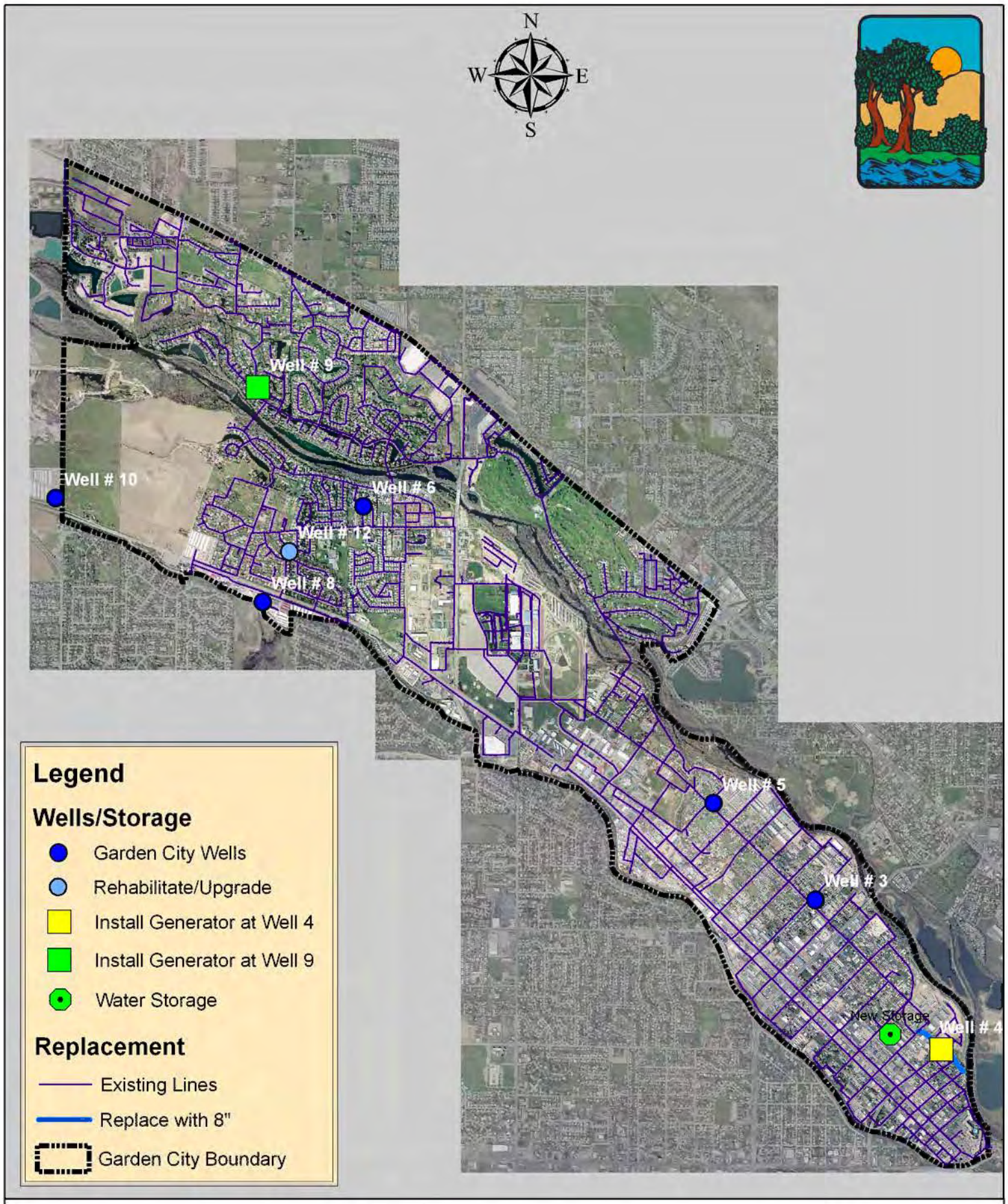
Water System Improvements 2017

FORSGREN Associates Inc.



Water System Improvements 2018

FORSGREN Associates Inc.



Water System Improvements 2019

FORSGREN Associates Inc.

APPENDIX Q
PUBLIC INPUT

Idaho Statesman

P.O. Box 40, Boise, Idaho 83707-0040

LEGAL ADVERTISING PROOF OF PUBLICATION

Account #	DT#	Identification	Amount:
035530	417021	LEGAL NOTICE NOTICE OF REGULAR MEETING	$49.16

Attention:	P.O. #	Run Dates
CHRISTIAN SAMPLES		JANUARY 9, 2009

CITY OF GARDEN CITY 6015 GLENWOOD ST. GARDEN CITY, ID 83714-1347	Number of Lines: 46	
	Affidavit: 1	Legal #:

LEGAL NOTICE
OF REGULAR MEETING AND PUBLIC HEARING BY THE CITY COUNCIL OF THE CITY OF GARDEN CITY TO CONSIDER THE ADOPTION OF A CAPITAL IMPROVEMENT PLAN FOR THE CITY OF GARDEN CITY

NOTICE IS HEREBY GIVEN that the City Council of the City of Garden City will hold, during its regular meeting, a public hearing in City Council Chambers, 6015 Glenwood Street, Garden City, Idaho, 83714 on Monday, January 26th, 2009, at 7:00 o'clock p.m., to consider the adoption of a Capital Improvement Plan for all water or sewer system improvements and/or additions for the City of Garden City.

Copies of the proposed Amended and Restated Plan are on file for public inspection and copying for the cost of duplication at the office of the City Clerk, City Hall, 6015 Glenwood Street, Garden City, Idaho 83714, between the hours of 8:00 o'clock a.m. and 4:00 o'clock p.m., Monday through Friday, exclusive of holidays.

The hearing will be held in a handicapped accessible facility. All information presented in the hearing shall also be available upon advance request in a form usable by persons with hearing or visual impairments, individuals with other disabilities may receive assistance by contacting the City 24 hours prior to the hearing.

At the time and place noted above, all persons interested in the above matters may appear and be heard. Written comments will also be accepted. Comments should be directed to the Garden City City Clerk.

Pam Thomason, City Clerk

Pub. Jan. 9, 2009

0000417021-01

JANICE HILDRETH, being duly sworn, deposes and says: That she is the Principal Clerk of *The Idaho Statesman,* a daily newspaper printed and published at Boise, Ada County, State of Idaho, and having a general circulation therein, and which said newspaper has been continuously and uninterruptedly published in said County during a period of twelve consecutive months prior to the first publication of the notice, a copy of which is attached hereto: that said notice was published in The Idaho Statesman, in conformity with Section 60-108, Idaho Code, as amended, for:

ONE

[ ] consecutive weekly [X] single

[ ] consecutive daily [ ] odd skip insertion(s)

beginning issue of: JANUARY 9, 2009

ending issue of: JANUARY 9, 2009

Janice Hildreth

STATE OF IDAHO)
.ss
COUNTY OF ADA)

On this 9 day of JANUARY n the year of 2009 before me, a Notary Public, personally appeared before me Janice Hildreth known or identified to me to be the person whose name subscribed to the within instrument, and being by me first duly sworn declared that the statements therein are true, and acknowledged to me that she executed the same.

Notary Public for Idaho
Residing at: Boise, Idaho
My Commission expires: 5/28/14

CITY OF GARDEN CITY
CITY COUNCIL MEETING MINUTES
January 26, 2009
7:00 P.M.

1. CALL TO ORDER

Mayor Evans called the meeting to order at 7:00 p.m.

2. ROLL CALL

Council Members Beaumont, Higgins and Souza were present. Council Member Moser was absent.

3. PLEDGE OF ALLEGIANCE

Mayor Evans

4. CHANGES TO AGENDA

A. Mayor Evans asked to move item 8B to item 9A, and move item 9A to item 9B.

5. CONSENT AGENDA

A. Approval of Council Meeting Minutes for 1/12/09 & Special Meetings of 1/16/09 & 1/21/09

Action: Council Member Beaumont made a motion to approve the Consent Agenda. Council Member Higgins seconded the motion.

All Council Members said Aye. **MOTION PASSED**

6. SPECIAL BUSINESS

A. Presentation by the audit firm Eide Bailly of the financial report and management letter for the year ended September 30, 2008.

Randy Dewey, manager of Garden City's audit, presented.

Action: Council Member Souza made a motion to receive the audit. Council Member Higgins seconded the motion. ROLL CALL VOTE.

Council Member Souza	YES	
Council Member Beaumont	YES	
Council Member Higgins	YES	**MOTION PASSED**

B. Presentation of the financial report for the period ending December 31, 2008

Jim Krueger presented.

7. ORDINANCES, RESOLUTIONS, CONTRACTS

A. Public Hearing continued – Ordinance 905-09 – Amending penalties in Title 8 of Garden City Code

Mayor Evans asked the Council to continue this item to February 23rd.

Action: Council Member Beaumont made a motion to continue the Public Hearing for Ordinance 905-09 to February 23rd. Council Member Souza seconded the motion. ROLL CALL VOTE.

Council Member Souza	YES	
Council Member Beaumont	YES	
Council Member Higgins	YES	**MOTION PASSED**

B. 2nd Reading – Ordinance 906-09 – Erosion and Sediment Control Amendments

Action: Council Member Higgins made a motion to have the City Clerk read Ordinance 906-09 by title only for the second reading. Council Member Beaumont seconded the motion. ROLL CALL VOTE.

Council Member Beaumont	YES	
Council Member Higgins	YES	
Council Member Souza	YES	**MOTION PASSED**

Pamela Thomason read Ordinance 906-09 by title only for the second reading.

C. 2nd Reading – Ordinance 907-09 – Storm Water Management & Discharge Control Amendments

Action: Council Member Higgins made a motion to have the City Clerk read Ordinance 907-09 by title only for the second reading. Council Member Souza seconded the motion. ROLL CALL VOTE.

Council Member Higgins	YES	
Council Member Souza	YES	
Council Member Beaumont	YES	**MOTION PASSED**

Pamela Thomason read Ordinance 907-09 by title only for the second reading.

8. UNFINISHED BUSINESS

A. Public Hearing – Master Plan – Capital Improvement Plan

Brent Crowthers and Kevin Harris, representing Forsgren and Associates, presented.

Mayor Evans opened the Public Hearing at 7:45 p.m.

There was no public comment.

Mayor Evans closed the Public Hearing at 7:46 p.m.

Action: Council Member Souza made a motion to approve the Capital Improvement Plan as presented. Council Member Higgins seconded the motion. ROLL CALL VOTE.

Council Member Souza	YES	
Council Member Beaumont	YES	
Council Member Higgins	YES	**MOTION PASSED**

9. NEW BUSINESS

A. Final Plat Village Oak SUB2008-00013 located at 208, 212 and 214 E. 36th St.

Jenah Thornborrow gave the staff report.

Jim Neill, applicant, 208 E. 36th St., presented.

Action: Council Member Higgins made a motion to approve final plat for SUB2008-00013 with conditions of approval from the Planning and Zoning Commission. Council Member Beaumont seconded the motion. Council Member Souza asked if the applicant was going to stub the street or have an easement to stub the street. Mayor Evans said he was going to recommend that according to Mr. Neill's testimony, he would prefer to leave the stub open to not exacerbate future engineering problems, but maintain the easement right of way. Mr. Neill acknowledged that was correct. Mayor Evans asked Jenah Thornborrow if there was any objection from the staff. Jenah said no. Mayor Evans said his interpretation of the motion would be that the stub would not be built, but just be provided for with an easement. Council Members Higgins and Beaumont agreed. ROLL CALL VOTE.

Council Member Souza	YES	
Council Member Beaumont	YES	
Council Member Higgins	YES	**MOTION PASSED**

B. Final Plat Subdivision SUB2008-00014 Canal Side, located at 315 E. 36th St. consisting of 2 commercial buildings & 6 residential townhouses

Jenah Thornborrow gave the staff report.

Jim Neill, applicant, 208 E. 36th St., presented.

Action: Council Member Higgins made a motion to approve the final plat for SUB2008-00014 with conditions of approval from the Planning and Zoning Commission. Council Member Beaumont seconded the motion. ROLL CALL VOTE.

Council Member Beaumont	YES	
Council Member Higgins	YES	
Council Member Souza	YES	**MOTION PASSED**

10. EXECUTIVE SESSION: Pursuant to Idaho Code 67-2345, for the purpose of discussing personnel issues, land acquisition and/or pending litigation

Action: Council Member Souza made a motion to go to into Executive Session pursuant to Idaho Code 67-2345, for the purpose of discussing personnel issues, land acquisition and/or pending litigation after which the meeting would adjourn. Council Member Higgins seconded the motion. ROLL CALL VOTE.

Council Member Higgins	YES	
Council Member Souza	YES	
Council Member Beaumont	YES	**MOTION PASSED**

11. ADJOURNMENT

Meeting adjourned at 8:15 p.m.

Approved: _____
Mayor John Evans

Attest: _____
Pamela Thomason, City Clerk

Kevin Harris

From: Chad Waters [CWaters@cdhd.idaho.gov]
Sent: Friday, January 30, 2009 2:12 PM
To: Kevin Harris
Cc: Mike Reno; Robert Howarth
Subject: Environmental Assessment for City of Garden City

Mr. Harris,

Thank you for sharing your information on the City of Garden City's facility planning study(FPS). Plans for the City's water supply, wastewater collection system and wastewater treatment should be directed to D.E.Q. We are interested in, and would be happy to review, any information that you may have for the City's Solid Waste study. However, the disk did not provide any data on Solid Waste as it pertains to the City of Garden City. Was there more information that was supposed to be sent or included? Again, thank you for the opportunity to look at the City's (FPS) and we would be interested in reviewing any information that you may have on their Solid Waste Plan.

Sincerely,

Chad Waters, R.E.H.S.
Senior Environmental Health Specialist
Central District Health Dept.
707 N. Armstrong Pl.
Boise, ID 83704-0825
(208)327-8517

The information contained in this email may be privileged, confidential or otherwise protected from disclosure. All persons are advised that they may face penalties under state and federal law for sharing this information with unauthorized individuals.
If you received this email in error, please reply to the sender that you have received this information in error. Also, please delete this email after replying to the sender.

Kevin Harris

From: Ennes.Susan@epamail.epa.gov
Sent: Friday, January 16, 2009 4:25 PM
To: Kevin Harris
Subject: Aquifer info

Attachments: ssa_all regional 7-08.pdf



ssa_all regional 7-08.pdf (535...

Hi Kevin,
Here is the regional map.
As you can see Boise is not close to the aquifer so no need for approval from my program.

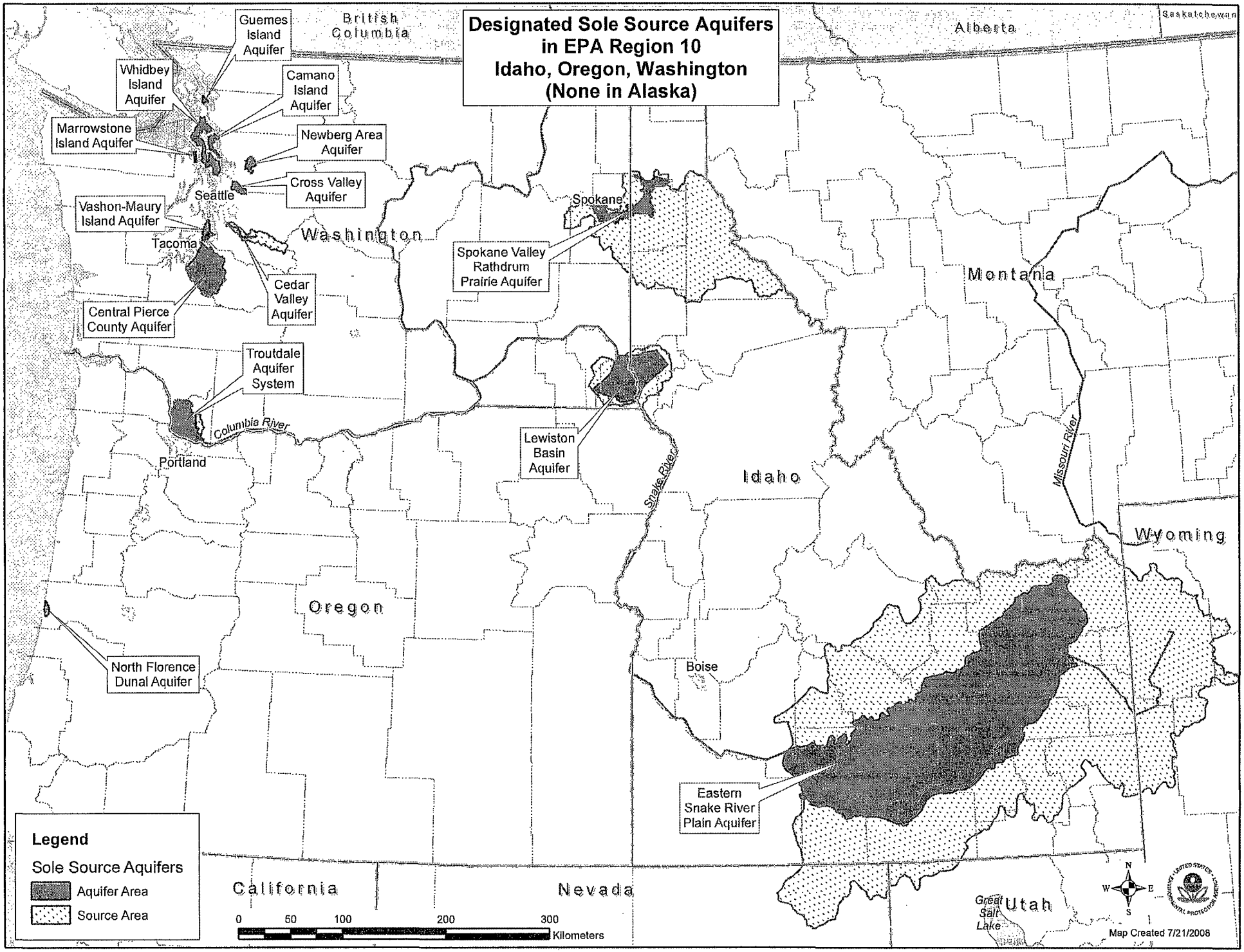
(See attached file: ssa_all regional 7-08.pdf)

For future reference here is the link to the R10 Sole Source Aquifer home page. We just put up really nice new GIS maps of all the aquifers.
You can find the above map there as well.

http://yosemite.epa.gov/r10/water.nsf/Sole+Source+Aquifers/SSA

Sue Ennes, Environmental Scientist
EPA Region 10
1200 Sixth Ave. Suite 900, OWW-136
Seattle, WA. 98101
SDWA Tribal & CWA Indian Set Aside Program Manager, Sole Source Aquifer Program Manager

206-553-6249
ENNES.SUSAN@EPA.GOV


Designated Sole Source Aquifers
in EPA Region 10
Idaho, Oregon, Washington
(None in Alaska)
Guemes Island Aquifer
Whidbey Island Aquifer
Camano Island Aquifer
Marrowstone Island Aquifer
Newberg Area Aquifer
Cross Valley Aquifer
Seattle
Vashon-Maury Island Aquifer
Tacoma
Central Pierce County Aquifer
Cedar Valley Aquifer
Troutdale Aquifer System
Columbia River
Portland
North Florence Dunal Aquifer
Spokane
Spokane Valley Rathdrum Prairie Aquifer
Lewiston Basin Aquifer
Snake River
Boise
Eastern Snake River Plain Aquifer
Great Salt Lake
British Columbia
Alberta
Saskatchewan
Washington
Oregon
California
Nevada
Idaho
Montana
Wyoming
Utah
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Aquifer Area
Source Area
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Kilometers
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Map Created 7/21/2008

Kevin Harris

From: Jesselyn_Hamilton@fws.gov
Sent: Wednesday, January 21, 2009 3:40 PM
To: Kevin Harris
Subject: Species List for Garden City Improvements

Attachments: Species List for Garden City Improvements.pdf



Species List for Garden City I...

Dear Mr. Harris:

This electronic message is in response to your request for a species list.
Attached to this message
is a letter to you and a list of plants and animals designated endangered, threatened, proposed or candidate under the Endangered Species Act that may occur in the areas specified in your request.
If you need further assistance or would like a paper copy of the letter mailed to you, please contact Jesselyn Hamilton at (208) 685-6950.
Thank you

(See attached file: Species List for Garden City Improvements.pdf)

Jesselyn Hamilton
Idaho Fish and Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709
Phone: (208) 685-6950
Fax: (208) 378-5262
Email: Jesselyn_Hamilton@fws.gov
www.fws.gov/idaho

United States Department of the Interior
IDAHO FISH AND WILDLIFE OFFICE
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
http://www.fws.gov/idaho

JAN 21 2009

Kevin Harris
Forsgren Associates, Inc.
350 North 2nd East
Rexburg, Idaho 83440

Subject: Garden City Water Supply System, Wastewater Collection System and Wastewater Treatment Improvements—Ada County, Idaho—Species List 970.0106 14420-2009-SL-0137

Dear Mr. Harris:

The Fish and Wildlife Service (Service) is writing in response to your request for information about the potential impacts to endangered, threatened, proposed, and/or candidate species, or designated critical habitat from the proposed improvements. The Service has not identified any issues that indicate that consultation under section 7 of the Endangered Species Act of 1973, as amended, is needed for this project. This finding is based on our understanding of the nature of the project, local conditions, and/or current information indicating that no listed species are present. If you determine otherwise or require further assistance, please contact Barbara Chaney at (208) 378-5259. Thank you for your interest in endangered species conservation.

Sincerely,

for Jeffery L. Foss, State Supervisor
Idaho Fish and Wildlife Office

TAKE PRIDE IN AMERICA

01-03-0028

STATE OF IDAHO

DEPARTMENT OF AGRICULTURE
DIVISION OF AGRICULTURAL RESOURCES

C.L. "BUTCH" OTTER
Governor
CELIA R. GOULD
Director

January 21, 2009

Kevin Harris, P.E.
Forsgren Associates, Inc.
350 North 2nd East
Rexburg, Idaho 83440

Dear Mr. Harris:

Thank you for inquiring with the Idaho State Department of Agriculture (ISDA) with regards to your work with the City of Garden City. The improvement work being proposed will be an important public works project for the citizens of the City of Garden City.

We have reviewed the environmental documents provided to us. Your documents are very professional and appear to be complete. At this time we do not have comments or questions related to these projects and the affects to prime/important farmland.

Thank you for contacting our agency. Feel free to contact us in the future (main number - 208-332-8500, my number - 208-332-8597).

Sincerely,

Gary Bahr

Gary Bahr

Water Quality Programs

PC: Water Program File

Kevin Harris

From: Ted Howard [thoward4shopai@yahoo.com]
Sent: Thursday, February 05, 2009 3:32 PM
To: Kevin Harris
Subject: EA for Garden City

Dear Mr Harris,

Thank you for your inquiry for comments from the Shoshone-Paiute Tribes regarding the proposal to improve the City's water supply system, wastewater collection system, and wastewater treatment.
In review of the CD that was provided, this proposal involves areas that has been previously disturbed. When ever there is ground disturbance it is a concern to our people. The Boise Valley has been the home of our people for countless generations, and it is impossible to know what might be discovered or where they may be discovered.
My only request is that when ever there is excavation or other ground disturbing activity, that you have a monitor on site to keep an eye out for artifacts of any kind. I know you have a protocol to stop work if something is discovered and you must contact the SHPO. I would appreviate it if you would contact our Cultural Office as well, and please don't let anyone remove anything from the site until we've had a chance investigate what you've discovered. We will more than likely offer some prayers before we proceed.

Sincerely,

Ted Howard

Cultural Resources Director

Shoshone – Paiute Tribes

Box 219

Owyhee, NV. 89832

Ph. (208) 759-3100 ext. 243

Cell (208) 871-7064

Fax (208) 759-3202

01-07-0038

IDAHO STATE HISTORICAL SOCIETY

"The History and Preservation People"

Our mission: to educate through the identification, preservation, and interpretation of Idaho's cultural heritage.

www.idahohistory.net

C.L. "Butch" Otter
Governor of Idaho

Janet L. Gallimore
Executive Director

Administration
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2682
Fax: (208) 334-2774

Archaeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3847
Fax: (208) 334-2775

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

Historic Preservation Office
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Historic Sites Office
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225

Public Archives and Research Library
2205 Old Penitentiary Road
Boise, Idaho 83712-8250

Public Archives
Office: (208) 334-2620
Fax: (208) 334-2626

Research Library
Office: (208) 334-3356
Fax: (208) 334-3198

Oral History
Office: (208) 334-3863
Fax: (208) 334-3198

January 13, 2009

Kevin Harris
Forsgren Associates Inc.
350 North 2nd East
Rexburg, Idaho 83440

RE: Water System Improvements, City of Garden City, Idaho

Dear Mr. Harris:

Thank you for requesting our views on the Water System Improvements planned for the City of Garden City, Idaho. We understand the proposed water system improvements are still in the preliminary planning stages.

Our office will not need to review the portions of the proposed project which do not include ground disturbing activities, such as general maintenance, testing, flushing, etc. We typically do not recommend an archaeological survey for projects involving the replacement of existing lines and manholes, provided the work will occur within existing line corridors, immediately adjacent to existing line corridors or within existing roadways. We would also not likely recommend a survey for rehabilitation to existing facilities or for work within the boundaries of any existing water facility.

When the project moves forward, and specific project areas are determined, we will need additional information for any proposed areas of new construction which will occur outside of the areas listed above and/or within previously undisturbed ground. This will include areas of new lines, new water wells, new water stage tanks, or a new wastewater treatment plant. We will need:

1. Description of project and construction activities that will occur.
2. Map showing the location of the project area.
3. Photos of the project area.
4. Description of the current condition of the ground (i.e. previous farmland, adjacent to gravel road, etc.).

The Idaho State Historical Society is an Equal Opportunity Employer.

Please send the additional information in hard copy format to our office via regular US mail. Once we receive this information, we will be able to continue with our review of this project and provide our office's recommendations. Please note that a *Categorical Exclusion* does not apply to Section 106 of the National Historic Preservation Act. Compliance under NEPA and Section 106 of the NHPA are separate reviews and subject to different federal regulations. Please also note that our office is afforded 30 days, once all the necessary information is received, to review projects under Section 106 and provide our recommendations. If you have any questions, please feel free to contact me at 208-334-3847, ext. 109.

Sincerely,

Susan Pengilly
Deputy SHPO and
Compliance Coordinator