City of Spokane

Water System Plan

Exhibits and Appendices

May 2014

Revised March 2016

Contents

Contents

Exhibits and Appendices (Cont.)

SEPA Determination/

Checklist

SPOKANE ENVIRONMENTAL ORDINANCE

(WAC 197-11-970) Section 11.10.230(3) File No. COS WSP
Determination of Non-Significance (DNS)

DETERMINATION OF NON-SIGNIFICANCE

Description of Proposal: City of Spokane Water System Plan

Proponent: City of Spokane, Water Department

Location of proposal, including street address, if any: City of Spokane Water Service Area as defined by the Spokane County Coordinated Water Systems plan

Lead agency: City of Spokane, Integrated Capital Management

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed Environmental Checklist and other information on file with the lead agency. This information is available to the public on request.

[ ] There is no comment period for this DNS.

[ ] This DNS is issued after using the optional DNS process in Section 197-11-355 WAC. There is no further comment period on the DNS.

[X] This DNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by February 4, 2015.

Responsible official: P. Mike Taylor

Position/Title: Director, Integrated Capital Management Phone: (509) 625-6307

Address: 2nd Floor, City Hall, 808 W. Spokane Falls Blvd, Spokane, WA 99201-3334

Date: January 21, 2014 Signature: _____

You may appeal this determination to P. Mike Taylor, Director, Integrated Capital Management

at (location): 2nd Floor, City Hall, Spokane, WA 99201-3334

no later than (date): February 4, 2015

by (method): written

You should be prepared to make specific factual objections.

Contact John Halsey at (509) 625-6300 to read or ask about the procedures for SEPA appeals.

ENVIRONMENTAL

CHECKLIST

SPOKANE

ENVIRONMENTAL

ORDINANCE

SECTION 17E.050.310

SPOKANE ENVIRONMENTAL ORDINANCE

(WAC 197-11-960) Section 17E.050.310

Environmental Checklist

File No. COS WSP

Purpose of Checklist:

The State Environmental Policy Act (SEPA) chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An Environmental Impact Statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for Applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply". IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (Part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal", "proposer", and "affected geographic area", respectively.

SPOKANE ENVIRONMENTAL ORDINANCE

(WAC 197-11-960) Section 17E.050.310

Evaluation For
Agency Use Only

TO BE COMPLETED BY APPLICANT

A. BACKGROUND

1. Name of proposed project, if applicable:

   City of Spokane Water System Plan

2. Name of Applicant:

   City of Spokane, Water Department

3. Address and phone number of applicant and contact person:

   Dan Kegley, City of Spokane Water Department, 914 E. North Foothills Dr., Spokane WA 99207-2794

4. Date checklist prepared:

   December 15, 2014

5. Agency requesting checklist:

   City of Spokane, Water Department

6. Proposed timing or schedule (including phasing, if applicable):

   Water System Plan submittal to Washington State Department of Health for final review and acceptance, January 2015.

   Water System Plan acceptance by City of Spokane City Council by Resolution, January 2015.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

   Yes;

   1.) Water use efficiency goals and measures as approved by resolution of the City of Spokane City Council on April 21, 2014 and included by reference in Chapter 4 of the Water System Plan.

   2.) Ongoing wellhead protection program included by reference in Chapter 5 of the Water System Plan.

   3.) Capital improvement projects as approved by the City of Spokane City Council and included by reference in Chapter 8 of the Water System Plan.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Delineation of Well Head Protection Areas (WHPA) in 1, 5 and 10 year capture zones.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No.

10. List any government approvals or permits that will be needed for your proposal, if known.

Water System Plan approval by the Washington State Department of Health.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

The City of Spokane, being a Group A water system, must submit a Water System Plan (WSP) for review and approval to the Washington State Department of Health. In accordance with WAC 246-290-100, the WSP is intended to provide water purveyors a process to:

1.) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with relevant local, state, and federal plans and regulations;

2.) Demonstrate how the system will address present and future needs in a manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans

12. Location of the proposal. Give sufficient information to a person to understand the precise location of your proposed project, including a street address, if any, and section, township and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are

not required to duplicate maps or detailed plans submitted with any permit application related to this checklist.

City of Spokane Water Service Area as defined by the Spokane County Coordinated Water Systems plan.

13. Does the proposed action lie within the Aquifer Sensitive Area (ASA)? The General Sewer Service Area? The Priority Sewer Service Area? The City of Spokane? (See: Spokane County's ASA Overlay Zone Atlas for boundaries).

ASA, General Sewer Service Area, Priority Sewer Service Area, City of Spokane,

14. The following questions supplement Part A.

a. Critical Aquifer Recharge Area (CARA) / Aquifer Sensitive Area (ASA)

(1) Describe any systems, other than those designed for the disposal of sanitary waste, installed for the purpose of discharging fluids below the ground surface (includes systems such as those for the disposal of stormwater or drainage from floor drains). Describe the type of system, the amount of material to be disposed of through the system and the types of material likely to be disposed of (including materials which may enter the system inadvertently through spills or as a result of firefighting activities).

None

(2) Will any chemicals (especially organic solvents or petroleum fuels) be stored in aboveground or underground storage tanks? If so, what types and quantities of material will be stored?

No

(3) What protective measures will be taken to insure that leaks or spills of any chemicals stored or used on site will not be allowed to percolate to groundwater? This includes measures to keep chemicals out of disposal systems.

N/A

(4) Will any chemicals be stored, handled or used on the site in a location where a spill or leak will drain to surface or groundwater or to a stormwater disposal system discharging to surface or groundwater?

No

b. Stormwater

(1) What are the depths on the site to groundwater and to bedrock (if known)?

N/A

(2) Will stormwater be discharged into the ground? If so, describe any potential impacts.

No

B. ENVIRONMENTAL ELEMENTS

1. EARTH

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous

other: *N/A*

b. What is the steepest slope on the site (approximate percent slope)?
N/A

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.
N/A

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.
N/A

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.
N/A

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
N/A

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?
N/A

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
N/A

2. AIR

a. What type of emissions to the air would result from the proposal (i.e., dust, automobile, odors industrial, wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

None, N/A

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None, N/A

c. proposed measures to reduce or control emissions or other impacts to air, if any:

N/A

3. WATER

a. Surface:

(1) Is there any surface water body on or in the immediate vicinity of the site including year-round and seasonal streams, saltwater, lake, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Spokane River

(2) Will the project require any work over, in, or

adjacent to (200 feet) the described waters? If yes, please describe and attach available plans.

No, N/A

(3) Estimate the amount of fill and dredge material that would be placed in or removed from the surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None

(4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

(5) Does the proposal lie within a 100-year flood plain? If so, note location on the site plan.

N/A

(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground:

(1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No direct ground water withdrawals will result from the non project action. All ground water withdrawals discussed or referenced in the WSP will be within existing water rights held by the City of Spokane.

(2) Describe waste material that will be

discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable) or the number of animals or humans the system(s) are expected to serve.

N/A

c. Water Runoff (including storm water):

(1) Describe the source of runoff (including storm water) and method of collection and disposal if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

N/A

(2) Could waste materials enter ground or surface waters? If so, generally describe.

N/A

(3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

N/A

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any (if the proposed action lies within the Aquifer Sensitive Area be especially clear on explanations relating to facilities concerning Sections 3b(4), 3b(5), and 3c(2) of this checklist).

N/A

4. PLANTS

a. Check or circle type of vegetation found on the site:

N/A

_____ deciduous tree: alder, maple, aspen,

other.
_____ evergreen tree: fir, cedar, pine, other.
_____ shrubs.
_____ grass.
_____ pasture.
_____ crop or grain.
_____ wet soil plants, cattail, buttercup, bulrush, skunk cabbage, other.
_____ water plants: water lily, eelgrass, milfoil, other.
_____ other types of vegetation.

b. What kind and amount of vegetation will be removed or altered?
N/A

c. List threatened or endangered species known to be on or near the site.

N/A

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

N/A

e. List all noxious weeds and invasive species know to be on or near the site.

N/A

5. ANIMALS

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

N/A

birds: hawk, heron, eagle, songbirds
other:
mammals: deer, bear, elk, beaver
other: *domestic pets*
fish: bass, salmon, trout, herring, shellfish
other:
other:

b. List any threatened or endangered species known to be on or near the site.

N/A

c. Is the site part of a migration route? If so, explain.

Yes. Within 20 miles of bird sanctuary.

d. Proposed measures to preserve or enhance wildlife, if any:

N/A

e. List any invasive animal species known to be on or near the site.

N/A

6. ENERGY AND NATURAL RESOURCES

a. What kinds of energy (electric, natural gas, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

N/A.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

N/A.

7. ENVIRONMENTAL HEALTH

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

No.

(1) Describe any known or possible

contamination at the site from present or past uses.

None Known

(3) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located with the project area and in the vicinity.

N/A

(4) Describe any toxic or hazardous chemicals that might be stored, used or produced during the project's development or construction or at any time during the operating life of the project.

None, N/A

(5) Describe special emergency services that might be required.

None

(2) Proposed measures to reduce or control environmental health hazards, if any:

N/A

b. Noise:

(1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other?

None.

(2) What type and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other? Indicate what hours noise would come from the site.

N/A

(3) Proposed measure to reduce or control noise impacts, if any:

N/A

8. LAND AND SHORELINE USE

a. What is the current use of the site and adjacent properties?

N/A

b. Has the site been used as a working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

N/A

(1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling and harvesting? If so, how?

N/A

c. Describe any structures on the site.

N/A

d. Will any structures be demolished? If so, which?

N/A

e. What is the current zoning classification of the site?

Center and Corridor type 1 (CC1), Center and Corridor type 1CC2, Mixed Use Transition (CC4), community business, Downtown Core, Downtown University, Downtown General, Downtown South, General Commercial, Heavy Industrial, Neighborhood Retail, Office, Office Retail, Residential Agricultural, Residential High Density, Residential Multifamily, Residential Single-Family, Residential Two-Family.

f. What is the current comprehensive plan designation of the site?

Conservation Open Space, Potential Open Space, Open Space, Agriculture, Residential 4-10, Residential 10-20, Residential 15-30, Residential 15+, Office, CC Core, CC Transition, Neighborhood Retail, Mini Center, General Downtown, Light Industrial, Heavy Industrial, Institutional.

g. If applicable, what is the current shoreline master program designation of the Site?

N/A.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

Portion of the City of Spokane Water Service Area is contained within the "Aquifer Sensitive Area" as outlined by the Spokane County Engineer's "208" Water Quality Management Program.

i. Approximately how many people would reside or work in the completed project?

N/A.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

N/A.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

None.

9. HOUSING

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
None.

c. Proposed measures to reduce or control housing impacts, if any:

N/A.

10. AESTHETICS

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

N/A.

b. What views in the immediate vicinity would be altered or obstructed?

None.

c. Proposed measures to reduce or control aesthetic impacts, if any:

None.

11. LIGHT AND GLARE

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

None.

12. RECREATION

a. What designated and informal recreational opportunities are in the immediate vicinity?

City Parks, Spokane River

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

N/A.

13. HISTORIC AND CULTURAL PRESERVATION

a. Are there any places or objects listed on, or proposed for national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

No.

b. Are there any landmarks, features or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

No

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the DAHP, archaeological surveys, historic maps, etc.

N/A

d. Proposed measures to avoid, minimize or compensate for loss, changes to and disturbance to resources. Please include plans for the above and any permits that may be required.

N/A

14. TRANSPORTATION

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

N/A

b. Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

N/A.

c. How many parking spaces would the completed project have? How many would the project eliminate?

N/A.

d. Will the proposal require any new roads or streets, or improvements to existing road and/or streets not including driveways? If so, generally describe (indicate whether public or private).

N/A.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak would occur.

N/A

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No

h. Proposed measures to reduce or control

transportation impacts, if any:

None.

15. PUBLIC SERVICES

a. Would the project result in an increased need for public services (for example: Fire protection, police protection, health care, schools, other)? If so, generally describe.

No.

b. Proposed measures to reduce or control direct impacts on public services, if any:

None.

16. UTILITIES

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system

N/A

other:

b. Describe the utilities that are proposed for the project, the utility providing the service and the general construction activities on the site or in the immediate vicinity which might be needed.

N/A

D. supplemental sheet for nonproject actions

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Not likely, the non-project action is for the City of Spokane Water System Plan (WSP). The WSP document is a means to demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with relevant local, state, and federal plans and regulations as well as demonstrate how the system will address present and future needs in a manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans. The WSP does not generate project actions and only reports proposed activities in the City's Capital Improvement Plan, wellhead protection activities and water use efficiency activities.

Proposed measures to avoid or reduce such increases are:

The Water System Plan includes reporting on wellhead protection, water use efficiency activities and distribution system loss control measures. Although the Water System Plan does not implement these activities and measures and only report them it demonstrates the City's commitment to their implementation and the protection of resources. Any Project activities related to the Capital Improvement Plan reported in the WSP will require its own project SEPA action and will be subject to its own environmental review.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Not likely, as previously stated, the non-project action for the City of Spokane Water System Plan (WSP) is a reporting document to demonstrate the operational and technical capabilities of the water system. The Water System Plan includes reporting on the City's Capital Improvement Plan which includes project activities.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Any Project activities related to the Capital Improvement Plan reported in the Water System Plan will require its own project SEPA action and will be subject to its own environmental review for its potential affect and conservation efforts to plants, animal, fish, or marine life.

3. How would the proposal be likely to deplete energy or natural resources?

Not likely, as previously stated, the non-project action for the City of Spokane Water System Plan (WSP) is a reporting document to demonstrate the operational and technical capabilities of the water system. The Water System Plan reports on the withdrawal of groundwater from the Spokane Rathdrum Prairie Aquifer for drinking water purposes. The groundwater withdrawals are from existing perfected well sites and within existing water rights held by the City.

Proposed measures to protect or conserve energy and natural resources are:

Future upgrades of pumps motors and equipment in well and booster stations reported in the Capital Improvement Plan chapter on the Water System Plan with more efficient equipment as service life is reached will conserve energy and promote efficient operation.

The City of Spokane has implemented a Water Use Efficiency Program meeting the requirements of WAC 246-290-800 and adopted water use efficiency goals by resolution 2014-0043 for conservation of water reported in the Water System Plan.

Included in the Water System Plan is a distribution system loss control plan to identify and control distribution system loss.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Not likely, as previously stated, the non-project action for the City of Spokane Water System Plan (WSP) is a reporting document to demonstrate the operational and technical capabilities of the water system. The Water System Plan includes reporting on the City's Capital Improvement Plan which includes project activities which could affect parks.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Any Project activities related to the Capital Improvement Plan reported in the Water System Plan will require its own project SEPA action and will be subject to its own environmental review for its potential affect to environmentally sensitive areas.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Not likely, the non-project action for the City of Spokane Water System Plan (WSP) is a reporting document to demonstrate the operational and technical capabilities of the

water system. The Water System Plan includes reporting on the City's Capital Improvement Plan which includes project activities which could impact shoreline or land use.

Proposed measures to avoid or reduce shoreline and land use impacts are:

Any Project activities related to the Capital Improvement Plan reported in the Water System Plan will require its own project SEPA action and will be subject to its own environmental review for its potential affect to shoreline or land use.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Not likely, the Water System Plan reports on the operation and maintenance of existing and future water infrastructure. In general water infrastructure such as well and booster stations, water storage reservoirs and transmission and distribution mains do not generate trip demands that would increase demand on transportation or provide a destination resulting in additional services or utilities required.

Proposed measures to reduce or respond to such demand(s) are:

N/A

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

No conflicts identified.

FOR STAFF USE ONLY

Staff Member(s) Reviewing Checklist:

Signature: _____

Based on this staff review of the environmental checklist and other pertinent information, the staff:

A. X Concludes that there are no probable significant adverse impacts and recommends a determination of nonsignificance.

B. _____ Concludes that probable significant adverse environmental impacts do exist for the current proposal and recommends a mitigated determination of nonsignificance with conditions.

C. _____ Concludes that there are probable significant adverse environmental impacts and recommends a determination of significance.

Chapter 1

Description of Water System

Exhibits and Appendices

Exhibit 1.3.1 Water Facilities Inventory

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
EASTERN DRINKING WATER REGIONAL OPERATIONS
16201 East Indiana Avenue, Suite 1500, Spokane Valley, Washington 99216-2830
TDD Relay 1-800-833-6388

December 1, 2014

Daniel Kegley
City of Spokane
914 E. North Foothills Dr
Spokane, Washington 99207

Subject: Sundance Estates Water System **(Inactivated)** – Spokane County, PWS ID# 59546

Dear Mr. Kegley:

Since Sundance Estates Water System no longer provides drinking water, the Water Facilities Inventory (WFI) reflects that this water system has been **inactivated.**

We understand the customers of Sundance Estates Water System are now served solely by the City of Spokane water system (PWS ID #83100 K). Just as a reminder, please take into consideration the new connections and make the appropriate changes to your coliform monitoring program as well as your sampling sites for chlorine residual. I have enclosed an updated Water Facilities Inventory form for the City of Spokane reflecting the additional connections and population served.

Please feel free to call me with any questions at (509) 329-2133.

Sincerely,

Alyssa Gersdorf

Alyssa Gersdorf
Water Facilities Inventory Program Administrator
Office of Drinking Water
Division of Environmental Health

Enclosure

cc: Spokane Regional Health District
Peggy Jones, Owner, Inactivated system
Ed Parry, P.E., Regional Engineer, DOH
George Simon, Compliance Program Manager, DOH
Mark Steward, Coliform Program Manager, DOH
Danielle Russell, Sanitary Survey Coordinator, DOH
Diana Horan, Operating Permit Program, Headquarters, DOH

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 12/01/2014
Printed: 12/01/2014
WFI Printed For: On-demand
Submission Reason: Pop/Connect Update

RETURN TO: Eastern Regional Office, 16201 E Indiana, Suite 1500, Spokane Valley, WA, 99216

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
83100 K	SPOKANE, CITY OF	SPOKANE	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

DANIEL R. KEGLEY [INTERIM DIRECTOR]
914 E NORTH FOOTHILLS DR
SPOKANE, WA 99207-2794

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

7. OWNER NAME & MAILING ADDRESS

SPOKANE, CITY OF
DANIEL R. KEGLEY
WATER DEPARTMENT
914 E. NORTH FOOTHILLS DRIVE
SPOKANE, WA 99207-2794

TITLE: INTERIM DIRECTOR

8. Owner Number 000830

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone: (509) 625-7821		Owner Daytime Phone: (509) 625-7821	
Primary Contact Mobile/Cell Phone: (509) 844-8450		Owner Mobile/Cell Phone:	
Primary Contact Evening Phone: (509) 326-4460		Owner Evening Phone:	
Fax: (509) 625-7816	E-mail: dkegley@spokanecity.org	Fax: (509) 625-7816	E-mail:

WAC 246-290-420(9) requires that water systems provide 24-hour contact information for emergencies.

11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed
- [ ] Managed Only
- [ ] Owned Only

SMA NAME: _____ SMA Number: _____

12. WATER SYSTEM CHARACTERISTICS (mark ALL that apply)

- [x] Agricultural
- [x] Commercial / Business
- [x] Day Care
- [x] Food Service/Food Permit
- [x] 1,000 or more person event for 2 or more days per year
- [x] Hospital/Clinic
- [x] Industrial
- [x] Licensed Residential Facility
- [x] Lodging
- [x] Recreational/RV Park
- [x] Residential
- [x] School
- [ ] Temporary Farm Worker
- [x] Other (church, fire station, etc.): _____

13. WATER SYSTEM OWNERSHIP (mark only one)

- [ ] Association
- [x] City / Town
- [ ] County
- [ ] Federal
- [ ] Investor
- [ ] Private
- [ ] Special District
- [ ] State

14. STORAGE CAPACITY (gallons)

105,176,000

--- SEE NEXT PAGE FOR A COMPLETE LIST OF SOURCES ---

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
83100 K	SPOKANE, CITY OF	SPOKANE	A	Comm

15	16	17	18										19			20	21						22	23	24			
	SOURCE NAME	INTERTIE	SOURCE CATEGORY										USE				TREATMENT								SOURCE LOCATION			
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	Nevada St - AHC725		X										X			Y		X					122	31000	NE NE	08	25N	43E
S02	Well Electric - AHC996		X										X			Y		X					50	39160	NW NE	11	25N	43E
S03	Park Water - AHC722		X										X			Y		X					126	62500	NE SE	11	25N	43E
S04	Ray St - AHC723		X										X			Y		X					75	21550	SE NW	22	25N	43E
S05	Hoffman Ave - AHC728		X											X		Y		X					235	5460	NW NE	04	25N	43E
S06	Grace Ave - AHC724		X											X		Y		X					124	19000	NE NE	08	25N	43E
S07	InAct 11/15/2001 Baxter - AHC726		X											X		Y		X					126	2600	SE NE	03	25N	42E
S08	Central Ave - AHC726		X										X			Y		X					272	16800	NE NE	31	26N	43E
S09	InAct 04/07/1995 Indian Canyon - AHC729		X											X		Y		X					60	1450	SW SE	14	25N	42E
S10	InAct 08/23/1995 SIA 1(abandoned)		X												X	Y		X					367	500	SE SE	29	25N	42E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
83100 K	SPOKANE, CITY OF	SPOKANE	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)	0	74345	Unspecified
A. Full Time Single Family Residences (Occupied 180 days or *more* per year)	70078		
B. Part Time Single Family Residences (Occupied *less than* 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied *more than* 180 days/year	4267		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied *less than* 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	10906	10906	
28. TOTAL SERVICE CONNECTIONS		85251	

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or *more* days per year? 227505

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?												
B. How many days per month is water accessible to the public?												

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?												
B. How many days per month are they present?												

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	150	150	150	150	150	150	150	150	150	150	150	150

35. Reason for Submitting WFI:

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: _____ DATE: _____

PRINT NAME: _____ TITLE: _____

Exhibit 1.3.2 Intertie Agreement

06/12/14

Agenda Sheet for City Council Meeting of: 05/19/2014		Date Rec'd	5/7/2014
		Clerk's File #	OPR 2014-0385
		Renews #	
Submitting Dept	WATER & HYDROELECTRIC SERVICES	Cross Ref #	
Contact	CHRIS 7803	Project #	
Contact E-Mail	CPETERSCHMIDT@SPOKANECITY.ORG	Bid #	
Agenda Item Type	Contract Item	Requisition #	
Agenda Item Name	4100 - INTERTIE AGREEMENT BETWEEN WATER DEPARTMENT & N SPOKANE IRR		

Agenda Wording

Intertie Water Supply Agreement for Auxiliary Water Supply between the City of Spokane Water Department(SWD) and North Spokane Irrigation District No. 8.

Summary (Background)

The City of Spokane Water Department(SWD)and the North Spokane Irrigation District No. 8 (NSID #8) have independent water systems that abut each other along their northern and southern boundaries, respectively. NSID #8 has constructed, in 2006, an emergency metered connection to the SWD water system, for emergency use in the event that some event should interrupt their water supply from their own sources. NSID #8 has the capability to provide its own primary water supply and is only seeking

Fiscal Impact		Budget Account
Neutral	$	#
Select	$	#
Select	$	#
Select	$	#

Approvals		Council Notifications	
Dept Head	SHUPE, LYNN	Study Session	
Division Director	ROMERO, RICK	Other	PWC 4/28/2014
Finance	BUSTOS, KIM	Distribution List	
Legal	DALTON, PAT	acline	
For the Mayor	SANDERS, THERESA	dkegley	
Additional Approvals		cpeterschmidt	
Purchasing		jsakamoto	

APPROVED BY SPOKANE CITY COUNCIL ON
5/19/2014
SPOKANE CITY CLERK

Continuation of Wording, Summary, Budget, and Distribution

Agenda Wording

Summary (Background)

auxiliary emergency supply from SWD. SWD has the capability to fulfill and implement its role as regional water supplier by including NSID #8 as an auxiliary water customer. Should it be needed, it would be turned on and water sold from SWD to NSID #8 through the metered connection. This is a one-way connection, and no water would flow or be sold from NSID #8 to the SWD.

Fiscal Impact		**Budget Account**
Select	**$**	**#**
Select	**$**	**#**

Distribution List

Spokane City Clerk File No. OPR 2014-0385

INTERTIE WATER SUPPLY AGREEMENT FOR AUXILIARY WATER SUPPLY

THIS AGREEMENT, is made and entered into this 11th day of June, 2014 by and between North Spokane Irrigation District No. 8, an Irrigation District and quasi-municipality of the State of Washington, having offices for the transaction of business at 7221 North Regal Street (Mailing address: 7221 N. Regal, Spokane, Washington 99217-7846), hereinafter referred to as "NSID #8"; and the City of Spokane, a municipal corporation of the State of Washington, providing public water service to areas inside and outside the City limits pursuant to RCW 35.92.010, through the City Department of Water and Hydroelectric Services having offices for the transaction of business at 914 E. North Foothills Drive, Spokane, Washington 99207-2794 hereinafter referred to as the "SWD."

RECITALS:

A. SWD owns and operates a Chapter 70.119A Group A Public Water System ("Spokane Water System") that supplies and distributes potable water to its own resident customers.

B. The Spokane Water System currently has the water resources, capital facilities and infrastructure, and funding to regionally supply and distribute treated domestic water to at least five (5) other wholesale purveyors and numerous retail customers outside Spokane's corporate limits, and has done so historically.

C. SWD owns and operates a series of wells pursuant to a series of water rights that are authorized to provide wholesale water within a regional wholesale service area, as approved in its Water System Plan ("Spokane Water System Plan"), promulgated in accordance with Chapter 43.20 RCW and entitled "City of Spokane, Comprehensive Water System Plan," Volumes 1 and 2, dated January, 2007, adopted and approved the City of Spokane City Council by Resolution dated February 26, 2007, and approved by the State Department of Health ("State DOH"), as said document may be amended, revised, or updated through time.

D. NSID #8 owns and operates a Chapter 70.119A Group A Public Water System that supplies and distributes water to its customers.

E. NSID #8 has the capability to provide its own primary water supply and is only seeking auxiliary emergency supply from SWD. SWD has the capability to fulfill and implement its role as regional water supplier by including NSID #8 as an auxiliary water customer.

F. Both jurisdictions are desirous and able to enter into this Interlocal Agreement, pursuant to the provisions of RCW Chapter 39.34 and standby water service will be of benefit to NSID #8 for auxiliary emergency water supply and fire protection.

G. NSID #8 and the SWD have installed a single connection between the water distribution systems of each party for auxiliary emergency supply and fire protection purposes.

H. NSID #8 and the SWD desire to enter into this Agreement establishing the rights and responsibilities of the Parties with regard to the interconnections of their respective water systems.

NOW, THEREFORE, for and in consideration of the foregoing recitals, incorporated herein, and the mutual promises and benefits exchanged by the parties herein, the Parties agree to the following specific details for the existing interconnections as set forth herein and further described in Attachment "A" hereto:

1. Term and Interconnections Governed.

1.1 This Agreement shall take effect on the date that both Parties have duly executed the Agreement. This Agreement shall remain in full force and effect for a term of twenty (20) years.

1.2 The Term of this Agreement may be extended or modified by written agreement of the Parties and by a duly executed Amendment to this Agreement.

1.3 There shall be one (1) interconnection location governed by this Agreement, described as follows:

City of Spokane Point of Delivery—Francis Street and Freya Street Intertie (as described in Attachment "A" which is incorporated herein by reference).

2. Water Delivery.

2.1 The SWD shall make emergency auxiliary water supply and fire protection service available to NSID #8 through the interconnection, as described in Attachment "A".

2.2 In the event that the SWD cannot meet or supply both the water demand of its customers and the auxiliary needs of NSID #8, then the SWD shall be obligated to first meet the needs of its own customers and services. The SWD shall not be responsible for any damages to NSID #8.

2.3 NSID #8 may only appropriate the amount of water that the SWD can provide without risk or damage to the SWD's system.

2.4 All water supplied by SWD for use or sale by NSID #8 shall be upon the express condition that after water passes the Point of Delivery, it becomes the property and exclusive responsibility of NSID #8. SWD shall not be liable for any degradation of water quality, for acts of sabotage or vandalism, or for other events and resulting damages that may occur beyond the Point of Delivery and within the NSID #8 Water System.

2.5 The quality of wholesale water made available to NSID #8 pursuant to this Agreement shall be of the same standard and quality as normally delivered to SWD's other customers and shall be in compliance with all applicable state and federal drinking water laws, regulations and standards at the Point of Delivery. NSID #8 shall be responsible for maintaining compliance with all applicable state and federal drinking water laws, regulations and standards past the Point of Delivery.

3. The Administration of this Agreement.

The Administration of this Agreement shall be the joint responsibility of NSID #8's Administrator and the Administrator of the SWD.

4. Contamination or Damage to the Water System.

If either Party contaminates or damages the water system of the other Party, then the Party responsible for the contamination or damage shall pay the cost of correcting, removing, and eliminating the contamination or damage incurred by the other Party, whether foreseen or unforeseen. Further, the responsible Party shall indemnify and hold harmless the other Party for injury to persons or property resulting from such contamination or damage.

5. Reports of Contamination.

NSID #8 agrees to have its double check valve assembly tested annually and to report the results of its annual test to SWD.

In addition to the annual test, and in order to minimize the possibility of such contamination or damage, the Parties agree that any contamination detected through a water sample must be reported to the other Party as follows: 1) At the time of the detection. 2) After the system has been declared free of the contaminant. 3) At the time any disinfection methods are discontinued. The Party reporting the contamination is subject to possible refusal by the uncontaminated Party from interconnection usage during the period of contamination.

THIS AGREEMENT shall remain in full force and effect and continue for a period of twenty (20) years. In the event this Agreement is terminated, the terminating Party shall disconnect the system at its expense. No modification or amendment shall be valid until mutually agreed upon, reduced to writing and executed by authorized representatives of the Parties.

6. Financing.

There is no separate financing or budget for this Agreement. The costs shall be paid as provided for herein.

7. Separate Entity Status.

No separate entity is created by this Agreement.

Signed this 11th day of June, 2014.

City of Spokane

By: ~~City Administrator~~ (MAYOR) 5/30/14

Approved as to form:

Assistant City Attorney

ATTEST:

City Clerk

North Spokane Irrigation District No. 8

By: Chairman of the Board of Commissioners

Approved as to form:

Counsel for District

CITY OF SPOKANE WASHINGTON

ATTACHMENT A

FRANCIS AVENUE & FREYA STREET INTERTIE

(1) Location: This metered, one way connection is located near the Northwest corner of Francis Avenue and Freya Street, Spokane County, Washington.

(2) Purpose: The Purpose of this 8-inch diameter connection is for standby water supply and fire flow for NSID #8. This connection was made at the request of NSID #8, in part due to the area behind the NSID #8 Reservoir being turned into a gravel pit for the North Spokane Corridor Program and mining and blasting of the hillside.

(3) Date of Installation: 2008.

(4) Cost of Construction: The cost of construction for this intertie was borne by NSID #8.

(5) Operating Procedure: This intertie contains a meter and a check valve at the point of interconnection. NSID #8 shall notify the SWD regarding the need for the auxiliary water supply prior to operating the manual valves between each system. Each Party's designated representative shall meet at the intertie location and coordinate the operation of the intertie valves.

(6) Rate Schedule. This interconnection is metered. At the end of each month that water is used, the meter will be read by the SWD and an accounting will be made of any water used. This water consumption will be billed in accordance with the water rates charged to regular "Commercial" SWD customers outside the City's Utility Service Area in effect at the time of use. Monthly service connection charges shall apply during any month that water is actually supplied through the intertie from SWD to NSID #8.

(7) Estimated Capacity. As of September 20, 2012, SWD estimated the flow rate and pressure performance available at the SWD side of the intertie as follows:
Boundary conditions: max day demand with a residential diurnal demand curve over a three day extended period simulation (EPS), peak hour from EPS is analyzed, critical node is same as flow node (the intertie)

Static pressure = 67 psi
Residual pressure at 1,500 gpm = 55 psi
Residual pressure at 3,280 pgm = 20 psi

SWD will periodically update the estimated flow rate and pressure performance available at the SWD side of the intertie and provide the information to NSID #8 if future estimates indicate a decrease in performance greater than 500 gpm from the performance stated herein.

(8) Hydraulic Valve. In the future, NSID #8 may, at NSID #8's cost, replace the manual valve at the intertie with an automatic hydraulic valve. Prior to any installation of a hydraulic valve by NSID #8, NSID #8 shall inform SWD of the change in the valve to a hydraulic valve. In the event of the change to an automatic hydraulic valve, SWD shall be entitled to bill NSID #8 a monthly service connection charge in addition to any charge for water used, based on SWD's regular commercial rates for SWD customers outside the SWD service area effective at the time of use. In that event, the monthly service connection charge shall be due regardless of use of water or lack thereof.

OR COUNCIL MEETING OF: December 4, 1989

AGENDA CATEGORY #1 RECOMMENDATION

otify Prior to Meeting:
Spokane Valley Advisory Council? ☐
Other? _____

- ☐ Hearing
- ☐ Annexation
- ☐ Report
- ■ Contract
- ☐ Resolution
- ☐ Emergency Ord.
- ☐ First Rdg. Ord.
- ☐ Report of City Manager

- ☐ Accept
- ■ Approve
- ☐ Deny
- ☐ Place on File
- ☐ Set Hrg. / Review Date For: _____
- ☐ Defer / Continue To: _____
- ☐ Council Direction

O: MAYOR AND CITY COUNCIL
- ■ For Action
- ☐ For Information

RECEIVED
NOV 29 1989
CITY CLERK'S OFFICE
SPOKANE, WA

Clerk's File # OPR 84-475
Eng. / LID # _____ BID # _____

GENDA WORDING:

Revised agreement for the sale of water to the City of Airway Heights.

ACKGROUND:

In November 1984, Spokane and Airway Heights entered into an agreement for Spokane to sell water to Airway Heights. The agreement requires negotiation if the furnishing of water by Spokane becomes other than "on an emergency basis." Airway Heights is now requesting a change in the agreement to provide for water sales on an "as needed" basis rather than upon an emergency. They are also requesting considerations of a "Small Cities Rate" rather than the current rates charged.

Spokane can provide water to Airway Heights on an as needed basis provided their system continues to function in an acceptable fashion and peak ands during hot dry summer days, on both systems, do not exceed our

continued

EN ONMENTAL FINDING: N/A

FISCAL IMPACT: Potential increased water sales revenue depending upon quantity of additional demand.

BUDGET ACCOUNT #: N/A

ATTACHMENTS: (list) Agreement 11/24/84; Ltr from Mayor Airway Heights 11/15/89
Contract Amendment

Signatures of:

Water/Hydro Svcs
Submitting Department

Laurie Klein Connelly
Legal

Manager (~~Finance/Administration~~, Engineering, ~~or Planning~~)

Finance

City Manager

COUNCIL ACTION:

ACCEPTED BY CITY COUNCIL
AND CONTRACT AUTHORIZED:

DEC 04 1989

_____ CITY CLERK

RECEIVED
DEC 08 1989
ENGINEERING SERVICES

DISTRIBUTION AFTER COUNCIL ACTION:
Water/Hydro Svcs (2)
Util Acctg
Acctg
Budget Control
Engineering Svcs
Legal
City of Airway Heights

17-1

Form # SpS Rev. 8-88

EXHIBIT 1.3.2A

capacity. In that event, Spokane's own system demands would receive priority and water supply to Airway Heights would be temporarily suspended.

In the existing agreement, Spokane agrees to sell Airway Heights water at the current in-city commercial rates established in the water rates resolution. This is considered an equitable rate for providing this service to Airway Heights, especially in consideration of the distance involved in getting the water to their point of connection (Hayford Road). Establishment of a separate rate structure for small cities is not recommended.

Recommend Council approval of revised agreement and authrotiy for staff to sign on behalf of the City upon acceptance by Airway Heights.

WHS 14-8

City Clerk No. OPR 84-475

CONTRACT AMENDMENT

This Agreement made and entered into this 11 day of December, 1989, by and between the CITY OF SPOKANE, a municipal corporation of the State of Washington (hereinafter "Spokane") and the CITY OF AIRWAY HEIGHTS, a municipal corporation of the State of Washington (hereinafter "Airway Heights").

WHEREAS, Spokane and Airway Heights entered into an emergency intertie agreement to allow Airway Heights to receive water from Spokane should it become necessary due to any failures in Airway Heights' System; and

WHEREAS, Spokane and Airway Heights now desire to amend the Agreement to provide water to Airway Heights on an as needed basis;

NOW, THEREFORE, the Agreement is hereby amended to read as follows:

Spokane agrees to allow Airway Heights to hook up to the water line which is to be extended from Lucas Air Park to the intersection of Highway 2 and Hayford Road. Airway Heights agrees to pay the costs of hooking up to the line, including metering and annual meter calibration and extending its transmission line. Should [~~an emergency arise~~] conditions exist whereby Airway Heights' water system cannot furnish adequate water, Spokane agrees to sell to Airway Heights and Airway Heights agrees to buy from Spokane water through this [~~emergency~~] intertie at established city rates, as listed under Section 2 in the current water rates Resolution. Spokane further reserves the right to temporarily discontinue the furnishing of water service [~~and renegotiate this agreement if the furnishing of water becomes other than on an emergency basis.~~] if water demands exceed the City's capacity to meet City needs.

Entered into on the date above first written.

CITY OF SPOKANE

By: Terry L Nisak
City Manager

Attest: Marilyn J. Montgomery
City Clerk

17-3

CITY OF AIRWAY HEIGHTS

By: Richard L. Russell
Mayor

Attest: [signature]
City Clerk

Approved as to form:

[signature]
Assistant City Attorney

17-4

This Agreement made and entered into this [redacted] day of [redacted], 1984, by and between the CITY OF SPOKANE, a municipal corporation of the State of Washington (hereinafter "SPOKANE"), and the CITY OF AIRWAY HEIGHTS, a municipal corporation of the State of Washington (hereinafter "AIRWAY HEIGHTS").

WHEREAS, Spokane has received, and Airway Heights will receive, state funds to improve the water facilities on the plains area west of Spokane; and

WHEREAS, Spokane has recently granted approval by the Spokane County Boundary Review Board to extend a water line in the south side of Highway 2 from the development known as Lucas Air Park to the intersection of Highway 2 and Hayford; and

WHEREAS, people administering the grant from the State of Washington have expressed a desire that Spokane allow Airway Heights to hook up to this water line and use it as an emergency intertie to receive water from Spokane should it become necessary due to any failures in Airway Height's system; and

WHEREAS, The Spokane County Boundary Review Board, in approving the extension of Spokane's water line, conditioned it upon Spokane and Airway Heights having an emergency intertie agreement;--NOW THEREFORE,

The parties hereto agree as follows:

Spokane agrees to allow Airway Heights to hook up to the water line which is to be extended from Lucas Air Park to the intersection of Highway 2 and Hayford Road. Airway Heights agrees to pay the costs of hooking up to the line, including metering and annual meter calibration and extending its transmission line. Should an emergency arise whereby Airway Height's water system cannot furnish adequate water, Spokane agrees to sell to Airway Heights and Airway Heights agrees to buy from Spokane water through this emergency intertie at established city rates, as listed under Section 2 in the current water rates Resolution. Spokane further reserves the right to discontinue the furnishing of water service and renegotiate this agreement if the furnishing of water becomes other than on an emergency basis.

Entered into on the date above first written.

CITY OF SPOKANE

BY: [redacted]
City Manager

Attest: Marilyn J. Montgomery
City Clerk

CITY OF AIRWAY HEIGHTS

BY: Mr Joe Martella
Mayor

Approved as to form:

[redacted]
Assistant City Attorney

17-5

OPR 89-996

INTERLOCAL AGREEMENT BETWEEN AIRWAY HEIGHTS AND THE CITY OF SPOKANE

FOR EXTENSION OF WATER SERVICE

Section 1. DEFINITIONS.

1.1 Airway Heights shall mean the City of Airway Heights, a code city of the State of Washington.

1.2 City shall mean the City of Spokane, a first class charter city of the State of Washington.

1.3 Connection shall mean that point at which the City ties its Hayford Road water line into the Airway Heights water system.

1.4 Main shall mean the 12" water line installed on the east side of the Hayford Road through which water is provided to the property defined below. any

1.5 Property shall mean the parcel of property located on the eastside of Hayford Road approximately 6000' North of the intersection of S.R.2 and Hayford Road, occupied by Shamrock Paving Company.

Section 2. PURPOSE. The purpose of this Agreement is to provide for the terms and conditions of the provision of water service to the Property. It is the intent of the parties that Airway Heights will provide water only until the City extends its water system to serve the Property.

Section 3. RESPONSIBILITIES OF AIRWAY HEIGHTS.

3.1 Airway Heights hereby grants the City approval to connect to the Airway Heights water system at a point and in a manner agreed upon by the respective City Engineers/Directors of Public Works.

3.2 Airway Heights will deliver water to the Property by wheeling through the City 12" Main located across and in Hayford Road.

3.3 Airway Heights will read the meter installed by the City and bill the Property accordingly.

3.4 Airway Heights will promptly advise the City of any known or suspected maintenance or repair needs on the City line or meter.

Section 4. RESPONSIBILITIES OF THE CITY.

4.1 The City will own and be responsible for the connection to the Airway Heights system and the construction, maintenance and metering of the Main from the Connection to the Property.

Section 5. USES OF THE MAIN. Airway Heights will use the Connection to provide water service to the Property only, unless otherwise agreed upon, in writing, by the City.

Section 6. CONDITIONS OF SERVICE. Airway Heights will provide water to the Property without imposing any conditions on service including but not limited to consent to annexation.

Section 7. AMENDMENT. Amendment of this Agreement may be made only by written agreement of the parties.

Section 8. DURATION AND TERMINATION.

8.1 This Agreement shall be for the term of 5 years and will automatically renew unless notice is provided 90 days prior to the end of any annual term.

8.2 This Agreement may be terminated by the City after the initial 5 year period at its discretion if the City, in its own determination decides, to extend water service to the Property and others. The City will provide at least 90 days notice of this termination.

8.3 Upon termination of this Agreement, Airway Heights and City of Spokane will determine whether the connection between the two systems, provided for in this Agreement will be continued for mutual benefit.

Section 9. HEADINGS. The section headings in this Agreement have been inserted solely for the purpose of convenience and ready reference. In no way do they purport to, and shall not be deemed to, limit or extend the scope or intent of the sections to which they apply.

Section 10. ALL WRITINGS CONTAINED HEREIN. This Agreement contains all of the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the parties hereto. The parties have read and understand all of this Agreement, and now state that no representation, promise, or agreement not expressed in this Agreement has been made to induce the parties to execute the same.

Section 11. FILING OF THE AGREEMENT. The City of Spokane and Airway Heights shall file this Agreement with the respective City Clerks and the City shall file this Agreement with the Spokane County Auditor and Secretary of State.

Section 12. SEVERABILITY. In the event any provision of this Agreement shall be declared by a court of competent jurisdiction to be invalid, illegal, or unenforceable, the validity, legality and enforceability of the remaining provisions shall not, in any way, be affected or impaired thereby.

Section 13. EFFECTIVE DATE. This Agreement shall become effective immediately after it is duly adopted by the Councils of the Cities of Spokane and Airway Heights.

CITY OF SPOKANE

By: Terry L Novak
City Manager

Attest: Marilyn J Montgomery
City Clerk

AIRWAY HEIGHTS

By: Mr Joe Martella
Mayor

Attest:
City Clerk

Approved as to form:

Laurie Hines Connelly
Assistant City Attorney

OR COUNCIL MEETING OF: December 18, 1989

AGENDA CATEGORY

RECOMMENDATION
X SWM 11-8-5

Notify Prior to Meeting:
Spokane Valley Advisory Council? ☐
Other? _____

☐ Hearing
☐ Annexation
☐ Report
☐ Contract
☐ Resolution
☐ Emergency Ord.
☐ First Rdg. Ord.
☐ Report of City Manager

☐ Accept
☐ Approve
☐ Deny
☐ Place on File
☐ Set Hrg. / Review Date For: _____
☐ Defer / Continue To: _____
☐ Council Direction

C AYOR AND CITY COUNCIL
☐ For Action
☐ For Information

RECEIVED
DEC 1 8 1989
CITY CLERK'S OFFICE
SPOKANE, WA

Clerk's File # OPR 89-996
Eng. / LID # _____ BID # _____

GENDA WORDING:
Interlocal agreement between the City of Airway Heights and the City of Spokane for water service.

ACKGROUND:
To allow the City of Airway Heights to provide water service to Shamrock paving. The closest city waterline lies on the opposite side of Highway 2. In order for the city to supply service it necessitates crossing the highway. This currently is not cost effective in light of serving only this single customer. At such time as the city finds it effective to supply water service this agreement would be terminated.

NV ONMENTAL FINDING: N/A

ISCAL IMPACT: N/A

UDGET ACCOUNT #: N/A

TTACHMENTS: (list) Interlocal Agreement on file for review in Office of City Clerk

ignatures of:
Water & Hydro Svcs
omitting Department

Laurie Kinn Connelly
Legal

nager (Finance, Administration, gineering, or Planning)

Finance

City Manager

RECEIVED
JAN 29 [illegible]
ENGINEERING SERVICES

UNCIL ACTION:
APPROVED & ADOPTED BY SPOKANE CITY COUNCIL:
DEC 18 1989
Marilyn J. Montgomery
CMC/AAE. SPOKANE CITY CLERK

DISTRIBUTION AFTER COUNCIL ACTION:
Water & Hydro Svcs
Util Acctg
Engineering Svcs
Legal
City of Airway Heights
(Certified copy)

Rev. 8-86

AGENDA SHEET FOR COUNCIL MEETING OF: Dec. 4, 2000

Water & Hydro. Svsc. | George Miller | 7803
Submitting Department | Contact Person | Phone Ext.

CONSENT AGENDA
● Contract
O Report

LEGISLATIVE SESSION
O Resolution
O Emergency Ordinance
O Final Reading Ordinance
O First Reading Ordinance
O Special Consideration
O Hearing

COUNCIL PRIORITY
O Communications
O Economic Development
O Growth Management
O Human Services
O Neighborhoods
O Public Safety
● Quality Service Delivery
O Racial Equity & Cultural Diversity
O Rebuild & Maintain Infrastructure

RECEIVED
NOV 21 2000
CITY CLERK'S OFFICE
SPOKANE, WA

Clerk's Files: #OPR 2000-1003
Renews: #
Cross Reference: #
ENG/LID: #
BID: #

NEIGHBORHOOD/COMMISSION/COMMITTEE NOTIFIED BY SUBMITTING DEPARTMENT:

N/A

AGENDA WORDING:

Agreement for Water Systems Interties for Standby and Continuous Water Service with Spokane County Water District No. 3 (SCWD #3).

BACKGROUND (Attach separate sheet if necessary):

Between the years 1960 and 1987, five interties were established between the City's and SCWD #3's water systems for standby, emergency and continuous needs by the SCWD #3 water system.

The interties were established by informal mutual unwritten agreements.

The Washington State Department of Health is now requiring that all existing interties between public water supply purveyors be formalized by written agreements. Management of both water agencies, the City of Spokane Water & Hydroelectric Services Department and SCWD #3, agree that this needs to be accomplished as well.

The Agreement formalizes the understandings between the Parties, under which these connections were established.

RECOMMENDATION: Approve the Agreement & Authorize the City Manager to sign.

FISCAL IMPACT: Expenditure – None | Budget Account: # N/A
Revenue – Varies depending on water sales #

LIST ATTACHMENTS AS FOLLOWS:
On file for Review in Office of City Clerk: X

Include in Packets:

SIGNATURES OF SUBMITTING OFFICERS (sign legibly):

Director, Water & Hydro Service | Asst. City Mgr. - Operations | Finance

Legal | | City Manager

DISTRIBUTION AFTER COUNCIL ACTION:
Director of Accounting
Budget Control
Legal Attn: Bob Beaumier
Water & Hydroelectric Services
Spokane County Water District No. 3 – duplic. orig.

COUNCIL ACTION:
APPROVED BY
SPOKANE CITY COUNCIL:
December 4, 2000
CITY CLERK

EXHIBIT 1.3.2B

Spokane City Clerk file no. OPR 2000-1003

SCWD #3 file no._____

AGREEMENT FOR WATER SYSTEMS INTERTIES FOR STANDBY AND CONTINUOUS WATER SERVICE

This Agreement made and entered into this 4th day of December, 2000, by and between Spokane County Water District No. 3, a public municipal water district of the State of Washington, having offices for the transaction of business at 5221 East Desmet Avenue (Mailing address: P O BOX 11187, Spokane, Washington 99211-1187), hereinafter referred to as "SCWD #3"; and the City of Spokane, a municipal corporation of the State of Washington, providing public water service to areas inside and outside the City limits pursuant to RCW 35.92.010, through its Department of Water and Hydroelectric Services having offices for the transaction of business at 914 E. North Foothills Drive, Spokane, Washington 99207-2794 (hereinafter "CITY WD").

WITNESSETH:

WHEREAS, the parties are public water supply purveyors owning and operating water systems to supply their customers with potable water for domestic and fire protection needs, and

WHEREAS, the current Spokane County Coordinated Water System Plan Update, June 1999, under Section 7, paragraph 7.6 promotes the creation of water system interties between water purveyors to increase the reliability of water service locally; and

WHEREAS, the State of Washington Administrative Code (WAC), Chapter 246-290, section 246-290-132, deals with establishing interties between public water systems;

WHEREAS, currently five (5) interconnections exist between the SCWD #3 and the CITY WD water systems as described in Attachments "A" through "E" hereto; and

WHEREAS, all of the existing interconnections were established between the years 1960 and 1987; and

WHEREAS, all existing interconnections were established Pre-1991 whereby the existing interconnections (hereafter "interties") become eligible to qualify under the provision of "PRE-1991 'GRANDFATHERED' INTERTIES" of RCW 90.03.383; and

WHEREAS, RCW 90.03.383 (3) required notice of such Pre-1991 interties to be submitted to the State of Washington Department of Ecology (Ecology) and the State of Washington Department of Health (DOH) by June 30, 1996 so as to receive approvals; and

4

WHEREAS, The CITY WD complied with RCW 90.03.383 (3) by providing such necessary notice by letter dated June 28, 1996, to both Ecology and DOH; and

WHEREAS, no written agreement currently exists for the aforementioned existing interties as these were established by informal mutual unwritten agreements;

WHEREAS, both jurisdictions are now desirous and able to enter into this formal Agreement, pursuant to the provisions of RCW Chapter 39.34, as may apply, for the continued operations of the existing interties between the water systems so as to provide standby and continuous water service for the benefit to SCWD #3 for auxiliary water supply, storage and fire protection; and

WHEREAS, by this formal Agreement, the Parties furthermore desire to establish their respective rights and responsibilities with regard to the interties of their respective water systems;

NOW, THEREFORE, for and in consideration of the mutual benefits to be derived herefrom, the Parties confirm and ratify their informal agreement with the following specific details for the existing interties as set forth herein and further described in Attachments "A" through "E" hereto:

1. The CITY WD shall make auxiliary water supply, storage and fire protection service available to SCWD #3 through the interties. However, the auxiliary water service may be subject to limitation as the CITY WD determines necessary if the CITY WD suffers a deficiency in water supply available to its own customers or other emergency circumstances. SCWD #3 may only appropriate the amount of water that the CITY WD determines it can provide without risk or damage to the CITY WD's system or CITY WD customers.

2. In the event that the CITY WD cannot meet or supply both the water demand of it's customers and the auxiliary needs of SCWD #3, then the CITY WD shall be obligated to first meet the needs of it's own customers and services. The CITY WD shall not be responsible for any damages to SCWD #3 and acts taken under this provision shall always be in the sole discretion of the CITY WD.

   However, the CITY WD hereby acknowledges that as to one existing intertie located near the intersection of Perry Road and 54th Avenue, as described in Attachment "E" hereto, this particular intertie provides the only source of water for SCWD #3's Water Service Area #4 and, thus, SCWD #3 Water Service Area #4 is dependent on the CITY WD for the water supply. As such, because of the uniqueness of this particular intertie, and as to Water Service Area #4 only, the CITY WD agrees to regard that service intertie for this area on the same priority for service as locations within the CITY WD service area; PROVIDED, SCWD # 3 shall remain the purveyor to said customers in its Water Service Area #4, and no direct customer service obligation between the CITY WD and said customers is created. Such circumstance may arise where the CITY WD formally agrees to take over this area as part of its water system. At such time, then the need for the intertie shall

no longer exist as the SCWD #3 customers in this area shall become the customers of the CITY WD and this agreement shall expire with respect to the intertie as described in Attachment "E" (Perry and 54th).

3. The Administration of this Agreement shall be the joint responsibility of SCWD #3's Administrator and the Administrator of the CITY WD.

4. If either Party contaminates or damages the water system of the other Party, then the Party responsible for the contamination or damage shall pay the cost of correcting, removing and eliminating the contamination or damage incurred by the other Party, whether foreseen or unforeseen. Further, the responsible Party shall indemnify and hold harmless the other Party for injury to persons or property resulting from such contamination or damage.

5. In order to minimize the possibility of such contamination or damage, the Parties agree that any contamination detected through a water sample must be reported to the other Party as follows: 1.) At the time of the detection. 2.) After the system has been declared free of the contaminant. 3.) At the time any disinfection methods are discontinued. The Party reporting the contamination is subject to possible refusal by the uncontaminated Party from intertie usage during the period of contamination.

THIS AGREEMENT shall remain in full force and effect and continue until such time as either Party gives the other Party at least thirty (30) days written notice of their intention to withdraw from and terminate this Agreement. In the event this Agreement is terminated, the terminating Party shall disconnect the systems at their expense. No modification or amendment shall be valid until mutually agreed upon, reduced to writing and executed by authorized representatives of the Parties.

CITY OF SPOKANE

By: _____
City Manager

Attest: _____
City Clerk

Approved as to form:

_____
Assistant City Attorney

Spokane County Water District No. 3

By: _____
Chairman of the Board of Commissioners

Approved as to form:

_____
Counsel for District

STATE OF WASHINGTON)
) ss.
County of Spokane)

On this 4th day of December, 2000, before me personally appeared Hank Miggins and Terri Pfister, to me known to be the City Manager and the City Clerk, respectively, of the City of Spokane, a municipal corporation, that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

OFFICIAL SEAL
CONNIE J. KENSOK
NOTARY PUBLIC – STATE OF WASHINGTON
COUNTY OF SPOKANE
My Commission Expires August 16, 2001

Notary Public in and for the State
of Washington, residing at Spokane.
My commission expires_____.

STATE OF WASHINGTON)
) ss.
County of Spokane)

On this 8th day of November, 2000, before me personally appeared Herbert Carlson, to me known to be the Chairman of the Board of Commissioners, of Spokane County Water District No. 3, a public municipal water district that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the water district, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

CONNIE M. BEITEY
Commission Expires
NOTARY
PUBLIC
APRIL 13, 2003
STATE OF WASHINGTON

Connie M. Beitey
Notary Public in and for the State
of Washington, residing at Spokane.
My commission expires 4/13/03.

ATTACHMENT "A"

HAVANA STREET & SPRAGUE AVENUE INTERTIE

(1) Location: This metered, one-way connection is located near the intersection of Havana Street and Sprague Avenue, Spokane County, Washington.

(2) Purpose: The Purpose of this 12-inch diameter connection (a 12-inch service tap & service connection split into a 12-inch service line and an 8-inch service line) is for standby water supply, storage and fire flow for SCWD #3. This connection was made at the request of the Washington Water Power Company (WWP), a predecessor to SCWD #3.

(3) Date of Installation: September 16, 1960.

(4) Cost of Construction: The cost of construction for this intertie was borne by WWP.

(5) Operating Procedure: This intertie contains a meter and a check valve at the point of intertie. SCWD #3 shall notify the CITY WD regarding the need for the auxiliary water supply prior to operating the manual valves between each system. Each Party's designated representative shall meet at the intertie location and coordinate the operation of the intertie valves.

(6) Rate Schedule. This intertie is metered. At the end of each month that water is used the meter will be read by the CITY WD and an accounting will be made of any water used. This water consumption will be billed in accordance with the water rates charged to regular "Commercial" CITY WD customers outside the City's Utility Service Area in effect at the time of use.

ATTACHMENT "B"

CARNAHAN & GLENROSE ROADS INTERTIE

(7) Location: This metered, one-way connection is located near the intersection of Carnahan and Glenrose Roads, Spokane County, Washington.

(8) Purpose: The Purpose of this 6-inch diameter connection is for auxiliary water supply, storage and fire flow for SCWD #3. This connection was made at the request of the Washington Water Power Company (WWP), a predecessor to SCWD #3.

(9) Date of Installation: February 1, 1978.

(10) Cost of Construction: The cost of construction for this intertie was borne by WWP.

(11) Operating Procedure: This intertie contains a meter and a one-way pressure sensitive hydraulically operated valve at the point of intertie which automatically opens in the case of a drop in pressure in the SCWD #3 system. This valve is adjusted to open intermittently to augment the water supply to the higher elevation area of SCWD #3's system.

(12) Rate Schedule. This intertie is metered. At the end of each month that water is used the meter will be read by the CITY WD and an accounting will be made of any water used. This water consumption will be billed in accordance with the water rates charged to regular "Commercial" CITY WD customers outside the City's Utility Service Area in effect at the time of use.

ATTACHMENT "C"

MISSION AVENUE & THIERMAN ROAD INTERTIE

(1) Location: This metered, one-way connection is located near the intersection of Mission Avenue and Thierman Road, Spokane County, Washington.

(2) Purpose: The Purpose of this 8-inch diameter connection is for standby water supply, storage and fire flow for SCWD #3. This connection was made at the request of the Washington Water Power Company (WWP), a predecessor to SCWD #3.

(3) Date of Installation: October 28, 1974.

(4) Cost of Construction: The cost of construction for this intertie was borne by WWP.

(5) Operating Procedure: This intertie contains a meter and a one-way pressure sensitive hydraulically operated valve at the point of intertie which automatically opens in the case of a drop in pressure in the SCWD #3 system. This valve is adjusted to open only in the event of a significant demand and subsequent loss of pressure caused by an emergency or major breakdown of equipment in SCWD #3's system.

(6) Rate Schedule. This intertie is metered. At the end of each month that water is used the meter will be read by the CITY WD and an accounting will be made of any water used. This water consumption will be billed in accordance with the water rates charged to regular "Commercial" CITY WD customers outside the City's Utility Service Area in effect at the time of use.

ATTACHMENT "D"

FRANCIS AVENUE & WALL STREET INTERTIE

(1) Location: This metered, one-way connection is located near the intersection of Francis Avenue and Wall Street, Spokane County, Washington.

(2) Purpose: The Purpose of this 8-inch diameter connection is for standby water supply, storage and fire flow for SCWD #3. This connection was made at the request of the Washington Water Power Company (WWP), a predecessor to SCWD #3.

(3) Date of Installation: March 6, 1987.

(4) Cost of Construction: The cost of construction for this intertie was borne by WWP.

(5) Operating Procedure: This intertie contains a meter and a check valve at the point of intertie. SCWD #3 shall notify the CITY WD regarding the need for the auxiliary water supply prior to operating the manual valves between each system. Each Party's designated representative shall meet at the intertie location and coordinate the operation of the intertie valves.

(6) Rate Schedule. This intertie is metered. At the end of each month that water is used the meter will be read by the CITY WD and an accounting will be made of any water used. This water consumption will be billed in accordance with the water rates charged to regular "Commercial" CITY WD customers outside the City's Utility Service Area in effect at the time of use.

ATTACHMENT "E"

PERRY ROAD & 54TH AVENUE INTERTIE

(1) Location: This metered, one-way connection is located near the intersection of Perry Road and 54th Avenue, Spokane County, Washington.

(2) Purpose: The Purpose of this 8-inch diameter connection is for water supply, storage and fire flow for SCWD #3. This connection was made at the request of the Washington Water Power Company (WWP), a predecessor to SCWD #3.

(3) Date of Installation: June 2, 1960.

(4) Cost of Construction: The cost of construction for this intertie was borne by WWP.

(5) Operating Procedure: This intertie contains a meter and a check valve at the point of interconnection. This intertie is the only source of water for Water Service Area #4.

(6) Rate Schedule. This interconnection is metered. At the end of each month the meter is read by the CITY WD and an accounting is made of any water used. This water consumption is billed in accordance with the water rates charged to regular "Commercial" CITY WD customers inside the City's Utility Service Area in effect at the time of use.

AGENDA SHEET FOR COUNCIL MEETING OF: Dec. 4, 2000

Water & Hydro. Svsc. | George Miller | 7803
Submitting Department | Contact Person | Phone Ext.

RECEIVED
NOV 21 2000
CITY CLERK'S OFFICE
SPOKANE, WA

CONSENT AGENDA
● Contract
O Report

LEGISLATIVE SESSION
O Resolution
O Emergency Ordinance
O Final Reading Ordinance
O First Reading Ordinance
O Special Consideration
O Hearing

COUNCIL PRIORITY
O Communications
O Economic Development
O Growth Management
O Human Services
O Neighborhoods
O Public Safety
● Quality Service Delivery
O Racial Equity & Cultural Diversity
O Rebuild & Maintain Infrastructure

Clerk's Files: #OPR 2000-1002
Renews: #
Cross Reference: #
ENG/LID: #
BID: #

NEIGHBORHOOD/COMMISSION/COMMITTEE NOTIFIED BY SUBMITTING DEPARTMENT:

N/A

AGENDA WORDING:

Agreement for Water Systems Interties for Standby Water Service with Whitworth Water District No. 2 (WWD #2).

BACKGROUND (Attach separate sheet if necessary):

Between the years 1968 and 1990, two interties were established between the City's and WWD #2's water systems for standby and emergency needs by the WWD #2 water system.

The interties were established by informal mutual unwritten agreements.

The Washington State Department of Health is now requiring that all existing interties between public water supply purveyors be formalized by written agreements. Management of both water agencies, the City of Spokane Water & Hydroelectric Services Department and WWD #2, agree that this needs to be accomplished as well.

The Agreement formalizes the understandings between the Parties, under which these connections were established.

RECOMMENDATION: Approve the Agreement & Authorize the City Manager to sign.

FISCAL IMPACT: Expenditure – None | Budget Account: # N/A
Revenue – Varies depending on water sales #

LIST ATTACHMENTS AS FOLLOWS:
On file for Review in Office of City Clerk: X

Include in Packets:

SIGNATURES OF SUBMITTING OFFICERS (sign legibly):

Director, Water & Hydro Service | Asst. City Mgr. - Operations | Finance

Legal

City Manager

DISTRIBUTION AFTER COUNCIL ACTION:
Director of Accounting
Budget Control
Legal Attn: Bob Beaumier
Water & Hydroelectric Services
Whitworth Water District No. 2 duplic. orig.

COUNCIL ACTION:

APPROVED BY
SPOKANE CITY COUNCIL:
December 4, 2000

CITY CLERK

EXHIBIT 1.3.2C3

11/7/00 rgb/gwm 11/14/00

Spokane City Clerk file no OPR 2000-1002

WWD #2 file no._____

AGREEMENT FOR WATER SYSTEMS INTERTIES FOR STANDBY WATER SERVICE

This Agreement made and entered into this 4th day of December, 2000, by and between Whitworth Water District No. 2, a public municipal water district of the State of Washington, having offices for the transaction of business at 10828 N. Waikiki Road, Spokane, Washington 99218, hereinafter referred to as "WWD #2"; and the City of Spokane, a municipal corporation of the State of Washington, providing public water service to areas inside and outside the City limits pursuant to RCW 35.92.010, through its Department of Water and Hydroelectric Services having offices for the transaction of business at 914 E. North Foothills Drive, Spokane, Washington 99207-2794 (hereinafter "CITY WD").

WITNESSETH:

WHEREAS, the parties are public water supply purveyors owning and operating water systems to supply their customers with potable water for domestic and fire protection needs, and

WHEREAS, the current Spokane County Coordinated Water System Plan Update, June 1999, under Section 7, paragraph 7.6 promotes the creation of water system interties between water purveyors to increase the reliability of water service locally; and

WHEREAS, the State of Washington Administrative Code (WAC), Chapter 246-290, section 246-290-132, deals with establishing interties between public water systems;

WHEREAS, currently two (2) interconnections exist between the WWD #2 and the CITY WD water systems as described in Attachments "A" and "B" hereto; and

WHEREAS, all of the existing interconnections were established between the years 1968 and 1990; and

WHEREAS, all existing interconnections were established Pre-1991 whereby the existing interconnections (hereafter "interties") become eligible to qualify under the provision of "PRE-1991 'GRANDFATHERED' INTERTIES" of RCW 90.03.383; and

WHEREAS, RCW 90.03.383 (3) required notice of such Pre-1991 interties to be submitted to the State of Washington Department of Ecology (Ecology) and the State of Washington Department of Health (DOH) by June 30, 1996 so as to receive approvals;

3

and

WHEREAS, The CITY WD complied with RCW 90.03.383 (3) by providing such necessary notice by letter dated June 28, 1996, to both Ecology and DOH; and

WHEREAS, no written agreement currently exists for the aforementioned existing interties as these were established by informal mutual unwritten agreements;

WHEREAS, both jurisdictions are now desirous and able to enter into this formal Agreement, pursuant to the provisions of RCW Chapter 39.34, as may apply, for the continued operations of the existing interties between the water systems so as to provide standby water service for the benefit to WWD #2 for emergency auxiliary water supply, storage and fire protection; and

WHEREAS, by this formal Agreement, the Parties furthermore desire to establish their respective rights and responsibilities with regard to the interties of their respective water systems;

NOW, THEREFORE, for and in consideration of the mutual benefits to be derived herefrom, the Parties confirm and ratify their informal agreement with the following specific details for the existing interties as set forth herein and further described in Attachments "A" and "B" hereto:

1. The CITY WD shall make emergency auxiliary water supply, storage and fire protection service available to WWD #2 through the interties. However, the emergency auxiliary water service may be subject to limitation as the CITY WD determines necessary if the CITY WD suffers a deficiency in water supply available to its own customers or other emergency circumstances. WWD #2 may only appropriate the amount of water that the CITY WD determines it can provide without risk or damage to the CITY WD's system or CITY WD customers.

2. In the event that the CITY WD cannot meet or supply both the water demand of it's customers and the auxiliary needs of WWD #2, then the CITY WD may choose to first meet the needs of it's own customers and services. The CITY WD shall not be responsible for any damages to WWD #2 or it's customers, it being understood that no customer relationship is created by this agreement or otherwise as between the CITY WD and WWD #2 customers or between WWD #2 and CITY WD customers.

3. The Administration of this Agreement shall be the joint responsibility of WWD #2's Administrator and the Administrator of the CITY WD.

4. If either Party contaminates or damages the water system of the other Party, then the Party responsible for the contamination or damage shall pay the cost of correcting, removing and eliminating the contamination or damage incurred by the other Party, whether foreseen or unforeseen. Further, the responsible Party shall indemnify and hold harmless the other Party for injury to persons or property resulting from such contamination or damage.

5. In order to minimize the possibility of such contamination or damage, the Parties agree that any contamination detected through a water sample must be reported to the other Party as follows: 1.) At the time of the detection. 2.) After the system has been declared free of the contaminant. 3.) At the time any disinfection methods are discontinued. The Party reporting the contamination is subject to possible refusal by the uncontaminated Party from intertie usage during the period of contamination.

THIS AGREEMENT shall remain in full force and effect and continue until such time as either Party gives the other Party at least thirty (30) days written notice of their intention to withdraw from and terminate this Agreement. In the event this Agreement is terminated, the terminating Party shall disconnect the systems at their expense. No modification or amendment shall be valid until mutually agreed upon, reduced to writing and executed by authorized representatives of the Parties.

CITY OF SPOKANE

By: _____
City Manager

Attest: _____
City Clerk

Approved as to form:

_____
Assistant City Attorney

Whitworth Water District No. 2

By: _____
Chairman of the Board of Commissioners

Approved as to form:

_____
Counsel for District

STATE OF WASHINGTON)
) ss.
County of Spokane)

On this 4th day of December, 2000, before me personally appeared Hank Miggins and Terri Pfister, to me known to be the City Manager and the City Clerk, respectively, of the City of Spokane, a municipal corporation, that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

OFFICIAL SEAL
CONNIE J. KENSOK
NOTARY PUBLIC – STATE OF WASHINGTON
COUNTY OF SPOKANE
My Commission Expires August 16, 2001

Notary Public in and for the State
of Washington, residing at Spokane.
My commission expires_____.

STATE OF WASHINGTON)
) ss.
County of Spokane)

On this 16th day of November, 2000, before me, the undersigned, a Notary Public in and for the State of Washington, personally appeared Earl D Edwards, to me known to be the Chairman of the Board of Commissioners, of Whitworth Water District No. 2, a public municipal water district that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the water district, for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

SUSAN E. ELDORE
NOTARY PUBLIC
STATE OF WASHINGTON
Commission Expires

Susan E. Eldore
Notary Public in and for the State
of Washington, residing at Spokane.
My commission expires 5-10-01.

ATTACHMENT "A"

NORTH MONROE STREET & FRANCIS AVENUE INTERTIE

(1) Location: This metered, one-way connection is located at the intersection of North Monroe Street and Francis Avenue (6300 North Monroe), Spokane County, Washington.

(2) Purpose: The Purpose of this 6-inch diameter connection is for standby emergency water supply, storage and fire flow for WWD #2. This connection was made at the request of Whitworth Water District #2.

(3) Date of Installation: October 16, 1968.

(4) Cost of Construction: The cost of construction for this intertie was borne by WWD #2.

(5) Operating Procedure: This intertie contains a meter and a check valve at the point of intertie. WWD #2 shall notify the CITY WD regarding the need for the auxiliary water supply prior to operating the manual valves between each system. Each Party's designated representative shall meet at the intertie location and coordinate the operation of the intertie valves.

(6) Rate Schedule. This intertie is metered. At the end of each month that water is used the meter will be read by the CITY WD and an accounting will be made of any water used. This water consumption will be billed in accordance with the water rates charged to regular "Commercial" CITY WD customers "City Commercial and Industrial Rates" in effect at the time of use.

ATTACHMENT "B"

HAWTHORNE ROAD & NEVADA STREET INTERTIE

(1) Location: This metered, one-way connection is located at the intersection of Hawthorne Road and Nevada Street, Spokane County, Washington.

(2) Purpose: The Purpose of this 12-inch diameter connection is for emergency auxiliary water supply, storage and fire flow for WWD #2. This connection was made at the request of Whitworth Water District #2.

(3) Date of Installation: August 1990.

(4) Cost of Construction: The cost of construction for this intertie was borne by WWD #2.

(5) Operating Procedure: This intertie contains a meter and a one-way pressure sensitive hydraulically operated valve at the point of intertie which automatically opens in the case of a drop in pressure in the WWD #2 system. This valve is adjusted to open intermittently to augment the water supply to the higher elevation area of WWD #2's system.

(6) Rate Schedule. This intertie is metered. At the end of each month that water is used the meter will be read by the CITY WD and an accounting will be made of any water used. This water consumption will be billed in accordance with the water rates charged to regular "Commercial" CITY WD customers "Outside the City Commercial and Industrial Rates" in effect at the time of use.

AGENDA SHEET FOR COUNCIL MEETING OF: January 22, 2001

Submitting Dept.	Contact Person	Phone No.
Water	George Miller	7805

RECEIVED
JAN 11 2001
CITY CLERK'S OFFICE
SPOKANE, WA

2008

OPR01-32

ADMINISTRATIVE SESSION
- ● Contract
- o Report
- o Claims

LEGISLATIVE SESSION
- o Emergency Ord
- o Resolution
- o Final Reading Ord
- o First Reading Ord
- o Special Consideration
- o Hearing

CITY PRIORITY
- o Communications
- o Economic Development
- o Growth Management
- o Human Services
- o Neighborhoods
- o Public Safety
- ● Quality Service Delivery
- o Racial Equity/Cultural Diversity
- o Rebuild/Maintain Infrastructure

CLERK'S FILE
RENEWS
CROSS REF
ENG
BID
REQUISITION
(o CR o RE)

AGENDA WORDING: Agreement for Water Systems Intertie for Water Supply Emergencies with the United States Government Department of Defense for Fairchild Air Force Base.

BACKGROUND: (Attach additional sheet if necessary) Fairchild Air Force Base (FAFB) has requested that an intertie with the City of Spokane water system be established with the FAFB water system at the FAFB facilities on Airport Drive west of Spotted Rd. FAFB desires to improve the reliability of water service for domestic & fire protection to the Fairchild Air Force Base during emergencies in their water system supply by the backup provided by the inertie between the water systems. The Agreement provides the formal understanding between the Parties for the intertie of the water system for emergency purposes.

RECOMMENDATION:
Approve the Agreement & Authorize the Mayor to sign.

Fiscal Impact:	Budget Account:
o Expenditure: $ N/A	# N/A
● Revenue: $ Varies on sales	# N/A
o _____ $	#

ATTACHMENTS:
On file for Review in Office of City Clerk: Intertie Agreement
Include in Packets:

SIGNATURES:

Director, Public Works & Utilities

Director – Water & Hydro. Svcs.

Finance

Legal

Mayor

Council President

DISTRIBUTION: Director of Accounting
Budget Control
Legal Attn: Bob Beaumier
Water (George Miller)
FAFB

COUNCIL ACTION:

APPROVED BY
SPOKANE CITY COUNCIL:
January 22, 2001
CITY CLERK

10.

EXHIBIT 1.3.2D

9/13/00 rgb/gwm

Spokane City Clerk file no. OPR01-32

FAFB file no._____

AGREEMENT FOR WATER SYSTEMS INTERTIE FOR WATER SUPPLY EMERGENCIES

This Agreement made and entered into this _____day of _____, 2000, by and between the CITY OF SPOKANE, a municipal corporation of the State of Washington, acting through its Department of Water and Hydroelectric Services (hereinafter "City" or "City Water Department"), and the United States Government, acting through its Department of Defense, as owner and operator of Fairchild Air Force Base (hereafter also "FAFB") in Spokane County, Washington.

WHEREAS, the parties are public water supply purveyors owning and operating water systems to supply their customers with potable water for domestic and fire protection needs, and

WHEREAS, the parties desire to mutually improve the reliability of the water supply by means of an emergency water system intertie, and

WHEREAS, the City system includes an existing 24" transmission water main in Spotted Road at Airport Drive in Spokane County. Said location is near FAFB water system supply facilities known as the Geiger Reservoir/Geiger Pumping Station. An intertie location convenient for both parties could be achieved by installing a new water line from said existing City main to the FAFB Geiger Reservoir; and

WHEREAS, the current Spokane County Coordinated Water System Plan Update, June 1999, under Section 7, paragraph 7.6 promotes the creation of water system interties between water purveyors to increase the reliability of water service locally; and

WHEREAS, the State of Washington Administrative Code (WAC), Chapter 246-290, section 246-290-132, deals with establishing interties between public water systems;

NOW, THEREFORE, the parties agree as follows:

1. Intertie; Location; Facilities

A. The parties agree FAFB may extend a necessary water main, including all other necessary infrastructure components, to intertie the FAFB water system supply facilities at the Geiger Reservoir/Geiger Pumping Station with the City's water system at the existing City water main in Spotted Road at Airport Drive, in Spokane County.

B. In addition to the intertie line, FAFB agrees to install such necessary facilities as may be ordered by the City Water Department Director. Such facilities shall include necessary water meter(s), backflow prevention device(s), and a control valve on the intertie with such necessary features so as to open and close at controlled speeds in order to control flows and mitigate creating water pressure surges, known as "water hammer."

C. Further, said control valve must be designed to be adjustable to govern the flow rate of water in order to mitigate creating low water pressure and water supply problems. As such, FAFB agrees to set the initial flow rate of the control valve at such setting so as not to exceed 2,500 gallons per minute.

D. All facilities and devices are to be installed at FAFB's sole expense and liability, and must be approved by the City Water Department Director.

2. Adjustment by City Water Department Director

A. The City reserves the right to require the setting of valve operating control speeds to be adjusted as necessary to protect the City's water system from unacceptable water hammer. Further, the City reserves the right to require the setting of flow to be adjusted downward as necessary to protect the operations of the City's water system from unacceptable impacts from flow rates drawn into the FAFB water system. These determinations are at the sole discretion of the City Water Department Director.

B. Verbal notice of any desired municipal adjustments may be given in person or by telephone from the City Water Department Director to FAFB, and may be followed by written notice from the Director to FAFB. Further, upon written authorization by the City Water Department Director, FAFB may be allowed to increase the flow rate to a specified rate above the aforementioned 2,500 gallons per minute, upon such additional terms or conditions as the Director may specify.

3. FAFB responsible for engineering, installation, maintenance

A. FAFB agrees that all liability and costs of the engineering and installation of all infrastructure, devices, controls and all other components necessary to provide a functional and reliable intertie with the City's water system are the sole responsibility of FAFB and the United States Department of Defense.

B. FAFB agrees to provide all necessary maintenance of all facilities, except the meter and water meter calibrations, so as to assure the continuing proper performance of the devices at its sole expense and liability. FAFB agrees to provide all necessary maintenance of all other water system infrastructure components, including the service line, located on the FAFB side of the water meter.

C. FAFB agrees to allow inspections of the intertie infrastructure components by City Water Department personnel at any time with advanced notification to FAFB, or in

case of urgency as ordered by the City Water Department Director, without advance notice.

3. City to keep meter in repair; damage

A. The City agrees to provide maintenance and calibration of the water meter at no additional cost, PROVIDED, FAFB agrees to pay any maintenance calibration or meter repair or replacement charges where the City Water Department Director determines that the water meter was damaged as a result of actions, processes and/or procedures caused by FAFB, its agents, employees or contractors, or third parties outside the City of Spokane. Such charges may be billed by the City on a time and materials basis and must be paid within 30 days of billing.

B. FAFB agrees to promptly advise the City of any known or suspected maintenance or repair needs on the City's water mains, including service line, or water meter.

4. Activation; times of use

A. FAFB may activate the intertie in times of emergency, which shall include the following circumstances: at such times as FAFB's water system cannot furnish adequate water from its own water system, as necessary to supply FAFB system needs to avoid base closure, for the purpose of testing the intertie for readiness of service, for the purpose of maintaining the quality of the water within the intertie plumbing at acceptable levels by periodic flowing of fresh water into the system, when necessitated because of scheduled or unscheduled system repairs or maintenance, or for any other reasons in the interests of national defense or the public safety.

B. FAFB agrees to give the City Water Department Director or designee at least 24 hours' advance notice of any activation of the intertie by calling the City's Water & Hydroelectric Services' dispatch office at 625-7800, except that during an unplanned emergency, the call may be made, as soon as possible, after the activation of the intertie.

C. The City reserves the right to temporarily discontinue the furnishing of water service upon the City Water Department Director's determination that the City is unable to adequately provide water service due to operational difficulties, which includes water system failure needing repairs, maintenance, or replacement. As much advanced notice as possible will be provided by the City to FAFB should such need to temporarily discontinue the furnishing of water service occurs, but in no event shall such time be less than 48 hours except that during an unplanned emergency the call may be made, as soon as possible, after the interruption of water service.

D. The City of Spokane reserves the right to renegotiate this agreement if the furnishing of water becomes other than on the basis provided for herein.

5. FAFB must pay for water usage

FAFB shall pay for all water furnished by the City, as measured through the water meter on the FAFB intertie service line, or if the meter is inoperative, a reasonable estimate of consumption by the City Water Department Director. Charges shall be at established City of Spokane water rates in effect at the time of consumption as listed in the Spokane Municipal Code under Section 13.04.2014 for Outside City Service Area. FAFB understands current City practice is to read the water meter on a monthly basis, which will result in the generation of monthly billings for water usage. FAFB agrees to make payment within 30 days of billing. FAFB is responsible promptly to notify the City of any errors in billing, but in any event, no longer than twelve (12) months after billing, and shall be subject to other generally applicable provisions of municipal water service ordinances, policies and requirements, as determined by the City Water Department Director.

6. Information for FAFB

The City agrees to provide FAFB, upon request, any available information relative to the City's water, on an annual basis by or before the deadlines prescribed by the U.S. Environmental Protection Agency pursuant to federal regulations, to assist the FAFB personnel in preparing their Annual Consumer Confidence Report as prescribed by federal regulations.

7. DOH, Ecology approval may be required

The parties understand this agreement may be subject to approval by the Washington State Department of Health (DOH), the Washington State Department of Ecology (Ecology) or other jurisdictional agencies prior to taking effect. As such, the parties agree to cooperate and assist each other, combining their respective technical and legal resources into a unified team unit or consortium, so as to jointly prepare and submit the necessary documents to DOH, Ecology, or other appropriate jurisdictional agencies for approval of this agreement and the intertie, so long as both parties believe the purpose of the agreement may be fulfilled.

8. Liability; Limit; Additional.

A. Notwithstanding any other provision, the parties agree that the City shall have no liability whatsoever for failure to furnish water in amounts or at rates needed or requested by FAFB, whether under this agreement or otherwise. Should any liability or damages nonetheless be determined to arise because of such failure or other default by the City, whether under the terms of this agreement or otherwise, the parties agree that the total amount of any claim may not exceed actual damages or the total payments by FAFB under this contract for a time not to exceed the past five (5) years, whichever is less.

B. The City shall never be liable for any incidental or consequential damages or otherwise to pay any costs of furnishing water to any FAFB customer and shall not be considered a purveyor to any FAFB customer. This agreement establishes no right to receive utility service for any area, person, or premises, and no such right or estoppel against the City shall be deemed extended or created by any action or inaction taken, in the administration of this agreement or otherwise.

C. This Agreement is not assignable by FAFB without written consent of the City Water Department Director.

D. This Agreement shall be construed as being made and delivered in the State of Washington with federal law being applicable to its construction and enforcement. Any action at law, suit in equity or judicial proceeding for the enforcement of this agreement or any provision herein shall be commenced in U.S. District Court.

E. This document is the entire agreement, which may not be amended, except in writing, mutually signed by both sides. Each party has had an opportunity to consult with legal counsel and the agreement shall not be construed to favor or disfavor either party.

CITY OF SPOKANE

By: _____
~~City Manager~~ Interim City Administrator

Attest: _____
City Clerk

Approved as to form:

_____
Assistant City Attorney

FAFB; UNITED STATES DEPARTMENT OF DEFENSE

By: _____
Commander, 92d Air Refueling Wing

STATE OF WASHINGTON)
) ss.
County of Spokane)

On this 22 day of January, 2001, before me personally appeared Hank Miggins and Terri Pfister, to me known to be the ~~City Manager~~ (Interim City Administrator) and the City Clerk, respectively, of the City of Spokane, a municipal corporation, that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument.

In witness whereof I have hereunto set my hand and affixed my official seal the day and year first above written.

Shirley M. Rippenger
Notary Public in and for the State of Washington, residing at Spokane.
My commission expires 04/15/01.

~~STATE OF WASHINGTON)~~
~~) ss.~~
~~County of Spokane)~~

UNITED STATES
AIR FORCE
AT FAIRCHILD AFB WA 99011

On this 13th day of November, 2000, before me, the undersigned, a Notary Public in and for the State of Washington, personally appeared Erwin F. Lessel III, to me known to be the Commander, of Fairchild Air Force Base, United States Department of Defense, the agency that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said agency, for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument and that the seal affixed is the seal of said agency.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

SCOTT B. BRUSO, SSGT, USAF
Paralegal Craftsman, 10 U.S.C. 1044a
92 ARW/JA
1 E. Bong St., Suite 135
Fairchild AFB, WA 99011

Notary Public ~~in and for the State of Washington, residing at Spokane.~~
~~My commission expires~~ N/A

AGENDA SHEET FOR COUNCIL MEETING OF: February 24, 2003

AgSht06-03-2002

Submitting Dept.	Contact Person	Phone No.
WATER	Brad Blegen	7839

ADMINISTRATIVE SESSION
X Contract
o Report
o Claims

LEGISLATIVE SESSION
o Emergency Ord
o Resolution
o Final Reading Ord
o First Reading Ord
o Special Consideration
o Hearing

CITY PRIORITY
o Communications
o Economic Development
o Growth Management
o Human Services
o Neighborhoods
o Public Safety
o Quality Service Delivery
o Racial Equity/Cultural Diversity
X Rebuild/Maintain Infrastructure

CLERK'S FILE OPR 2003-144
RENEWS
CROSS REF
ENG
BID
REQUISITION

STANDING COMMITTEES (Date of Notification)
o Finance _____
o Neighborhoods _____
o Planning/Community & Econ Dev _____
o Public Safety _____
o Public Works _____

Neighborhood/Commission/Committee Notified: _____
Action Taken: _____

AGENDA WORDING: Agreement with Velview Water District 13 for Emergency Water Intertie

BACKGROUND: (Attach additional sheet if necessary) This provides authority for an intertie with Velview water system to support emergency needs only.

RECOMMENDATION:
APPROVE

Fiscal Impact: o N/A	**Budget Account:** o N/A
o Expenditure: $	#
o Revenue: $	#
o Budget Neutral	

ATTACHMENTS: Include in Packets:
On file for Review in Office of City Clerk:

SIGNATURES:

Department Head

Division Director

Finance

Legal

City Administrator for Mayor

Council President

DISTRIBUTION:
Water
Mike Ormsby- Preston Gates Law Firm
Engineering

COUNCIL ACTION:

February 17, 2003: See Council Action Memorandum dated February 18, 2003, for Council Action on February 17, 2003.

March 10, 2003: See Council Action Memorandum dated March 12, 2003, for Council Action on March 10, 2003.

EXHIBIT 1.3.2E

THE CITY OF SPOKANE

OFFICE OF THE CITY CLERK
808 W. SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3342
(509) 625-6350

March 12, 2003

City Clerk File Nos.:
CPR 03-2
OPR 03-144

COUNCIL ACTION MEMORANDUM

RE: AGREEMENT WITH VELVIEW WATER DISTRICT 13 FOR EMERGENCY WATER INTERTIE

During its 3:30 p.m. Briefing Session held Monday, March 10, 2003, the Spokane City Council took the following action:

> **Motion** by Council Member Greene, seconded by Council Member Hession, that the Agreement with Velview Water District 13 for Emergency Water Intertie be added to the (March 10, 2003) Consent Agenda (thereby removing the item off the table) **carried unanimously (Council Members Eugster and French absent).**

Subsequently during the 3:30 p.m. Briefing Session, the Council took the following action:

> **Motion** by Council Member Greene, seconded by Council Member Rodgers, to approve the March 10 Current Consent Agenda Items, excluding Item No. 5, **carried unanimously (Council Members Eugster and French absent).** This action included the approval of the Agreement with Velview Water District 13 for Emergency Water Intertie.

Terri L. Pfister, CMC
Spokane City Clerk

c: Water – Brad Blegen
Engineering Services
Mike Ormsby – Preston Gates Law Firm

CITY OF SPOKANE

OFFICE OF THE CITY CLERK
808 W. SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3342
(509) 625-6350

JOHN T. POWERS, JR.
MAYOR

February 18, 2003

City Clerk File Nos.:
CPR 03-2
✓OPR 03-144

COUNCIL ACTION MEMORANDUM

RE: AGREEMENT WITH VELVIEW WATER DISTRICT 13 FOR EMERGENCY WATER INTERTIE

During its 3:30 p.m. Briefing Session held Monday, February 17, 2003, the Spokane City Council, upon review of its February 24, 2003, Advance Agenda, took the following action:

> **Motion** by Council Member Eugster, seconded by Council Member French, to table (indefinitely) the Agreement with Velview Water District 13 for emergency water intertie and refer it to the Public Works Committee **carried 6-0 (Council President Higgins absent).**

Terri L. Pfister, CMC
Spokane City Clerk

c: City Administrator Jack Lynch
Chief of Staff Randy Withrow
Public Works & Utilities Division Director Roger Flint
Water – Brad Blegen
Engineering Services
Mike Ormsby – Preston Gates Law Firm
Mike Piccolo - Legal

4862811
Page: 1 of 10
03/19/2003 12:17P
OFFICE OF CITY CLERK AGR $28.00 Spokane Co, WA

After Recording Return to:
Office of the City Clerk
808 W Spokane Falls Boulevard
Spokane, WA 99201-3342

Spokane City Clerk's file no. OPR 03-144
Velview WD #13 file no._____

AGREEMENT FOR EMERGENCY WATER SYSTEMS INTERTIE

This Agreement made and entered into this _____day of _____, 2002, by and between the CITY OF SPOKANE, a municipal corporation of the State of Washington (hereinafter "CITY"), and the Velview Water District #13 PWS #91445F- Spokane County (hereinafter also "VELVIEW" or "District").

WHEREAS, the Velview development was platted in the late 1960's and served by a water system that was formerly recognized as a municipal water district in 1982; and

WHEREAS, there are currently 22 homes served by the District and another 10 lots within the District's service area who either have their own well or no water service at all; and

WHEREAS, the Department of Health has issued a moratorium on any additional hook-ups to the water system of the District; and

WHEREAS, the District has had problems with its well both in terms of quality and quantity of water; and

WHEREAS, the District is desirous of providing sufficient water to meet the demand and emergency situations facing its residents and with

certain limitations, the City is prepared to provide water on an emergency basis subject to such limitations as stated, and with the District retaining all service obligations to its own customers; and

WHEREAS, the District must pay certain costs associated with the connection of its system to the City and intends to finance these necessary improvements through the formation of a local improvement district ("LID"); and

WHEREAS, in order to assess property in an LID for improvements, the benefit from such improvements must be provided or available to any properties assessed; and

WHEREAS, both parties own and operate public water systems in Spokane County WA and VELVIEW requests permission to connect to the City system for emergency backup purposes; and

WHEREAS, the City is willing to grant VELVIEW's request, without guarantees from the City of the permissibility or reliability of such connection or the adequacy of the City's water supply;

NOW THEREFORE, VELVIEW and the City agree as follows:

1. ADMINISTRATION; EFFECTIVE DATE

A. The City's representative administering this agreement is the Director of Water and Hydroelectric Services ("Director" or "City Water Director"). Designation of this official may be changed by written notice from the City Administrator to VELVIEW notwithstanding any references hereafter. VELVIEW's representative is the System Manager ("Manager"). VELVIEW may change this designation by written notice to the City Administrator.

B. This agreement is effective as of the date first above given, provided also 1) both parties have executed the same and 2) approvals from jurisdictional regulatory agencies have been granted, as necessary. Notwithstanding any other provision relating to conditions of performance herein, this agreement may be cancelled at any time by either party by written notice to the other and the intertie disconnected without further liability of either party to the other. VELVIEW's notice must be signed by the VELVIEW System Manager. The City's notice must be signed by the City Water Director. The actual date and details of

physical connection of the intertie may be determined by the Director and Manager.

2. REGULATORY REQUIREMENTS

A. The parties will work together to address any regulatory requirements. These may include WAC 246-290-132 (4), which references prerequisites for State Health Department approval of emergency interties:

(a) In an approved coordinated water system plan, water system plan, water system plan update, water system plan amendment, or small water system management plan including:
(i) Description of the intended use of the emergency intertie;
(ii) Location of the proposed intertie;
(iii) Date the intertie is intended to be operational;
(iv) Copy of the intertie agreement between purveyors detailing the conditions and limitations of such intertie; and
(v) Hydraulic analysis conducted to identify the impacts upon each water system.

(b) In a project report in accordance with WAC 246-290-110 or in a construction document in accordance with WAC 246-290-120.

B. This agreement or its provisions may be incorporated in an appropriate water system plan, as required by the applicable regulations. In any regulatory agency decision affecting performance of this agreement, the parties agree to work together to supply any further information and accomplish necessary approvals, provided VELVIEW must pay any reasonable engineering, staff time, or other costs incurred by the City.

3. MECHANICS

A. Connection Location

The City agrees to allow VELVIEW to hookup to its system at the following location: The vicinity of Prescott Road and Velview Drive.

The details of location may be modified by written approval of the Water Director and VELVIEW Manager, on mutual written consent, subject also to any regulatory agency requirements. All expenses and liability for the

hookup shall be VELVIEW's. VELVIEW Manager may request reasonable advance notice of the estimated costs.

B. Purpose/Date/Maximum Flow. This is an emergency backup intertie for VELVIEW. The purpose of this agreement is to establish an interconnection between the two public water systems permitting the temporary exchange or delivery of water between those systems only in cases of emergency that result in permanent supplies being unavailable for use or emergency from inadequate water pressure as defined in WAC 246-290, all as further conditioned herein. The maximum emergency flow permitted by the City is 1,500 gallons per minute. During activation, the City reserves the right to control such activation or use, in the Water Director's exercise of reasonable discretion.

4. VELVIEW RESPONSIBILITIES

A. The City will provide at VELVIEW's expense the necessary manual and pressure activated valves necessary for the operation of the intertie.

B. Meter, Backflow prevention. The City will provide at VELVIEW's expense the meter necessary to measure water consumption and the back flow prevention device necessary to protect the City's water system from reverse flow of water from the VELVIEW water system to the City's water system.

C. VELVIEW is solely responsible for the emergency intertie after the point of connection with City facilities. Not by way of limitation, this includes:

1. VELVIEW agrees that all liability and costs of the engineering and installation of all infrastructure, devises, controls and all other components necessary to provide a functional and reliable emergency intertie with the City's water system is the sole responsibility of VELVIEW.

2. The City will perform any maintenance on the control valve or other fixtures determined necessary by the City, and VELVIEW must pay any charges therefore.

3. VELVIEW agrees to provide all necessary maintenance of all other water system infrastructure components, including the service line, located on the VELVIEW side of the water meter.

4. VELVIEW agrees to allow inspections of the emergency intertie infrastructure components by the City Water Department at any time.

5. ACTIVATION; TIMES OF USE

A. The City Water Director shall at all times maintain control of activating the connection and determine the parameters of any automatic activation. Activation is premised as follows:

1. VELVIEW shall continue to operate its own wells and may not reduce pumpage or operations in reliance upon the emergency connection herein.

2. The purpose of activation is strictly in response to conditions whereby VELVIEW's water system cannot furnish adequate water from its own water system, does not have adequate water pressure, for testing the intertie for readiness of service, and/or for the purpose of maintaining the quality of the water within the intertie plumbing at acceptable levels by periodic flowing of fresh water into the system.

3. Since this is an emergency intertie, under no circumstances may VELVIEW expand service beyond a total of 32 single family customer style lots. Such lots may not be further subdivided or developed to increase or exacerbate the needs of VELVIEW, the intent of this term being to express the concern, accepted by VELVIEW, that the City is willing to support VELVIEW meet its emergency needs as now presented, but not facilitate actions by VELVIEW or others in allowing such needs to be increased or worsened. Any modification of this term must be approved in writing by the City Water Director. Modification in one instance shall in no respect imply further modifications.

4. As an emergency intertie, under no circumstances may VELVIEW ever agree to serve any adjacent areas requesting service from VELVIEW.

B. Supplementing other terms, the City reserves the right to discontinue the furnishing of water service if at any time the City Water Director determines that municipal water needs or demands exceed the City's capacity to meet intertie needs in the Director's sole discretion.

6. ADDITIONAL VELVIEW OBLIGATIONS

VELVIEW promises further:

A. To support and pursue inclusion of VELVIEW territory within the City Urban Growth Area boundary and support any proposal or petition for annexation of VELVIEW territory into the City of Spokane, it being a mutual declared goal of the parties to facilitate annexation of the area served by VELVIEW into the City of Spokane at an appropriate time.

B. To record notice of this agreement on the plat of all properties within VELVIEW boundaries. Prior to connecting the intertie herein, VELVIEW agrees to obtain from all its current customers a covenant approved by the City binding connected VELVIEW customer's premises to annex to the City of Spokane. VELVIEW agrees to enforce this requirement and not to release its customers from such covenant unless approved by the City Engineer or designee in writing. Such covenant shall be likewise obtained by VELVIEW as a condition of connection of all future customers. In the event VELVIEW is not able to obtain 100% participation from each and every existing connected customer, but shows it has exercised due diligence, VELVIEW may appeal to the Director for limited relief from 100% compliance with this requirement. In requesting relief or considering a request for relief, both VELVIEW and the City shall act in mutual good faith. VELVIEW further agrees that no new hookups will be permitted and no increase or modification of service to any existing nonsignatory customers allowed without a recorded covenant. In recording the notice of this agreement, VELVIEW will include due notice of this covenant requirement on all property within its territory as in the nature of a disclosure per RCW 65.08.170.

7. PAYMENT

A. VELVIEW shall pay for all water furnished by the City, as measured through the water meter on the VELVIEW intertie service line, or if the meter is inoperative, a reasonable estimate of consumption as ordered by the Water Director. Charges shall be at established City of Spokane water rates currently in effect at the time of consumption as listed in the Spokane Municipal Code for Outside City Service Area or similar applicable water rate provisions as determined by the Director to apply, as well as any other or additional costs incurred by the Water Department not otherwise provided for in City Water Rates. The VELVIEW Manager may request advance information as reasonably available from the Water Director.

B. VELVIEW understands that current City practice is to read the water meter on a monthly basis. This results in monthly billings for water usage. VELVIEW agrees to make payment within 30 days of billing.

8. METER REPAIRS

A. The City agrees to provide maintenance and calibration of the water meter at no additional cost, PROVIDED, VELVIEW agrees to pay any maintenance calibration or meter repair or replacement charges where the Water Director determines that the water meter was damaged as a result of actions, processes and/or procedures caused by VELVIEW, its agents, employees or contractors, or third parties outside the City of Spokane. Such charges may be billed by the City on a time and materials basis and must be paid within 30 days of billing.

B. VELVIEW agrees to promptly advise the Director of any known or suspected maintenance or repair needs on the City's water mains, including service line, or water meter.

9. NO GUARANTEES, OTHER RELATIONS CREATED

A. No guarantees by City. VELVIEW understands that the City's consent to this agreement is given with the strict understanding that the City water supplies and facilities are reserved exclusively for the benefit of the City and its residents. No guarantees of water supply availability or willingness by the City to continue such arrangements are made by the City. No estoppel against the City shall be deemed extended or created by any action or inaction taken, in the administration of this agreement.

B. No third party beneficiaries. This agreement creates no third party beneficiaries or relationships. The City shall never be liable for any incidental or consequential damages or otherwise to pay any costs of furnishing water to any VELVIEW customers and shall never be considered a purveyor to any VELVIEW customers for any purpose.

C. City takes no responsibility for limitations in VELVIEW system, water supply. Any limitations in the VELVIEW system or supply to provide its customers or others with safe and reliable service remain 100% upon VELVIEW's shoulders and this agreement is not intended either to remove or enhance any duty on the part of VELVIEW to serve its customers now or hereafter. The City has no liability for failure to furnish water, whether under this agreement or otherwise. In the event, for any

reason, any claim shall arise under this agreement or otherwise in connection with any relationship created by this agreement VELVIEW further agrees that the amount of any liability or damages nonetheless determined to arise shall not exceed the total amounts paid to the City by VELVIEW for a total of five (5) years. The measuring period is the immediate period of five (5) years or less prior to any event upon which municipal fault or liability is determined to have arisen. This provision shall control any other in case of ambiguity or conflict.

10. ADDITIONAL

A. This Agreement is not assignable without written consent of the non assigning party.

B. This Agreement shall be construed as being made and delivered in the State of Washington with the laws of the State of Washington being applicable to its construction and enforcement. Any action at law, suit in equity or judicial proceeding for the enforcement of this agreement or any provision herein shall be instituted in the Superior Court of Spokane County, Washington.

C. This document is the entire agreement, which may not be amended, except in writing, mutually signed by both sides. Each party has had an opportunity to consult with legal counsel and the agreement shall not be construed to favor or disfavor either party. In the event any clause shall be declared illegal or unenforceable, it shall not affect the remainder.

Entered into on the date above first written.

CITY OF SPOKANE

By: _____
City Administrator

Attest: _____
City Clerk

VELVIEW WATER DISTRICT #13

By: George W. Lugga
Commissioner

Approved as to form:

Assistant City Attorney

Counsel for VELVIEW

STATE OF WASHINGTON)
) ss.
County of Spokane)

On this 13th day of March, 2003, before me personally appeared Jack Lynch and Terri Pfister, to me known to be the City Administrator and the City Clerk, respectively, of the City of Spokane, a municipal corporation, that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument.

In witness whereof I have hereunto set my hand and affixed my official seal the day and year first above written.

Notary Public in and for the
State of Washington, residing
at Spokane.
My commission expires 04/15/05

STATE OF WASHINGTON)
) ss.
County of Spokane)

OFFICE OF CITY CLERK AGR $28.00
4862811
Page: 10 of 10
03/19/2003 12:17P
Spokane Co, WA

On this 20th day of January, 2003, before me, the undersigned, a Notary Public in and for the State of Washington, personally appeared George W Twiggs, to me known to be the Commissioner, VELVIEW WATER DISTRICT #13, that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said District, for the uses and purposes therein mentioned, and on oath stated that he/she was authorized to execute said instrument and that the seal affixed is the seal of said agency.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

MICHAEL C. ORMSBY
COMMISSION EXPIRES
NOTARY
PUBLIC
10-15-06
STATE OF WASHINGTON

Notary Public in and for the State of Washington, residing at Spokane

My commission expires October 15, 2006

Exhibit 1.5.1 Watershed System Plan Checklist

Watershed System Plan Checklist for WRIA 55 and 57

The Washington State Department of Health requires Watershed Planning Units to check Water System Plans for consistency with Watershed Plans. The WRIA 55/57 Planning Unit requests you provide the following information about your water system plan. The WRIA 55/57 Watershed Management Plan has recommendations rather than requirements, thus, these questions are primarily informational. The first question represents the only required element. Your responses to the other question will help the WRIA 55/57 Planning Unit understand the conditions in the watershed better. The Planning Unit may be able to help you implement some of your projects that apply to the Plan recommendations in the future and Water Systems can help meet the Watershed Plan goals. Thank you.

Question	Location in Water System Plan / Answer
Does the Water System Plan include a conservation program?	Yes- Chapter 4
Does the conservation plan include a method to monitor / document water savings goals?	Yes- Chapter 4, Section 4.1
Does the Conservation Program include indoor conservation incentives?	Yes- Chapter 4, Section 4.1
Does the conservation program include incentives for irrigation efficiencies for large irrigators?	Yes-Chapter 4, Section 4.1
Does the conservation program include ways to encourage water conservation on public properties?	Yes-Chapter 4, Section 4.1
Does the conservation program include extra measures for low flow years?	No additional measures other than an extra surcharge charged to customers for extra high irrigation use in the summer months when low river flows are most critical.
Does the plan address water reclamation?	Yes- Chapter 4, Section 4.1
Does the plan identify any areas of water availability concerns near or in your service area?	Yes-Chapter 1, Section 1.4, 1.6 and Chapter 4, Section 4.5
Does the plan include water pumping/use data?	Yes-Chapter 4, Section 4.1
Does your water district have any wells near a river? Have you or would you consider moving pumping away from those wells during low flow times?	Yes, Well Electric station is adjacent to the river. This well is a major source of supply. Shutting it down would cause major supply problems for water customers and fire flow protection. Therefore, an extreme state of emergency would have to be declared by local government bodies before shutting this well down would be considered.

EXHIBIT 1.5.1

Exhibit 1.6.1 Water Demand Forecast

City of Spokane
Department of Water &
Hydroelectric Services

Future Water Service Area Build-out Demand Estimate

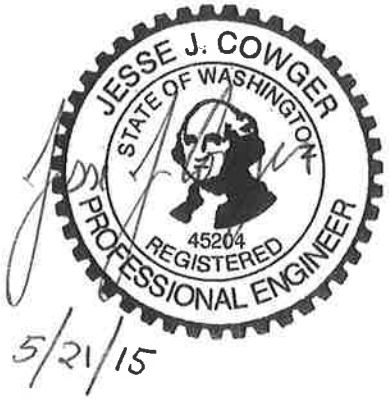
February 20, 2015 – Final

VARELA & ASSOCIATES, INC.
ENGINEERING AND MANAGEMENT
PLANNING • DESIGN • MANAGEMENT • INSPECTION

City of Spokane
Department of Water &
Hydroelectric Services

Future Water Service Area Build-out Demand Estimate

February 20, 2015 – Final



VARELA & ASSOCIATES, INC.
ENGINEERING AND MANAGEMENT
PLANNING · DESIGN · MANAGEMENT · INSPECTION

CITY OF SPOKANE
FUTURE WATER SERVICE AREA
BUILD-OUT DEMAND ESTIMATE

1.0 BACKGROUND AND PURPOSE

The City of Spokane's Department of Water & Hydroelectric Services (Water Dept) has retained Varela & Associates for assistance related to a planned water supply project. The project will consist of development of a new well-field at a new location. The Water Dept has identified several possible locations for the new source of supply. The location of current and future water demand in relation to current and future supply sites dictate the transmission needs of the water distribution system. The Water Dept wants to develop a quantitative basis for evaluating the transmission system impacts of prospective new supply sites.

The Water Dept indicates water supply facilities have service lives of 50-100 or more years and hence believes demand estimates associated with future supply and transmission needs should take into account similar time frames. The Spokane County Coordinated Water System Plan (CWSP) establishes the Water Dept's future service area which is significantly larger than the current service area. This analysis assumes the time frame for build-out of the CWSP service area is similar to the service life of the supply and transmission improvements currently contemplated by the Water Dept.

Spokane's water rights currently are not fully consolidated; that is, the annual volume and instantaneous withdrawal rate at each supply site is limited to a fixed fraction of the City's total water rights portfolio. The Water Dept has applied to the Department of Ecology (Ecology) to consolidate two of its largest water rights and add points of withdrawal at potential new supply sites. Consolidation of Spokane's other water rights may not be necessary if future supply needs for each supply site do not exceed the water rights annual volume and withdrawal rate available at each site.

The Water Dept has tasked Varela & Associates with estimating the build-out water demand for the City of Spokane's future water service area as defined in the Spokane County CWSP. It is our understanding the Water Dept intends to use the build-out water demand estimate developed herein for the following:

- Coordinate siting of new water well fields with conceptual future transmission and distribution system needs.
- Aid in possible future discussions with the Department of Ecology on adequacy of annual water rights.

2.0 METHODOLOGY

The build-out water demand estimate for the City's future service area is intended to be used for the specific purposes identified in the preceding section. The assumptions and information used to develop the build-out water demand estimate are intended to be similar to but not identical to those used to develop other local comprehensive land use and water system plans.

The following sections provide a general outline of the methods used to estimate the build-out water demand of the CWSP service area.

2.1 Sources of Information

The following sources of information were used to estimate the build-out demand of the CWSP service area:

- Recent Water Dept total annual water production figures
- Draft City of Spokane Water System Plan, May 2014
- GIS layers from the City of Spokane and Spokane County including parcel, zoning and land use data (most GIS data acquired November 2014)
- Population projections and 2010 census data from the State Office of Financial Management (OFM)
- Available aerial photography

2.2 Determine Current and Future Water Use Ratios

Current per-capita water use within the existing water service area was used as the baseline to estimate future per-capita water use for the entire CWSP service area. Analysis of current population density and estimation of future population density allowed estimation of *current and future water use per acre* ratios. The *future water use per acre* ratio was used to estimate future water use for both vacant parcels within the service area and for water use within the CWSP area when it is fully developed.

2.3 Estimate Future Water Use within Existing Service Area

Vacant parcels within the existing service area were identified using Spokane County parcel data. The parcel data identifies if a parcel is vacant or not. It is assumed vacant parcels will develop and contribute to the build-out water demand.

Spokane's planning department maintains up-to-date GIS layers on preliminary and final land use actions. Parcels identified as final plats are not included in the "vacant" parcels described above and need to be included to estimate future (infill growth) water use within the existing service area.

Redevelopment or additional development of non-vacant lots has potential to increase population density within the water service area; higher density population will result in increased water use within Spokane's water service area. Estimating the future density of population within the service area and using the existing per-capita demand ratio allows calculation of a *future water use per acre* ratio.

Applying the *future water use per acre* ratio to vacant lots and applying *water use per capita* to the population increase for redevelopment provides an estimate of future water use within the existing service area.

2.4 Estimate New Water Use within the CWSP Service Area

For the area outside the existing service area but inside the CWSP boundary the water use projections assume that all available land will be converted into higher density land uses except for the Rural

Conservation land designated by the County. It is assumed that when the CWSP area is fully built-out land use within the CWSP boundary will be similar to the future density of the existing service area. To estimate future water use the *future water use per acre* ratio was applied to the portions of the CWSP service area not currently served water by the Water Dept.

2.5 Water Sales to Other Jurisdictions and Wholesale Customers

The Water Dept has common boundaries with roughly 12 water purveyors. Six of these adjoining purveyors have interties with the City of Spokane water system. Spokane expects to connect to additional adjacent purveyors and will likely become an important member in regional wholesale water supply to systems with insufficient source capacity and/or insufficient water rights to support current demand and/or growth in their water systems. A detailed estimate of possible future wholesale connections and growth rates is beyond the scope of this study. This study assumes Spokane will eventually supply up to 10,000 acre-feet to neighboring systems via interties.

3.0 Existing Service Area Characteristics

3.1 Area

The existing service area covers approximately 56,500 acres. The service area includes most of the City of Spokane as well as smaller areas outside the City Limits. **Figure 1** shows the existing water service area and the CWSP service area. According to City land use maps approximately 2,500 acres within the existing service areas are designated as Conservation. Most conservation areas do not currently utilize water; it is assumed these areas will not use water in the future.

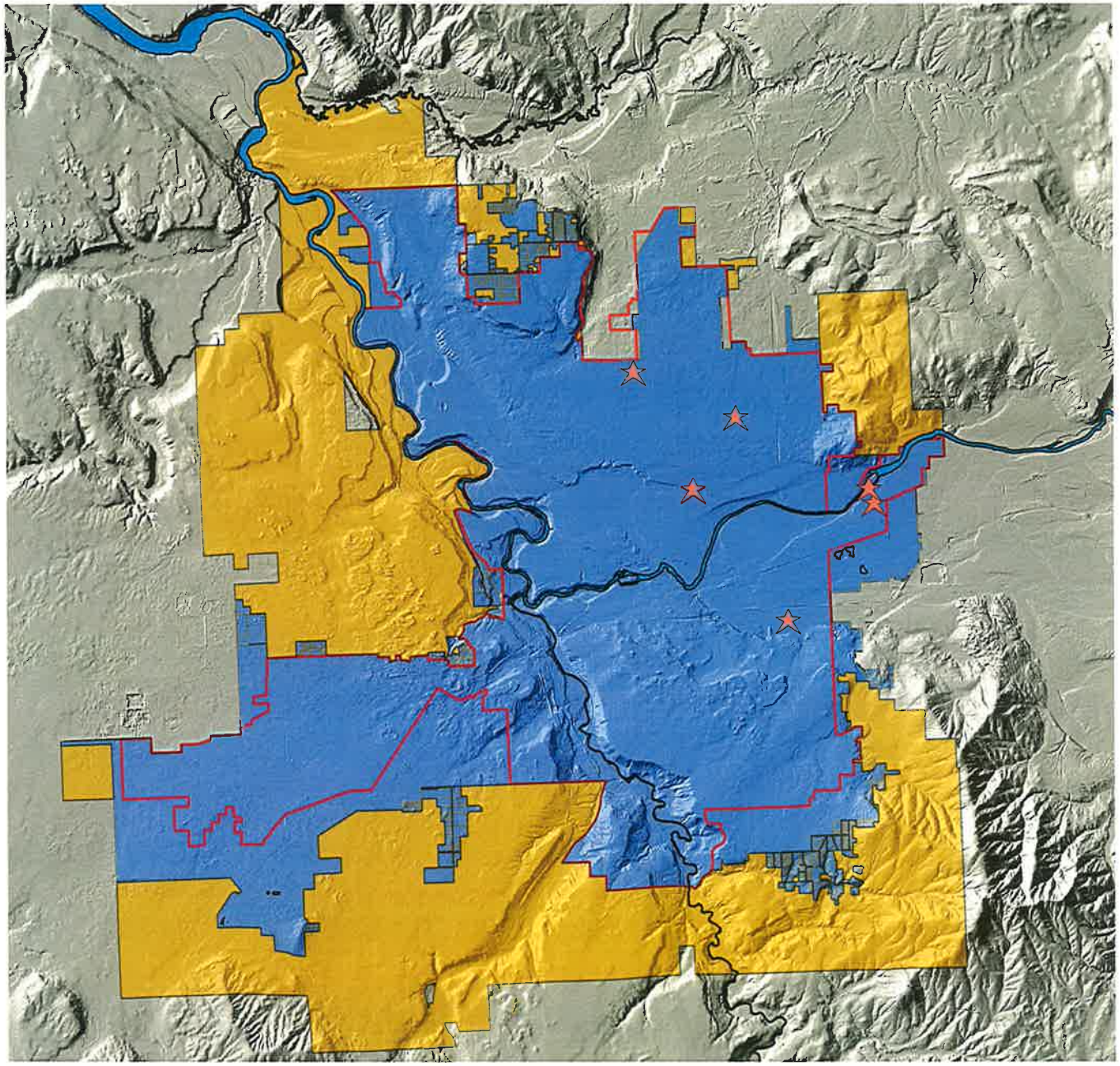
The area used to determine current and future *water use per acre* was calculated by subtracting conservation areas, vacant lots, and newly platted parcels from the existing service area as shown in **Table 1**.

Table 1 Existing Service Area Acreages

Description	Area (acres)
Total Existing Service Area	56,500
Conservation Areas	2,500
Vacant Lots	10,000
New Plats	1,280
Served Area	42,720
Used for calculations herein	42,700

3.2 Zoning and Land Use

City and County zoning and land use designations were reviewed to see if they could be used to refine the water use estimate. Average water use per zoning designation or land use designation was not readily available. County land use and zoning designations, while similar to the City's are expected to change over time as the CWSP service area approaches build-out. Hence, it was concluded that attempting to refine the water use estimate by using current zoning and land use designations was not appropriate for this evaluation.



SCALE: AS SHOWN DESIGNED: JCP/JJC DRAWN: JCP CHECKED: APPROVED: PROJ. NO.: 145-05-01 DATE: 2/20/15	VARELA AND ASSOCIATES, INC. ENGINEERING AND MANAGEMENT	**CITY OF SPOKANE-DEPT. OF WATER & HYDR. ELEC. SERVICES** FUTURE WATER SERVICE AREA BUILD-OUT DEMAND ESTIMATE Spokane Water System Existing and CWSP Service Areas	FIGURE **1**

3.3 Population

The 2010 population was estimated within the service area using the 2010 census block data from the Washington State OFM. The 2010 population within the service area is estimated at 229,200 persons. This estimate is relatively close to Spokane's estimated service area population listed in the 2014 draft Water System Plan of 227,455 persons. The difference between these two population estimates possibly results from the treatment of census blocks that are not fully enclosed within the City's existing water service area. This report utilizes the 229,200 persons as the existing service area population.

3.4 Vacant Parcels

The number and area of vacant parcels was estimated using the parcel GIS layer from Spokane County. For the purpose of this analysis any parcel identified as residential and vacant is considered developable. Recreational and parkland identified as vacant parcels were also added to provide a conservative estimate of vacant land that may eventually use water supplied by the Water Dept. The estimated area of vacant lots was further refined by using Exemption Codes (i.e. government, religious, school and NULL). The NULL code is used for nonexempt properties, which includes private taxable property. **Figure 2** shows the location of vacant parcels within the existing service area. **Table 2** provides the vacant lot acreage sorted by Exemption Code.

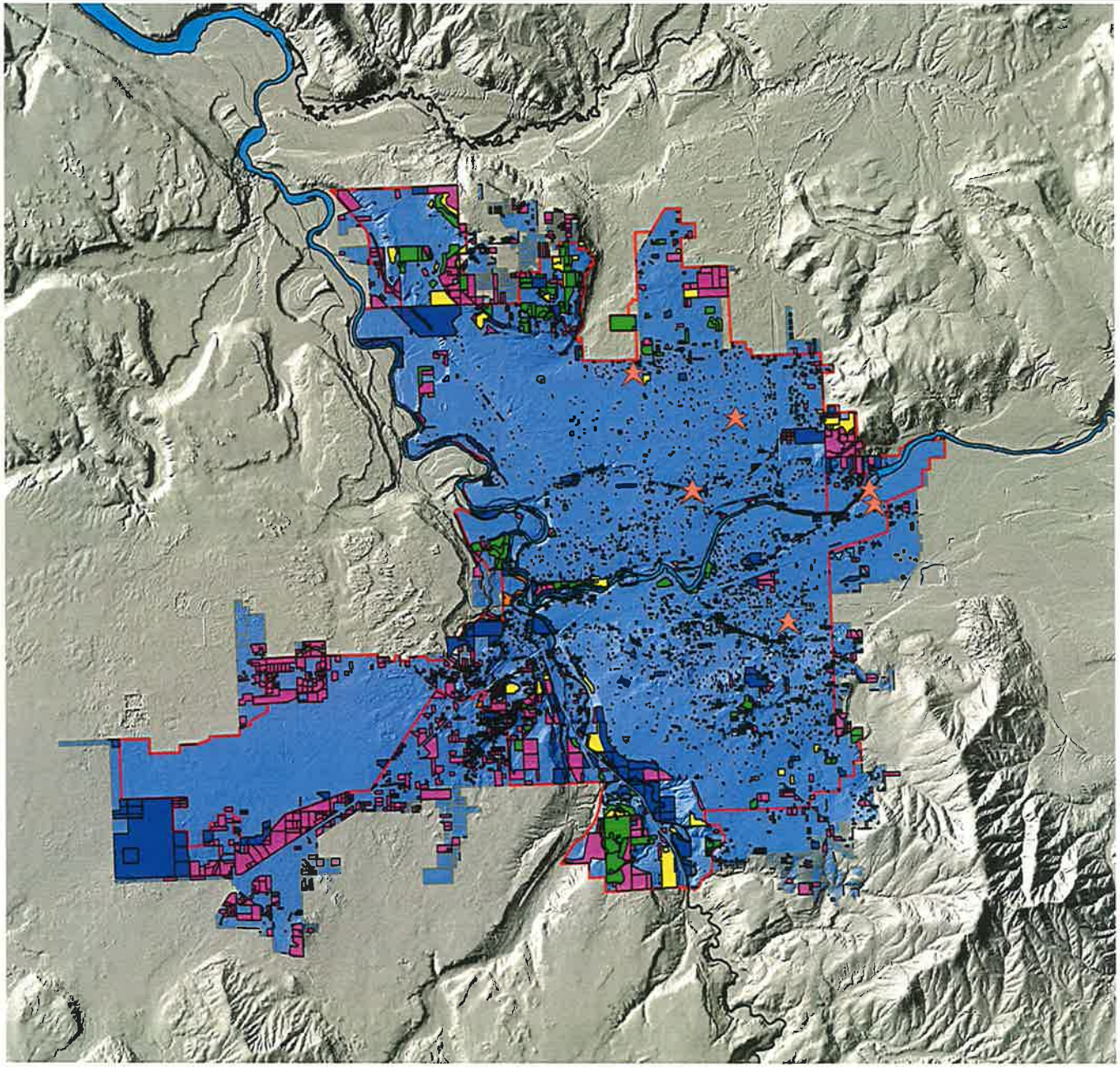
Table 2 Vacant Lots Sorted by Exemption Code

Exemption Code	Area (Acres)	Number of Parcels
DOR	110	153
GOVT	3,120	831
NULL	6,700	7,129
SCLS	70	57
Totals	10,000	8,170

The City provides GIS information on proposed development including Preliminary and Final plat layers. Most of the parcels designated as preliminary plats are included as vacant parcels. There are 1,280 acres of land designated as Final Plats that are within the existing service area but are not designated as vacant lots.

3.5 Water Use

The 2014 Draft Water System Plan includes information on Spokane's water use. Water use is calculated from the total water pumped minus distribution system leakage (DSL – which includes unaccounted for water volume) minus water sold to other jurisdictions. For 2010 water use was 56.46 MGD for average daily demand (ADD) and 171.64 MGD for maximum day demand (MDD). In 2010 system water losses were estimated at approximately 18% of the total water pumped and annual water sales to other jurisdictions were 110 MG. Average flow rate of water sales through interties in 2010 is calculated at 0.3 MGD. **Table 3** summarizes the 2010 water demand that is used to calculate the *water use per capita* and *current water use per acre* ratios.



Legend

Water_system

- Spokane Wells

Land Use Actions

- Land Use Actions
- finalplat
- City Limits

Vacant Lots-Ownership

- Church
- Government
- Private
- School

N

0 1 2 miles

SCALE:	AS SHOWN
DESIGNED:	JCP/JJC
DRAWN:	JCP
CHECKED:	
APPROVED:	
PROJ. NO.:	145-05-01
DATE:	2/20/15

VARELA AND ASSOCIATES, INC.
ENGINEERING AND MANAGEMENT

CITY OF SPOKANE-DEPT. OF WATER & HYDR. ELEC. SERVICES
FUTURE WATER SERVICE AREA BUILD-OUT DEMAND ESTIMATE

Spokane Water System
Vacant Lots within Existing Service Area

FIGURE
2

Table 3 2010 Water Use

Water Use (2010)	ADD		MDD (MGD)
	ADD (MGD)	Annual (MG)	
Total Water Pumped	56.5	20,609	171.6
System Losses (1)	10.2	3,740	30.9
Sales via Interties	0.3	110	0.9
Served Area	46.0	16,759	139.81

(1) *This table assumes that system losses include unmetered uses that will result in an average ADD:MDD peaking factor similar to the rest of the water system (approximately 3.0).*

3.6 Summary and Current Water Use Ratios

Population density within the current water service area (including conservation areas and vacant lots) is calculated as:

229,200 persons ÷ 56,500 acres = 4.06 persons per acre

Current population density for the current areas served by the water system [Served Area = Total Area – Conservation Area – Vacant Lots – Platted Lots] is calculated as:

229,200 persons ÷ (56,500 – 2,500 – 10,000 – 1,280 ≈ 42,700 acres) = 5.37 persons per acre

This analysis utilizes the 2010 census population figures rather than relying on estimates of growth since the 2010 census took place; hence, the 2010 water system production figures were used for consistency. The water system production figures were adjusted by removing system losses and sales to other jurisdictions in order to calculate *current water use per capita* and *current water use per acre* ratios.

Current water use per capita is calculated as:

ADD = 46,030,000 gpd ÷ 229,200 persons ≈ 200 gpd

MDD = 139,810,000 gpd ÷ 229,200 persons ≈ 610 gpd

Current water use per acre is calculated as:

ADD = 46,030,000 gpd ÷42,700 acres ≈ 1,080 gpd

MDD = 139,810,000 gpd ÷ 42,700 acres ≈ 3,270 gpd

The following table summarizes the calculated water use ratios for the existing water service area.

Table 4 Water Use Ratios from Existing Water Service Area

Description	ADD	MDD
Water use per capita	200 gpd	610 gpd
Water use per acre	1,080 gpd	3,270 gpd
Persons/acre (total area)	4.06 persons/acre	
Persons/acre (non-vacant parcels only)	5.37 persons/acre	

4.0 FUTURE WATER USE WITHIN THE EXISTING SERVICE AREA

Future water use within the existing service area is estimated by assuming that existing non-vacant lots are redeveloped to a higher density and that vacant lots within the service area are developed to that same higher density. It is assumed that future distribution system losses will make up approximately 10% of future water use.

4.1 Infill Growth due to Redevelopment

Future water use due to redevelopment (additional development of non-vacant lots) is estimated assuming existing population density can increase by approximately 25%; this increases current population by 57,300 persons within the existing water service area for a total future population within the existing service area of 286,500 persons. Applying the derived *water use per capita* ratio, future water use due to redevelopment of existing areas inside the current service area is estimated at:

57,300 persons x 200 gpcd = 11,500,000 gpd (11.5 MGD)

Redevelopment at higher density will result in a higher average *future water use per acre*; the future average population density is estimated by dividing estimated future population of the served area by the area currently served [Served Area = Total Area – Conservation Area – Vacant Lots – Platted Lots]. Future population density is calculated as:

(229,200 + 57,300 persons) ÷ (56,500 – 2,500 – 10,000 – 1,280 ≈ 42,700 acres) = 6.71 persons per acre

Higher population density due to redevelopment will result in the following estimated average water use per acre:

ADD = (6.71 persons per acre) x (200 gpcd) ≈ 1,342 gpd/acre

MDD = 1,342 x 3.03 = 4,066 gpd/acre

4.2 Infill Growth on Vacant Parcels

Vacant land within the existing service area totals 10,000 acres. It's unclear whether vacant parcels with DOR, GOVT, and SCLS exemption codes will ever be utilized for uses that require water; for the purpose of this analysis it is assumed vacant, exempt parcels will never be utilized in ways that require water service. It is assumed that all non-exempt parcels will develop at the same average

future population density calculated in the preceding section. Future water use of the vacant non-exempt parcels within the existing service area is estimated at:

6,700 acres x 1,342 gpd/acre ≈ 8,990,000 gpd (9.0 MGD)

The future demand of final plats not yet connected to the water system is estimated at:

1,280 acres x 1,342 gpd/acre ≈ 1,720,000 gpd (1.7 MGD)

4.3 Estimated Distribution System Losses

Existing distribution losses are estimated at about 18% of the total water volume pumped. System losses averaged roughly 10.2 MGD in 2010. The Water Dept hopes to limit future system losses to 10% or less.

4.4 Existing Service Area Future Water Use Summary

Future water use within the existing service area was estimated using the *future water use per acre* ratio calculated in preceding sections.

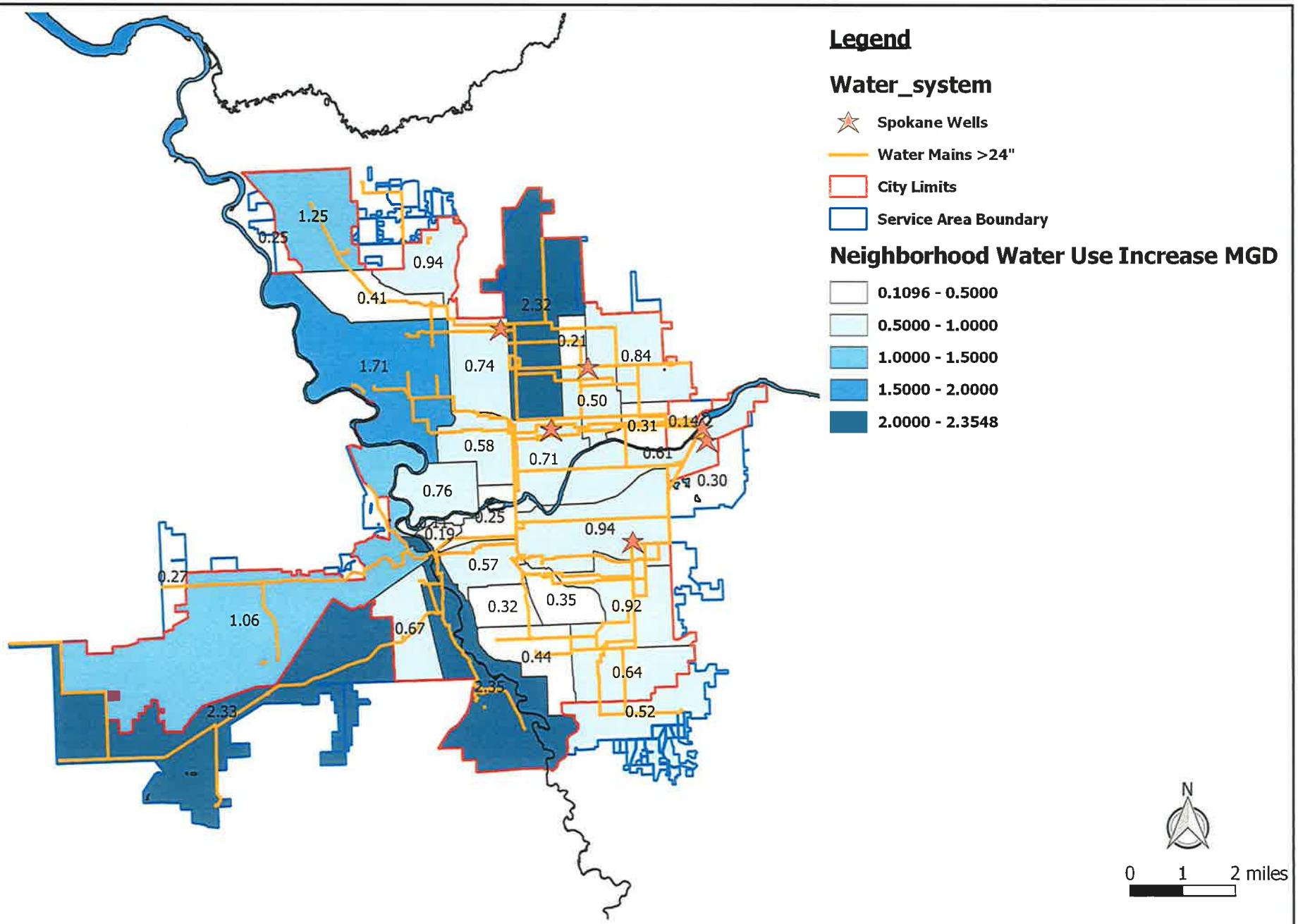
Table 5 Existing Service Area Water Use Increase

Water Use	ADD (MGD)	Annual	
		MG	acre-feet
Infill due to Redevelopment	11.5	4,198	12,884
Infill due to Vacant Parcels	9.0	3,285	10,081
Final Plats	1.7	621	1,906
Subtotal	22.2	8,103	24,871
Distribution System Losses (10%)	2.2	803	2,464
Total Water Use Increase	24.4	8,906	27,333

Figure 3 shows the estimated ADD increased water use for designated neighborhoods expressed in million gallons per day (MGD). The increase in water use allocated to each neighborhood was estimated as follows:

25% increase over estimated existing use due to denser redevelopment
Vacant lots area multiplied by *future water use per acre* + (refer to **Section 4.1**)
An estimate of future distribution system losses +
Total increase in Water Use

Table 6 shows this information in table form. **Figure 3** also shows the location of City wells and water transmission mains 24 inch or greater in diameter.



SCALE: AS SHOWN DESIGNED: JCP/JJC DRAWN: JCP CHECKED: APPROVED: PROJ. NO.: 145-05-01 DATE: 2/20/15	VARELA AND ASSOCIATES, INC. ENGINEERING AND MANAGEMENT	**CITY OF SPOKANE-DEPT. OF WATER & HYDR. ELEC. SERVICES** FUTURE WATER SERVICE AREA BUILD-OUT DEMAND ESTIMATE Spokane Water System Estimated Water Use Increase within Existing Service Area	FIGURE **3**

Table 6 Increased Water Use per Neighborhood in Existing Service Area

Name	Increased water use from Infill due to Redevelopment (MGD)	Increased Water Use from Infill of Vacant Lots (MGD)	Allowance for distribution system losses (MGD)	Total Estimated Increase in Water Demand (MGD)
Balboa\South Indian Trail	0.22	0.11	0.07	0.40
Bemiss	0.38	0.05	0.07	0.50
Browne's Addition	0.11	0.00	0.07	0.18
Chief Garry Park	0.34	0.20	0.07	0.60
Cliff\Cannon	0.43	0.06	0.07	0.56
Comstock	0.33	0.05	0.07	0.44
East Central	0.54	0.34	0.07	0.94
Emerson\Garfield	0.44	0.07	0.07	0.57
Five Mile Prairie	0.18	0.70	0.07	0.94
Grandview\Thorpe	0.03	0.57	0.07	0.67
Hillyard	0.27	0.51	0.07	0.84
Latah/Hangman Valley	0.22	2.07	0.07	2.35
Lincoln Heights	0.59	0.26	0.07	0.91
Logan	0.50	0.14	0.07	0.71
Manito\Cannon Hill	0.22	0.03	0.07	0.32
Minnehaha	0.19	0.04	0.07	0.30
Nevada\Lidgerwood	1.54	0.71	0.07	2.32
North Hill	0.64	0.03	0.07	0.74
North Indian Trail	0.34	0.85	0.07	1.25
Northwest	1.22	0.42	0.07	1.70
Peaceful Valley	0.01	0.03	0.07	0.11
Riverside	0.14	0.04	0.07	0.25
Rockwood	0.15	0.13	0.07	0.35
SA_East (1)	0.03	0.20	0.07	0.29
SA_NE (1)	0.01	0.06	0.07	0.14
SA_NW (1)	0.04	0.14	0.07	0.25
SA_SE (1)	0.27	0.18	0.07	0.52
SA_WPN (1)	0.05	0.15	0.07	0.26
SA_WPS (1)	0.17	2.09	0.07	2.33
Southgate	0.39	0.17	0.07	0.63
West Central	0.46	0.23	0.07	0.76
West Hills	0.11	0.88	0.07	1.06
Whitman	0.13	0.01	0.07	0.20
Total (2)	10.7	11.5	2.2	24.4

(1) *SA_ areas have been developed for this document to show regions where future water use will occur. In this particular table, the SA_ areas are inside the existing water service area, but outside the City Limits and currently do not have a neighborhood designation.*

(2) *Some column totals are slightly off due to justifiable significant figures and truncation of decimal points.*

5.0 FUTURE WATER USE WITHIN CWSP SERVICE AREA

5.1 Area

The unserved portion of the CWSP service area adds approximately 44,790 acres to the City's existing water service area (refer to **Figure 1**). Total future water service area for the City is therefore 44,790 + 56,500 acres = 101,290 acres.

5.2 Zoning and Land Use

County Zoning and Land Use designations were reviewed to determine if they could be used to refine the future water use estimate. The County designations could be useful to predict the timing of when water will be needed in the CWSP service area outside the existing service area. An example of this is that land designated as "Urban Reserve" will likely need water before lands designated "Rural Traditional" will. However, the assumption is that the entire CWSP with the exception of the 10,500 acres designated "Rural Conservation" will be developed over time, at the same future density as the rest of the water service area (refer to section following for future density).

5.3 Population

The 2010 population inside the CWSP boundary but outside the existing service area was estimated at 21,020 persons using the 2010 census block data from the Washington State OFM. Current population density is estimated at:

21,020 persons ÷ 44,790 acres = 0.47 persons/acre.

Current population density inside Spokane's existing service area is substantially higher at 4.06 persons per acre. Future density of the CWSP service area is estimated at 6.71 persons/acre (**Section 4.1**); future population of the CWSP service area outside the existing service area is estimated at:

(44,790 – 11,550 conservation acres) x 6.71 person/acre ≈ 223,000 persons

Total build-out population of CWSP service area (including existing service area) is estimated at:

229,200 + 223,000 persons ≈ 460,000

5.4 CWSP Area Future Water Use Estimated

Future water use of the area outside the existing service area but within the CWSP boundary is estimated using the *future water use per acre* ratio developed in **Section 4.1**. Estimated water use is calculated by subtracting lands designated as Rural Conservation and Mining from the CWSP area outside the existing service area and multiplying by the future water use per acre ratio. Future water use of the area outside the existing service area but enclosed by the CWSP boundary is therefore estimated at:

(44,790-11,550 acres) x 1,342 gpd per acre = 44.6 MGD

Another method of estimating water use for the same area is to use estimated build-out population in the CWSP service area outside the existing service area based on the 33,240 acres of land available with an estimated future population density of 6.71 persons/acre (**Section 4.1**); this results in a build-out population of 223,000 persons within the CWSP service area outside the existing service area. **Section 3.6** estimates current per-capita water use a 200 gpd/capita. Using this factor water use in the CWSP is estimated at 44.6 MGD; this checks with the 44.6 MGD estimated using the *future water use per acre* ratio.

The calculated water use per acre ratio does not include system losses. System losses are estimated at 10% of total water use.

44.6 x 10% = 4.5 MGD
Build-out water use in the CWSP is estimated at 44.6 + 4.5 = 49.1 MGD

Figure 4 and **Table 7** show estimated build-out water use in areas of the CWSP service area that are outside the existing service area.

Table 7 Estimated Future Water Use in CWSP

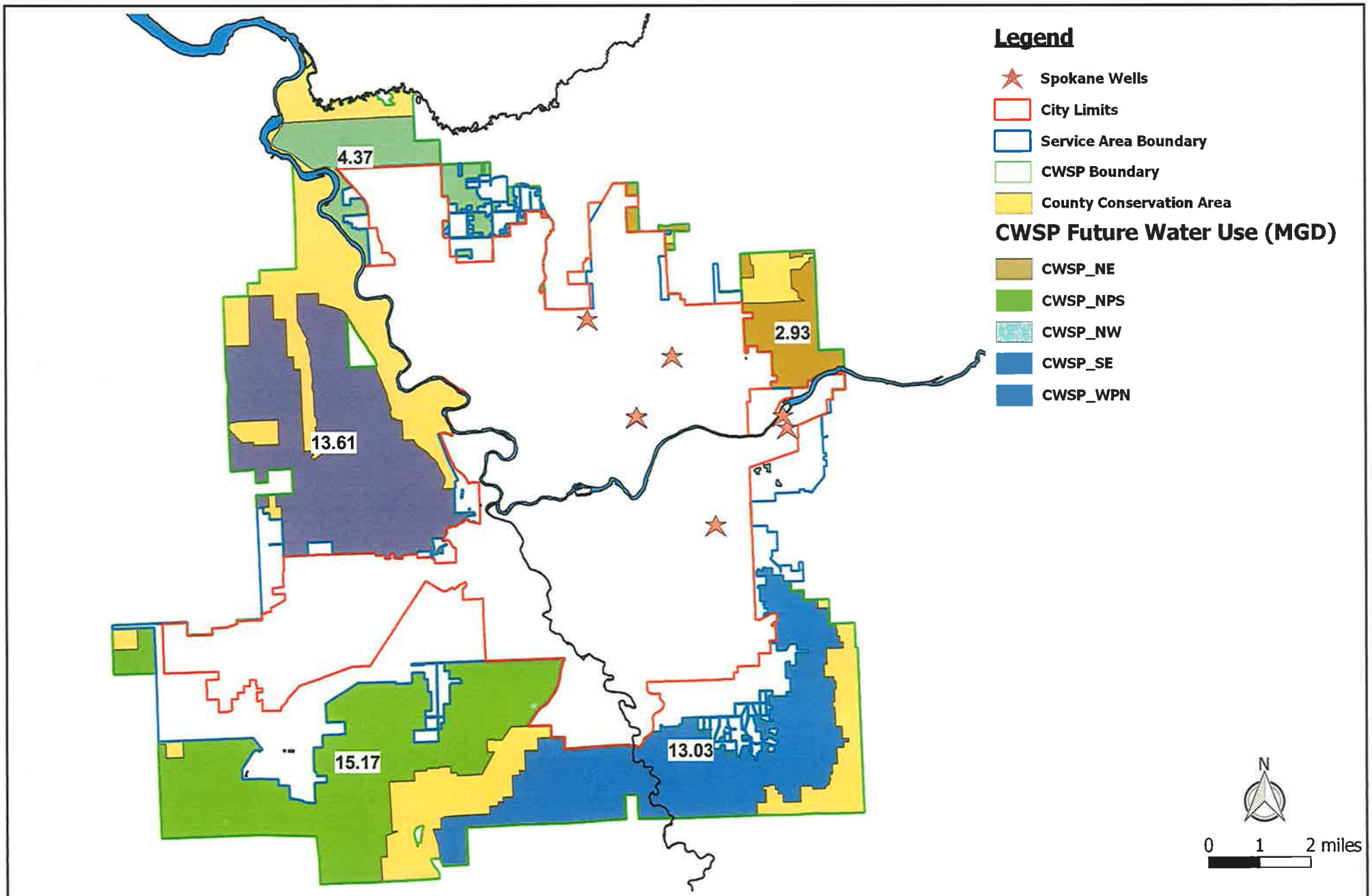
Area Name	Acres	Water Use (MGD)	Annual	
			MG	acre-feet
CWSP_NE	1,981	2.93	1,069	3,281
CWSP_NW	2,959	4.37	1,595	4,895
CWSP_SE	8,819	13.03	4,756	14,597
CWSP_WPN	9,211	13.61	4,968	15,247
CWSP_NPS	10,270	15.17	5,537	16,994
Totals	33,240	49.10	17,922	55,004

6.0 EXISTING AND FUTURE WATER USE AGREEMENTS (INTERTIES)

Spokane has common boundaries with at least 12 water purveyors. Six of these adjoining purveyors have interties with the City of Spokane Water System.

- Spokane County Water District #3 has four interties that provide for both normal water supply and for emergency needs
- Whitworth Water District has one intertie for emergency purposes
- City of Airway Heights has one intertie that is used extensively to supplement demands that the Airway Heights Water System cannot support
- Fairchild Air Force Base has one intertie that is used for emergency needs in their water system
- Vel View Water District has one intertie to receive water on an as-needed basis
- North Spokane Irrigation District has an intertie for emergency purposes

The table and figure following show annual intertie volume sold over the last ten years.



SCALE:	AS SHOWN
DESIGNED:	JCP/JJC
DRAWN:	JCP
CHECKED:	
APPROVED:	
PROJ. NO.:	145-05-01
DATE:	2/20/15

VARELA AND ASSOCIATES, INC.
ENGINEERING AND MANAGEMENT

CITY OF SPOKANE-DEPT. OF WATER & HYDR. ELEC. SERVICES
FUTURE WATER SERVICE AREA BUILD-OUT DEMAND ESTIMATE

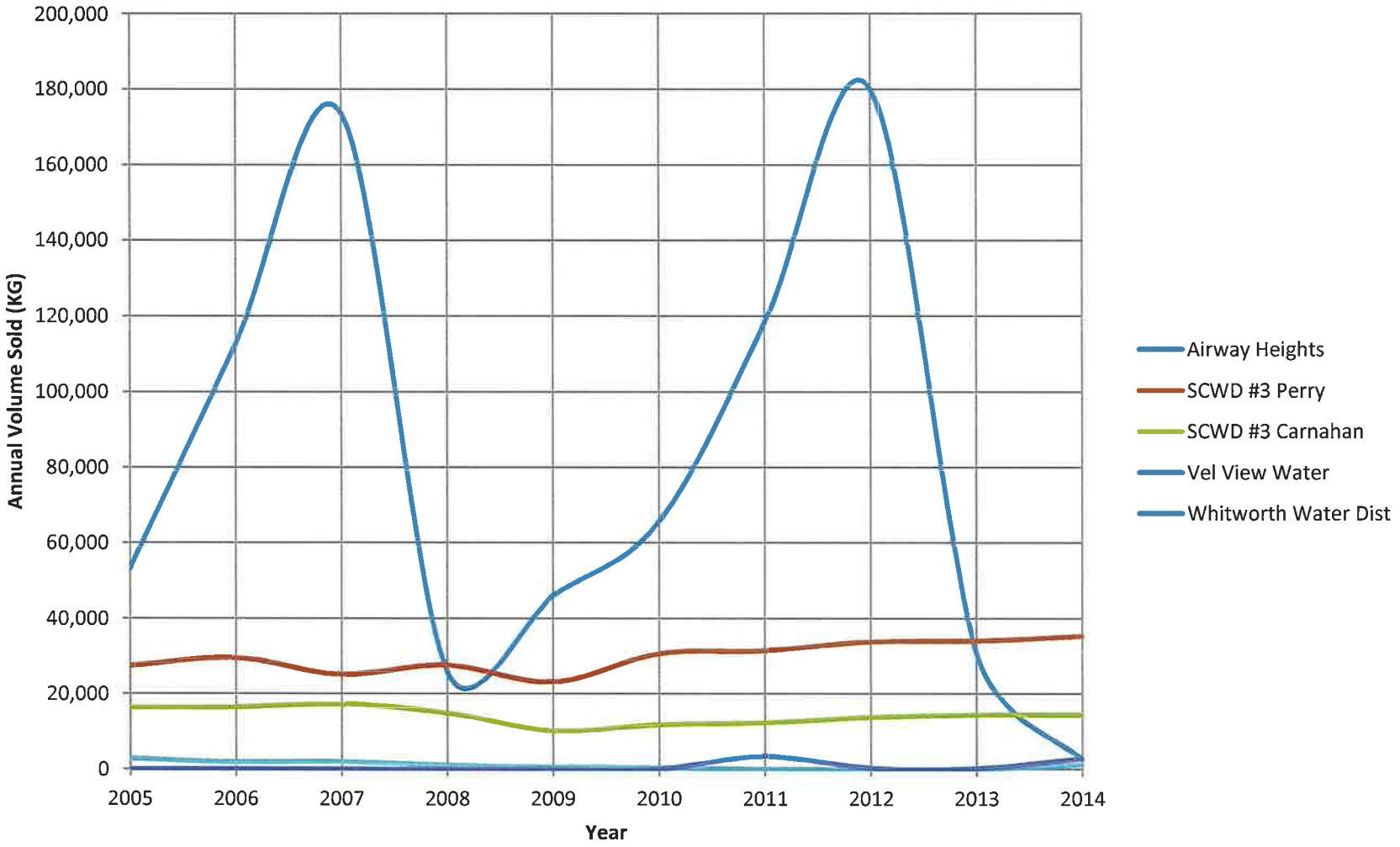
Spokane Water System
Estimated Water Use Increase

FIGURE
4

Table 8 Annual Intertie Sales Volumes 2005-2014

Name	All Volumes in 1,000 gallons (KG)												
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Mean	High	Low
Airway Heights	53,258	112,686	173,671	25,769	46,002	65,555	118,379	180,014	30,623	2,513	80,847	180,014	2,513
SCWD #3 Carnahan	16,374	16,419	17,249	14,893	10,165	11,751	12,290	13,733	14,377	14,377	14,163	17,249	10,165
SCWD #3 Desmet	39	37	29	36	40	102	112	178	5	2	58	178	2
SCWD #3 Perry	27,378	29,555	25,144	27,634	23,129	30,593	31,364	33,746	33,956	35,259	29,776	35,259	23,129
SCWD #3 Wall	0	0	0	0	0	0	0	0	0	0	0	0	0
SCWD #3 Thierman	15	30	22	81	0	434	142	172	75	75	105	434	0
Vel View Water	2,837	1,814	1,953	1,064	607	412	0	0	0	1,198	989	2,837	0
Whitworth Water Dist	0	0	0	0	0	0	3,441	299	135	2,775	665	3,441	0
Sum	99,901	160,541	218,068	69,477	79,943	108,847	165,728	228,142	79,171	56,199	126,602	239,412	35,809

Figure A Annual Intertie Sales Volumes



As shown in the preceding table and figure the volume sold through interties varies significantly from year to year which makes accurate prediction of future needs difficult. In addition, Spokane expects to connect to additional adjacent utilities in regional wholesale partnerships for systems that do not have adequate supply and/or annual water rights to support growth in their systems. A detailed estimate of possible future connections and growth rates is beyond the scope of this study. This study assumes Spokane will eventually supply up to 10,000 acre-feet to neighboring systems via interties.

7.0 ESTIMATED BUILD-OUT WATER USE

This evaluation is intended to be moderately conservative in order to provide for the long term future needs of the community and region. The analysis assumes current levels of water use efficiency will remain constant over time.

Estimated future water use includes infill of vacant parcels within the existing service area, increased development density, and expansion into the future service area as defined by the CWSP. **Table 9** provides a summary of estimated build-out water use in Spokane's future water service area allocated to various areas and categories.

Table 9 Estimated Future Water Use

Description		Existing Annual		Build-out Annual	
		MG	acre-ft	MG	acre-ft
Existing Served Area	Existing Served Area	16,759	51,435	16,759	51,435
	System Losses (18% => 10% at ult.)	3,740	11,478	2,224	6,826
	City Agreements (Interties)	110	338	3,258	10,000
	Subtotal (1)	20,609	63,251	22,241	68,261
Infill and Redevelop Existing Served Area	Redevelopment	-	-	4,198	12,884
	Vacant Lots	-	-	3,285	10,081
	Platted Parcels	-	-	621	1,906
	System Losses (10%)	-	-	803	2,464
	Subtotal (1)	-	-	8,906	27,333
Expansion to Un-served CWSP	Development of Un-served Areas	-	-	16,279	49,962
	System Losses (10%)	-	-	1,643	5,043
	Subtotal (1)	-	-	17,922	55,004
	Total Demand (1)	20,609	63,251	49,070	150,600

(1) *Some subtotals and totals are slightly off due to justifiable significant figures and truncation of decimal points in preceding calculations. Refer to calculations in preceding sections for source of results reported in this table.*

Currently Spokane's ADD to MDD peaking factor is approximately 3.0. If this peaking factor remains constant over time MDD will be calculated at:

ADD = 49,070 MG ÷ 365 days ≈ 134 MGD
MDD = 134 MGD x 3.0 ≈ 400 MGD ≈ 280,000 gpm

8.0 EXISTING WATER RIGHTS VS ESTIMATED BUILD-OUT DEMANDS

Spokane's 2014 Draft Water System Plan indicates the City's water rights portfolio includes the following total annual and instantaneous quantities:

Annual (Q_A): 147,570 acre-feet
Instantaneous (Q_I): 241,100 gpm

The estimated build-out demands for Spokane's future service area developed herein slightly exceed the City's annual water rights (≈ 3,000 acre-feet) and more significantly exceed the City's instantaneous water rights (≈ 39,000 gpm). The slight difference in annual water rights and estimated annual build-out demands is likely within the uncertainties associated with the assumptions used herein to estimate the future demands. If Spokane's ADD:MDD peaking factor remains constant the build-out demand estimate developed herein indicates Spokane will need additional instantaneous water rights to meet MDD.

Exhibit 1.7.1 CWSP Water Utility Service Area Agreement

AGENDA SHEET FOR COUNCIL MEETING OF: June 14, 1999

Water & Hydro	Brad Blegen	7820
Submitting Department	Contact Person	Phone Ext.

CONSENT AGENDA	LEGISLATIVE SESSION	COUNCIL PRIORITY
0 Contract	0 Resolution	0 Communications
● Report	0 Emergency Ordinance	0 Economic Development
	0 Final Reading Ordinance	0 Growth Management
	0 First Reading Ordinance	0 Human Services
	0 Special Consideration	0 Neighborhoods
	0 Hearing	0 Public Safety
		● Quality Service Delivery
		0 Racial Equity & Cultural Diversity
		0 Rebuild & Maintain Infrastructure

RECEIVED JUN - 2 1999 CITY CLERK'S OFFICE SPOKANE, WA

Clerk's Files: # OPR 99-476

Renews: #

Cross Reference: #

ENG/LID: #

BID: #

NEIGHBORHOOD/COMMISSION/COMMITTEE NOTIFIED BY SUBMITTING DEPARTMENT:

Public Works Committee

Action Taken: Approved

AGENDA WORDING:

Concurrence with the 1999 Spokane County Water System Plan Update and authorize the Director of Water and Hydroelectric Services to sign with other area water purveyors the necessary submitting documents for County Commissioner approval.

BACKGROUND (Attach separate sheet if necessary):

The Spokane County Coordinated Water System Plan 1999 Update is based on State Law requirements that counties have plan(s) that address how water service will be provided to the citizens within the county and the plan(s) are to be consistent with each county's Comprehensive Plan and other planning documents. As part of this plan, the interrelationships and boundaries between all the different water purveyors must be addressed. This 1999 Update is basically the same as the previously approved 1989 Plan, except it is updated to address changes that have occurred since 1989, such as growth management, utility boundary adjustments, design standards revisions, well head protection, water quality monitoring, and conservation issues. The new updated plan has been prepared by the consulting firm of Economic and Engineering Services in conjunction with staff from Spokane County and each water purveyor in the northern two thirds of Spokane County.

RECOMMENDATION: **Approve**

FISCAL IMPACT: **Expenditure - $** **Budget Account: #**
Revenue - $ **#**

LIST ATTACHMENTS AS FOLLOWS:

On file for Review in Office of City Clerk: The entire plan.

Include in Packets: Executive Summary

SIGNATURES OF SUBMITTING OFFICERS (sign legibly):

Department Head | Division Director | Finance

Legal | | for City Manager

DISTRIBUTION AFTER COUNCIL ACTION:

Water & Hydro - Brad Blegen
Legal

COUNCIL ACTION:

APPROVED BY
SPOKANE CITY COUNCIL:

June 14, 1999

Tim Clark
ACTING CITY CLERK

EXHIBIT 7.1

Exhibit 3-2

WATER UTILITY SERVICE AREA AGREEMENT

SPOKANE COUNTY COORDINATED WATER SYSTEM PLAN

This Service Area Agreement, submitted by City of Spokane confirms that the attached map, dated July 20, 1999 accurately identifies the service area that the water utility is willing and able to serve unless regulatory constraints do not enable the utility to do so.

The intent of this agreement is to define service areas in a manner which assures that time, effort, and money are best used by avoiding any unnecessary duplication of service. Spokane County and the Washington State Department of Health will recognize these boundaries as the exclusive service area of the undersigned utility, giving the utility right of first refusal for service.

As a condition of being granted this designated service area, the utility will be required to ensure that the same boundary is utilized for preparation of its individual water system plan. The utility agrees to adhere to the Service Area Boundary Amendment procedures specified in the Spokane County Coordinated Water System Plan (CWSP). The utility will also provide service in a manner consistent with its own individual water system plan and service policies. The utility also fully recognizes that this Service Area Agreement is developed in fulfillment of the Spokane County CWSP.

It is further agreed that neighboring utilities may provide water service to customers within the service area boundary of an adjacent utility only if a mutually acceptable agreement is developed to specify the conditions and term of such service. Existing service on boundary streets shall remain as connected unless transfer of service is agreed to by the neighboring utilities. Depth of service on boundary streets identified on the attached map shall be limited to one platted lot if the adjacent area is unclaimed.

The person signing below assures that he or she has been authorized to sign the Service Area Agreement on behalf of the utility. Attached is documentation verifying this authority.

City of Spokane
Water Utility

Authorized Representative

2/15/01
Date

Receipt Acknowledged By:

N Bruce Rawls
Spokane County, Division of Utilities

2/26/2001
Date

AMENDMENT NO. 1
WATER UTILITY SERVICE AREA AGREEMENT
SPOKANE COUNTY COORDINATED WATER SYSTEM PLAN

This Amendment documents a change in the water service area boundary for the **City of Spokane**, as established in accordance with the Service Area Agreement dated February 26, 2001, for the Spokane County Coordinated Water System Plan.

The amended water service area boundary is accurately reflected on the attached official map prepared by the Spokane County Division of Utilities. No changes, other than those attached to the Amendment, have occurred in either boundaries or special working agreements between affected utilities. Other provisions of the Service Area Agreement have not been altered by this Amendment.

The **City of Spokane** acknowledges that it will coordinate with the Washington State Department of Health any modifications to its individual Water System Plan as a result of this Amendment.

IN WITNESS WHEREOF, the undersigned has executed this Amendment acting as the authorized or designated representative of **City of Spokane** on 1/26/05.

Designated Representative

Water Department Director
Title

City of Spokane
Water Utility

Receipt Acknowledged:

N Bruce Rawls
Spokane County, Division of Utilities

2/10/05
Date

Exhibit 1.7.2 CWSP Service Area Boundary Amendment Procedure

Exhibit 3-4

SPOKANE COUNTY COORDINATED WATER SYSTEM PLAN
SERVICE AREA BOUNDARY AMENDMENT PROCEDURE

Application: Amendments in water utility service area boundaries will occur when a utility or adjacent utilities wish to expand or reduce their service area and will be approved by the procedures defined herein only if a new conflict in service areas is not created by the modification.

Potential Stakeholders: Utility proposing the Amendment; Adjacent utilities; Spokane County Division of Utilities (SCDU), Planning Department, and Boundary Review Board (BRB); Spokane County Health District; Washington State Department of Health (DOH); and the Chair of the Water Utility Coordinating Committee (WUCC).

Procedures:

1. The water utility requesting the service area boundary amendment shall submit their request in writing to SCDU along with a map identifying the existing and requested boundaries. The written request shall specify the reason or justification for the change.
2. SCDU will also insure that written confirmation is obtained from any adjacent utilities, at least within 1/4 mile of the proposed boundary change, and that the proposed change does not create a service conflict.
3. If a conflict exists, then no further boundary modification occurs until the conflict is resolved between the impacted utilities. The remaining procedural steps are followed once it is established that there are no conflicts.
4. SCDU will ensure that the water utility requesting the service area boundary amendment seeks public input regarding the requested amendment through a public notice in the County's official newspaper which specifies a time and place for comments to be submitted to the utility. SCDU will also provide a similar notice on the County's web-site. SCDU will take no action on the requested boundary change until an affidavit of publication is submitted and the comment period has expired. All comments will be directed to the affected utilities for appropriate action. All costs associated with the public notification procedures are the responsibility of the utility requesting the boundary amendment.

Exhibit 3-4 (cont)

5. SCDU prepares two copies of revised service area map and an Amendment to the Service Area Agreement and submits them to affected utilities for their review, signature, and return to SCDU of one signed copy with the remaining copy kept in their files. Special working Agreements, if they exist, between all affected utilities shall be submitted as attachments to the Service Area Agreement Amendment.

6. All submittals of requests for amendments (Procedure No. 1), confirmation of non-conflict (Procedure No. 3), and signed Service Area Agreement Amendments (Procedure No. 5) must bear the signature of an official authorized to represent the respective utility. Some form of written confirmation of this authority and/or agreement with the requested boundary amendment by the utility's governing body must be submitted to SCDU.

7. Convene WUCC Executive Committee to review change request and once all issues of interest are resolved authorize the WUCC Chair to concur with the Amendment.

8. Once the above documentation is received, a Certificate of Completion following the format of Exhibit 3-5 is executed by the Director of the SCDU and the Chair of the WUCC. The Certificate formally acknowledges that the Service Area Boundary Amendment Procedures, described herein, has been completed and approves the requested change. A copy of the Certificate will then be transmitted to the affected utilities.

9. The "official" service area maps are updated on GIS and hard copy, and shall be reviewed and updated with all changes at least quarterly and kept on file by SCDU.

10. Copies of updated "official" service area maps are transmitted to the Spokane County Planning Department, Spokane County Health District, BRB, and DOH.

10. SCDU directs the applicant and all adjacent utilities, whose service area boundaries are adjusted, to the DOH for modifications required to their individual Water System Plans.

11. Copies of all signed Service Area Agreement Amendments and related correspondence shall be date stamped and kept on file for each participating utility by SCDU.

Exhibit 1.7.3 CWSP Service Area Boundary Amendment Form

Exhibit 3-5

AMENDMENT NO. _____
WATER UTILITY SERVICE AREA AGREEMENT
SPOKANE COUNTY COORDINATED WATER SYSTEM PLAN

This Amendment documents a change in the water service area boundary for the (Name of Water Utility) as established in accordance with the Service Area Agreement, dated _____, for the Spokane County Coordinated Water System Plan.

The amended water service area boundary is accurately reflected on the attached official map prepared by the Spokane County Division of Utilities. No changes, other than those attached to the Amendment, have occurred in either boundaries or special working agreements between affected utilities. Other provisions of the Service Area Agreement have not been altered by this Amendment.

The (Name of Water Utility) acknowledges that it will coordinate with the Washington State Department of Health any modifications to its individual Water System Plan as a result of this Amendment.

IN WITNESS WHEREOF, the undersigned has executed this Amendment acting as the authorized or designated representative of the (Name of Water Utility) on (date).

_____
Designated Representative

Receipt Acknowledged:

_____
Title

_____
Spokane County, Division of Utilities

_____
Water Utility

_____
Date

Exhibit 1.7.4 Certificate of Completion Service Area Adjustment

Exhibit 3-6

CERTIFICATE OF COMPLETION
SERVICE AREA ADJUSTMENT

THIS CERTIFICATE OF COMPLETION ACKNOWLEDGES AMENDMENT OF SERVICE AREA BOUNDARIES; (fill-in blank describing type of requested change)

WHEREAS, the Spokane County Coordinated Water System Plan, hereinafter "CWSP," provides for the establishment and adjustment of service area boundaries for the purveyors of public water service in Spokane County and;

WHEREAS, (number of purveyors(s)) public water service purveyors, (Name No. 1) and (Name No. 2, etal) have agreed to ("fill-in blank" with description of requested type of change and reference to location and any agreements between adjacent utility(ies)):

WHEREAS, the CWSP provides for approval of all Service Area Amendments by the Spokane County Division of Utilities (SCDU) and the local Water Utility Coordinating Committee (WUCC) and;

WHEREAS, it appears there is no reason not to approve the wishes of the utilities concerned and no conflict is created by said modification;

NOW THEREFORE, BE IT CERTIFIED BY THE SPOKANE COUNTY WATER UTILITY COORDINATING COMMITTEE AND THE SPOKANE COUNTY DIVISION OF UTILITIES:

That the service area change procedures have been completed and boundaries for the (Name of Utility(ies)) be changed and amended to ("fill-in blank" with description of change), subject in addition to such terms and conditions as the two parties may now or hereafter mutually agree.

PASSED and adopted by the Water Utility Coordinating Committee and Spokane County Division of Utilities this _____ day of _____, _____.

_____	_____
("Name") Chair, Water Utility Coordinating Committee	N. Bruce Rawls, P.E. Director Spokane County Division of Utilities

Exhibit 1.8.0 Service Area Policy

2-25-16

CITY OF SPOKANE ADMINISTRATIVE POLICY AND PROCEDURE	ADMIN 5200-16-03 LGL 2016-0020
TITLE: DUTY TO PROVIDE WATER SERVICE EFFECTIVE DATE: March 18, 2016 REVISION EFFECTIVE DATE: N/A	

1.0 GENERAL

1.1 The City of Spokane ("City") Water and Hydroelectric Services Department owns and operates a public water system; and is the regional water purveyor. The City has a duty to provide water to new service connections within the retail water service area, when such service is available in a timely and reasonable manner; there exists sufficient water rights to provide water service; there exists sufficient capacity to provide water service in a safe and reliable manner under Washington State Department of Health regulations; and such service is consistent with the requirements of local plans and regulations and the City's utility service extension ordinances. (WAC 246-290-106).

1.2 TABLE OF CONTENTS

2.0 DEPARTMENTS/DIVISIONS AFFECTED

This policy shall apply to the City Water and Hydroelectric Services Department.

3.0 REFERENCES

RCW 35.92.020
RCW 36.70A.030
RCW 36.70A.110
WAC 246-290-106
WAC 246-290-108
City of Spokane Comprehensive Plan CFU 3.6
Comprehensive Water System Plan figure 1.8.0a
SMC 13.04.1921
SMC 13.04.1922

4.0 DEFINITIONS

None

5.0 POLICY

5.1 Domestic water service is a rural and urban governmental service and the City of Spokane is the regional water purveyor. Therefore the City has a duty to provide service to new water service connections within its retail water service area as outlined in the Comprehensive Water System Plan when:

a. Water service is available in a timely and reasonable manner;

b. There exist sufficient water rights available to provide water service;

c. There is sufficient capacity to serve in a safe and reliable manner per the Department of Health rules and regulations; and

d. Extension of service is consistent with the requirements of local plans and regulations, including the City's Water System Plan and utility service extension ordinances.

5.2 City water service is intended to provide for the needs of the residents of the City and for residents outside the City who are within the City's Retail Service Area. Pursuant to RCW 35.92.020, the City may enter into agreements for extension of water service outside the City's boundaries upon terms and conditions, when there is a determination that such extension will not overload or imperil the City's water system, including domestic and fire flow pressure, supply resources and municipal water rights, all as may be needed by current or future city customer needs, and are subject to any other applicable laws or regulations. (SMC 13.04.1922). Therefore, customers outside the City must complete an annexation covenant and service agreement as a condition of water service.

5.3 The City's Comprehensive Water System Plan provides for extension of water service beyond the City's boundaries and inside the Retail Service Area as identified in Chapter 1, Figure 1.6.1

5.4 Request for City Water Service outside the existing Retail Service area as identified in the Comprehensive Water System Plan in Chapter 1, Figure 1.6.1 are dependent upon the completion of the City's Application and Certificate of Water Availability form. Changing the Retail Water Service boundaries to provide water service to areas outside the current Retail Water Service Area requires a City Council approved amendment to the City's Water System Plan.

5.5 The City's comprehensive plan provides that it is appropriate to extend or expand water services outside the UGA in limited circumstances which are shown to be necessary to protect basic public health and safety and the environment and when such services are financially supportable at rural densities and do not permit urban development. (CFU 3.6; RCW 36.70A.110(4)).

6.0 PROCEDURE

6.1 Analysis Needed For Requests To Provide Water Service.

6.1.1 Requests Inside City Boundaries:

Duty to Serve

6.1.2 Outside City boundaries - Inside Retail Water Service Area:

Duty to Serve Inside Water Service Area Subject To Limitations:

a. Water service is available in timely and reasonable manner as determined by City Utility;

b. There are sufficient water rights to provide water service;

c. There is sufficient capacity to serve in a safe and reliable manner;

d. It is consistent with requirements of local plans and regulations and the City's Water System Plan and utility service extension ordinances;

e. Annexation covenant must be signed, as applicable;

f. Written contract with cost allocation, indemnity and all applicable liabilities; and

g. Developer agrees to pay one hundred percent (100%) costs of construction; liability; indemnification; permitting without sewer and all applicable liabilities.

6.1.3 Outside City Boundaries – Prior Commitment to Serve Inside Future Service Area:

The City will honor prior commitments for water service. In the case of a prior commitment for water service, the vested water capacity exists with the commitment and the parcels included in the prior commitment will be included in the retail water service area and service will be analyzed and provided pursuant to paragraph 6.1.2.

6.1.4 Outside Retail Water Service Area – Inside Future Water Service Area:

The City will evaluate any new requests for retail water service which are outside the City's retail water service area within 120 days of the request or as prescribed by State Law, pursuant to the flow chart for retail water service requests, as attached hereto.
It is the policy of the City to ensure that requests for expansion of the Retail Service Area be considered at least annually.

No Duty to Serve outside Retail Service Area unless amend Retail Service Area:

a. Amendment to Retail Service Area requires a City Council approved amendment to the Water System Plan/Retail Service Area.

b. Amended Water System Plan is subject to approval by Department of Health.

c. Extension of service necessary to protect basic health / safety / environment and does not conflict with GMA requirements.

6.1.5 Outside Water Service Area:

No Duty to Serve

Wholesale Water Supply Agreement or Interlocal Agreement subject to City Council approval.

7.0 RESPONSIBILITIES

The City of Spokane Water and Hydroelectric Services Department shall administer this policy.

8.0 APPENDICES

Water Service Area Chart
Flow Chart for Retail Water Service Requests

APPROVED BY:

City Attorney — Date: 3/3/16

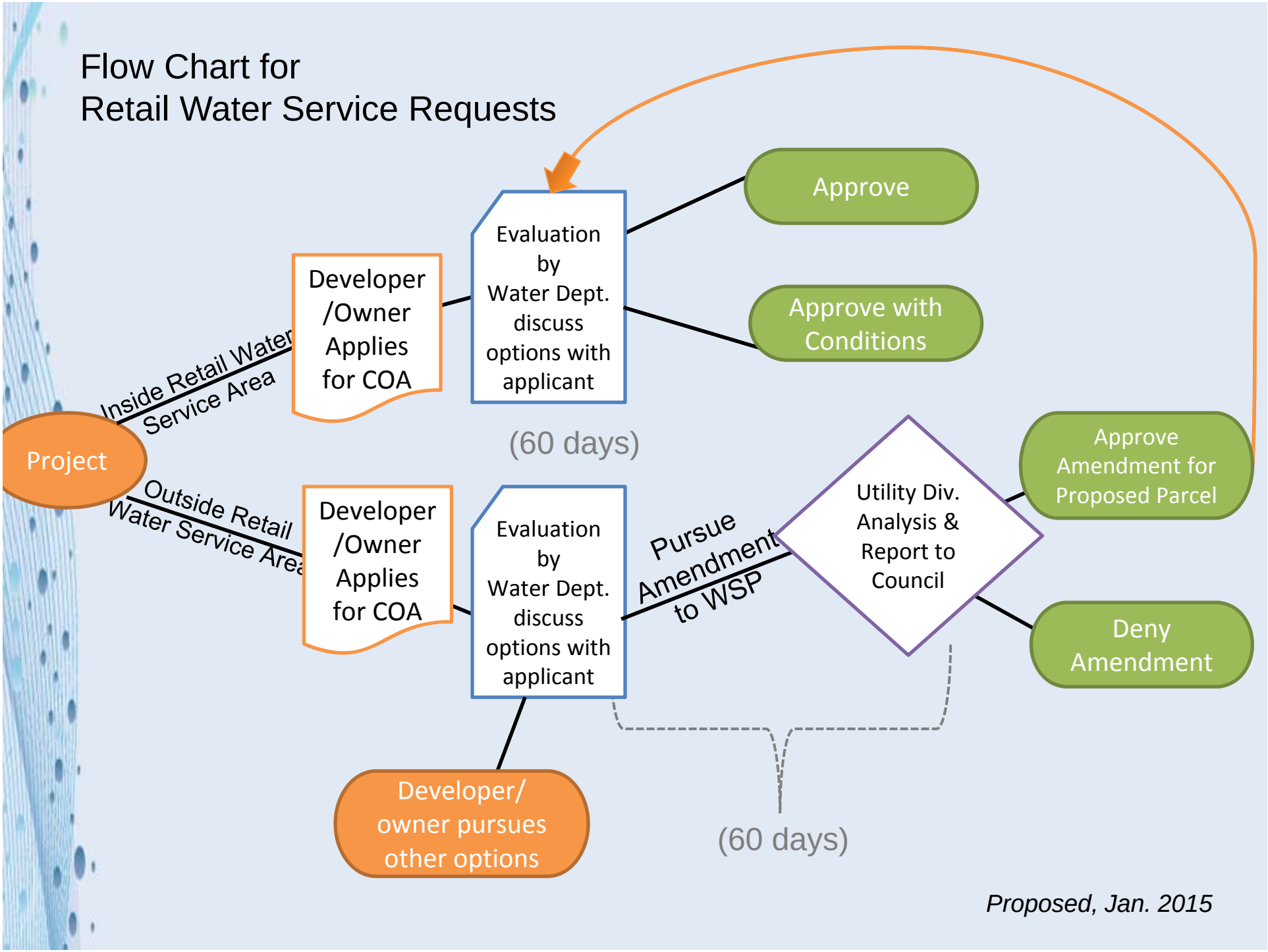
Scott Simmons
Director - Utilities — Date: 3/3/16

City Administrator — Date: 3/3/16

Water Service Areas:

Inside City Boundaries	**Outside City boundaries – Inside Retail Water Service Area**	**Outside Retail Water Service Area**	**Outside Water Service Area Wholesale Water Service Agreements**
Duty To Serve	Duty To Serve inside water service area – subject to limitations: 1. Water is available in timely and reasonable manner as determined by City Utility 2. Sufficient water rights available to provide water service 3. Sufficient capacity to serve in safe and reliable manner 4. Consistent with requirements of local plans and regulations and the City's utility service extension ordinances 5. Annexation covenant must be signed 6. Written contract with cost allocation, indemnity, applicable liabilities 7. Developer to pay 100% costs of construction; liability; indemnification; permitting with or without sewer	No Duty To Serve outside Retail Water Service Area unless: 1. City Council approves amendment of RSA 2. Requires DOH approval Can serve after amendment: 3.Water is available in timely and reasonable manner 4. Sufficient water rights available to provide water service 5. Sufficient capacity to serve in safe and reliable manner 6. Consistent with requirements of local plans and regulations and the City's utility service extension ordinances including Water System Plan and service area boundaries 7. Annexation covenant must be signed 8. Developer to pay 100% costs of construction; liability; indemnification; permitting with or without sewer and applicable liabilities 9. Extension of service is necessary to protect basic health/safety/environment	No Duty to Serve Wholesale / water supply agreement or interlocal agreement subject to City Council approval. Sufficient water rights to provide water service Sufficient capacity to serve in safe and reliable manner Consistent with requirements of local plans and regulations and the City's utility service extension ordinances and Water System Plan Subject to approval by the Department of Health AND May Require an amendment to the Water System Plan

Flow Chart for Retail Water Service Requests



Proposed, Jan. 2015

Exhibit 1.8.1 COS Annexation Covenant

REQUEST FOR UTILITY CONNECTION ANNEXATION COVENANT

Date _____

Name _____

Address _____

Phone _____

Legal Description _____

_____

_____

_____

Address of Legal Description _____

_____

Owner has requested City approval of: (Check one) ☐ Sewer ☐ Water

Taken by _____

lh\forms\annx'cov.frm

EXHIBIT 1.8.1

Exhibit 1.8.3 Water Main Oversize Policy

CITY OF SPOKANE
WATER & HYDROELECTRIC SERVICES

Water Main Oversize Policy

Introduction:

Anyone (hereafter, applicant) desiring City water service to be extended to their property(ies) where such City water service does not exist, must request permission to construct an extension of water service to such location(s) by submitting such request to the City of Spokane through the Developer Services Section of Engineering Services.

Typically such a request is just for a water distribution main extension(s), including fire hydrants as needed, to the desired location(s). However, in some cases, in order to extend City water service which will provide acceptable water pressure and quantity necessary for domestic needs as well as for fire protection, additional water system infrastructure components may need to be constructed (such as reservoir(s), pumping station(s) and transmission water main(s)).

The sizing of all necessary mains and appropriate water system infrastructure shall be determined based on the needs of the applicant for the water service extension such that the quantity of water necessary for domestic, irrigation, and fire protection needs can be delivered at acceptable water pressure. A hydraulic analysis, to be submitted by the applicant, may be necessary to support the plans submitted for City approval towards obtaining permission for construction of the water system extension.

The necessary quantity of water for domestic service shall be determined by the applicant's consultant engineer and such determination shall be subject to the approval of the City's Director of Water & Hydroelectric Services.

The necessary quantity of water for fire protection shall be determined by the fire district of jurisdiction and the Director of Water & Hydroelectric Services.

The applicant shall be responsible for all costs necessary for the construction of all needed water main(s) and appropriate water system infrastructure required for project(s).

The Policy:

In reviewing the water plans submitted by the applicant, the Director of Water & Hydroelectric Services may determine that the water main(s) should be constructed at a larger size than needed for the applicant's project or development in order to meet the City's future needs relative the City's water system.

When the Director of Water & Hydroelectric Services makes such determination, the Director shall order the water plans to be revised to reflect the pipe size(s) so deemed

necessary by the Director and, further, to require the that construction be in conformance with the revised water plans.

The Director, in making such determination, shall have City staff complete the attached justification form entitled "WATER MAIN OVERSIZE JUSTIFICATION & APPROVAL. The completed form shall then be signed by the Director and the applicant and be made a part of the project records.

Further, the Director shall authorize that the applicant be reimbursed for such costs incurred relative the oversizing of the water main(s) upon the City Council's approval of the improvement(s) for the City's operation and maintenance.

Determination of Eligible Cost(s) for Oversizing Water Main(s):

The portion of the project that is reimbursable is limited to the water main infrastructure system which is part of the public water system or is intended to become part of the public water system. Further, the portion of the project that is reimbursable is the difference in material cost only, including pipes, valves, fittings and pipe restrainment.

The process for determining the amount to be reimbursed is established by the City utilizing bids provided by local material suppliers. The difference in material costs is established on the lowest of the bids received as a package for all materials involved as follows:

> First, the lowest bid for all materials necessary for the construction of the water main(s) based the size(s) representing the required needs of the applicant.
>
> Second, the lowest bid for all materials necessary for the construction of the water main(s) based the size(s) representing the required needs of the City.

Utilizing the two low bids received, the City will compute the eligible reimbursable amount, including applicable sales tax, relative water main oversizing cost(s) for the project(s).

The City of Spokane Water Main Oversize Policy is hereby adapted this 28th day of May, 1999.

Brad W. Blegen

Brad W. Blegen, P.E., Director
Water & Hydroelectric Services

Exhibit 1.8.4 Water Main Oversize Form

WATER MAIN OVERSIZE JUSTIFICATION & APPROVAL

Date _____

For Water Main Located: _____
(Street or Location)

From: _____ To: _____

File No. _____ Project No. _____

Applicant: _____

Size Water Main Required: _____ Oversize Water Main Required: _____

Estimated Cost for Oversizing: _____

Reason for Oversizing: _____
_____

Will Cost of Oversizing Be Recovered By Future Special Connection Fees? Yes ___ No___

If no, why not: _____
_____

If yes, Identify Benefitting Properties: _____
_____
_____

Provide Formula or Procedure for Calculating Future Special Connection Fees:
_____
_____

Is applicant requesting latecomers' reimbursement fee? Yes____ No____

COMMENTS:

APPROVED: _____ ACCEPTED: _____ _____
Director - Water & Hydro. Svcs. Applicant Date

NOTE: This form is to be completed prior to construction.

EXHIBIT 1.8.4

Exhibit 1.8.5 Water Tap Work Order Form

CITY OF SPOKANE
WATER TAP INSTALLATION ORDER

Appl. Date: 06/20/06
Permit NO: P0604906

9303 N SORENSON CT
Z Code: 99208
Legal: MCCARROLL EAST 3RD ADDITION BLK 3 LOT 13

Acct. NO: 107344/S109173

Tap On: SORENSON CT
ST Width: **********60.00
Acct TYPE: RE 1 Units
Firm Price:**********333.00
Applicant:
SUNSET WEST PROPERTIES INC
700 W 7TH AVE #404
SPOKANE WA 99204
993-5107

Btwn: BELMONT DR AND END OF CULDESAC
Tap Size: 1"
Main Size: 8"
Sewer Sys: 1
Purpose: DOM
LID/Work #:
Water Sys: J
In/Out City? I
Excavator:

Tap Measurements _____
Curb Measurements _____
Protection Box Measurements _____
Additional Information:

QTY	DESCRIPTION	AMOUNT	QTY	DESCRIPTION	AMOUNT
				Material_Sub_Total	
				Material_OverHead	
				TOTAL_MATERIAL	
				HRS. TRUCK @	
				HRS. @	
				TOTAL_EQUIPMENT	
				HRS._LABOR @	
				HRS._LABOR @	
				HRS._LABOR @	
				TOTAL_LABOR	
				FIRM**********333.00 TOTAL	

T NED Water ON ___ Water OFF ___
Date Work Completed: _____ Completed By: _____
WIT01 $ 333.00

EXHIBIT 1.8.5

Exhibit 1.8.6 Water Meter Work Order Form

CITY OF SPOKANE
WATER METER INSTALLATION ORDER

Appl. Date: 04/24/06
Permit NO: P0603419

3806 W JAY AVE
Z. Code: 99208
Legal: FALCON RIDGE 1ST ADDITION BLK 3 LOT 15

Acct. NO: 106497/S108260

Tap On: JAY AVE Btwn: 'L' AND DORSET RD
ST Width: **********38.00 Tap Size: 1" Purpose: DOM
Meter Size: 1" - 03
Installed In: BOX LID/Work #:
Acct TYPE: RE 1 Units Sewer Sys: 1 Water Sys: N
Firm Price:********1,006.00 In/Out City? O

Applicant:
HOMESTEAD CONSTRUCTION INC
312 S FARR RD
SPOKANE WA 99206
509 892 0454

Excavator:
HOMESTEAD CONSTRUCTION INC
312 S FARR RD
SPOKANE WA 99206
509 892 0454

Trench OK'd By: _____ Date: _____
METER Furn. By: _____ MFG: ___ Kind: ____ Size: ____ Owner: __
Curb Meas: _____ Serial #: _____

MAINT NUMBER	DIGITS		LOCATION
_____	___	METER	_____
		ARB	_____
_____	___	METER	_____
		ARB	_____
_____	___	METER	_____
		ARB	_____

Fireline? YES ___ NO ___
Additional Information:

QTY	DESCRIPTION	AMOUNT	QTY	DESCRIPTION	AMOUNT
				Material_Sub_Total	
				Material_OverHead	
				TOTAL_MATERIAL	
				HRS. TRUCK ___ @	
				HRS. ___ @	
				TOTAL_EQUIPMENT	
				HRS._LABOR___ @	
				HRS._LABOR___ @	
				HRS._LABOR___ @	
				TOTAL_LABOR	
				SALES_TAX	
				FIRM********1,006.00 TOTAL	

TURNED Water ON___ OFF___ Date:_____
FOUND Water ON___ OFF___
Date Work Completed: _____ Completed By: _____

WOX112 (Total Materials Amt) $_____
WOX113 (Total Equipment Amt) $_____
WOX111 (Total Labor Amt) $_____
WOX114 (Total Sales Tax) $_____

EXHIBIT 1.8.6

Exhibit 1.8.7 City of Spokane Water Department Rules and Regulations for Water Service Installations

CITY OF SPOKANE WATER DEPARTMENT RULES AND REGULATIONS FOR WATER SERVICE INSTALLATIONS

Revised 06/17/2014

For Water Tap and Meter Applications	625-6309
South Side Inspections	625-7844 or 994-2065
North Side Inspections	625-7845 or 994-1669
Cross Connection Inspections	625-7967 or 990-3366
Inspectors Fax Number	(509) 625-7853

1. **THE RULES AND REGULATIONS INCLUDED HEREIN ARE NOT TO BE CONSIDERED AS COMPLETE. NO ATTEMPT HAS BEEN MADE TO COVER ALL OF THE ORDINANCES. IT SHALL BE THE RESPONSIBILITY OF THE BUILDER, OWNER, OR CONTRACTOR, TO CALL INSPECTORS TO CLARIFY ANY SITUATION THAT IS NOT CLEARLY ADDRESSED IN THESE REGULATIONS IN REGARD TO SITE PLANS, BUILDING DESIGN, ETC.**

2. **All water service trenches or excavation will be sloped or shored according to WISHA Department of Labor and Industry standards to provide safe access**

3. **INSPECTIONS**:

NOTE: NO ON PROPERTY INSPECTION WILL BE MADE UNTIL A METER APPLICATION HAS BEEN PURCHASED

ALL WATER SERVICE INSTALLATIONS, FROM THE PROPERTY LINE TO THE MAIN SHUT-OFF VALVE OR VALVES INSIDE THE BUILDING OR BASEMENT, REQUIRE INSPECTION BY THE WATER DEPARTMENT INSPECTOR BEFORE COVERING.

At the time of the inspection water for construction and the current monthly charge for construction water will commence. Construction water charges will continue until installation of the water meter. Once the meter is installed, construction water charges will cease, and the current, regular monthly fees for water service and water use will commence.

4. **BACKFLOW / CROSS-CONNECTION:**

The policies, procedures and criteria for determining Backflow/Cross Connections (actual and possible) and appropriate levels of protection shall be in accordance with the City of

Spokane Water Department Cross Connection Control and Backflow program, rules and regulations, Washington Administrative Code (WAC 246-290-490) and the City of Spokane Municipal Code 13.04.0814.

Examples of areas where devices/assemblies will be needed: Buildings over 30' above street level, medical facilities, laboratories/clinics, fire protection systems, irrigation systems (Yard Hydrants are considered a part of an irrigation system), boilers, post mix soda pop machines, food processing, car washes and/or other facilities where chemicals are used or are injected into the water system, etc. All Backflow Assemblies must be on the Washington State Approved Assemblies list. All Backflow Assemblies will be tested when initially installed, repaired, replaced or moved. The owner is required to have a State Certified Backflow Assembly Tester (BAT) test all Backflow Assemblies annually thereafter. BAT shall tag assemblies tested noting time and date of test.
Where a meter exists in a meter box and the Concrete rings are minimum 36" inside diameter, then the DCVA for Irrigation must be installed outside of the meter box and plumbed into a box of the appropriate size to allow for testing and repair as per. the City of Spokane Water Department Municipal Codes. All installations must meet the requirements of the City of Spokane Water Department.

Retro Fit:

Single Check replacement in vaults, shall be inspected by the Cross Connection Control Inspector before removal of old assembly and again after the new assembly has been installed and tested.

5. NEW TAPS AND RETAPS:

In ALL cases the property owner is responsible for service location and depth.
In all cases where a new water service is to be installed, a stake marked "WATER" must be placed at the property line by the contractor, builder, or owner showing where service is to enter property, otherwise tap will not be made.

Only City Water Personnel will tap the City Water mains. Size of tap shall be maintained to the water meter. Taps on new mains will not be made until bacteriological tests are taken and the sample has been approved by County Health Department. All water services must be 5 feet deep from finished grade. (A depth of 5 feet shall be maintained through any 208 or swale system.)

6. WATER SERVICE PIPE:

All services up to and including 1 ½" must be seamless, soft-annealed, type "K" copper; with flared fittings or approved compression fittings OR may be HDPE (200 psi, CTS, SDR 9) out of the public right-of-way and only after the meter installation. 2" to 3" may be HDPE (200 psi, CTS, SDR 9), or copper, 4" and larger shall be ductile iron. Fittings must be used when a change in direction of pipe is necessary. All pipes shall be bedded with sand (minimum 6"). All HDPE shall have stainless steel stiffeners and copper compression fittings. A 12 gauge tracer wire shall be installed on the HDPE and affixed to the pipe every 10'. Water services in the same trench shall have a horizontal separation of 2 feet.

Galvanized services that are 4" or smaller cannot be reused if the service has been off for one year, and the building is gone.
All water services viable or not that will not be reused shall be disconnected at the water main. The physical disconnection will be done by Water Department personnel at no charge, all excavation and restoration will be at the owner's expense prior to construction.

7. WATER AND SEWER SEPARATION:

The sewer must be a minimum of 18" deeper and a minimum of 5' horizontally from the center line of ANY water service

When sewer elevation is higher than the water service, there must be a separate water trench with 6 feet of undisturbed earth between water and sewer. All water service installations shall be at least 10 feet from any cesspool, catch basin, septic tank.

8. OTHER UTILITIES:

All other utilities (telephone, cable TV, electric, gas, etc.) shall have a minimum of 5 foot horizontal separation from the water line.

9. WATER SERVICE ENTERING BUILDING:

Where a water service pipe enters a building a depth of 5 feet shall be maintained. Where there is no basement i.e. crawl space or slab floor, the water service pipe, including fire lines will maintain a 5 foot bury and extend 2 feet inside the footing before rising to the point of use or meter. No joints will be allowed under the floor, or within 5 feet of the outer wall. All service installations running parallel to buildings shall be at least 10 feet from the outer foundation walls.

10. METER LOCATION:

Standard meter location shall be in an approved meter box at property line. Installation of meters in a building shall be reviewed on a case by case basis and approved by the Director of the Spokane Water Department. When meters are installed in the building they must be within 60' of the property line. The meters must be installed in a utility room or mechanical room with a concrete floor, and an approved floor drain, with a valve on the inlet and outlet sides of the meter. **Meters shall not be installed under stairs, in closets, crawl areas, garages, or unheated areas.** There shall be not more than 18" of exposed pipe before the meter. All 3/4" or 1" services where water pressure is 80 psi or higher, shall have an approved Pressure Reducer installed before the meter. On services 1 ½" and larger, the pressure regulator shall be after the meter.
Roughed in meter makeup shall be / 16.5" length for 1" / 14" length for ¾" / 12.5 " length for 5/8"

11. LARGE WATER SERVICES (3" AND LARGER):

All meters 3" or larger shall be installed at the property line, in a vault built to Water Department Specifications, or can be installed in the building when less than 60 feet from property line to meter. For maintenance, all large meters must be accessible and have a minimum 12" clearance from any wall or floor. Water Department personnel and owners' representatives will visit the site prior to the estimate for a complete determination of requirements.

12. WATER SERVICE REPAIR AND REPLACEMENT:

The repair of service leaks on private property is the responsibility of the property owner. Any repair or replacement of existing services shall follow all current rules and regulations and be inspected before covering. **No service relays shall be pulled unless a minimum depth of 4 ½' can be maintained with a minimum of 5' sewer separation.** Where a new building, or an addition to existing building, is erected over an existing service, the water service shall be either sleeved or offset by relaying the service a minimum of 10' from outer foundation wall.

13. EASEMENTS REQUIRED:

Easements shall be considered on a case by case basis, granted by the Director of the Spokane Water Department

When water services cross property other than property being serviced, the water meter shall be installed in a city standard meter box with a 24" cast iron ring and cover. This box must be installed no more than 3' inside the property line and an easement number must be filed with the Taps and Meter Division at City Hall

14. METER BOX:

Meter boxes, for single meters up to 1" in size, when installed by the property owner, shall meet City of Spokane Water Department standards and shall be placed on property not more than 3' inside the property line, and built to Water Department specifications. **All meter boxes and lids shall be maintained by property owner!**

Single meters up to 2" or if there will be two meters, 2" in size or smaller, a concrete meter box with a 48" minimum inside diameter with a standard 24" cast iron ring and cover will be required.

For meters larger in size than 2" or if there will be more than two meters, please contact our inspectors for appropriate vault dimensions. All meter boxes and vaults must meet H20 traffic load rating if in an area where traffic loads are expected.

15. REMOTE READOUT CONDUIT:

All commercial buildings and residential homes (including duplex and triplex dwellings)

are required to install an approved ½ inch PVC electrical conduit and must be installed from the water meter, to an accessible location on the outside of the building, approximately 3' from finished grade. If the length of the conduit exceeds 200', a pull string shall be provided. All directional changes will be made with sweeps, 90 degree elbows will not be allowed. All commercial buildings which are remodeled, reconstructed, or additions added on will be required to install conduit. Polyethylene pipe as conduit will not be acceptable.

REMOTE READER CABLE INSTALLATION POLICY

The City of Spokane Water Department will require a three wire, 22 gauge, color coded cable to be installed by the builder during the construction of all residential and commercial buildings for remote water meter reading purposes.

The cable shall begin at the water meter location and terminate on the street side of the building or on either side of the building within two feet of the street side of the building. The cable shall be in an accessible location approximately 36 inches above finished grade and with approximately 4' of excess cable left on each end.

16. CONTRACTOR'S GUARANTEE:

Work being done by private contractors, pertaining to quality of materials and installation procedures, shall be guaranteed for two (2) years from time of installation.

If water is turned on or found on without proper inspection by the Water Division, the following City Ordinance applies:

CITY ORDINANCE CHAPTER 13.04 WATER

13.04.200 PENALTY. Any person violating any of the provisions of this chapter, or the rules and regulations of the Water Division, shall be deemed guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine in any sum not exceeding $300.00, or by imprisonment in the City Jail for not more than ninety days, or by both fine and imprisonment. Each day of a continuing violation shall constitute a new and separate violation unless otherwise specified. (Source, Section 40, C2452)

If Tap and Meter applications have been completed, water may be turned on for construction by calling 625-6000. Plumbers must abide by the following City Ordinance:

City Ordinance Chapter 13.04 WATER 13.04.130 Sub-Section D

The Director of Public Utilities may also permit qualified plumbers, licensed and bonded in accordance with state laws, to open and shut the street cock in order to make the

necessary repairs or to test their work, and in every such case such persons shall leave the stop cock as they found it. They shall be responsible for any damage, losses or liabilities of the City or third parties arising from their acts, errors or omissions. (Source, Section 35, part C-2452; Cross ref., Section 13.04.0806 - 13.04.0812)

SPECIFICATIONS FOR UNDERGROUND INSTALLATION OF LARGE DOMESTIC WATER SERVICES, MAINS, AND FIRELINES
(Shall Conform to A.P.W.A. with Spokane Supplemental Standards)

1. All material installed in the City of Spokane, including fire hydrants and valves, must conform to City of Spokane Specifications. Pipe and Fittings shall be approved ductile iron. All fire hydrants must be individually valved. When in Fire Districts outside of City of Spokane jurisdiction, installation and materials will conform to City of Spokane Rules and Regulations, however, the type of fire hydrants, direction of operation, size and style of operating nut and port caps, will be determined by local Fire Department Jurisdiction.

2. Pipe shall be laid at a minimum depth of 5 ½ feet to invert from finished grade. Pipe depth shall also be maintained through 208 swale systems.

3. Pipe and fittings shall be class 350 ductile and installed in accordance with manufactures instructions and in an approved manner. (A.W.W.A C600-64)(Example - Tyton slip joint connections require continuity wedges, and all taps will have Double strap saddles)
4. Pipes shall be clean inside when installed and open ends shall be protected when work is stopped, to prevent foreign material from entering pipe.

5. Pipe joints will be either mechanical joint or tyton slip joint; change in direction shall not exceed 75% of manufacturers' maximum deflection standards.

6. All tees, plugs, caps and bends on pipe installed underground shall be mechanically restrained. Mega lugs and field lock gaskets or other restraint systems approved by the Director of the City of Spokane Water Department, shall be used. Thrust blocking is not acceptable.

7. All underground fire lines, or fire suppression systems that are separated or protected from the potable water system requires a State Level III or "U" licensed contractor for installation.

8. All hydrants shall be properly restrained, from the main to the hydrant (mega lugs or field lock gaskets).

9. All water mains and appurtenances 2" and larger shall be tested in sections of convenient length under a hydrostatic pressure equal to 1.5 times that under which they will operate or in no case shall the test pressure be less than 175 psi. Firelines will be tested at 200 psi or 1.5 times the operation pressure, whichever is greater. All pumps, gauges, plugs,

saddles, corporation stops, miscellaneous hose and piping and measuring equipment necessary for performing the test shall be furnished and operated by the contractor. Chlorination shall only be done by city forces at the expense of the developer and all arrangements shall be made through the City water service inspectors.

10. Earth shall be well tamped under and around pipes to prevent settling or lateral movement. Care shall be taken to prevent rocks, etc. from damaging pipe while backfilling. Frozen earth and/or asphalt shall not be used for backfill material. Backfilling will be done according to APWA specifications.

11. If the property line is in a 208 swale area the meter vault\box may have to be relocated farther on property in a utility easement.

NO ATTEMPT HAS BEEN MADE TO COVER ALL SPECIFICATIONS AND ARE NOT TO BE CONSIDERED AS COMPLETE. IF THERE ARE ANY QUESTIONS, PLEASE CALL 625-7800.

A copy of these rules can be found at

The Municipal Code Water Section can be found at
http://www.spokanecity.org/services/documents/smc/?Chapter=13.04

Revised 11/2009

Exhibit 1.8.8 Minimum Water Service Vault Dimensions

CITY OF SPOKANE WATER DEPT.
WATER SERVICE MINIMUM VAULT DIMENSIONS.

3" DOMESTIC	**6' x 8' x 6'6"**
3" DOMESTIC W/DCVA	**6' x 10' x 6'6"**
3" IRRIGATION W/DCVA	**6' x 10' x 6'6"**
4" DOMESTIC	**6' x 8' x 6'6"**
4" DOMESTIC W/DCVA	**6' x 10' x 6'6"**
4" FIRE ONLY	**6' x 7' x 6'6"**
4" FIRE & DOMESTIC	**6' x 12' x 6'6"**
4" IRRIGATION W/DCVA	**6' x 10' x 6'6"**
6" DOMESTIC	**6' x 8' x 6'6"**
6" DOMESTIC W/DCVA	**6' x 12' x 6'6"**
6" FIRE ONLY	**6' x 8' x 6'6"**
6" FIRE & DOMESTIC	**6' x 14' x 6'6"**
6" IRRIGATION W/DCVA	**6' x 12' x 6'6"**
8" FIRE ONLY	**6' x 10' x 6'6"**
8" FIRE & DOMESTIC	**6' x 16' x 6'6"**
10" FIRE ONLY	**6' x 10' x 6'6"**
10" FIRE & DOMESTIC	**6' x 16' x 6'6"**

IF THERE ARE 2 SERVICES, ALL VAULTS WILL BE A MINIMUM OF 8' WIDE.

IF THERE ARE MORE THAN 2 SERVICES,
VAULT DIMENSIONS MUST BE OBTAINED
FROM TAPPING DEPT. (509) 625-7847

ALL VAULTS WILL BE HEAVY DUTY TRAFFIC RATED.

THESE VAULTS ARE MINIMUM INSIDE DIMENSIONS.

Revised 3/27/2015

Exhibit 1.10.1 Consistency Checklists

COS WSP December 2014
Local Government Consistency Review

WATER DEPARTMENT
914 E North Foothills Drive
Spokane WA 99207-2794
(509) 625-7800
FAX 625-7816

January 15, 2015

Louis Meuler, Acting Director
City of Spokane – Planning & Development
808 W. Spokane Fall Blvd.
Spokane, WA. 99201

RE: **City of Spokane Draft Water System Plan Consistency Review**

Dear Louis,

Please find enclosed a local Government Consistency Review Checklist for the City of Spokane Draft Water System Plan currently in review by the Washington State Department of Health and a drive containing the Draft Water System Plan for your review.

The City of Spokane is currently in the process of updating its Water System Plan which is required every 6 years. The Washington State Department of Health requires the City of Spokane Water Department to obtain a signed consistency checklist from all local planning agencies within whose jurisdictions we provide either retails or wholesale water service as part of this update.

Included on the checklist are the page numbers in the draft plan that appears most relevant for your review. A copy of the draft plan is also available for viewing in PDF format at the City of Spokane Water Department website at https://beta.spokanecity.org/publicworks/water/ourwater/. If you prefer a hard copy of the document please contact me at your convenience via e-mail or phone at the contact provided below and arrangement will be made to provide you a hard copy.

Upon completing the review, please sign the review checklist and return to the Water Department, ATTN: James Sakamoto. Please contact me if there are any questions or if you require clarification on the consistency review or the water system plan. We look forward to your consistency review of the City of Spokane Draft Water System Plan.

Sincerely,

James Sakamoto, P.E.
Principal Engineer – Water Department
jsakamoto@spokanecity.org
Ph: (509) 625-7854

JSS/jss

Attachments: Local Government Consistency Review Checklist

cc Dan Kegley, Director – Water Department
Tirrell Black, Planner – Planning and Development
Water File

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: City of Spokane Water Department PWS ID: 83100

Planning/Engineering Document Title: Draft Water System Plan Plan Date: Dec 2014

Local Government with Jurisdiction: City of Spokane Planning Department

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	P.1-32	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	P.2-1 2-8	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	P.1-38	Yes
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	P.1-37	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	P.1-4 P.1-30 Ch. 5 Ch. 8	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

January 27, 2015
Date

Tirrell Black, Assistant Planner, City of Spokane Planning + Development
Printed Name, Title, & Jurisdiction

COS WSP December 2014
Local Government Consistency Review

WATER DEPARTMENT
914 E North Foothills Drive
Spokane WA 99207-2794
(509) 625-7800
FAX 625-7816

January 15, 2015

Mike Basinger
City of Spokane Valley
11707 E. Sprague Ave. Suite 106
Spokane Valley, WA 99206

RE: **City of Spokane Draft Water System Plan Consistency Review**

Dear Mike;

Please find attached a local Government Consistency Review Checklist for the City of Spokane Draft Water System Plan currently in review by the Washington State Department of Health.

The City of Spokane is currently in the process of updating its Water System Plan which is required every 6 years. The Washington State Department of Health requires the City of Spokane Water Department to obtain a signed consistency checklist from all local planning agencies within whose jurisdictions we provide either retails or wholesale water service as part of this update.

Included on the checklist are the page numbers in the draft plan that appears most relevant for your review. A copy of the draft plan is available for viewing in PDF format at the City of Spokane Water Department website at https://beta.spokanecity.org/publicworks/water/ourwater/. If you have difficulties accessing the web site and retrieving the document or would prefer a hard copy of the document please contact me at your convenience via e-mail or phone at the contact provided below and arrangements will be made to provide you a copy.

Upon completing the review, please sign the review checklist and return in the self addressed envelope provided. Please contact me if there are any questions or if you require clarification on the consistency review or the water system plan. We look forward to your consistency review of the City of Spokane Draft Water System Plan.

Sincerely,

James Sakamoto, P.E.
Principal Engineer – Water Department
jsakamoto@spokanecity.org
Ph: (509) 625-7854

JSS/jss

Attachments: Local Government Consistency Review Checklist

cc Dan Kegley, Director – Water Department
Water File

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: City of Spokane Water Department PWS ID: 83100

Planning/Engineering Document Title: Draft Water System Plan Plan Date: Dec 2014

Local Government with Jurisdiction: City of Spokane Valley

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	P.1-32	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	P.2-1	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	P.1-38	Yes
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	P.1-37	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	P.1-4 P.1-30 Ch. 5 Ch. 8	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Henry M. Allen 06 Jul 15

Signature Date

Henry M. Allen, Development Engineer, City of Spokane Valley

Printed Name, Title, & Jurisdiction

COS-WSP 2016

WATER DEPARTMENT
914 E North Foothills Drive
Spokane WA 99207-2794
(509) 625-7800
FAX 625-7816

March 3, 2016

Brian A. Sayrs
Regional Planner
Department of Health
Office of Drinking Water
16201 East Indiana Ave Suite 1500
Spokane Valley WA 99216

RE: Airway Heights Local Government Consistency Review Checklist

Dear Brian;

In accordance with WAC 246-290-108(3) the City of Spokane is completing the Local Government Consistency Review Checklist for the City of Airway Heights in the self certification process.

Attached is the completed checklist along with the original request for Local Government Consistency Review dated January 15, 2015. Additional contact includes phone and e-mail requests prior to the submittal of the draft of the City of Spokane Water System Plan to the Department of Heath Office of Drinking Water providing more than the required 60 days for response to the Local Government Consistency Review request.

The attached self certified consistency review checklist completes the self certification process in fulfilling the requirements in WAC 246-290-108.

Sincerely,

Dan Kegley
Director, Water-Wastewater
City of Spokane, WA

JSS/DK

COS-WSP 2016

WATER DEPARTMENT
914 E North Foothills Drive
Spokane WA 99207-2794
(509) 625-7800
FAX 625-7816

Attachments: Airway Heights Consistency Review Request Letter
Local Government Consistency Review Checklist

cc WSP File

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: City of Spokane Water Department PWS ID: 83100

Planning/Engineering Document Title: Draft Water System Plan Plan Date: Dec 2014

Local Government with Jurisdiction: City of Airway Heights

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	P.1-31	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	P.2-9	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	P.1-36	Yes
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	E.1.8.0	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	P.1-28 P.1-33 Ch. 5 Ch. 8	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

D. R. Keegley 3/3/2016

Signature Date

Daniel R. Keegley Director Water/Wastewater City of Spokane

Printed Name, Title, & Jurisdiction

COS WSP December 2014
Local Government Consistency Review

WATER DEPARTMENT
914 E North Foothills Drive
Spokane WA 99207-2794
(509) 625-7800
FAX 625-7816

January 15, 2015

Derrick Braaten – Development Services Director
City of Airway Heights
1208 S. Lundstrom St.
Airway Heights, WA 99001

RE: **City of Spokane Draft Water System Plan Consistency Review**

Dear Derrick;

Please find attached a local Government Consistency Review Checklist for the City of Spokane Draft Water System Plan currently in review by the Washington State Department of Health.

The City of Spokane is currently in the process of updating its Water System Plan which is required every 6 years. The Washington State Department of Health requires the City of Spokane Water Department to obtain a signed consistency checklist from all local planning agencies within whose jurisdictions we provide either retails or wholesale water service as part of this update.

Included on the checklist are the page numbers in the draft plan that appears most relevant for your review. A copy of the draft plan is available for viewing in PDF format at the City of Spokane Water Department website at https://beta.spokanecity.org/publicworks/water/ourwater/. If you have difficulties accessing the web site and retrieving the document or would prefer a hard copy of the document please contact me at your convenience via e-mail or phone at the contact provided below and arrangements will be made to provide you a copy.

Upon completing the review, please sign the review checklist and return in the self addressed envelope provided. Please contact me if there are any questions or if you require clarification on the consistency review or the water system plan. We look forward to your consistency review of the City of Spokane Draft Water System Plan.

Sincerely,

James Sakamoto, P.E.
Principal Engineer – Water Department
jsakamoto@spokanecity.org
Ph: (509) 625-7854

JSS/jss

Attachments: Local Government Consistency Review Checklist

cc Dan Kegley, Director – Water Department
Water File

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: City of Spokane Water Department PWS ID: 83100

Planning/Engineering Document Title: Draft Water System Plan Plan Date: Dec 2014

Local Government with Jurisdiction: City of Airway Heights

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	P.1-32	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	P.2-1	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	P.1-38	Yes
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	P.1-37	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	P.1-4 P.1-30 Ch. 5 Ch. 8	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature Date

Printed Name, Title, & Jurisdiction

COS WSP December 2014
Local Government Consistency Review

WATER DEPARTMENT
914 E North Foothills Drive
Spokane WA 99207-2794
(509) 625-7800
FAX 625-7816

January 15, 2015

John Pederson - Planning Director
Spokane County Building and Planning
1026 West Broadway Ave.
Spokane, WA 99260-0500

RE: **City of Spokane Draft Water System Plan Consistency Review**

Dear John;

Please find attached a local Government Consistency Review Checklist for the City of Spokane Draft Water System Plan currently in review by the Washington State Department of Health.

The City of Spokane is currently in the process of updating its Water System Plan which is required every 6 years. The Washington State Department of Health requires the City of Spokane Water Department to obtain a signed consistency checklist from all local planning agencies within whose jurisdictions we provide either retails or wholesale water service as part of this update.

Included on the checklist are the page numbers in the draft plan that appears most relevant for your review. A copy of the draft plan is available for viewing in PDF format at the City of Spokane Water Department website at https://beta.spokanecity.org/publicworks/water/ourwater/ If you have difficulties accessing the web site and retrieving the document or would prefer a hard copy of the document please contact me at your convenience via e-mail or phone at the contact provided below and arrangements will be made to provide you a copy.

Upon completing the review, please sign the review checklist and return in the self addressed envelope provided. Please contact me if there are any questions or if you require clarification on the consistency review or the water system plan. We look forward to your consistency review of the City of Spokane Draft Water System Plan.

Sincerely,

James Sakamoto, P.E.
Principal Engineer – Water Department
jsakamoto@spokanecity.org
Ph: (509) 625-7854

JSS/jss

Attachments: Local Government Consistency Review Checklist

cc Dan Kegley, Director – Water Department
Water File

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: City of Spokane Water Department PWS ID: 83100

Planning/Engineering Document Title: Draft Water System Plan Plan Date: Dec 2014

Local Government with Jurisdiction: Spokane County Planning

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	P.1-32	Yes
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	P.2-1	Yes
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	P.1-38	Yes
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	P.1-37	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	P.1-4 P.1-30 Ch. 5 Ch. 8	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature Date

Printed Name, Title, & Jurisdiction

SPOKANE COUNTY
BUILDING AND PLANNING DEPARTMENT
1026 West Broadway Avenue
Spokane, WA 99260

February 24, 2015

Mr. James Sakamoto, P.E.
Principal Engineer-Water Department
914 E. North Foothills Drive
Spokane, WA 99207-2794

RE: City of Spokane Draft Water System Plan Consistency Review

Dear Mr. Sakamoto:

The Spokane County Department of Building and Planning received the local Government Consistency Review Checklist for the City of Spokane Draft Water Plan and we are unable to approve the review checklist based on the following deficiencies. By way of background, the deficiencies specified herein were presented to the City Council at its legislative session on Monday, February 9, 2015.

Section 1.6 of the Draft Water Plan states that "water service in rural areas is provided on a case by case basis subject to meeting the intent of the Growth Management Act to not promote urban development in a rural area" and that "these rural water services may be provided if service can be provided on a timely and reasonable basis, and the proponent pays the cost for the extension of such service". For clarification, please note that extension of public water service to rural areas outside the Urban Growth Area is permitted per Section 13.600.114 (2) of Spokane County Code. In addition, Section 1.6 of the Draft Water Plan does not include any explanation of how rural service can be provided in a "timely and reasonable manner" and extension of service should be provided within the 120-day timeframe specified in the Spokane County CWSP. (Reference Section 1a of the review checklist)

Section 1.6 of the Draft Water Plan also notes that expansion of the Urban Growth Area "shall be in compliance with the City of Spokane Comprehensive Plan and all other regulations prior to review and inclusion to the retail service area". The above-cited text is not consistent with the Growth Management Act as defined in RCW 36.70A.030 (19) that states "Urban Growth areas means those areas designated by a *County* pursuant to RCW 36.70A.110". Designation and amendment of the Urban Growth Area is a responsibility specifically delegated to the Board of County Commissioners and amendment of the Draft Water Plan does not relieve the County of said responsibility or defer this task to the City of Spokane. In addition to the Growth Management Act, the Spokane County Comprehensive Plan (Chapter 1, Introduction) and the adopted Countywide Planning Policies (Policy Topic 1, Policies 16-19) already provide a prescriptive process for periodic review and update of the Urban Growth Area. Section 1.6 should be amended or revised to reference the process to amend the Urban Growth Area as specified in the Countywide Planning Policies, as well as the pertinent sections of the City Comprehensive Plan that address expansion/modification of the Urban Growth Area. (Reference Section 1A of the review checklist)

Section 2.1 of the Draft Water Plan does not identify a six-year growth projection that is consistent with the adopted City/County population growth projections. Section 2.1 merely references 2010 census data for the number of people in the City and estimates a 2010 population for the retail service area. Section 2.2 also references the 2010 population within the City, a 2013 estimate of population within the retail service area, and no six-year growth projection. (Reference section 1b of the review checklist)

Section 2.9 of the Draft Water Plan notes an annual growth rate of approximately 1% per year and the water demand forecast shown in Table 2.2.3 tabulates water demand forecast for six and twenty year time periods but does not explain how the respective population numbers for 2013, 2018, and 2033 were derived or if the water demand forecast is for the existing retail service area. In addition, the respective population figures listed in Table 2.2.3 does not coincide with the population numbers in paragraph 2.2 of the Draft Water Plan. (Reference Section 1b of the review checklist)

Pages 1-38 of the Draft Water Plan does not list City of Spokane Water Department "service area policies" or fully explain the "set procedure governed by the City's municipal codes, ordinances, and design guidelines". At a minimum, the Draft Water Plan should either list or identify in appendices the City's codes, ordinances, and standards that identify the "set procedure". City Council approval of Ordinance C3523 that established an *annual* process to expand the retail service areas appears to be inconsistent with the 120-day timely and reasonable provisions of the Spokane County CWSP. In addition, Ordinance C35223, Section 13.04.1921 (B) does not define what constitutes "more frequently, an emergency, or urgent circumstance" and could result in substantial delay of a decision in a timely and reasonable manner. (Reference Section 1c of the review checklist)

Our previous comment(s) for Section 1a as set forth above notes public water service outside the Urban Growth Area is permitted per Section 13.600.114(2) of Spokane County Code. (Reference Section 1d of the review checklist)

Thank you for the opportunity to review the Draft Water Plan and consistency review checklist. If you have any questions about our comments, please contact me at your convenience.

Sincerely,

John Pederson

John Pederson
Planning Director

cc: Washington State Department of Health

Washington State Department of Health

Local Government Consistency Review Checklist

Water System Name: City of Spokane Water Department PWS ID: 83100

Planning/Engineering Document Title: Draft Water System Plan Plan Date: Dec 2014

Local Government with Jurisdiction: Spokane County Planning

WAC 246-290-108 Consistency with local plans and regulations:
Consistency with local plans and regulations applies to planning and engineering documents under WAC 246-290-106, 246-290-107, and 246-290-110(4)(b (ii).

1) Municipal water suppliers must include a consistency review and supporting documentation in its planning or engineering document describing how it has addressed consistency with **local plans and regulations**. This review must include specific elements of local plans and regulations, as they reasonably relate to water service as determined by Department of Health (DOH). Complete the table below and see instructions on back.

Local Government Consistency Statement	Page(s) in Planning Document	Yes – No – Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the applicable service area.	P.1-32	~~Yes~~ NO
b) The six-year growth projection used to forecast water demand is consistent with the adopted city/county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	P.2-1	~~Yes~~ NO
c) Applies to cities and towns that provide water service: All water service area policies of the city or town are consistent with the utility service extension ordinances of the city or town.	P.1-38	~~Yes~~ NO
d) Service area policies for new service connections are consistent with the adopted local plans and adopted development regulations of all jurisdictions with authority over the service area [City(ies), County(ies)].	P.1-37	~~Yes~~ NO
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable; Coordinated Water System plans, Regional Wastewater plans, Reclaimed Water plans, Groundwater Area Management plans, and Capital Facilities Element of Comprehensive plans.	P.1-4 P.1-30 Ch. 5 Ch. 8	~~Yes~~ NO

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

not John Pederson — February 24, 2015
Signature — Date

John Pederson, Planning Director, Spokane County Dept. of Building & Planning
Printed Name, Title, & Jurisdiction

COS WSP December 2014
Local Government Consistency Review

WATER DEPARTMENT
914 E North Foothills Drive
Spokane WA 99207-2794
(509) 625-7800
FAX 625-7816

January 15, 2015

Mike Hermanson – Water Resources Specialist
Spokane County Water Resources
1004 N. Freya St.
Spokane, WA 99202

RE: **City of Spokane Draft Water System Plan Consistency Review**

Dear Mike;

Please find attached a local Government Consistency Review Checklist for the City of Spokane Draft Water System Plan currently in review by the Washington State Department of Health.

The City of Spokane is currently in the process of updating its Water System Plan which is required every 6 years. The Washington State Department of Health requires the City of Spokane Water Department to obtain a signed consistency checklist from all local planning agencies within whose jurisdictions we provide either retails or wholesale water service as part of this update and a consistency review from the Coordinated Water System Plan Administrator.

Included on the checklist are the page numbers in the draft plan that appears most relevant for your review. A copy of the draft plan is available for viewing in PDF format at the City of Spokane Water Department website at https://beta.spokanecity.org/publicworks/water/ourwater/. If you have difficulties accessing the web site and retrieving the document or would prefer a hard copy of the document please contact me at your convenience via e-mail or phone at the contact provided below and arrangements will be made to provide you a copy.

Upon completing the review, please sign the review checklist and return in the self addressed envelope provided. Please contact me if there are any questions or if you require clarification on the consistency review or the water system plan. We look forward to your consistency review of the City of Spokane Draft Water System Plan.

Sincerely,

James Sakamoto, P.E.
Principal Engineer – Water Department
jsakamoto@spokanecity.org
Ph: (509) 625-7854

JSS/jss

Attachments: Local Government Consistency Review Checklist

cc Dan Kegley, Director – Water Department
Water File

SPOKANE COUNTY

UTILITIES DIVISION
KEVIN R. COOKE, P.E., DIRECTOR
A DIVISION OF THE PUBLIC WORKS DEPARTMENT

April 22, 2015

Mr. Dan Kegley
City of Spokane
914 E. Foothills Drive
Spokane, WA 99207-2794

Re: City of Spokane Draft Water System Plan
Spokane County Utilities Comments, Consistency Review

Dear Dan,

On January 15, 2015 the City of Spokane (City) submitted the City of Spokane Draft Water System Plan (Plan) to Spokane County Utilities (County) for local Government Consistency Review with respect to the Spokane County Coordinated Water System Plan (CWSP). After careful review we have determined that the Plan, and the City of Spokane Ordinances that are integral to implementation of the Plan, are not consistent with the CWSP. As a result we are not able to provide the requested Local Government Consistency Review Checklist signed by Spokane County Utilities. The rationale for this decision is provided below.

Section 1.8 of the Plan details service area policies. That section specifies the conditions under which water service will be provided within the retail service area but does not address the provision of water service outside of the retail service area but within the City of Spokane CWSP boundary (aka, future service area). Water service within the future service area is governed by Spokane Municipal Code 13.04.1921 (C) which states:

> *New water service connections and Certificates of Water Availability outside the boundaries of the City's Retail Water Service Area will not be approved until the City's Comprehensive Water System Plan is amended to include the area under consideration. Amendments to the Comprehensive Water System Plan to expand the Retail Water Service Area to include new customers outside of the boundaries of the Retail Water Service Area shall be considered cumulatively on an annual basis or more frequently by a vote of City Council. Requests for such amendments must be submitted prior to March 31st in order to be considered in the annual amendment cycle.*

1026 WEST BROADWAY AVENUE, 4TH FLOOR • SPOKANE, WA 99260-0430
PHONE: (509) 477-3604 • FAX: (509) 477-4715 • TDD: (509) 477-7133

As administrator of the Spokane County CWSP, the County is responsible for designating which water purveyor will serve a proposed subdivision or building. The County is required to respond to requests for water service in a timely and reasonable manner which has been defined in the Spokane County CWSP as 120 days. Therefore the annual amendment cycle is not consistent with the Spokane County CWSP.

We are aware that the Washington State Department of Health (DOH) has provided comments to the Plan that addresses the same concern. Specifically they request a "schedule or flow chart for retail water service requests that demonstrates that approval or denial of a service request occurs within 120 days of the first meeting between the City and the applicant." Regardless of the timing of a response to a water service request, the proposed process for connecting to the City of Spokane's water system is needlessly lengthy, administratively burdensome, and could be subject to political considerations not related to water service and utility management. As proposed, all requests for water in the future service area will be subject to City Council approval. We are not aware of a set of policies that will guide the decision making process, similar to the policy that is described for service requests within the retail service area. Additionally, each new request will be potentially delayed, awaiting an annual Plan update, which will have to go through all of the formalities as a regular Plan. This process includes review and comment from local jurisdictions and approval by Washington DOH. Washington State Law does not require all properties be located within a retail service area prior to receiving water service for this very reason. The law allows for municipal water providers to update their Plans on a less frequent basis while including/updating new users in their water system.

It is the goal of Water System Coordination Act and the Spokane County CWSP to encourage, rather than discourage, connection to reliable, safe public water supplies. However, the process embodied in the current Plan and City of Spokane Municipal Code may promote the use of individual wells and the creation of new small water systems. New, small water systems often do not have the resources to adequately manage a water system and become a risk to public health. In fact the City of Spokane recently took over a small water system (Nine Mile Manor) outside of the City of Spokane's retail water service area for this reason. The use of individual wells, especially in areas where water resources are strained such as the West Plains, can impact surface water flows and residents that are currently withdrawing water from the same aquifer.

For the above reasons, requiring property owners residing in the City of Spokane Future Service Area, sometimes with a water main running adjacent to their property, to go through the process currently proposed for connecting to the City of Spokane Water System is not consistent with the Spokane County CWSP.

If the following changes are made, the water system plan will be consistent with the CWSP:

1. Include policies related to provision of water service in the future service area in Section 1.8 of the Plan. The policies should include a description of the process that an applicant will follow to obtain water service within the future water service area. The timeline from the acceptance of the applicant's initial request and a response by the City should be consistent with the CWSP, namely 120 days.

2. Include a statement of the factors to be considered by staff and the City Council in evaluating a request for water service extension into the future service area.
3. Remove the unnecessary requirement of adding a parcel into the retail service area prior to provision of water service.

Sincerely,

for Kevin R. Cooke, P.E.

Director, Spokane County Division of Utilities

ENGINEERING REVIEW COMMENTS	DATE: 6 Feb 2015	PAGE 1 OF 2 PAGES

PROJECT NUMBER	PROJECT TITLE	SUBMITTAL (%)
Water System Plan	City of Spokane Water System Plan, Dec 2014	Dec 2014

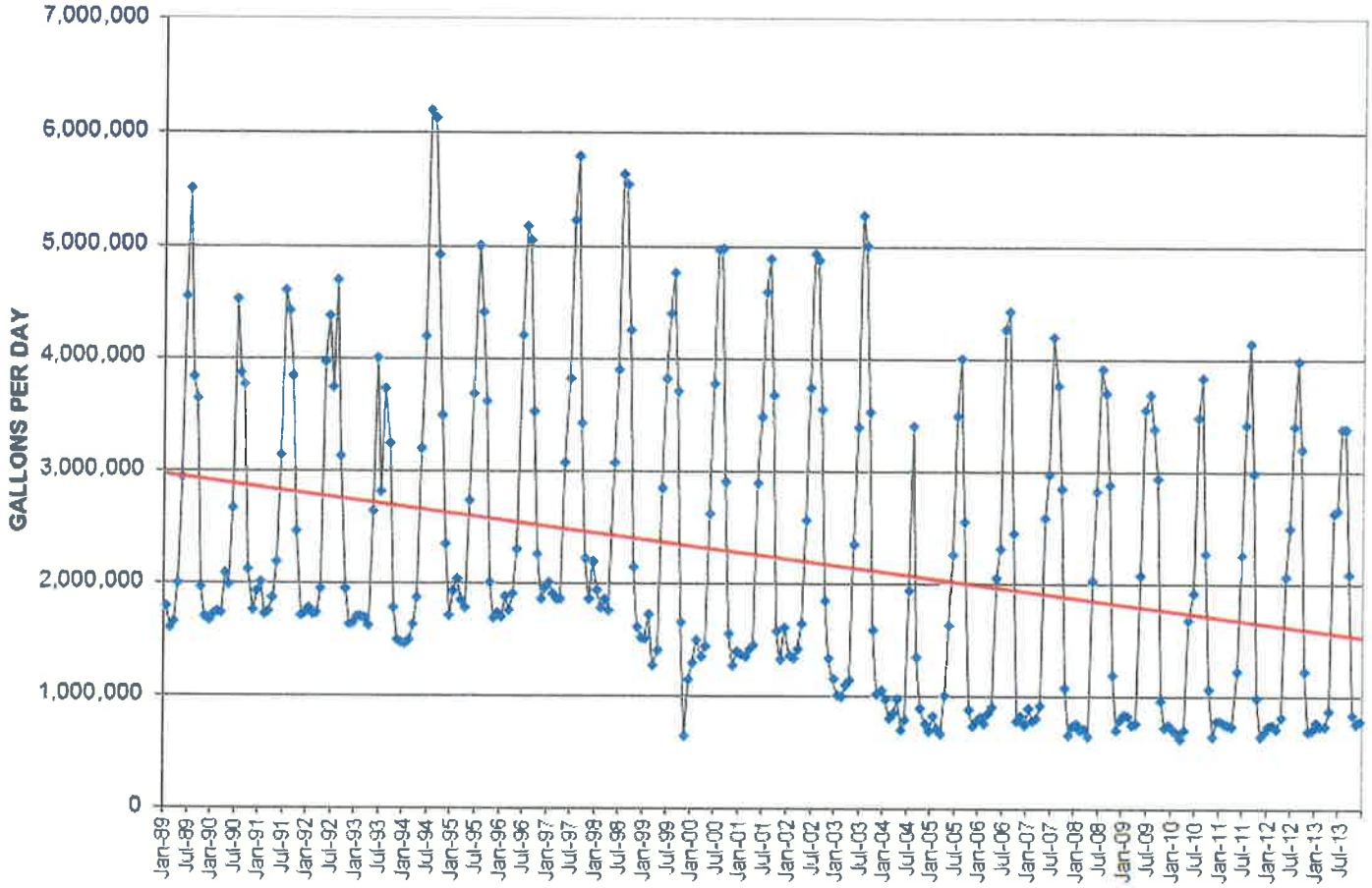
REVIEWED BY:	ORGANIZATION/ELEMENT:	PHONE: 657 DSN	(509) COMMERCIAL
David G. Luders, P.E.	92 CES/CEOER, Fairchild AFB	5839	247-5839

☐ USER ☐ ARCHITECTURAL ☐ MECHANICAL ☐ ENVIRONMENTAL ☐ SAFETY ☐ COMMUNICATIONS

☐ GENERAL ☑ CIVIL/STRUCTURAL ☐ ELECTRICAL ☐ FIRE PROTECTION ☐ SECURITY ☐ CONTRACTING

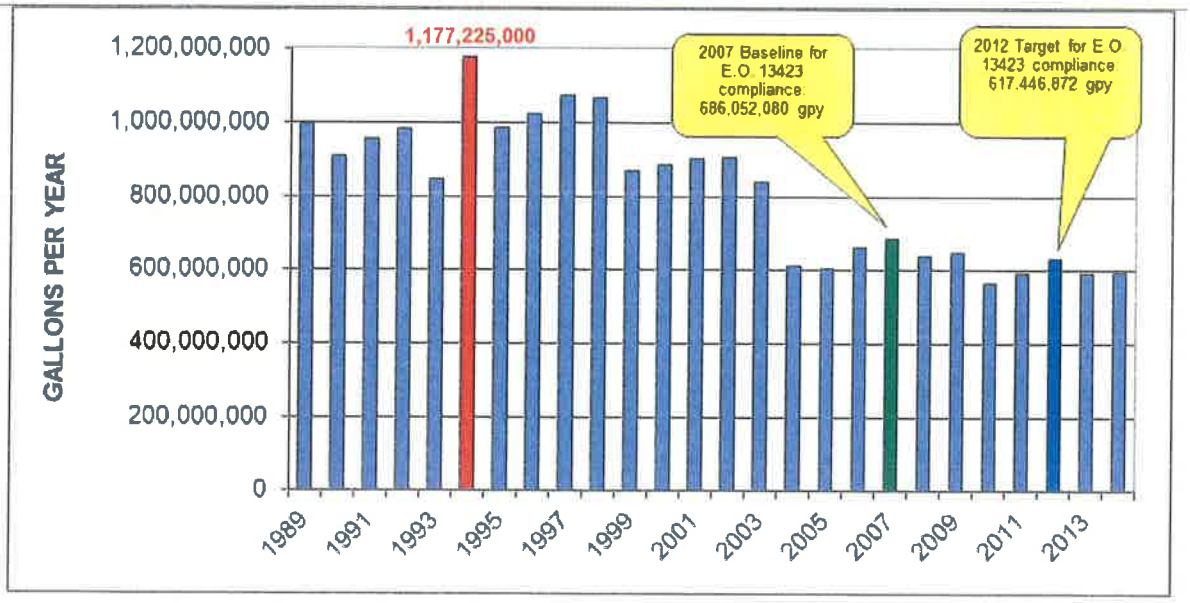
ITEM NO.	SPEC PARAGRAPH DRAWING NUMBER	COMMENT	REVIEW ACTION
1	General	Per my e-mail correspondence with Mr. Brian Sehr (Regional Planner at the DOH Office of Drinking Water), "You are correct that the City is required to notify all adjacent water purveyors that they have a plan available for review." I was surprised and dismayed that the first opportunity to review the WSP was at the Joint WRIA 54/55/57 Meeting held at the Spokane Conservation District Office on 4 Feb 2015, at which Mr. Jim Sakamoto made his presentation about the WSP.	
2	WSP Pages 1-27 & 4-16	The official street address of Fairchild AFB's water intertie with the City of Spokane is more than just "Airport Dr. & Spotted Rd." – it's 2108 W. Spotted Road (per the U.S. Postal Service and the Fairchild AFB 92nd Civil Engineer Squadron Real Property Office).	
3	WSP Page 1-33	Speaking about Fairchild AFB and Airway Heights' interties, it is not true that "Both customers use water on a consistent basis and very likely will need to purchase additional water in the future to support growth." Fairchild AFB has been reducing its facility footprint for a decade, employs fewer personnel, reduced its on-base housing inventory, and has no plans to purchase any more water from the City of Spokane than it does now. See attached graphs. Take Fairchild AFB out of that sentence.	
4	Coliform Monitoring Plan Page 18	Change Joe Duricic's title to "Water & Fuels Maintenance Foreman", and change his e-mail address to joseph.duricic@us.af.mil .	
5	WSP Appendix "REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2013" and WSP Pages 8-7 & 8-8.	There is no discussion about what the City of Spokane is going to do to lower its (3-year average) 19.3% Distribution System Leakage. Chapter 8 (the Capital Improvement Program) was not provided in the Appendix document, nor on the website https://beta.spokanecity.org/publicworks/water/ourwater/ . It simply says that "The DSL for the City of Spokane Water System is 19.3%, which does not meet the standard." The standard is 10% or less. Where in the vast distribution system does the City believe the leaks to be occurring? What is it going to do about it? I see on Page 8-7 of the WSP lists of Capital Expenditures for replacing old Distribution Mains and Transmission/Distribution Mains, but what reduction in DSL is anticipated by completing these projects? It's possible that the water rates to customers like Fairchild AFB could be lowered significantly if one-fifth of the pumped water isn't wasted.	

FAIRCHILD AFB's AVERAGE DAY DEMAND FOR POTABLE WATER, 1989-2015 (WELLS 2-7)



FAIRCHILD AFB WATER CONSUMPTION SUMMARY FOR WELLS #2, 5, 6, & 7, & INTERTIE

CALENDAR YEAR	GALLONS
1989	997,654,000
1990	908,432,000
1991	956,708,000
1992	984,655,000
1993	846,604,000
1994	1,177,225,000
1995	986,849,000
1996	1,022,914,000
1997	1,074,266,000
1998	1,065,753,000
1999	870,231,000
2000	884,790,000
2001	901,179,000
2002	906,379,080
2003	839,914,800
2004	611,956,600
2005	602,941,080
2006	660,901,280
2007	686,052,080
2008	639,291,960
2009	647,875,080
2010	562,558,680
2011	591,422,000
2012	632,654,420
2013	590,610,830
2014	594,010,217



Chapter 2

Basic Planning Data and Water Demand Forecasting

Exhibits and Appendices

Chapter 3

System Analysis

Exhibits and Appendices

Appendix 3.1.1 Technical Memorandum
Hydraulic Modeling

Murray, Smith & Associates, Inc.
Engineers/Planners
421 W Riverside Ave, Suite 762 ▪ Spokane, WA 99201 ▪ PHONE 509.321.0340 ▪ FAX 503.225.9022

TECHNICAL MEMORANDUM

DATE: September 21, 2015

PROJECT: City of Spokane Hydraulic Model Update

TO: City of Spokane, Washington

FROM: Joseph Foote, P.E. & LaDonne Harris
Murray, Smith & Associates, Inc.

RE: Summary of Water System Model Calibration

The City of Spokane (City) selected Murray, Smith & Associates, Inc. (MSA) to assist in the update of its hydraulic water system model. The model update included the development of both steady state and extended period modeling capabilities. Steady state simulations occur at a specific time, while extended period simulations (EPS) take place over the course of a set time duration. The City's geographic information system (GIS) data was used for update of the model and provides the model network connectivity and element information. A one to one relationship between the model and GIS was maintained to allow update of information between the two software databases. To complete the update of the model a calibration was performed for both steady state and extended period simulations. Steady state calibration relied on comparing model outputs to field pressure and flow tests. Extend period calibration compared SCADA trends for the City's system to model outputs over a 24-hour period. This technical memorandum outlines the calibration process and results for both the steady state and extended period calibration.

STEADY STATE CALIBRATION

Purpose

The steady state model simulates a "snapshot" of the system at a moment in time. It allows for static analysis of the system under the specific boundary conditions established for that representative condition. The steady state calibration process tests the accuracy of model

pipeline friction factors, demand distribution, valve status, network configuration, and facility parameters such as tank elevations, pressure reducing valve (PRV) settings and pump status and curves.

City of Spokane staff conducted field tests to gather hydrant pressure and flow information throughout the system in August and September 2014. This field data was collected for comparison with model results to calibrate the hydraulic model.

Methodology

A combination of two different field testing methods were used to gather the necessary information to calibrate the hydraulic model: 1) Pressure recorders were placed in the field to continuously collect pressure readings for 24-hours at each location and 2) flow testing was conducted to measure the pressure drop when a flow was created by opening a hydrant.

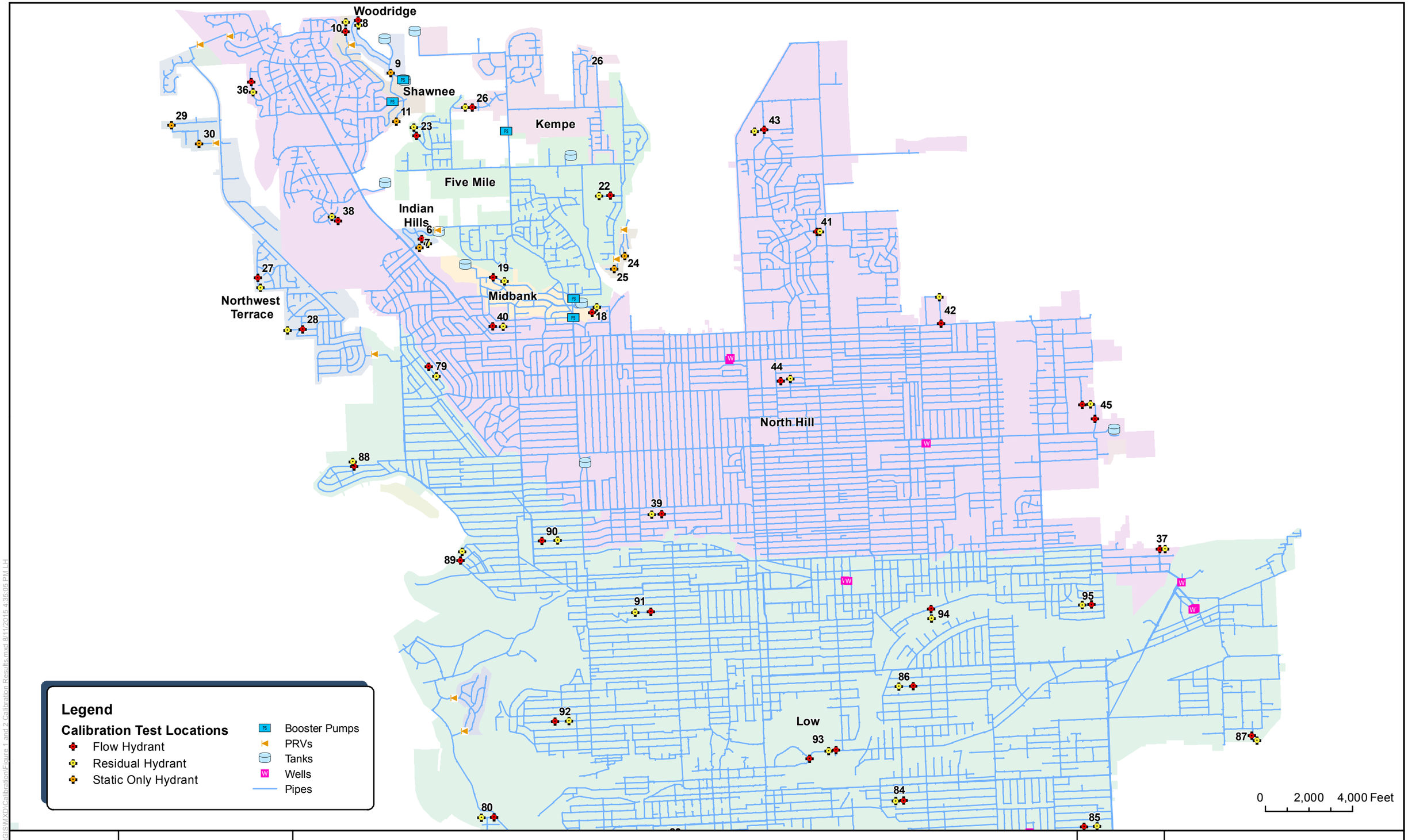
Fire flow testing consists of recording static pressure at a hydrant and then "stressing" the system by flowing an adjacent hydrant. While the adjacent hydrant is flowing, residual pressure is measured at the first hydrant to determine the pressure drop that occurs when the system is "stressed". Boundary condition data, such as reservoir levels and pump on/off status, must also be known to accurately model the system conditions during the time of the flow test. The recorded time of each fire hydrant flow test was used to collect boundary condition information from the City's supervisory control and data acquisition (SCADA) system.

The results from the pressure recorders were used as needed to corroborate other field test results. The static pressure results were used initially because they represent the system status under regular flow conditions during a snapshot in time. Once the system calibrates and the model predicts similar pressures as the field, then comparisons are made using flow tests. The flow tests also represent a snapshot in time, where a hydrant is flowing at a known rate. This known flow rate creates a corresponding drop in pressure within the system, which is also measured in the field. The flow field data is then applied within the hydraulic model by adding a known flow measured at the hydrant and letting the model predict the resulting drop in pressure.

Static pressure tests are typically not a good indicator of whether the correct pipe connections and diameters or valve status have been represented in the model. The flow tests on the other hand are good indicators of whether the correct pipe geometry and sizes have been included in the model. The flow tests are intended to "stress" the system creating higher velocities and head losses than typically exist within the system. If the model is able to predict comparable drops within the system under the flow conditions, it is a good indication that the correct piping configurations and sizes have been represented.

There were a total of 78 flow locations and 25 static only pressure locations that were tested over a three week period. Figures 1 and 2 show the location for each test. Each pressure zone in the City's system had at least one test conducted.

In order to have confidence in any calibration effort, the model must replicate accurate boundary condition information. SCADA data was recorded simultaneously as the testing was conducted. When testing concluded, the SCADA information was gathered and analyzed to determine system boundary conditions such as pump status and reservoir levels, during each of the field tests for input in the model.



MSA
Murray, Smith & Associates, Inc.

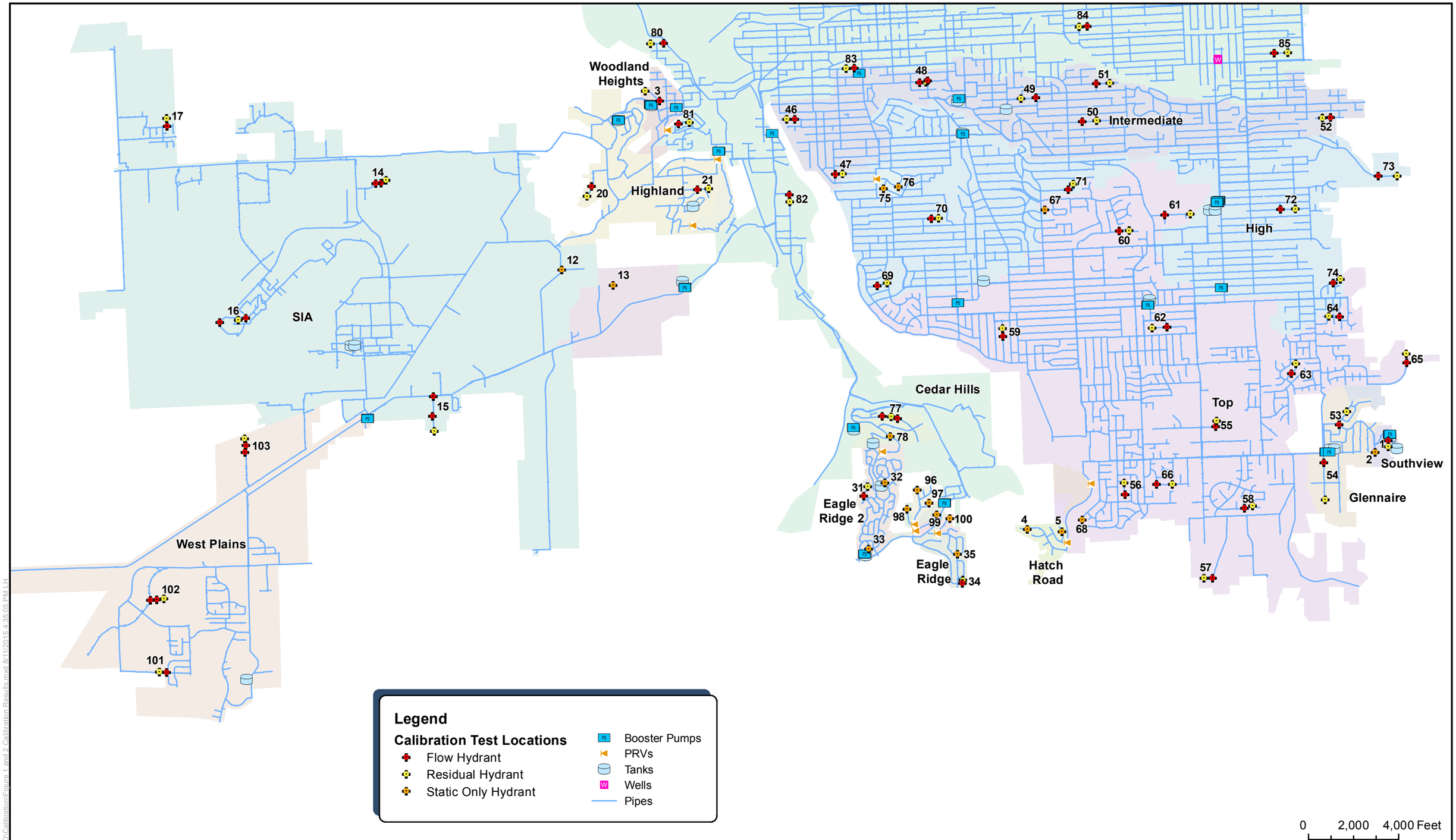
CITY OF SPOKANE

City of Spokane
Steady State Calibration

Figure 1
Calibration Test Locations
North of System

I:\BOI_Projects\14\1559\GIS\MXD\Calibration\Figure 1 and 2 Calibration Results.mxd 8/11/2015 4:35:05 PM LH

September 2015 14-1559



MSA Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Steady State Calibration

Figure 2
Calibration Test Locations
South of System

September 2015 14-1559

I:\BOI_Projects\14\1559\GIS\MXD\Calibration\Figure 1 and 2 Calibration Results.mxd 8/11/2015 4:35:05 PM LH

Mass Balance

After the initial model construction was complete and before any of the pressure or flow test information was used, an initial mass balance calculation was performed to ensure that the hydraulic model was predicting realistic flows and pressures. The mass balance looked at each individual pressure zone comparing the average day demand (ADD), to the available sources of supply. Since only a couple of small pressure zones have been added since the last model update and mass balance, this exercise verified the results of the mass balance done with the previous model update. This process also checks the integrity of each pressure zone, ensuring that water cannot flow across pressure zone boundaries unless it is through a pump station or pressure reducing valve.

Calibration Criteria

The comparison of each field test pressure to the model simulated pressure is evaluated and the confidence level in the calibration of the model is determined based on the criteria in Table 1. The confidence level is also assessed for each pressure zone based upon the overall confidence level of each test within the zone.

Table 1
Calibration Confidence Criteria[1]

Confidence Level	Static Pressure Difference	Residual Pressure Drop Difference
High	≤ 5 psi	≤ 10 psi
Medium	5-10 psi	10-20 psi
Low	> 10 psi	> 20 psi

[1] *Criteria represent absolute value difference between field and model results.*

For any system, a portion of the data describing the distribution system may be missing or inaccurate, and assumptions will be required. This does not necessarily mean that the accuracy of the hydraulic model will be compromised. Depending on the accuracy and completeness of the available information, some pressure zones may achieve a higher degree of calibration than others. Although it is a good idea to investigate potential sources of difference in the model and field results, models that do not meet the highest degree of calibration are still useful for planning purposes.

Static Pressure Results

The purpose of the static pressure comparisons is to determine if the hydraulic model is predicting reasonable pressures against known system characteristics under steady state conditions.

The model and field static pressure results matched well in most locations. Table 2 shows the comparison of field and model results for the pressure testing. At approximately

87 percent of the test locations, the field and model results were within 5 psi of each other and 99 percent of the field static pressures were within 10 psi of model pressures. Only one of the 189 static pressures compared had greater than a 10 psi difference between the model and field results. Figures 3 and 4 show the static pressure results.

The single test location where the field and model results varied by more than 10 psi, in the PZ31 Zone, was studied. The other static test in the zone also showed model pressures around 10 psi higher than the field result. This zone is served solely by a PRV and it appears the actual system PRV setting may be lower than what was reported for the model analysis, which is causing the model to have higher pressure in the area of the valve compared to field results. The Summerwood & Shelby Ridge valve settings should be evaluated.

Table 2
Static Test Results

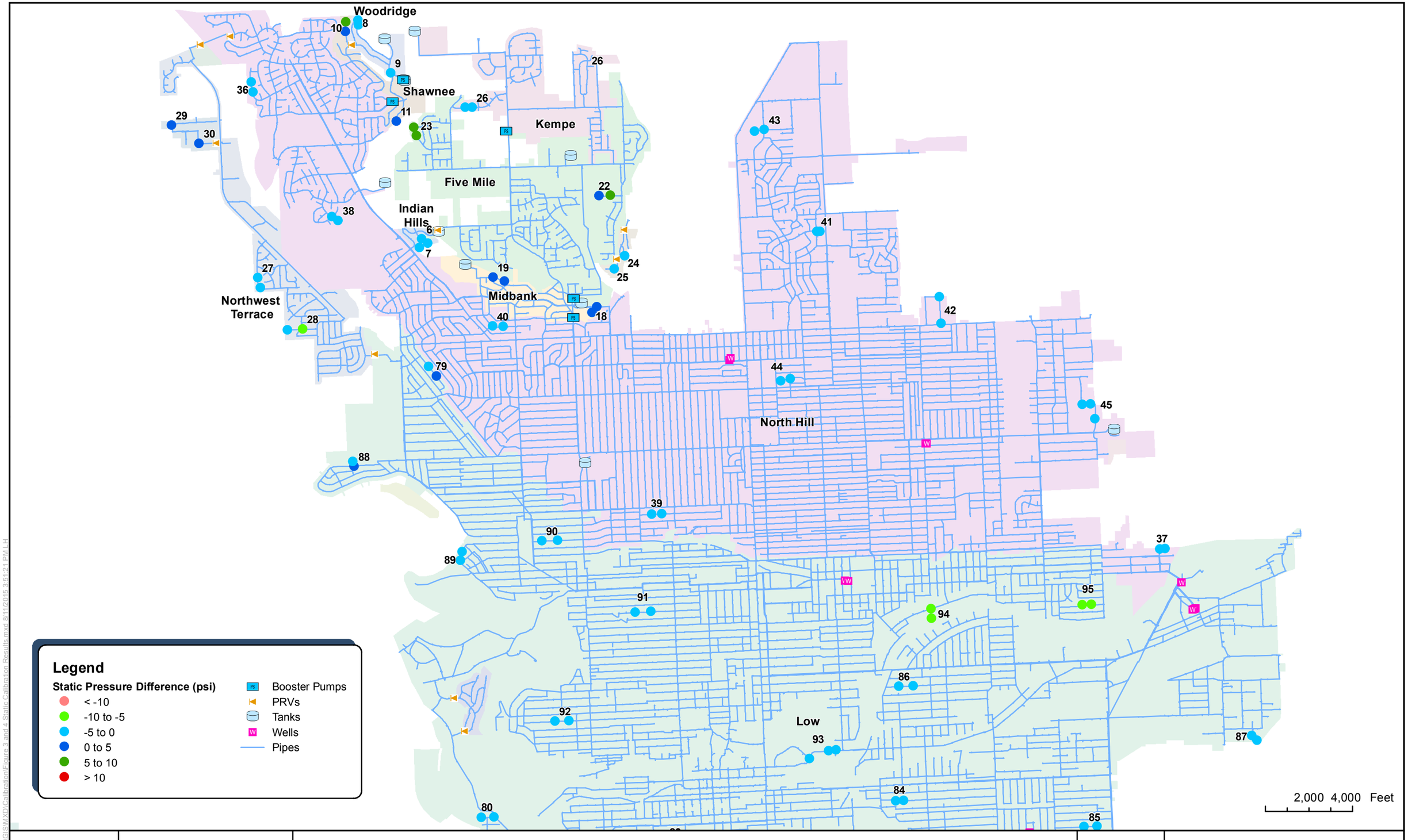
Test #	Pressure Zone	Hydrant	Field Pressure (psi)	Model Pressure (psi)	Pressure Difference (psi)	Confidence Level
1	Southview	wHY8364	64	61	-3	High
		wHY8363	70	70	0	High
2	Southview	wHY2658	104	106	2	High
3	Woodland Heights	wHY341	112	111	-1	High
		wHY4202	114	114	0	High
4	Hatch Road	wHY8163	95	90	-5	High
5	Hatch Road	wHY4931	44	40	-4	High
6	Indian Hills	wHY586	86	85	-1	High
		wHY6240	80	78	-2	High
7	Indian Hills	wHY504	110	109	-1	High
8	Woodridge	wHY6201	78	77	-1	High
		wHY6202	86	85	-1	High
9	Woodridge	wHY955	90	89	-1	High
10	Shawnee	wHY6200	66	72	6	Medium
		wHY6203	66	71	5	High
11	Shawnee	wHY471	56	57	1	High
12	SIA	wHY4419	84	84	0	High
14	SIA	wHY4394	80	79	-1	High
		wHY4393	78	77	-1	High
		wHY4392	80	75	-5	High
15	SIA	wHY4458	65	61	-4	High
		wHY4456	62	61	-1	High
		wHY4457	64	61	-3	High
16	SIA	wHY8139	58	55	-3	High
		wHY8140	54	54	0	High
		wHY8143	54	56	2	High
17	SIA	wHY6608	58	65	7	Medium
		wHY8099	60	66	6	Medium

Test #	Pressure Zone	Hydrant	Field Pressure (psi)	Model Pressure (psi)	Pressure Difference (psi)	Confidence Level
18	Midbank	wHY262	50	55	5	High
		wHY263	52	55	3	High
19	Midbank	wHY571	68	68	0	High
		wHY2778	70	72	2	High
20	Highland	wHY360	74	71	-3	High
		wHY296	74	73	-1	High
21	Highland	wHY6492	65	64	-1	High
		wHY4480	65	64	-1	High
22	Five Mile	wHY6046	66	69	3	High
		wHY6047	64	70	6	Medium
23	Five Mile	wHY7793	60	66	6	Medium
		wHY7794	60	66	6	Medium
24	PZ43	wHY492	90	87	-3	High
25	PZ43	wHY7321	60	57	-3	High
26	Kempe	WHY58869	76	75	-1	High
		WHY58870	78	75	-3	High
27	Northwest Terrace	wHY7896	108	103	-5	High
		wHY7897	108	103	-5	High
28	Northwest Terrace	wHY440	100	98	-2	High
		wHY2841	90	81	-9	Medium
29	PZ35	wHY7244	56	59	3	High
30	PZ35	wHY6230	52	56	4	High
31	Eagle Ridge 2	wHY232	78	80	2	High
		wHY233	67	74	7	Medium
32	Eagle Ridge	wHY6683	52	49	-3	High
33	Eagle Ridge	wHY6425	68	63	-5	High
34	Eagle Ridge	wHY291	89	85	-4	High
		wHY7707	89	81	-8	Medium
35	Eagle Ridge	wHY7710	84	85	1	High
36	North Hill	wHY6125	105	100	-5	High
		wHY6128	100	97	-3	High
37	North Hill	wHY7561	107	106	-1	High
		wHY7560	108	106	-2	High
38	North Hill	wHY5792	94	91	-3	High
		wHY5793	94	91	-3	High
39	North Hill	wHY24057	78	75	-3	High
		wHY2243	76	74	-2	High
40	North Hill	wHY5642	60	56	-4	High
		wHY2818	60	56	-4	High
41	North Hill	wHY5948	66	64	-2	High
		wHY5947	62	61	-1	High
42	North Hill	wHY5885	66	64	-2	High
		wHY5878	66	65	-1	High
		wHY6022	102	99	-3	High

Test #	Pressure Zone	Hydrant	Field Pressure (psi)	Model Pressure (psi)	Pressure Difference (psi)	Confidence Level
43	North Hill	wHY6023	98	96	-2	High
44	North Hill	wHY2974	60	56	-4	High
		wHY2976	56	54	-2	High
45	North Hill	wHY4852	72	68	-4	High
		wHY6826	72	67	-5	High
		wHY6883	73	68	-5	High
46	Intermediate	wHY4597	128	128	0	High
		wHY4596	120	120	0	High
47	Intermediate	wHY2752	57	58	1	High
		wHY8298	66	66	0	High
48	Intermediate	wHY5444	94	94	0	High
		wHY769	108	108	0	High
		wHY5445	94	93	-1	High
49	Intermediate	wHY5406	90	90	0	High
		wHY7951	96	95	-1	High
50	Intermediate	wHY5365	82	82	0	High
		wHY5366	88	88	0	High
51	Intermediate	wHY4256	101	101	0	High
		wHY4255	106	107	1	High
52	Intermediate	wHY7681	70	69	-1	High
		wHY4296	74	75	1	High
53	Glennaire	wHY926	159	157	-2	High
		wHY7911	152	153	1	High
54	Glennaire	wHY6456	148	145	-3	High
		wHY860	155	151	-4	High
55	Top	wHY859	73	75	2	High
		wHY6467	73	75	2	High
56	Top	wHY4948	79	79	0	High
		wHY4949	75	79	4	High
57	Top	wHY952	98	97	-1	High
		wHY838	106	107	1	High
58	Top	wHY2713	59	59	0	High
		wHY2711	60	62	2	High
59	Top	wHY6974	84	89	5	High
		wHY6975	84	90	6	Medium
60	Top	wHY8209	82	83	1	High
		wHY8208	78	85	7	Medium
61	Top	wHY5209	88	88	0	High
		wHY7916	80	78	-2	High
62	Top	wHY846	73	73	0	High
		wHY4991	78	78	0	High
63	Top	wHY906	78	77	-1	High
		wHY4637	70	74	4	High
		wHY2609	78	85	7	Medium

Test #	Pressure Zone	Hydrant	Field Pressure (psi)	Model Pressure (psi)	Pressure Difference (psi)	Confidence Level
64	Top	wHY2602	80	84	4	High
65	Top	wHY6462	78	80	2	High
		wHY2127	70	73	3	High
66	Top	wHY4952	73	75	2	High
		wHY4953	70	77	7	Medium
67	Top	wHY869	94	93	-1	High
68	Top	wHY934	78	85	7	Medium
69	High	wHY5071	52	50	-2	High
		wHY5070	45	50	5	High
70	High	wHY5216	80	78	-2	High
		wHY5217	74	77	3	High
71	High	wHY5240	65	66	1	High
		wHY5239	66	66	0	High
72	High	wHY4341	56	57	1	High
		wHY4342	46	55	9	Medium
73	High	wHY823	65	70	5	High
		wHY824	104	105	1	High
74	High	wHY4624	84	82	-2	High
		wHY4625	77	81	4	High
75	PZ36	wHY6479	70	68	-2	High
76	PZ36	wHY6819	70	68	-2	High
77	Cedar Hills	wHY6629	106	106	0	High
		wHY6630	109	105	-4	High
		wHY6628	105	110	5	High
78	Cedar Hills	wHY6621	52	53	1	High
79	Low	wHY5576	64	65	1	High
		wHY5577	67	66	-1	High
80	Low	wHY165	108	105	-3	High
		wHY8181	118	115	-3	High
81	Low	wHY4564	58	60	2	High
		wHY4563	46	52	6	Medium
82	Low	wHY8239	125	131	6	Medium
		wHY8238	127	134	7	Medium
83	Low	wHY8220	72	66	-6	Medium
		wHY4229	64	63	-1	High
84	Low	wHY6368	82	78	-4	High
		wHY6367	82	79	-3	High
85	Low	wHY5466	75	71	-4	High
		wHY7995	75	73	-2	High
86	Low	wHY3942	90	86	-4	High
		wHY18858	78	74	-4	High
87	Low	wHY6418	70	67	-3	High
		wHY6416	70	66	-4	High

Test #	Pressure Zone	Hydrant	Field Pressure (psi)	Model Pressure (psi)	Pressure Difference (psi)	Confidence Level
88	Low	wHY3209	96	95	-1	High
		wHY2376	94	95	1	High
89	Low	wHY374	109	107	-2	High
		wHY373	116	115	-1	High
90	Low	wHY3369	60	60	0	High
		wHY3368	75	74	-1	High
91	Low	wHY76	90	86	-4	High
		wHY18860	91	88	-3	High
92	Low	wHY3996	90	88	-2	High
		wHY3995	91	88	-3	High
93	Low	wHY618	92	89	-3	High
		wHY4174	94	91	-3	High
		wHY55	86	83	-3	High
94	Low	wHY714	96	90	-6	Medium
		wHY2522	96	87	-9	Medium
95	Low	wHY3650	76	69	-7	Medium
		wHY2495	76	70	-6	Medium
96	PZ31	wHY6642	48	60	12	Low
97	PZ31	wHY973	80	90	10	Medium
98	Eagle Ridge	wHY62869	74	73	-1	High
99	PZ33	wHY6650	95	95	0	High
100	PZ34	wHY6651	120	120	0	High
101	West Plains	wHY4510	76	77	1	High
		wHY4509	74	75	1	High
102	West Plains	wHY7530	86	87	1	High
		wHY7529	88	88	0	High
		wHY8402	88	89	1	High
103	West Plains	wHY20857	102	104	2	High
		wHY20858	100	104	4	High
		wHY20859	100	104	4	High



MSA Murray, Smith & Associates, Inc.

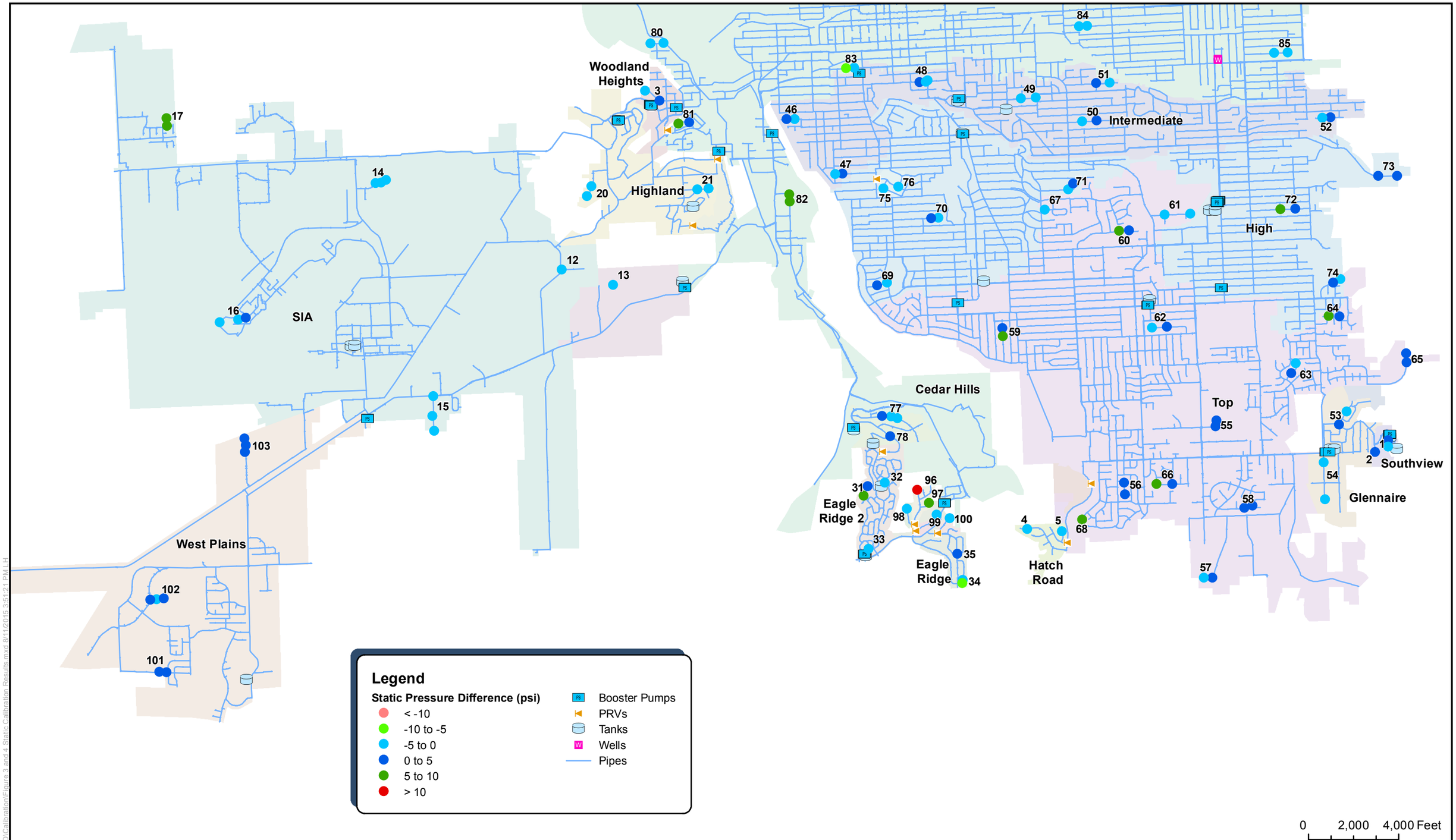
CITY OF SPOKANE

City of Spokane
Steady State Calibration

Figure 3
Static Pressure Results
North of System

September 2015 14-1559

I:\BOI_Projects\14\1559\GIS\MXD\Calibration\Figure 3 and 4 Static Calibration Results.mxd 8/11/2015 3:51:21 PM LH



MSA Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Steady State Calibration

Figure 4
Static Pressure Results
South of System

September 2015 14-1559

I:\BOI_Projects\14\1559\GIS\MXD\Calibration\Figure 3 and 4 Static Calibration Results.mxd 8/11/2015 3:51:21 PM LH

Flow and Residual Pressure Results

The purpose of flow testing is to determine if the hydraulic model contains the correct pipe sizes and connectivity and is predicting system friction losses and other conditions accurately. There is typically more variability in the accuracy of the flow calibration compared to the static pressure calibration. This is primarily due to there being more variables that affect flow testing. For the model to accurately predict head losses under flow testing conditions, it is necessary for the model to correctly represent the connectivity of all pipes, sizes of those pipes, lengths of those pipes, roughness coefficients, system demand and many other variables, such as the boundary conditions.

Since the flow tests "stress" the system, the effect of small differences in field and model representations that were not detected under typical static conditions can result in larger differences under flow conditions. For example, under fire flow conditions the pipe friction factor and size will have a much larger influence on pressures than under typical maximum day demand (MDD) conditions. Variation between the model and field results that was not significant during static pressures can become magnified under fire flow conditions.

Flow results were analyzed by comparing the field pressure drop to the model pressure drop. Pressure drop refers to the difference in the static pressure (before hydrant is opened) and residual pressure (once the hydrant flow stabilizes). By analyzing the pressure drop, inaccuracies that result from ground elevation remain relative and discrepancies are reduced.

Table 3 and Figure 5 and 6 show the results of the 78 flow tests. For 77 percent (60 of 78) of the flow tests, the model predicted a pressure drop within 10 psi of the field pressure drop. For 95 percent (74 of 78) of the flow tests, the model predicted a pressure drop within 20 psi of the field test and only 5 percent (4 of 78) of the predicted pressure drops were greater than 20 psi different from the field tests.

Overall the calibration is relatively high, with very few low confidence results; however the model did not calibrate to the same accuracy for the flow tests as it did with the pressure tests. This is not unexpected due to the large number of variables that affect flow results. The following are areas that the City will need to follow up and investigate in order to address issues arising from the calibration process in the low confidence locations:

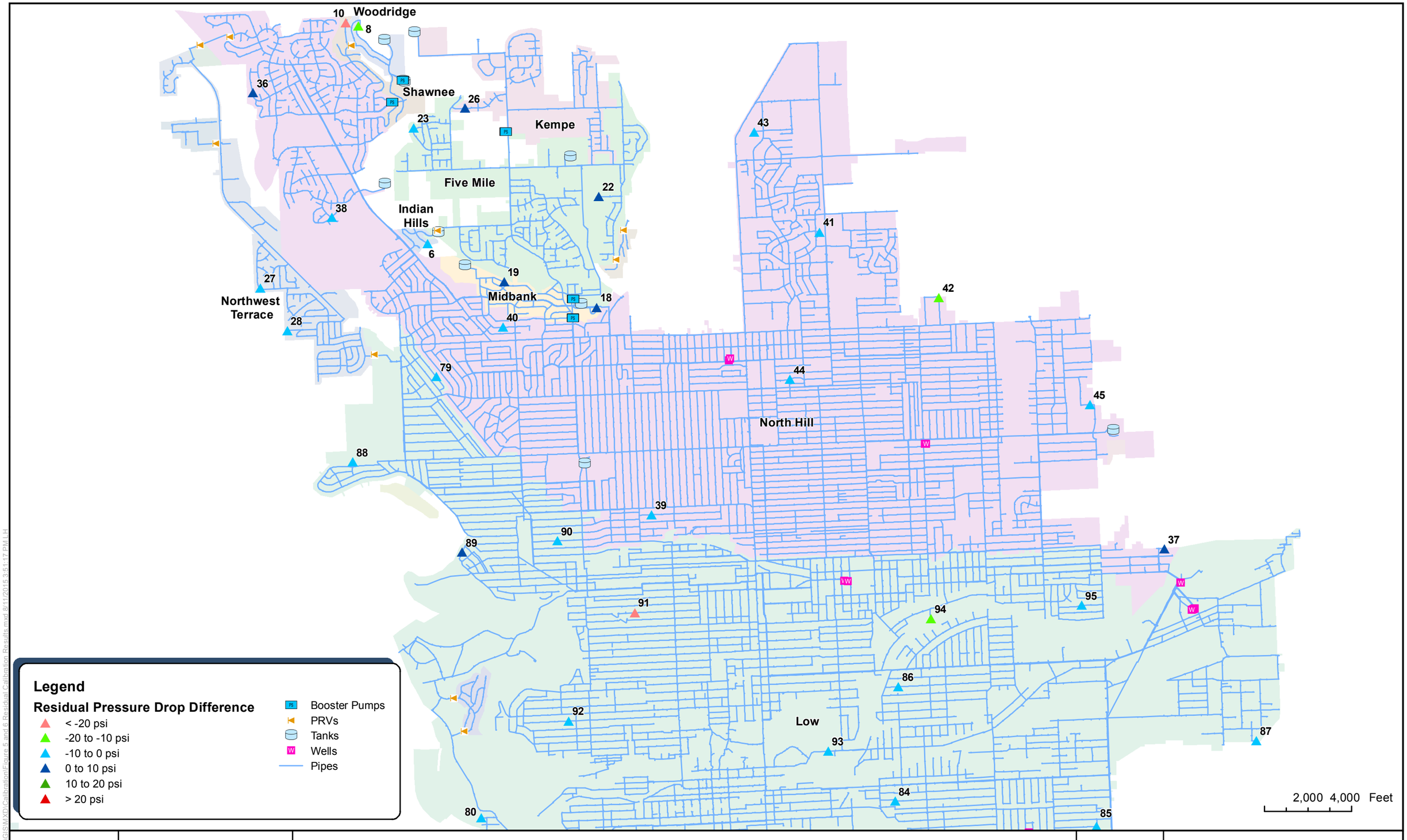
- Check for any closed or partially closed valves near hydrant wHY4596
- Confirm pipe diameters to hydrant wHY860
- Identify improvements to address system pressures at hydrant wHY824
- Check for any closed or partially closed valves near hydrant wHY18860

Table 3
Flow Test Results

Test #	Pressure Zone	Flow Hydrant	Flow (gpm)	Residual Hydrant	Field Static Pressure (psi)	Field Residual Pressure (psi)	Field Pressure Drop (psi)	Model Static Pressure (psi)	Model Residual Pressure (psi)	Model Pressure Drop (psi)	Difference in Pressure Drop	Confidence Level
1	Southview	wHY8363	2,120	wHY8364	64	54	10	61	56	5	-5	High
3	Woodland Heights	wHY4202	1,693	wHY341	112	50	62	111	58	53	-9	High
6	Indian Hills	wHY6240	1,881	wHY586	86	70	16	85	69	16	0	High
8	Woodridge	wHY6202	1,830	wHY6201	78	44	34	77	54	22	-12	Medium
10	Shawnee	wHY6203	1,848	wHY6200	66	42	24	72	68	4	-20	Medium
14	SIA	wHY4393	2,185	wHY4394	80	65	15	79	59	20	5	High
		wHY4392	2,052									
15	SIA	wHY4456	1,983	wHY4458	65	50	15	61	49	12	-3	High
		wHY4457	1,910									
16	SIA	wHY8140	1,588	wHY8139	58	44	14	55	25	30	16	Medium
		wHY8143	1,834									
17	SIA	wHY8099	1,756	wHY6608	58	40	18	65	48	17	-1	High
18	Midbank	wHY263	1,360	wHY262	50	30	20	55	30	25	5	High
19	Midbank	wHY2778	2,093	wHY571	68	55	13	68	52	16	3	High
20	Highland	wHY296	1,836	wHY360	74	46	28	71	41	30	2	High
21	Highland	wHY4480	1,161	wHY6492	65	22	43	64	32	32	-11	Medium
22	Five Mile	wHY6047	1,983	wHY6046	66	54	12	69	52	17	5	High
23	Five Mile	wHY7794	1,499	wHY7793	60	34	26	66	48	18	-8	High
26	Kempe	wHY58870	1,675	WHY58869	76	44	32	75	40	35	3	High
27	Northwest Terrace	wHY7897	2,080	wHY7896	108	70	38	103	69	34	-4	High
28	Northwest Terrace	wHY2841	1,789	wHY440	100	60	40	98	58	40	0	High
31	Eagle Ridge 2	wHY233	1,866	wHY232	78	65	13	80	64	15	2	High
34	Eagle Ridge	wHY7707	2,058	wHY291	89	74	15	85	62	23	8	High
36	North Hill	wHY6128	2,052	wHY6125	105	80	25	100	68	32	7	High
37	North Hill	wHY7560	2,039	wHY7561	107	70	37	106	67	39	2	High
38	North Hill	wHY5793	1,756	wHY5792	94	70	24	91	68	23	-1	High
39	North Hill	wHY2243	1,742	wHY24057	78	60	18	75	61	14	-4	High
40	North Hill	wHY2818	1,836	wHY5642	60	50	10	56	49	7	-3	High
41	North Hill	wHY5947	1,588	wHY5948	66	52	14	64	53	11	-3	High
42	North Hill	wHY5878	1,272	wHY5885	66	37	29	64	50	14	-15	Medium
43	North Hill	wHY6023	2,597	wHY6022	102	92	10	99	91	9	-1	High
44	North Hill	wHY2976	1,499	wHY2974	60	48	12	56	49	7	-5	High
45	North Hill	wHY6826	1,836	wHY4852	72	61	11	68	62	6	-5	High
		wHY6883	2,052									

Test #	Pressure Zone	Flow Hydrant	Flow (gpm)	Residual Hydrant	Field Static Pressure (psi)	Field Residual Pressure (psi)	Field Pressure Drop (psi)	Model Static Pressure (psi)	Model Residual Pressure (psi)	Model Pressure Drop (psi)	Difference in Pressure Drop	Confidence Level
46	Intermediate	wHY4596	1,572	wHY4597	128	48	80	128	78	50	-30	Low
47	Intermediate	wHY8298	1,554	wHY2752	57	30	27	58	43	15	-12	Medium
48	Intermediate	wHY769 wHY5445	2,417 2,245	wHY5444	94	80	14	94	85	9	-5	High
49	Intermediate	wHY7951	1,771	wHY5406	90	70	20	90	70	20	0	High
50	Intermediate	wHY5366	1,642	wHY5365	82	59	23	82	62	20	-3	High
51	Intermediate	wHY4255	1,625	wHY4256	101	35	66	101	49	52	-14	Medium
52	Intermediate	wHY4296	1,607	wHY7681	70	40	30	69	41	28	-2	High
53	Glennaire	wHY7911	2,650	wHY926	159	102	57	157	85	72	15	Medium
54	Glennaire	wHY860	2,185	wHY6456	148	80	68	145	55	90	22	Low
55	Top	wHY6467	2,185	wHY859	73	66	7	75	71	4	-3	High
56	Top	wHY4949	2,052	wHY4948	79	68	11	79	75	4	-7	High
57	Top	wHY838	1,788	wHY952	98	42	56	97	32	65	9	High
58	Top	wHY2711	1,518	wHY2713	59	34	25	59	30	29	4	High
59	Top	wHY6975	1,657	wHY6974	84	56	28	89	66	23	-5	High
60	Top	wHY8208	1,422	wHY8209	82	34	48	83	21	62	14	Medium
61	Top	wHY7916	2,146	wHY5209	88	66	22	88	80	8	-14	Medium
62	Top	wHY4991	1,926	wHY846	73	48	25	73	43	30	5	High
63	Top	wHY4637	1,742	wHY906	78	45	33	77	38	39	6	High
64	Top	wHY2602	1,805	wHY2609	78	52	26	85	46	39	13	Medium
65	Top	wHY2127	1,676	wHY6462	78	45	33	80	38	42	9	High
66	Top	wHY4953	1,676	wHY4952	73	55	18	75	57	18	0	High
69	High	wHY5070	1,480	wHY5071	52	44	8	50	44	6	-2	High
70	High	wHY5217	1,298	wHY5216	80	32	48	78	44	34	-14	Medium
71	High	wHY5239	918	wHY5240	65	10	55	66	13	52	-3	High
72	High	wHY4342	1,588	wHY4341	56	46	10	57	47	10	0	High
73	High	wHY824	1,298	wHY823	65	0	65	71	-15	86	21	Low
74	High	wHY4625	1,340	wHY4624	84	28	56	82	23	59	3	High
77	Cedar Hills	wHY6630 wHY6628	2,093 2,146	wHY6629	106	68	38	106	60	46	8	High
79	Low	wHY5577	1,588	wHY5576	64	41	23	65	46	19	-4	High
80	Low	wHY8181	2,595	wHY165	108	93	15	105	94	11	-4	High
81	Low	wHY4563	974	wHY4564	58	33	25	60	50	10	-15	Medium
82	Low	wHY8238	2,428	wHY8239	125	100	25	131	107	24	-1	High
83	Low	wHY4229	1,676	wHY8220	72	55	17	66	55	11	-6	High
84	Low	wHY6367	1,588	wHY6368	82	57	25	78	60	18	-7	High

Test #	Pressure Zone	Flow Hydrant	Flow (gpm)	Residual Hydrant	Field Static Pressure (psi)	Field Residual Pressure (psi)	Field Pressure Drop (psi)	Model Static Pressure (psi)	Model Residual Pressure (psi)	Model Pressure Drop (psi)	Difference in Pressure Drop	Confidence Level
85	Low	wHY7995	1,709	wHY5466	75	55	20	71	51	20	0	High
86	Low	wHY18858	1,588	wHY3942	90	69	21	86	71	15	-6	High
87	Low	wHY6416	1,642	wHY6418	70	45	25	67	46	21	-4	High
88	Low	wHY2376	1,910	wHY3209	96	56	40	95	55	40	0	High
89	Low	wHY373	2,463	wHY374	109	86	23	107	78	29	6	High
90	Low	wHY3368	1,836	wHY3369	60	42	18	60	44	16	-2	High
91	Low	wHY18860	1,298	wHY76	90	26	64	86	64	22	-42	Low
92	Low	wHY3995	2,052	wHY3996	90	75	15	88	76	12	-3	High
93	Low	wHY4174	2,509	wHY618	92	84	8	89	85	4	-4	High
		wHY55	2,120									
94	Low	wHY2522	1,588	wHY714	96	49	47	90	59	31	-16	Medium
95	Low	wHY2495	1,756	wHY3650	76	54	22	69	47	22	0	High
101	West Plains	wHY4509	2,080	wHY4510	76	62	14	77	61	16	2	High
102	West Plains	wHY7529	2,486	wHY7530	86	72	14	87	72	15	1	High
		wHY8402	2,310									
103	West Plains	wHY20858	2,185	wHY20857	102	62	40	104	72	32	-8	High
		wHY20859	2,185									



MSA Murray, Smith & Associates, Inc.

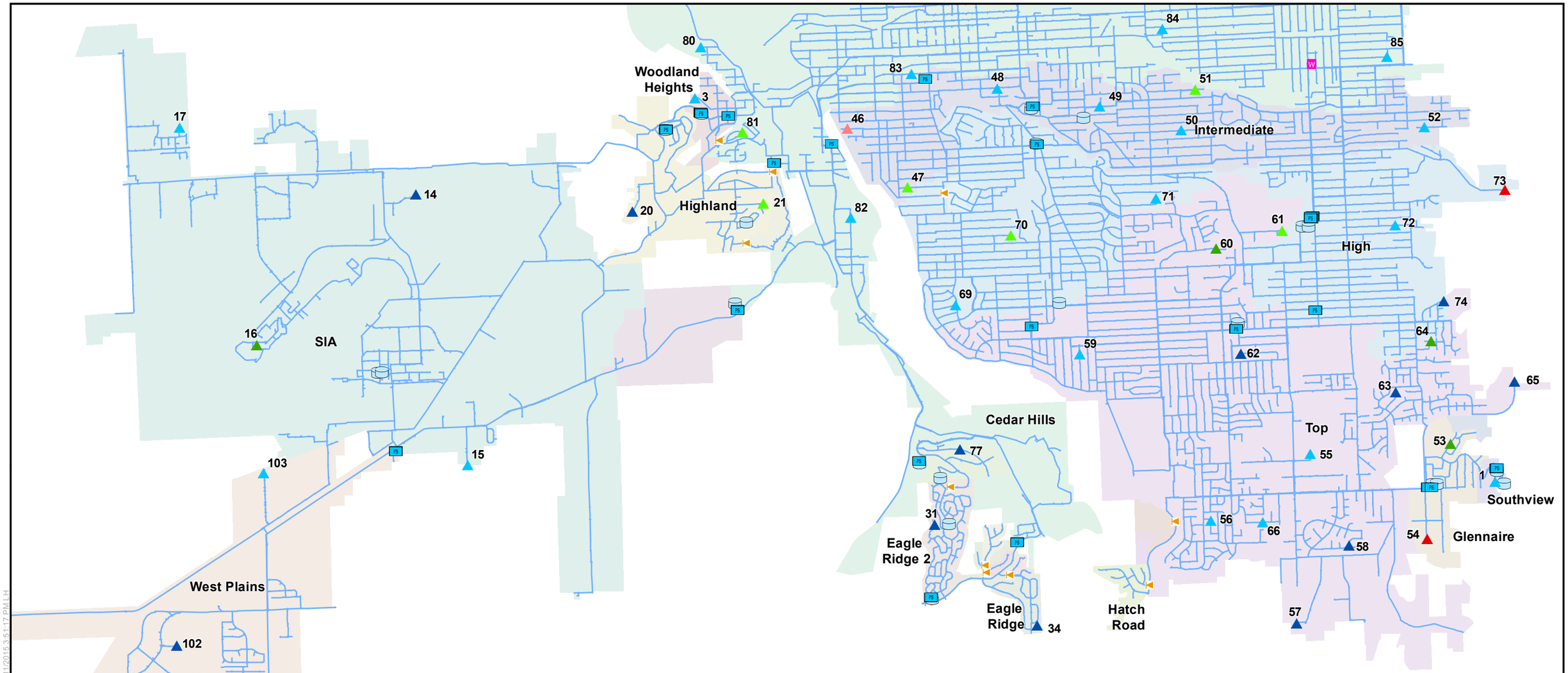
CITY OF SPOKANE

City of Spokane
Steady State Calibration

Figure 5
Residual Pressure Results
North of System

I:\BOI_Projects\14\1559\GIS\MXD\Calibration\Figure 5 and 6 Residual Calibration Results.mxd 8/11/2015 3:51:17 PM LH

September 2015 14-1559



Legend

Residual Pressure Drop Difference

- < -20 psi
- -20 to -10 psi
- -10 to 0 psi
- 0 to 10 psi
- 10 to 20 psi
- > 20 psi

- Booster Pumps
- PRVs
- Tanks
- Wells
- Pipes

0 2,000 4,000 Feet

MSA Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Steady State Calibration

N W E S

Figure 6
Residual Pressure Results
South of System

September 2015 14-1559

I:\BOI_Projects\141559\GIS\MXD\Calibration\Figure 5 and 6 Residual Calibration Results.mxd 8/11/2015 3:51:17 PM LH

Summary

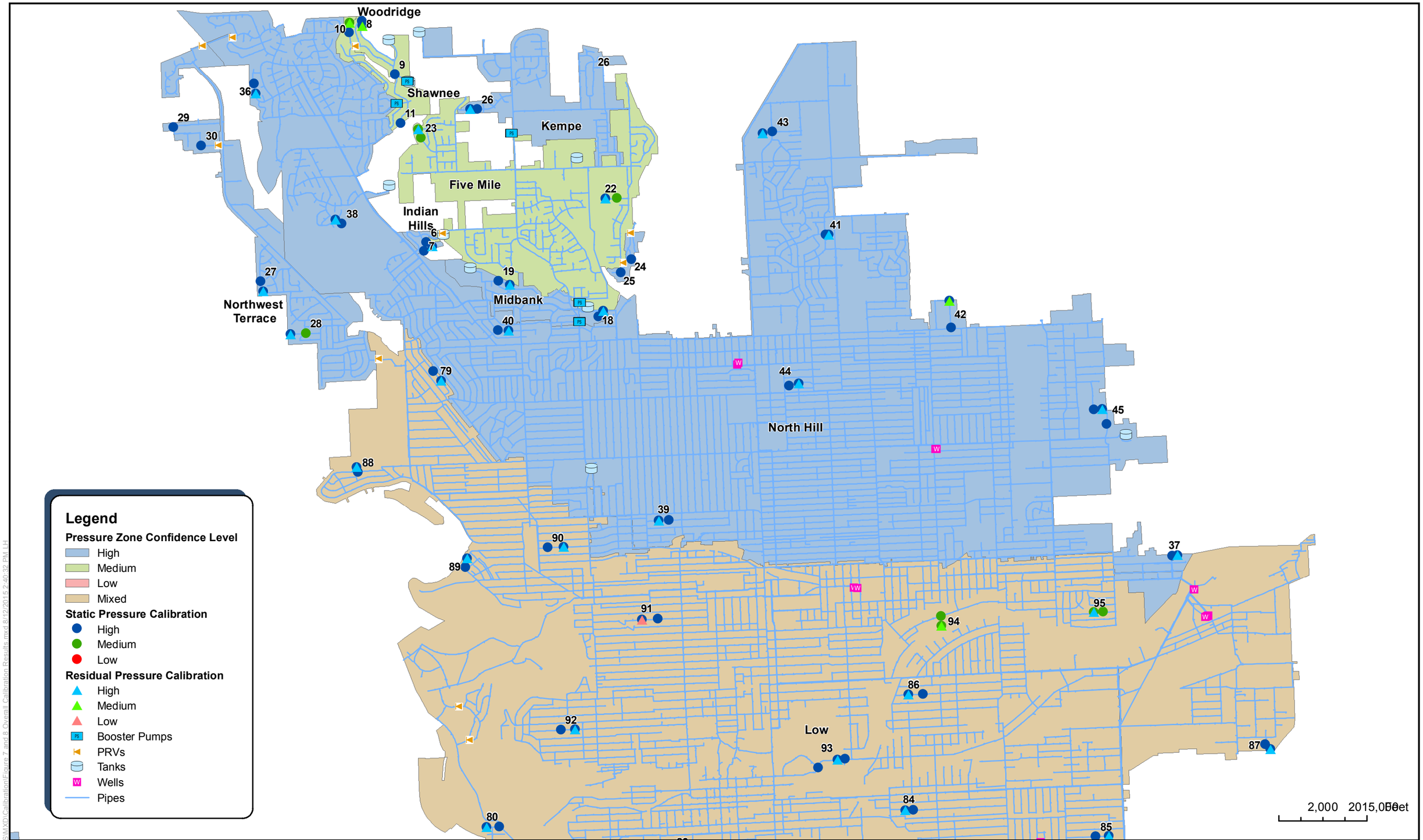
The overall results for the steady state calibration are summarized on Figures 7 and 8. Based on the level of confidence for the calibration test results, a confidence level for each pressure zone was assigned. The confidence of the majority of tests within a pressure zone determined the overall calibration confidence for the zone.

Out of 28 pressure zones 19 are assigned a High confidence level, 4 a Medium confidence level, and 1 a Low confidence level. The remaining 4 had mixed results with high, medium and low calibration test results. The overall results that were achieved for both the pressure and flow testing established a relatively high confidence level for the City's water system model to be used for planning and design activities.

The City has made efforts to improve the accuracy of its GIS and demand data and the current calibration is significantly improved since the last major model update and calibration were done. Some specific areas have been recommended for additional validation where low calibration confidence occurred. In addition to these specific areas, the accuracy of the model can continue to be improved with additional testing, increased demand verification and SCADA data refinement and calibration efforts. This will be an on-going effort for the City as the water system expands, as new areas are added and additional pressure zones are created.

As the City begins using the model for design and planning, City staff will need to check the area they are working in to confirm the established confidence level for that area. Once the confidence level has been established a decision can be made if any additional flow tests are required to confirm pressures and flow in that area or if as built information will need to be reviewed. Calibration should continue to be done incrementally on an ongoing basis. All water systems change over time and therefore hydraulic models need to be regularly updated to reflect change.

These efforts to continue to update and calibrate the model will continue to strengthen and add to the City's water system model, to maintain the level of confidence required for its use as a planning tool into the future. It will also provide City staff an opportunity to continue modeling on a regular basis and to continue to build institutional confidence in the model results.



MSA
Murray, Smith & Associates, Inc.

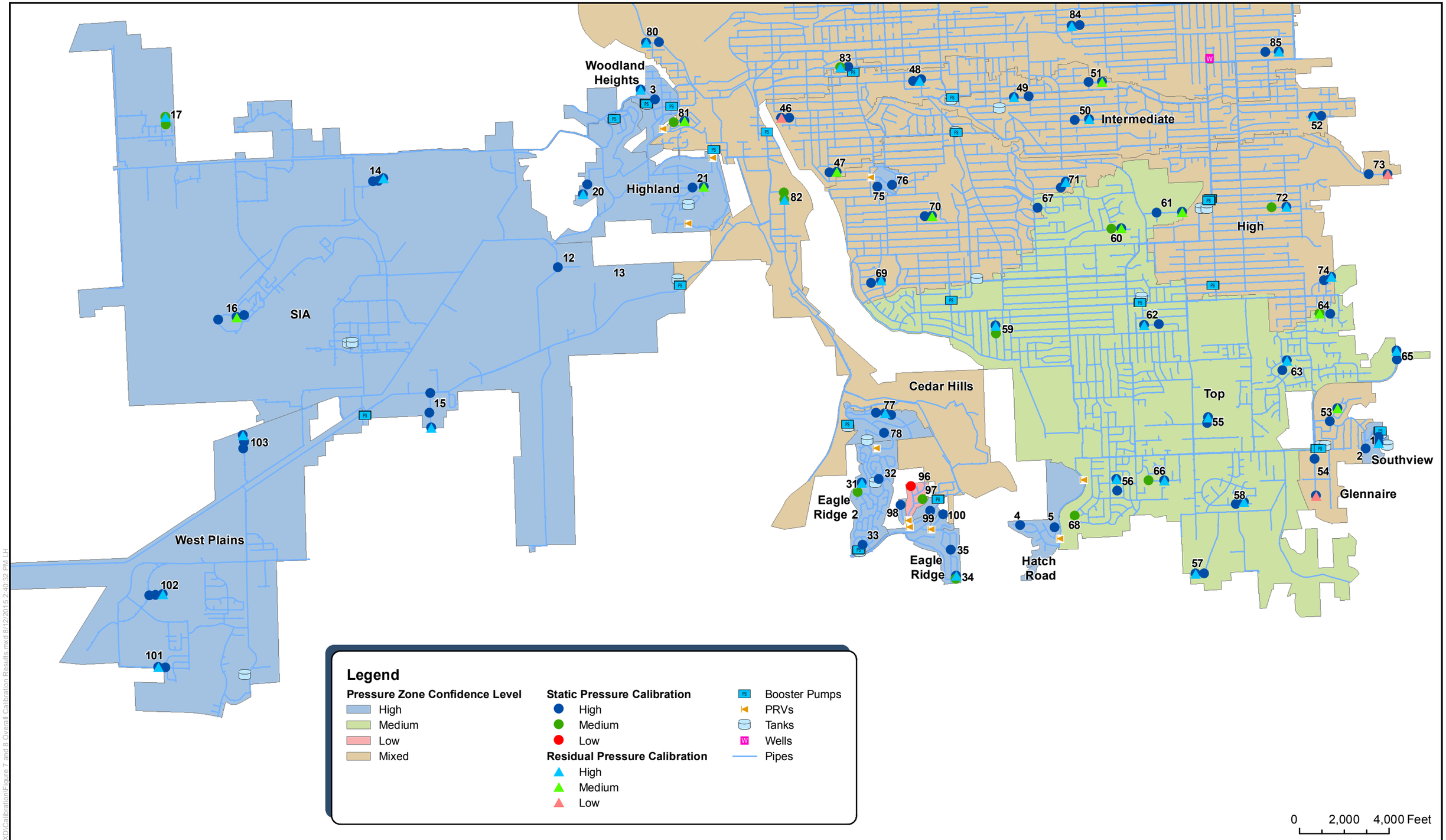
CITY OF SPOKANE

City of Spokane
Steady State Calibration

Figure 7
Zone Calibration Results
North of System

I:\BOI_Projects\14\1559\GIS\MXD\Calibration\Figure 7 and 8 Overall Calibration Results.mxd 8/12/2015 2:40:32 PM LH

September 2015 14-1559



Legend

Pressure Zone Confidence Level
- High
- Medium
- Low
- Mixed

Static Pressure Calibration
- High
- Medium
- Low

Residual Pressure Calibration
- High
- Medium
- Low

- Booster Pumps
- PRVs
- Tanks
- Wells
- Pipes

0 2,000 4,000 Feet

Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Steady State Calibration

N W E S

Figure 8
Zone Calibration Results
South of System

September 2015 14-1559

I:\BOI_Projects\14\1559\GIS\MXD\Calibration\Figure 7 and 8 Overall Calibration Results.mxd 8/12/2015 2:40:32 PM LH

EXTENDED PERIOD SIMULATION

Purpose

The extended period simulation (EPS) model simulates the system over a period of time. It allows dynamic analysis of the system under the specific patterns and controls represented in the model. The EPS calibration process tests the accuracy of model demand distribution, diurnal patterns, and facility parameters such as tank size, pressure reducing valve (PRV) settings and pump controls.

City of Spokane staff provided SCADA information for summer, winter and shoulder seasons for comparison with model results to calibrate the hydraulic model.

Methodology

Due to the temporal component of an EPS model, time-based demand data was added to the model through diurnal curves. The diurnal pattern information was developed for each demand season (summer, winter, spring, and fall) from analyzing SCADA information. Based on where SCADA information is available, seven areas were distinguished where specific patterns were developed for each season to represent the change in demand patterns over the course of a day and the difference in demand for different throughout the year. The SCADA information was analyzed by performing a mass balance within each of the seven areas over time. This was completed by monitoring all pump station flows along with the changes in water level within the reservoirs over incremental time steps. The result of this mass balance calculation showed the amount of water being demanded in the system over time.

Additionally, City operations staff provided information for on/off settings for pumps during typical average day and maximum day demand conditions. The current SCADA system has control strategies for the majority of the booster pump stations. All well pump stations and a few booster pump stations do not have control strategies and are currently operated manually, based on operator judgment. Even the pumps with control strategies are sometimes adjusted based on operator judgement of system conditions.

EPS Results

The calibration of an EPS model is focused on comparing trends between the SCADA information and the model outputs over time. This comparison centers on the emptying and filling trends of the reservoirs in addition to the on/off status of the well and booster station pumps over time. The hydraulic model was run over a 24-hour period, using the same starting and demand conditions identified in the SCADA information. EPS calibration is achieved if similar trends in water movement within the system are observed between the model and SCADA information. Adjustments to operational settings and demand information may be required to achieve acceptable calibration. Each pressure zone with tank and pump SCADA was calibrated. Zones served only by a PRV are not included in

the EPS calibration because they are not on the SCADA system and do not have data available for the EPS calibration.

The calibration assessment is qualitative and based on the trend in tank elevation and pump status between the model and SCADA information. If trends generally follow controls or have an explanation for variation, there is a high confidence in the calibration. Where trends were substantially off from controls and without reasonable explanation zones have lower confidence calibration depending on the extent of the variation between model and SCADA patterns. An example of a comparison graph for a single pump is shown in Figure 9 and for the tank level and overall pumps in the zone in Figure 10. Similar graphs were created for each of the 32 tanks, 74 booster pumps and 26 well pumps within the system. The calibration summary for each pressure zone is summarized in Table 4.

Figure 9
Glennaire Pump 3 Summer EPS Calibration

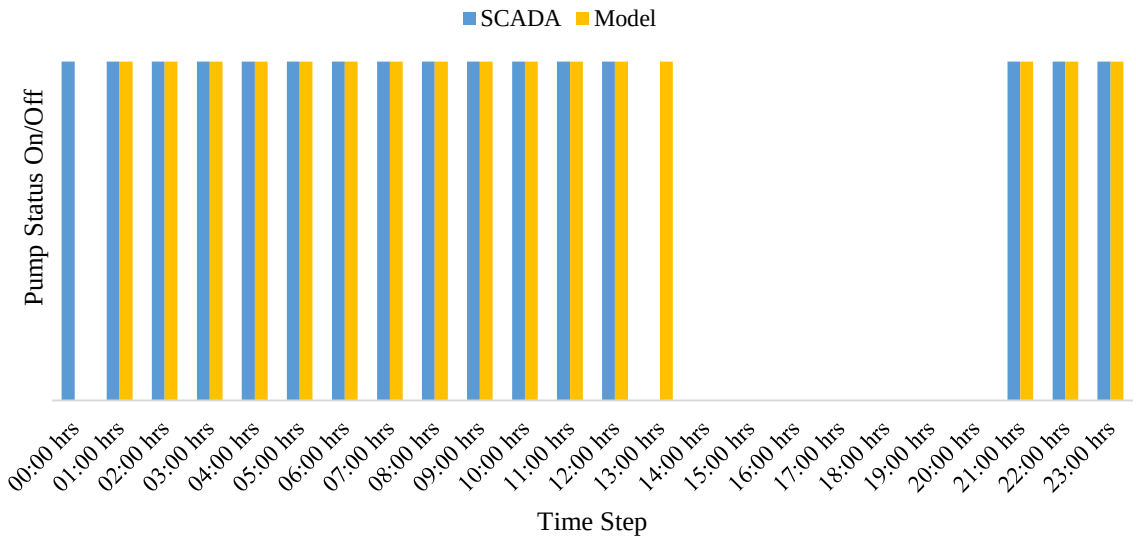
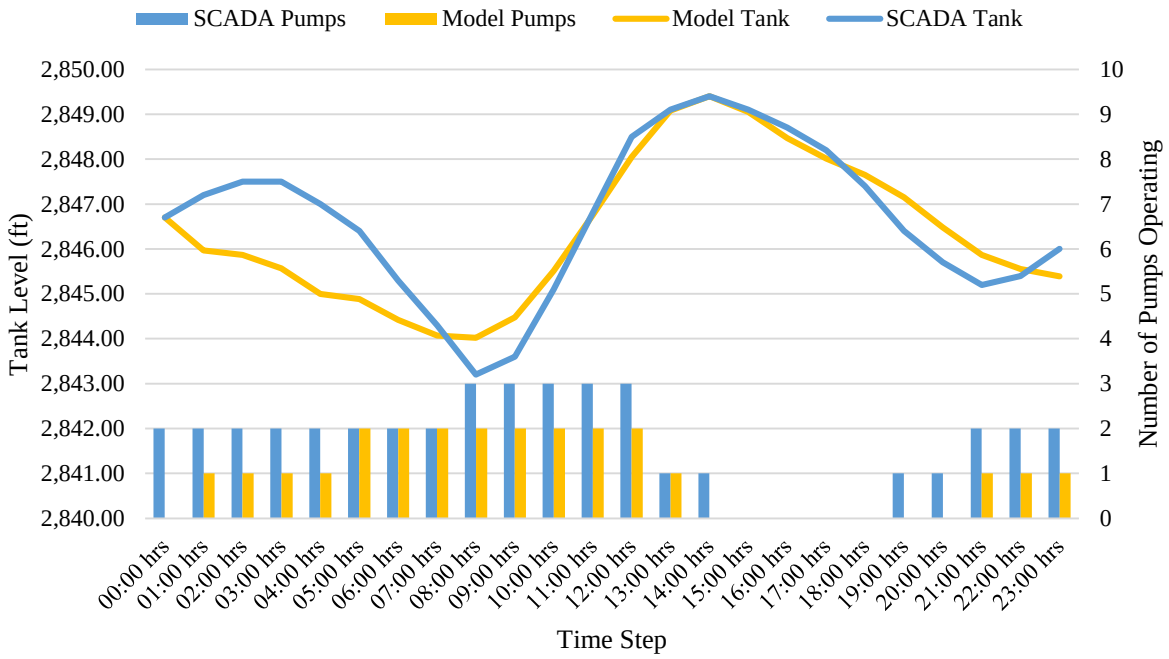


Figure 10
Glennaire Zone Summer EPS Calibration



Overall the calibration is relatively high for the system EPS model and is useful for predicting system responses based on the demand and controls contained in the model. The few areas with low calibration confidence under EPS conditions are generally small zones that did not have unique diurnal patterns. The model, particularly small pressure zones, is highly impacted by the demand allocation and diurnal pattern used. Since SCADA flow measurements are not available to the majority of zones, only seven patterns were used across the nineteen pressure zones calibrated in the EPS model. The variation in the actual demand allocation and pattern for each zone can impact the calibration and future simulation results.

Also, to the extent the system is manually operated, the model cannot reflect the variation that comes with the override of control settings by individual operators. No record is kept of the daily adjustments made by operators, so it is not possible to determine when this occurred, but it is a regular occurrence and is presumed to account for much of the variation seen in areas with lower confidence in the calibration.

Table 4
Extended Period Calibration Results

Pressure Zone	Diurnal Pattern	Notes
Cedar Hills	Low	• Summer tank and pump trends generally match • Manual operations during winter allow tank to drain further than controls would indicate
Eagle Ridge	EagleRidge	• Tank and pump trends generally match • Lead pump varies
Eagle Ridge 2	EagleRidge	• SCADA tank levels historically used a different datum, resulting in fixed difference in summer results. Datum was corrected to match starting in 2015. • Appears to be manual override to fill tank sooner than controls would indicate • Pump oversized so control setting is uncertain
Five Mile	NorthHill	• Summer tank and pump control trends generally match • Winter model demand and pattern differ from system conditions
Glennaire	Glennaire_ Southview	• Tank levels and pump control trends generally match • Appears to be manual override in summer to fill tank sooner than controls would indicate • Winter demand appears higher in model
High	IntHighTop	• Lead pump varies • Appears to be manual override to fill tank sooner than controls would indicate
Highland	Low	• Tank levels and pump control trends generally match • Appears to be manual override in winter to fill tank sooner than controls would indicate
Intermediate	IntHighTop	• Manual operations during winter allow tanks to drain further than controls would indicate • Some pumps feeding the zone are always manually operated and do not follow controls • Well pump operations need to be reviewed
Kempe	NorthHill	• Manual operations in winter allow tank to drain further than controls would indicate • Appears to be manual override in summer to fill tank sooner than controls would indicate
Low	Low	• Lead pump varies • Well pump operations need to be reviewed

Pressure Zone	Diurnal Pattern	Notes
		• Number of and distance between tanks in the zone results in variability across tank patterns in model and SCADA • Manual operations in winter allow tanks to drain further than controls would indicate
Midbank	NorthHill	• Model demand and pattern differ from system conditions
North Hill	NorthHill	• Tank level and pump control trends generally match • Manual operations in winter allow tank to drain further than controls would indicate • Lead pump varies • Well pump operations need to be reviewed
Shawnee	NorthHill	• Manual operations in winter allow tank to drain further than controls would indicate • Uncertainty in demand and diurnal pattern appear to have large impact for this small zone
SIA	SIA	• Tank level and pump control trends generally match • Appears to be some variation between system and model demand
Southview	Glennaire_ Southview	• Lead pump varies • Uncertainty in demand and diurnal pattern appear to have large impact for this small zone
Top	IntHighTop	• Summer peak demand appears higher in system than model • Manual operations allow tanks to drain further than controls would indicate
West Plains	WestPlains	• Tank level and pump control trends generally match • Significant daily variation in operations was observed in SCADA
Woodland Heights	Low	• Pump control trends generally match • Uncertainty in demand and diurnal pattern appear to have large impact for this small zone
Woodridge	NorthHill	• Winter model demand and pattern differ from system conditions

Summary

Unlike the steady state calibration, where the instantaneous boundary conditions can be easily captured and reflected in the model, the EPS calibration is attempting to match the system operations over time and is very susceptible to variations in field conditions since there are currently significant changes in how the system is operated across the course of

an entire day and in different seasons. Despite these challenges, the accuracy of the City's EPS model continues to increase and calibration has significantly improved since the last calibration effort nearly ten years ago due to update of the SCADA system, which provides more consistent information for all facilities to evaluate diurnal patterns and system trends.

Where enough data existed for diurnal patterns to be developed and applied for specific zones and where the SCADA reflects system responses consistent with the set control points, rather than significant manual operations, the model generally has high calibration confidence. As a result, the model is accurately reflecting the system where that information is known and consistent. For zones with no flow meters information prevented the development of unique diurnal patterns and where SCADA does not reflect control points due to the regular adjustments made by system operators, the calibration level is generally lower.

The higher calibration is most evident during summer periods when most pumps are operating and there is less variability on what pumps can be used to serve demand; whereas during winter conditions there are few pumps required to meet demand and more options for the operators to choose from when manually activating pumps to meet demands. Additionally, the City is currently trying different operating strategies, including letting tanks drain lower during low demand conditions to facilitate turnover and improve water quality. This different strategy is evident in the SCADA information, but since it is a new approach, the controls for pumps have not necessarily been adjusted to reflect the change and are contributing to the differences seen between the model and SCADA information in the winter. As the City evaluates this strategy of reducing power consumption by relying on tanks for supply during the day and filling at night, it is recommended that the model be used to evaluate the winter control points to better define this new strategy and the corresponding adjustments be made by operations staff in the SCADA system.

The EPS model is ready to be used as a predictive tool for testing various operation strategies and potential impacts of decisions (such as taking facilities offline) within the system. The City should continue to collect data that will be used to improve the accuracy of the model by adding flow meters at booster pump stations and major PRV stations. This will allow for better demand allocation and patterns throughout each zone in the system.

It is also essential that model controls are coordinated closely with the actual operations strategies utilized by operators. As the City continues to rely substantially on manual operation of the system, development of standard controls within the model to accurately reflect the system operations is not possible. Controls will need to be modified for each modeling scenario based on the actual or anticipated conditions to reflect the actual operations. Additionally, reducing the amount of manual operations and increasing adherence to set controls to operate the system will allow for more predictable and consistent system operation. This will improve the accuracy and usefulness of the model in predicting system conditions and the impact of operations decisions can be tested in the model to asses alternative control strategies without having to use trial and error on the actual system.

The overall results that were achieved for the EPS calibration established a relatively high confidence level for the City's water system model to be used for planning and operations activities. Where good data exists on demand and operations, the model is predicting well. Where unique demand allocation and patterns are not available for a zone the model does not have as much data as needed. The model is unable to predict the manual operations that appear to override system controls. However there is confidence that the model would respond accurately to specific operations scenarios if the manual control data was known. To continue to improve the calibration, the City can better define manual operation strategies to create corresponding controls in the model. Also, installation of flow meters at pump stations and some large PRVs to better determine demands and diurnal patterns will allow a better understanding of system conditions and improve the model representation of specific system circumstances.

Appendix 3.2.1 Report on Spokane Drinking Water Quality

REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2014

Reported by
Doug Greenlund, Environmental Analyst
1 April 2015

Note: *This report provides a summary of the drinking water monitoring conducted during 2014 only. For a comprehensive review of past monitoring, please see the 2010 report and subsequent annual reports.*

The City of Spokane's water is of very high quality. Many different tests are conducted at varying intervals to confirm that the City's drinking water meets Washington state and federal EPA drinking water quality standards. The City's drinking water supply, to date, has consistently met all state and federal standards. This report is meant to provide consumers and other interested parties with insight into what analytical tests have been conducted and, in some cases, substances that have been detected. The state and federal Maximum Contaminant Level (MCL) information is provided as a risk benchmark.

This report also summarizes the amount of water the City used in 2014, and documents some indicators to show the progress being made to meet conservation goals adopted by the City in its Water Stewardship Strategic Plan.

The final pages (appendices) of this report summarize the most recent analytical testing. Appendix II has a comprehensive list of substances tested in City water. Appendix III summarizes the testing completed during 2014. Appendix IV provides a summary of inorganic testing results. Appendix V provides the results from distribution system disinfection by-product testing. The following narrative and attachments summarize and explain recent results in more detail. Appendix VI and the last two pages of this narrative (General Information) contain information relevant to the annual Consumer Confidence Report. As such, the information may be redundant, relative to the main text of this report.

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie Aquifer - designated a sole source aquifer in 1978. The Spokane Valley-Rathdrum Prairie Aquifer slowly flows through two different states and a number of different counties and is the source water for a large number of water purveyors including the City of Spokane. This water and any contaminants freely move across political boundaries. Many groups and/or private individuals may claim this water to be used for diverse purposes. Some of these competing interests include (but are not limited to) drinking water rights, irrigation, fisheries, hydroelectric power, and industrial processes. The Spokane Aquifer (that portion of the larger aquifer lying within Washington State) and the Spokane River exchange water. While the aquifer contains a large volume of water, many factors play into the volume of water in the Spokane River, complicating the management of these resources. Some of these factors include pumping for irrigation and potable water, hydroelectric dam operations, and the variations of weather and precipitation. The rates and locations of exchange between the aquifer

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable co
n alguien que lo entiende bien.
(Para ver información adicional, visite al; www.epa.gov/espanol/ciudadanos.html

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài liệu này.

and the Spokane River have been re-examined as part of the Bi-State Aquifer Study. In January 2008, the states of Washington and Idaho announced signing a Memorandum of Agreement (www.idwr.idaho.gov/WaterInformation/projects/svrp/PDFs/svrp_MOA_10-26-07.pdf) concerning the *"…continued coordination involving the maintenance and improvement of the technical tools developed in a bi-state water study."* Discussions to agree on how to utilize these technical tools to manage this valuable resource will continue. The results of these studies and agreements will help give the City information it needs to continue to supply high-quality water to the citizens of Spokane.

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good housekeeping measures are not followed for all activity over and adjacent to the aquifer. The physical and economic health of our area depends on the quality of our drinking water. In order to safeguard water quality, the City continues its efforts to make available to the community information about, and appropriate disposal mechanisms for, dangerous wastes that are generated in the Aquifer Sensitive Area. The City, in cooperation with other local governments and the Spokane Aquifer Joint Board, continues to work toward strengthening regulations for the storage and use of critical materials to safeguard the local water supply.

For additional information regarding the City of Spokane's drinking water or related issues:

City of Spokane Water Department	(509) 625-7800	www.spokanewater.org/
City of Spokane-Environmental Programs	(509) 625-6570	www.greenspokane.org/
Spokane County - Water Resources	(509) 477-3604	www.spokanecounty.org/WQMP/
Spokane Regional Health District – Environmental Health Div.	(509) 324-1560	www.srhd.org/services/environment.asp
Washington State Department of Health - Eastern Regional Office (Drinking Water)	(509) 329-2100	www.doh.wa.gov/YouandYourFamily/HealthyHome/DrinkingWater
Washington State Department of Ecology – Eastern Regional Office	(509) 329-3400	www.ecy.wa.gov/
U.S. EPA Safe Drinking Water Hotline	1-800-426-4791	water.epa.gov/drink/index.cfm

REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2014

Table of Contents

To obtain free software to read some of these digital files:

- Adobe Acrobat files: www.adobe.com/products/acrobat/readstep2.html
- Microsoft Word files: www.microsoft.com/downloads/details.aspx?FamilyID=3657ce88-7cfa-457a-9aec-f4f827f20cac&displaylang=en

QUANTITY - Water for the Future

As a result of increasing recognition of the limits of our groundwater resources, the state has encouraged local interests and authorities to come together to manage this resource. The City of Spokane has taken an active role in area-wide partnerships to safeguard the quality and quantity of our water supply. The City of Spokane and all its water customers are challenged to use water resources wisely and responsibly. The City of Spokane Water Stewardship Program Strategic Plan was established by resolution of the City Council on May 1, 2006 (Resolution 06-49).

Changes in federal building standards have resulted in water savings nationwide. The City's Building Services Dept. enforces these standards. The City of Spokane Water Department has taken additional steps to conserve water through education programs, metering water use, reducing the loss of water resulting from leaking pipes, and implementing a conservation-oriented rate structure. The Water Use Efficiency Rule (WAC 246-290-810) requires that municipal water suppliers adopt a plan to make more efficient use of their water. Two of the quantifiable elements, conservation goals and distribution system leakage, are discussed in this section.

GOALS

In April 2014, the City of Spokane updated the Water Use Efficiency Goals. These new goals were adopted on April 21 through resolution 2014-0046. There are four new goals based on metered consumption. Of the four goals three of them deal with reduction in outdoor water use for the largest sectors: commercial/industrial, government, and residential. Residential includes single family residences. The government sector includes all levels of government served by the water department as well as parks, public schools, and public post-secondary education facilities. The commercial/industrial sector focuses only on identified outdoor irrigation uses. The fourth goal deals with indoor water use for residential customers. The updated goals differ from the City's previous goals. They are based on measured use not measured pumping, associated with a specific customer segment, and primarily cover the outdoor summertime use. The goals, as adopted, are stated below:

1. Continue the reduction of indoor residential use by one half percent (0.5%) on average for residential connections annually, over the next six (6) years.
2. Reduce outdoor residential use by two percent (2%) on average for residential connections annually, over the next six (6) years.
3. Reduce metered outdoor irrigation commercial/industrial use by two percent (2%) for Commercial/Industrial connections annually, over the next six (6) years.
4. Reduce outdoor metered government use by two percent (2%) for governmental connections annually, over the next six (6) years.

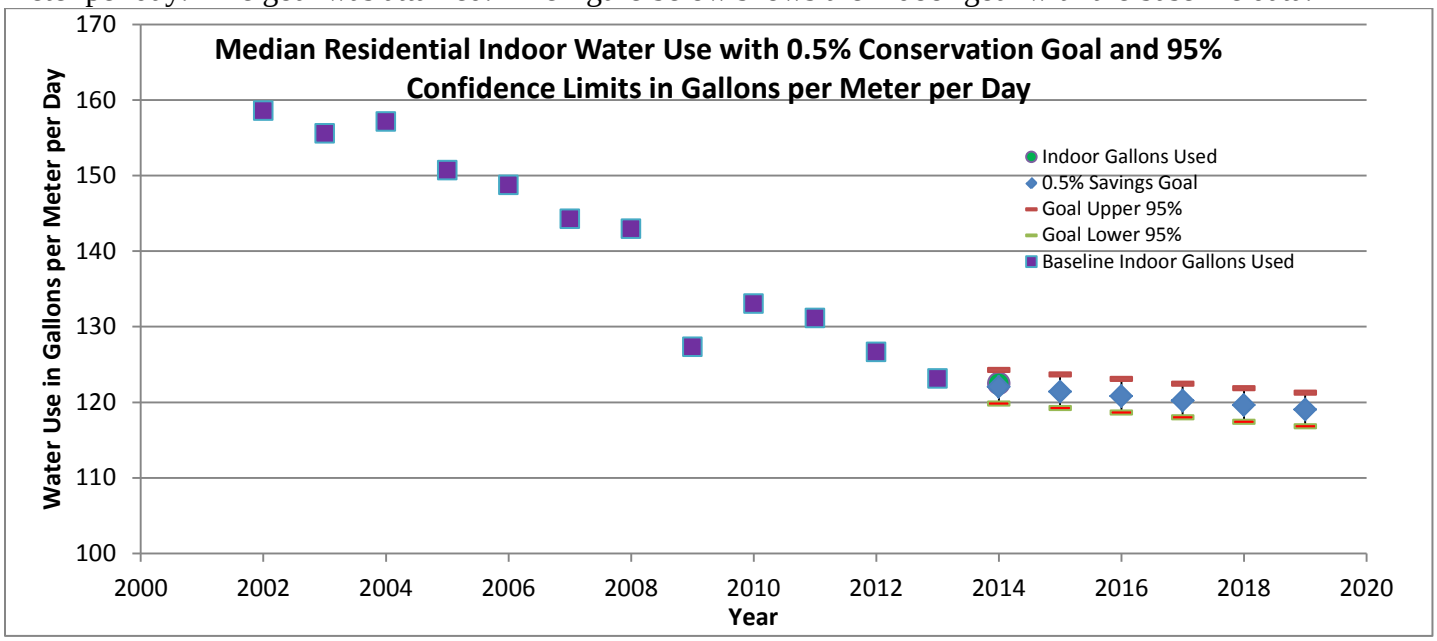
Three of the four goals were attained in 2014. The commercial/industrial goal was above the 95% confidence interval and therefore very likely not met.

All of the conservation goals are based on a reduction in use from the baseline period of 2002 to 2013. The indoor use is for the period of December 15 to February 14. The outdoor use is for the period of July 15 to September 14. The outdoor use is the read summer time use minus the indoor use for the preceding period. The outdoor use is further corrected for the pan evaporation as measured at the Spokane National Weather

Service office. The results presented are comparing pan evaporation corrected baseline goals with pan evaporation corrected results

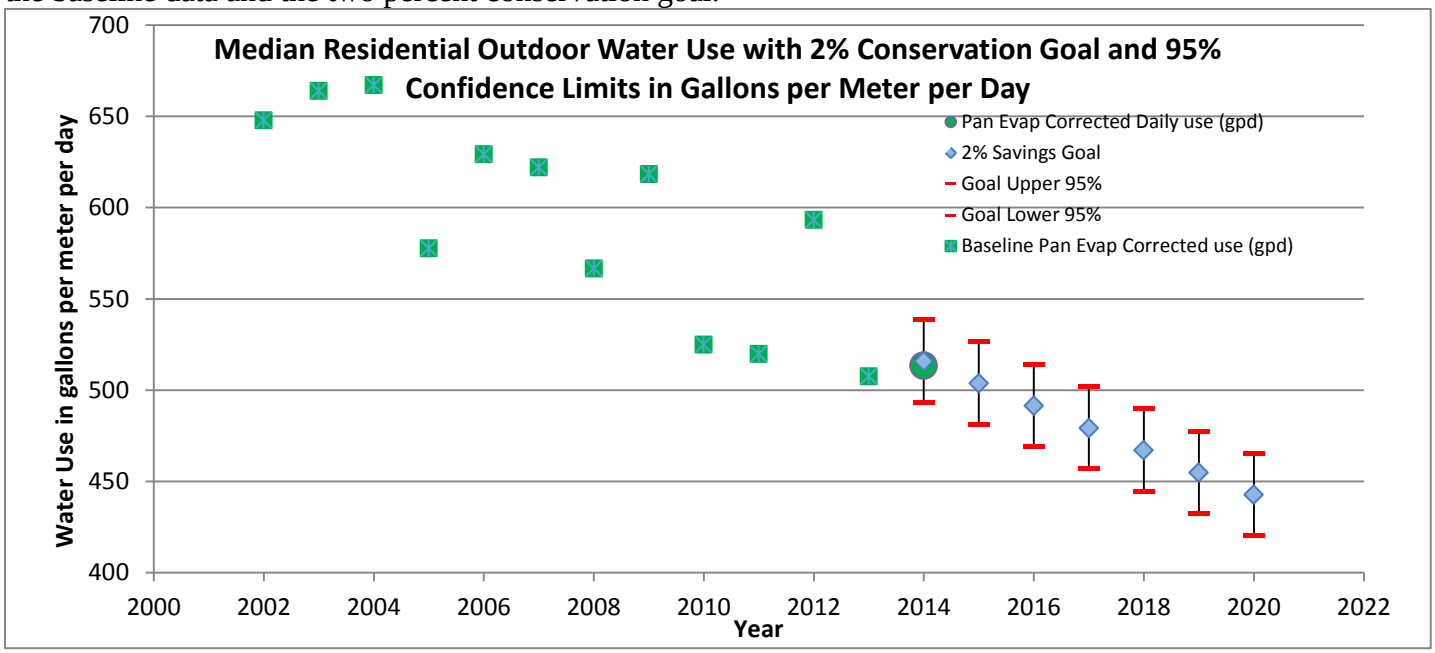
Indoor Residential

The indoor residential goal for 2014 was 122 gallons per meter per day. The measured use was 122 gallons per meter per day. The goal was attained. The figure below shows the indoor goal with the baseline data.



Outdoor Residential

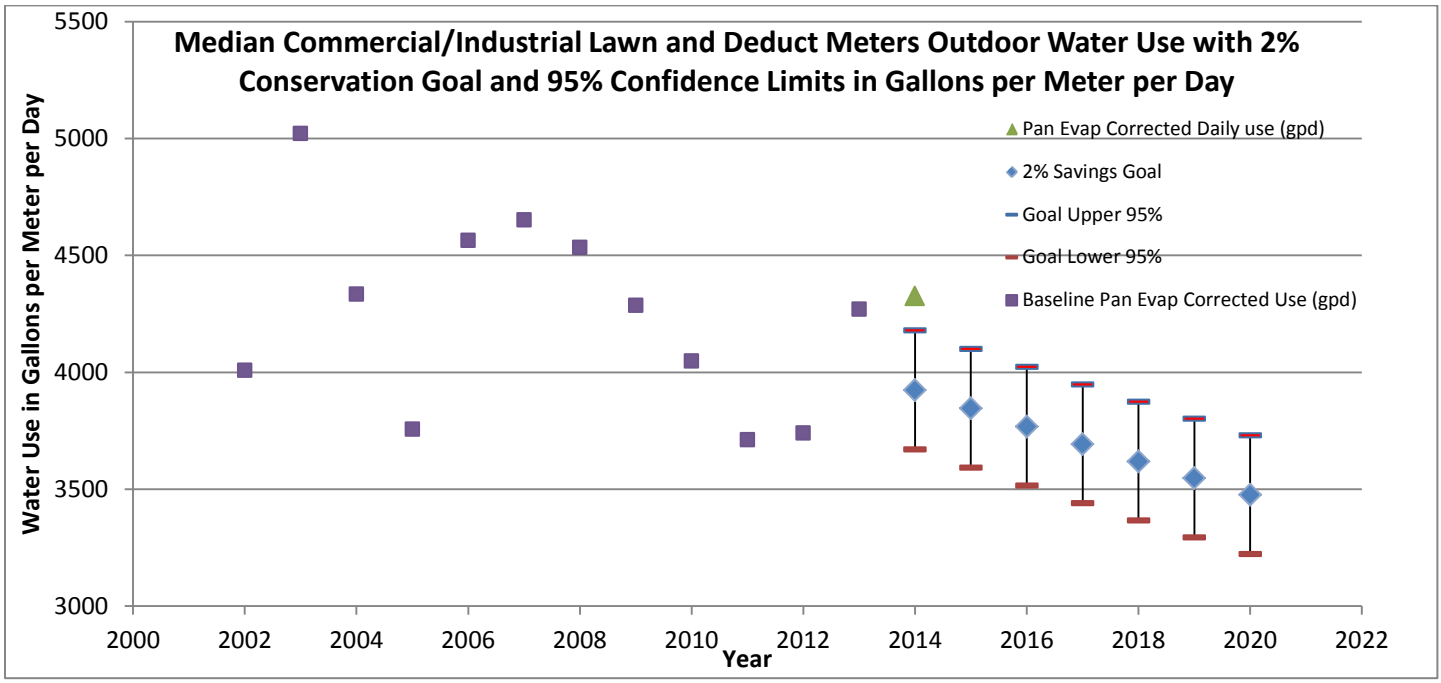
The outdoor residential goal for 2014 was 516 gallons per meter per day. The measured results were 513 gallons per meter per day. This goal was also attained. The figure below is for the residential outdoor use with the baseline data and the two percent conservation goal.



CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

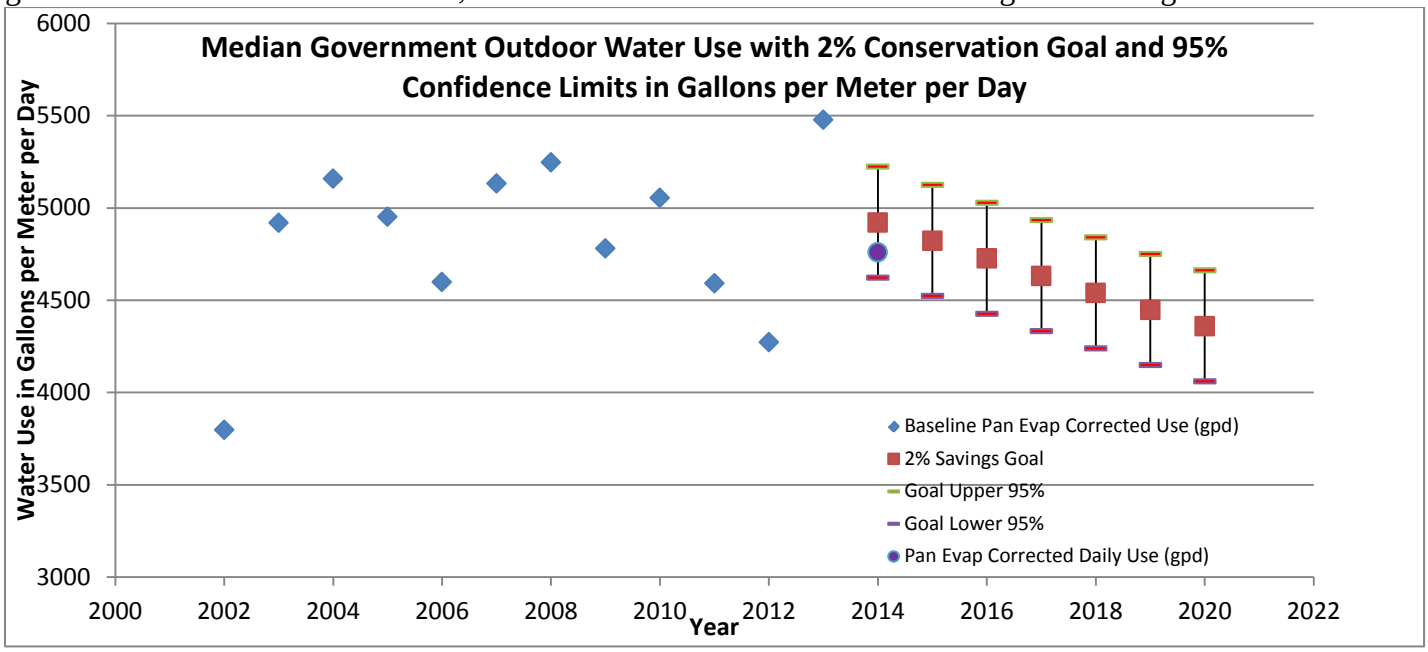
Outdoor Commercial/Industrial

The conservation goal for the commercial/industrial sector was 3,923 gallons per meter per day. The measured result was 4,325 gallons per meter per day. This is above the 95% confidence; therefore it is very likely the goal was not met. The figure below shows the baseline commercial/industrial data with the conservation goal and confidence intervals.



Outdoor Government

The 2014 government sector outdoor conservation goal was 4,921 gallons per meter per day. The pan evaporation corrected use was 4,759 gallons per meter per day. The figure below shows the 2% conservation goal with 95% confidence intervals, and the baseline water use. The outdoor government goal was attained.



CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

Goals 2006 to 2014

The 2006 City of Spokane Water Stewardship Strategic Plan included goals for per capita reductions in water use. The goals were based on total pumpage for all uses including residential, commercial, industrial, and government, and are expressed on a per capita basis. These goals were set for limiting the water consumption through 2017 and were specified for seasonal periods of October through March, April through June, and July through September. The goals differ by year and period.

The October through March timeframe is typically a period of mostly indoor water use. The amount used during this period is nearest the water use essential for health and safety. Furthermore, a modest, but constant rate of growth for our community is assumed.

The April through June timeframe is a transitional period from mostly indoor use to increasing outdoor use.

The July through September period includes increasing demand for outdoor irrigation. This is also the most critical period for flows in the Spokane River. The per capita reduction in water use for this period is the most ambitious.

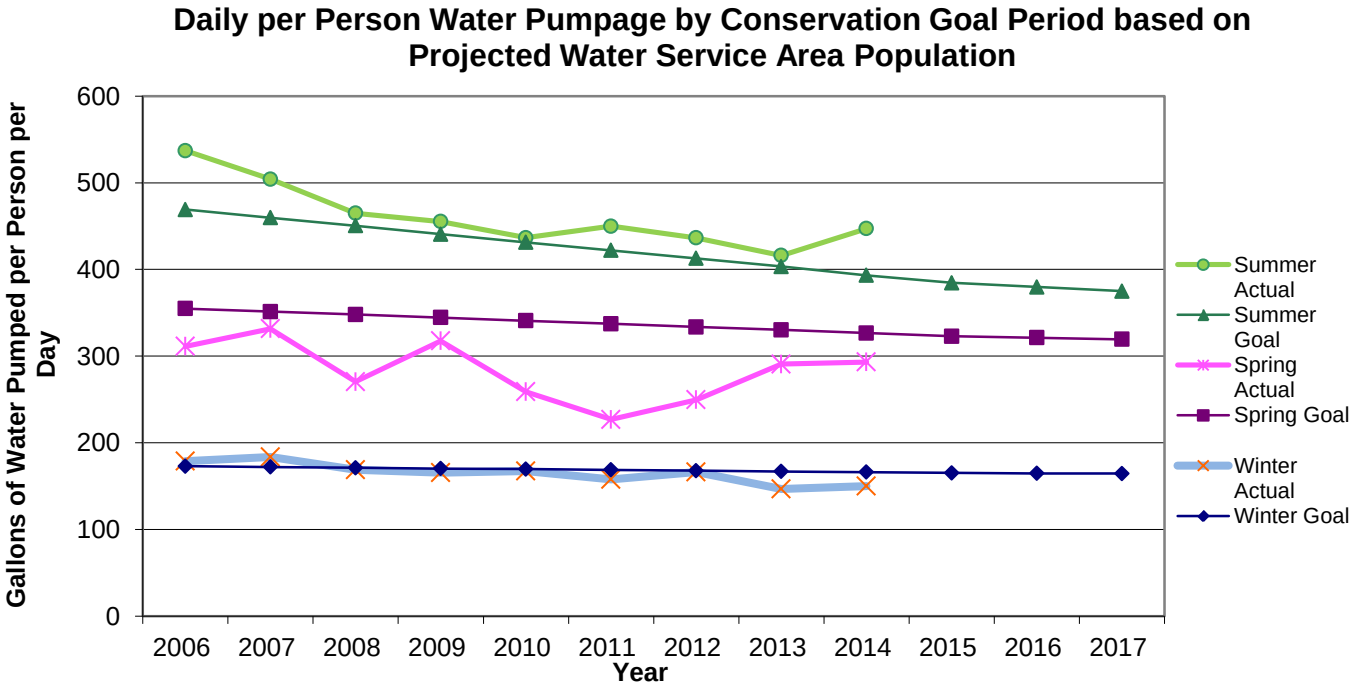
The detailed source water pumping totals versus the adopted Water Stewardship Goals are in Appendix I. The following table and graphs illustrates this information for 2014:

WATER YEAR	2014 pumpage (x1,000 gallons)		
Period	Total	Goal	Result
October 2013 through March 2014 (winter)	6,397,435	7,080,000	-9.6%
April through June (spring)	6,246,070	6,960,000	-10.3%
July through September (summer)	9,632,114	8,470,000	13.7%
Sum of seasonal totals	22,275,619		

The preceding table shows the difference between the Goal and the actual Use as a percentage. A positive value equals exceedance of the goal. Total pumpage for the periods for 2006 - 2014 is available in Appendix I.

It is our estimate that the City, while continuing to show improvement, did not achieve its water conservation pumpage goal for 2014, specifically for the timeframe of July – September 2014. The following graph demonstrates the actual pumpage and goals for each season for 2006 thru 2014 on a per person per day basis. The water service area projected population from the Water Stewardship Strategic Plan is available in Appendix I.

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760



In 2014, the City met the conservation goal for the winter period of October 2013 through March 2014. This was the seventh consecutive year for meeting this conservation goal.

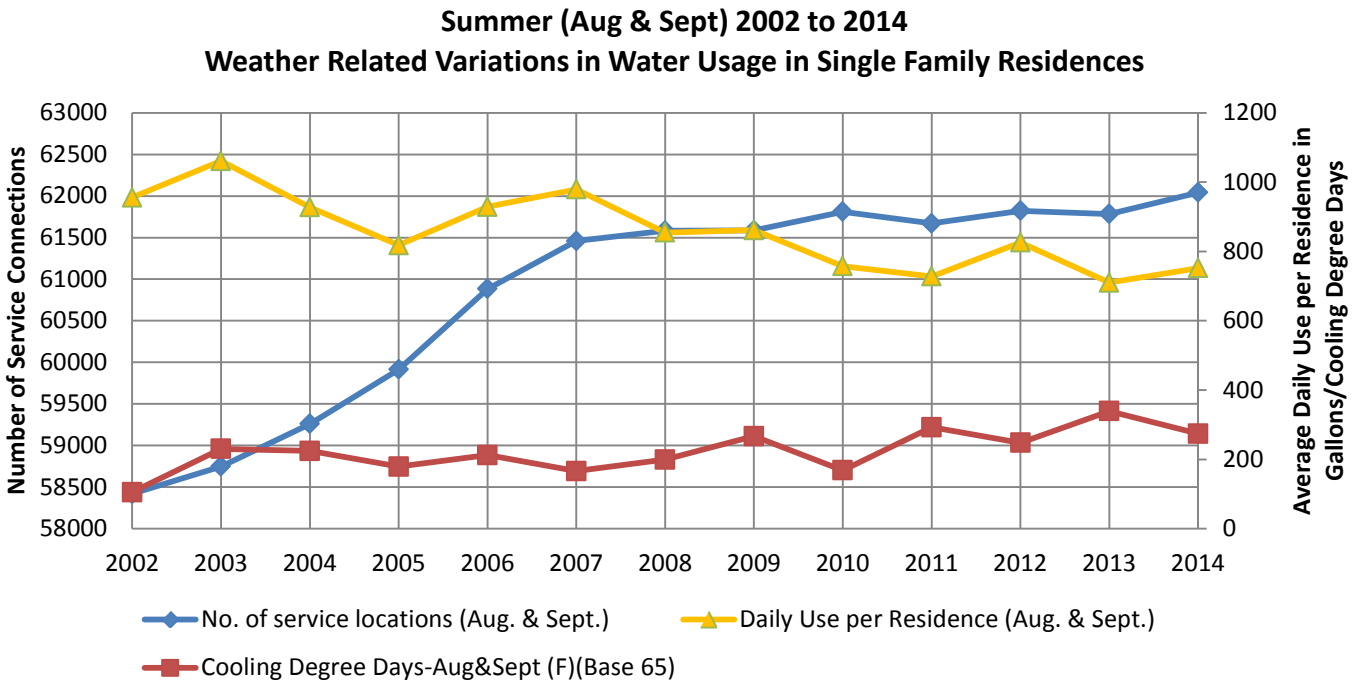
The City of Spokane has consistently met the conservation goal for the months of April, May and June**. The City met its goal for April through June again in 2014.**

The City did not meet its goal for July through September in 2014. To date, the City has not met its goal for July through September. Note that the rate of water use reduction is most ambitious during this season.

It is important to note that the commitment taken on by the City is based on per capita usage and the actual population served in 2014 is not immediately known. However, an indicator of population would be the number of single-family residences served. The following table provides the number of single-family residences over the last 10 years. Please note that the number of residences is typically lower in the winter because some local residents go south for the winter, and during that time, such residences are not counted as "connections."

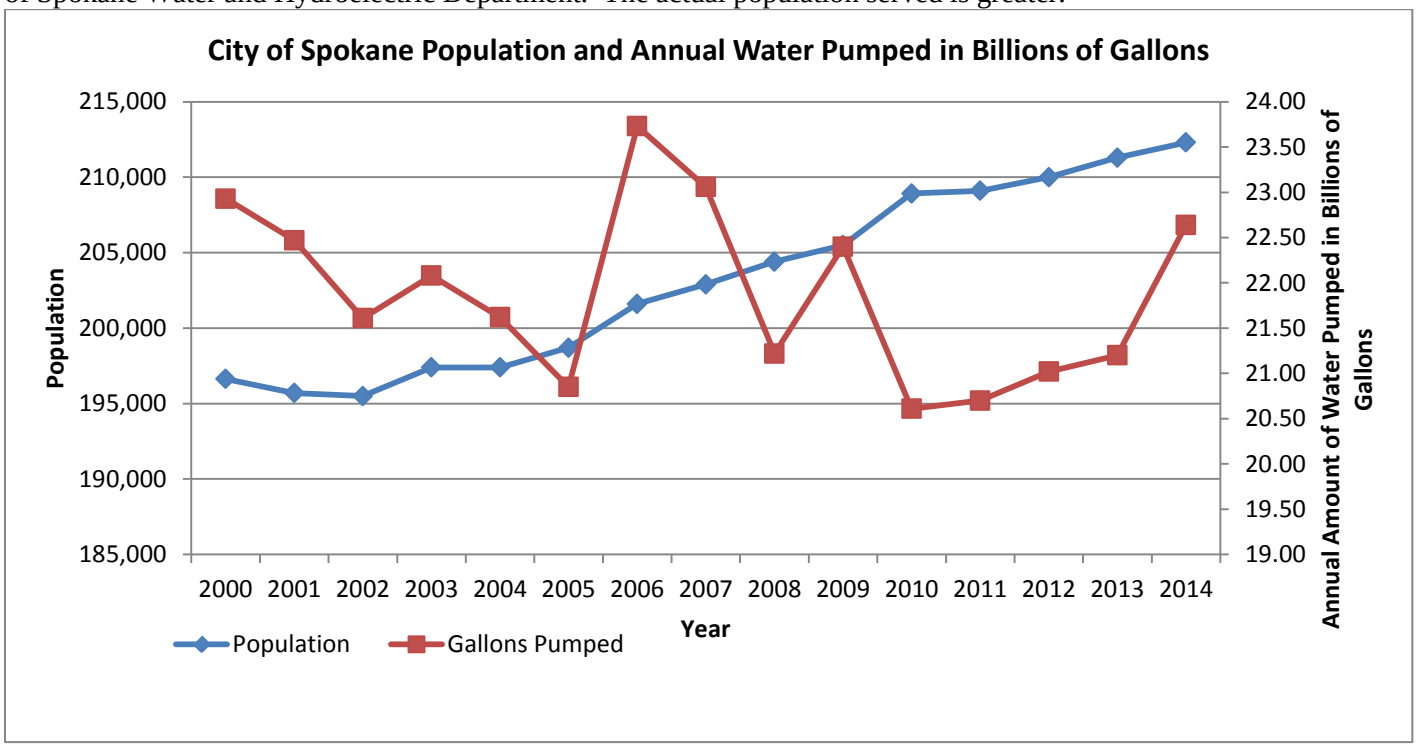
	No. of service locations (Jan. & Feb.)	***No. of service locations (Aug. & Sept.)***
2005	**58,403**	**59,914**
2006	**59,231**	**60,883**
2007	**59,881**	**61,459**
2008	**60,435**	**61,581**
2009	**60,683**	**61,585**
2010	**60,608**	**61,810**
2011	**60,492**	**61,671**
2012	**60,478**	**61,822**
2013	**59,384**	**61,783**
2014	**61,403**	**62,042**

In addition to total population served, seasonal weather variations impact water use. The following graph illustrates daily usage (City of Spokane billing records) in single-family residences during the summer for the period 2002-2014:



The preceding graph compares water usage of single-family residences with temperature (i.e. cooling degree days). July 2014, which is not included in this data, was the hottest July in Spokane since 1906. There was Water Stewardship Program outreach and communication in 2014.

The following graph shows the growth in the City of Spokane and the total amount of water annually pumped by the City of Spokane Water and Hydroelectric Department. The actual population served is greater.



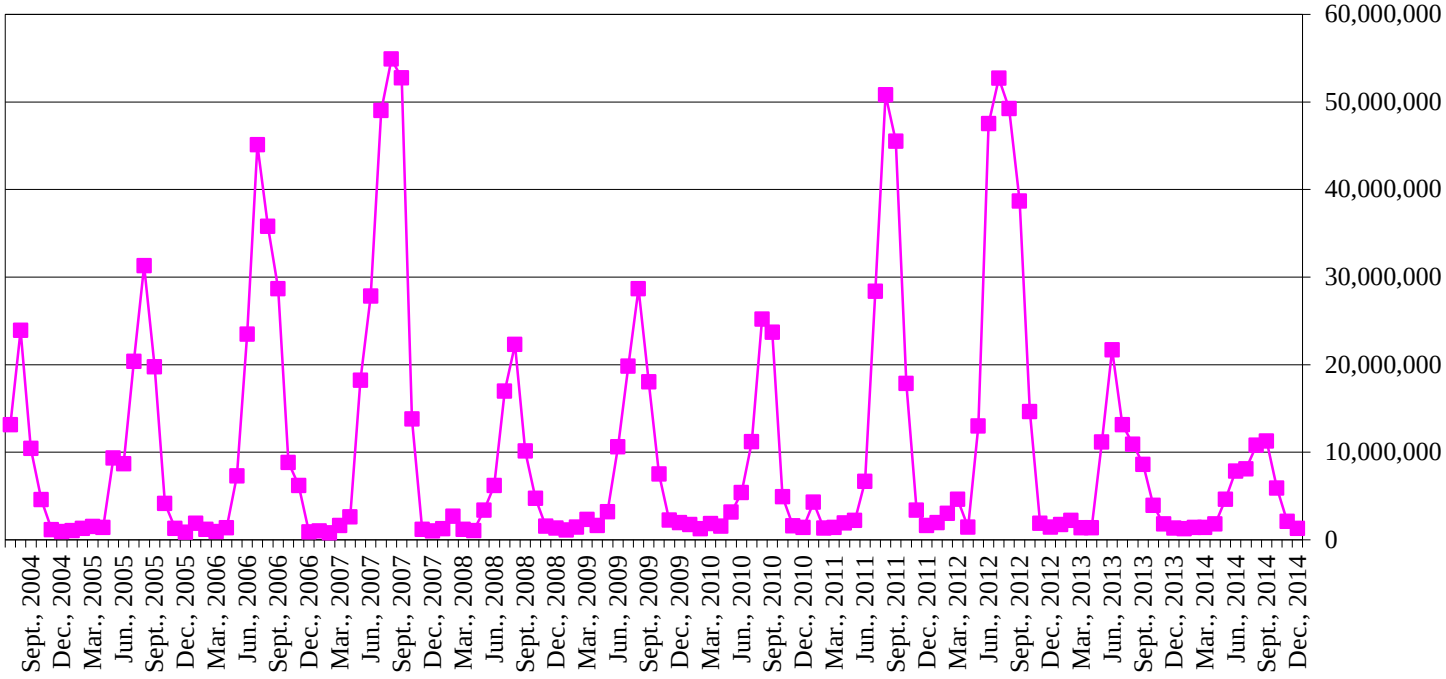
CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

The following table shows the annual total gallons delivered to our wholesale customers:

	Annual Total Intertie Demand, gal.	Percent Change From Previous Year
2005	161,179,040	
2006	190,312,144	18.1 %
2007	227,270,824	19.4 %
2008	75,063,296	- 67.0 %
2009	95,439,564	27.1 %
2010	108,846,716	14.0 %
2011	165,106,788	51.7%
2012	231,569,580	40.3%
2013	79,169,816	-65.8%
2014	51,154,224	-35.4%

The following graph displays the total gallons per month wholesaled to water purveyors outside the City's water service area:

Total Intertie Water Demand, gallons per month



WATER YEAR	2014 pumpage (x1,000 gallons)				
Period	Total	Intertie Demand	Adjusted Total	Goal	Adjusted Result
October 2013 through March 2014 (winter)	6,397,435	11,103	6,386,332	7,080,000	-9.8%
April through June (spring)	6,246,070	14,251	6,231,819	6,960,000	-10.5%
July through September (summer)	6,632,114	30,130	9,601,984	8,470,000	13.4%
Sum of seasonal totals	22,275,619				

If wholesale water use were not counted in the conservation goal measurements, we would be 0.4 % closer to achieving the summer goal.

2014 Water Use Efficiency Program Summary

The City of Spokane continues to engage and educate water customers in water efficient practices. Water Stewardship outreach was concentrated in crucial summer months where water use more than triples and water efficiency goals are at their highest.

Our work for 2014 included:

- Participation in nine community events over the summer, distribution of educational materials and hosting activities on water wise practices
- Presentation of water conservation lessons to two after school programs
- Sponsorships of a Hoopfest Court and the Spokane Indians Baseball grounds crew, with associated advertising and awareness opportunities
- Partnering with local agencies and universities to create, plan, and host four community engagement events
- Information sharing through social media outlets, the City's website, utility bill inserts, and media interviews
- Offering free irrigation assessments to customers
- Providing 216 indoor water saving toilet accessories, low-flow showerheads, aerators, and leak detectors as well as 103 outdoor hose timers to customers

In November 2014, the City Council adopted a new wastewater bill discount for customers who use less water. Under the credit program, which will begin in January 2015, the lowest 20 percent of indoor water users receive credits totaling $60 a year. The lowest 20 percent of indoor water users is determined annually based on water use during the winter when most water use is for indoor purposes and ultimately reaches the City's Riverside Park Water Reclamation Facility. Credits for 2015 will be based on 2014 winter water usage numbers. Although the credit is designed primarily to introduce equity in the City's wastewater rate system and lower operating costs for the City's wastewater utility, it also helps the City achieve its water use efficiency goals, especially the goal for lower residential indoor water use.

Outreach education and engagement with water customers is designed to increase awareness over time and encourage responsible use of our water resources. Statistical data and customer feedback will provide critical information on customer behavior and program effectiveness. For more information, visit: EPA-WaterSense Program (www.epa.gov/watersense/) H2OUSE-Watersaver Home (www.h2ouse.net/) and the City of Spokane Water Stewardship Program at www.waterstewardship.org/

Distribution System Loss (DSL)

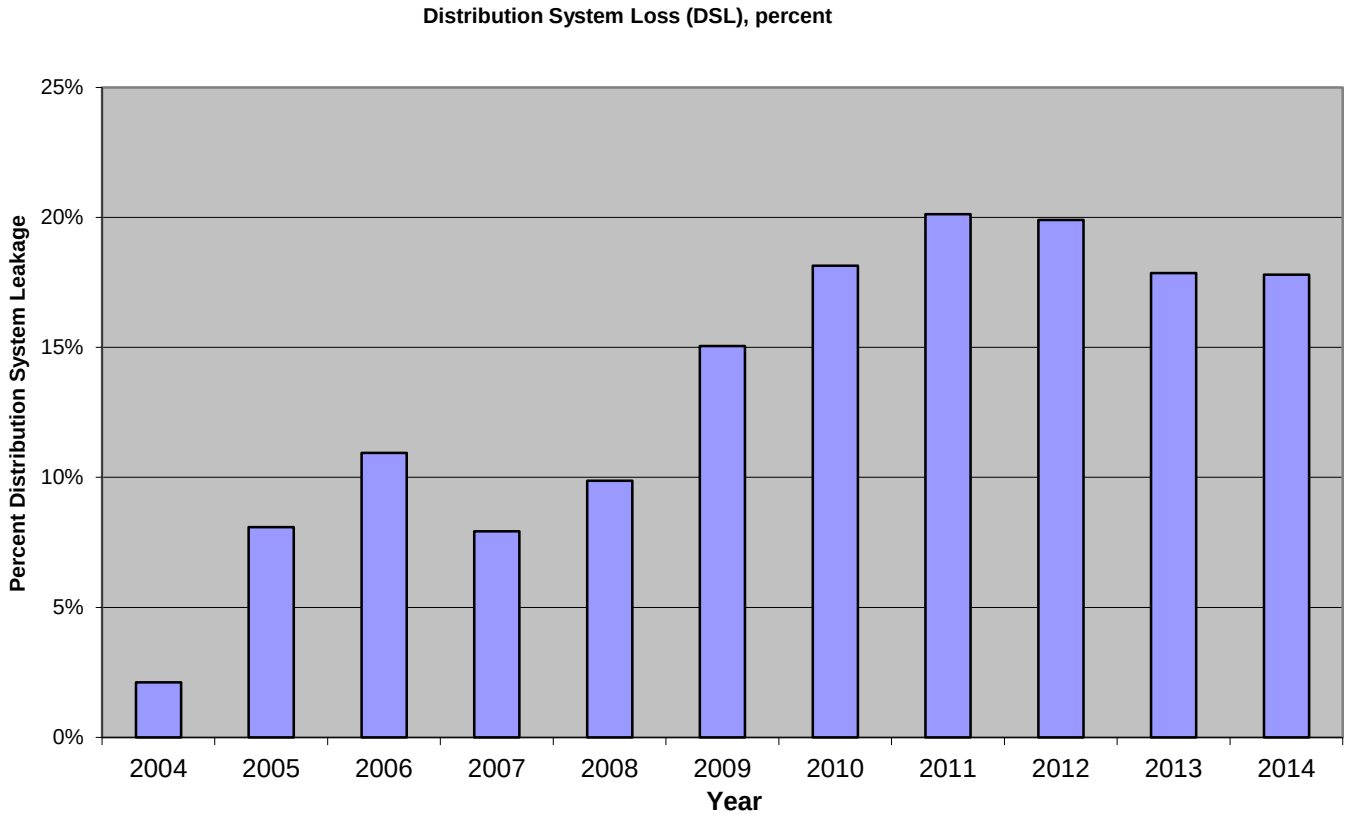
The Water Use Efficiency Rule requires the calculation of system water loss. Prior to this calculation, water systems are required to install service meters on all direct service connections[1] before January 22, 2017. The City of Spokane has had a long-standing policy of metering service connections. The calculations determine the volume of water not attributed to delivery to a customer and thus assumed to be lost to the ground. This loss is to be reported as a volume and as a percentage. In both cases, the DSL is determined as a running three-year average, and the water system must relate this DSL to the DSL standard promulgated by Washington Department of Health. The water use category of Non-Revenue Accounted-For Water is included in the Total Authorized Consumption (AC). This category, which is estimated (non-metered), includes such uses as street cleaning, cleaning water tanks/reservoirs, and water system maintenance (flushing). This estimate was reevaluated in 2013.

The method for DSL calculation and the data for the calculation are in Appendix I, pg. 24. The volume and percent DSL for the last three years are as follows:

[1] WAC 246-290-820(2)(a)

	2012	*2013*	*2014*	*Average*
DSL, percent	19.9%	17.9%	17.8%	18.5%
DSL, volume (gallons x 1000)	4,190,911	3,787,117	4,032,455	4,003,494

The most direct means to comply with the Water Use Efficiency Rule standard for DSL is for the three-year running average to be less than 10% [2]. **The DSL for the City of Spokane Water System is 18.5%, which does not meet the standard.** The City will continue to encourage the responsible use of our water resources, continue to assess the accuracy of our reporting, and implement projects to reduce our system leakage. In 2014, the City of Spokane Water Department continued to improve accounting of water from hydrant permits by using hydrant meters with select permit holders. Following is a graph depicting the annual DSL for 2004-2014:



[2] WAC 246-290-820(1)(b)(i)

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

QUALITY Drinking Water
An Invaluable Community Resource

INORGANICS

The City typically has a Washington State Department of Ecology accredited laboratory run a full drinking water inorganics analysis once every three years on each of our source wells. In addition, nitrates are tested annually, as required. The most recent inorganic results from accredited laboratories are in Appendix IV. **All sources are in compliance with existing National Primary Drinking Water Regulations for Inorganic Maximum Contaminant Levels (MCL)**.

ARSENIC

The arsenic readings in 2014 at the Grace and Hoffman wells were 2.55 µg/L, and 3.00 µg/L respectively. The MCL for arsenic is 10 µg/L, or parts per billion (ppb). For City drinking water, 5.13 µg/L of arsenic in 2009 from Ray Street Well represents the highest result to date.

City drinking water currently meets EPA's drinking water standard for arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water.

Further information concerning health impact issues, regulatory requirements, and compliance costs for water utilities/water customers can be found at water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm and www.doh.wa.gov/Portals/1/Documents/Pubs/331-167.pdf.

FIELD MEASUREMENTS

The City of Spokane routinely measures water parameters at the wells including water pH and temperature.

These are the average, maximum, and minimum pH measurements from the source wells in 2014. pH has a secondary maximum contaminate level (SMCL) of 6.5 to 8.5. SMCL's are guidelines for water purveyors to manage drinking water for cosmetic, aesthetic, and technical effects. Technical effects include scaling and corrosion.

Source Water pH

Source Well	*Average*	*Maximum*	*Minimum*
Central	7.99	8.18	7.57
Grace	7.88	8.18	7.21
Hoffman	7.95	8.09	7.83
Nevada	7.91	8.14	7.51
Parkwater	7.87	8.26	7.35
Ray Street	7.63	7.78	7.10
Well Electric	7.97	8.72	7.39

The following are average, maximum, and minimum source water temperatures in degrees Fahrenheit for 2014. We track and provide this information as water temperature changes can result in water quality changes and because of the increased interest in using the aquifer and aquifer water as a heat source and/or sink.

	Water Temperature ° F		
Source Well	*Average*	*Maximum*	*Minimum*
Central	54.1	57.2	51.8
Grace	53.8	55.4	52.7
Hoffman	53.9	54.5	53.6
Nevada	54.3	55.4	53.6
Parkwater	52.9	55.4	50
Ray Street	53.8	55.4	51.8
Well Electric	53.8	59	50

These are measurements at the source. The values at a service location will be different based on the season and where it resides within the distribution system. The federal government has not established guidelines for drinking water temperature.

NITRATE - NITROGEN

The Ray Street Well continues to be monitored quarterly for Nitrate-N. **In 2014, the highest accredited lab quarterly result for the Ray Street Well was 3.23 mg/L.** The federal MCL for Nitrate –N is 10 mg/L. The result from a duplicate sample analyzed by the Riverside Park Water Reclamation Facility (RPWRF) Laboratory was 3.54 mg/L. The quarterly results for Ray Street Well for 2014 are as follows:

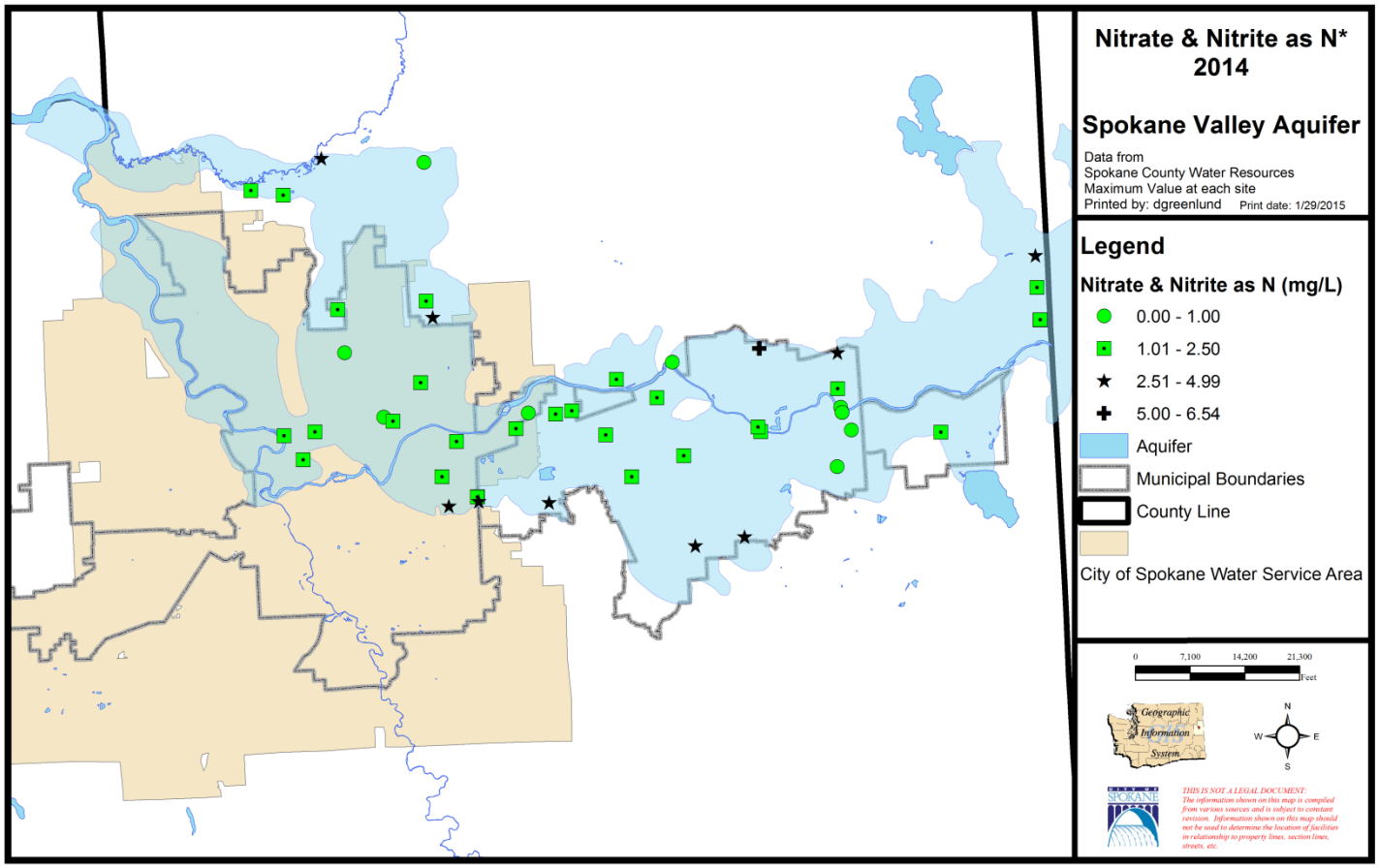
Sample Date	*Accredited Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
28-January-2014	3.15	3.42
29-April-2014	3.07	3.08
29-July-2014	2.82	3.17
28-October-2014	3.23	3.54

The trend for nitrate-nitrogen at the Ray Street Well has remained constant to slightly declining for a number of years.

All other City sources average 1.19 mg/L for 2014, less than a fifth of the MCL for nitrate-nitrogen. The 2014 results for the other City source wells are as follows:

Source Well	*Accredited Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
Well Electric	1.37	1.58
Parkwater	1.55	1.68
Hoffman	1.24	1.38
Grace	0.68	0.72
Nevada	0.80	0.86
Central	0.90	0.93

The following map depicts the results of monitoring wells sampled during 2014 by the Spokane County Water Resources Program. The results are for nitrate+nitrite as nitrogen from monitoring wells and springs along the Spokane River and purveyor wells over the Spokane Aquifer. Where multiple sampling events occurred at the same location, the highest result is depicted on the map. There are a number of wells that had results between 2.51and 6.54 mg/L. These wells, including the City of Spokane Ray Street Well, are typically located along the edge of the aquifer and appear to be subject to nitrate loading to the aquifer that originates at higher elevations.



For further information concerning nitrate in drinking water and potential health issues, you can access the EPA website at water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm or the Washington State Dept. of Health website at www.doh.wa.gov/Portals/1/Documents/Pubs/331-214.pdf.
(Para ver información adicional, visite al; www.doh.wa.gov/Portals/1/Documents/Pubs/331-214s.pdf)

PHOSPHORUS

Drinking water regulations primarily deal with human health-related impacts. Phosphorus is not a drinking water regulated contaminant, but is of significant concern in this region as a pollutant in the Spokane River. Local groundwater makes significant contribution to the River and is the background for water discharged to sewer.

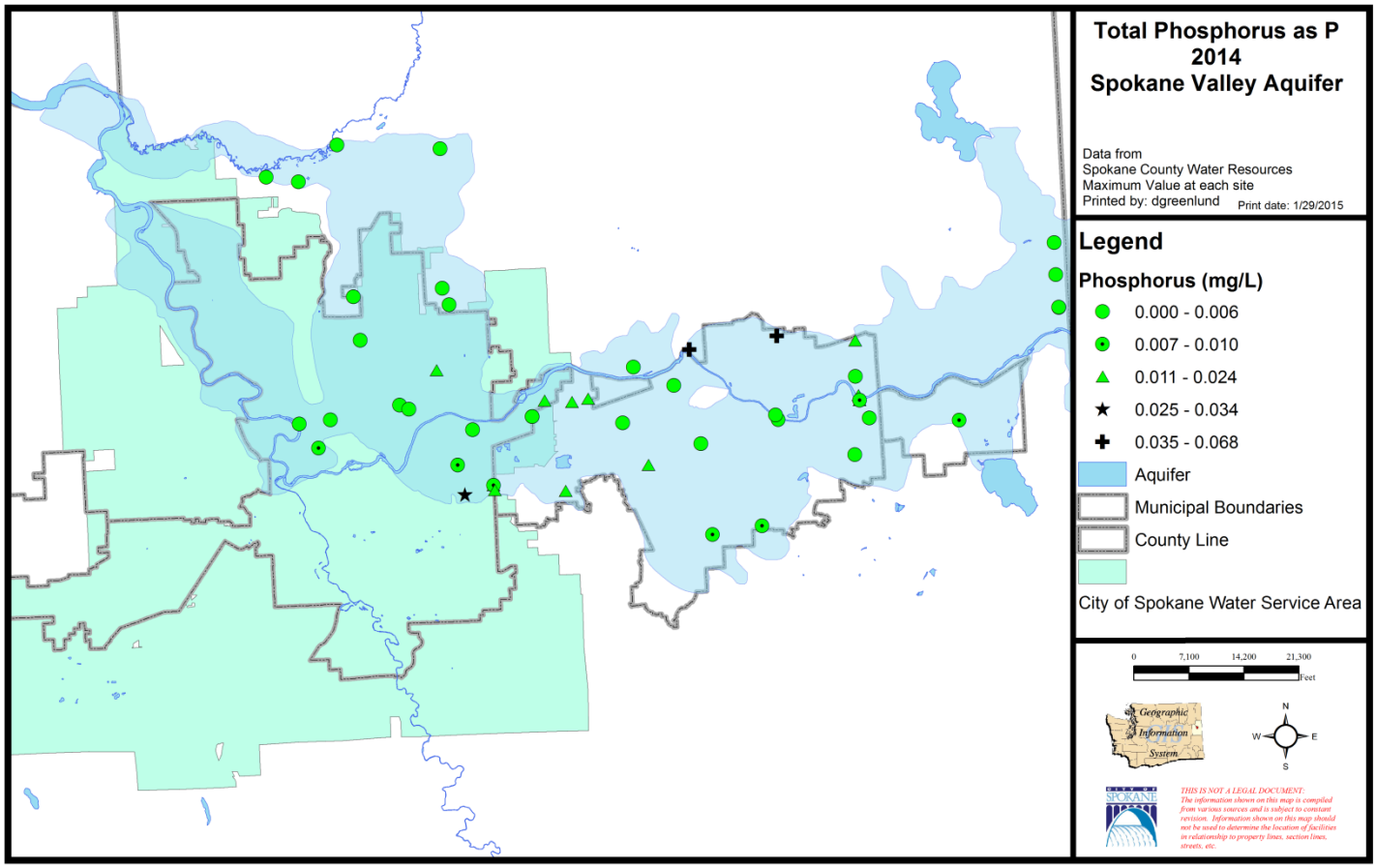
In July 2013, groundwater samples from the City source wells were analyzed by the City RPWRF Laboratory. **Similar to nitrate concentrations, most City wells have fairly low concentrations. The average concentration of the six city wells not including the Ray Street well was 0.004mg/L. Ray Street Well was sampled four quarters and the greatest result was .025mg/L.**

Location	*Date Sampled*	*PO4-P, mg/L*	*Location*	*Date Sampled*	*PO4-P, mg/L*
Electric	7/29/2014	0.0031	Central	7/29/2014	0.0008
Parkwater	7/29/2014	0.0006	Ray Street	1/28/2014	0.0206
Nevada	7/29/2014	0.0012	Ray Street	4/29/2014	0.048 *
Grace	7/29/2014	0.0001	Ray Street	7/29/2014	0.0157
Hoffman	7/29/2014	0.0184	Ray Street	10/28/2014	0.0246

*RPWRF analyzed this sample with SM Method 4500P-E not the low level method, EPA 365.3 The result is presented but is not considered a representative result.

There is no drinking water regulatory limit for phosphorus, but to give this some context, the Total Maximum Daily Loading for Dissolved Oxygen for the Spokane River calls for a phosphorus concentration limit of 0.010 mg/L in the river during the critical summer season.

During 2014, the Spokane County Water Resources Program collected and analyzed 133 samples from 49 locations for total phosphorus (including duplicate samples at several locations). Of that number, 32 samples from 14 different locations exceeded 0.010 mg/L. Following is a map demonstrating the distribution of total phosphorus results on the Washington side of the Spokane Valley-Rathdrum Prairie Aquifer.



This map illustrates that, similar to nitrate concentrations in groundwater, phosphorus concentrations are greatest along the sides of the valley. This likely indicates loading from run-off from higher elevations. There are a couple of sampling sites with higher values that appear <u>not</u> to be located near the sides of the valley or near the Spokane River. These sampling sites have total phosphorus concentrations in the range of 0.011 to 0.024 mg/L.

RADIONUCLIDES & RADON

RADIONUCLIDES

In 2014, the City of Spokane tested the Parkwater and Ray Street source wells for Radium 228 and Gross Alpha. The table below has the results.

	Gross Alpha Particle Activity	Radium 228	Combined Radium 226/228 *
Parkwater	2.10	.52	2.10
Ray Street	< 1	1.04	1.54

All results in pCi/L

Gross Alpha particle activity has an MCL of 15 pCi/L. The federal MCL for Radium 226 and Radium 228 (combined) is 5 pCi/L. The City of Spokane results were below the MCL.

The radionuclide rule allows Gross Alpha results to be used in lieu of Radium 226 if the Gross Alpha particle activity is below 5 pCi/L. If the gross alpha particle activity result is below the detection limit, one-half of the detection limit is used to determine compliance[3]. The radionuclide rule also allows a Gross Alpha particle activity measurement to be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The Gross Alpha activity was below 15 pCi/L so the City did not test for Uranium.

* If the Radium 228 or 226 value is <1.0, a value of zero will be used to calculate the Combined Radium 226/228[4].

For more information on radionuclides in drinking water, access the EPA website at water.epa.gov/lawsregs/rulesregs/sdwa/radionuclides/index.cfm

RADON

The Water Department monitored the Parkwater, and Ray Street wells in 2014, with results of 441 pCi/L, and 443 pCi/l respectively. The Environmental Protection Agency has published a proposed rule for regulating the concentration of radon-222 in drinking water. The rule proposes a maximum contaminant level goal (MCLG) of zero, a maximum contaminant level (MCL) of 300 pCi/L, and an alternative maximum contaminant level (AMCL) of 4000 pCi/L. The proposed rule would require that community water supply systems (including the City's) generally would have to comply with the MCL of 300 pCi/L, unless there is a multi-media mitigation program (MMM) in place. With a MMM, the AMCL of 4000 pCi/L would apply.

The publication of the proposed rule was November 2, 1999, and the comment period closed February 4, 2000. The final rule was expected to be published one year from that date. The rule had been listed on the Unified Agenda of Federal Regulatory and Deregulatory Actions with the status of the radon regulation final action "To Be Determined." In the January 2012 update of the Unified Agenda, the rule was removed.

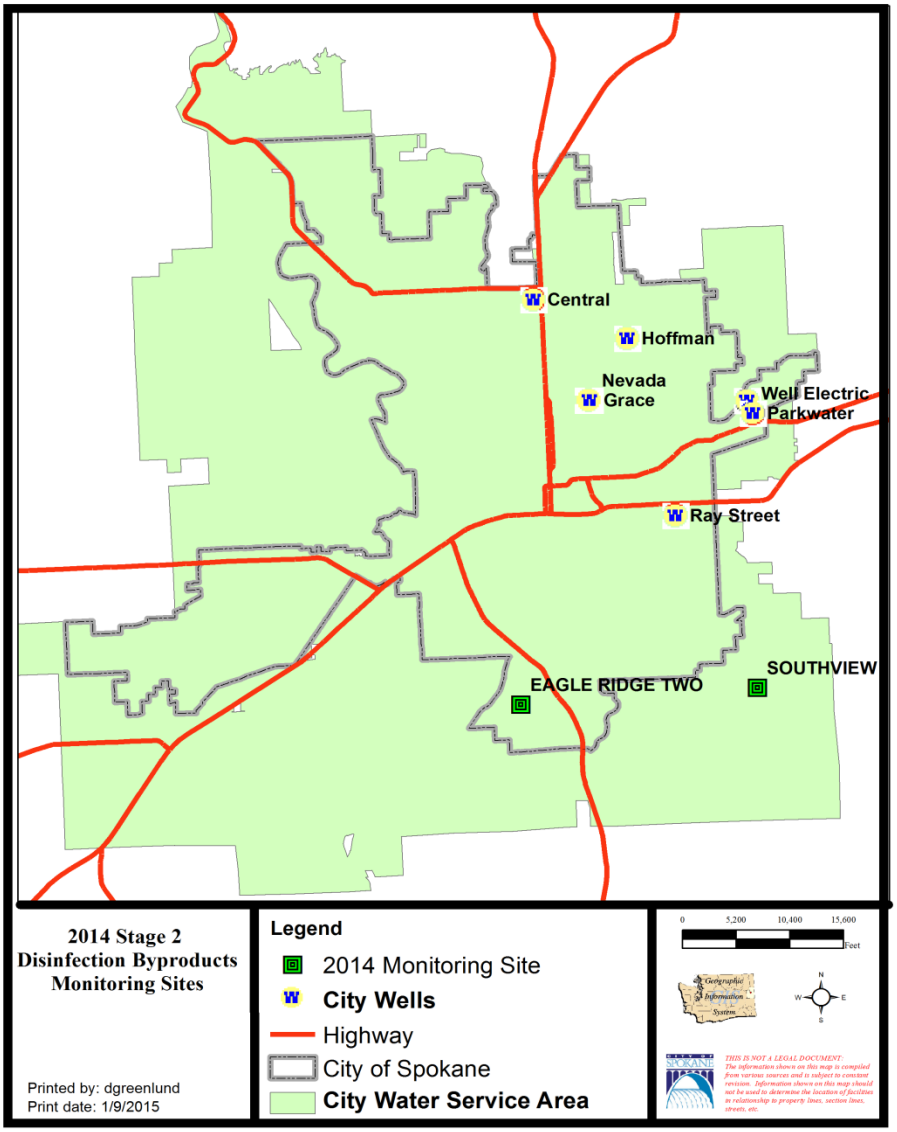
Radon gas is one of a number of radioactive elements that result from the radioactive decay of uranium found locally in natural deposits. Exposure to excessive amounts of radon may increase cancer risk. Most of these risks result from exposure to radon in indoor air. The EPA has determined that 1-2% of the radon in indoor air comes from drinking water. For further information concerning radon in drinking water, access the EPA website at www.epa.gov/radon/rnwater.html. For more general information concerning radon in the environment and the associated health issues, access the EPA website at www.epa.gov/radon/index.html or call the Radon Hotline at *1-800-SOS-RADON [*1-800-767-7236]. An EPA publication titled "A Citizen's Guide to Radon" can be downloaded from www.epa.gov/radon/pubs/citguide.html.

[3] 40 CFR 141.26a (5)
[4] 40 CFR 141.26c (3) v

ORGANICS

DISINFECTION BY-PRODUCTS – DISTRIBUTION SYSTEM

The maximum value during 2014 compliance monitoring of the distribution system for total trihalomethanes (TTHM) was 3.94 ppb and for haloacetic acids (HAA5) was no detection. This is well below the federal MCL of 80 ppb for total trihalomethanes and 60 ppb for the sum of five haloacetic acids and is only detected at the extreme end of the distribution system. The Stage 2 Disinfectants and Disinfection By-products Rule requires a Locational Running Annual Average (LRAA) be used for reporting compliance. This is the average of four quarterly samples for each sampling location. The City uses small amounts of chlorine as a drinking water disinfectant. However, the disinfectants themselves can react with materials in the water to form byproducts, which may pose health risks. The maximum value for TTHM was 5.02 ppb. Appendix V has the results for all 2014 quarterly sampling. There were no detections of haloacetic acids at any sampling site in 2014. The Stage 2 Disinfectants and Disinfection By-products Rule allows for reduced monitoring if the results are less than one half the MCL. This is 40 ppb for TTHM and 30 ppb for HAA5. The City met this requirement and was granted a reduced monitoring schedule from the Washington State Department of Health. Beginning in 2014, the City sampled quarterly at the Southview and Eagle Ridge Two locations.



In 2014, two sites were sampled every quarter. They were Eagle Ridge Two, and Southview. For more information on the Stage 2 DBPR, go to the EPA website water.epa.gov/lawsregs/rulesregs/sdwa/stage2/index.cfm

2014 was the third year of sampling under the Stage 2 Disinfectants and Disinfection Byproducts Rule. Starting in 2007 and continuing until 2010, the City Water Department performed assessment monitoring at over 20 locations (approximately five each year) to determine the potential for disinfection by-products (DBP) to be formed during the detention period in the distribution system. The DBP assessment sampling sites were selected from the existing coliform sampling sites. Based on this sampling and analysis of the retention time of water in the distribution system, locations were determined for the Stage 2 distribution system sampling program.

MtBE (Methyl tert-Butyl Ether)

Central and Nevada well stations were monitored for MtBE in 2014 in conjunction with the regularly scheduled Volatile Organic Compounds (VOC) monitoring. There were no detections at a detection limit of 0.5 µg/L. The City has included testing for MtBE with the VOC monitoring since 2005 and has had no detections.

MtBE is a gasoline additive used throughout the United States to reduce carbon monoxide and ozone levels caused by automobile emissions. There is currently a drinking water advisory for MtBE water.epa.gov/action/advisories/drinking/mtbe.cfm. This advisory recommends a range of 40 µg/L or less based on consumer acceptance of potential taste and odor. The EPA believes this would also provide a large margin of exposure safety from toxic effects.

Further information concerning the health impact, environmental effects, and technical background of MtBE can be found at the following website: the EPA Office of Water at water.epa.gov/drink/contaminants/unregulated/mtbe.cfm

Other Volatile Organics

Many compounds have been tested for and not detected. Appendix II: "TESTS RUN ON CITY OF SPOKANE WATER" on page **26** has a comprehensive list of the volatile and synthetic organic chemicals tested in 2014. Refer to Appendix VI in the 2010 Drinking Water Report for a historic summary of ORGANIC CHEMICAL DETECTIONS for each well station that contributes to the City Water System. Only organic compounds that have previously been detected in City water are listed in the 2010 Drinking Water Report table.

In 2014, the City of Spokane tested the Central and Nevada well stations for Volatile Organic Compounds (VOC). There were no detections.

Trihalomethanes (THMs, chloroform, bromoform, bromodichloromethane, dibromochloromethane) are one group of volatile organic, disinfection by-products. That is to say, they can originate from chemical interactions between a disinfectant (chlorine gas in the City's system) and any organic matter present in the raw water. **There were no detections of THMs in source water monitoring for 2014**.

Synthetic Organics

The City of Spokane tested the Central, Grace, and Hoffman wells for Synthetic Organic Chemicals (SOC) in 2014. There were no detections. The City conducts tests for more than 140 different chemicals including pesticides, herbicides, PCBs, and phthalates (plasticizers).

Microbiological Contaminants

Coliform Bacteria - Source

The City of Spokane well station raw source water (the water before disinfectant chlorination) has been tested regularly for coliform bacteria. While historically there has been no requirement to test for coliform bacteria in source water, the City has monitored for this water quality parameter. More recently, testing requirements to determine whether hydraulic continuity exists with the Spokane River have increased the testing frequency. **In 2014, out of 74 tests for coliform bacteria in the City source water wells, there were no detections of total coliform, and no detections of fecal coliform.**

Out of 409 tests over the five-year period from 2010 through 2014, there have been no detections of total coliform. There have been no detections of fecal coliform in the source water during this time frame.

HETEROTROPHIC PLATE COUNT BACTERIA – SOURCE

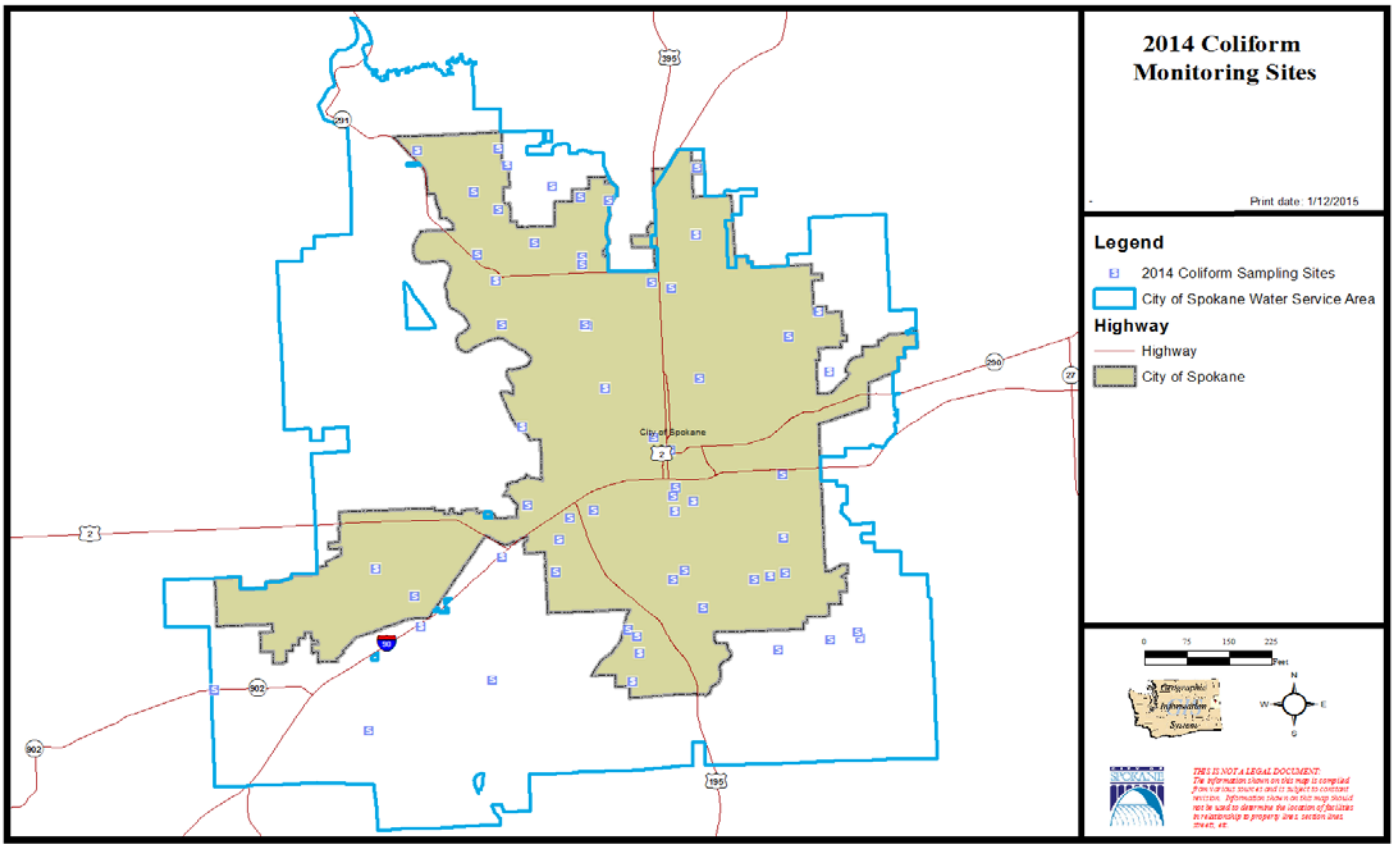
In 2014, out of 58 Heterotrophic Plate Count (HPC) tests on source water, there were 10 positive results. The greatest concentration was 22 colonies per milliliter of sample at the Hoffman Well. HPC tests were conducted 354 times over the five-year period from 2010 through 2014 on raw source water. There have been 89 positive HPC results. Washington state drinking water regulations state: *"Water in a distribution system with a HPC level less than or equal to 500/mL is considered to have a detectable residual disinfectant concentration."*[5] The maximum detection during this five-year period was 806 colonies per milliliter at the Hoffman well in 2011. Without regard to source water HPC levels, City source water is treated with chlorine to safeguard drinking water quality. This is done based on the historical use of open reservoirs (which no longer exist) and to preserve the sanitary quality when a well or piping is open to the environment during construction, repair or routine maintenance. Some water utilities in this area (drawing from the same aquifer) do not add any disinfectant.

COLIFORM BACTERIA - DISTRIBUTION SYSTEM

Coliform testing is typically done four days a week from various points in the distribution system. The Water Department has more than 220,000 customers. This population tier[6] requires taking 150 samples per month, which was adopted as the target for distribution system coliform monitoring by the Water Dept. in 2007. When a coliform positive test result is reported, re-sampling is done in compliance with the Total Coliform Rule and the Groundwater Rule. **During 2014, the City Water Department had 1,974 coliform bacteria samples analyzed. There were no detections.** 1,974 samples were analyzed in 2013 and, 1,974 samples were analyzed in 2012.

The Water Department staff has worked to refine the sampling sites for the distribution system. Concerns about inadvertent contamination of sampling sites and locations that don't adequately represent the distribution of the water system has caused the Water Department staff to establish more dedicated sampling sites at locations more representative of the entire system. Following is a map of the distribution system sampling sites during 2014, overlaid on the City's water service area. It is important to note that the sample sites are evenly placed based on the distribution system, which may not currently reach all parts of the water service area, and population density.

[5] Ref. WAC 246-290-451 (3)(c)
[6] ref. WAC 246-290-300 (3)(e-Table 2)



Water Department staff state that coliform bacteria have not been confirmed in the distribution system for at least the last 35 years. Sample handling or collection errors are suspected causes of the original detections.

PROTOZOA

A number of cities and towns throughout the country, in years past, have experienced problems with giardia and/or cryptosporidium getting into the distribution systems. Most times, problems with these parasitic organisms in potable water have been associated with surface water sources. **The City is not aware of, nor has the State Department of Health or Spokane Regional Health District indicated an awareness of, cases where infections with these organisms were traced back to the City's water system**.

Please note that cryptosporidium and other water borne organisms can be spread in many ways. For further risk information go to the Centers for Disease Control and Prevention (CDC) at www.cdc.gov/parasites/crypto/gen_info/infect.html. People who become ill as a result of consuming giardia and/or cryptosporidium typically recover after suffering severe bouts of diarrhea. However, small children, people whose immune systems are compromised, or who are otherwise in poor health can die as a result of these infections. For further information concerning the potential health effects issues, access the websites at the CDC at www.cdc.gov/parasites/crypto/index.html (cryptosporidium) and www.cdc.gov/parasites/giardia/index.html (giardia) and the EPA website at www.epa.gov/safewater/consumer/pdf/crypto.pdf (Para ver información adicional, visite water.epa.gov/drink/agua/upload/crypto_spanish.pdf)

GENERAL INFORMATION

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable con alguien que lo entiende bien. (Para ver información adicional, visite al; www.epa.gov/espanol/ciudadanos.html)

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài liệu này.

Across the nation, 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 radioactive material and can pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include:

- Biological contaminants, such as viruses and bacteria, which 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 run-off, 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, storm water run-off, and residential uses.
- Organic chemicals, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water run-off and septic systems.
- Radioactive materials, 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, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food & Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protections for public health.

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 contacting the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791, or you can access additional information at EPA websites: water.epa.gov/drink/index.cfm or water.epa.gov/drink/info/index.cfm

HEALTH INFORMATION

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

Additional information concerning:

Radon: During 2014, the City conducted tests at Parkwater and Ray Street wells for Radon-222. The results were 441 pCi/L, and 443 pCi/L. The EPA has proposed a MCL of 300 pCi/L, which has not been finalized.

Radon is a radioactive gas that you can't see, taste, or smell and is a known carcinogen. Compared to radon entering the home through soil, radon entering the home through tap water will, in most cases, be a small source of radon in indoor air. Breathing air containing radon can lead to lung cancer and/or drinking water containing radon also may cause increased risk of stomach cancer. If

you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call EPA's Radon Hotline (866-730-GREEN) or access the EPA website at www.epa.gov/radon/hotlines.html.

Arsenic: The arsenic readings in 2014 at the Grace, and Hoffman wells were 2.55 ppb and 3.00 ppb respectively. The Maximum Contaminant Level (MCL) for Arsenic is 10 ppb.

City of Spokane drinking water currently meets EPA's revised drinking water standard for arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water. Information on arsenic in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm.

Lead: During 2012, the City tested 54 at-risk residences for lead. The single highest result was 15 ppb. This result for lead is equal to the 15 ppb Action Level for lead**.** The lead results, based on City in-home sampling, also continue to qualify our water system as having "Optimized Corrosion Control." Source water is analyzed for lead concurrent with the in-home testing. The maximum concentration in 2012 source water testing for lead was 0.35 ppb.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Spokane is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline, 1-800-426-4791 or at water.epa.gov/drink/info/lead/index.cfm

CITY OF SPOKANE'S SYSTEM

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie (SVRP) Aquifer - designated a "sole source" aquifer in 1978. The Spokane Aquifer (that portion of the SVRP aquifer lying within Washington State) and the Spokane River exchange water. The rates and locations of exchange are the subject of continued study.

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good "housekeeping" measures are not followed for all activity over and adjacent to the aquifer. In order to safeguard water quality, the City, in coordination with other stakeholders, is currently implementing a Wellhead Protection Program. This program endeavors to inform the public about the Spokane Valley-Rathdrum Prairie Aquifer, and about appropriate disposal mechanisms for dangerous and/or critical materials that are generated in the Aquifer Sensitive Area. The program seeks land use regulations to help protect drinking water wells from contamination.

For additional information regarding the City of Spokane's Drinking Water or related issues, you can call:

City of Spokane Water & Hydroelectric Services	509-625-7800
City of Spokane Environmental Programs	509-625-6570

The Mayor recommends Water and Hydroelectric Services policy and rates to the Spokane City Council.
The Council meets most Mondays at 6:00 p.m. in the Council Chambers at
Spokane City Hall (808 W. Spokane Falls Blvd., Spokane, WA).

Appendix I - Water Use Efficiency compliance data 18-Feb-2015

Distribution System Leakage (DSL)

	2014	2013	2012	2011	2010	2009	2008	2007	2006
Service Meter Reading-Single Family, gallons	9,024,016,000	8,481,889,000	8,340,082,788	8,004,190,202	8,317,983,390	9,649,430,384	8,624,299,376	8,992,947,286	8,998,900,409
Service Meter Reading-Multi Family, gallons	2,312,170,000	2,281,194,000	2,209,050,964	2,123,911,196	2,156,077,200	2,360,823,156	3,065,246,404	3,534,713,255	3,449,781,864
Service Meter Reading-Commercial/Industrial, gallons	4,020,022,000	3,934,823,000	3,810,799,262	3,712,856,606	3,896,950,147	4,217,716,655	5,565,693,716	6,218,000,969	6,260,652,288
Service Meter Reading-Government, gallons	1,481,666,000	1,412,515,000	1,450,574,304	1,340,906,695	1,325,244,765	1,643,114,508	1,587,638,976	2,061,287,117	2,059,728,405
Purchased, permit ***	1,128,395,000	646,646,000	5,349,696						
Emergency Interties, gallons	**	**	**	**	* *	* *	* *	* *	* *
Wholesale Amount Sold, gallons	56,198,736	79,169,816	231,569,580	165,106,788	108,846,716	95,993,084	75,146,324	222,581,612	159,655,364
Non-Revenue Accounted for Water, gallons (estimate) *	583,677,000	580,548,000	784,644,731	1,189,855,000	1,064,380,000	1,064,380,000	209,440,000	209,440,000	209,440,000
Total Authorized Consumption, gallons *	18,606,144,736	17,416,784,816	16,832,071,326	16,536,826,487	16,869,482,218	19,031,457,788	19,127,464,796	21,238,970,240	21,138,158,330
Total Authorized Consumption (gal. X1000) (AC) *	18,606,145	17,416,785	16,832,071	16,536,826	16,869,482	19,031,458	19,127,465	21,238,970	21,138,158
Total Production (gal. X1000) (TP)	22,638,600	21,203,902	21,022,982	20,702,520	20,608,800	22,402,716	21,222,058	23,066,258	23,735,049
Distribution System Loss (DSL), volume (gal. X1000)	4,032,455	3,787,117	4,190,911	4,165,694	3,739,318	3,371,258	2,094,593	1,827,288	2,596,891
Distribution System Loss (DSL), percent	17.8%	17.9%	19.9%	20.1%	18.1%	15.0%	9.9%	7.9%	10.9%

* Total Authorized Consumption includes Non-Revenue Accounted for Water, which is consistent with Water Use Efficiency Rule guidance (see definition at right). This is different from past practice in previous Water System Plans. The value for Non-Revenue Accounted for Water (estimated, non-metered) was reassessed in 2009 and again in 2012

WAC 246-290-010 Definitions. - "Authorized consumption" means the volume of metered and unmetered water used for municipal water supply purposes by consumers, the purveyor, and others authorized to do so by the purveyor, including, but not limited to, fire fighting and training, flushing of mains and sewers, street cleaning, and watering of parks and landscapes. These volumes may be billed or unbilled.

* * Emergency intertie volumes are combined with wholesale amount sold

*** Prior to 2012, this was included in non-revenue accounted for water. Water use by selected permit holders was monitored with hydrant meters in 2013 and the estimated use revised.

Method for calculating the Distribution System Loss (DSL)

Calculating Percent DSL

To calculate percent DSL, use the following equation:

Percent DSL = [(TP - AC) / (TP)] x 100

Where:

DSL = Percent (%) of distribution system loss

TP = Total water produced and purchased

AC = Authorized consumption

Calculating Volume DSL

To calculate volume DSL, use the following equation:

Volume DSL = TP - AC

Report volume DSL in millions of gallons or gallons

Total System Pumpage vs. Water Stewardship Strategic Plan Goals (source - City of Spokane Water Department)

WATER YEAR (Oct. through Sept.)	2014	2013	2012	2011	2010	2009	2008	2007	2006
					pumpage (x1,000 gallons)				
Total - Oct. (prev. yr.)through Mar.	6,397,435	6,178,688	6,910,801	6,475,952	6,778,277	6,618,666	6,670,191	7,161,742	6,884,687
Total - Apr. through Jun.	6,246,070	6,118,455	5,184,227	4,655,473	5,241,226	6,439,647	5,340,540	6,463,462	5,991,545
Total - Jul. through Sept.	9,632,114	8,850,530	9,164,570	9,329,077	8,938,048	9,202,243	9,277,452	9,936,735	10,451,223
Total - sum of seasonal totals	22,275,619	21,147,673	21,259,598	20,460,502	20,957,551	22,170,556	21,288,183	23,561,939	23,327,455
Goal - Oct. (prev. yr.) through Mar.	7,080,000	7,020,000	6,970,000	6,920,000	6,870,000	6,810,000	6,760,000	6,710,000	6,660,000
Goal - Apr. through Jun.	6,960,000	6,950,000	6,930,000	6,920,000	6,900,000	6,890,000	6,870,000	6,850,000	6,830,000
Goal - Jul. through Sept.	8,470,000	8,580,000	8,670,000	8,750,000	8,830,000	8,910,000	8,990,000	9,060,000	9,130,000
Population Estimate	234,154	231,194	228,250	225,387	222,538	219,726	216,947	214,207	211,500
Difference between Goal & Use as a percentage (positive value equal exceedance of goal)									
Result - Oct. (prev. yr.) through Mar.	-9.6%	-12.0%	-0.8%	-6.4%	-1.3%	-2.8%	-1.3%	6.7%	3.4%
Result - Apr. through Jun.	-10.3%	-12.0%	-25.2%	-32.7%	-24.0%	-7.8%	-22.3%	-5.6%	-12.3%
Result - Jul. through Sept.	13.7%	3.2%	5.7%	6.6%	1.2%	3.3%	3.2%	9.7%	14.5%

Single Family Residences, total volume billed (entire service area) (Source - Utility Billing)

year	billing period	gallons (total)	no. of service locations	gal per service location per day	% change of service locations (Aug. & Sept.)
2002	Jan. & Feb.	661,658,308	57,239	199	
2002	Aug. & Sept.	3,349,808,500	58,418	956	
2003	Jan. & Feb.	621,954,490	57,238	187	
2003	Aug. & Sept.	3,739,564,671	58,747	1061	0.56%
2004	Jan. & Feb.	718,183,965	57,978	214	
2004	Aug. & Sept.	3,297,148,096	59,259	927	0.87%
2005	Jan. & Feb.	604,612,888	58,403	178	
2005	Aug. & Sept.	2,940,177,049	59,914	818	1.11%
2006	Jan. & Feb.	709,090,289	59,231	206	
2006	Aug. & Sept.	3,392,957,337	60,883	929	1.62%
2007	Jan. & Feb.	610,421,856	59,881	176	
2007	Aug. & Sept.	3,610,435,980	61,459	979	0.95%
2008 *	Jan. & Feb.	605,478,234	60,435	170	
2008	Aug. & Sept.	3,158,038,235	61,581	855	0.20%
2009	Jan. & Feb.	655,566,618	60,683	186	
2009	Aug. & Sept.	3,183,286,496	61,585	861	0.01%
2010	Jan. & Feb.	597,449,771	60,608	170	
2010	Aug. & Sept.	2,809,319,289	61,810	758	0.37%
2011	Jan. & Feb.	622,672,473	60,492	177	
2011	Aug. & Sept.	2,693,465,720	61,671	728	-0.22%
2012	Jan. & Feb.	520,332,871	60,478	146	
2012	Aug. & Sept.	3,064,418,368	61,822	826	0.24%
2013	Jan. & Feb.	527,271,506	59,384	153	
2013	Aug. & Sept.	2,631,712,994	61,783	710	-0.06%
2014	Jan. & Feb.	602,851,273	61,403	170	
2014	Aug. & Sept.	2,799,952,511	62,042	752	0.42%
			Avg. percent change of service		0.50%

* Heavy winter weather during Feb. 2008 resulted in estimating north side accounts

Appendix II - Tests Run on City of Spokane Water 12-Jan-2015

FIELD TESTS
Chlorine, Total Residual
Conductivity
Hardness
pH
Temperature
Turbidity

RADIONUCLIDES
Alpha emitters (gross)
Radon 222
Radium 228

MICROBES
BACTERIA
Total Coliform - Before & After Treatment
Fecal Coliform - Before & After Treatment
Heterotrophic Plate Count - Raw water

GENERAL INORGANICS
Color
Conductivity
Hardness, Total
Total Dissolved Solids
Turbidity

INORGANIC IONS
Chloride
Cyanide
Fluoride
Nitrate Nitrogen
Nitrite Nitrogen
Phosphorus
Sulfate

INORGANIC METALS
Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Selenium
Silver
Sodium
Thallium
Zinc

VOLATILE ORGANICS
Benzene
benzene, 1,2,3-Trichloro-
benzene, 1,2,4-Trichloro-
benzene, 1,2,4-Trimethyl-
benzene, 1,3,5-Trimethyl-
benzene, Bromo-
benzene, Butyl-
benzene, Chloro-
benzene, Ethyl
benzene, Isopropyl-
benzene, m-Dichloro-
benzene, o-Dichloro-
benzene, p-Dichloro-
benzene, Propyl-
benzene, sec-Butyl-
benzene, tert-Butyl-
Butadiene, Hexachloro-
Chloride, Carbon Tetra-
Chloride, Methylene (aka methane, dichloro)
Chloride, Vinyl
ethane, 1,1,1,2-Tetrachloro-
ethane, 1,1,1-Trichloro-
ethane, 1,1,2,2-Tetrachloro-
ethane, 1,1,2-Trichloro-
ethane, 1,1-Dichloro-
ethane, 1,2-Dichloro-
ethane, Chloro-
ethene, 1,1-Dichloro-
ethene, cis-1,2-Dichloro-
ethene, Tetrachloro-
ethene, trans-1,2-Dichloro-
ethene, Trichloro-
methane, Bromo-
methane, Bromochloro-
methane, Chloro-
methane, Dibromo-
methane, Dichlorodifluoro-
methane, Trichlorofluoro- (Freon 11)
Naphthalene
propane, 1,2,3-Trichloro-
propane, 1,2-Dichloro-
propane, 1,3-Dichloro-
propane, 2,2-Dichloro-
propene, 1,1-Dichloro-
propene, cis-1,3-Dichloro-
propene, trans-1,3-Dichloro-
Styrene
Toluene
toluene, o-Chloro-
toluene, p-Chloro-
toluene, p-Isopropyl-
Xylene, m&p-
Xylene, o-
Xylene, total

Appendix II (continued)

GENERAL ORGANICS

ether, Methyl tert-Butyl (MtBE)

DISINFECTION BY-PRODUCTS

TRIHALOMETHANES

Chloroform
Bromoform
methane, Dibromochloro-
methane, Bromodichloro-
Total Trihalomethanes

FIVE HALOACETIC ACIDS (HAA5)

acetic Acid, Monochloro-
acetic Acid, Dichloro-
acetic Acid, Trichloro-
acetic Acid, Monobromo-
acetic Acid, Dibromo-

OTHER DISINFECTION BY-PRODUCTS

acetic Acid, Bromochloro-

SYNTHETIC ORGANICS

2-Chloronaphthalene
2-Methylnapthalene
4-bromophenyl phenyl ether
4-Chlorophenyl phenyl ether
5-Hydroxydicamba
Acenaphthene
Acenaphthylene
Acifluorfen
Adipate, Di-(2-ethylhexyl)
Alachlor
Aldicarb
Aldicarb Sulfone
Aldicarb Sulfoxide
Aldrin
Amtryne
Anthracene
Anthracene, Benz(a)-
Anthracene, Dibenz(a,h)-
Arochlor 1016
Arochlor 1221
Arochlor 1232
Arochlor 1242
Arochlor 1248
Arochlor 1254
Arochlor 1260
Atraton
Atrazine
Baygon
Benefin
Bentazon
benzene, Hexachloro-
benzoic acid, 3,5-Dichloro-
BHC (alpha)
BHC (beta)
BHC (delta)
Bromacil
Butachlor
Butylate
Carbaryl
Carboxin
Chloramben
Chlordane
Chlordane, alpha-
Chlordane, gamma-
Chlorpropham
Chrysene
Cyanazine
Cycloate
D, 2,4-
Dalapon
DB, 2,4-
DCPA (Dacthal)
DDD, 4,4-
DDE, 4,4-
DDT, 4,4-
Diazinon
Dibenzofuran
Dicamba
Dichlorprop
Dichlorvos
Dieldrin
Diesel (as straight alka chain)
Dimethoate
Dinoseb
Diphenylamine
Diquat
Disulfoton
Disulfoton sulfone
Disulfoton sulfoxide (A)
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endothall
Endrin
Endrin aldehyde
EPTC
Ethoprop
Ethylene Dibromide
Fenamiphos
Fenarimol
Fluoranthene
Fluoranthene, Benzo(b)
Fluoranthene, Benzo(k)
Fluorene
Fluridone
furan, 3-Hydroxycarbo-
furan, Carbo-
Glyphosate
Heptachlor
Heptachlor Epoxide
Hexachloroethane
Hexazinone
Isodrin
Isophorone
Isopropalin
Isosafrole
Lindane
Malathion
Merphos
Methiocarb
Methomyl
Methoxychlor
Methyl paraoxon
Methylparathion
Metolachlor
Metribuzin
Mevinphos
MGK-264
Molinate
N-Nitrosodi-N-propylamine
Napropamide
Nonachlor, cis-
Nonachlor, trans-
Norflurazon
Oxadiazon
Oxamyl
Oxyfluorfen
Pendamethalin
Pentachloronitrobenzene
pentadiene, Hexachlorocyclo-
Perylene, Benzo(g,h,i)
Phenanthrene
phenol, 2,4,6-Trichloro
phenol, 2,4-Dichloro
phenol, 4-Chloro-3-methyl
phenol, Pentachloro-
phenyls, Polychlorinated Bi- (PCB, total Arochlor)
phthalate, Butylbenzyl-
phthalate, Di-(2-Ethylhexyl)-
phthalate, Di-n-Butyl-
phthalate, Diethyl
phthalate, Dimethyl-
Picloram
Profuralin
Prometon
Propachlor
propane, Dibromochloro- (DBCP)
Pyrene
pyrene, Benzo a-
Pyrene, Indeno(1,2,3,c,d)
Safrole
Simazine
T, 2,4,5-
Terbacil
Terbuphos
Toxaphene
TP, 2,4,5-
Trifluralin
Vernolate

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water 4-Feb-2015

2014 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING

	SOURCE #	8	6	5	1	3	4	2
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
BACTERIA								
COLIFORM - RAW SOURCE *		8 / 0	8 / 0	4 / 0	5 / 0	12 / 0	10 / 0	27 / 0
Total Coliform -number of samples per year / number of positive detections		8 / 0	8 / 0	4 / 0	5 / 0	12 / 0	10 / 0	27 / 0
Fecal Coliform - number of samples per year / number of positive detections								
HETEROTROPHIC PLATE COUNT - RAW SOURCE *		8 / 1	8 / 1	4 / 22	5 / 0	12 / 1	10 / 1	21 / 10
number of samples per year / greatest result value								
* All operating wells are typically sampled once per month								
INORGANIC								
FULL LIST- ACCREDITED LAB (phase II & V included)	3rd Qtr - Jul		completed-see App. IV	completed-see App. IV				
NITRATE	1st Qtr - Jan						3.15	
	2nd Qtr - April						3.07	
	3rd Qtr - Jul	0.9	0.683	1.24	0.80	1.55	2.82	1.37
	4th Qtr - Oct						3.23	
NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan						3.42	
	2nd Qtr - April						3.08	
	3rd Qtr - Jul	0.93	0.72	1.38	0.86	1.68	3.17	1.58
	4th Qtr - Oct						3.54	
ORGANIC								
VOLATILES	1st Qtr - Jan	no detections						
(including TRIHALOMETHANES)	2nd Qtr - April							
	3rd Qtr - Jul				no detections			
	4th Qtr - Oct							
SYNTHETIC ORGANICS (515.1, 525.2, 531.1)	2nd Qtr - April							
	3rd Qtr - Jul	no detections	no detections	no detections				
	4th Qtr - Oct	no detections						
	4th Qtr - Dec		no detections					
RADIOACTIVE CONTAMINANTS								
Radium 228 - pCi/L,	2nd Qtr - April					0.52	1.04	
Gross Alpha - pCi/L	2nd Qtr - April					2.10	<1	
Radon - pCi/L	2nd Qtr - April					441	443	

UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.

CITY OF SPOKANE 18-Feb-2015

DRINKING WATER INORGANICS SUMMARY

MOST RECENT WELL STATION MONITORING ANALYTICAL RESULTS

ACCREDITED LABORATORIES

								Maximum Contaminant Levels		CURRENT DATA SUMMARY			
WELL STATION	CENTRAL	ELECTRIC	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	MCL's**	Goals MCLG's	MEAN	MAX	MIN	COUNT
SAMPLING DATE	30-Jul-2013	30-Jul-2013	29-Jul-2014	29-Jul-2014	31-Jul-2012	31-Jul-2012	31-Jul-2012						
LABORATORY	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)						
ALKALINITY	not tested	not tested	not tested	not tested	90	147	155	unregulated		131	155	90	3
HARDNESS (as CaCO3) #	131	131	96	136	97	163	171	unregulated		132	171	96	7
CONDUCTIVITY (µmos/cm)	256	284	214	305	207	335	383	700 t		283	383	207	7
TURBIDITY (NTU)	< 0.100	< 0.100	< 0.1	< 0.1	< 0.100	< 0.100	< 0.100	1 t			< 0.1	< 0.1	7
COLOR (color units)	< 5.00	< 5.00	< 5	< 5	< 5.00	< 5.00	< 5.00	15 s			< 5.00	< 5.00	7
CHLORIDE	3.67	3.91	3.66	5.24	3.67	5.59	12.8	250 s		5.51	12.8	3.66	7
TOT. DISSOLVED SOLIDS	140	148	136	167	119	201	220	500 s		162	220	119	7
MAGNESIUM	14.1	14.0	8.3	15.1	8.74	17.6	16.3	unregulated		13.4	17.6	8.3	7
CALCIUM	27.1	31.8	23	29	23.9	35.9	49.4	unregulated		31.4	49.4	23	7
ORTHO-PHOSPHATE	0.02	< 0.01	< 0.01	0.02	< 0.01	< 0.01	0.02	unregulated		0.02	0.02	< 0.010	7
AMMONIA	< 0.030	< 0.030	not tested	not tested	< 0.05	< 0.05	< 0.05	unregulated			< 0.05	< 0.030	5
CYANIDE	< 0.0100	< 0.0100	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.2	0.2		< 0.0100	< 0.0100	7
FLUORIDE	< 0.5	< 0.5	< 0.01	< 0.01	< 0.1	< 0.1	< 0.1	2 s	4		< 0.5	< 0.01	7
NITRATE (NO3-N)	0.87	1.36	0.68	1.24	0.8	1.35	2.51	10	10	1.26	2.51	0.68	7
NITRITE (NO2-N)	< 0.050	< 0.050	< 0.01	< 0.01	< 0.1	< 0.1	< 0.1	1	1		< 0.1	< 0.01	7
SULPHATE	11.5	11	6.68	11.5	7.58	15.1	13.1	250 s	400	10.9	15.1	6.7	7
ALUMINUM	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01	0.05 - 0.2 s			< 0.080	< 0.01	7
ANTIMONY	< 0.00300	< 0.00300	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.006	0.006		< 0.00300	< 0.001	7
ARSENIC	0.0035	0.00475	0.00255	0.003	0.00288	0.00326	0.00458	0.010	0	0.0035	0.00475	0.00255	7
BARIUM	0.0232	0.0201	0.0164	0.0255	0.0168	0.0277	0.0472	2	2	0.0253	0.0472	0.0164	7
BERYLLIUM	< 0.000800	< 0.000800	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.004	0.004		< 0.0008	< 0.0003	7
CADMIUM	< 0.00200	< 0.00200	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.005	0.005		< 0.001	< 0.000200	7
CHROMIUM	< 0.0060	< 0.0060	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.1	0.1		< 0.0060	< 0.001	7
COPPER	0.0083	< 0.010	0.00445	0.00458	0.00298	0.00058	0.000481	TT	1.3	0.0036	0.0083	0.000481	7
IRON	< 0.060	< 0.060	< 0.01	< 0.01	0.019	< 0.01	< 0.01	0.3 s		0.0190	0.019	< 0.01	7
LEAD	< 0.00100	< 0.00100	< 0.00100	< 0.00100	0.00013	0.00003	0.00035	TT	0	0.00017	0.00035	0.00003	7
MANGANESE	< 0.01	< 0.01	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	0.05 s			< 0.01	< 0.001	7
MERCURY	0.0002	0.00022	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.002	0.002	0.0002	0.00022	< 0.0001	7
NICKEL	< 0.005	0.00133	< 0.001	0.00114	< 0.001	< 0.001	< 0.001	0.1 * * *	0.1 * * *	0.00124	0.00133	< 0.001	7
SELENIUM	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.05	0.05		< 0.002	< 0.001	7
SILVER	< 0.1	< 0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.1 s			< 0.1	< 0.001	7
SODIUM	3.11	3.84	2.48	3.87	2.57	3.94	7.35	unregulated		3.9	7.35	2.48	7
THALLIUM	< 0.00100	< 0.00100	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.0005		< 0.00100	< 0.001	7
ZINC	0.0283	0.00537	0.0116	0.0156	0.0125	0.012	0.0153	5 s		0.01438	0.0283	0.00537	7

RESULTS ARE IN mg/L EXCEPT WHERE OTHERWISE NOTED

* TT = Treatment Technique; s = Secondary MCL; t = State only MCL

* * Aluminum is a secondary regulated contaminant

* * * The MCL and MCLG for Nickel were remanded on February 9, 1995, monitoring requirements still in effect

divide by 17.1 to convert to grains per gallon

Appendix V - Distribution System Disinfection By Products

CITY OF SPOKANE 4-Feb-2015

Disinfection By Products TriHaloMethanes (THMs)

2013	Sample Date	Location	Chloroform	Bromodichloromethane	Chlorodibromomethane	Bromoform	Total THMs	LRAA (locational running annual average)
First Quarter (Q1)	1/17/2013	Strong Road	< 0.25	0.62	0.93	< 0.50	1.55	
	1/17/2013	Cedar Hills	< 0.25	0.59	0.95	< 0.50	1.54	
	1/17/2013	Mallen Hill	< 0.25	0.55	0.81	< 0.50	1.36	0.79
	1/17/2013	BPA Easement	0.55	1.12	1.35	< 0.50	3.02	1.82
	1/17/2013	Eagle Ridge Two	0.42	0.76	1.23	0.52	2.93	2.16
	1/17/2013	Southview	0.39	0.92	1.58	0.65	3.54	3.55
Second Quarter (Q2)	4/4/2013	Strong Road	0.42	0.9	1.15	< 0.50	2.47	2.69
	4/4/2013	Cedar Hills	0.29	0.59	0.86	< 0.50	1.74	1.63
	4/4/2013	Mallen Hill	0.29	0.66	0.91	< 0.50	1.86	1.1
	4/4/2013	BPA Easement	0.58	1.00	1.19	0.50	3.27	2.16
	4/4/2013	Eagle Ridge Two	0.44	0.81	1.03	< 0.50	2.38	2.12
	4/4/2013	Southview	0.41	0.95	1.21	0.58	3.15	3.14
Third Quarter (Q3)	7/18/2013	Strong Road	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	1.52
	7/18/2013	Cedar Hills	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	1.24
	7/18/2013	Mallen Hill	< 0.25	< 0.5	0.54	< 0.5	0.54	1.23
	7/18/2013	BPA Easement	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	2.16
	7/18/2013	Eagle Ridge Two	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	2.35
	7/18/2013	Southview	0.26	0.76	1.40	0.85	3.27	3.26
Fourth Quarter (Q4)	10/17/2013	Strong Road	0.39	0.70	1.19	< 0.5	3.19	1.80
	10/17/2013	Cedar Hills	0.28	< 0.5	0.66	0.51	1.57	1.21
	10/17/2013	Mallen Hill	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	0.94
	10/17/2013	BPA Easement	0.27	< 0.5	0.62	< 0.5	0.89	1.80
	10/17/2013	Eagle Ridge Two	0.37	0.73	1.02	< 0.5	2.95	2.07
	10/17/2013	Southview	0.46	0.98	1.52	0.78	4.26	3.56
2014								
First Quarter (Q1)	1/16/2014	Eagle Ridge Two	0.49	0.76	1.02	< .5	2.27	1.90
	1/16/2014	Southview	0.58	1.11	1.43	0.6	3.72	3.60
Second Quarter (Q2)	4/16/2014	Eagle Ridge Two	0.43	0.76	0.87	< .5	2.06	1.82
	4/16/2014	Southview	0.47	1.00	1.22	0.69	3.38	3.66
Third Quarter (Q3)	7/17/2014	Eagle Ridge Two	< 0.25	< .5	< .5	< .5	< 0.5	1.82
	7/17/2014	Southview	0.36	0.9	1.36	1.03	3.65	3.75
Fourth Quarter (Q4)	10/16/2014	Eagle Ridge Two	< 0.25	< .5	< .5	< .5	< 0.5	1.08
	10/16/2014	Southview	0.37	0.99	2.01	1.65	5.02	3.94

All values are reported in µg/L

First quarter LRAA 2014 would include Total THM for second, third and fourth quarters of 2013 and first quarter 2014.

CONTAMINANTS FOUND IN DRINKING WATER TESTING IN 2014

CITY OF SPOKANE, WATER & HYDROELECTRIC SERVICES

Data presented, if not from 2014, is from the most recent testing done in accordance with the regulations.

SOURCE WATER TESTING CONTAMINANT	Units	Highest Average	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Arsenic	µg/L	**(a)**	**3.0**	**2.6**	**2**	**2**	**10**	**0**	**Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes**
Nitrate	mg/L	**(a)**	**3.23**	**0.68**	**10**	**10**	**10**	**10**	**Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits**
Gross Alpha	pCi/L	**(a)**	**2.1**	**< 1.0**	**1**	**2**	**15**	**0**	**Erosion of natural deposits**
Combined Radium 226 and 228 (b)	pCi/L	**(a)**	**2.1**	**1.54**	**2**	**2**	**5**	**0**	**Erosion of natural deposits**
DISTRIBUTION SYSTEM TESTING CONTAMINANT	Units	LRAA	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Disinfection Byproducts - TTHMs [Total Trihalomethanes]	µg/L	**3.94**	**5.02**	**2.06**	**6**	**8**	**80**	**0**	**By-product of drinking water chlorination**
		date sampled	**90th Percentile (d)**	**Number of Sites exceeding AL**	**Number Positive Samples**	**Number of Samples**	**MCL**	**MCLG**	
Copper (c)	mg/L	**Aug-12**	**0.09**	**0**	**54**	**54**	**TT, AL= 1.3**	**1.3**	**Corrosion of household plumbing systems; Erosion of natural deposits: Leaching from wood preservatives**
Lead (c)	µg/L	**Aug-12**	**3.80**	**0**	**54**	**54**	**TT, AL= 15**	**0**	**Corrosion of household plumbing systems; Erosion of natural deposits**

Notes

(a) Compliance with MCL is determined by single sample results, so no average is used.

(b) Gross Alpha results were used in lieu of Radium 226, one half of the detection limit of 1.0 was used for the ND

(c) Faucet samples were from 'at risk' homes (those with lead service lines and those with copper pipes with lead solder joints).

(d) 90% of at-risk homes had this concentration, or less, of lead/copper.

Key to Table

AL = Action Level = The concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow.

LRAA = Locational Running Annual Average

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.

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.

pCi/L = picocuries per liter (a measure of radioactivity)

µg/L = micrograms per Liter = parts per billion

mg/L =milligrams per Liter = parts per million

TT = Treatment Technique = A required process intended to reduce the level of a contaminant in drinking water.

ND = None Detected

< less than

Appendix 3.2.2 Water Quality Consumer Confidence Report (CCR)

More Than 100 Years of Water Stewardship

CITY OF SPOKANE WATER DEPARTMENT

2014 WATER QUALITY REPORT

An Annual Report on the Source and Contents of Spokane's Water

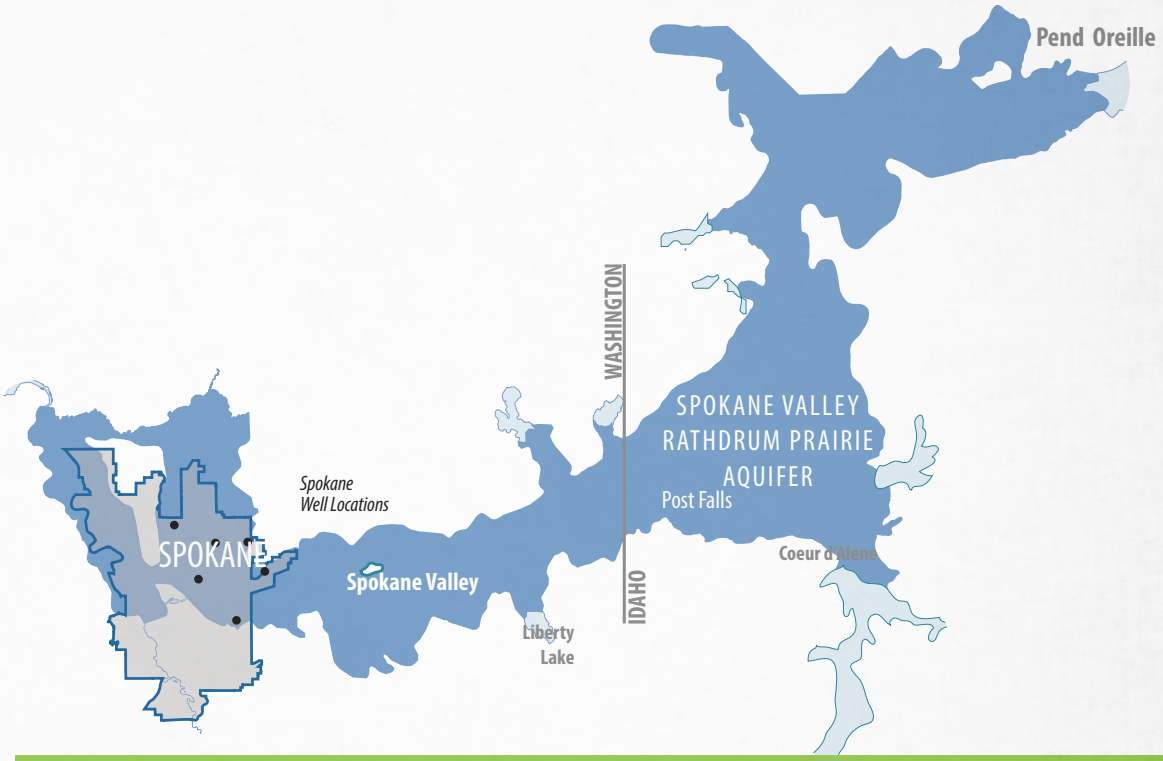
Northwest view of Upriver Dam and Hydroelectric Facility, 1957

Your Water System:

PURE WATER FROM THE GROUND

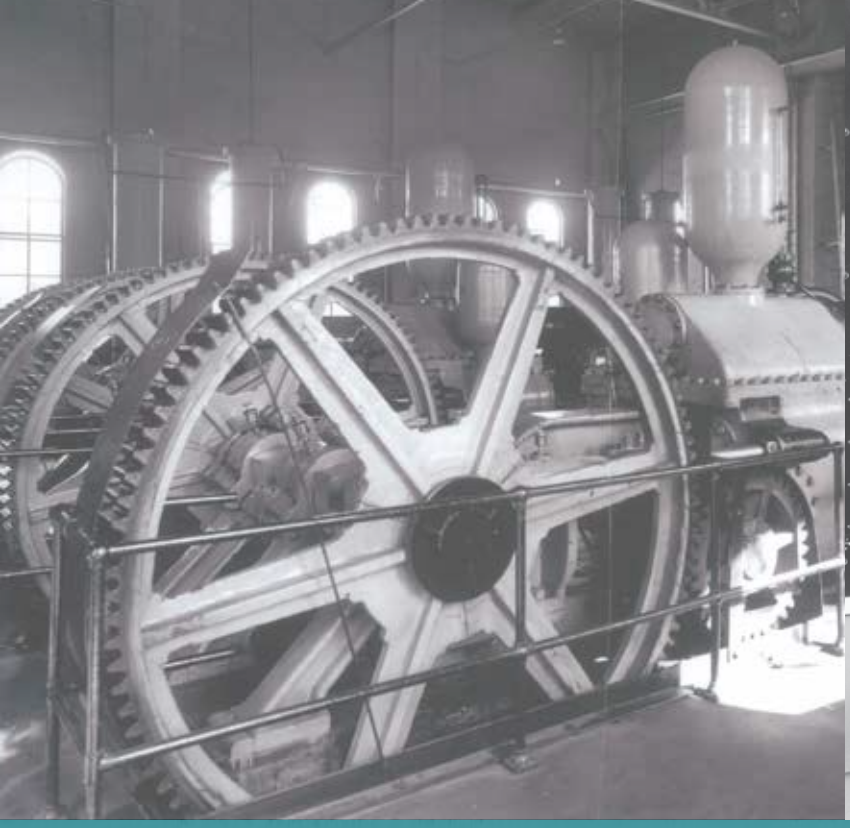
The Spokane Valley Rathdrum Prairie Aquifer was created by ice age floods that deposited a thick layer of boulders and gravel. This rock and gravel layer is now filled with water and extends 135 square miles from Pend Oreille Lake in Idaho to just past the western edge of the City of Spokane. It ranges in surface depth from a few feet in some areas to as much as 500 feet in others.

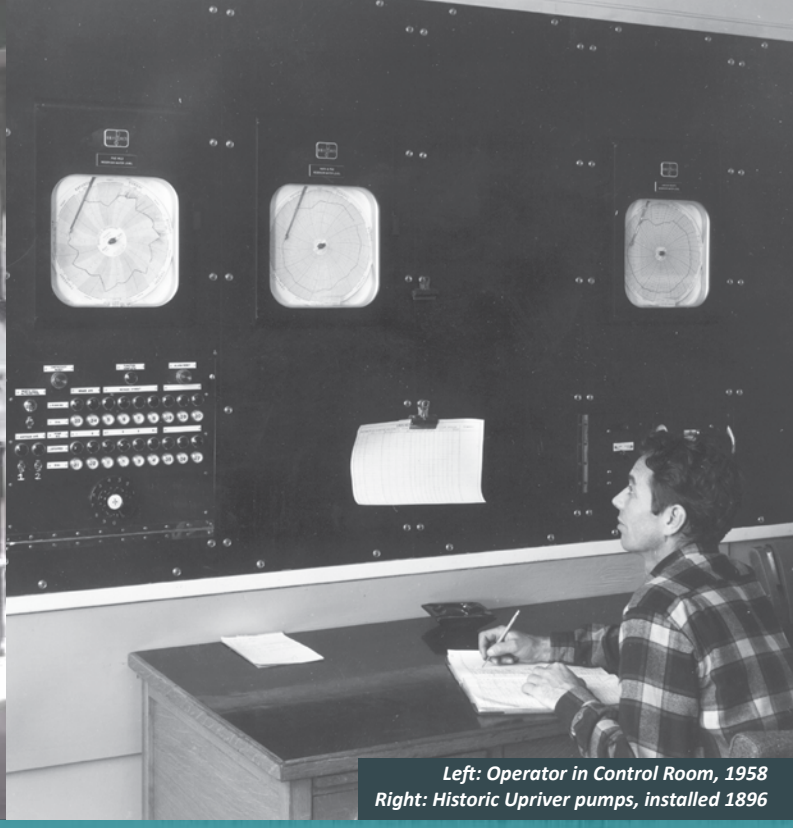
We are working and living over our drinking water source. Since our water is beneath us, it is important that we follow good stewardship practices and not pour anything on the ground or in storm drains that you would not want to drink.



COME SEE THE UPRIVER DAM AND WELL COMPLEX

The City of Spokane gives tours to school and civic groups. Areas of interest include: the aquifer, hydroelectric power, the water control center, the water quality lab, and how water gets from the well to your house. If you are interested in a tour, please call the dam at 742-8141 and schedule a time for your visit. All interested groups please call ahead and provide supervision for small children. Give us a call!

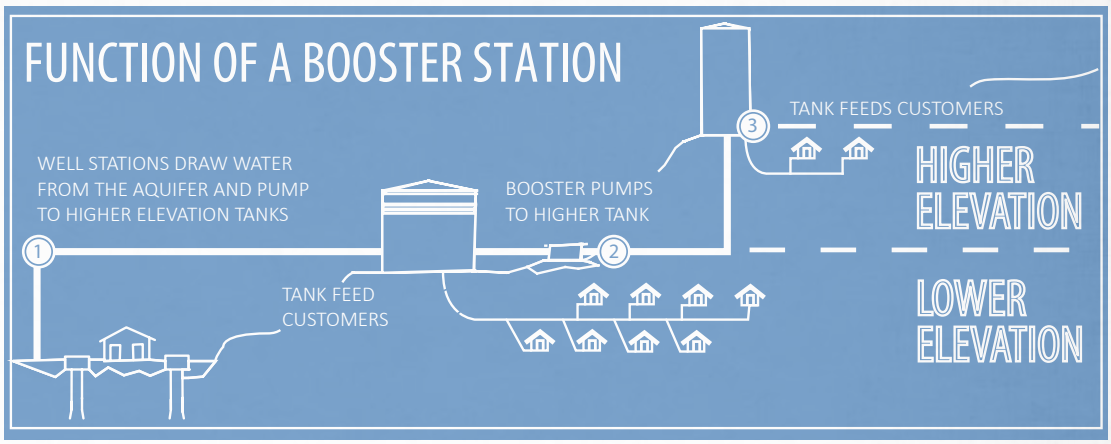




Left: Operator in Control Room, 1958
Right: Historic Upriver pumps, installed 1896

From Source to Tap

1 The City of Spokane has seven wells located throughout the City from which it draws water directly from the aquifer. The water from the aquifer is pure enough to be pumped directly from the ground without any treatment. We simply add chlorine to the water to ensure that purity is maintained throughout the distribution system.



2 To pump the water up to storage tanks and reservoirs, booster stations are located throughout the city. These stations contain large pumps and motors to help move the well water from lower elevations to the tanks at higher elevations within the distribution system. Water at a higher elevation in a tank provides water pressure to the homes below it.

3 More than 1,000 miles of water mains are located throughout the City. Water reaches your house directly from service lines running off smaller mains. To meet customers' needs, the City has over 100 million gallons of water stored in reservoirs. The amount of water stored in a given tank depends on both the water demand for that area as well as the fire protection requirements.

4 Throughout the year, hundreds of water quality tests are performed, water mains, valves and meters are repaired and replaced, and water department personnel continually search for leaks and problems to ensure you the best drinking water possible. Highly trained operators monitor the distribution system from a 24-hour control center. Ultimately, the water system is extensive and requires thousands of man-hours to maintain and operate.

WATER EFFICIENCY:

2014 Water Use Goals

The City of Spokane has taken an active role in area-wide partnerships to safeguard the quality and quantity of our water supply and additional steps to conserve water through educational programs, metering water use, repairing leaking pipes, and implementing a conservation-oriented rate structure.

In April 2014 new Water Use Efficiency Goals were adopted to measure metered usage. The new goals are a 0.5% annual residential indoor reduction and a 2% annual reduction in outdoor irrigation for residential, commercial/industrial, and government use.

Water Use Efficiency Goals - adopted April 2014

Metered Consumption: Beginning April 2014		
	Total (gal/day)	Goal (gal/day)
Indoor Residential Use	122	122
Outdoor Residential Use	513	516
Outdoor Commercial/Industrial Use	4,325	3,923
Outdoor Government Use	4,759	4,921

Water Use Efficiency Goals: 2006 - April 2014

2014 Pumpage (x1,000 Gallons)			
Period	Total	Goal	Result
October 2013 - March 2014(winter)	6,397,435	7,080,000	-9.6%
April - June (spring)	6,246,070	6,960,000	-10.3%
July through September (summer)	9,636,735	8,470,000	13.7%

Sum of seasonal totals: 22,275,619

Water Department staff installing a water main, early 1900s

THE KEY TO A SUSTAINABLE FUTURE

2014 Water Use Goal Results

The City achieved its previous conservation goals (effective through April of 2014) for the winter and spring periods, however it did not meet summer timeframe goals.
The newly adopted Goals for 2014 were achieved for indoor residential use, outdoor residential use and outdoor government use; but not for outdoor commercial/industrial use.
Help us meet this year's goals this summer, and save money on your water bill at the same time, by continuing to find ways to use less.

Distrubution System Loss

Designated Water Department personnel identify leaks using state-of-the-art, sonic leak detection equipment. These crews have been instrumental in reducing the amount of unaccounted water throughout the distribution system. An aggresive leak detection program is a key element in the Water Department's conservation efforts.
To comply with the Water Use Efficiency Rule standard for Distribution System Loss, a water system must have a 3-year running average of less than 10%. The DSL for the City of Spokane Water System for 2014 is 17.8% and the three year average is 18.5 %, which means the City has not met the DSL standard.

2014 Distribution System Loss	
Total Water-Produced & Purchased, gallons	22.6 billion
DSL, percent	17.8 %
DSL, volume, gallons	4 billion

The DSL is calclulated using the following method:
DSL = [(TP - AC) / (TP)] x 100

Where
Percent of Distribution System Leakage ***(DSL)***
Total Water Produced and Purchased ***(TP)***
Authorized Consumption ***(AC)***

Conservation Tips

Preventing leaks is one way water is conserved; your efforts are another. As temperatures rise in the summer, so does our outdoor water use, mostly on lawns and landscapes. As much as 50% of the water we use outdoors is wasted from inefficient watering methods and systems. Watering your lawn in the early morning, setting a timer to remind you to turn off sprinklers, and leaving grass longer are a few easy ways to save water this summer.

POTENTIAL SOURCES OF WATER CONTAMINATION

All Drinking Water May Contain Contaminants

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 land or through the ground, it dissolves naturally occurring minerals and radioactive material, and can pick up substances from the presence of animals or from the presence of human activity.

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

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations which limit the amount of certain contaminants in the water provided by public water systems. U.S. Food and Drug Administration regulations establish the limits for contaminants in bottled water, which must provide the same protection for public health.

SPECIAL NOTICE

For the elderly, infants, cancer patients, people with HIV/AIDS, or other immune problems

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, transplant recipients, persons with HIV/AIDS or other immune disorders, some elderly and infants can be particularly at risk for infection. These people should seek advice from their health care providers. The US EPA - Center for Disease Control guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline **1-800-426-4791**.

POTENTIAL CONTAMINANTS

CONTAMINANT	TYPE	SOURCES
Microbiological	Viruses and Bacteria	Sewage treatment plants, septic waste, agricultural, and livestock runoff
Inorganic Chemical	Salts and Metals	Naturally-occuring or from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming
Organic Chemical	Pesticides and Herbicides	Residential and agricultural use, urban storm water runoff
	Synthetic and Volatile	Byproducts of industrial processes and petroleum production, gas stations, urban storm water runoff, and septic systems
Radioactive	Natural and Man Made Deposits	Mining, gas, and oil production, naturally occuring

CONTAMINANTS FOUND IN DRINKING WATER TESTING IN 2014

Source Water Testing

Contaminant	Units	MCLG	MCL	Average	Range	Possible Source
Arsenic	mg/L	0	10	(a)	2.6 to 3.0	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Nitrate	mg/L	10	10	(a)	0.68 to 3.23	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Combined Radium - (Radium 226 +228) (b)	pCi/L	0	5	(a)	1.54 to 2.1	Decay of natural and man-made deposits
Gross Alpha emitters	pCi/L	0	15	(a)	< 1.0 to 2.1	Erosion of natural deposits

End of Pipe Testing

Contaminant	Units	MCLG	MCL	90th Percentile	Number of Sites Exceeding AL	Possible Source
Copper (c) - tested Summer 2012	ppm	1.3	TT,AL= 1.3	0.09 (d)	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (c) - tested Summer 2012	ppb	0	TT,AL= 15	3.80 (d)	0	Corrosion of household plumbing systems; Erosion of natural deposits

Contaminant	Units	MCLG	MCL	LRAA	Range	Possible Source
Total Trihalomethanes	ppb	0	80	3.94	2.06-5.02	By-products of drinking water chlorination

A Word about Some Specific Contaminants

Radon

Radon is a naturally occurring radioactive gas that is common in the Spokane area. During 2014, the City conducted tests from two source wells for Radon-222. The single highest result was 443pCi/L and the lowest was 441pCi/L. Exposure to excessive amounts of radon may increase cancer risk. Compared to radon entering the home through soil, radon entering the home through tap water would, in most cases, typically be 1–2 % of the radon in indoor air. For local information concerning radon in your home, see the Washington Dept. of Health Radon Outreach webpage (www.doh.wa.gov/CommunityandEnvironment/Contaminants/Radon.aspx) or call EPA's Radon Hotline (800-SOS-RADON).

Lead

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

Definitions

AL: *Action Level* - The concentration of a contaminant which, if exceeded, triggers treatment or other
requirements which a water system must follow.
LRAA: *Locational Running Annual Average*
MCL: *Maximum Contaminant Level* - The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLG as feasible using the best available treatment technology.
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.
ppb: same as ug/L, micrograms per liter, and parts per billion
ppm: same as mg/L, milligrams per liter, and parts per million
TT: *Treatment Technique* - A required process intended to reduce the level of a contaminant in drinking water.
pCi/L: Picocuries per liter (a measure of radioactivity).
ND: *None Detected*

Notes

(a) Compliance with MCL is determined by single sample results, so no average is used
(b) Gross Alpha results were used in lieu of Radium 226, one half of the detection limit of 1.0 was used for the ND.
(c) Faucet samples were from 'at risk' homes (those with lead service lines and those with copper pipes with lead solder joints).
d) 90% of at risk homes had this concentration or less of lead/copper

Save Money on Your Monthly Utility Bill!

The City of Spokane strives to provide excellent utility services at an affordable price. To assist our customers with budgeting, the City Council approved three years of utility rates, limiting annual increases to average inflation of 2.9% for years 2015 through 2017.

Additionally, in November 2014, the City Council adopted a new wastewater bill discount for customers who use less water. Under the credit program, which began in January 2015, the lowest 20 percent of indoor water users receive credits totaling $60 a year.

The lowest 20 percent of indoor water users is determined annually based on water use during the winter when most water use is for indoor purposes and ultimately reaches the City's Riverside Park Water Reclamation Facility. Credits for 2015 are based on 2014 winter water usage numbers.

Although the credit is designed primarily to introduce equity in the City's wastewater rate system and lower operating costs for the City's wastewater utility, it also helps the City achieve its water use efficiency goals, especially the goal for lower residential indoor water use.

YOUR PARTICIPATION IS WELCOME

The Mayor recommends Water Department policy and rates to the Spokane City Council. The Council meets every Monday, excluding holidays, at 6:00 pm in the Council Chambers at City Hall (808 W Spokane Falls Blvd., Spokane, WA).

City of Spokane Water Department
(509) 625-7800 (24 Hours a Day)
www.spokanewater.org

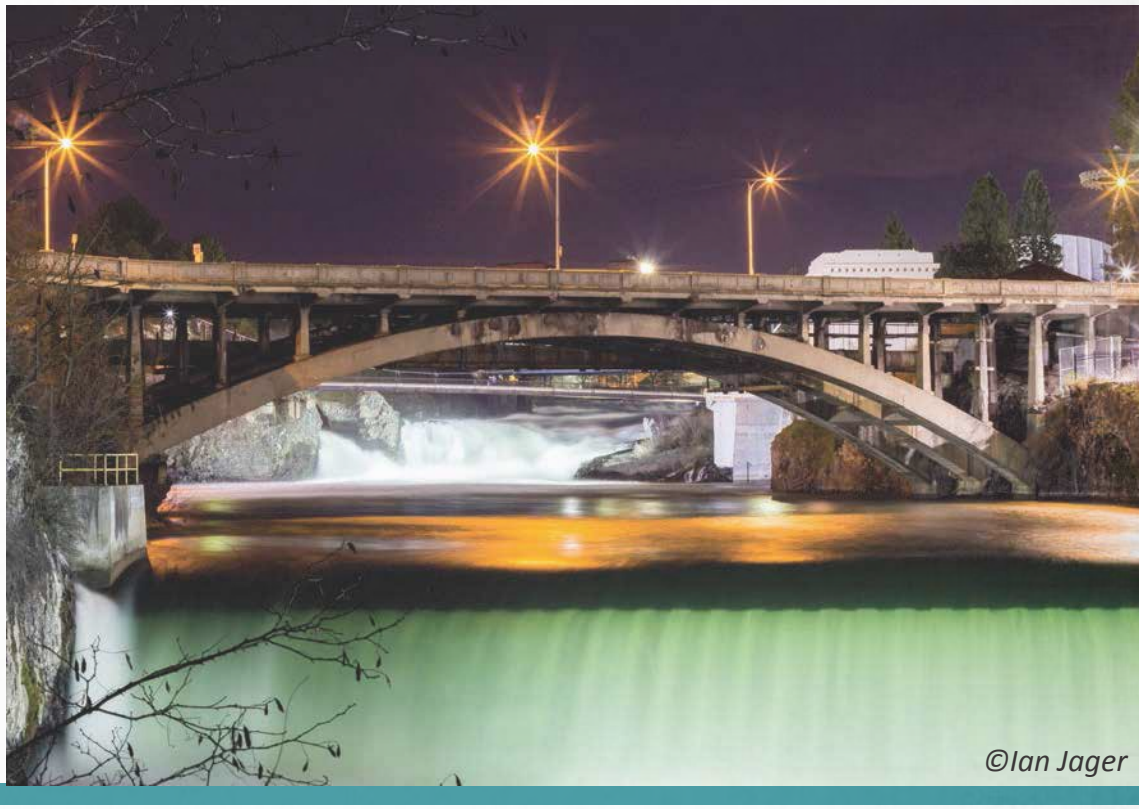
City of Spokane
Environmental Programs
(509) 625-6570

Department of Ecology
Eastern Regional Office
(509) 329-3400

Spokane Regional Health District
(509) 324-1560

Spokane County
Water Resources (Division of Utilities)
(509) 477-3604

Office of Drinking Water
Washington Department of Health
Eastern Regional Office
(509) 329-210



©Ian Jager

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable con alguien que lo entiende bien. Para ver información adicional, visite al; http://www.epa.gov/safewater/agua.html.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài liệu này.

Printed on recycled paper

Exhibit 3.8.1 Letter; SCFD

Spokane
FIRE DEPARTMENT

CITY OF SPOKANE

ROBERT S. WILLIAMS
FIRE CHIEF

January 9, 2007

Chris Peterschmidt, P.E.
Water Systems Engineer
City of Spokane Water Department
914 N Foothills Dr.
Spokane, WA 99207

Dear Mr. Perterschmidt,

I understand that you and our Fire Protection Engineer Dave Kokot discussed the practice of "nesting" Standby Storage (SB) and Fire Suppression Storage (FSS) in determining adequate water supply system capacity for the City of Spokane.

The City of Spokane Fire Department understands and does not prohibit the City of Spokane Water Department's practice of Consolidation (Nesting) of Standby Storage and Fire Suppression Storage in the design and operation of their water storage facilities, as adequate fire suppression water supply is available.

Please contact me if further information is required.

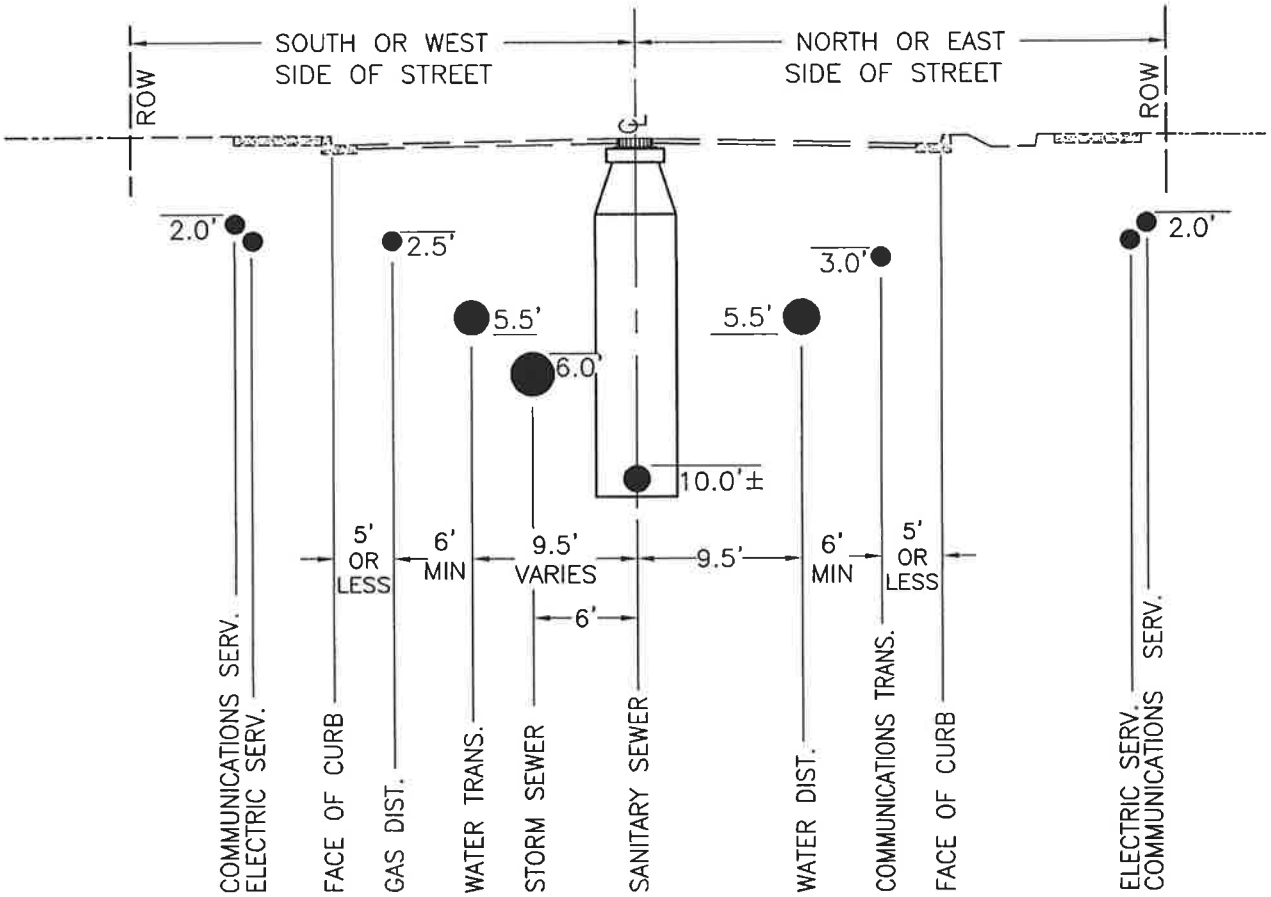
Sincerely,

Lisa Jones

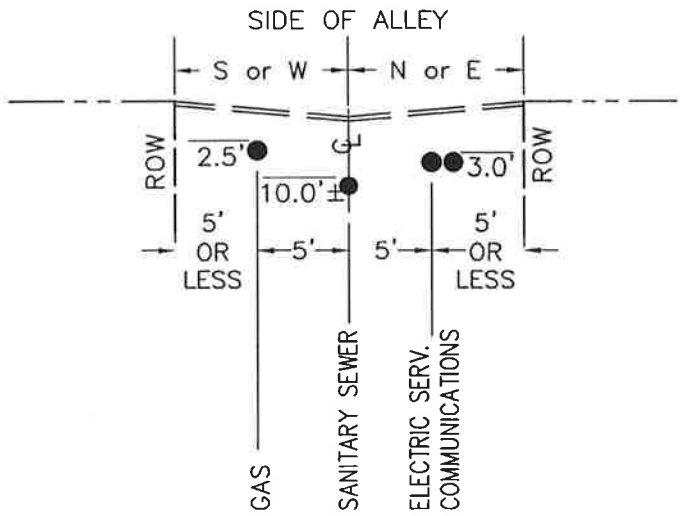
Lisa Jones, Fire Marshal
Spokane Fire Department
(509) 625-7040

EXHIBIT 3.8.1

Exhibit 3.9.1 COS Standard Plan W-112



TYPICAL STREET



TYPICAL ALLEY

NOTES:

1. LOCATIONS ARE STANDARD FOR UNDERGROUND INSTALLATIONS & VARIATION SHALL REQUIRE PRE-APPROVAL BY THE CITY ENGINEER.
2. ALL LOCATIONS & DEPTHS OF EXISTING UTILITIES SHALL BE VERIFIED BY RESPECTIVE OWNERS PRIOR TO NEW INSTALLATIONS.

CALL BEFORE YOU DIG 456-8000

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — TOM L. ARNOLD, P.E.

PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

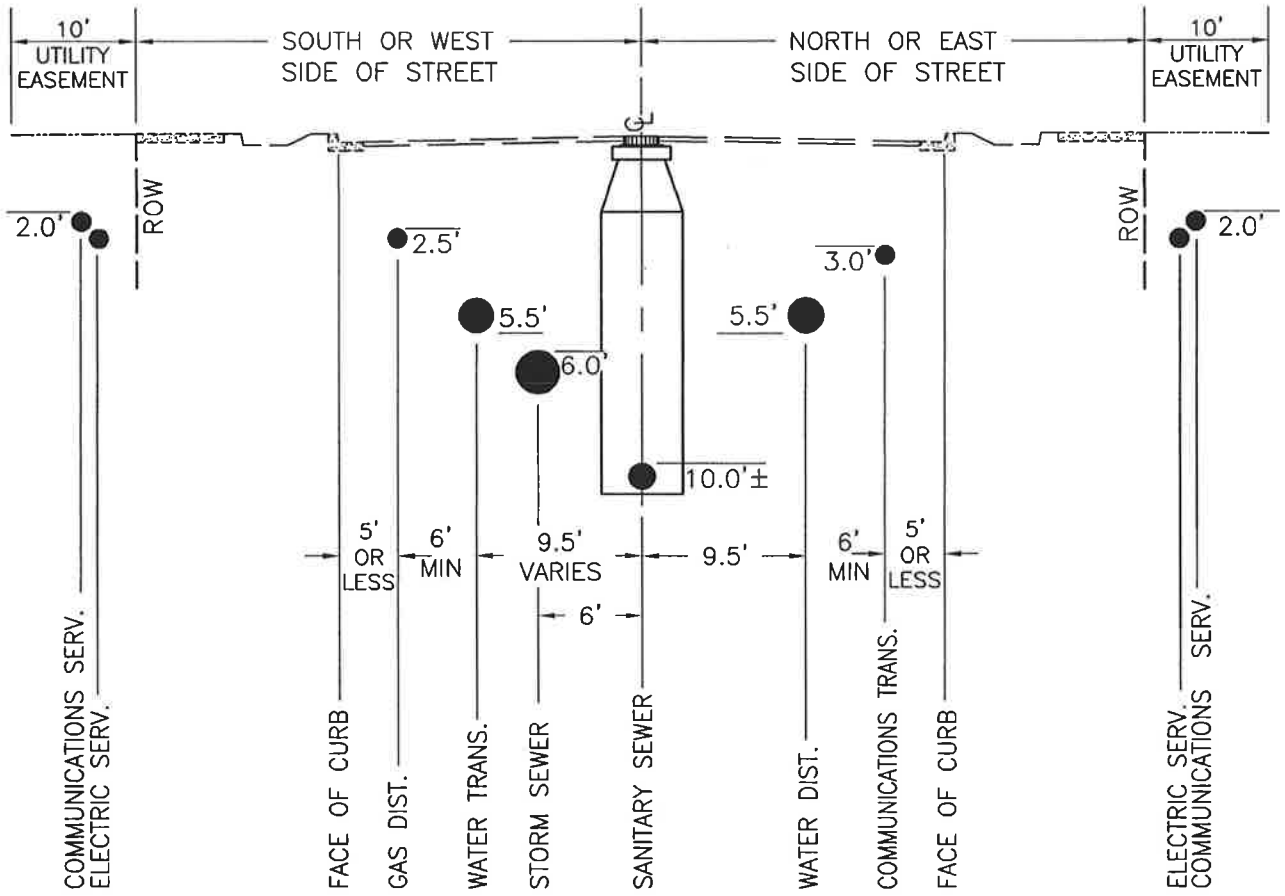
ADOPTED: 02/1986
REVISED: 05/2007
SUPERSEDES: W-109A,12/98
CHECKED BY: JAG
SCALE: NTS
DWG/REV. BY: RLB/SRM

UNDERGROUND UTILITY LOCATION
FOR EXISTING STREETS

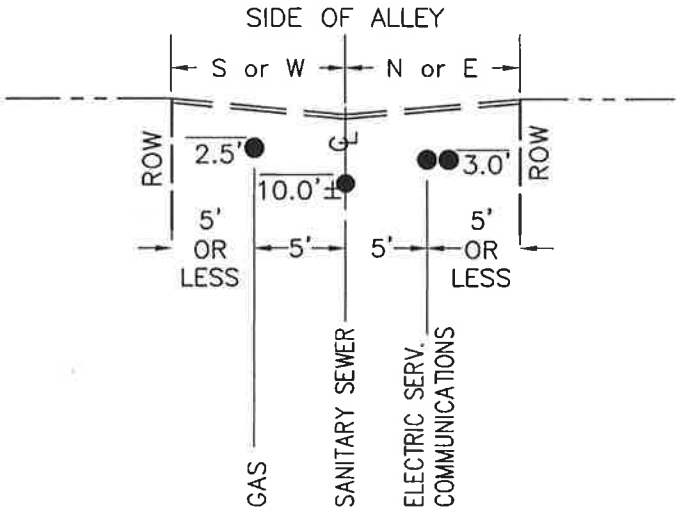
SPOKANE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. W-112



TYPICAL STREET



TYPICAL ALLEY

NOTES:

1. LOCATIONS ARE STANDARD FOR UNDERGROUND INSTALLATIONS & VARIATION SHALL REQUIRE PRE-APPROVAL BY THE CITY ENGINEER.
2. ALL LOCATIONS & DEPTHS OF EXISTING UTILITIES SHALL BE VERIFIED BY RESPECTIVE OWNERS PRIOR TO NEW INSTALLATIONS.

CALL BEFORE YOU DIG 456-8000

APPROVED BY

DIRECTOR, ENGINEERING SERVICES TOM L. ARNOLD, P.E.

PRINCIPAL ENGINEER, DESIGN GARY S. NELSON, P.E.

ADOPTED:	05/2007
REVISED:	
SUPERSEDES:	
CHECKED BY:	JAG
SCALE:	NTS
DWG/REV. BY:	RLB

UNDERGROUND UTILITY LOCATION
FOR NEW DEVELOPMENTS

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. W-113

Appendix 3.10.1 Technical Memorandum – Fire Flow and PHD Analysis

MSA
Murray, Smith & Associates, Inc.
Engineers/Planners
421 W Riverside Ave, Suite 762 ▪ Spokane, WA 99201 ▪ PHONE 509.321.0340 ▪ FAX 503.225.9022

TECHNICAL MEMORANDUM

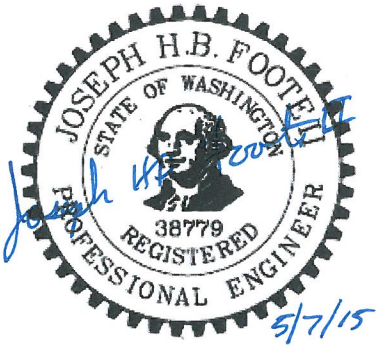
DATE: May 7, 2015

PROJECT: City of Spokane Hydraulic Model Update

TO: Water Department, City of Spokane, Washington

FROM: Joseph Foote, P.E.
Murray, Smith & Associates, Inc.

RE: Fire Flow and PHD Analysis Results



Introduction

The City of Spokane's (City's) hydraulic model was recently updated and calibrated to reflect current system conditions. The calibration resulted in a generally high level of confidence in the model to reflect system conditions. After calibration, the model was used to evaluate the hydraulic capacity of the system under existing and future demand conditions. The evaluation includes a fire flow and peak hour demand (PHD) analysis under steady-state conditions. The analysis was completed in conjunction with the City's 2014 Water System Plan (WSP) to comply with the Washington State Department of Health, Office of Drinking Water (ODW) requirements.

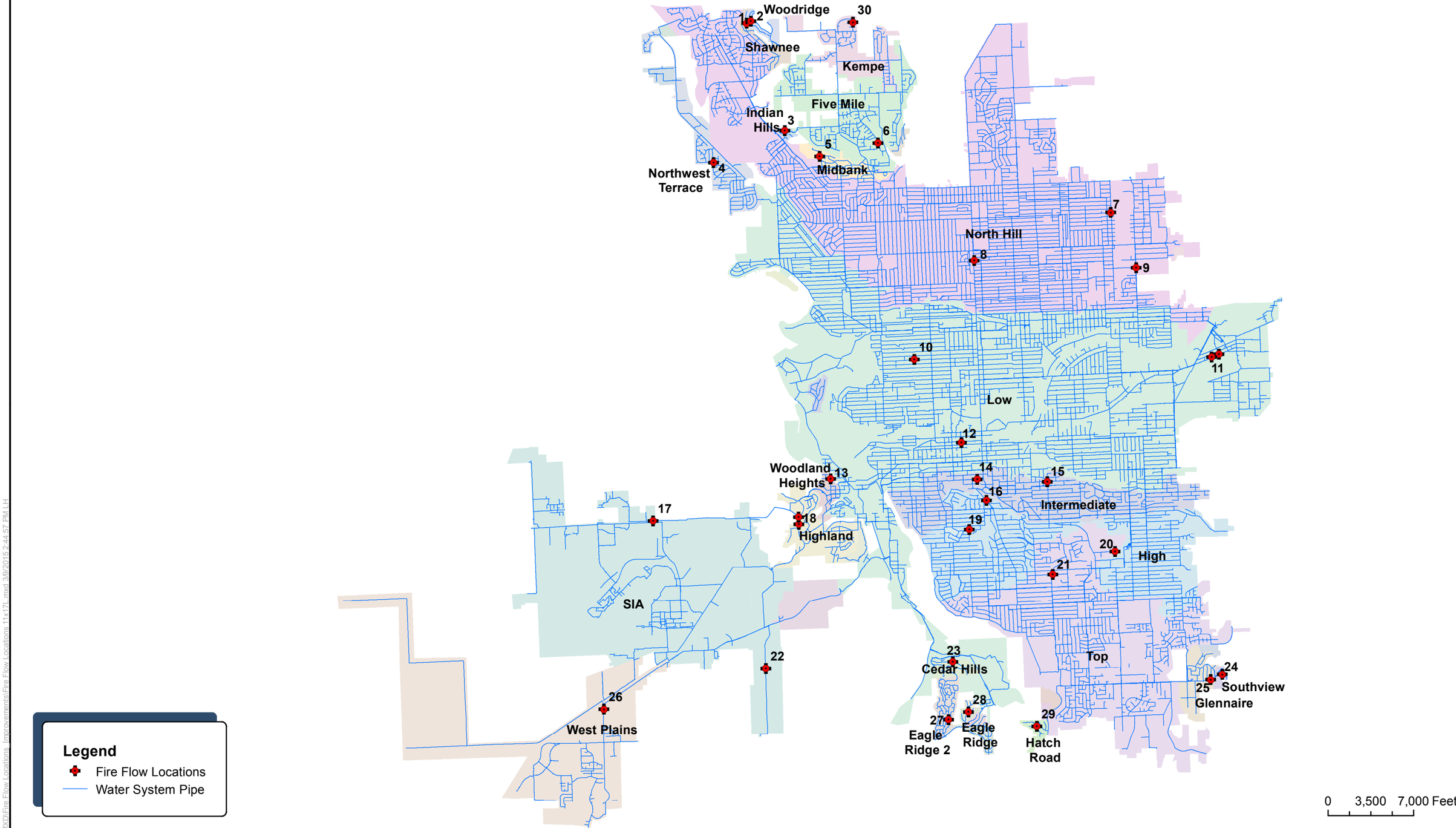
Fire Flow Analysis

The fire flow analysis looked at 30 locations throughout the City's water distribution system, shown in Figure 1. These sites were selected by determining the largest fire flow demands in each pressure zone as identified by the City's Fire Protection Engineer and Water Department staff. Some pressure zones included multiple fire flow locations based on the size of the area served. Table 1 lists information about each fire flow location.

Table 1
Fire Flow Locations

Location	Zone	Facility	Fire-Flow Requirement (gpm)[1]	Required Duration (hr)[2]	Fire Flow Storage Requirement (MG)[3]
1	Shawnee	Large Residential	1,750	2	0.21
2	Woodridge	Large Residential	1,750	2	0.21
3	Indian Hills	Large Residential	1,750	2	0.21
4	Northwest Terrace	Multifamily Residential	3,750	3	0.68
5	Midbank	Large Residential	1,750	2	0.21
6	Five Mile	Large Residential	1,750	2	0.21
7	North Hill	Hillyard Tire	6,000	4	1.44
8	North Hill	Northtown Office Building	4,000	4	0.96
9	North Hill	BNRR Tank Farm	6,000	4	1.44
10	Low	Havermale School	6,000	4	1.44
11	Low	BNSF Rail Yard	8,000	4	1.92
12	Low	Paulsen Building	6,000	4	1.44
13	Woodland Heights	Multifamily Residential	3,750	3	0.68
14	Intermediate	Sacred Heart Doctor Building	4,000	4	0.96
15	Intermediate	Large Retail	4,000	4	0.96
16	High	St. John's Cathedral	4,000	4	0.96
17	SIA	Mini Storage	6,000	4	1.44
18	Highland	Motel 6	8,000	4	1.92
19	High	St. Augustine School	3,750	3	0.68
20	Top	Rockwood Manor	4,000	4	0.96
21	Top	Cedar Park Apartments	4,000	4	0.96
22	SIA-Geiger	Large Residential	1,750	2	0.21
23	Cedar Hills	Large Residential	1,750	2	0.21
24	Southview	Large Residential	1,750	2	0.21
25	Glennaire	Large Residential	1,750	2	0.21
26	West Plains	Computer Manufacturer	6,000	4	1.44
27	Eagle Ridge 2	Large Residential	1,750	2	0.21
28	Eagle Ridge	Large Residential	1,750	2	0.21
29	Hatch Road	Large Residential	1,750	2	0.21
30	Kempe	Large Residential	1,750	2	0.21

[1] *gpm = gallons per minute.*
[2] *hr = hour.*
[3] *MG = million gallons.*



MSA
Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

N
W
E
S

Figure 1
Fire Flow Locations

May 2015 14-1559

I:\BOI_Projects\14\1559\GIS\MXD\Fire Flow Locations_Improvements\Fire Flow Locations 11x17L.mxd 3/9/2015 2:44:57 PM LH

The ODW defines criteria used to evaluate the ability of the system to adequately meet fire flow needs. This includes evaluating the system under Maximum Day Demand (MDD), depleted storage, and firm pumping capacity to determine if the minimum pressure requirement can be met. A list of the criteria used to evaluate the system under fire flow conditions is provided in Table 2.

Table 2
Fire Flow Criteria

MDD[1]	Existing: 186 mgd[2]	5-Year: 196 mgd[2]	20-Year: 235 mgd[2]
Fire Flow[3] (gpm)	1,750 – 8,000 gpm[4]		
Fire Flow Duration[3]	2 hours at 1,750 gpm 3 hours at 3,750 gpm 4 hours at 4,000 – 8,000 gpm		
Tank Levels[5,6]	Fire flow and equalization storage depleted		
Pumping Capacity[7]	Firm Capacity: Largest single pump out of service for each pressure zone		
Pressure[5]	20 psi[8] minimum pressure at service points		

[1] *Based on City's 2014 Water System Plan.*
[2] *mgd = million gallons per day.*
[3] *Fire flow requirements provided by City of Spokane Fire Protection Engineer.*
[4] *gpm = gallons per minute.*
[5] *Based on WAC 246-290-230.*
[6] *For zones with inadequate fire flow storage, a minimum tank level was assumed.*
[7] *Based on WAC 246-293-660.*
[8] *psi = pounds per square inch.*

The City's 2014 WSP evaluates the storage within the system and indicates the volume of different storage components. These values were used to determine the level of each tank for the fire flow hydraulic analysis. The hydraulic model simulated each fire flow during MDD conditions with the tank levels based on the fire and equalization storage being depleted. Tanks within the few pressure zones lacking adequate fire flow storage were set at a minimum level in order to determine any piping deficiencies. Pumps were turned on to provide the needed flow to each pressure zone, assuming the largest pump to each zone was out of service.

Once these conditions were set, the steady state hydraulic model evaluated the system's ability to provide the necessary fire flow while maintaining a minimum 20 psi at all services under existing, 5-year, and 20-year demand conditions. The analysis evaluated the available fire flow at a single hydrant closest to the defined location, except for locations 11 and 18, which had the highest fire flow requirement. At these locations, two hydrants were required for the system to provide the high flow requirement, and is similar to the multiple hydrants

that would typically be utilized in the field to fight a fire. Results of the fire flow simulation are shown in Table 3.

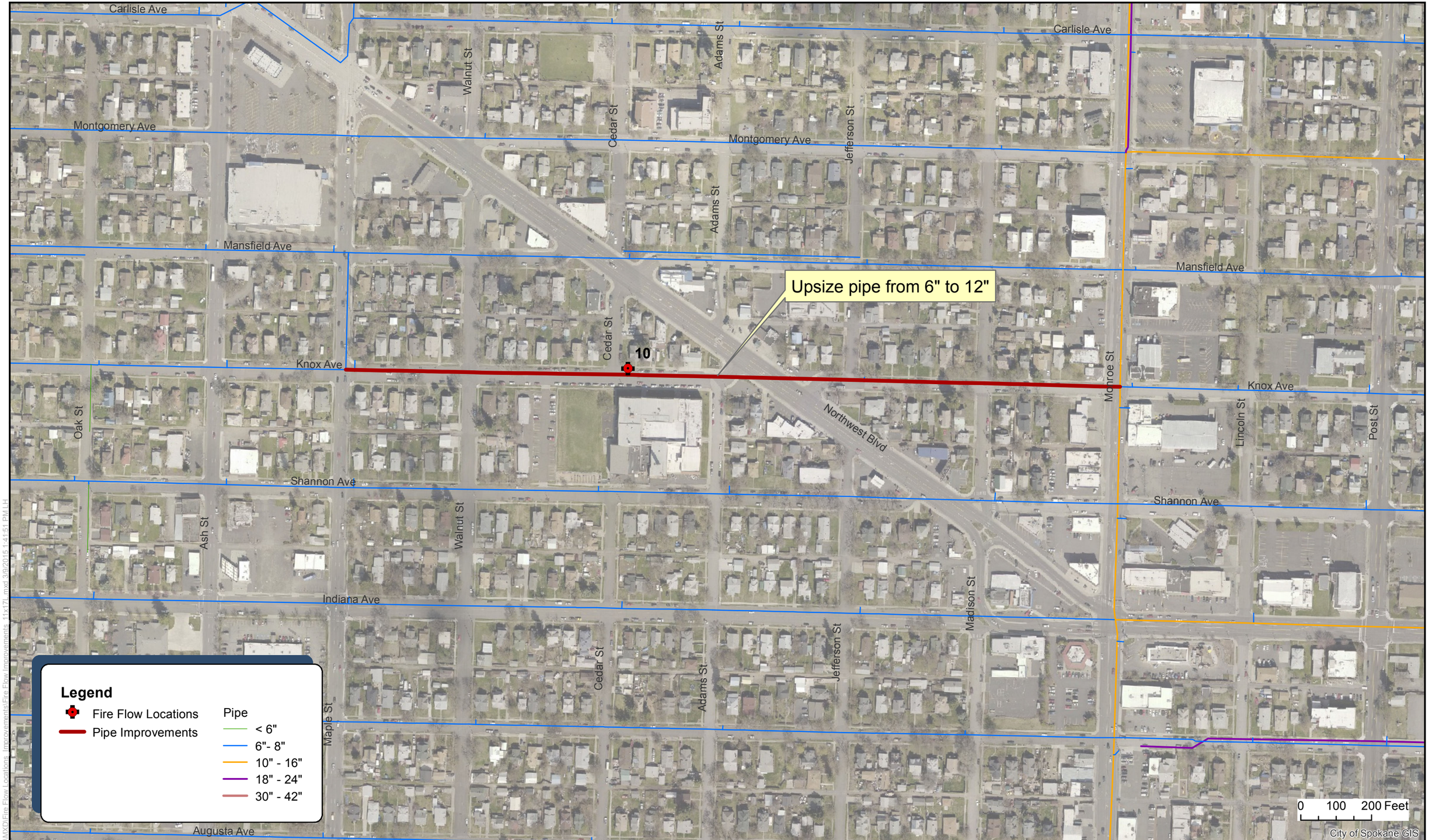
As highlighted in Table 3, seven locations lack adequate fire protection, mainly because of undersized piping. The deficiency in location 18, is due to insufficient storage and supply booster pump station capacity. Figures 2 through 8 show proposed options for resolving each deficiency. These options primarily rely on increasing the size of the existing pipe, but as the City further defines these projects as part of the 5-Year Capital Improvement Program, they may consider other solutions which address the deficiency, such as parallel piping.

The system was also analyzed under future 5 and 20-year demand conditions with the proposed improvements implemented. The results indicate that the proposed improvements result in adequate fire flow and the system has no additional deficiencies under higher future demands, as indicated in Table 3.

Table 3
Fire Flow Results

Location	Zone	Facility	Model ID	Fire Flow Requirement (gpm)	Existing			5 Year[1]	20 Year[1]
					Static Pressure (psi)	Residual Pressure (psi)	Available Flow at 20 psi (gpm)	Available Flow at 20 psi (gpm)	Available Flow at 20 psi (gpm)
1	Shawnee	Large Residential	WHY6196	1,750	71	68	4,420	4,392	4,371
2	Woodridge	Large Residential	WHY6197	1,750	95	68	3,627	3,627	3,617
3	Indian Hills	Large Residential	WHY6242	1,750	70	63	5,269	5,260	5,208
4	Northwest Terrace	Multifamily Residential	WHY2871	3,750	95	24	3,865	3,840	3,406
5	Midbank	Large Residential	WFT2362	1,750	67	65	8,713	8,692	8,642
6	Five Mile	Large Residential	WHY7322	1,750	95	88	7,915	7,892	7,826
7	North Hill	Hillyard Tire	WHY3039	6,000	67	32	7,036	7,017	6,958
8	North Hill	Northtown Office Building	WHY542	4,000	62	41	5,792	5,780	5,736
9	North Hill	BNRR Tank Farm	WHY2423	6,000	68	47	9,646	9,634	9,596
10	Low	Havermale School	WHY3684	6,000	80	-270	2,268	6,889	6,772
11[2]	Low	BNSF Rail Yard	WHY8280	8,000	72	38	6,271	6,246	6,172
	Low		WHY3774	8,000	73	23	3,243	3,231	3,197
12	Low	Paulsen Building	WHY5	6,000	91	70	11,878	11,807	11,645
13	Woodland Heights	Multifamily Residential	WHY7731	3,750	132	-251	1,908	5,206	5,158
14	Intermediate	Sacred Heart Doctor Building	WHY6658	4,000	113	102	13,104	13,075	13,022
15	Intermediate	Large Retail	WHY4252	4,000	116	-41	3,008	4,386	4,348
16	High	St. Johns Cathedral	WHY7984	4,000	116	20	3,991	4,538	4,529
17	SIA	Mini Storage	WHY8414	6,000	77	54	9,765	9,688	8,992
18[2]	Highland	Motel 6	WHY8032	8,000	54	-11	2,802	5,854	5,755
	Highland		WHY8034	8,000	44	-28	2,102	4,645	4,596
19	High	St. Augustine School	WHY7673	3,750	100	-5	3,198	3,886	3,880
20	Top	Rockwood Manor	WHY5209	4,000	84	-9	3,204	4,377	4,338
21	Top	Cedar Park Apartments	WHY5028	4,000	80	65	8,954	8,928	8,853
22	SIA-Geiger	Large Residential	WHY7972	1,750	64	53	4,078	4,060	3,533
23	Cedar Hills	Large Residential	WHY6629	1,750	110	99	6,372	6,359	6,284
24	Southview	Large Residential	WHY8363	1,750	65	61	6,394	6,394	6,394
25	Glennaire	Large Residential	WHY2654	1,750	70	37	2,213	2,212	2,195
26	West Plains	Computer Manufacturer	WHY4541	6,000	90	69	11,487	11,464	11,194
27	Eagle Ridge 2	Large Residential	WHY6442	1,750	65	49	3,357	3,350	3,307
28	Eagle Ridge	Large Residential	WHY6647	1,750	74	57	3,292	3,286	3,253
29	Hatch Road	Large Residential	WHY8284	1,750	66	38	2,335	2,331	2,297
30	Kempe	Large Residential	WHY6076	1,750	67	58	4,439	4,428	4,389

[1] *Five- and 20-year results assume recommended improvements to address existing fire flow inadequacies are in place.*
[2] *Locations 11 and 18 results reflect flow at two hydrants simultaneously, which is necessary to meet the fire flow requirement.*



MSA
Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

N
W E
S

Figure 2
Location 10 Improvement

May 2015 14-1559

I:\BOI_Projects\14\1559\GIS\MXD\Fire Flow Locations_Improvements\Fire Flow Improvements_11x17L.mxd 3/9/2015 1:41:51 PM LH

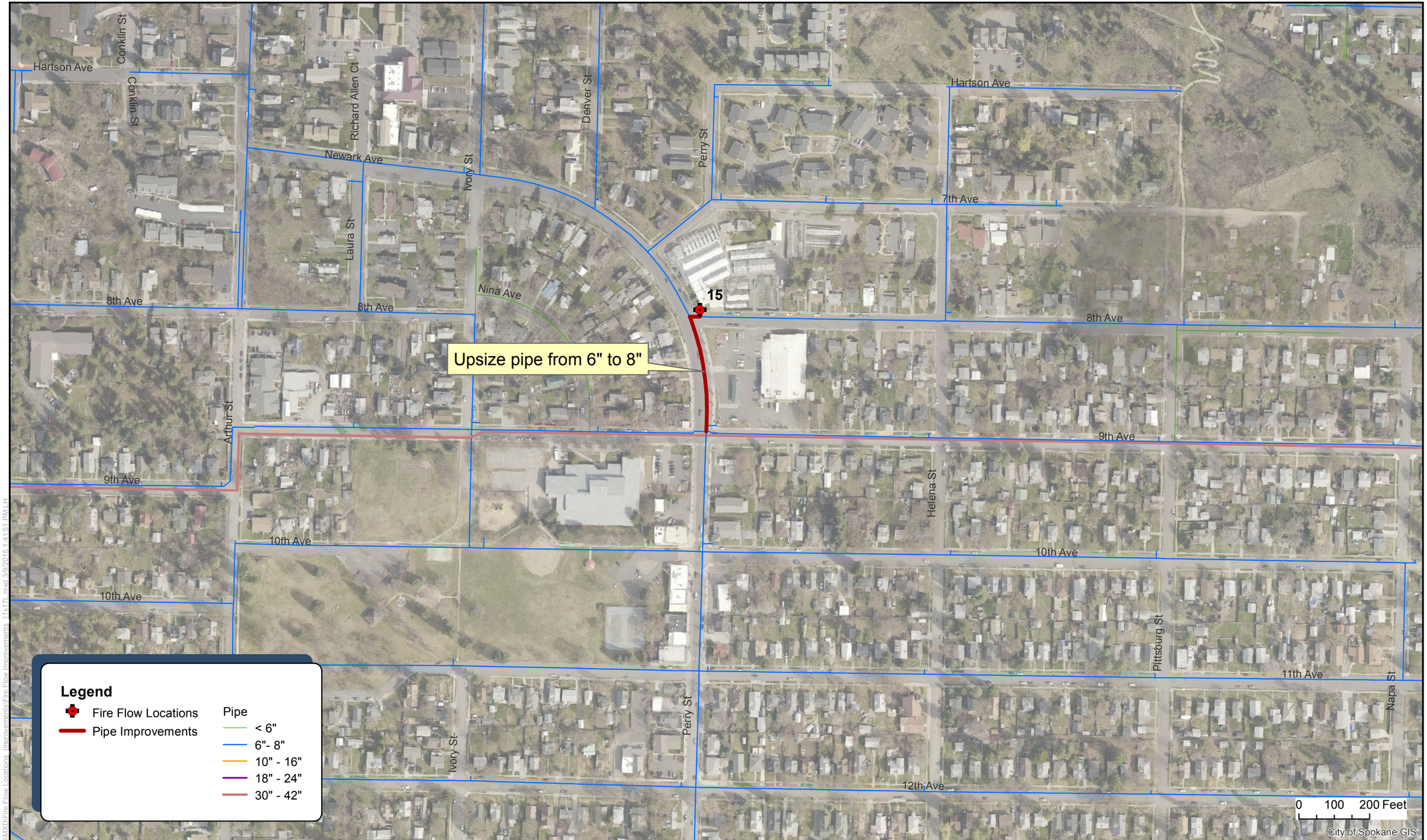
MSA Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

Figure 3
Location 13 Improvement

May 2015 14-1559



MSA Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

N W E S

Figure 4
Location 15 Improvement

May 2015 14-1559

I:\BOI_Projects\14\1559\GIS\MXD\Fire Flow Locations_Improvements\Fire Flow Improvements_11x17L.mxd 3/9/2015 1:41:51 PM LH

I:\BOI_Projects\14\1559\GIS\MXD\Fire Flow Locations_Improvements_11x17L.mxd 3/9/2015 1:41:51 PM LH

MSA Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

Figure 5
Location 16 Improvement

May 2015 14-1559

Murray, Smith & Associates, Inc.

City of Spokane
Fire Flow and PHD Analysis

Figure 6
Location 18 Improvement

May 2015 14-1559

I:\BOI Projects\14\1559\GIS\MXD\Fire Flow Locations Improvements\Fire Flow Improvements 11x17L.mxd 3/9/2015 1:41:51 PM LH

\\BOI_Projects\14\1559\GIS\MXD\Fire Flow Locations_Improvements\Fire Flow Improvements_11x17L.mxd 3/9/2015 1:41:51 PM LH

Murray, Smith & Associates, Inc.

City of Spokane
Fire Flow and PHD Analysis

Figure 7
Location 19 Improvement

May 2015 14-1559

I:\BOI_Projects\141559\GIS\MXD\Fire Flow Locations_Improvements\Fire Flow Improvements_11x17L.mxd 3/9/2015 1:41:51 PM LH

Murray, Smith & Associates, Inc.

City of Spokane
Fire Flow and PHD Analysis

Figure 8
Location 20 Improvement

May 2015 14-1559

Peak Hour Demand Analysis

The PHD analysis examined the City's water distribution system under the highest demand conditions. Similar to the fire flow analysis, the regulatory criteria define the system conditions under which the PHD analysis must be completed. This includes evaluating the system with depleted operational and equalization storage to determine if the minimum pressure requirement can be met. A list of these criteria is provided in Table 4.

Table 4
PHD Criteria

PHD[1]	Existing: 13.2 mgh[2]	5-Year: 13.9 mgh[2]	20-Year: 16.6 mgh[2]
Tank Levels[3]	Operational and equalization storage depleted		
Pumping Capacity	Total Capacity: No pumps out of service		
Pressure[3]	30 psi minimum pressure at service points		

[1] *Based on City's 2014 Water System Plan.*
[2] *mgh = million gallons per hour.*
[3] *Based on WAC 246-290-230.*

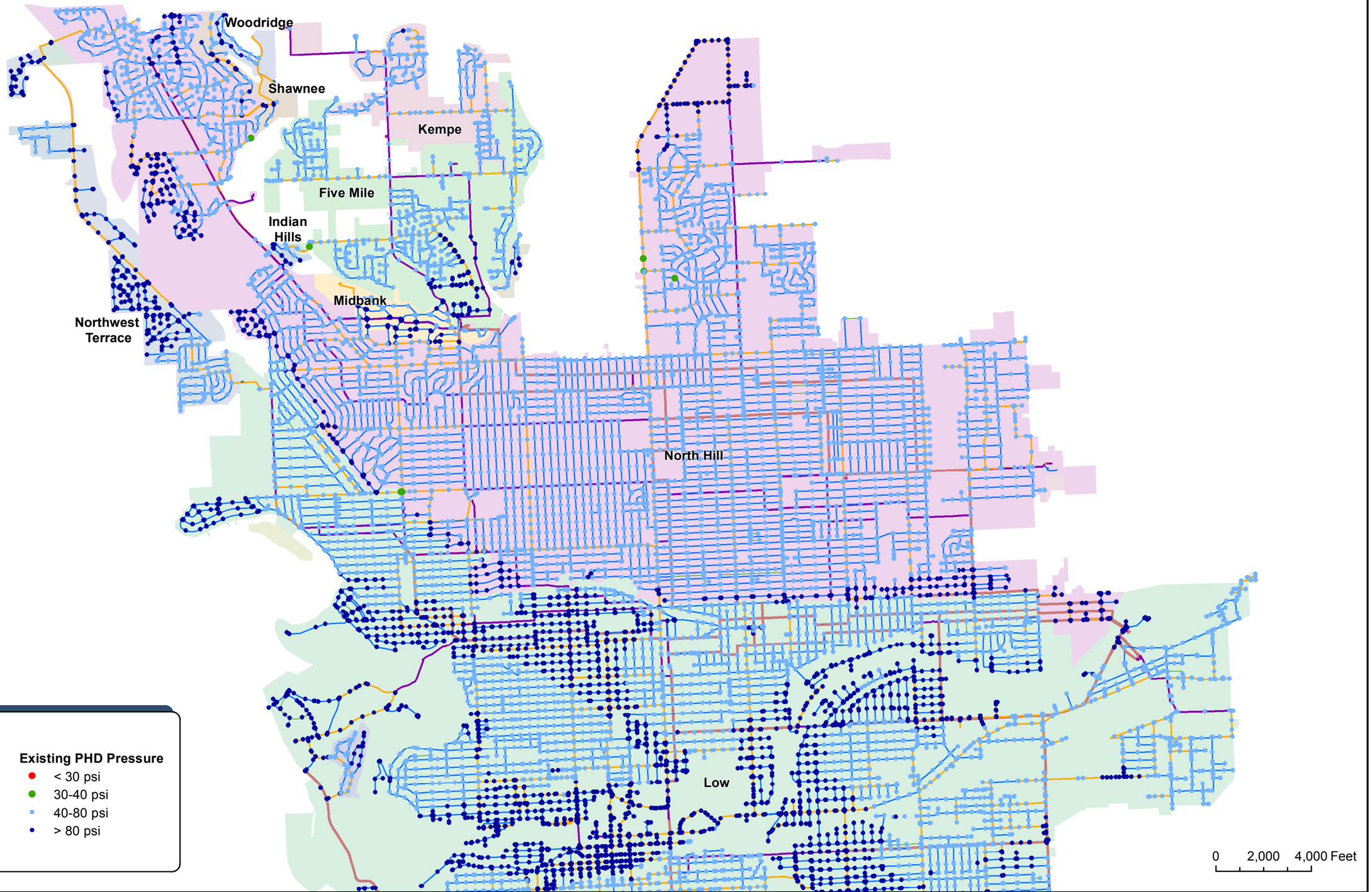
The hydraulic model simulated each PHD condition with the tank levels set with the operational and equalization storage depleted; pumps were set to provide the needed flow to each zone.

Once these conditions were set, the steady state hydraulic model evaluated the system's ability to meet demand while maintaining at least 30 psi at all services under existing, 5-year, and 20-year demand conditions. A few locations in the system are below 30 psi, which are due to localized higher elevation points at pressure zone boundaries. The City is aware of these locations and will continue to monitor them and consider reasonable options to provide adequate service to these customers. Figures 9 through 14 show the PHD simulation results.

Conclusions and Recommendations

The fire flow and PHD analyses indicate that the City's water system in general has the capacity to meet current and future demands. As outlined, there are specific areas within the water system that require improvements to address fire flow deficiencies. These fire flow deficiencies are generally located in parts of the system that were developed at a time when requirements were less stringent that those currently in place. PHD issues are minimal, and are primarily located in topographically challenging locations where pressure zone boundaries exist. These low pressure areas should be monitored to determine if there are impacts to customers.

It is recommended that the City review and implement solutions to address localized fire flow deficiencies. Areas with low pressures under PHD should be monitored to confirm that customers are not impacted by these lower pressures.



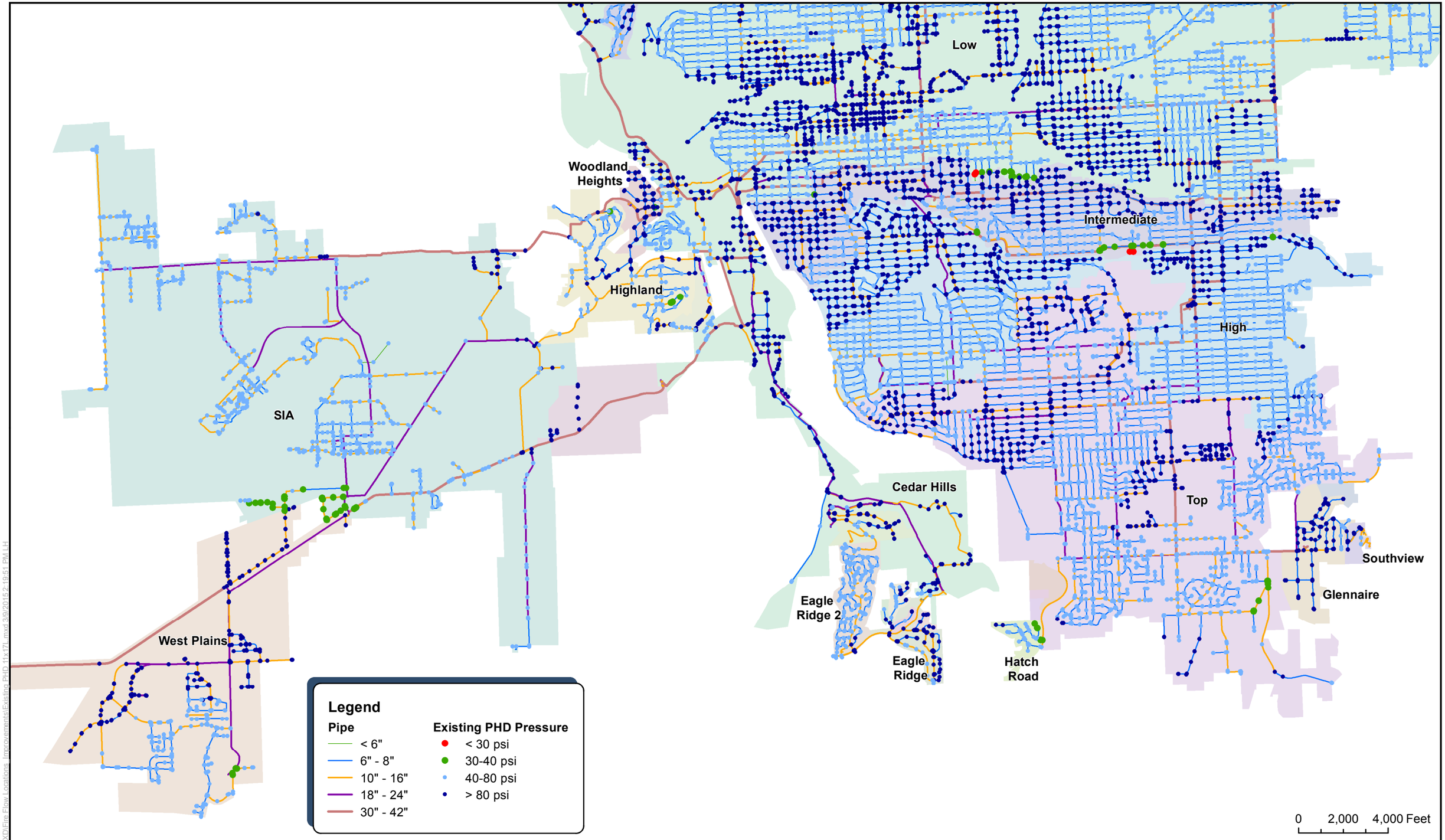
MSA
Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

Figure 9
Existing PHD Results
North of System

May 2015 14-1559



\\BOI_Projects\14\1559\GIS\MXD\Fire Flow Locations_Improvements\Existing PHD 11x17L.mxd 3/9/2015 2:19:51 PM LH

Murray, Smith & Associates, Inc.

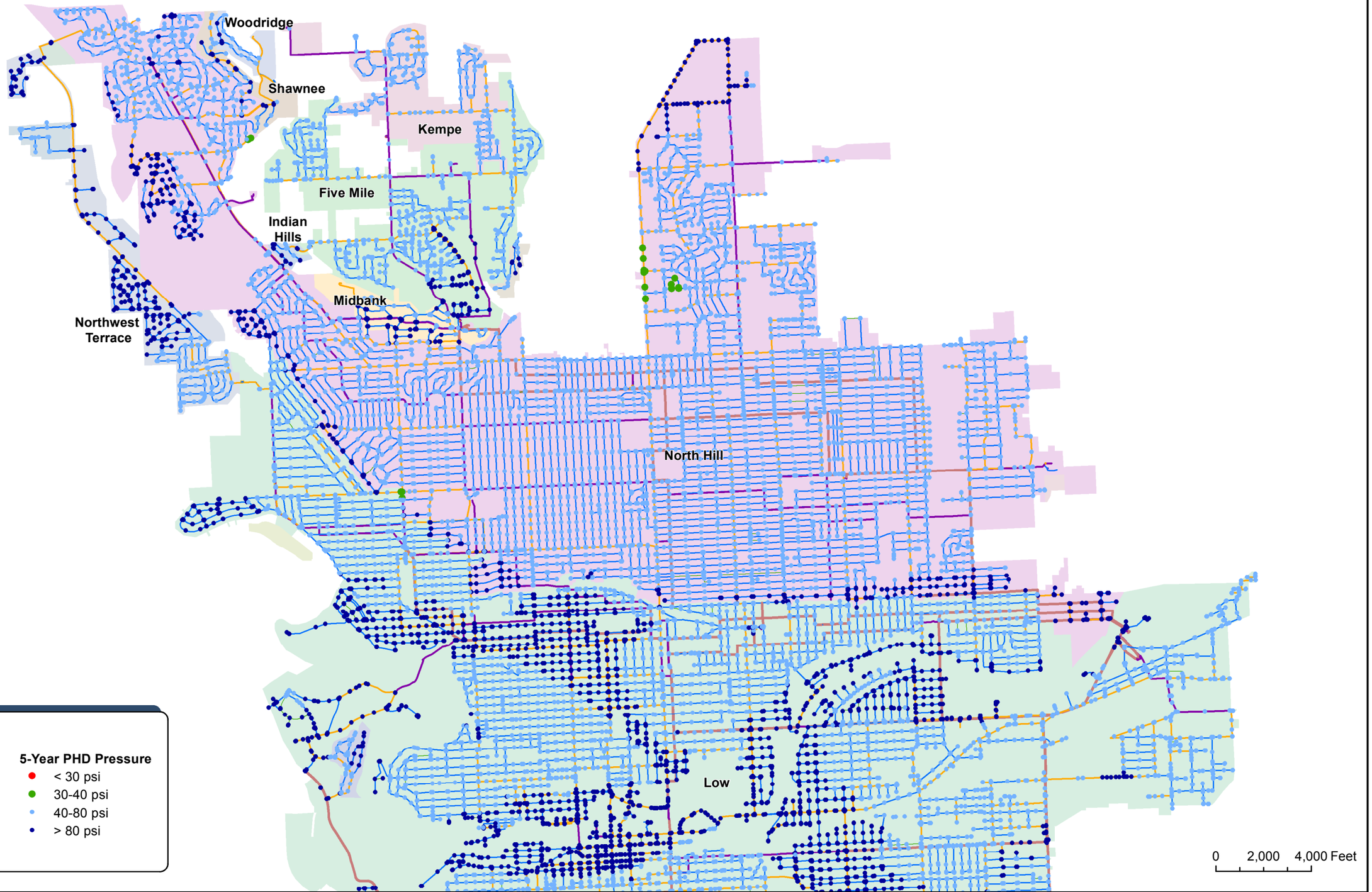
CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

N W E S

Figure 10
Existing PHD Results
South of System

May 2015 14-1559



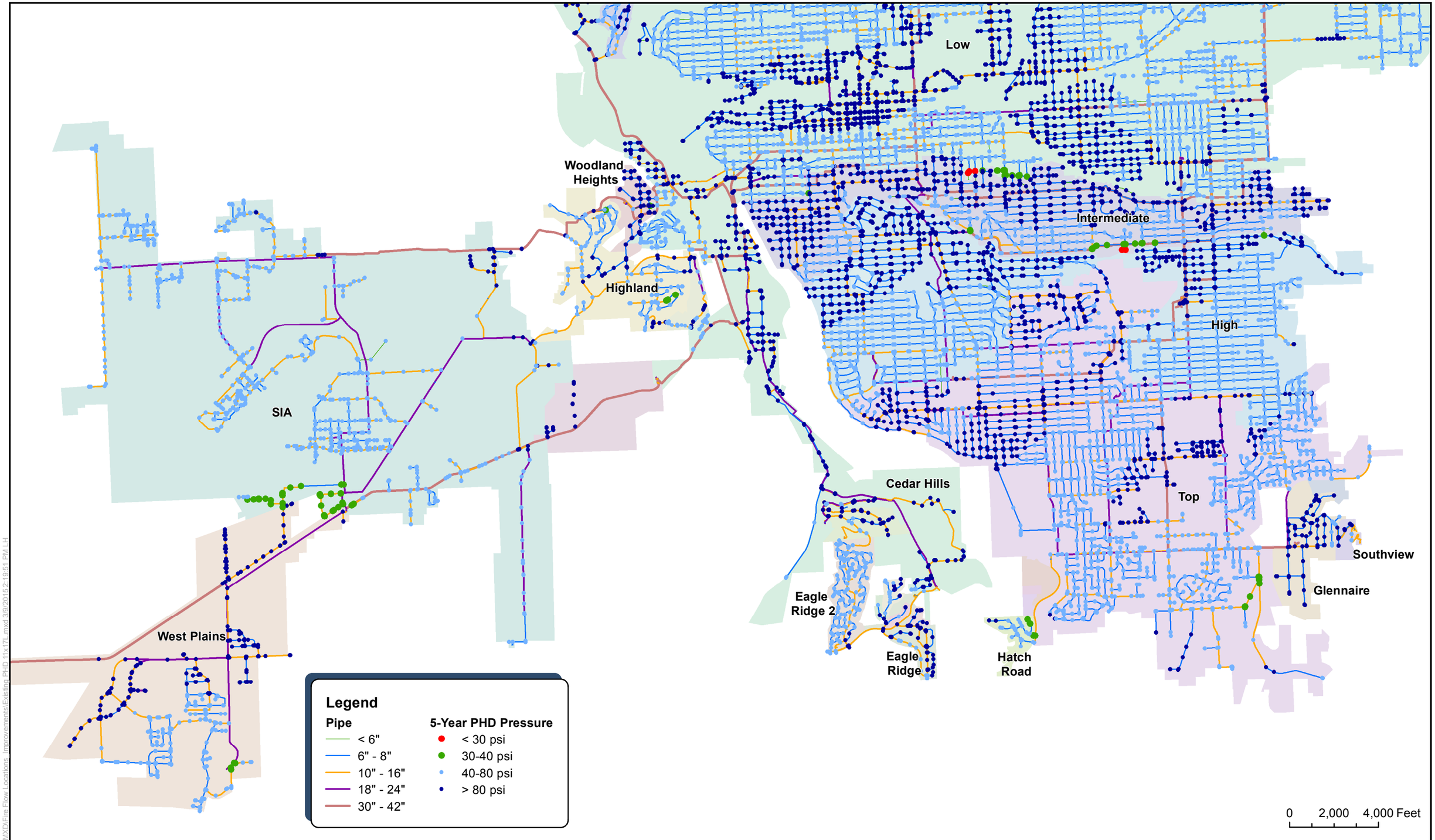
MSA
Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

Figure 11
5-Year PHD Results
North of System

May 2015 14-1559

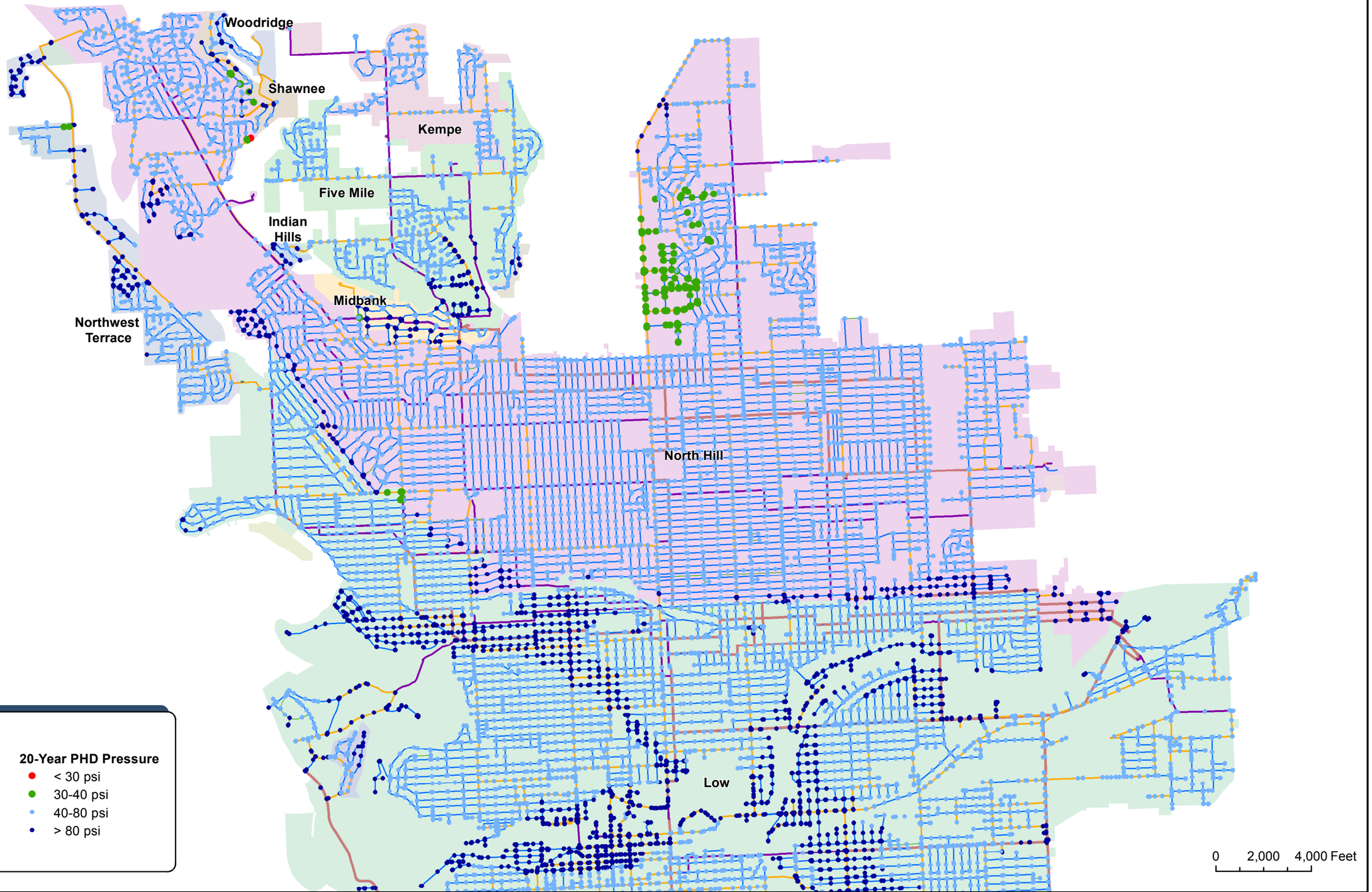


Murray, Smith & Associates, Inc.

City of Spokane
Fire Flow and PHD Analysis

Figure 12
5-Year PHD Results
South of System

May 2015 14-1559



MSA Murray, Smith & Associates, Inc.

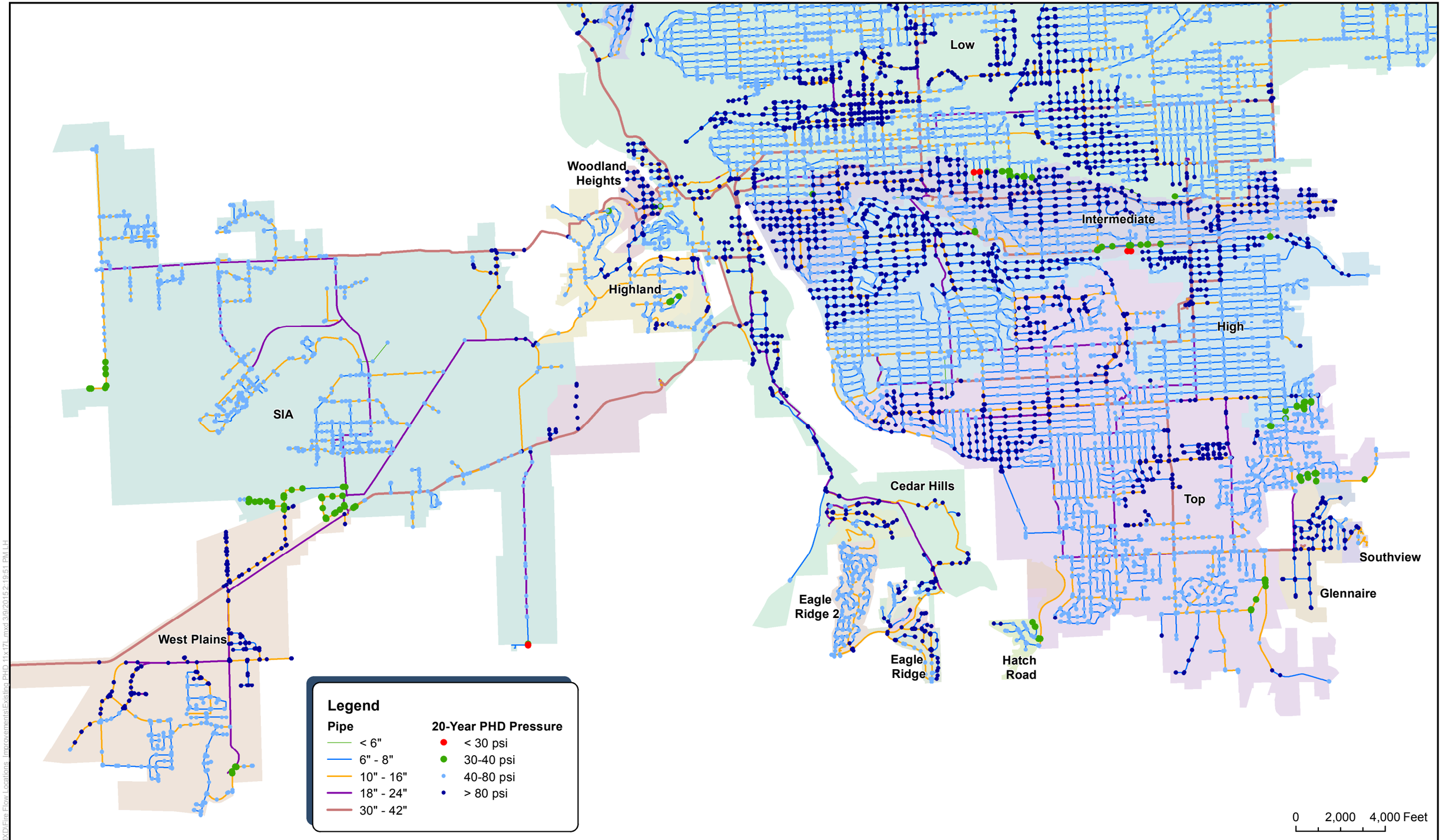
CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

N W E S

Figure 13
20-Year PHD Results
North of System

May 2015 14-1559



MSA Murray, Smith & Associates, Inc.

CITY OF SPOKANE

City of Spokane
Fire Flow and PHD Analysis

N W E S

Figure 14
20-Year PHD Results
South of System

May 2015 14-1559

Chapter 4

Water Resource Analysis & Water Use Efficiency (WUE)

Exhibits and Appendices

Exhibit 4.1.1 COS Resolution 2014-0043 Water Use Efficiency (WUE)

CITY OF SPOKANE

OFFICE OF THE CITY CLERK
808 W. SPOKANE FALLS BLVD
SPOKANE, WASHINGTON 99201-3342
509.625.6350

April 28, 2014

City Clerk File No.:
RES 2014-0043

COUNCIL ACTION MEMORANDUM

RE: RESOLUTION 2014-0043 ADOPTING THE REVISED WATER USE EFFICIENCY GOALS FOR THE CITY OF SPOKANE WATER UTILITY

During its 6:00 p.m. Legislative Session held Monday, April 21, 2014, the Spokane City Council considered Resolution 2014-0043. Subsequent to a presentation by Water Department Director Dan Kegley; the opportunity for public testimony, with no individuals requesting to speak; and Council comment, the following action was taken:

> **Upon Unanimous Roll Call Vote, ,** the City Council **adopted Resolution 2014-0043** adopting the revised water use efficiency goals for the City of Spokane Water Utility in compliance with Washington Administrative Code 246-290-800.

Terri L. Pfister, MMC
Spokane City Clerk

Agenda Sheet for City Council Meeting of: 04/21/2014		**Date Rec'd**	4/9/2014
		Clerk's File #	RES 2014-0043
		Renews #	
Submitting Dept	WATER & HYDROELECTRIC SERVICES	**Cross Ref #**	
Contact Name/Phone	DAN KEGLEY 625-7840	**Project #**	
Contact E-Mail	DKEGLEY@SPOKANECITY.ORG	**Bid #**	
Agenda Item Type	Resolutions	**Requisition #**	
Agenda Item Name	4100 - RESOLUTION ADOPTING THE REVISED WATER USE EFFICIENCY GOALS		

Agenda Wording

Water Stewardship/Water Use Efficiency (WUE)Goals: evaluation and re-establishment in accordance with WAC 246-290-830.

Summary (Background)

The State of Washington through WAC 246-290-800, requires public water systems that supply municipal water to implement a water use efficiency program. In anticipation of the passage of the Water Use Efficiency Program requirement, which became effective on January 22, 2007, the City of Spokane City Council adopted Resolution 2006-0049 on May 10, 2006. Resolution 2006-0049, adopting the City of Spokane Water Stewardship Program, outlined goals and reporting requirements intended to meet

Fiscal Impact		**Budget Account**
Neutral	$	#
Select	$	#
Select	$	#
Select	$	#

Approvals		**Council Notifications**	
Dept Head	KEGLEY, DANIEL	**Study Session**	PWC 3/10/2014
Division Director	ROMERO, RICK	**Other**	
Finance	LESESNE, MICHELE	**Distribution List**	
Legal	DALTON, PAT	dkegley	
For the Mayor	SANDERS, THERESA	jsakamoto	
Additional Approvals		acline	
Purchasing			

ADOPTED BY SPOKANE CITY COUNCIL ON
4/21/2014
SPOKANE CITY CLERK

Continuation of Wording, Summary, Budget, and Distribution

Agenda Wording

Summary (Background)

WAC 246-290-0840. In order to maintain compliance with the Water Use Efficiency Goal Setting requirements outlined in WAC 256-290-830(7) the governing body of the public water system shall evaluate and re-establish water use efficiency goals every six years as part of a water system plan approved under WAC 246-290-100. The goals are revised to meet the Water Use Efficicency Goal Settings requirements in WAC 246-290-830 as part of the water system plan approval. Re-establishment of the goals meeting the requirement of the WAC will complete a required step towards the completion of the water system plan and maintain in good standing our complicance with the requirements of the City of Spokane operating permit with the Washington Department of Health, Office of Drinking Water.

Fiscal Impact		**Budget Account**
Select	**$**	**#**
Select	**$**	**#**

Distribution List

Clerk's File No. RES 2014-0043

RESOLUTION NO. 2014-0043

A RESOLUTION adopting the revised Water Use Efficiency (WUE) Goals for the City of Spokane Water Utility in compliance with Washington Administrative Code WAC 246-290-800.

WHEREAS, the Washington State Administrative Code WAC 246-290-800 requires public water systems that supply municipal water to implement a water use efficiency program; and

WHEREAS, on May 10, 2006, the City of Spokane adopted Resolution 2006-0049, the City of Spokane Water Stewardship Program which included water use efficiency goals and reporting requirements intended to meet WAC 246-290-840; and

WHEREAS, WAC 246-290-830 requires municipal water suppliers to update and reestablish water use efficiency goals at least every six (6) years as part of a water system plan approval process; and

WHEREAS, the City of Spokane is updated its water system plan and desires to comply with the requirements of Water Use Efficiency Goal setting rules as outlined in Washington Administrative Code WAC 246-290-830;--

NOW THEREFORE, Be it resolved by the City Council of the City of Spokane that it hereby approves the following revised Water Use Efficiency Goals for the City of Spokane Water Utility:

1. Continue the reduction of indoor residential use by one half percent (0.5%) on average for residential connections annually, over the next six (6) years.

2. Reduce outdoor residential use by two percent (2%) on average for residential connections annually, over the next six (6) years.

3. Reduce metered outdoor irrigation commercial/industrial use by two percent (2%) for Commercial/Industrial connections annually, over the next six (6) years.

4. Reduce outdoor metered governmental use by two percent (2%) for governmental connections annually, over the next six (6) years.

ADOPTED BY THE CITY COUNCIL ON April 21, 2014

City Clerk

Approved as to form:

Assistant City Attorney

Chapter 5

Source Water Protection

Exhibits and Appendices

Exhibit 5.1.1 Capture Zones and WHPA


CITY OF SPOKANE WELLHEAD CAPTURE ZONES
MAP EXHIBIT 5.1.1
Central
Hoffman
Grace
Nevada
Well Electric
Parkwater
Ray
TWP. 25 N.
TWP. 26 N.
Legend
City Wells
Other Water Purveyor's Wells
City Limits
Spokane-Rathdrum Aquifer System
Aquifer Sensitive Area
Travel Time of Wellhead Capture Zones
Special
1 Year
5 Year
10 Year
Liberty Lake
Dishman Hills Natural Area

Exhibit 5.1.2 PCSI Sample Letter

Local Water Utilities
United for Safe Drinking Water

Carnhope Irrigation District No. 7
City of Spokane
Consolidated Irrigation District No. 19
East Spokane Water District No. 1
Honeywell Electronic Materials, Inc.
Hutchinson Irrigation District No. 16
Irvin Water District No. 6
Kaiser Aluminum - Trentwood
Liberty Lake Sewer & Water District
Moab Irrigation District No. 20
Model Irrigation District No. 18
Modern Electric & Water Co.
North Spokane Irrigation District No. 8
Orchard Avenue Irrigation District No. 6
Pasadena Park Irrigation District No. 17
Spokane County Water District No. 3
Spokane Business & Industrial Park
City of Millwood
Trentwood Irrigation District No. 3
Vera Water and Power
Whitworth Water District No. 2

Ty Wick
SAJB President

Tonilee Hanson
Program Manager
509-847-4337

September 2014

Dear Business Owner or Manager,

The Spokane Aquifer Joint Board (SAJB) is a consortium of twenty-one water purveyors who provide safe, clean drinking water to more than 500,000 Spokane County residents and businesses each day. We live and work in this area because of the quality of life, which includes the excellent water derived from the Spokane Valley Rathdrum Prairie Aquifer, our sole source of drinking water.

Your business is one of more than 2,000 businesses located over the Aquifer that may pose a potential for contamination of our drinking water source. Federal law mandates we notify you of this, and remind you that any contaminant released on or underground is expected to reach the Aquifer and eventually be drawn into public water supply wells.

Please work with us to maintain the exceptional quality of our Aquifer by safely storing and properly disposing of all contaminants. A disposal and business resource guide is enclosed for your reference.

Need help getting rid of your wastes? The Spokane EnviroStars Waste Directory is a new local resource for businesses or residents to help you locate a vendor who will safely dispose of hazardous and other wastes. The Waste Directory also has health and environmental information for over 258 different wastes. Please visit www.SpokaneWasteDirectory.org.

Finally, your business may be eligible for Spokane EnviroStars certification and recognition if you properly dispose of and manage hazardous and other wastes. To apply call 509-847-4337 or go to www.SpokaneEnviroStars.org.

Thank you for your efforts to protect the Aquifer. If you have any questions, please call your water provider, or visit our website at www.spokaneaquifer.org to learn more about the Aquifer and our organization.

Best wishes for your business success,

The Spokane Aquifer Joint Board

Enclosure

SPOKANE AQUIFER JOINT BOARD
1521 N. Argonne Rd. Suite C PMB 250 Spokane Valley, WA 99212
www.spokaneaquifer.org info@spokaneaquifer.org

SAJB

SPOKANE AQUIFER JOINT BOARD
Local Water Utilities United for Safe Drinking Water
www.spokaneaquifer.org
info@spokaneaquifer.org

Your business can help protect our aquifer and drinking water.

We have some of the cleanest and most affordable drinking water in the world. As a business owner, safe waste disposal practices help protect our water and lower your business liability. Find business resources at www.spokaneaquifer.org.

Need to dispose of waste? Go to…

www.SpokaneWasteDirectory.org

Get free promotion and recognition for best management practices and safe waste disposal. Apply for Spokane EnviroStars Certification at www.SpokaneEnviroStars.org

Remember… Don't pollute your Drinking Water…It's beneath you!

QUICK CONTACT GUIDE
SPOKANE AREA BUSINESS RESOURCE

Washington State Dept. of Ecology
Spills, 24-Hour Ecology Response & Toxics Reduction
www.ecy.wa.gov 329-3400
e-cycle 1-800-RECYCLE

Spokane Waste Directory
Find vendors to safely dispose of your wastes
www.spokanewastedirectory.org

City of Spokane
Solid Waste Disposal Information 625-6580
Wastewater Pretreatment Program 625-4600
Spills to City Sewer 625-7900
www.spokanecity.org

City of Spokane Valley
www.spokanevalley.org/solidwaste 921-1000
2405 N. University Road

Liberty Lake – City Hall 755-6700

Spokane County Wastewater Pretreatment Program 477-7450
Spills to County Sewer 477-1984
After Hours 459-9330

Washington State Dept. of Health
Drinking Water Division 329-2100
After Hours 1-877-481-4901
www.doh.wa.gov/ehp/dw

Spokane County Utilities
Solid Waste & Water Resources Program 477-3604
www.spokanecounty.org/utilities/solidwaste

Spokane Regional Health District
Environmental Health 324-1560 x 9
www.srhd.org

Spokane Regional Clean Air Agency
Air Quality, Asbestos, Woodstoves,
Outdoor Burning, Permits 477-4727
www.spokanecleanair.org

SPOKANE AQUIFER JOINT BOARD
Revised 10/14
www.spokaneaquifer.org info@spokaneaquifer.org

Exhibit 5.1.3 PCSI List

2014 PCIS List

Site Address	Site Name
18 S HAVEN ST	Rocketman Auto Detail
19 W GLASS AVE	KARLEA SMITH DESIGN & CONSULTING
22 N RALPH ST	THUNDERBIRD LUBRICATIONS RALPH ST
22 W CENTRAL AVE	MILLER RONALD R DDS
24 E EUCLID AVE	PELLANDA WILLIAM L
24 E HOFFMAN AVE	ZEPHYR WINDOW WASHING
24 N STONE ST	M T M CONTRACTORS INC
26 E KIERNAN AVE	BRIANS QUALITY PAINTING
28 E HOFFMAN AVE	K & B LAWN CARE SERVICES INC
33 E FRANCIS AVE	DARIGOLD INC. SPOKANE PLANT
33 E FRANCIS AVE	Inland Northwest Dairies LLC
35 E WALTON AVE	24-7 GRAPHICS & ILLUSTRATION
37 E COZZA DR	SPOKANE FIRE DISTRICT STATION 18
37 E EUCLID AVE	SPOKANE CAB # 1536
42 E HOFFMAN AVE	HOCHSTEDLER ENTERPRISES
46 E ROWAN AVE	SPOKANE DIGESTIVE DISEASE CLNC
48 E LIBERTY AVE	ALLENS LAWN CARE
51 E EVERETT AVE	GUZMAN LAND CARE
53 E RICH AVE	J U CONTRACTING CO
59 E QUEEN AVE	HEART N HOME HEALTHCARE
59 E QUEEN AVE	TAK DUST CONTROL
59 E QUEEN AVE	TAK PETROLEUM INC
101 N STONE ST	PACIFIC CONTRACTORS & SUPPLY INC
103 W COLUMBIA AVE	JIMS CARPET SERVICE
104 E RICH AVE	MAID TO ORDER
104 S FREYA ST	D & M REFRIGERATION INC
104 S FREYA ST	EUCON CORPORATION
104 S FREYA ST	KITCHENS BY CONTARDO INC
104 S FREYA ST	LEASING CO INC THE
104 S FREYA ST	METALTECH INTERNATIONAL INC
104 S FREYA ST	MILL MAN STEEL INC
104 S FREYA ST	PACIFIC RAINIER ROOFING INC
104 S FREYA ST	REUGH CONSTRUCTION INC
104 S FREYA ST	SHAMROCK CONSTRUCTION & MAINTENANCE CO I
104 S FREYA ST	TAPIO BROWN BUILDING
104 S FREYA ST	WESTERN RAIL CORP
107 N STONE ST	DAN'S MACHINE WAX CO
110 N GREENE ST	ELECTRIC SMITH INC
111 W JOSEPH AVE	LIMITED EDITION BEAGLES
112 N Crestline St	Dr Bill's Auto Clinic

2014 PCIS List (Cont.)

Site Address	Site Name
112 N CRESTLINE	SPOKANE WROUGHT IRON INC.
112 S FISKE ST	CHRISTIAN YARD CARE
114 E GORDON AVE	APECK CONSTRUCTION
118 E PRINCETON AVE	PRINCETON CLEANING & JANITORIAL
118 N NAPA ST	PROCOLLISION CENTER
119 E PRINCETON AVE	PRINCETON CLEANING & JANITORIAL
120 E EUCLID AVE	NORTHWEST SENIOR CARE INC
120 N RALPH ST	MAX J. KUNEY COMPANY
121 N LEE ST	INWEST TRANSPORTATION SYSTEMS L L C
122 N NAPA ST	DAN AUTO PARTS
122 N NAPA ST	KEYSTONE BODY & PAINT
124 E KIERNAN AVE	R K S CONSTRUCTION
124 E ROWAN AVE	PURDY ALAN D MD
127 E KIERNAN AVE	MOMENTS TO REMEMBER
128 E SANSON AVE	COMPLETE CARPENTRY INC
130 N CRESTLINE ST	AFFORDABLE AUTO SALES AND REPAIR
133 N STONE ST	GREGS FINISHING
202 E NORTH FOOTHILLS DR	FOOTHILLS LINCOLN MERCURY MAZDA
203 N STONE ST	Greencastle Soap & Supply
207 N FREYA ST	RYERSON STEEL
211 E LIBERTY AVE	DUNCAN TREE SERVICE
211 E QUEEN AVE	PJ LANDSCAPING
218 N CRESTLINE ST	Aramark
223 E BRIDGEPORT AVE	WINDOWS R US
227 S HAVEN ST	SKIN ILLUSTRATIONS UNLIMITED
228 S Thor St	Tesoro
235 E ROWAN AVE	HOLY FAMILY MEDICAL CENTER
301 E WALTON AVE	FINISHING TOUCH PAINTING & WOODWORKING
303 W QUEEN AVE	URBAN YARD CARE
306 N FREYA ST	DISHMAN CAB
307 N SYCAMORE ST	C & C MANUFACTURING
309 N SYCAMORE ST	Inland Retech
309 W QUEEN AVE	ACE CONTRACTORS
315 E MONTGOMERY AVE	NIOSH Spokane Research Lab
319 E MONTGOMERY AVE	PECK PLBG
323 E EUCLID AVE	MICHAELS QUALITY CONST
358 W NEBRASKA AVE	PARSONAGE-BU
408 E FAIRVIEW AVE	BILL DENNO AUTO REPAIR
411 N HAVANA ST	NORTHERN ENERGY SPOKANE
421 N FREYA ST	ELKAY SSP

2014 PCIS List (Cont.)

Site Address	Site Name
427 E BALDWIN AVE	AT CONSTRUCTION
501 E FAIRVIEW AVE	WILLIAMS LAND DESIGNS & LANDSCAPE SERVIC
501 N FREYA ST	NAPA SPOKANE DISTRIBUTION CTR SPOKANE
502 N FREYA ST	STOP N SHOP
503 E ERMINA AVE	COUNTY RECORDS PUBLISHING CO
508 N FISKE ST	CHEVRON SPOKANE BULK Plt
508 N FISKE ST	PETROLEUM DISTRIBUTING CO INC
508 N FISKE ST	Spencer Environmental
508 N FISKE ST	Thermo Fluids Inc Transfer Facility
510 S THOR ST	Seven-ELEVEN 2303-17937 J
511 E RICH AVE	INLAND EMPIRE PAINTING
515 N HAVANA ST	FEDERAL EXPRESS
515 S THOR ST	CLASSIC CLIPS
516 N SYCAMORE ST	McCLINTOCK & TURK
601 N FREYA ST	KELLER SUPPLY CO-WHOLESALER
601 N NAPA ST	Standard Batteries
603 N HAVANA ST	WILLIAMS & SONS DISTRIBUTORS INC
606 N FISKE ST	CONSOLIDATED FREIGHTWAYS SPOKANE
606 N FISKE ST	UPS Freight Spokane
617 N HELENA ST	Safeguard Business Printing
619 N NAPA ST	High Quality Electrical Rebuilding
620 N Freya St	Northwest Radiator
633 N HELENA ST	Rug Doctor Inc
633 N HELENA ST	SPOKANE OUTBOARD SERVICE INC
654 S THOR ST	JUST CLEANIN
702 N HELENA ST	Ibex Flooring
704 N STONE ST	Keigley & Company
707 N FREYA ST	MORAN FENCE INC
708 N COOK ST	CITY PARCEL DELIVERY INC
713 N COOK ST	Trackman Inc
714 E MONTGOMERY AVE	QUALITY MASONRY
715 N HOGAN ST	Trane
721 N HOGAN ST	Compass Construction Inc
726 N HOGAN ST	FAIRWAYS CIGARS INC
727 N HOGAN ST	RESCUE RESTORATION INC
727 W FRANCIS AVE	GREEN GABLES PHOTOGRAPHY INC
728 N COOK ST	MR SERVICE INC
728 S THOR ST	YURIYS CO
738 N COOK ST	Crown Sign Service
801 E INDIANA AVE	H & S GENERAL CONTRACTORS

2014 PCIS List (Cont.)

Site Address	Site Name
809 N HELENA ST	RODS ELECTRIC INC.
815 N REGAL ST	S&P MEATS INC
819 N Crestline St	Gold Image
823 N MADELIA ST	NORTHERN EXPOSURES PHOTOGRAPHY
830 N REGAL ST	Todds Automotive / Divine Corp
901 E Sharp Ave	TESORO 2GO #62149
909 N NELSON ST	MR. ED'S WAREHOUSE BUILDING
910 E HOLLAND AVE	Alton's Tire Rama
911 E MARIETTA AVE	ACTION RECYCLING INC
911 E MARIETTA AVE	SILVER BUYERS
914 E NORTH FOOTHILLS DR	SPOKANE CITY WATER DEPT
933 E MISSION AVE	SAFEWAY #255
938 E ILLINOIS AVE	BANGHAM LAGG & WYNN
1003 E MISSION AVE	MATT KINCAID PAINTING
1003 N HOGAN ST	NATHAN MURPHY PROPERTY IMPROVEMENT
1035 E CATALDO AVE	US Express Inc
1100 N SUPERIOR ST	MAPLEWOOD GARDENS
1107 N CRESTLINE ST	CHUCKS SEALING
1112 N COLUMBUS ST	FIRST LINE MOBILE FIRE EXTINGUISHER SERV
1117 N SUPERIOR ST	BETTES FLORAL BOUTIQUE
1204 E BALDWIN AVE	KNIPPRATH CELLARS INC
1211 E FRANCIS AVE	Swedish Motorcar Service
1215 E NORA AVE	BODY & PAINT PLUS
1221 E ERMINA AVE	NELSONS NORTH WEST WOOD PRODUCTS
1223 E JACKSON AVE	FINE PHOTOGRAPHY BY TIM SCHULTHEIS
1315 N NAPA	JACKS DENTURE LAB
1411 E MISSION AVE	AVISTA CORP
1419 N HAMILTON ST	Clark's Cleaners
1419 N LEE ST	FULL MOON PRESS ELECTRONIC PUBLISHING
1503 E ILLINOIS AVE	ZIP TRIP NO. 10
1519 E TRENT AVE	Spokane Metal Finishing
1523 N MAGNOLIA ST	ROOTER NINE ONE ONE
1524 E TRENT AVE	NorthStar Hydro Cleaning Systems
1530 E ILLINOIS AVE	ALL POWER CONTRACTING
1622 E NORTH CRESCENT AVE	GERRYS SPEED SHOP
1705 E SPRINGFIELD AVE	THE AUTO SERVICE CENTRE
1710 E TRENT AVE	ADVANTAGE PRINTING
1717 E Trent Ave	Ralph's Body Fender & Muffler
1727 E SPRINGFIELD AVE	Security Plus Omni Corporation
1727 N CINCINNATI ST	PETTIT CONSTRUCTION

2014 PCIS List (Cont.)

Site Address	Site Name
1800 E TRENT AVE	QUALITY MILLWORKS INC (WA)
1802 E TRENT AVE	BAKER BUILDERS
1803 E SPRINGFIELD AVE	WALKER CONST STOR WAREHSE
1815 E MISSION AVE	MISSION AVENUE LIBERTY TIRE INC
1815 E TRENT AVE	PRECISION COLLISION
1827 E TRENT AVE	CRASH INC
1831 E MISSION AVE	WHITLEY OIL LLC MISSION
1902 E MISSION AVE	POWER TOOL SERVICE
1911 E SPRINGFIELD AVE	KEN HAINSWORTH CO
1914 E MISSION AVE	MOSS PHOTOGRAPHY
1914 E MISSION AVE	WAYMAKER INDUSTRIES
2025 E TRENT AVE	WESCO DISTRIBUTING INC
2101 E RIVERSIDE AVE	ACC BLDG-PACIFIC CONTRACTORS
2103 N PERRY ST	CALVIN & CO
2104 E MALLON AVE	GRAYSON FLEET MAINTENANCE
2104 E MALLON AVE	WHEELS ON WHEELS INC
2105 N FANCHER RD	LONGS LAWN TREE & SHRUB SERVICE
2106 E BROADWAY AVE	STIERWALT CORP
2108 E MALLON AVE	PRO FAB CUSTOM WELDING
2121 E Riverside Ave	Oil Analysis Lab Inc
2124 E SHARP AVE	RO & MO'S MOBILE AUTO REPAIR
2202 E BROADWAY AVE	CUSTOM PRODUCTIONS WAREHOUSE
2204 E MALLON AVE	PRECISION CABINETRY INC
2204 E RIVERSIDE AVE	BURYA AUTOMOTIVE SHOP
2207 E CATALDO AVE	B & R HAULERS
2214 E MALLON AVE	SPECIALTY HOME PRODUCTS
2222 E MALLON Ave	PREMIER LANDSCAPE
2228 E SHARP AVE	DUNN RITE ROOFING CO
2310 E BOONE AVE	MYSTIQUE SOAP & FRAGRANCE CO
2318 E BOONE AVE	AUTO CARE ON WHEELS
2406 E TRENT AVE	BATEMANS TOWING & REPAIR SERVICE
2410 N HOGAN ST	LOGANHURST HEALTH CARE FAC.
2411 E SPRAGUE AVE	STURDEVANT AUTO SALES
2414 N NEVADA ST	FODE & SON SIDING & CARPENTRY
2417 N ASTOR ST	FLASHES AUTO BODY
2417 N DENVER ST	INTEGRITY CONSTRUCTION NORTHWEST INC
2420 E TRENT AVE	SUPERIOR CRAFTED CABINETS INC
2423 E SPRAGUE AVE	WILSONS SMALL ENGINE
2440 E TRENT AVE	Concession Supply Spokane
2502 E TRENT AVE	Mitchell Lewis & Staver Co

2014 PCIS List (Cont.)

Site Address	Site Name
2503 E SPRAGUE AVE	A 1 AUTO SALES OF SPOKANE
2513 N PERRY ST	A & J
2515 E TRENT AVE	Auto Works NW
2517 E 1ST AVE	BLUE SKY FLATWORK AND FLOORING
2524 N NEVADA ST	Z-1
2525 N PERRY ST	ACE FENCING & SPRINKLER SYSTEMS
2601 E SPRAGUE AVE	PERFORMANCE AUTO SALES INC
2601 E SPRAGUE AVE	R-H-M WHOLESALE
2610 E SPRAGUE AVE	QUALITY CARS INC
2616 E BROADWAY AVE	Barrier Trust Property
2616 N HAMILTON ST	LEONARDS MACHINE & SUPPLY
2625 E TRENT AVE	COOPERATIVE SUPPLY
2626 E TRENT AVE	All Thermal Insulation
2626 E TRENT AVE	Bogans Auto Sales
2626 E TRENT AVE	Professional Insulation
2626 E TRENT AVE	Specialty Environmental
2626 E TRENT AVE	SPECIALTY INSULATION
2626 E TRENT AVE	WASHINGTON WHOLESALE AUTO LLC
2628 E 1ST AVE	R & J GENERAL CONTRACTOR
2711 E SPRAGUE AVE	BAKER CONSTRUCTION & DEVELOPMENT INC
2711 E SPRAGUE Ave	MAIL GRAPHICS
2713 E SPRAGUE Ave	WHEN EAST MEETS WEST
2714 N MAYFAIR ST	WA DOT Eastern Region Mayfair
2727 E TRENT AVE	Metal Sales Manufacturing Corp
2801 E SPRAGUE AVE	ANDYS RESALE CARS
2808 E SPRAGUE AVE	HORIZON AUTO 2
2820 N ASTOR ST	SEARS REPAIR CENTER
2820 N MAYFAIR ST	WSDOT MAINTENANCE SHOP
2824 N NEVADA	HARRY D NELSON
2832 N RUBY ST	SPOKANE FUNERAL HOME+CREMATORY
2904 E SPRAGUE AVE	HONEY BEE HAMS
2911 E CLEVELAND AVE	T & M AUTO SERVICE
2932 E TRENT AVE	WAREHOUSE CARPETS INC
3015 N NELSON ST	INTERIOR CONCEPTS
3108 E FERRY AVE	PANTROL INC.
3206 N DIVISION ST	ALFONSO MOTORS
3220 N DIVISION ST	CAMPER CAPITOL
3304 E SPRINGFIELD AVE	Evergreen Powder Coatings
3320 E SPRINGFIELD AVE	CUSTOM VAN & TRUCK CO
3320 E SPRINGFIELD AVE	U Haul Co of Inland NW Shop

2014 PCIS List (Cont.)

Site Address	Site Name
3407 E MAIN AVE	SPOKANE RECYCLING PROD.
3407 E MAIN AVE	WASTE PAPER SERVICE INC
3427 E 5th Ave	Fred Meyer Fuel 657
3506 E SANSON AVE	Sanson Drum
3511 E RIVERSIDE AVE	Fluid Design Products Inc
3521 E 5TH AVE	SOUTHEAST PAINTING
3528 E MAIN AVE	ALCOBRA METALS
3530 E FERRY AVE	PUPO'S PRODUCE INC
3608 N DIVISION St	SFD STATION 10 (FIRE DEPARTMENT)
3609 E SPRINGFIELD AVE	AND ET CETERA INC
3611 E SPRAGUE AVE	AARON'S SALES & LEASE
3613 E MAIN AVE	HASKINS STEEL OXARC
3615 E FERRY AVE	COVER PRKNG/WASH SUNRISE FOODS
3619 E SPRINGFIELD AVE	STEVE WELTZ CABINET SALES INC
3621 E Front Ave	A & A Body Repair And Painting
3627 E ALKI AVE	INDUSTRIAL SYSTEMS & FABRICATION INC
3627 E OLIVE AVE	STANDARD IRON & METAL CO
3714 N ATLANTIC ST	PACIFIC POOL AND SPA
3721 N DIVISION ST	LILAC CITY MOTORS
3803 E 6TH AVE	FOXTALE ENTERPRISES
3804 E FRONT AVE	HASKINS STEEL
3807 E 6TH AVE	DETAILS TILE & TRIM
3807 E FERRY AVE	SPOKANE TIN AND SHEET IRON WORKS INC
3817 N DIVISION St	HERITAGE FLOORING L L C
3820 E MAIN AVE	B & I WAREHOUSE
3827 E 6TH AVE	HARLEY ELECTRICAL SERVICES
3900 E Broadway Ave	STOCK STEEL
3901 E MAIN AVE	OSTEO NORTHWEST
3908 E FERRY AVE	Keebler Co
3918 E PACIFIC AVE	NORRIS QUALITY CONSTRUCTION INC.
3939 N FREYA ST	Allied Instrumentation Laborat
4000 E BOONE AVE	MID MOUNTAIN MACHINERY
4002 E FERRY ST	AT&T WIRELESS E SPOKANE
4002 E FERRY AVE	WHITE BOOT CO.
4003 E SPRAGUE AVE	RENT TO OWN
4006 N DIVISION ST	Budget Truck Rental
4007 E 5TH AVE	KARM & TARA TRADING
4007 E MAIN AVE	OLD WORLD CHRISTMAS
4010 E ALKI AVE	COLUMBIA DISTRIBUTING OF SPOKANE L L C
4010 E MAIN AVE	SAC TRANSPORTATION INC

2014 PCIS List (Cont.)

Site Address	Site Name
4011 E FERRY AVE	WINDSOR PLYWD WAREHOUSE
4014 E SPRAGUE AVE	PEPSI-COLA BOTTLING CO SPOKANE
4022 E BROADWAY AVE	BROADWAY INDUSTRIAL PARK
4047 E 6TH AVE	SURE CLEAN
4048 E PACIFIC AVE	J C & CO
4051 E 5TH AVE	KESLER DRYWALL SERVICES
4103 N DIVISION ST	24-7 GRAPHICS & ILLUSTRATION
4103 N DIVISION ST	GLEN'S FLOWER BLDG
4106 N STONE ST	K L LANDSCAPING
4107 N DIVISION ST	F J W OWNERS-SMALL COMM BU
4108 E PACIFIC AVE	J B SALVAGE & DEMOLITION
4114 E FERRY AVE	M & L SUPPLY OFFICE+WAREHOUSE
4114 E MAIN AVE	INDUSTRIAL COATING SPECIALISTS INC
4114 E MAIN AVE	Northwest Wash & Go
4114 E MAIN AVE	PACIFIC WINDOW PRODUCTS
4201 E SPRAGUE AVE	P M AUTO SALES
4201 N DIVISION ST	HEMMINGMOORES ORIGINALS INC
4203 E NEBRASKA AVE	NTP Enviromental Svcs
4204 N NORMANDIE ST	GATES CONTRACTORS
4208 N DIVISION ST	THE MUFFLER MART INC
4216 E MAIN AVE	Crescent Electric Supply Co
4240 E ALKI AVE	BURLINGAME STEEL INC
4314 N LIDGERWOOD ST	A CUTTING EDGE CONSTRUCTION CO
4402 N DIVISION ST	Walker's Furniture
4407 N DIVISION ST	CARTRIDGE WORLD DIVISION
4423 N DIVISION St	GOODYEAR AUTO SERVICE CNTR #8949
4504 N Division St	Alton's Tire Rama
4520 N FERRALL ST	FOREST RESOURCES INC
4615 N DIVISION St	NORTHTOWN GAS & DELI
4727 N DIVISION ST	Fast Lube Service
4750 N DIVISION ST	NORTHTOWN MALL
4750 N DIVISION ST	Photo Frenzy
4828 N STEVENS ST	D-MAC CONSTRUCTION
4918 N NORMANDIE ST	FROM START TO FINISH
5002 N POST ST	RE NU CONSTRUCTION
5007 N CALISPEL ST	A D S ARTISTIC DESIGN STUDIO
5013 N STEVENS ST	TROM PUBLISHING
5220 N MARKET ST	Greenboro Spokane
5403 N STEVENS ST	SKI CONSTRUCTION
5428 N STEVENS ST	SOLOGRAPHICS

2014 PCIS List (Cont.)

Site Address	Site Name
5505 E RUTTER AVE	E D M O DISTRIBUTORS INC
5520 N DIVISION ST	Rite Aid 5307
5523 E PARKWATER AVE	PERRON LIMITED
5603 E COMMERCE AVE	WORM CO ENTERPRISES
5628 N DIVISION ST	JUST A KICK
5633 N LIDGERWOOD ST	HOLY FAMILY HOSPITAL
5703 N POST ST	DIAL CLEANING
5829 E RUTTER AVE	FELTS FIELD AVIATION INC
5901 N LIDGERWOOD ST	N SPOKANE PRO BLDG EAGLE REHAB
5903 N DIVISION ST	PERKINS RESTAURANT
5922 N DIVISION ST	SNOW AUTO-FORMAL IMAGE
5923 N NORMANDIE ST	WELCOME HOME HOUSECLEANING
5924 N DIVISION ST	SNOW'S RETAIL BLDG SUITE A
6001 N MAYFAIR ST	A QUALITY CONTRACTING
6010 N ATLANTIC ST	V J MAINTENANCE
6015 N DIVISION ST	NORTH DIVISION MUFFLER CLINIC INC
6029 N MAYFAIR ST	CLEAN N BRIGHT
6105 E RUTTER AVE	FELTS FIELD-BLDG #17
6105 E RUTTER AVE	FELTS FIELD-HANGER 16
6125 N DIVISION ST	COST PLUS PLAZA
6125 N DIVISION	MELCHER MFG DBA LIFETIME POOLS
6202 N MARKET ST	Total Auto LLC
6302 N DIVISION St	QWIK STOP 1651
6313 E RUTTER AVE	LORANGER AVIATION INC
6315 E RUTTER AVE	MEDSTAR OFF/HNGR 6315 E RUTTER
6315 E RUTTER AVE	METRO AVIATION, INC.
6315 E SHARP AVE	HUGH MCNIVEN COMPANY
6510 N DIVISION ST	QUALITY ROOFING & SEAL COATING
6510 N DIVISION # 260	L J'S ENTERPRISES
6606 N DIVISION ST	Lowes HIW Inc of N Spokane
6624 N NAPA ST	Jay F Hoffman Trucking Inc
6902 N DIVISION ST	Lowes HIW 206
7228 N DIVISION ST	Columbia Paint & Coatings Division Spok
7320 N DIVISION ST	Jiffy Lube
7414 N DIVISION ST	Northgate Laundry
7630 N DIVISION ST	MICHAEL'S (FORMERLY BEST)
7704 N Division St	Schucks Auto Supply 87
7704 N DIVISION SPACE 3	Westco Martinizing North Division
7902 N DIVISION St	ZIP TRIP NO. 5
8702 N Division St	Schucks' Auto Supply # 4449

2014 PCIS List (Cont.)

Site Address	Site Name
9000 N Division St	Fast Lube Service
9000 N Division St	Wendle Ford/Nissan/Isuzu
9631 N NEVADA ST	DOMINICAN HEALTH INVESTMENT CORPORATION
10200 N NEWPORT HWY	SAFEWAY FUEL CENTER NEWPORT HWY
E 5317 RUTTER AVE	Community Colleges of Spokane Felts Fiel
E. 6311 SHARP AVE.	CHEVRON PIPE LINE CO. SPOKANE
N 4770 Division	Macys
N. 112 HAVEN ST.	COLUMBIA PAINT & COATINGS CO
Wellesley & Belt	Shadle Aquatics Center

Appendix 5.1.1 Wellhead Protection Program Technical Assessment

Section 5

Contingency Plan

5.1 Introduction

The Safe Drinking Water Act (SDWA) and its 1986 amendments require public water purveyors to develop contingency plans to manage and maintain an adequate water supply. In addition, Washington State Department of Health (DOH) requires contingency planning for wellhead protection programs to be incorporated into the purveyor's comprehensive water plan (WAC 246-290-100 and WAC 246-290-210).

A contingency plan for wellhead protection describes multiple actions to be implemented if either of the following conditions occurs:

- Groundwater monitoring detects a significant reduction in water quality either in a monitoring well or in a production well/well field.
- An emergency event which poses a threat to shut down one or more production wells.

Although other conditions for contingency planning exist (e.g. loss of transmission main, pumping station difficulties, etc.), only those that relate to potential contamination threats are discussed in this report.

The Washington State DOH's Wellhead Protection Program further lists several issues that contingency planning must address. As they apply to the City of Spokane, these are:

- Identify the maximum water system capacity including transmission and storage capacity and the impact from loss of the supply from the largest well.
- Evaluate expansion options for the system
- Identify potential interties to other public systems and costs to buy and deliver supplies from these systems.
- Evaluate current emergency procedures and make recommendations for contingency planning
- Identify future potential water sources and methods necessary for the protection of new sources
- Maintain a list of emergency phone numbers relevant to wellhead protection.

5.2 Contamination Detection

Events that trigger implementation of the contingency plan are detection of a contaminant threat or an emergency event that could lead to a contaminant threat. Actual detection could occur in a monitoring well or a production well. Detection of a contaminant in a monitoring well, but yet to be discovered in a production well, indicates that the City probably has time to respond in a non-crisis mode. If contaminants are detected in a production well, the City

must respond in a more timely manner, depending on the concentration of the contaminant, and how close it is to the regulatory maximum contaminant level (MCL).

Preventive action limits (PALs) have been established to identify a threshold concentration at which additional action **should be considered.** PALs should not be used to prescribe or limit action of the City to protect the water supply. The PAL shall only be used to heighten the awareness, and possibly take action, to determine the cause and location of the contaminant.

These PALs are lower than the regulatory MCLs to provide the City some time to consider response alternatives. Chemical constituents of an aesthetic nature are not subject to regulatory MCLs and need not be considered in this contingency plan.

PALs for volatile organic compounds (VOCs), synthetic organic compounds (SOCs), and for inorganic constituents were established using different criteria. Because SOCs and VOCs do not occur naturally in groundwater, their presence suggests manmade contamination. Inorganic constituents occur naturally at levels that fluctuate over time and distance. PALs for each category are defined as:

- SOCs/VOCs: twenty five percent of the MCL (Table 5-1 and 5-2)
- Inorganics: fifty percent of the MCL (Table 5-3)

Table 5-1
Volatile Organic Constituents
Maximum Contaminant Levels (MCL)/Preventive Action Limits (PAL)

CAS No.	Contaminant	MCL (mg/L)	PAL (mg/L)
75-01-4	Vinyl chloride	0.002	Detection
71-43-2	Benzene	0.005	0.00125
56-23-5	Carbon tetrachloride	0.005	0.00125
107-06-02	1,2-Dichloroethane	0.005	0.00125
79-01-06	Trichloroethylene	0.005	0.00125
106-46-7	para-Dichlorobenzene	0.075	0.0188
75-35-4	1,1-Dichloroethylene	0.007	0.00175
71-55-6	1,1,1-Trichloroethane	0.2	0.05
156-59-2	cis-1,2-Dichloroethylene	0.07	0.00175
78-87-5	1,2-Dichloropropane	0.005	0.00125
100-41-4	Ethylbenzene	0.7	0.175
108-90-7	Monochlorobenzene	0.1	0.025
95-50-1	o-Dichlorobenzene	0.6	0.150
100-42-5	Styrene	0.1	0.025
127-18-4	Tetrachloroethylene	0.005	0.00125
108-88-3	Toluene	1	0.25
156-60-5	trans-1,2-Dichloroethylene	0.1	0.025
1330-20-7	Xylenes (total)	10	2.500
75-09-2	Dichloromethane	0.005	0.00125
120-82-1	1,2,4-Trichloro-benzene	.07	0.0175
79-00-5	1,1,2-Trichloro-ethane	0.005	0.00125

Notes:
Source: 40 CFR 141.61
2. PALs are 25 percent of the MCL or at the method detection limit, whichever is higher
Analytical Method: EPA 524.2

Table 5-2

Synthetic Organic Constituents (Phase II/V)

Maximum Contaminant Levels (MCL)/Preventive Action Limits (PAL)

Contaminant	MCL (mg/L)	PAL (mg/L)
Alachlor	0.002	0.0005
Aldicarb	0.003	0.00075
Aldicarb sulfoxide	0.004	0.001
Aldicarb sulfone	0.002	0.0005
Atrazine	0.003	0.00075
Carbofuran	0.04	0.01
Chlordane	0.002	0.0005
Dibromochloropropane	0.0002	0.00005
2,4-D	0.07	0.0175
Ethylene dibromide	.00005	1.25x10-5
Heptachlor	0.0004	0.0001
Heptachlor epoxide	0.0002	0.00005
Lindane	0.0002	0.00005
Methoxychlor	0.04	0.01
Polychlorinated biphenyls	0.0005	0.000125
Pentachlorophenol	0.001	0.00025
Toxaphene	0.003	0.00075
2,4,5-TP	0.05	0.0125
Benzo[a]pyrene	0.0002	0.00005
Dalapon	0.2	0.055
Di(2-ethylhexyl) adipate	0.4	0.1
Di(2-ethylhexyl) phthalate	0.006	0.0015
Dinoseb	0.007	0.00175
Diquat	0.02	0.005
Endothall	0.1	0.025
Endrin	0.002	0.0005
Glyphosate	0.7	0.175
Hexacholorbenzene	0.001	0.00025
Hexachlorocyclopentadiene	0.05	0.0125
Oxamyl (Vydate)	0.2	0.05
Picloram	0.5	0.125
Simazine	0.004	0.001
2,3,7,8-TCDD (Dioxin)	3x10-8	7.5 x10-7

Table 5-3

Inorganic Constituents

Maximum Contaminant Levels (MCL)/Preventive Action Limits (PAL)

Contaminant	MCL (mg/L)	PAL (mg/L)
Primary Constituents		
Antimony	0.006	0.003
Arsenic	0.050	0.025
Barium	2.01	1.0
Berylium	0.004	0.002
Cadmium	0.005	0.0025
Chromium	0.100	0.05
Copper	1.3	.05
Iron	0.30 S	0.15
Lead	0.015 AL	(refer to note 3)
Manganese	0.050 S	0.025
Mercury	0.002	0.001
Nickel	0.10	.05
Nitrate	10	5
Nitrite	1.0	0.5
Selenium	0.05	0.025
Silver	0.050	0.025
Thallium	0.002	0.001
Secondary (Aesthetic) Constituents		
Asbestos (>10μm)	7 million fibers/liter	3.5 MFL
Chloride	250.0	125.0
Color	15 color units	7.5
Copper	1.0	0.5
Flouride	2.0	1.0
Foming Agents	0.5	0.25
Iron	0.30	0.15
Manganese	0.05	0.025
Odor	3.0	1.5
ph	6.5 - 8.5	
Silver	0.1	0.05
Sulphate	250	125
TDS	500	250
Zinc	5 S	2.5

Table 5-3 (continued)

Inorganic Constituents

Maximum Contaminant Levels (MCL)/Preventive Action Limits (PAL)

Notes:

1. Table includes general chemistry constituents and metals.
2. The PALfor IOC's was set at one-half the MCL
3. "AL" indicates that while no MCL has been established, 0.015 mg/L is a recommended action level for lead (National Primary Drinking Water Standards, U.S. EPA Region 5, updated June 1993). A water supplier is required to take action if greater than 10% of the connections exceed 0.015 mg/L (U.S. EPA drinking water hotline.)

5.2.1 Monitoring Wells/Contaminant Detection

Figure 5-1 is a flow chart showing actions that should be considered if potential contamination is detected in a monitoring well.

Any well with a reported value above the PAL should be re-sampled as soon as possible after the laboratory report. This is necessary to detect false positive results attributable to errors in collection, testing or handling of the sample. Strict field protocol should be followed to minimize the possibility of a false positive result. If re-sampling does not produce a value above the PAL, the contingency plan need not be implemented, but the detection event should be noted for future reference.

If the PAL is exceeded, the City should make a preliminary assessment of potential contaminant sources and the potential impact to the production well. The following issues should be determined:

- What are the potential impacts to the overall City water system?
- Which production wells could be removed from service?
- Can potential sources of the contaminant be identified?
- Could the monitoring well be on the edge of a contaminant plume, with higher concentrations impacting another well?
- What is the closest distance the contaminant could be from a production well?
- What time has elapsed since the previous sampling date and what is the travel rate for the contaminant?

A preliminary assessment must be made to identify the potential source of contamination. The preliminary assessment will determine if additional investigation is necessary. If the assessment determines the source is on City property, the City should report the findings to the following agencies:

- Washington State Department of Health (DOH)
- Washington State Department of Ecology (ECOLOGY)
- Spokane County Water Quality Management Program (WQMP)
- Spokane County Health District (SCHD)

Under this condition the City should also be contemplating remedial measures.

If the potential source is not on City property, the City may choose to install a monitoring well immediately downgradient of the suspected source. Information from this monitoring well could be used by ECOLOGY to exercise its regulatory authority for remediation of the source site. The City should monitor the progress of the investigation and remediation, including, when necessary, retain a technical consultant to protect the City's interests in the matter.

If the potential source of contamination is not identified, the City should consult with ECOLOGY and other agencies to determine a future course of action.

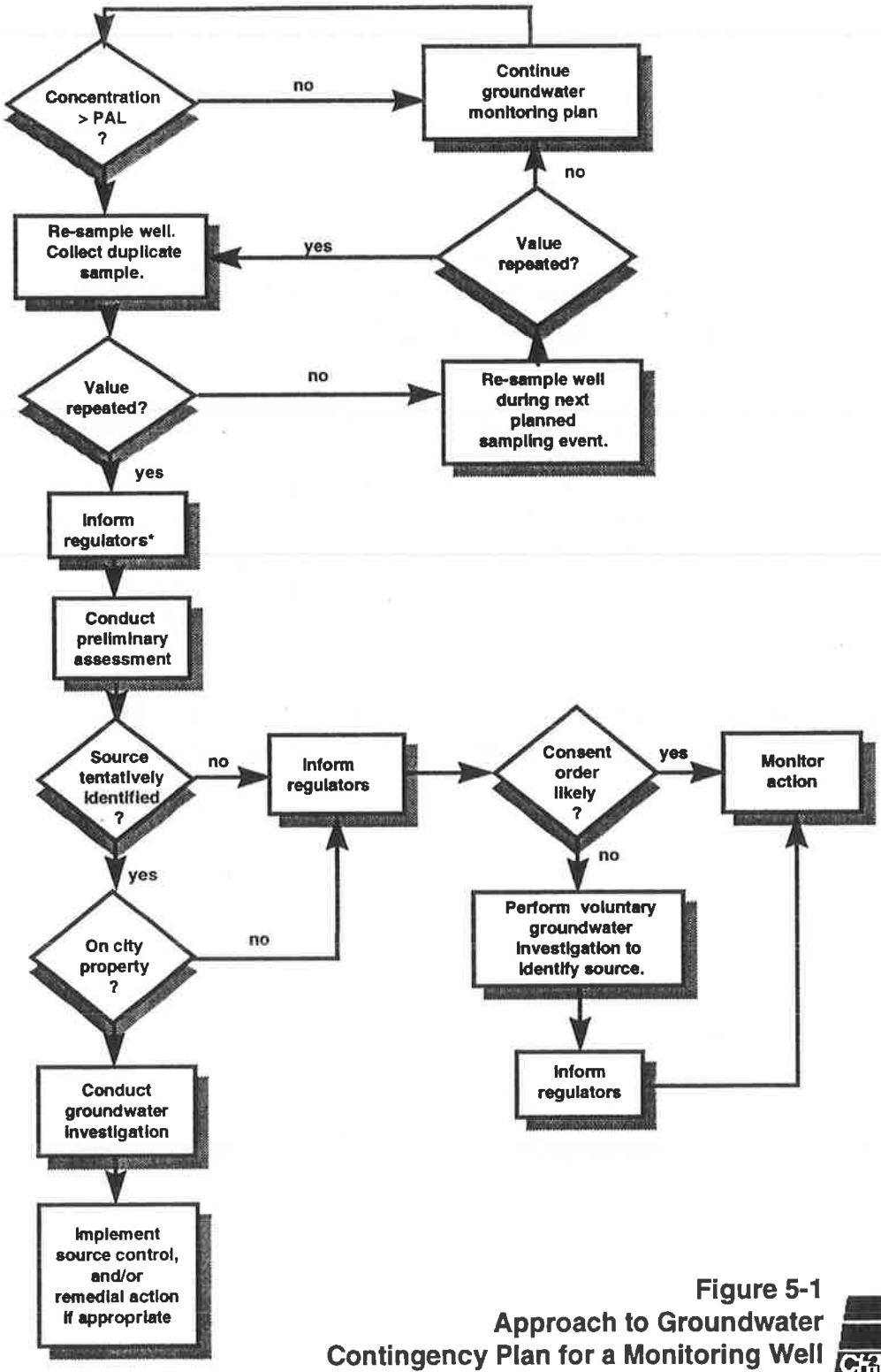


Figure 5-1
Approach to Groundwater Contingency Plan for a Monitoring Well Showing Contamination

5.2.2 Production Well Contaminant Detection

Figure 5-2 is a flow chart showing actions that should be taken if potential contamination is detected in a production well.

Any well with a reported value above the PAL should be re-sampled as soon as possible after the laboratory report. This is necessary to detect false positive results attributable to errors in collection, testing or handling of the sample. Strict field protocol should be followed to minimize the possibility of a false positive result. If re-sampling does not produce a value above the PAL, the contingency plan need not be implemented, but the detection event should be noted for future reference.

If the PAL is exceeded, the City should notify regulators and make a preliminary assessment of the source and potential impact to the production well. The following issues should be determined:

- Is the MCL exceeded? (If so, follow requirements of WAC 46-290-320)
- If the MCL is not violated, should the well remain in service with sampling performed more frequently?
- If the MCL is being exceeded, immediate interim measures can and should be taken, including 1) pumping the well to waste, 2) removing the source from production or 3) providing emergency treatment at the wellhead.

If a source of contamination is not identified and the concentration is below the MCL, the City may continue to use the well while;

1. Conducting a source investigation with regulators
2. Consider alternatives for the production well, planning for groundwater treatment.

If the source has been identified, control and remedial action should be pursued in the same manner as described in Section 5.2.1 Monitoring, but with more expediency.

Operation of a particular well may influence groundwater migration. If contaminants are migrating toward a well, but have only been detected in monitoring wells, the production well could be shut down reducing the obvious threat to the public health. However, shutting down a well could change the groundwater flow pattern which could affect contaminant travel to other wells. Other less apparent alternatives must be considered, including continued pumping and treatment or pumping the water to waste. ***Each case must be evaluated individually.***

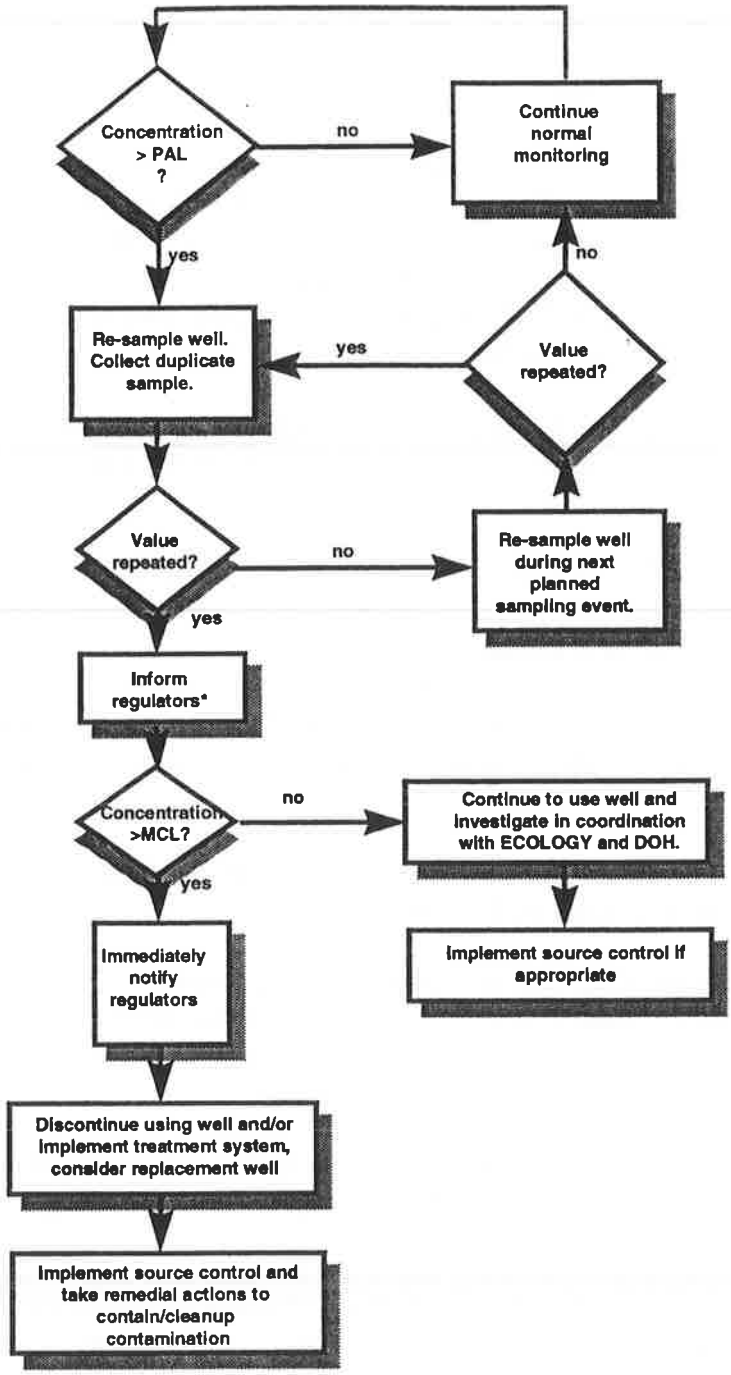


Figure 5-2
Approach to Groundwater Contingency Plan for a Production Well Showing Contamination

*Regulators include: Ecology, DOH, WQMP, SCHD

5.3 Emergency Event

Actions taken when an emergency occurs should be consistent and coordinated with the City's overall emergency response plan and the Water Department. The emphasis in this wellhead project is on groundwater contamination and the loss of a production well. The discussion presented in this report should only be considered a part of the City's overall response plan outlined in Section 4—*Emergency Response of the City of Spokane's Comprehensive Water Plan, Vol 2: Operations.*

The following emergencies are relevant to WHPAs:

- Tanker-truck/Railcar spill releasing hazardous material to a stormwater dry well, unpaved roadway or yard
- Fire at a hazardous material storage site
- Rupture of tanks storing hazardous materials
- Major failure of a large sanitary interceptor sewer
- Rupture of a surface or subsurface petroleum pipeline

Emergencies can take many forms. This makes rigid and detailed planning difficult, and undesirable. Therefore, an effective contingency plan must be flexible enough to be implemented under a variety of circumstances. Intelligent onsite decisions can only be made when the particular circumstances of an emergency are fully understood. Flexibility, therefore, lies in summoning all appropriate officials to the site so that a complete and balanced response decision can be made. WHP concerns must be addressed at each emergency event. Failure to do so can lead to the loss of a well. For example, the immediate and historical reaction to a fire at a chemical warehouse is to combat the fire to preserve the structure and property at risk. However, that response may lead to large quantities of contaminated water or liquid flowing into the soil. Depending on the particular site conditions, the appropriate response to this emergency may be to allow the structure and stored product to burn. This will minimize the flow of water or liquids that could contaminate groundwater.

The City of Spokane's HAZMAT (Hazardous Materials) Team from the City's Fire Department assumes command at most emergencies that would threaten the aquifer. However, other emergencies could occur that would not involve the HAZMAT team. For this reason, communication links to City and County sewer departments, DOT response team and local Fire Districts need to be established.

In all cases of emergencies, the Director of the City of Spokane's Water/Hydroelectric Services Department fully participates with the primary emergency response teams for the City of Spokane and Spokane County incidents. Once notified of an emergency, the Director's course of action is outlined in the flowchart presented in Figure 5-3.

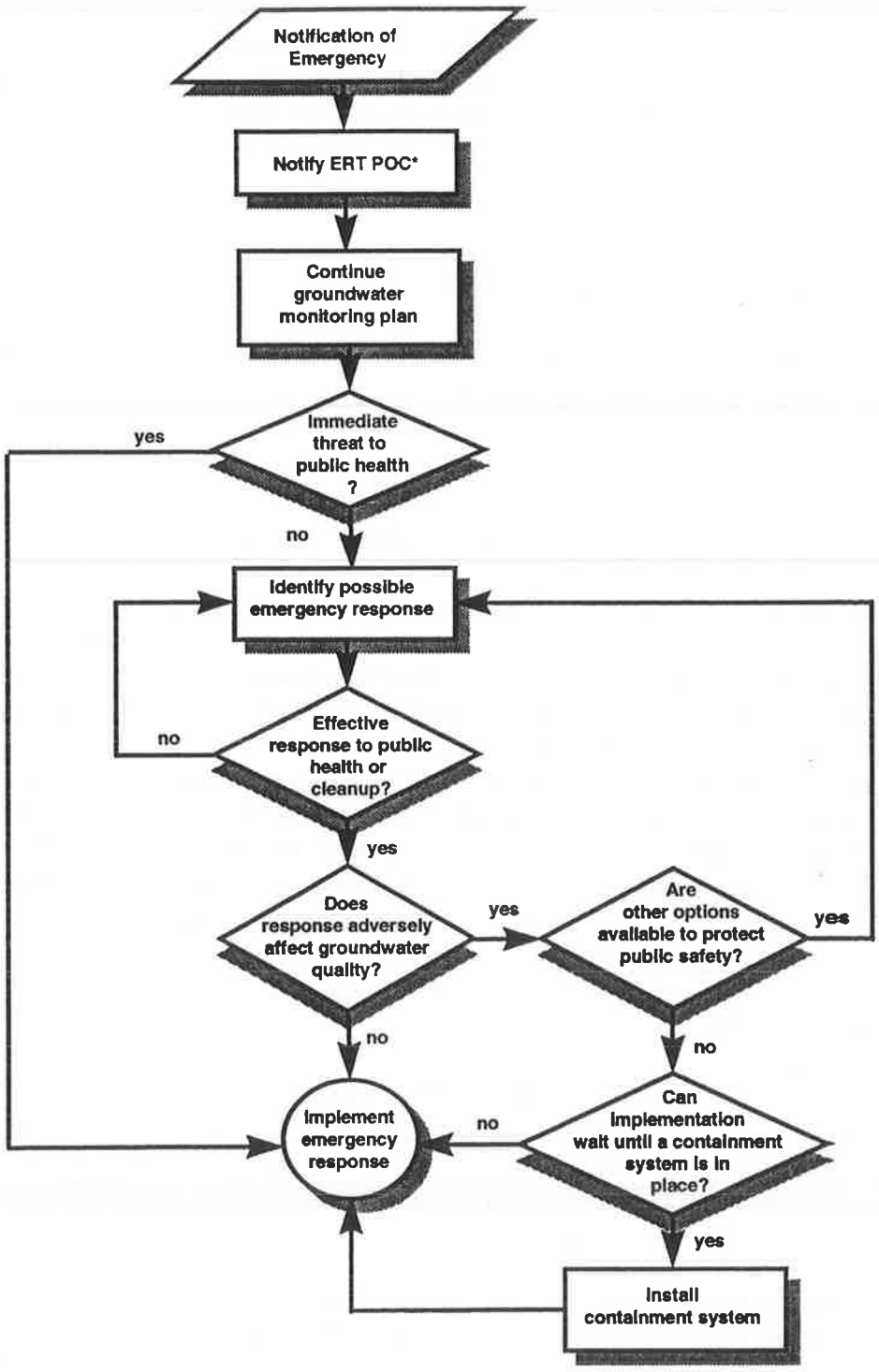


Figure 5-3
Approach to Emergency Response within WHP Area

*ERT POC - Emergency respone team, point of contact

5.4 Operational Response

The City of Spokane enjoys the advantages of ample aquifer capacity and adequate distribution system capacity to deal with the loss of a well. If contamination or the possibility of contamination causes a well to be removed from service, the impacts can range from negligible to inconvenient depending on which well is affected and the time of year. The following summary of system characteristics is relevant to understanding operational contingencies:

1. Total system operational capacity is 220 million gallons per day (mgd). Reserve capacity of approximately 60 mg/d is available if some wells, booster stations and reservoirs were out of service. Total system capacity for planning purposes is 280 mg/d. [1]

2. Daily demand ranges from a low of 30–40 mg/d during winter months to 150 mg/d during hot summer weather. The record demand is 185 mg/d (see Figure 5-4).

3. The Well Electric and Parkwater wells are critical to the City's system. Together they can supply fifty two percent of the total system capacity. The combination of the Grace and Nevada wells, the next largest well field can supply only thirteen percent of the total system capacity.

4. The Well Electric source can directly or indirectly supply the North Hill and the southside hydraulic systems.

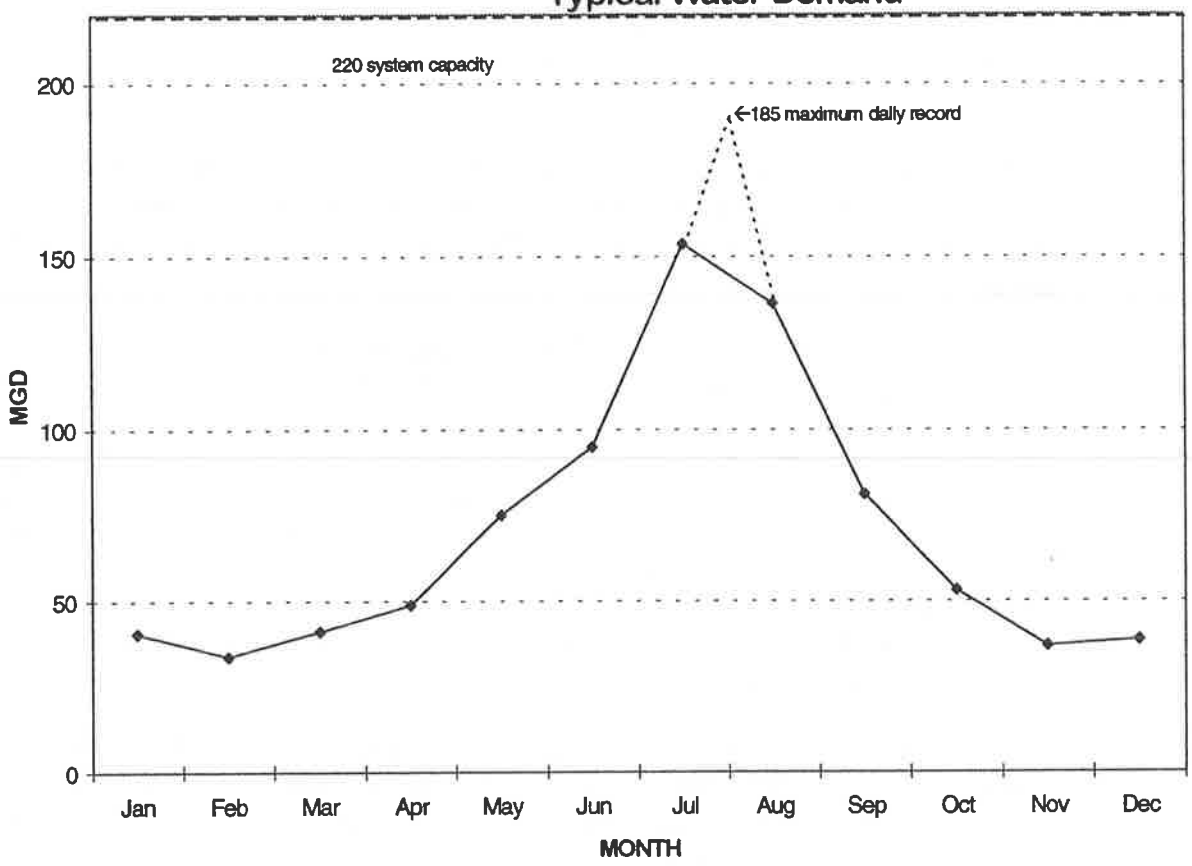
5. Loss of a well during the summer season will require reconfiguration of the system. During winter, if Well Electric and Parkwater are inoperable (due to seasonal shutdown), other wells can meet the water demand up to 110 mg/d. The North Hill wells can provide up to 50 mg/d, while the south side wells (Nevada and Ray St.) provide 60 mg/d capacity.

6. Figure 5-5 illustrates the schematic layout of the distribution system and the flexibility to meet an emergency situation, when water must be moved from one area or zone to another. There is ample capacity to move water from the North Hill hydraulic system or from the intermediate hydraulic system to supply water to the low system.

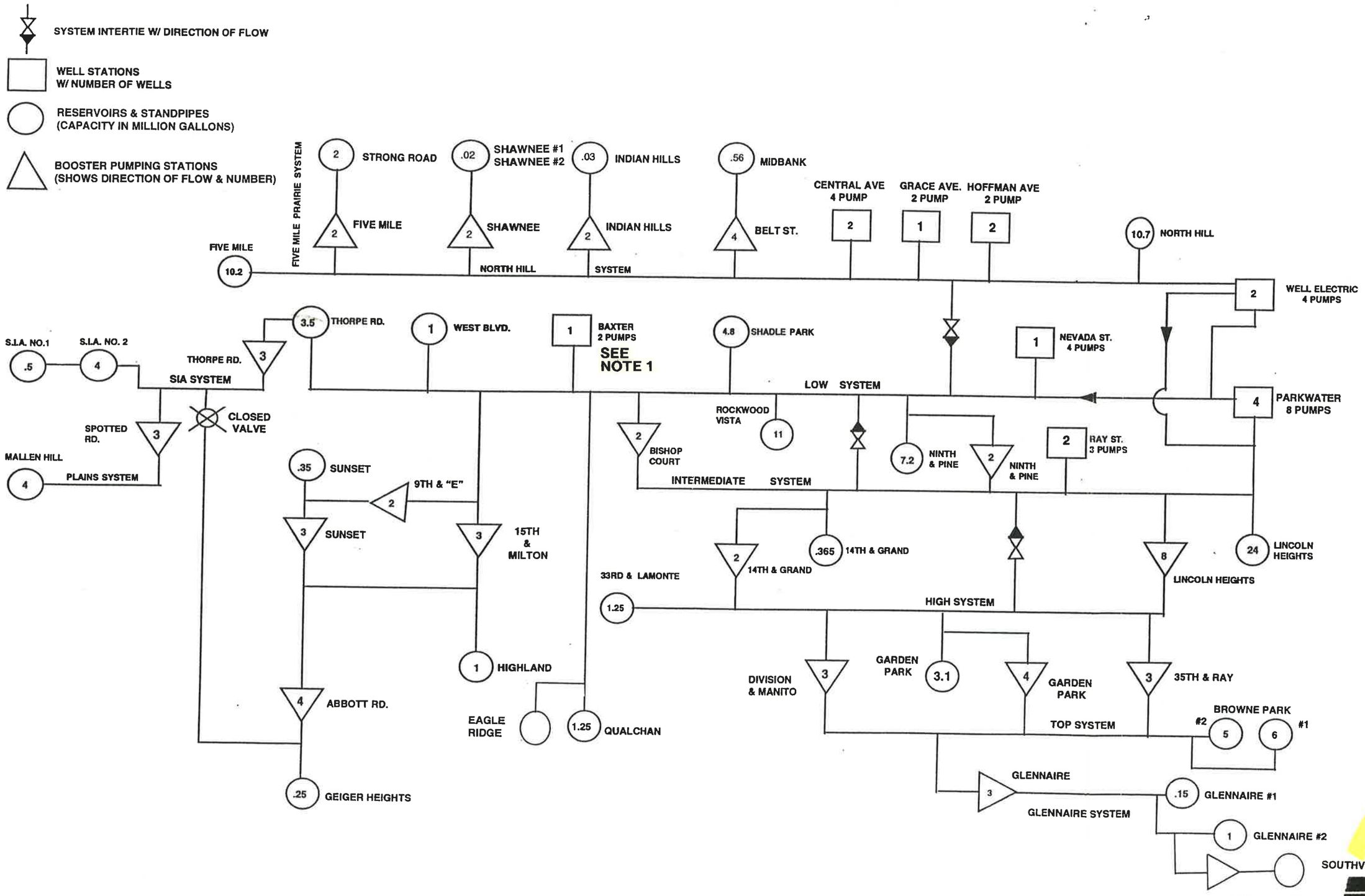
---

[1] Leon Sproule, Mark Cleveland City of Spokane Water Department communication 10/3/95

Figure 5-4
City of Spokane
Typical Water Demand*



** Information is from the 1994 records*



NOTE 1: DECOMMISIONED – 2003

Figure 5-5
Spokane Water System - Schematic

CH2MHILL

5.4.1 Summer Operations

The Parkwater and Well Electric production wells are critical to meeting the City's summer water demand. These two wells are within the same WHPA, and therefore, for planning purposes, loss of one suggests the probable loss of both water supply sources. This loss would reduce the City's overall system capacity of 220 mg/d to 100 mg/d. Therefore, the City's worst-case planning scenario should assume that the contingency planning capacity is 100 mg/d.

Fortunately, much of the peak water demand during June, July, and August can be curtailed without major impact to public health. During these months, the water demand peaks at an average of 150 mg/d and exceeds the contingency planning capacity of 100 mg/d by 50 mg/d. However, it is estimated that 80–100 mg/d of the peak summer usage is for non-essential public health uses such as lawn watering, car washing, street cleaning, and other non-essential uses. Therefore in order of priority[2], to reduce water demand by 50 mg/d the City anticipates taking the following steps:

1. Utilize the water system's reserve capacity. Activate all well pumps that are in reserve status and reconfigure the distribution system to divert some water from one area or pressure zone to the impacted area or pressure zone. This would include maximizing use of booster stations to supply water from a lower pressure zone to a higher one or partially opening connections between higher pressure zone to a lower one. Reconfiguration of the system could increase capacity by approximately 20 mg/d.

2. Curtail or eliminate public landscape watering; i.e., golf courses and parks. This would save approximately 15 mg/d.[3]

3. Curtail other City activities requiring large amounts of water such as street washing and hydrant testing. This saving is difficult to quantify, but should be done as a matter of policy.

4. Request voluntary reduction from selected users, such as schools and large private industries. This could save approximately 5 mg/d.

5. Make a general appeal through the media for voluntary reduction. This could save approximately ten percent of non-essential usage; approximately 10 mg/d.

6. Increase public awareness of the problem, and request odd/even watering days for domestic use. This could save an additional 10 mg/d in addition to the 10 mg/d demand reduction of a general media appeal.

---

[2] Leon Sproule, Mark Cleveland City of Spokane Water Department communication 1/19/96

[3] Utility Billing Records 1994, City of Spokane
Contingency Plan

7. As a short term emergency measure, restructure the water rates to severely discourage non-essential usage. This could reduce demand by seventy five percent of all non-essential water use; an additional 20-35 mg/d could be attained..

5.5 Summary

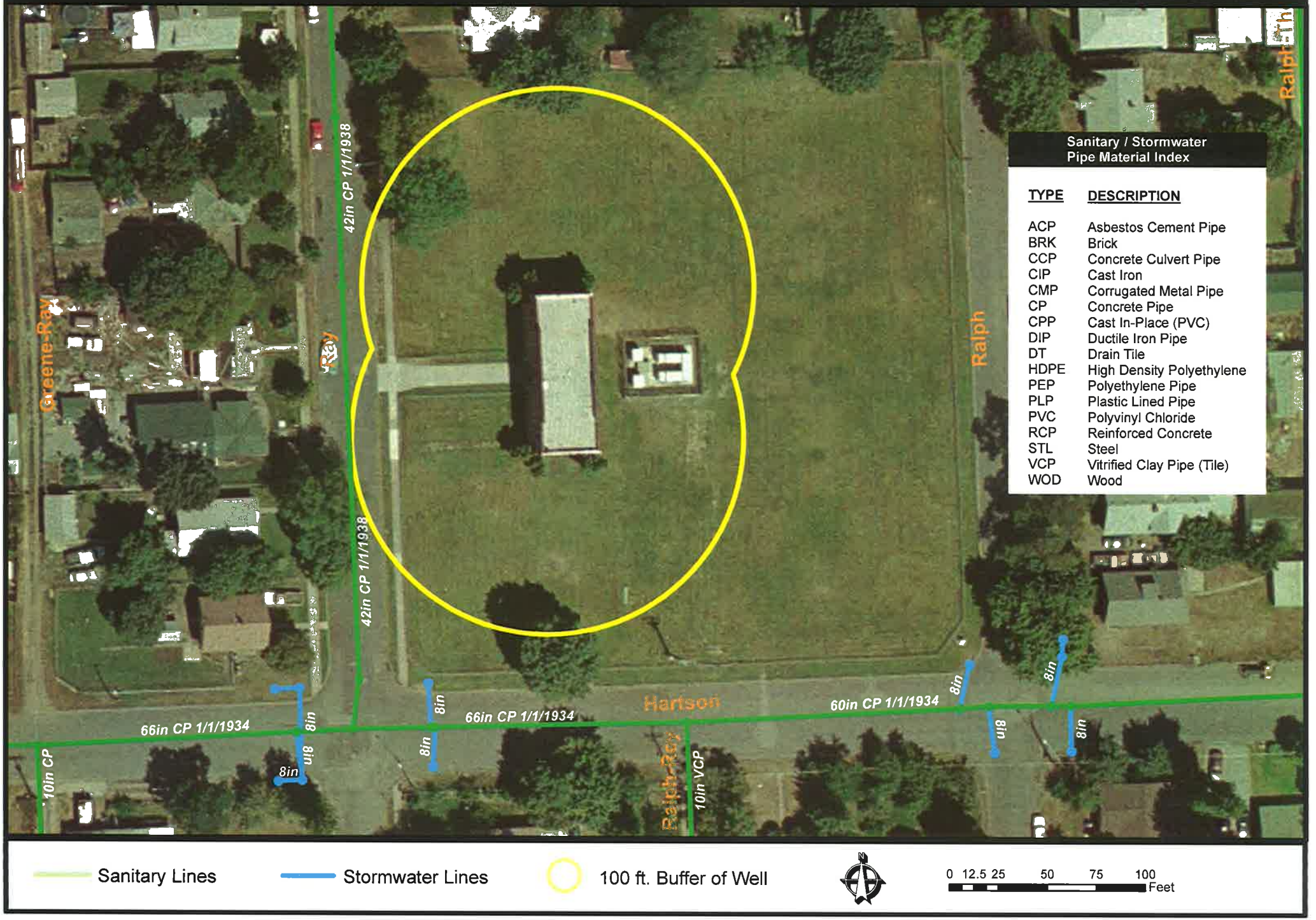
In summary, most of the City's water system demand could be met by utilizing the system's reserve capacity. Additional measures during the hottest months may be necessary, but should meet the system demand without calling on public participation in reduction.

The capacity of future wells and distribution flexibility should consider this contingency plan, along with the potential loss of Parkwater and Well Electric wells.

Exhibit 5.1.4 Wellhead 100 Foot Radius Assessment Maps

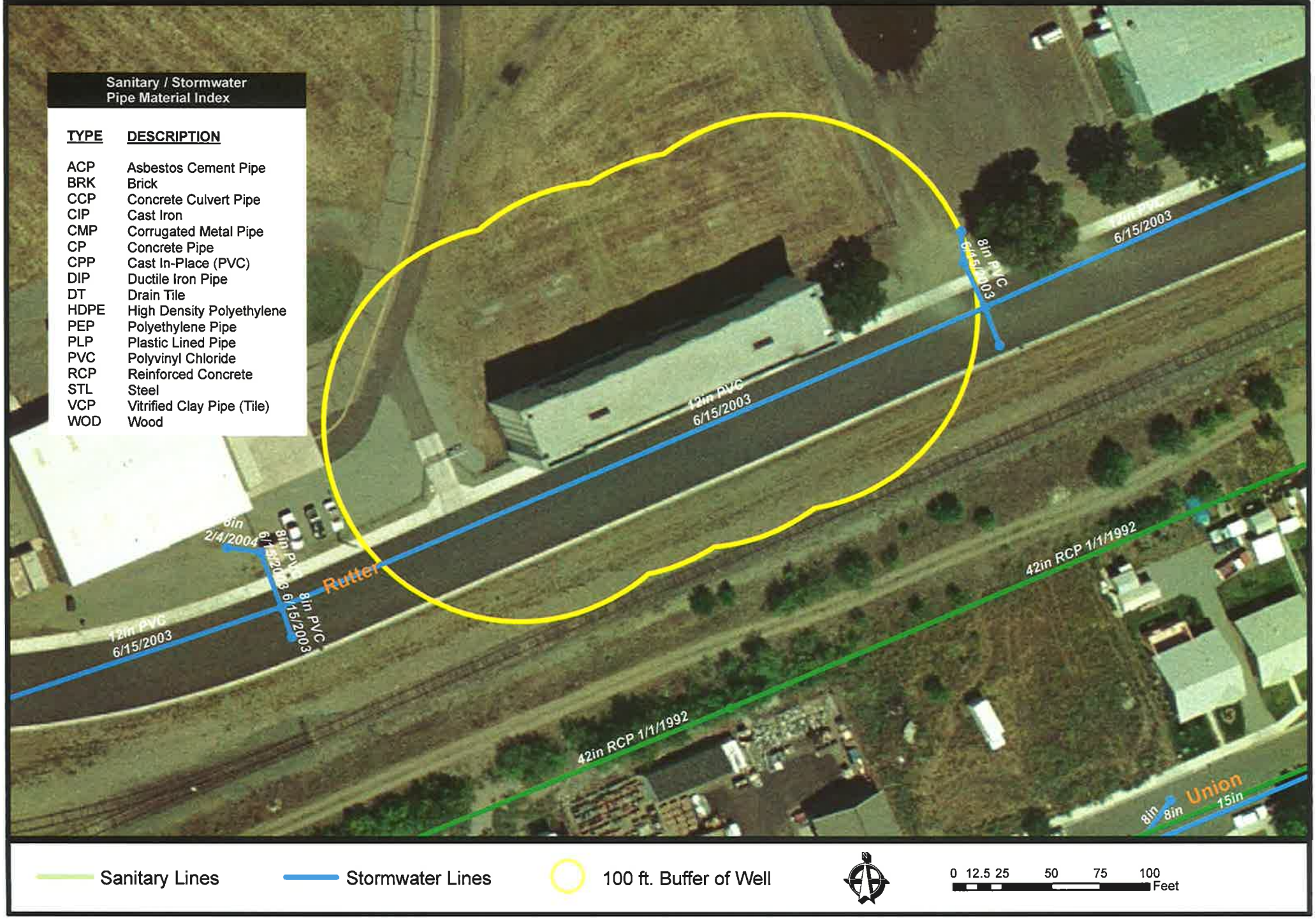
Ray Street Well Station

Exhibit 5.1.4a



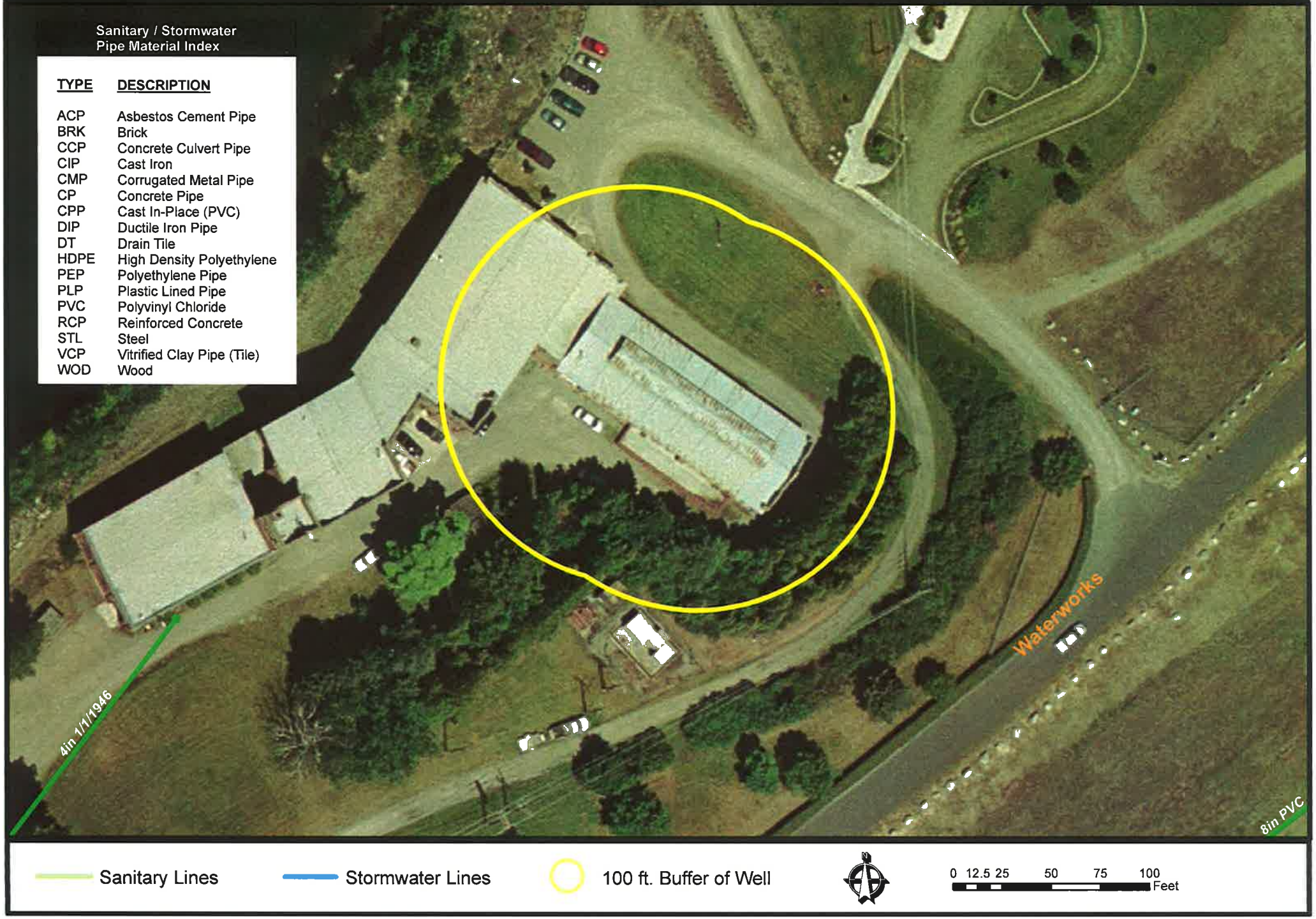
Parkwater Well Station

Exhibit 5.1.4b



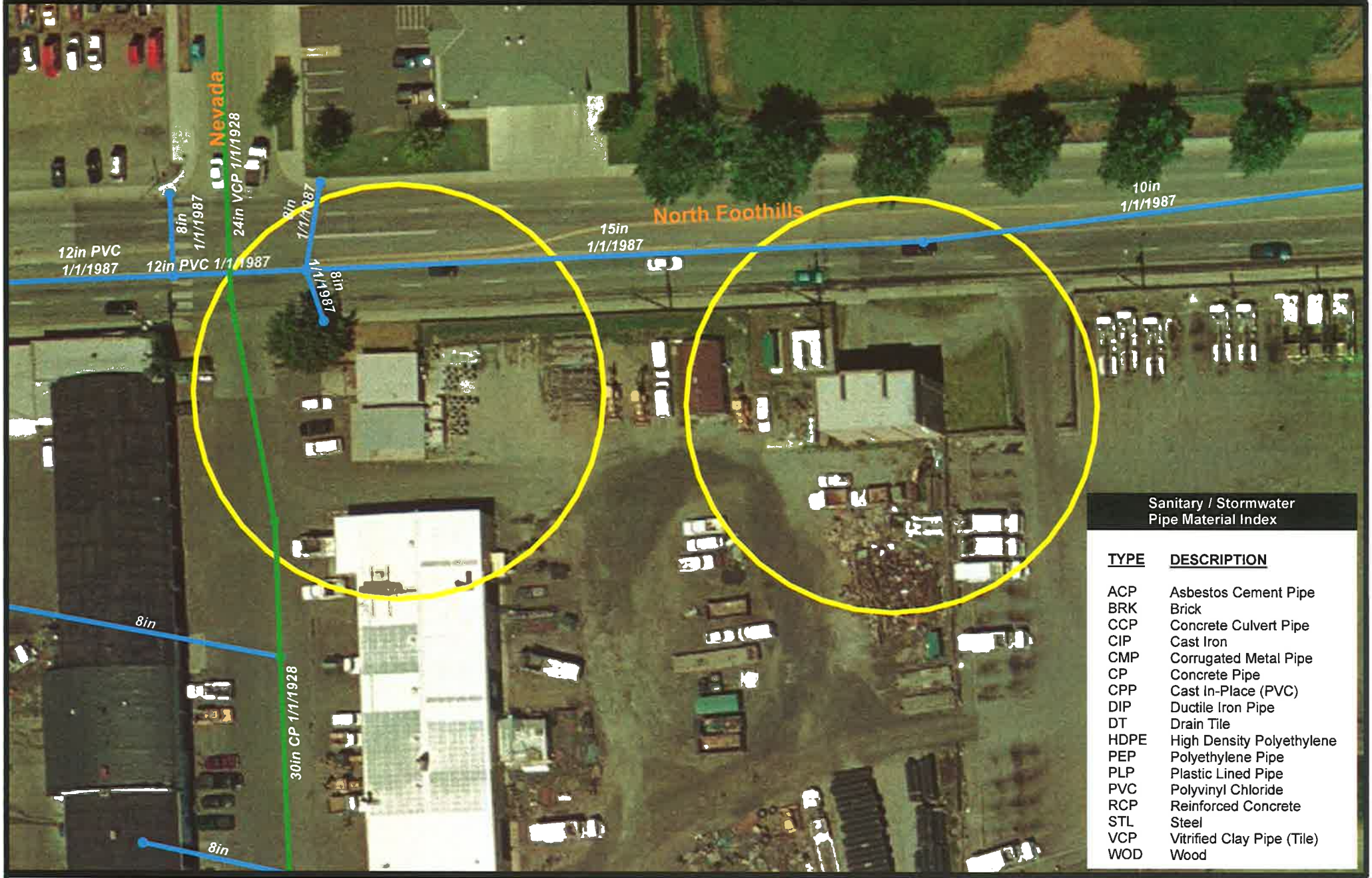
Well Electric Well Station

Exhibit 5.1.4c



Nevada Well Station & Grace Well Station

Exhibit 5.1.4d



Sanitary / Stormwater Pipe Material Index

TYPE	DESCRIPTION
ACP	Asbestos Cement Pipe
BRK	Brick
CCP	Concrete Culvert Pipe
CIP	Cast Iron
CMP	Corrugated Metal Pipe
CP	Concrete Pipe
CPP	Cast In-Place (PVC)
DIP	Ductile Iron Pipe
DT	Drain Tile
HDPE	High Density Polyethylene
PEP	Polyethylene Pipe
PLP	Plastic Lined Pipe
PVC	Polyvinyl Chloride
RCP	Reinforced Concrete
STL	Steel
VCP	Vitrified Clay Pipe (Tile)
WOD	Wood

Sanitary Lines

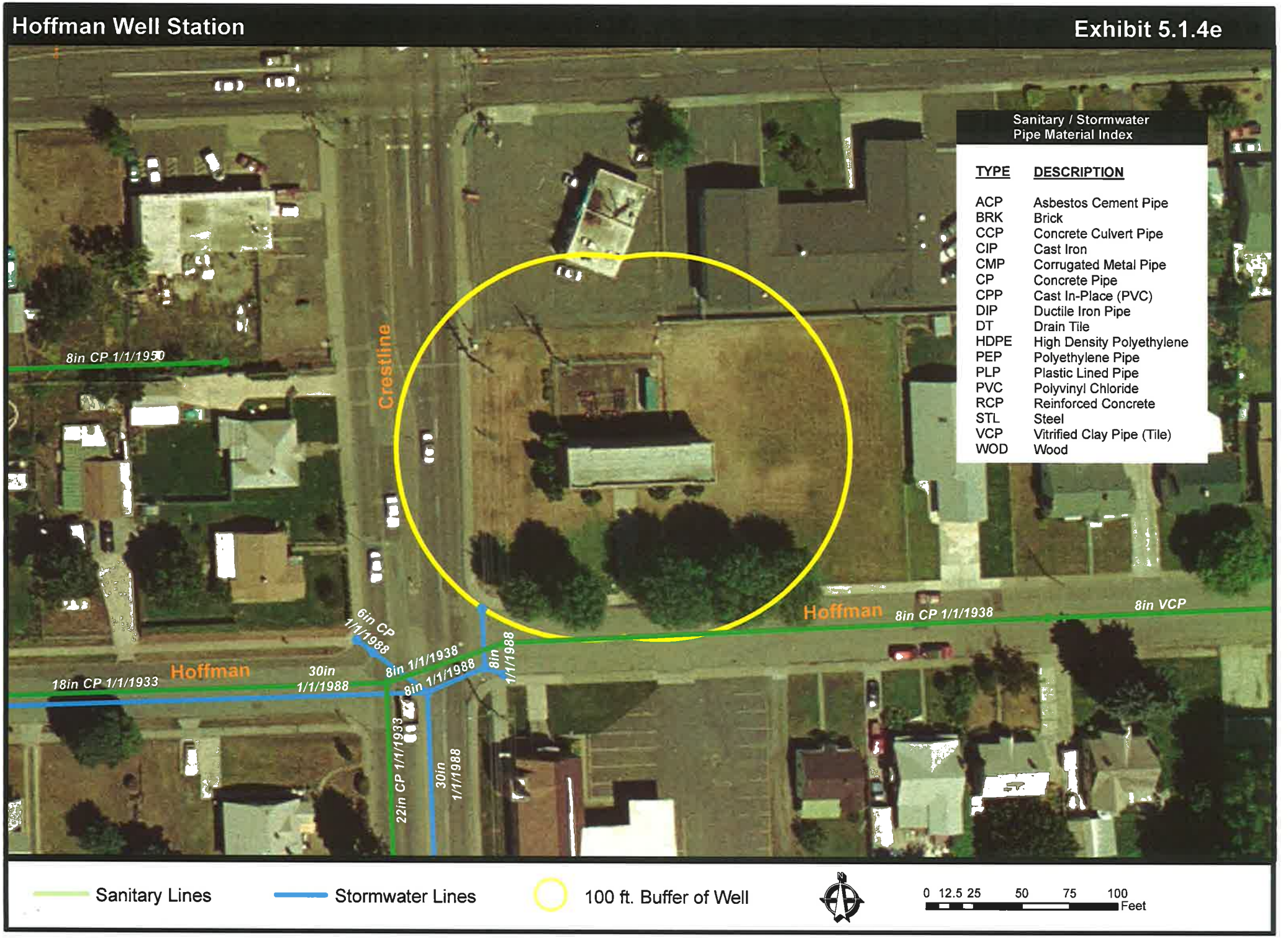
Stormwater Lines

100 ft. Buffer of Well

0 12.5 25 50 75 100 Feet

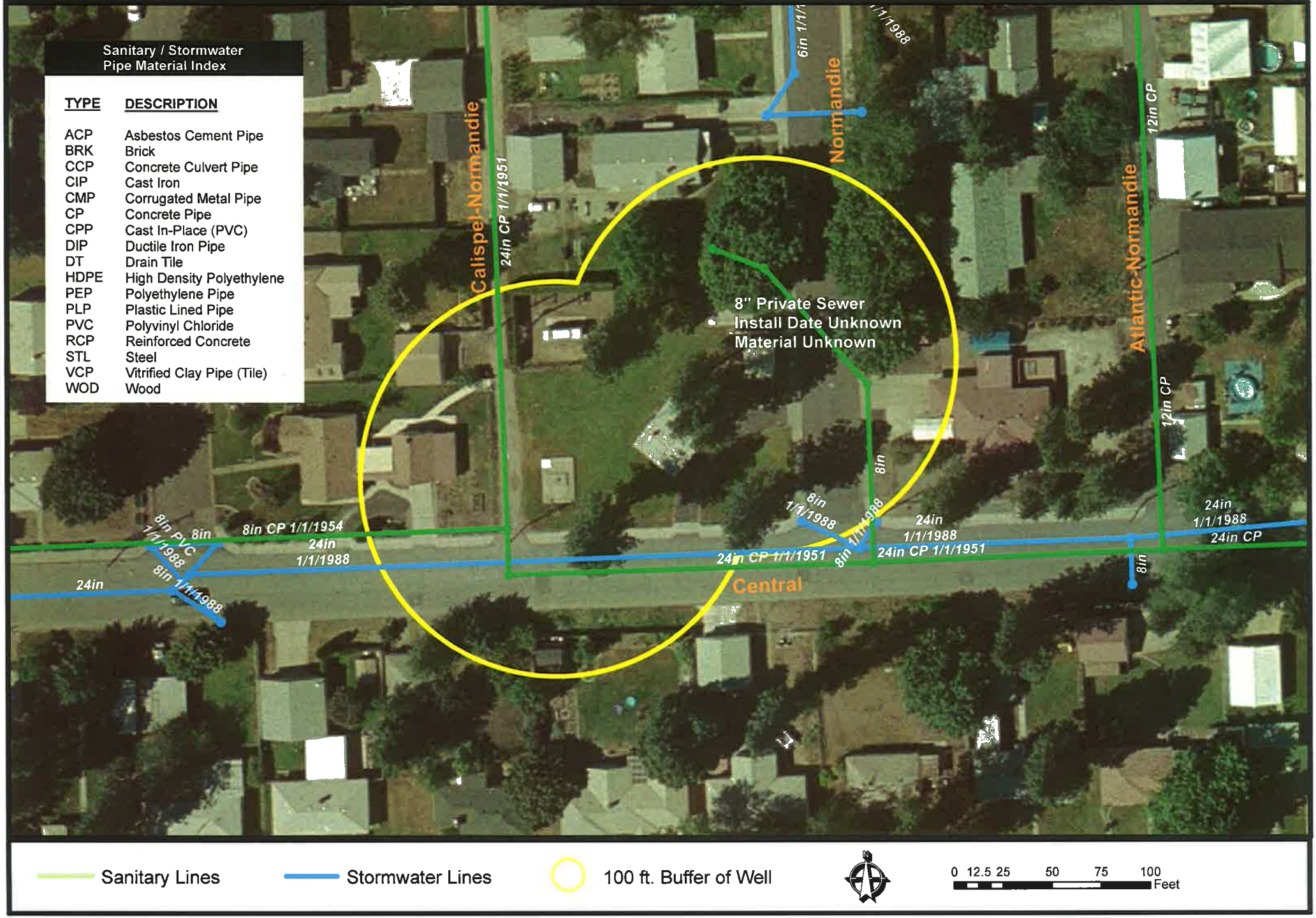
Hoffman Well Station

Exhibit 5.1.4e



Central Well Station

Exhibit 5.1.4f



Appendix 5.1.2 Wellhead Protection Policy Committee Recommendations

Recommendations for Development of Regional Wellhead Protection Measures

By: The Spokane Valley Rathdrum Prairie Wellhead Protection Policy Coordinating Committee

Date: **29 April 2014**

This document contains recommendations for the development of regional Wellhead Protection measures. These recommendations have been developed by the Spokane Valley Rathdrum Prairie Wellhead Protection Policy Coordinating Committee (WHP PCC) which is comprised of representatives of local municipalities listed in appendix 4.

These proposed Wellhead Protection measures are intended to compliment the current aquifer protection measures and are specifically targeted at protecting public drinking water wells located within the Spokane Valley Rathdrum Prairie aquifer.

Contents

Background

The Federal Safe Drinking Water Act (SDWA) amendments of 1986 established a new wellhead protection (WHP) program to protect groundwater that contributes to public drinking water supplies. Under the SDWA, Section 1428, each state must prepare a WHP program for submittal to the EPA. As legislated through the Revised Code of Washington (RCW) 70.119A.080, the Washington State Department of Health, issued an EPA approved WHP program in May of 1994.

In 1994 the City of Spokane began the first phase of the WHP program. This phase was completed in 1998 and documented in the City of Spokane Wellhead Protection Program Phase I – Technical Assessment Report February 1998. The Spokane Aquifer Joint Board (SAJB) began work on phase one in 1995. Phases I and II were completed in 2000 and documented in the Spokane Aquifer Joint Board Wellhead Protection Plan. Phase I included aquifer research and modeling, the identification of potential wellhead protection areas, and the identification of potential contaminant sources.

For phase II of the WHP program the City of Spokane, SAJB, Spokane County Public works and Millwood worked together. This phase included purveyors susceptibility assessments, notification of both the purveyors and the regulatory/emergency response agencies of the potential contaminate sources and preparation of contingency plans to aid each purveyor in providing alternate sources of water. Phase II included input from the Citizens Wellhead Committee; public meetings informing citizens of the WHP program and process and seeking input; and a survey of public opinion. A Policy Coordinating Committee (PCC) composed of staff representatives from the cooperating municipalities reported the recommendations generated from findings of the Citizens Wellhead Committee and the public survey.

The PCC presented their recommendations in two sets. The first set of recommendations addressed consensus items which did not require approval of regional governments, and were implemented jointly by the City and SAJB. Recommendations included the funding and oversight of an Education and Awareness Campaign, Proactive Business Assistance and Chemical Reduction, Enhanced Household Hazardous Waste Removal, and a Potential Contaminate Source Inventory Update Program.

The second set of recommendations involved land use regulations. Two regulatory items were recommended,1) tightening existing regulations regarding stormwater runoff, and 2) restricting relatively high-risk land use activities in the vicinity of public drinking water system wells.

The PCC met in 1999 and 2000 and anticipated a move to adopt the regulatory items by the City of Spokane and Spokane County in mid 2001. The Phase I and II Wellhead Protection Reports were made part of the water purveyors water system comprehensive plans as they became due and subsequently were approved by Washington State Department of Health.

The SAJB, which the City of Spokane joined in 1998, implemented the consensus items from the PCC and has continued to this date with Education and Awareness, Proactive Business Assistance, Enhanced Household Hazardous Waste Removal and the Potential Contaminate Source Inventory. The County and City Planning Departments delayed action on the regulatory wellhead protection items as they grappled with Growth Management Act deadlines. The two planning directors moved and the new Cities of Liberty Lake and Spokane Valley came into being. The regulatory wellhead protection items were not implemented.

In 2006 the SAJB again addressed the regulatory items developed from the PCC in 1999. In September of 2007 the SAJB issued the Spokane Aquifer Joint Board (SAJB) 2007 Wellhead Protection Update. These water purveyor recommendations became the foundation for the current set of wellhead protection recommendations.

In 2008, following presentations to the Spokane Regional Health District Board and to the Spokane City Council, City of Spokane Environmental Programs staff floated an agreement to the regional government planning departments that would establish a new policy coordinating committee. City of Spokane Planning, City of Spokane Water, Spokane County Planning, the Town of Millwood, and the Spokane Aquifer Joint Board signed the agreement. However the City of Liberty Lake indicated a desire to just follow the process, while the City of Spokane Valley and Fairchild AFB choose to participate informally. The current WHP PCC operates as an informal regional group facilitated by City of Spokane Environmental Programs staff.

In 2011, the State Department of Health offered to provide funding for updating the wellhead protection model to expand over the entire aquifer, and explore the model use in helping to identify potential stormwater facility risks. This funding offer was subject to some local match from the SAJB. The City of Spokane, SAJB, and WA State Department of Health came to agreement on a scope of work which was subsequently completed by Groundwater Solutions Inc. located in Portland, Oregon.

Technical Information

The Spokane Valley Rathdrum Prairie (SVRP) Aquifer, as a consequence of its formation by the glacial Lake Missoula floods, is an unconfined aquifer composed of highly porous cobble and gravels. This composition makes the ground water highly susceptible to contamination from the surface.

The flow rate in this Aquifer is very rapid compared to most aquifers and the water quality very good. As a consequence nutrients that might be present in other aquifers to aid in biological degradation of contaminants and the time of travel sufficient for such degradation is limited. In this Aquifer a one year time of travel, considered reasonable treatment for some drinking water contaminants, can easily exceed a mile in length flowing beneath mostly developed properties, some of which are almost certainly potential contaminant sources.

We desire here, as the SAJB did in their 2007 Wellhead Protection Update, to make clear the importance of aquifer-wide protection of groundwater quality, and achievement of a meaningful level of special wellhead protection to help assure clean, healthy drinking water at a reasonable cost for the populace.

Regionally there are many aquifer protection policies, rules, and programs that contribute directly or indirectly to maintaining or improving aquifer water quality. While many of the Aquifer water quality protection measures are similar, there are differences from one jurisdiction to another. It is felt that more consistent regulation between jurisdictions would result in better Aquifer water quality protection, and provide greater understanding and more certainty to the regulated public. The following is our attempt to list the currently existing Aquifer protection measures:
Current Aquifer Protection

- *The 1979 Spokane Aquifer Water Quality Management Plan laid the foundation for Aquifer protection in the City of Spokane and Spokane County.*
- *The Spokane Regional Stormwater Manual (SRSM) recognizes the uniqueness of the aquifer and the importance of protecting a sole source aquifer. This manual has established Best Management Practices (BMP's) to protect ground water. All of the regional Washington jurisdictions have adopted the SRSM.*
- *The City of Spokane and Spokane County implemented septic tank replacement programs to reduce septic infiltration into the aquifer. The County program has resulted in a quantifiable reduction in nitrate at sampling wells in many locations in the Spokane Valley.*
- *The City of Spokane has ordinances requiring connection to the sanitary sewer system. Liberty Lake has nearly all of the properties in its service area connected to the sanitary sewer.*
- *All septic systems have to be properly designed. Their installation is permitted and regulated by the Spokane Regional Health District.*
- *All installations of underground storage tanks (UST) are regulated by the City of Spokane, Spokane County, or the Washington State Department of Ecology.*
- *Above ground storage tank (AST) installation is regulated by the City of Spokane and Spokane County.*
- *The Cities of Spokane, Spokane Valley, Liberty Lake, and Millwood, and the Counties of Spokane and Kootenai, have regulations governing the use, handling and storage of critical materials. In Idaho these regulations apply to all locations with the triggering level of chemical, while in Washington the regulations do not apply to businesses that existed before the regulations went into place provided the business activity on the site has not changed.*

- *Critical Materials regulation is actively enforced in Kootenai County with dedicated funding and regular inspections. In the City of Spokane the Fire Department inspects for compliance with critical materials regulation.*
- *The City of Spokane Valley and Spokane County have uses and activities that are regulated in critical aquifer recharge areas.*
- *The water purveyors, following state wellhead protection rules and with the assistance of Spokane County, maintain lists of businesses that have used hazardous or critical materials. These businesses are notified on a biennial basis of their location near wells and their potential to contaminate groundwater.*
- *The Spokane Aquifer Joint Board has lent some support to the locally funded EnviroStars program which assists small quantity dangerous waste generating businesses with appropriate waste handling information. The SAJB also provides community education on the Spokane Aquifer and protection of its water quality.*
- *The Regional Solid Waste System maintains free household hazardous waste disposal locations. They provide many educational opportunities on the need to properly dispose of household hazardous waste. The System provides assistance to small quantity dangerous waste generating businesses.*
- *Spokane County and City of Spokane Utilities have programs that assist in aquifer water quality/quantity monitoring and aquifer education.*

Basis for Wellhead Protection

The cost effectiveness of wellhead protection measures and programs can be compared to local water purveyor experience with contaminated wells, the costs to replace wells, and the health consequences of contaminants in drinking water.
Community health and economic vitality are linked to water quality and availability. There are businesses located here whose operating costs are significantly linked to the quality and reliability of the water provided. The missing piece for protecting drinking water quality in our regional regulatory structure is control of activities just beyond 100 feet of the wells (just beyond the currently regulated sanitary control zone). These are areas where water can fairly quickly be moved out of the aquifer and to a home or business. They are also areas where activities can occur which may contaminate the ground water and/or jeopardize the existence of a well. Spokane County Water District 3 lost a drinking water well to contamination, as has Sundance Estates. In addition private wells have been adversely contaminated over the years by industrial activities and landfills, a number of wells were contaminated to the point of not being useable. The City of Spokane has lost wells to expanding airports and expanding wastewater facilities. As the region becomes more highly developed and the water distribution systems become larger and more complex, the opportunities for reasonably replacing lost wells diminish. The recommendations that follow are intended to reduce the risk that drinking water quality from drinking water wells will be adversely impacted by changing land use practices, and that potential impacts to wells will be considered in land use decision-making.

Recommendations:

I. **Aquifer-wide Protection: Jurisdictions (cities, counties, state and federal) formally recognize the importance of Aquifer wide groundwater quality protection. In particular they should:**
   1) **Legally recognize the SVRP Aquifer and areas tributary to the SVRP Aquifer for ground water protection;**
   2) **Strive to achieve regionally consistent Aquifer protection requirements;**
   3) **Recognize and participate in the Aquifer Protection Council**

II. **Regulated Special Wellhead Protection Areas (RSWPAs): Jurisdictions (cities, counties, state and federal) formally recognize RSWPAs and current methods of derivation consistent with the Wellhead Protection Policy Coordinating Committee recommendation as outlined in Appendix 1 and mapped on Map 1. This is for Group A Community systems and Group A non-transient non-community systems (NTNC) drawing water from the SVRP aquifer. Further recognize that such boundaries may need to be modified as new information is available. The RSWPAs are in addition to the defined special wellhead protection areas which the State has previously recognized. The previously defined zones may be required by WA-DOH for use by the purveyors in notification of potential contaminant sources.**

III. **SEPA/NEPA Notifications: Permitting agencies and SEPA/NEPA administrators notify drinking water purveyors of proposed land-use actions and development proposals in the purveyors' RSWPAs. *See Table 1 below for current list*. In addition it is recommended that SEPA/NEPA notices related to RSWPAs go to the Spokane Aquifer Joint Board and the Spokane Aquifer Protection Council.**

IV. **Stormwater Treatment and Disposal: The Wellhead Protection PCC recommends that each jurisdiction adopt the following in their Critical Area Ordinances for all new development and redevelopment exceeding the jurisdictional threshold, both public and private. The jurisdictional threshold is as specified in the Spokane Regional Stormwater Manual. The RSWHPAs referred to below are those as defined when the updated Ordinances are adopted and when amendments or additions are made. It is intended that compliance with the recommendations in areas of future RSWPA amendments**

or additions be triggered by subsequent new development or redevelopment exceeding the jurisdictional threshold.

A. Treatment and disposal of Stormwater within RSWPAs

1) **Stormwater treatment and disposal will be in compliance with the Spokane Regional Stormwater Manual and/or the Stormwater Management Manual for Eastern Washington except as augmented by the requirements below.**
2) **No new direct injection of untreated stormwater from pollutant generating impermeable surfaces (PGIS) in RSWPA zones is allowed. "Untreated stormwater" here means stormwater that has not passed through a stormwater treatment best management practices facility, regardless of the level of treatment provided, before discharge to a drywell or other underground injection control facility.**
3) **Development project proponents should be encouraged to avoid increasing the size of the post-development basin tributary to a RSWPA zone.**
4) **Stormwater Underground Injection Control (UIC) facilities, other infiltration facilities and injection wells should be located as far as practical from wellheads**.
5) **New stormwater facilities within <u>300 feet</u> of a drinking water well shall provide treatment at least equivalent to a bio-infiltration swale with engineered soil as defined in the Spokane Regional Stormwater Manual and/or the Stormwater Management Manual for Eastern Washington.**
6) **Except for uncontaminated (non-PGIS) runoff, no stormwater discharge treated or otherwise shall occur within the sanitary control area, which is the area within 100 feet of a drinking water well.**
7) **Regional stormwater facilities within RSWPAs should be allowed only when either a) the size of the post-development basin tributary to the RSWPA is not greater than the size of the pre-development basin tributary to it, or b) an engineering analysis demonstrates that the proposed basin increase does not have an adverse impact to the wellhead protection zone. An adverse impact would be an expected decline in water quality at the well (e.g. an increase in any contaminant concentration greater than 10% of the MCL), or a significant change in the well's modeled capture area such that the currently recommended RSWPA was no longer appropriate (e.g. a**

boundary displacement greater than 250 feet which would then potentially change the parties impacted by the zoning).

B. Disposal of Stormwater Outside of RSWPAs but still over the aquifer

1) As part of the analysis required in the Regional Stormwater Manual (section 1.5) for assessing down-gradient impacts of proposed facilities, new stormwater disposal facilities both public and private with six acres or more of PGIS directed to a common disposal point over the Aquifer but not in RSWPA zones shall be modeled using the aquifer model used for wellhead protection capture zone delineation IF they: a) are up-gradient of a RSWPA zone and are within a 2 year time of travel from the wellhead as mapped on Map 2 and are designed to discharge in a day more than 20 percent of the well's average pumping volume, OR b) have 20 acres or more of PGIS directed to a common disposal point over the Aquifer. No less than the ten year design storm, 24 hour volume after adjustment for evaporation / transpiration loss will be inputted into the steady state and/or transient aquifer average conditions model.

Such proposed facilities would be acceptable when the model shows that:

i. no more than 20% of any well's modeled production comes from this source of recharge, and

ii. where stormwater runoff could include perennial surface water, the recharge facility location is at least a one year time of travel from drinking water wells.

2) Drinking Water Purveyors listed in Table 1 will be given notice by jurisdictions when public or private stormwater facilities are proposed where conditions a or b in the above section "B.1)" is or are met. Such notice will include the location of the proposed facility, the adjusted 24 hour design volume, and whether or not the facility is expected to get perennial surface waters along with the stormwater.

V. Stormwater Contamination Mitigation: To address potential and actual contamination from stormwater facilities reaching wells

1) **Group A Water Purveyors must have and implement a Contingency Plan which addresses contaminant detection and includes Preventative Action Limits (PALs). If PALs are exceeded at the well and stormwater is the**

suspected source of contamination, the water purveyor shall notify and work with the local stormwater utility and/or owners of private stormwater injection facilities such that the stormwater utility and/or private owner mitigates the source of contamination. This may include installation of stormwater treatment BMPs where existing facilities do not meet requirements of the Spokane Regional Stormwater Manual. The notification of the stormwater utility and facility owners would be in addition to the notifications made to the State and County agencies responsible for water quality.

2) **Stormwater Utilities will provide water purveyors information appropriate for private companies and individuals regarding proper maintenance of, and housekeeping around, stormwater facilities. Water Purveyors are currently required to identify Potential Contaminant Sources and notify them and emergency responders that they are located in wellhead capture areas. Water Purveyors will publish and distribute the provided stormwater facility maintenance information to potential contaminant sources in RSWPAs when sending out their every-other-year potential contaminant source notices.**

3) **Whenever the Spokane Regional Stormwater Manual is <u>updated,</u> the participating stormwater utilities should determine what mechanisms can reasonably be brought to bear so as to further limit contaminants from impervious surfaces reaching the Aquifer, providing, if reasonably achievable, protection above the then-current requirements of stormwater facilities within RSWPAs. This process should include all available local data on stormwater Best Management Practice (BMP) efficiencies of removal and should include the latest available health risk information for chemicals that have been detected in the Aquifer and/or the purveyors wells before and after initial treatment. This analysis should include, but not be limited to, consideration of impervious surface area and contaminant loading being treated, available treatment options and their removal efficiency, and inspection and maintenance minimum standards. The results of this analysis should be documented in the updated manual.**
4) **In order to assure proper maintenance and functioning of new stormwater facilities placed within RSWPAs, whether public or private, they should be conditioned with the right of the local government and/or stormwater utility to:**
   1) enter the property for inspection of the stormwater facility, and

2) require testing and/or do testing as deemed necessary, and

3) require maintenance and/or do maintenance as deemed necessary.

E. **Water purveyors shall notify affected stormwater utilities when there is a water line leak/break that causes eroded material to enter a stormwater system.**

VI. Wastewater Collection Systems: All Wastewater Management Plans for Wastewater utilities providing any service in the Spokane Aquifer Sensitive Area should recognize:

A. There is a desire to have properly designed, constructed, and functioning wastewater collection systems (nominally 8-inch diameter pipes) within wellhead protection areas in so far as septic systems are eliminated and wastewater is conveyed away from the capture areas to treatment facilities.

B. Beyond the wastewater conveyance systems discussed in "A" above, additional wastewater conveyance should be avoided in RSWPAs whenever an alternative route is feasible.

C. All new sewer systems and sewer system additions should be tested per section C1-5 Testing, Criteria for Sewage Works Design, WA-DOE August 2008, 98-37 WQ (as amended), or local jurisdiction equivalent.

D. Critical portions of sewer systems include areas where failure is most likely and where the consequence of that failure is highest. Sewer systems inside RSWPAs are considered critical because the consequence of failure is unacceptably high. Therefore, inspection frequency should be increased. Inspections should be in accordance with section C1-7.4.2 Manhole Inspection and/or C1-7.4.3 TV Inspection, Criteria for Sewage Works Design, WA-DOE August 2008, 98-37 WQ or as amended. If these critical portions of the sewer system are found to be structurally deficient or undersized during inspection, they should be given priority and repaired or replaced within 5 years of such a determination.

E. Wastewater force (pressurized) mains should be constructed outside RSWPAs whenever practical. If a portion of a force main system must be located within a RSWPA, that portion must be constructed of ductile iron pipe or, after consultation with potentially affected purveyors, other Recommended pipe material for unusual conditions from Table C1-4, Criteria for Sewage Works Design, WA-DOE August 2008, 98-37 WQ. or as amended.

F. Wastewater (gravity) collection system mains & trunks (12-inch diameter pipe and larger) should not be located in a RSWPA whenever an alternative

route is feasible. If a portion of a transmission main system must be located within a RSWPA it should be located as far from the wellhead as possible.

VII. Septic Systems: The Spokane Regional Health District and Washington State Department of Health should permit septic systems in RSWPAs, but only if in compliance with the most recent requirements, and only if:

A. in densities of no greater than one single family residence system in five acres, OR

B. in net densities of no greater than one single family residence system in five acres where each residence has its own septic system and drain field.

It is recognized that prior approval has already been given by local governments in some cases for development rights that would exceed the one in five acre density limit. The intent is that this recommendation would apply for all development approvals granted after this recommendation is agreed to by the local governments.

VIII. Rules/Plans Consistency: Federal, State, County, and the Spokane Regional Health District (SRHD) rules and all comprehensive plans (land use and water/wastewater utility) for areas over the Spokane Aquifer Sensitive Area should recognize:

A. the need for cooperatively working with the SRHD and Washington State Department of Health to eliminate any septic systems in RSWPAs that have been documented by a water purveyor to be diminishing drinking water quality; and

B. that Washington State Class A reclaimed water as defined in Water Reclamation and Reuse Standards, September 1997, Washington State Department of Health and Washington State Department of Ecology, can be used in RSWPAs for otherwise acceptable commercial/industrial activities and can be used for outdoor irrigation where the rate of application does not exceed the normal plant uptake rate less available precipitation; and

C. that the use of reclaimed water of a lower classification than Washington Class A in a RSWPA should be treated as a potentially harmful activity and not be permitted without a public hearing to decide appropriate controls and conditions; and

D. That surface percolation and/or direct injection of Washington Class A reclaimed water into the groundwater and/or into the ground below the ground surface for recharge can occur in RSWPAs if such injected water is no closer to drinking water wells than one year time of travel; and

E. surface percolation of reclaimed water into the Spokane Rathdrum Prairie Aquifer is the preferred type of reclaimed water recharge in this area and then only permitted if the reclaimed water is Washington Class A; and

F. That all reclaimed water aquifer recharge projects should be required to be modeled using the same aquifer model as used for wellhead protection capture area delineation, and permitted only when all the following are true:

1) **No significant change in well capture areas is demonstrated;**
2) **The recharge point is greater than one year time of travel from drinking water wells; and**
3) **No more than 20% of any well's modeled production comes from this type of recharge.**

IX. Potentially Harmful Activities: The Wellhead Protection Policy Coordinating Committee recommends that each jurisdiction adopt the following regarding activities that, if located within RSWPAs, could potentially be harmful.

A. Potentially harmful activities are:

Animal Feedlots
Bio-Research Facilities
Chemical/Agricultural Chemical Warehousing
Composite Products Manufacturing
Dry Cleaning (performed on location)
Electronics Manufacturing
Electroplating/Metal Finishing
Engine & Vehicle Repair/Service/Salvage
Furniture Stripping
Junk/Salvage/Recycling Yards
Metal Fabrication
Mining/Sand & Gravel Extraction
Storage of Critical Materials
Transfer of Critical Materials
Oil & Gas Drilling
Paint Manufacturing and Wholesale Storage
Petroleum Bulk Storage & Transmission
Photo Processing
Printing and Lithography
Solid Waste Handling & Recycling Facilities
Vehicle Washing
Wastewater Bulk Storage, Treatment & Pumping Facilities
Wood Treatment Facilities
Other activities as determined by local government and/or local groundwater purveyors as potentially harmful

B. These activities would be allowed in RSWPA zones only when:

1. **the proponent obtains approval from each of the applicable purveyor(s) whose RSWPA zone(s) would be developed in, and**
2. **obtains development approval from each of the jurisdictions where the development will occur, consistent with each jurisdiction's adopted permit/approval process for wellhead protection areas.**

C. Any of these activities currently occurring in RSWPA zones should be considered "non-conforming" and subject to the above requirements only upon future expansion or re-development, consistent with the jurisdiction's adopted regulations pertaining to wellhead protection areas and nonconforming uses.

Explanatory Comments:

Introduction, last paragraph Page 6: The Spokane County Water District 3 well that was lost to contamination had a combined cost of at least $700,000 dollars (1997, with 2013 est.$ 1.016M) to replace and the source of contamination has not yet been determined. To provide some context as to how these costs might vary from a smaller system/well to a larger, the City of Spokane has a rough estimate of the cost to replace the Parkwater & Well Electric well stations of $ 110.9 million dollars (2013). Not including costs to abandon the existing well stations or to deal with contamination that might enter the distribution system.

Documented Aquifer drinking water well contamination incidents:
1) Seventy-two residents north of Kaiser Mead were provided piped in water due to aquifer contamination (CDC Mead LLC, State ID 3)
2) Spokane Co. Water District 3 converted their Dakota well to emergency use only as a result of the Kaiser Mead contamination, it served 800 connections previously.
3) One residential well contaminated (Greenacres Landfill, State ID 631)
4) Fifty residential homes provided piped in water due to aquifer contamination (Northside Landfill, State ID 111)
5) Spokane County Water Dist. 3 well which served 800 homes, lost to contamination (Spokane Co. Water Dist. 3 Mead, State ID 738)
6) Sundance Estates well lost to arsenic contamination (21 properties served)
7) Wandermere & St. Georges Academy wells now used for irrigation only due to contamination.

See appendix 2 for a list of groundwater contaminated sites. *[Return]*

IV.A.5 The 300 foot distance was derived to meet two expressed concerns: 1) The concern expressed by purveyors that their wells might be considered under the influence of surface water should a discharge point be within 200 feet of a drinking water well; and 2) A concern expressed by the City of Spokane and Spokane County staff that it was important to define a distance and not leave it arbitrary. WADOH regulations state: ""Potential GWI" means a source identified by the department as possibly under the influence of surface water, and includes, but is not limited to, all wells with a screened interval fifty feet or less from the ground surface at the wellhead and located within two hundred feet of a surface water, and all Ranney wells, infiltration galleries, and springs." *Ginny Stern, a WADOH hydrologist has agreed that the 300 foot distance combined with the bioswale bmp is protective of the wells.* *[Return]*

IV.A.7.b A basic engineering analysis regarding the potential of increasing contaminant levels at a well by more than 10% of an MCL could be done in one of the following ways:
a) Demonstrate that before treatment worst case stormwater quality from the contributing area would not exceed drinking water MCLs; or
b) Assume that the contaminant concentrations being discharged from the treatment facility at the aquifer interface is at the drinking water MCL level. (This assumption follows the stormwater manual assumption that BMP's will at least deliver water that does not exceed the MCLs.) The wellhead protection aquifer model after incorporation of project details could then be used to determine the appropriate dilution factor to apply in making the determination if 10% of an MCL is exceeded.
The 250 foot displacement criteria used in determining if a project would render an RSWPA no longer appropriate is based on a 300 foot block width.

[Return]

IV.B.1 The wellhead model referred to is the one recognized in Recommendation II, and documented in Appendix 1, B & C. *[Return]*

IV.B.1.a Basis for the six acre threshold: The RSWPA boundaries are based on current groundwater and surface water flow conditions. A concern is that future projects may have a drainage design where large areas will have their stormwater runoff collected and conveyed to an infiltration point thus changing the location and distribution of stormwater infiltrating into the aquifer. These changes could, in turn, increase the risk posed by use of a well by altering the groundwater flow conditions and changing the boundaries of the RSWPAs. Small projects will have little effect on the boundaries but large projects could have a measurable effect. To determine when a drainage design should be considered for modeling to evaluate its impacts, a threshold was found that would trigger consideration.

The factor that was decided for the threshold was the 10-year stormwater volume that would fall within a RSWPA in a day and assumed to infiltrate. For the RSWPAs within the SAJB service area, the smallest rainfall depth from the SRSM was 1.5 inches which was used to calculate the volume. For this event, the smallest calculated quantity of water that would fall in a representative RSWPA, when wells not currently in use but kept for emergency purposes are eliminated from consideration, was 44,000 cubic feet. This volume became the threshold.

Thus, the recommended threshold for proposed infiltration facilities located outside the RSWPA but within a two-year time of travel from a wellhead is 44,000 cubic feet of stormwater in a 24-hour period at a common disposal point. This volume is typically generated from approximately 6 acres of impervious surface as calculated using a 24-hour long precipitation event in the Bowstring method (see the SRSM). Based on this, for a quick determination, facilities that have 6 or more acres of impervious surface draining to a common disposal point would need to be considered for modeling using the aquifer model to access impacts; if below this area then no modeling would be required.
[Return]

IV.B.1..i The twenty percent limit on stormwater discharge from a facility to a well provides a fivefold dilution of any contaminants coming from the facility and then being distributed from the well. It is based on an understanding that stormwater facilities do not technically have to clean water up beyond the drinking water standards at the point of discharge into the aquifer and that facilities can fail for a variety of reasons to meet their design water quality levels. It assumes facility failure to meet design water quality levels will not go on for long and so would not involve more than one facility at a time in a RSWPA zone. Drinking water purveyors report their test results to the public, and are concerned about the public's perception of the water quality. The purveyors have increased monitoring and reporting requirements when detected levels reach half of a maximum contaminant level. *[Return]*

IV.B.1.ii Water from a perennial surface water body can significantly vary in water quality from stormwater runoff as it is more likely contaminated to some extent with water borne organisms (such as Giardia) that can cause disease. The WA-DOH has indicated that a one year time of travel is reasonable to provide protection from pathogenic organisms and includes a reasonable margin of safety. In determining whether this one year time of travel requirement is met it is acceptable to add months on to the modeled horizontal time to compensate for vertical time of travel of the stormwater through the unsaturated zone if the vertical time of travel for the particular area has been determined by a WA State registered Hydrogeologist. Given Table 2, on page 15 of USGS Report 2007-5044, vertical transmission times in excess of 5 months would not be expected. In the Spokane Valley very short times of travel, less than a day, have been experienced by water purveyors when doing pump tests.
[Return]

V.C. The intent of this recommendation is to have the folks most knowledgeable about current stormwater quality, stormwater BMPs in use, and those potentially available, including information about their contaminant removal efficiencies consider occasionally if there is more that reasonably could be done to reduce the risk posed by stormwater chemical concentrations in the vicinity of wells in the Aquifer. It is recognized that stormwater picks up contaminants and can move them into the aquifer depending on a variety of factors. It is also recognized that stormwater is not the sole potential source of these contaminants. The Spokane Aquifer and purveyors systems contain some contaminants that have Maximum Contaminant Level Goals (MCLGs) of 0 as a consequence of their impacts on human health. Contaminant human health impact

studies are occasionally updated, but for many contaminants have not yet been done. The concentration of contaminant that ultimately reaches the aquifer via stormwater is dependant on how much of the contaminant is exposed to stormwater; the contaminant chemistry including how the contaminant interacts with sunshine, air, water, and soils; the amount of the sunshine, air, water and soils the contaminant interacts with, the duration of time these interactions occur over, and the quantity and type of treatment the stormwater receives before discharge. By decreasing the contaminants getting in water and increasing the amount and duration of degrading and diffusing interactions contaminant concentrations and resulting health impacts can be lowered, but at some cost. *[Return]*

VIII.D & VIII.F.2 In determining whether these one year time of travel requirements are met it is acceptable to add months on to the modeled horizontal time to compensate for vertical time of travel of the stormwater through the unsaturated zone if the vertical time of travel for the particular area has been determined by a WA State registered Hydrogeologist. Given Table 2, on page 15 of USGS Report 2007-5044, vertical transmission times in excess of 5 months would not be expected. In the Spokane Valley very short times of travel, less than a day, have been experienced by water purveyors when doing pump tests. *[Return]*

IX *The Potentially Harmful Activities List was originally referred to as the "High Risk Activities List". A fairly complete history of that list is contained in Appendix 3. Addition of major highways and railroad lines was proposed and ultimately decided against. Electroplating and Critical Materials storage and handling were added during the Wellhead Protection Policy Coordinating Committee process (see August & Sept. 2011, and March 2012 minutes). In the February 2014 meeting Washington State Department of Health recommendations to remove' fiberglass' from the reference to composite manufacturing and to add 'Salvage/Recycling' to Junk Yards were adopted. Finally an "Other" category was added to allow control of activities identified in the future as potentially harmful.* *[Return]*

Glossary

disposal point- The ultimate destination where stormwater from a particular site is discharged, either through infiltration or other approved downstream discharge point.

direct injection- Injection of water into the ground other than by way of percolation through native soils, including underground injection control wells (e.g. drywells) and discharges into gravel pits.

existing condition -.The site condition prior to development; not necessarily the pre-developed condition.

infiltration—The passage of water through the soil surface into the ground. (SRSM)

infiltration facility (or system)- A drainage facility designed to use the hydrologic process of surface and stormwater runoff soaking into the ground, commonly referred to as percolation, to dispose of surface and stormwater runoff. (SMMEW)

pre-development basin- Existing condition, as defined in the Spokane Regional Stormwater Manual, of a surface water basin.

pre-developed condition- The native vegetation and soils that existed at a site prior to the influence of Euro-American settlement. (SRSM) Jurisdictions may choose to require that either the pre-developed condition or the "existing condition" be used to calculate runoff volumes to be compared to the runoff generated under the "proposed development condition". Because there is limited information available to identify and confirm actual pre-developed conditions for many areas of eastern Washington, jurisdictions may choose to apply a reasonably determined set of conservative curve numbers for use in determining the runoff volume compared to that under the proposed development condition. (SMMEW)

regional stormwater facility- Regional stormwater facilities are grass-lined ditches, natural drainage ways, ponds, pipes and various other means of conveying, treating and disposing of stormwater runoff that serve as the "backbone" of a system to which smaller drainage elements can be connected. Most regional facilities serve more than a single development within a given contributing drainage basin. . For the purposes of this document, the term is based on its design flow being greater than that which would result from six acres of pollutant generating impervious surface.

regulated special wellhead protection areas (RSWPAs) – Special wellhead protection areas that have been recognized by local governments for increased land use regulation and control designed to protect the well and water entering the well.

stormwater facility- A constructed component of a stormwater drainage system designed or constructed to perform a particular function or multiple functions. Stormwater facilities include, but are not limited to: pipes, swales, ditches, culverts, street gutters, detention ponds, retention ponds, constructed wetlands, infiltration devices, catch basins, oil/water separators, and biofiltration swales. (SMMEW)

special wellhead protection area – A wellhead protection area, usually other than a 1, 5, or 10 year time of travel area and derived from alternative criteria approved by the WA Department of Health. Over the SVRP Aquifer these are common because the aquifer rate of flow is high and the area is in many places developed.

underground injection control (UIC) well- a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or a dug hole whose depth is greater than the largest surface dimension; or an improved sinkhole; or a subsurface fluid distribution system which includes an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground. Examples of UIC wells or subsurface infiltration systems are drywells, drain fields, catch basins, pipe or french drains, and other similar devices that discharge to ground.

wellhead capture area- An area derived from a model or calculation designed to show where groundwater is flowing to a well. Typically these areas are based on a specified time of travel.

wellhead protection area - Area managed by a community (or private association, homeowner's association, etc.) to protect its groundwater based drinking water supply. Wellhead Protection areas may consist of a number of zones, but always include the standard sanitary control area, and frequently other areas based on groundwater time of travel to the well, and aquifer or watershed boundaries.

Table 1:

Name	Water District	email Address	Phone (p) Cell (c)	Address
Terry Squibb	Carnhope Irrigation District #7	carnhope7@comcast.net	536-9180p 768-7296c	4613 E 3rd Ave Spokane, Wa 99212
Paul Allen	City of Millwood	cmillwood_water@comcast.net	924-0960p 342-1500c	9103 E Frederick Ave Millwood, WA 99206
Dan Kegley	City of Spokane	dkegley@spokanecity.org	625-7800p	914 E North Foothills Dr Spokane, WA 99207
Bob Ashcraft	Consolidated Irr #19	consolidatedirrigation@comcast.net	924-3655p	120 N Greenacres Road Greenacres, WA 99016
Rick Adkins	East Spokane Water District	dist1@comcast.net	926-6072p 370-8036c	704 S Coleman Road Spokane Valley, WA 99212
Denise Coyle	ESLLIC		255-6837	321 S Sandy Beach Ln Liberty Lake, WA 99019
Joseph Duricic	Fairchild AFB	Joseph.duricic@us.af.mil	247-2318	92nd CES/CEOIU Fairchild AFB, WA 99011
BiJay Adams	Green Ridge Estates	bijay@libertylake.org	922-9016 922-5443x27	22510 E Mission Ave Liberty Lake, WA 99019
Michael Croom	Honeywell Electronic Materials	michael.croom@honeywell.com	252-2290p 252-2200p	15128 E Euclid Ave Spokane, WA 99215
Terry Squibb Walt McKee	Hutchinson I.D. #16	hutchinsonid16@qwestoffice.net	926-4634p 768-7296c	618 N Sargent Road Spokane, WA 99212
Glen Terry	Irvin Water District #6	irvinwater@windwireless.net	924-9320p	11907 E Trent Spokane Valley, WA 99206
Sarah Scott	Kaiser Aluminum-Trentwood	sarah.scott@kaisertwd.com	927-6122p 290-2530c	15000 E Euclid Ave Spokane, WA 99215
BiJay Adams	Liberty Lake Sewer & Water Dist	bijay@libertylake.org	922-9016 922-5443x27	22510 E Mission Ave Liberty Lake, WA 99019

Scott Inch	Moab Irrigation District #20	moabdistrict@qwest.net	226-0545p 496-0141c	25805 E Trent Ave Newman Lake, WA 99206
Jim Lahde	Model Irrigation District #18	jim@modirr.org	926-5759p 939-7108c	1506 S. Pierce Road Spokane, WA 99206
Joe Morgan	Modern Electric Water Co	jmorgan@mewco.com	928-4540p 879-6417c	904 N Pines Road Spokane, WA 99206
Sister Mary Janae	Mount Saint Michaels			8500 North Street Spokane, WA 99217
Gary Lowe	North Spokane Irrigation District #8	nsid8@comcast.net	467-6727p 370-5773c	7221 N Regal Spokane, WA 99217
Mike Klein	Orchard Avenue Irrigation District	orchardaveirrigationdist6@comcast.net	926-4563p 991-3329c	8101 E Buckeye Spokane, WA 99212
Bruce Davidson	Pasadena Park Irrigation District #17	ppid17bruce@comcast.net	926-5535p 939-4446c	9227 E Upriver Drive Spokane, WA 99206
Ed Wolfe	Pinecroft MHP		389-5337	11920 E Mansfield #40A, Spokane, WA 99206
Frank Triplett	Pioneer Water Co	Pioneerh2o@gmail.com	991-7483	PO Box 54 Nine Mile Falls, WA 99026
Jim Gady	Rivervale Water Assn.	gadypump@hotmail.com	466-4054	508 E. Half Moon Rd. Colbert, WA 99005
Ty Wick	Spokane County Water District #3	scwd3@comcast.net	536-0121p	5221 E Desmet Ave Spokane, WA 99212
R. David Enos	Spokane Industrial Park (Rep for)	David.enos@urscorp.com	944-3807 209-0102	920 N Argonne Ste 300 Spokane, Wa 99212
Peggy Jones / Chris Heftel	Sundance Estates (aka: Ninemile Manor Addition & River Bluff Land Co.)	chrisheftel@aol.com	995-2899	4425 W. Lookout Mountain Lake, SuiteA
Mark Whitlow	Timberline MHP		928-8150	19625 E Wellesley, Otis Orchard, WA 99207
Mike Klein Jr.	Trentwood Irrigation District #3	tidist3@yahoo.com	922-7532p 998-4160c	4402 N Sullivan Road Spokane, Wa 99216

Dennis Overbay	Vel View #13		466-4322	3609 W Velview Road
Todd Henry	Vera Water and Power	thenry@verawaterandpower.com	924-3800p	601 N Evergreen Road Spokane, WA 99216
Frank Triplett	Whitworth University		777-4780 991-7483	
Susan McGeorge Doug Babin	Whitworth Water District #2	mcgeorge@asisna.com doug@whitworthwater.com	466-0550p	10828 N Waikiki Road Spokane, WA 99218

System No Longer Class A, but wishing to stay informed:

Mike Butler	Hutton Settlement	mbutler@huttonsettlement.org	838-2789	9907 E. Wellesley Ave.

Appendix 1 – Wellhead Protection Model Files

A. Recommended protection areas by system:

File	*Date*	*Size*	*Water System*
AllCarnhope.dxf	*12/5/2012*	*3,060 KB*	*Carnhope Irrigation district*
AllCentralPreMix.dxf	*11/30/2012*	*1,543 KB*	*Central Pre Mix*
AllCID.dxf	*11/28/2012*	*73,494 KB*	*Consolidated Irrigation District*
AllESLLIC.dxf	*11/30/2012*	*1,056 KB*	*East Side Liberty Lake Improvement Club*
AllESWD.dxf	*11/28/2012*	*14,299 KB*	*East Spokane Water District*
AllFairchild.dxf	*11/30/2012*	*5,608 KB*	*Fairchild AFB*
AllGreenridge.dxf	*11/30/2012*	*1,504 KB*	*Green Ridge Estate Water System*
AllHID.dxf	*11/29/2012*	*5,893 KB*	*Hutchinson Irrigation District*
AllHoneywell.dxf	*11/29/2012*	*8,630 KB*	*Honeywell*
AllIrvin.dxf	*2/28/2013*	*7,423 KB*	*Irvin Water District*
AllKaiserT.dxf	*12/6/2012*	*4,277 KB*	*Kaiser Trentwood*
AllLibertyLake.dxf	*4/2/2013*	*10,077 KB*	*Liberty Lake Sewer and Water District*
AllMillwood.dxf	*11/30/2012*	*9,249 KB*	*City of Millwood*
AllMoab.dxf	*11/30/2012*	*3,438 KB*	*Moab Irrigation District*
AllModel.dxf	*11/30/2012*	*13,403 KB*	*Model Irrigation District*
AllModernWaterEL.dxf	*4/25/2014*	*18,760 KB*	*Modern Electric and Water Co.*
AllMtStMich.dxf	*11/8/2012*	*1,786 KB*	*Mount Saint Michaels*
AllNSID.dxf	*11/8/2012*	*5,362 KB*	*North Spokane Irrigation District*
AllOID.dxf	*11/30/2012*	*5,591 KB*	*Orchard Avenue Irrigation District*
AllPasadena.dxf	*12/5/2012*	*8,759 KB*	*Pasadena Park Irrigation District*
AllPinecroft.dxf	*11/30/2012*	*2,954 KB*	*Pinecroft MHP*
AllPioneer.dxf	*11/30/2012*	*2,888 KB*	*Pioneer Water Company*
AllRivervale.dxf	*11/21/2012*	*3,385 KB*	*River Vale Water Association*
AllSIP.dxf	*11/30/2012*	*11,012 KB*	*Spokane Business and Industrial Park*
*AllSpokane.dxf***	*4/2/2013*	*22,127 KB*	*City of Spokane*
AllStevensCoPUD	*8/13/2013*	*2,205KB*	*Stevens County PUD*
AllTID.dxf	*11/30/2012*	*15,267 KB*	*Trentwood Irrigation District*
AllTimberline.dxf	*11/30/2012*	*3,611 KB*	*Timberline MHP*
AllVera.dxf	*3/1/2013*	*44,292 KB*	*Vera Water and Power*
AllWD3.dxf	*1/24/2013*	*36,070 KB*	*Spokane County Water District 3*
AllWWD.dxf	*11/28/2012*	*22,987 KB*	*Whitworth Water District*
AllWWU.dxf	*11/28/2012*	*5,358 KB*	*Whitworth University*

***The City of Spokane is in the process of developing a new well. When the relevant information is available this well will be added to the above file and the file date and size adjusted.*

B. Recognized model software and input files used to derive the recommended regulated special wellhead protection areas.

1) Microfem model version 4.10.62;
copyright 1997..2012 C.J.Hemker and R.G. deBoer
(Dr. C.J. Hemker, Amsterdam, The Netherlands; microfem.com)

Input files – All below file names should be preceeded with: "SVRP_Wellhead_"

a. Average conditions model

AverageConditionsvF.feb	04/24/2014	424	Batch file
AverageConditionsvF.fem	04/24/2014	6,042,741	Model file
AverageConditionsvF.fpr	04/24/2014	674	Project file
AverageConditionsvF.lb2	04/24/2014	101,295	Label file
AverageConditionsvF.lb3	04/24/2014	89,763	Label file
AverageConditionsvF.lb4	04/24/2014	167,632	Label file
AverageConditionsvF.lb5	04/24/2014	96,834	Label file
AverageConditionsvF.ppn	04/24/2014	443,795	Precipitation
AverageConditionsvF.sto	04/24/2014	357,665	Storativity
AverageConditionsvF.thi	04/24/2014	1,501,817	Thickness
AverageConditionsvF.wc1	04/24/2014	139,612	Riverbed resistance
AverageConditionsvF.wh1	04/24/2014	139,420	River top
AverageConditionsvF.wl1	04/24/2014	138,909	River bottom
AverageConditionsvF.xtr	04/24/2014	14,452,927	Data

b. Wells at maximum, average tributaries & river

MaxPump_MeanRivTribvF.fem	04/24/2014	6,042,313	Model file
MaxPump_MeanRivTribvF.fpr	04/24/2014	595	Project file
MaxPump_MeanRivTribvF.lb2	04/24/2014	101,294	Label file
MaxPump_MeanRivTribvF.lb3	04/24/2014	89,763	Label file
MaxPump_MeanRivTribvF.lb4	04/24/2014	167,632	Label file
MaxPump_MeanRivTribvF.lb5	04/24/2014	96,834	Label file
MaxPump_MeanRivTribvF.ppn	04/24/2014	443,795	Precipitation
MaxPump_MeanRivTribvF.thi	04/24/2014	1,501,817	Thickness
MaxPump_MeanRivTribvF.wc1	04/24/2014	139,612	Riverbed resistance
MaxPump_MeanRivTribvF.wh1	04/24/2014	139,420	River top
MaxPump_MeanRivTribvF.wl1	04/24/2014	138,909	River bottom
MaxPump_MeanRivTribvF.xtr	04/24/2014	14,452,900	Data

c. Wells at maximum, minimum tributaries & river

MaxPump_MinRivTribvF.fem	04/24/2014	6,041,870	Model file
MaxPump_MinRivTribvF.fpr	04/24/2014	584	Project file
MaxPump_MinRivTribvF.lb2	04/24/2014	101,294	Label file
MaxPump_MinRivTribvF.lb3	04/24/2014	89,763	Label file
MaxPump_MinRivTribvF.lb4	04/24/2014	167,632	Label file
MaxPump_MinRivTribvF.lb5	04/24/2014	96,834	Label file
MaxPump_MinRivTribvF.ppn	04/24/2014	443,795	Precipitation
MaxPump_MinRivTribvF.thi	04/24/2014	1,501,817	Thickness
MaxPump_MinRivTribvF.wc1	04/24/2014	139,612	Riverbed resistance
MaxPump_MinRivTribvF.wh1	04/24/2014	139,092	River top
MaxPump_MinRivTribvF.wl1	04/24/2014	138,909	River bottom
MaxPump_MinRivTribvF.xtr	04/24/2014	14,452,927	Data

d. Other wells average, tributaries & river maximum

MeanPump_MaxRivTribvF.fem	04/24/2014	6,024,335	Model file
MeanPump_MaxRivTribvF.fpr	04/24/2014	606	Project file
MeanPump_MaxRivTribvF.lb2	04/24/2014	101,294	Label file
MeanPump_MaxRivTribvF.lb3	04/24/2014	89,763	Label file
MeanPump_MaxRivTribvF.lb4	04/24/2014	167,632	Label file
MeanPump_MaxRivTribvF.lb5	04/24/2014	96,834	Label file
MeanPump_MaxRivTribvF.ppn	04/24/2014	443,795	Precipitation
MeanPump_MaxRivTribvF.thi	04/24/2014	1,501,817	Thickness
MeanPump_MaxRivTribvF.wc1	04/24/2014	139,612	Riverbed resistance
MeanPump_MaxRivTribvF.wh1	04/24/2014	139,306	River top
MeanPump_MaxRivTribvF.wl1	04/24/2014	138,909	River bottom
MeanPump_MaxRivTribvF.xtr	04/24/2014	14,452,900	Data

e. Display only model – surface elevations

DisplayAveCondvF.fem	04/24/2014	6,350,454	Model file
DisplayAveCondvF.fpr	04/24/2014	588	Project file
DisplayAveCondvF.lb2	04/24/2014	101,294	Label file
DisplayAveCondvF.lb3	04/24/2014	89,763	Label file
DisplayAveCondvF.lb4	04/24/2014	167,632	Label file
DisplayAveCondvF.lb5	04/24/2014	96,834	Label file
DisplayAveCondvF.ppn	04/24/2014	443,795	Precipitation
DisplayAveCondvF.sto	04/24/2014	357,665	Storativity
DisplayAveCondvF.thi	04/24/2014	1,501,817	Thickness

DisplayAveCondvF.wc1	04/24/2014	139,612	Riverbed resistance
DisplayAveCondvF.wh1	04/24/2014	139,420	River top
DisplayAveCondvF.wl1	04/24/2014	138,909	River bottom
DisplayAveCondvF.xtr	04/24/2014	14,452,924	Data

2) Water system and well information used in the modeling is summarized in the EXCEL spreadsheet:
"Water System and Well Summary sheetv3.xlsx"

C. The model has been prepared by a licensed hydrologist, John Porcello, and its appropriate use documented. It is recommended that the model use be as broad as possible regionally. This will help inform folks of the current level of understanding of how the aquifer works and will facilitate model improvements going forward.

1) The input files will be shared with the local and state agencies and with the water purveyors whose wellhead protection areas have been derived from its use.
2) Until an alternative arrangement is agreed upon, the official wellhead protection model input files will reside jointly between the City of Spokane and the SAJB.
3) It should be recognized that the model input files and the base model itself will have to change over time. Further with multiple users it is recognized that model output differences will show up. Where these differences are considered significant by either a purveyor or land use regulator the "correct" answer will have to be determined by a State certified hydro-geologist.
4) Some changes have already been made in the model since it was transferred to Environmental Programs from GSI. These changes and the reason for same are documented in an Excel workbook titled "Changes to Base model Tracking sheetv4.xlsx".

D. References for the methods used to derive the recommended Special Wellhead Protection Areas

1) GSI Water Solutions Inc. Technical memorandum by John Porcello—
Attachment 1: Recommended Modeling Procedure for SWPA Delineation

Using the City/SAJB Models of the SVRP Aquifer, dated 24 September 2012.

2) City of Spokane Environmental Programs memorandum by Doug Greenlund -- *Detailed Directions for Special Wellhead Protection Area Technical Definition*, dated 7 August 2013.

E. Transient modeling of regional stormwater facilities

1) GSI Water Solutions Inc. provided methods and directions for running stormwater input impact evaluations using the steady state model (stormwater input is modeled as continuous), and using two linked steady state models, one with stormwater being inputted and the second without. A third option of running the model in full transient mode was discussed but considered outside the contract scope.

2) Stormwater utility staff raised concerns that a steady state representation of stormwater input was far from representative of what happens in the real world. As a consequence of this concern City of Spokane Environmental Program staff set about running the model in transient mode to evaluate several scenarios. The procedure and example input files are briefly outlined in "*Potential Transient method for Regional Facility Evaluation.pdf*". This model use and transient method have not been validated by a licensed hydro-geologist at this time.

Transient model files

StoreAvgCondvF.Feb	04/24/2014	424	Batch file
StoreAvgCondvF.fem	04/24/2014	6,042,554	Model file
StoreAvgCondvF.fpr	04/24/2014	609	Project file
StoreAvgCondvF.lb2	04/24/2014	101,459	Label file
StoreAvgCondvF.lb3	04/24/2014	89,763	Label file
StoreAvgCondvF.lb4	04/24/2014	167,632	Label file
StoreAvgCondvF.lb5	04/24/2014	96,834	Label file
StoreAvgCondvF.ppn	04/24/2014	443,795	Precipitation
StoreAvgCondvF.sto	04/24/2014	850,189	Storativity
StoreAvgCondvF.thi	04/24/2014	1,501,817	Thickness
StoreAvgCondvF.wc1	04/24/2014	139,612	Riverbed resistance
StoreAvgCondvF.wh1	04/24/2014	139,420	River top
StoreAvgCondvF.wl1	04/24/2014	138,909	River bottom
StoreAvgCondvF.xtr	04/24/2014	14,727,483	Data

Appendix 2 – Aquifer Contamination Incidents

FacilitySite Id	CleanupSiteName	Address	City	SiteStatus	State Ranking
3	CDC Mead LLC	2111 E HAWTHORNE RD	MEAD	Cleanup Started	0
630	General Electric Co	4323 E MISSION AVE	SPOKANE	Construction Complete-Performance Monitoring	0
631	Greenacres Landfill	308 N HENRY ROAD	LIBERTY LAKE	Construction Complete-Performance Monitoring	0
667	North Market St	N MARKET ST & FREYA ST	SPOKANE	Construction Complete-Performance Monitoring	0
111	Northside Landfill	7202 N NINE MILE RD	SPOKANE	Cleanup Started	0
52126416	HOLCIM INC	12207 E EMPIRE AVE	SPOKANE VALLEY	Cleanup Started	1
627	Aluminum Recycling Corp	3412 E WELLESLEY	SPOKANE	Construction Complete-Performance Monitoring	2
28314355	Appleway Chevrolet Inc	8500 E SPRAGUE AVE	SPOKANE VALLEY	Cleanup Started	2
650	City Parcel	708 N COOK ST	SPOKANE	Cleanup Started	2
53481373	Kaiser Aluminum & Chemical Corporation	15000 E EUCLID AVE	SPOKANE	Cleanup Started	2
738	SPOKANE CO WATER DIST 3	11600 N MARKET	MEAD	Awaiting Cleanup	2
629	ARGONNE ROAD	N 6018 ARGONNE RD	SPOKANE VALLEY	Cleanup Started	3
638	BJ CARNEY & Co	1102 N HOWE RD	SPOKANE	Cleanup Started	3
737	BNRR TAYLOR EDWARDS A	CINCINNATI & TRENT	SPOKANE	Cleanup Started	3
676	BNSF PARKWATER RAILYARD	PARKWATER	SPOKANE	Cleanup Started	3
84461527	HAMILTON STREET BRIDGE SITE	111 N ERIE ST	SPOKANE	Construction Complete-Performance Monitoring	3
674	SPOKANE FIRE DEPT TRAINING FAC	REBECCA & MISSION	SPOKANE	Cleanup Started	3
654	US DOE BPA Bell Maintenance HQ	2400 E HAWTHORNE RD	MEAD	Awaiting Cleanup	3
744	A to Z Rental	8000 N MARKET ST	SPOKANE	Cleanup Started	
4354868	BESTWAY MOTOR FREIGHT	822 E PACIFIC AVE	SPOKANE	Cleanup Started	

CITY OF SPOKANE ENVIRONMENTAL PROGRAMS
Dave Mandyke, Director –Utilities Division
Lloyd Brewer, Environmental Programs Manager

MEMORANDUM

19 September 2011

To: Wellhead Policy Coordinating Committee
File
Fr: Lloyd Brewer, Environmental Programs Manager LAB
Cc: Frank Triplett, Chris Peterschmidt, Dave Mandyke, Gerry Gemmill

Re: List of Relatively High Risk Business Activities

About half of the List of Relatively High Risk Business Activities currently under consideration originated in the first Wellhead Protection Policy Coordinating Committee. The original list from that process is documented in the City of Spokane's Wellhead Protection Program Phase II, (2000, section 4.6.2) and in the SAJB Wellhead Protection Plan (2001, section 8.7.2). The original list was brought forward by Stan Miller, then Spokane County's Spokane Aquifer Water Quality Program Manager and a Wellhead Protection Policy Coordinating Committee member. In his position Stan had significant knowledge of the contaminant sources which had already caused contamination of the Aquifer. In addition, he had years of experience working with EPA on the Sole Source Aquifer program.

The original list was further modified in 2007 as it was brought to, and considered by, the Spokane Aquifer Joint Board for inclusion in their Wellhead Protection recommendations. The list currently under consideration with the names and dates of those contributing changes is attached as Table 1. The list was nearly doubled near the end of the SAJB process when Martin Palaniuk, a City of Spokane Planning Intern, came across an EPA reference with double the number of business types considered potentially risky as compared to the first list. Martin was working on the Critical Aquifer Recharge portion of the City's Comprehensive Plan at the time.

Finally in our current process we have heard recommendations for highways and railroads to be considered as well. These were considered by the first Wellhead Protection Policy Coordinating Committee, the Wellhead Protection Citizen's Advisory Committee, and resulting Focus Groups.

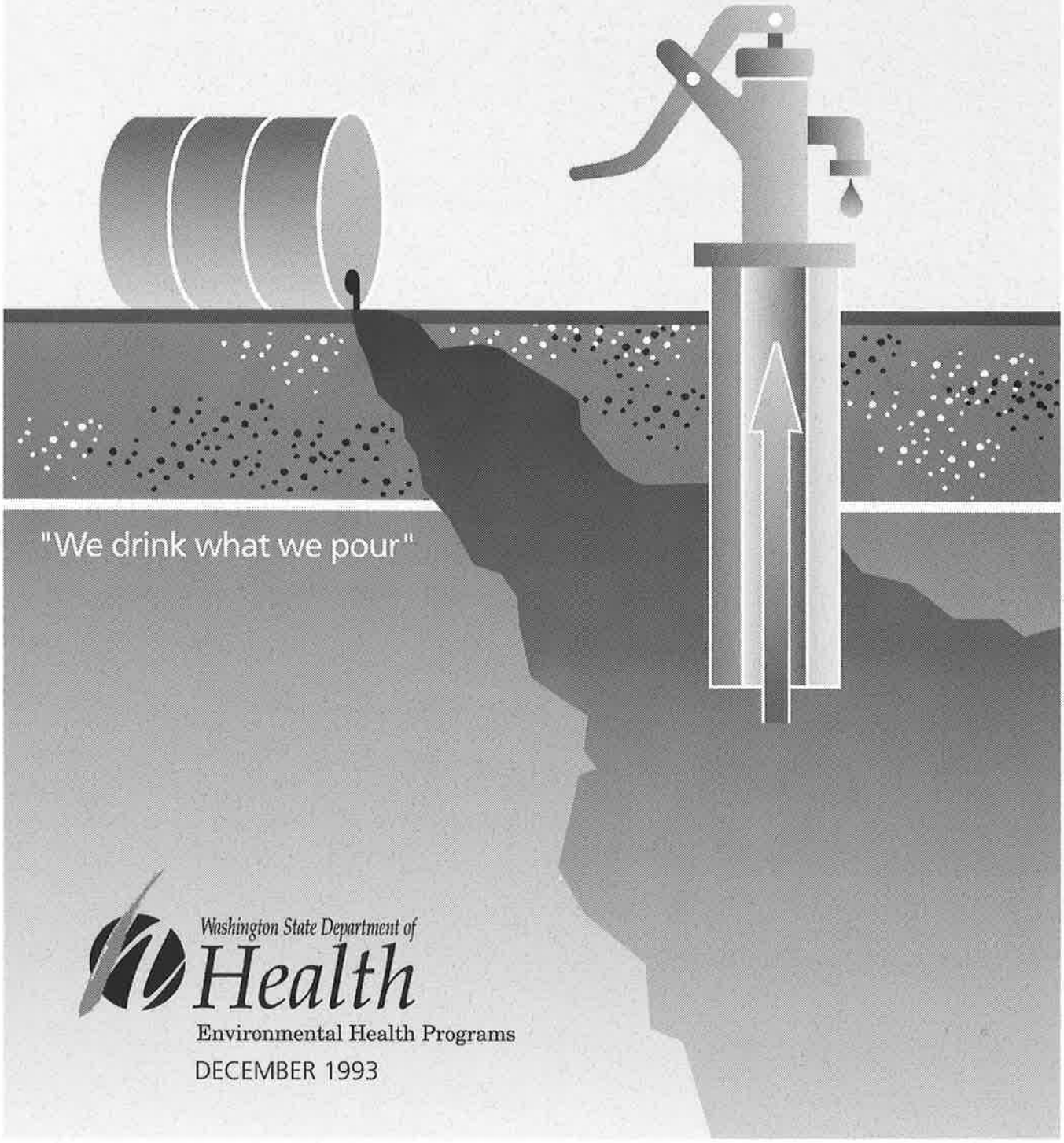
I am attaching three pages from the Washington State Department of Health Guidance on Wellhead Protection (Dec 1993; Inventory of Potential Contaminant Sources in Washington's Wellhead Protection Areas; pages 4, 5, & 10) whose contents originated with EPA. As you will see, the whole list we currently have before us is included in the WA-DOH / EPA listing.

TABLE 1:

Stan 2/00		Chemical/Agricultural Chemical Warehousing
Stan 2/00		Composite ("fiberglass") Products Manufacturing
Stan 2/00		Dry Cleaning (performed on location)
Stan 2/00		Electronics Manufacturing
Stan 2/00		Electroplating
Stan 2/00		Engine & Vehicle Repair/Service/Salvage
Stan 2/00		Metal Fabrication
Stan 2/00		Paint Manufacturing and Wholesale Storage
Stan 2/00	Lloyd 2/07	Petroleum Bulk Storage & Transmission
Stan 2/00		Printing and Lithography
Lloyd 2/07	SAJB 4/07	Wastewater Bulk Storage, Treatment & Pumping Facilities
SAJB 6/07		Mining/Sand & Gravel Extraction
Martin 9/07		Animal Feedlots
Martin 9/07		Bio-Research Facilities
Martin 9/07		Furniture Stripping
Martin 9/07		Junk Yards
Martin 9/07		Oil & Gas Drilling
Martin 9/07		Photo Processing
Martin 9/07		Solid Waste Handling & Recycling Facilities
Martin 9/07		Vehicle Washing
Martin 9/07		Wood Treatment Facilities
Bruce 7/11		Freeways & major Highways
Bruce 7/11		Railroad lines

Stan	Stan Miller, former Spokane County Water Quality Management Program Lead
Lloyd	Lloyd Brewer, City of Spokane Environmental Programs Manager
Martin	Martin Palaniuk, former City of Spokane Planning Intern, currently City of Spokane Valley Planner
Bruce	Bruce Rawls, Spokane County Director of Utilities

Inventory of Potential Contaminant Sources in Washington's Wellhead Protection Areas



Washington State Department of Health
Environmental Health Programs
DECEMBER 1993

Table 1. Potential Contaminant Sources Listed by Type

CATEGORY I—Sources designed to discharge substances

Subsurface percolation (e.g., septic tanks and cesspools)
Injection Wells
- Hazardous waste
- Non-hazardous waste (e.g., brine disposal and drainage)
- Non-waste (e.g., enhanced recovery, artificial recharge solution mining, and in-situ mining)

Land application
- Waste water (e.g., spray irrigation)
- Wastewater byproducts (e.g., sludge)
- Hazardous waste
- Non-hazardous waste

CATEGORY II—Sources designed to store, treat, and/or dispose of substances; discharge through unplanned release

Landfills
- Industrial hazardous waste
- Industrial non-hazardous waste
- Municipal sanitary

Open dumps, including illegal dumping (waste)
Residential (or local) disposal (waste)
Surface impoundments
- Hazardous waste
- Non hazardous waste

Waste tailings
Waste piles
- Hazardous waste
- Non hazardous waste

Materials stockpiles (non-waste)
Graveyards
Animal burial
Aboveground storage tanks
- Hazardous waste
- Non-hazardous waste
- Non-waste

Underground storage tanks
- Hazardous waste
- Non-hazardous waste
- Non-waste

Containers
- Hazardous waste
- Non-hazardous waste
- Non-waste

Open burning sites
Detonation sites
Radioactive disposal sites

CATEGORY III—Sources designed to retain substances during transport or transmission

Pipelines
- Hazardous waste
- Non-hazardous waste
- Non-waste

Materials transport and transfer operations
- Hazardous waste
- Non-hazardous waste
- Non-waste

CATEGORY IV—Sources discharging substances as a consequence of other planned activities

Irrigation practices (e.g., return flow)
Pesticide applications
Fertilizer applications
Animal feeding operations
De-icing salts applications
Urban run-off
Percolation of atmospheric pollutants
Mining and mine drainage
- Surface mine-related
- Underground mine-related

CATEGORY V—Sources providing conduit or inducing discharge through altered flow patterns

Production wells
- Oil (and gas) wells
- Geothermal and heat recovery wells
- Water supply wells

Other wells (non-waste)
- Monitoring wells
- Exploration wells

Construction excavation

CATEGORY VI—Naturally occurring sources whose discharge is created and/or exacerbated by human activity

Ground water- surface water interactions
Natural leaching
Saltwater intrusion/brackish water upconing (or intrusion of other poor-quality natural water)

Source: United States Environmental Protection Agency. 1989. *Wellhead Protection Programs: Tools for Local Governments.* EPA 440/6-89-002

Table 2. Potential Contaminant Sources Listed Alphabetically

Agricultural

Animal burial areas
Animal feedlots
Chemical application (e.g., pesticides, fungicides, and fertilizers)
Chemical storage areas
Irrigation
Manure spreading and pits

Commercial

Airports
Auto repair shops
Boat yards
Construction areas
Car washes
Cemeteries
Dry cleaning establishments
Educational institutions (e.g., labs, lawns, and chemical storage areas)
Gas stations
Golf courses (chemical application)
Jewelry and metal plating
Laundromats
Medical institutions
Paint shops
Photography establishments/printers
Railroad tracks and yards/maintenance
Research laboratories
Road deicing operations (e.g., road salt)
Road maintenance depots
Scrap and junkyards
Storage tanks and pipes (above-ground, below-ground, underground)

Industrial

Asphalt plants
Chemical manufacture, warehousing, and distribution activities
Electrical and electronic products and manufacturing
Electroplaters and metal fabricators
Foundaries
Machine and metalworking shops
Manufacturing and distribution sites for cleaning supplies
Mining (surface and underground) and mine drainage
Petroleum products production, storage, and distribution centers
Pipelines (e.g., oil, gas, coal slurry)
Septage lagoons and sludge
Storage tanks (above-ground, below-ground, underground)
Toxic and hazardous spills
Wells - operating and abandoned (e.g., oil, gas, water supply, injection, monitoring (and exploration)
Wood preserving facilities

Residential

Fuel storage systems
Furniture and wood strippers and refinishers
Household hazardous products
Household lawns (chemical application)
Septic systems, cesspools, water softeners
Sewer lines
Swimming pools (e.g. chlorine)

Waste Management

Fire training facilities
Hazardous waste management units (e.g., landfills, land treatment areas, surface impoundments, waste piles, incinerators, treatment tanks)
Municipal incinerators
Municipal landfills
Municipal wastewater and sewer lines
Open burning sites
Recycling and reduction facilities
Stormwater drains, retention basins, transfer stations

Source: United States Environmental Protection Agency. 1989. *Wellhead Protection Programs: Tools for Local Governments.* EPA 440/6-89-002

Table 3. Quantities and Types of Chemicals Typically Used, Stored or Transferred by Land Use Activities

Large Amounts of Chemicals

Industrial Activities Chemical manufacturing; electronics; petroleum refining and storage; metal treating; food processing; wood and pulp processing; textile manufacturing; warehousing	**Chemical Categories** Metals and a variety of synthetic organic compounds including petroleum based hydrocarbons, solvents, degreasers, and pesticides
Commercial Activities Gas stations; furniture strippers; drum cleaning	Petroleum products; other synthetic organic compounds*

Moderate Amounts of Chemicals

Commercial Activities Dry cleaners; junk yards; auto repair and body shops; pest controllers; photographic processing; machine shops; auto parts stores; lawn and garden/farm stores; paint stores; hardware stores; medical facilities	**Chemical Categories** Metals; nutrients; fertilizers; pesticides; petroleum products; other synthetic organic compounds*
Agricultural Activities High intensity agricultural operations (fruits and vegetables); concentrated animal operations (feedlots, dairies, poultry)	Nitrates and other nutrients; fertilizers; pesticides
Residential Activities Urban housing; high density using septic systems, urban gardening	Nitrates and other nutrients; fertilizers; pesticides; petroleum products; other synthetic organic compounds*

Small Amounts of Chemicals

Commercial Activities Grocery stores; department stores; office buildings; laundromats; food service; shoe repair; barber and beauty shops	**Chemical Categories** Petroleum products and other synthetic organic compounds*
Agricultural Activities Low chemical use agriculture (forage crops)	Nitrates
Residential Activities Moderate and low density, septic systems, urban gardening	Nitrates and other nutrients; fertilizers; petroleum products; pesticides; and other synthetic organic compounds*

* Synthetic organic compounds include volatile, semi-volatile and non-volatile compounds. In general they include the following: solvents; degreasers; plasticizers; petroleum based hydrocarbons and by-products; other industrial chemicals; and pesticides (herbicides, fungicides, rodenticides, and insecticides).

Adapted from: United States Environmental Protection Agency. 1991. *Guide For Conducting Contaminant Source Inventories For Public Drinking Water Supplies. EPA 570/9-91-014.*

Appendix 4 Wellhead Protection Policy Coordinating Committee Attendees

Name	Organization
Lloyd Brewer	City of Spokane
Doug Greenlund	City of Spokane
Henry Allen	City of Spokane Valley
Ty Wick	SAJB
Rob Lindsey	Spokane County
Bill Rickard	City of Spokane
Matt Zarecor	Spokane County
Tonilee Hanson	SAJB
Jeremy Jenkins	Liberty Lake Sewer and Water District
Lynn Schmidt	City of Spokane
Tom Richardson	City of Millwood
Gloria Mantz	City of Spokane Valley
Steve Holderby	Spokane Regional Health District
Lori Barlow	City of Spokane Valley
Jim Lahde	Model Irrigation District
Rob Lindsay	Spokane County
Karen Kendall	City of Spokane Valley
Art Jenkins	City of Spokane Valley
Bill Shelton	Fairchild Air Force Base
John Porcello	GSI Water Solutions Inc.
Matt Kohlbecker	GSI Water Solutions Inc.
Tirrell Black	City of Spokane
Lee Mellish	Liberty Lake Sewer and Water
Bruce Rawls	Spokane County Utilities
Mike Taylor	City of Spokane
Ben Brattebo	Spokane County
Erin Casci	SAJB
Heather Cannon	Washington State Department of Health
Dorothy Tibbetts	Washington State Department of Health
Dave Johnson	Spokane County Conservancy Board
Scott Kuhta	City of Spokane Valley
Jim Falk	Spokane County
Chris Green	City of Spokane
Mary Kate McGee	City of Spokane Valley
Mike Hermanson	Spokane County
Amanda Tainio	City of Liberty Lake
Ed Perry	Washington State Department of Health
David Luders	Fairchild Air Force Base

Map 1
Proposed Regulated Special Wellhead Protection Areas over SVRP Aquifer

Printed by: dgreenlund Print date: 4/29/2014

Legend

- Carnhope Irrigation District
- City of Millwood
- City of Spokane
- Consolidated Irrigation District
- East Spokane Water District
- Honeywell
- Hutchinson Irrigation District
- Irvin Water District
- Kaiser Trentwood
- Liberty Lake Sewer and Water District
- Moab Irrigation District
- Model Irrigation District
- Modern Electric and Water Co
- Non SAJB
- North Spokane Irrigation District
- Orchard Ave Irrigation District
- Pasadena Park Irrigation District
- Spokane Business and Industrial Park
- Spokane County Water District 3
- Stevens County PUD
- Trentwood Irrigation District
- Vera Water and Power
- Whitworth Water District

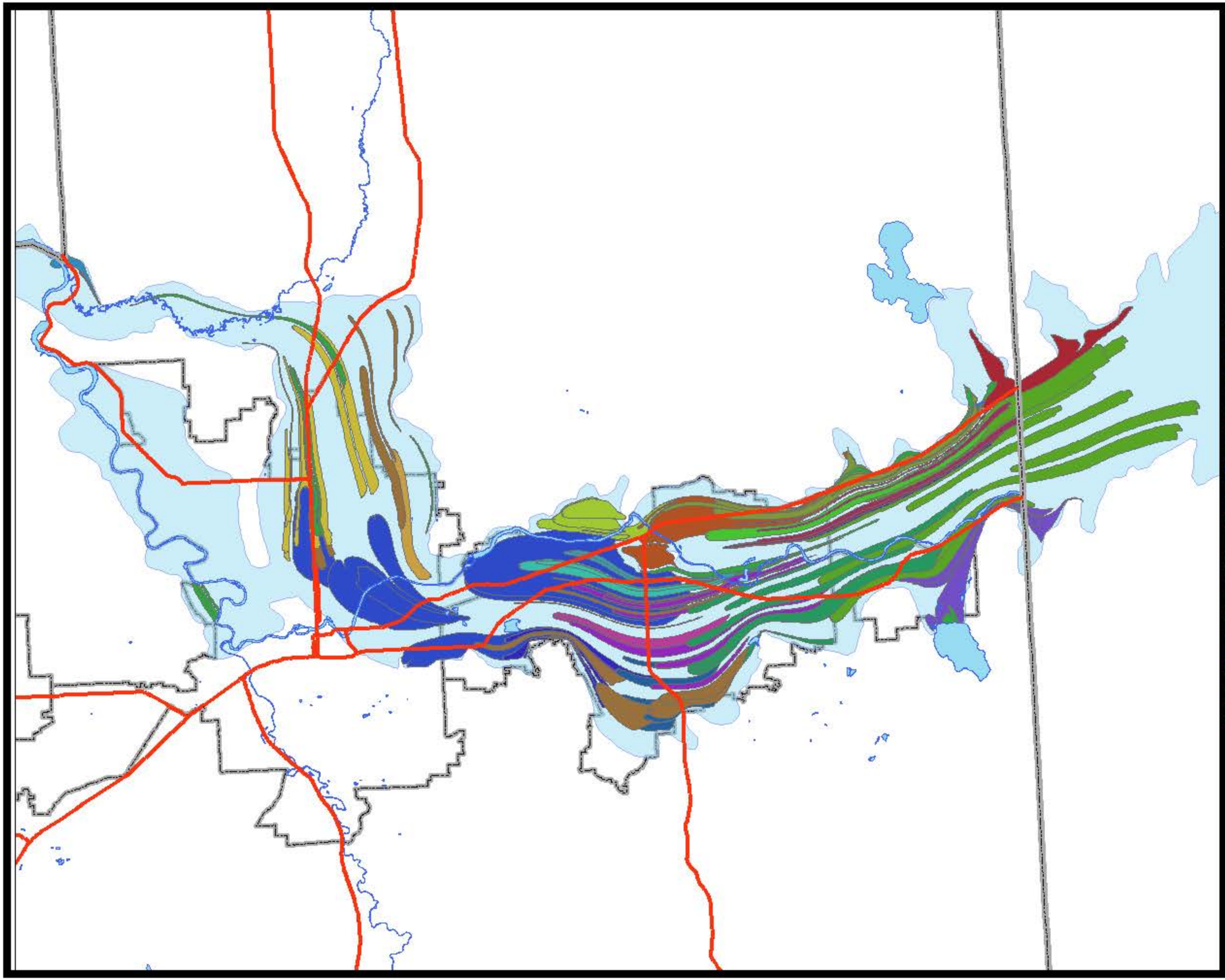
0 7,700 15,400 23,100
Feet

Geographic Information System

N
W E
S

CITY OF SPOKANE

THIS IS NOT A LEGAL DOCUMENT.
The information shown on this map is compiled from various sources and is subject to constant revision. Information shown on this map should not be used to determine the location of facilities in relationship to property lines, section lines, streets, etc.



Map 2

2 Year Time of Travel Wellhead Protection Areas

Printed by: dgreenlund Print date: 4/29/2014

Legend

WaterSystem

- Carnhope Irrigation District
- City of Millwood
- City of Spokane
- Consolidated Irrigation District
- East Spokane Water District
- Honeywell
- Hutchinson Irrigation District
- Irvin Water District
- Kaiser Trentwood
- Liberty Lake Sewer and Water District
- Moab Irrigation District
- Model Irrigation District
- Modern Electric and Water Co
- Non SAJB
- North Spokane Irrigation District
- Orchard Ave Irrigation District
- Pasadena Park Irrigation District
- Spokane Business and Industrial Park
- Spokane County Water District 3
- Stevens Co. PUD
- Trentwood Irrigation District
- Vera Water and Power
- Whitworth Water District

0 8,000 16,000 24,000

Feet

Geographic Information System

N

W E

S

CITY OF SPOKANE

THIS IS NOT A LEGAL DOCUMENT.
The information shown on this map is compiled from various sources and is subject to constant revision. Information shown on this map should not be used to determine the location of facilities in relationship to property lines, section lines, streets, etc.

Chapter 6

Operation and Maintenance Program

Exhibits and Appendices

Exhibit 6.3.1 Pressure Zone Control Strategy

Controls

System Name Eagleridge

System High Pressure 190

System Low Pressure 175

Season	Seq. #	Tank Name	Pump Name	Pump #	Start Elevation	Stop Elevation
Summer	1	Eagleridge	Eagleridge	3	2335.5	2341.5
Summer	2	Eagleridge	Eagleridge	2	2334.5	2341
Summer	3	Eagleridge	Eagleridge	1	2333.5	2340.5
Winter	1	Eagleridge	Eagleridge	1	2335.5	2341.5
Winter	2	Eagleridge	Eagleridge	2	2334.5	2341
Winter	3	Eagleridge	Eagleridge	3	2333.5	2340.5

APPENDIX 6.3.1

Controls

System Name Eagleridge2

System High Pressure 85

System Low Pressure 52

Season	Seq. #	Tank Name	Pump Name	Pump #	Start Elevation	Stop Elevation
Annual	1	Eagleridge 2	Eagleridge 2	2	2435	2456

Controls

System Name Plains System

System High Pressure 108

System Low Pressure 100

Season	Seq. #	Tank Name	Pump Name	Pump #	Start Elevation	Stop Elevation
Annual	1	Mallen	Spotted	2	2625	2646
Annual	2	Mallen	Spotted	1	2620	2640

Exhibit 6.3.2 Operator Tasks and Procedures

WATER/HYDRO OPERATOR LISTINGS

100 GENERAL SAFETY AND SECURITY

100 Assistance - Plant Operations, Critical and Emergency
110 Personal Safety
120 Plant and Equipment Safety
130 Plant Security

200 SAFETY MANAGEMENT PROGRAMS

200 Process Safety Management
210 Chlorine
230 Emergency Action Plans
240 Equipment Tagout and Lockout

300 GENERAL OPERATIONAL DUTIES

300 Logs and Reports
310 Communications
320 Station Equipment
330 Inspections of Stations
340 Inspections of Switchyards and Switchgear
350 Inspections of Diversion Dam
360 Inspections of Auxiliary Power Systems
370 Miscellaneous

400 WATER SYSTEM OPERATIONS

400 General System
410 Pumps and Motors
420 Water System Malfunctions
430 Related Equipment

500 HYDRO-GENERATION PLANT

500 General Hydro-Generation Operations
510 Powerhouse 1 Operations
520 Powerhouse 2 Operations
530 Control and Protective Equipment
540 Hydro-Generation Malfunctions
550 Related Equipment

600 COMPUTERS AND SCADA

700 WATER QUALITY LABORATORY

100 GENERAL SAFETY AND SECURITY

Assistance - Plant Operations, Critical And Emergency

100 Call Out Flow Chart
101 Police, Fire, or First Aid
102 Locate the Material Data Sheets
103 Keep Personnel Record Up to Date

Personal Safety

110 Personal Safety Awareness
111 Personal Protective Equipment
112 Inspect and Wear Flotation Devices
113 Respiratory Protection
114 Confined Space Entry
115 Hazard Communication
116 Fall Protection

Plant and Equipment Safety

120 Fire Extinguishers
121 Operate Halon Systems
122 Incident Investigation and Reporting
123 Electrical Safety

Plant Security

130 Inspect Security Lighting, Fences, Gates, Doors, etc.
131 Requests For Information
132 Calls of Threatening Nature
133 Controlling Access to Water Department Facilities

200 SAFETY MANAGEMENT PROGRAMS

Process Safety Management

200 PSM Awareness
201 PSM Well Electric PHA
202 Well Electric Chlorine Process Overview
203 Pre-Startup Safety Review Procedure

Chlorine

210 Inspect and Test Chlorine Systems
211 Chlorine Spill/Leak Detection
212 Chlorine Spill/Leak Response
213 Inspect and Test Chlorine Leak Detectors
214 Delivery of 150 lbs. Containers
215 Delivery of Ton Containers
216 Inspect Chlorine Hoist at Well Electric
217 Changing Chlorine Supply for All Conditions
218 Training Emergency Backup Personnel (Observer)
219 Take Chlorine Residual

Emergency Action Plans

230 Upriver Dam EAP Training and Drills
231 CL2 EAP Training and Drills
232 Well Electric CL2 EAP Drills
233 Visitor CL2 EAP Awareness or Training
234 Avista Post Falls EAP Training and Drills

Tagout, Lockout, and Equipment Protective Shutdowns

240 LOTO Awareness
241 LOTO Procedures
242 Clearance Procedures
243 Hot Work Permit Procedures

300 GENERAL OPERATIONAL DUTIES

Logs and Reports

Communications

Station Equipment

Inspections of General Plant

Inspections of Diversion Dam

Inspections of Switchyards and Switchgear

Inspections of Auxiliary Power Systems

Miscellaneous

400 WATER SYSTEM OPERATIONS

General System Operations

Pumps and Motors

Water System Malfunctions

Related Equipment

500 HYDRO-GENERATION PLANT

General Hydro-Generation Operations

Powerhouse 1 Operations

Powerhouse 2 Operations

Control and Protective Equipment

Hydro-Generation Malfunctions

Related Equipment

600 COMPUTERS AND SCADA

Policies and Security

600 City Policy for Computer Use
601 Usernames and Passwords

Windows XP Procedures

610 Computer Failure
611 Data Communication Failure

Citect Procedures

620 Computer Failure
621 Data Communication Failure

Water System SCADA

630 Operate Water System Computer
631 Start and Stop Pumps With Computer
632 Computer Failure
633 Data Communication Failure

Hydro Plant SCADA

640 Operate Hydro Electric Scada - Digitek
641 Operate Hydro Electric Scada - Citect
642 Computer Failure
643 Data Communication Failure

Legacy Software

650 Operator Training
651 Barrington Software
652 Backups
653 Computer Failure
654 Data Communication Failure

700 WATER QUALITY LABORATORY

Field Sampling Procedures

Bacteriological Methodology

Chemical/Physical Methodology

Preventative Maintenance

Please Refer to Laboratory SOP for Specific Applications and Tests not Mentioned

Appendix 6.4.1 Well Field and Monitoring Requirements

DEPARTMENT OF SOCIAL AND HEALTH SERVICES
DRINKING WATER OPERATIONS

SUBJECT: Definition of Well Field and Monitoring Requirements for Well Fields

PURPOSE: Provide a definition of well field to assist DSHS staff in determining utility compliance with inorganic and organic water quality monitoring.

GUIDELINE

The Drinking Water Operations Sections have long recognized the concept of considering nearby wells withdrawing from the same aquifer as a well field, and eligible for consideration as a single source when considering compliance with water quality monitoring requirements. It has become necessary to provide guidance to staff to ensure consistency when dealing with Washington State utilities and to establish general direction for development of future state regulations. Therefore, a number of individual wells will be considered a well field if all of the following criteria are met:

1. The depth of all individual wells must be within 20 percent of each other after taking elevation differences into account. The depth of the well shall be the distance from the top of the well to the well screen(s), perforations, or the water bearing strata.

2. All individual wells shall draw from the same aquifer(s) as determined by comparable inorganic chemical analysis (such as conductivity, total hardness, nitrates, chlorides or other indicators or other information acceptable to the Department).

3. All individual wells must discharge water through a common pipe in order to allow the collection of a composite sample which includes all the individual wells within the well field. There shall be no individual services prior to the composite sampling point.

4. All individual wells must be under the control of the same purveyor to be considered part of a well field.

The following monitoring requirements will apply to all designated well fields:

a) All individual wells which are normally in operation during the sampling month must be pumping when collecting a source sample.
b) Samples from a designated well field cannot be composited with samples from any other drinking water sources.

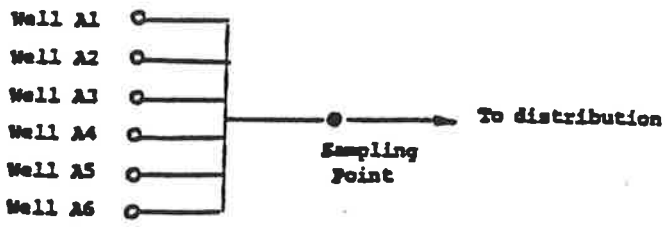
It shall be the responsibility of the utility to provide necessary information to justify varying from this guideline. The Drinking Water Regional Office Staff must concur with all variances from this guideline.

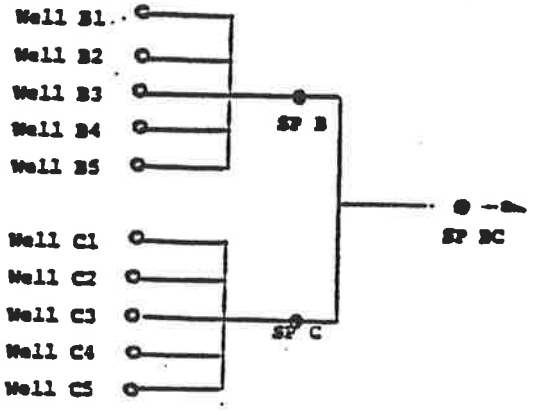
Approved By Bill Liechty Date 5-19-88

APPENDIX 6.4.1

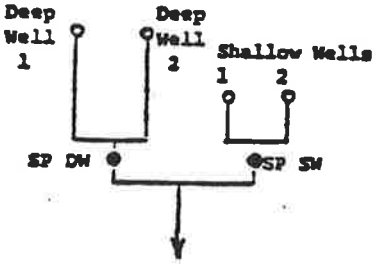
Department of Social and Health Services

WELL FIELD EXAMPLES

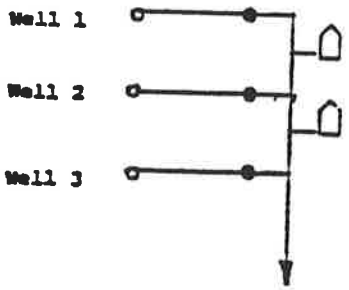




Wells B1 - B5 would be considered a well field if sampling point B was used. Wells C1 - C5 would be considered a seperate well field. If sampling point BC was used then all B and C wells could be considered one well field



Even through these wells are in the same vicinity and discharge through a common pipe, they can not be considered one well field because they are of different depth and draw from different aquifers. If the two deep wells can be piped so that there is a common discharge point for sampling (SP DW), the two deep wells could be considered a well field. Same rule would apply to the shallow wells.



Even if Wells 1, 2 and 3 are the same depth and are in the same aquifer, they can not be considered a well field because there are services before a common discharge (sampling) point.

W F I INFORMATION

DSHS SOURCE CODE	UTILITY SOURCE NAME	
S01	Well Field A	
S02	Well Field BC	(Sampling point BC) } Can not be composited
S03	Well Field Deep Well	
S04	Well Field Shallow Well	

Appendix 6.4.2 Sampling Site Photos

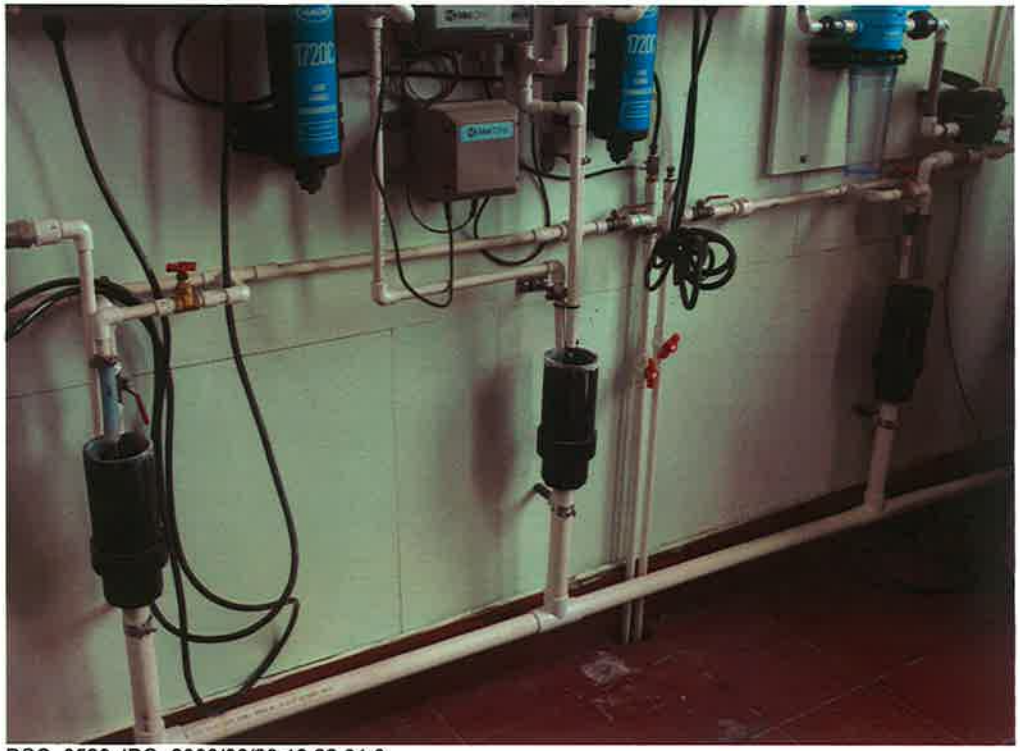
CITY OF SPOKANE WATER DEPARTMENT
SOURCE SAMPLING SITES

Photo Number	Description
0521	Nevada Street Well S-01 Well 1, Turbidity Pump
0522	Nevada Street Well S-01 Pumps 1, 2, 3, 4
0526	Grace Ave Well S-02 Well 1, Pumps 1 & 2
0528	Well Electric Well S-02 Well 4, Sample Pump Well 5, Sample Pump
0529	Well Electric Well S-02 Well 4, Turbidity Pump Well 5, Turbidity Pump
0548	Parkwater Well S-03 Well 2, Pump 4, Turbidity Pump Well 2, Pump 4, Sample Pump
0583	Ray Street Well S-04 Wells 1 & 2, Pumps 1, 2, 3
0590	Hoffman Ave Well S-05 Wells 1 & 2, Pumps 1 & 2
0597	Central Avenue Well S-08 Wells 1 & 2, Pumps 1, 2, 3, 4

DSC_0521.JPG 2006/06/29 13:04:47

DSC_0522.JPG 2006/06/29 13:04:58.9

DSC_0526.JPG 2006/06/29 13:08:11.8

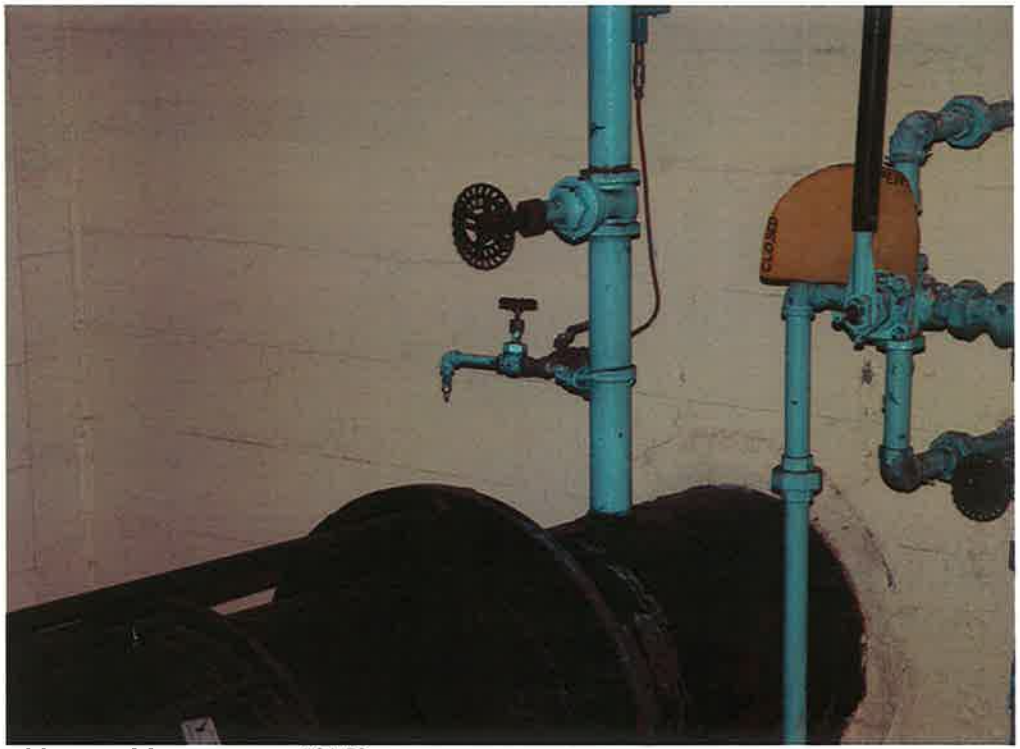


DSC_0528.JPG 2006/06/29 13:22:01.8

DSC_0529.JPG 2006/06/29 13:22:04.9

DSC_0548.JPG 2006/06/29 13:33:19.8

DSC_0583.JPG 2006/06/29 14:15:42.2



DSC_0590.JPG 2006/06/29 14:31:56

DSC_0597.JPG 2006/06/29 14:47:02.8

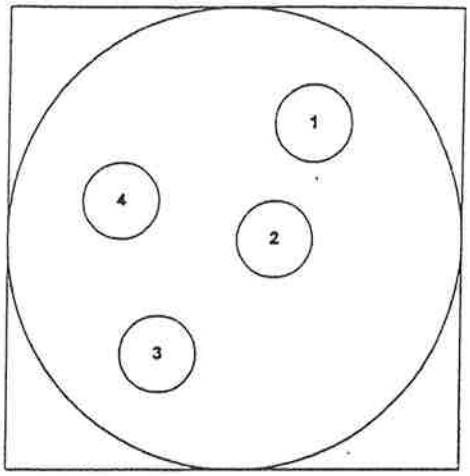
Appendix 6.4.3 Sample Site Forms

City of Spokane Water Department
Fields Sampling Record

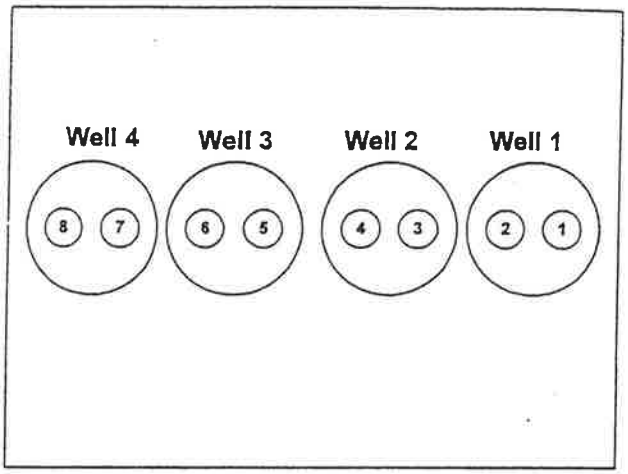
Well Station						
Well Number						
Date						
Time						
Sampler						
Pump Number						
Pumping Rate from Well						
Pumping Rate from Field						
Well Level						
Cl_2 Residual (Free)						
Cl_2 Analyzer Reading						
Conductivity						
pH						
Temp C (water)						
Temp C (air)						
Turbidity						
Turbidity (on-line)						
Coliforms/E. coli						
HPC						
Notes:						

APPENDIX 6.4.3.1

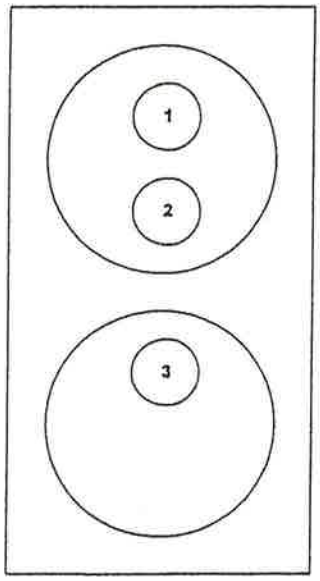
Nevada (S01)



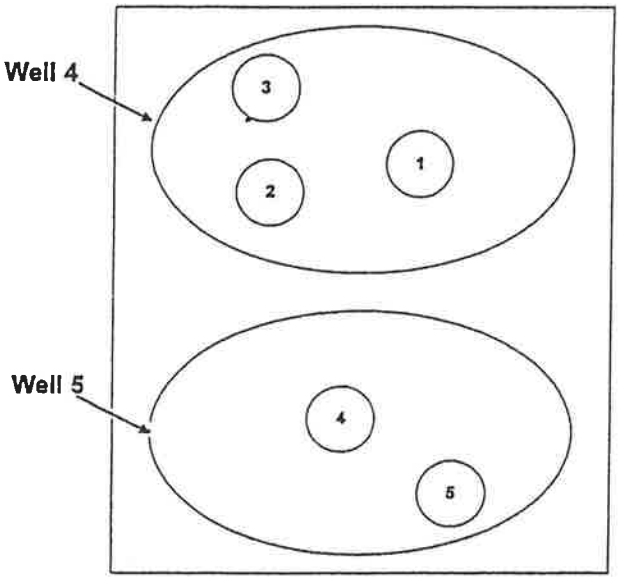
Parkwater (S03)



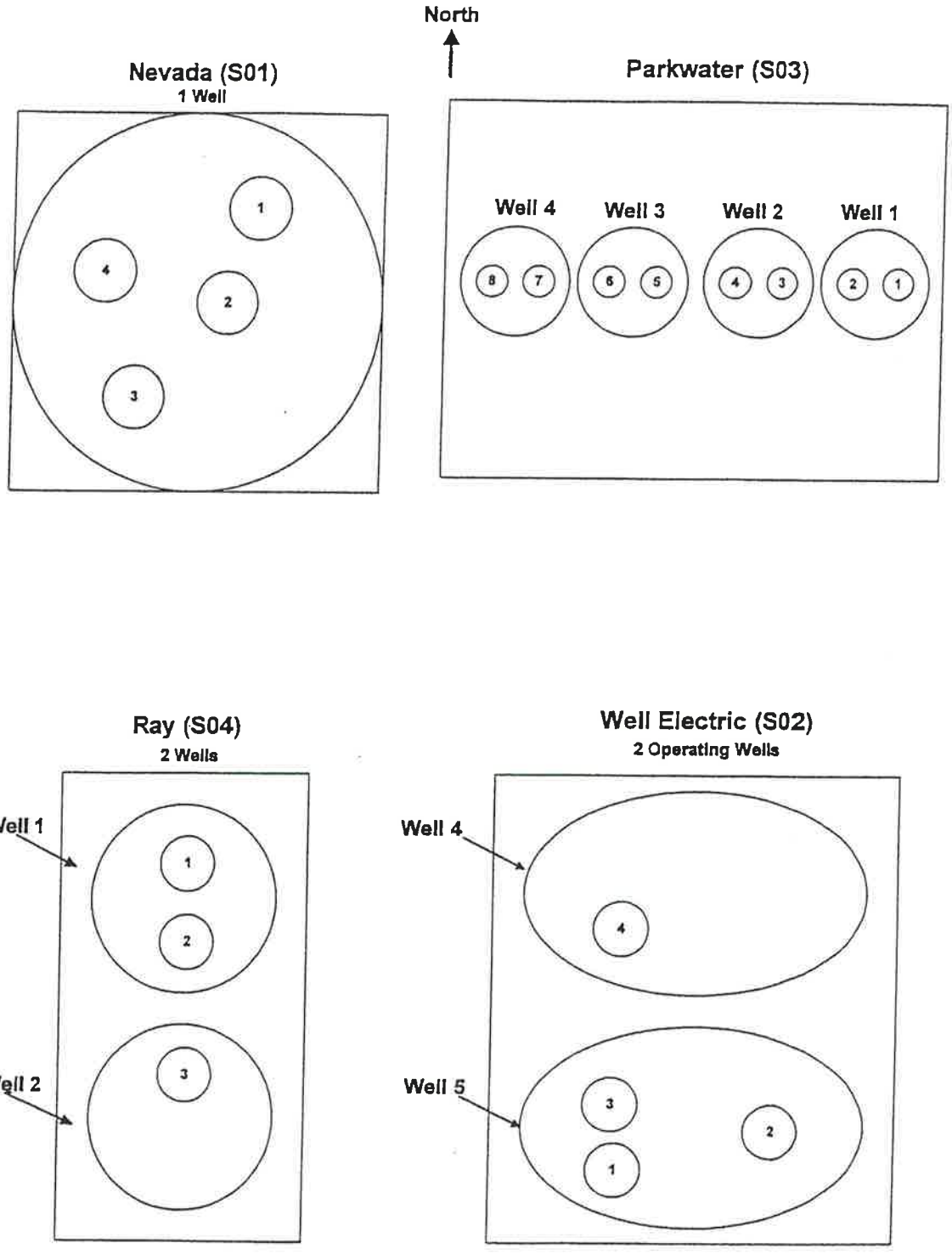
Ray (S04)



Well Electric (S02)

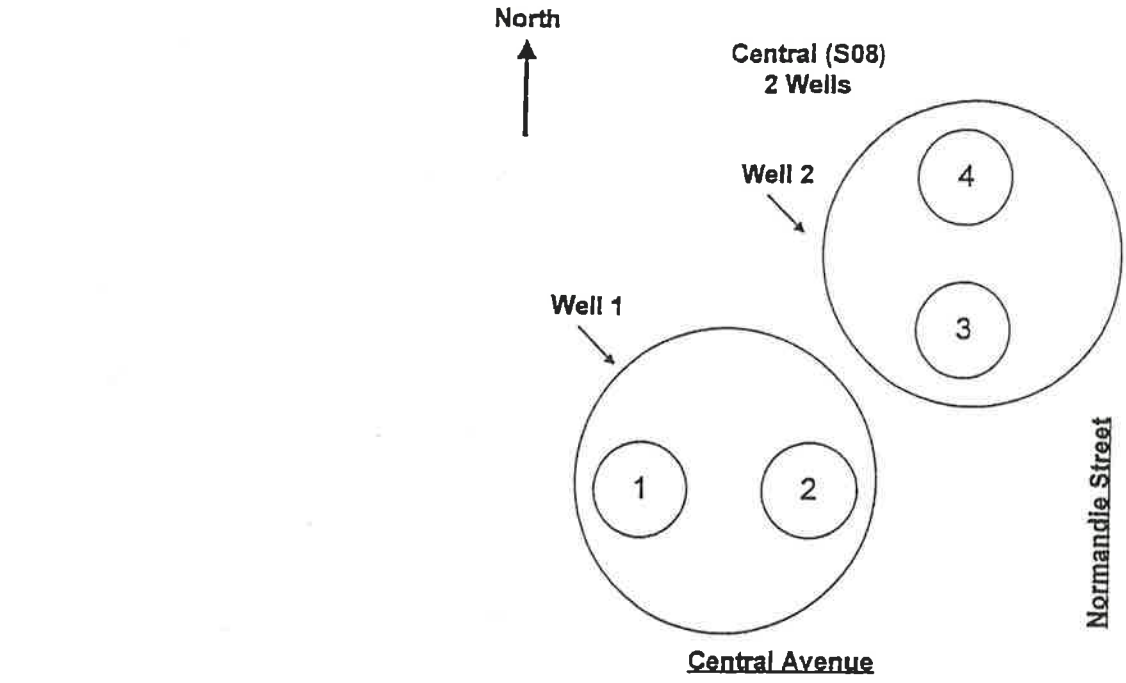


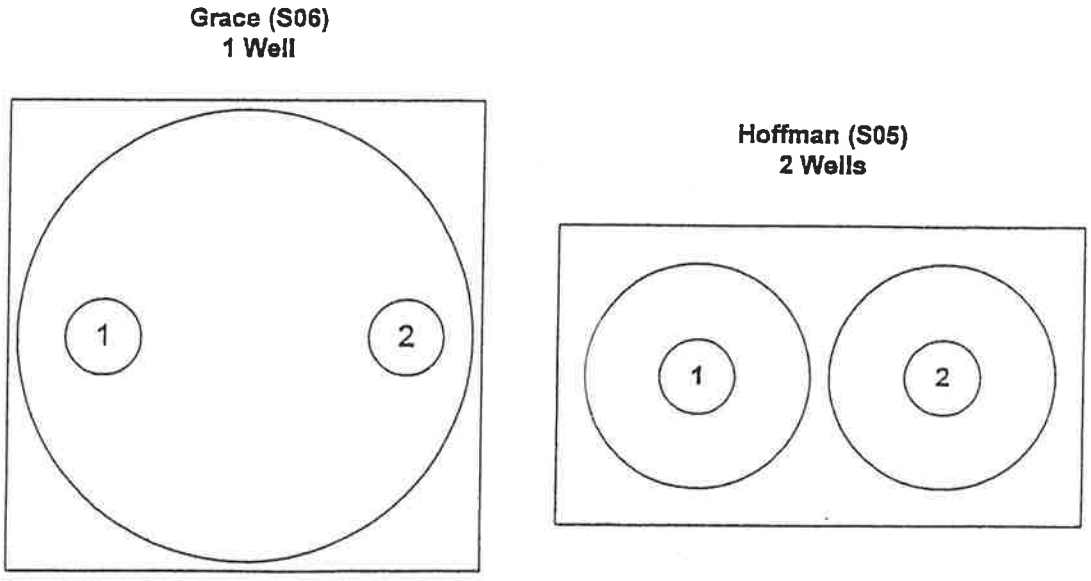
Schematic with old Well Electric pump configuration



Schematic with existing Well Electric pump configuration

APPENDIX 6.4.3.3





Schematic with existing pump configuration

APPENDIX 6.4.3.4

Appendix 6.4.4 Report on City of Spokane Drinking Water for 2010

REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2010

Reported by
Doug Greenlund, Environmental Analyst
1 April 2011

The City of Spokane's water is of very high quality. Many different tests are conducted at varying intervals to confirm that the City's drinking water meets Washington State and Federal EPA drinking water quality standards. A comprehensive list of the substances tested for is in Appendix II. The City drinking water supply, to date, has consistently met Federal standards. This report provides a summary of the drinking water monitoring conducted during 2010 by contaminant group with historical context. This report is meant to provide consumers and other interested parties with insight into what analytical tests have been conducted and, in some cases, substances that have been detected. The State and Federal Maximum Contaminant Level (MCL) information is provided as a risk benchmark.

This report also summarizes the amount of water the City used in 2010, and documents some indicators to show the progress being made to meet conservation goals adopted by the City in its Water Stewardship Strategic Plan.

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable co
n alguien que lo entiende bien.
(Para ver información adicional, visite al; http://water.epa.gov/drink/aqua/)

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài liệu này.

The final pages (appendices) of this report summarize the most recent analytical testing. Appendix III summarizes the testing completed during 2010, 2009, and 2008. Appendix IV through X summarizes the analytical results for recent and historical testing. The following narrative and attachments summarize and explain recent results in more detail. Appendix XI and the last two pages of this narrative (General Information) contain information relevant to the annual Consumer Confidence Report. As such, the information may be redundant, relative to the main text of this report.

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie Aquifer - designated a sole source aquifer in 1978. The Spokane Valley-Rathdrum Prairie Aquifer slowly flows through two different states and a number of different counties and is the source water for a large number of water purveyors (including the City of Spokane). This water and any contaminants freely move across political boundaries. Many groups and/or private individuals may claim this water to be used for diverse purposes. Some of these competing interests include (but are not limited to) drinking water rights, irrigation, fisheries, hydroelectric power, and industrial processes. The Spokane Aquifer (that portion of the larger aquifer lying within Washington State) and the Spokane River exchange water. While the aquifer contains a large volume of water, many factors play into the volume of water in the Spokane River complicating the management of these resources. Some of these factors include, but are not limited to, pumping for irrigation and potable water, hydroelectric dam operations, and the variations of weather and precipitation. The rates and locations of exchange between the aquifer and the Spokane River have been re-examined as part of the Bi-State Aquifer Study. In January 2008, the States of Washington and Idaho announced signing a Memorandum of Agreement

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509)-625-6570; FAX (509) 343-5760

(http://www.idwr.idaho.gov/WaterInformation/projects/svrp/PDFs/svrp_MOA_10-26-07.pdf) concerning the *"…continued coordination involving the maintenance and improvement of the technical tools developed in a bi-state water study.*" Discussions to agree on how to utilize these technical tools to manage this valuable resource will continue. The results of these studies and agreements will help give the City information it needs to continue to supply high-quality water to the citizens of Spokane.

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good housekeeping measures are not followed for all activity over and adjacent to the aquifer. The physical and economic health of our area depends on the quality of our drinking water. In order to safeguard water quality, the City continues its efforts to make available to the community information about, and appropriate disposal mechanisms for, dangerous wastes that are generated in the Aquifer Sensitive Area. The City, in cooperation with other local governments and the Spokane Aquifer Joint Board, continues to work toward strengthening regulations for the storage and use of critical materials to safeguard the local water supply.

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 contacting the U.S. Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791, or you can access additional information at EPA websites: http://water.epa.gov/drink/info/index.cfm and/or http://water.epa.gov/drink/guide/index.cfm

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. Further information concerning the EPA drinking water regulations and children may be accessed at http://water.epa.gov/learn/kids/drinkingwater/kidshealth_index.cfm
(Para ver información adicional, visite al; http://water.epa.gov/drink/aqua/losninos.cfm)

For further information regarding the City of Spokane's drinking water or related issues:

City of Spokane Water Department	509-625-7800	http://www.spokanewater.org/
City of Spokane-Environmental Programs	509-625-6570	http://www.greenspokane.org/
Spokane County - Water Resources	509-477-6024	http://www.spokanecounty.org/WQMP/
Spokane Regional Health District – Environmental Health Div.	509-324-1560	http://www.srhd.org/services/environment.asp
Washington State Department of Health - Eastern Regional Office (Drinking Water)	509-329-2100	http://www.doh.wa.gov/ehp/dw/default.htm
Washington State Department of Ecology – Eastern Regional Office	509-329-3400	http://www.ecy.wa.gov/
U.S. EPA Safe Drinking Water Hotline	1-800-426-4791	http://water.epa.gov/drink/

CONTENTS

To obtain free software to read some of these digital files:
Adobe Acrobat files: www.adobe.com/products/acrobat/readstep2.html
Microsoft Word files: http://www.microsoft.com/downloads/details.aspx?FamilyID=3657ce88-7cfa-457a-9aec-f4f827f20cac&displaylang=en

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509)-625-6570; FAX (509) 343-5760

QUANTITY - Water for the Future

Our Water.
Our Future.
Our Priority.

As a result of the increasing recognition of the limits to our groundwater resources, the State has encouraged local interests and authorities to come together to manage this resource. The City of Spokane has taken an active role in area-wide partnerships to safeguard the quality and quantity of our water supply. The City of Spokane and all its water customers are challenged to use water resources wisely and responsibly. The City of Spokane Water Stewardship Program was established by resolution of the City Council on May 1, 2006 (Resolution 06-49).

Changes in federal building standards have resulted in water savings nationwide. The City's Building Services Dept. enforces these standards. The City of Spokane Water Department has taken additional steps to conserve water through education programs, metering water use, reducing the loss of water resulting from leaking pipes, and implementing, in stages, a conservation-oriented rate structure. The Water Use Efficiency Rule requires that municipal water suppliers adopt a plan to make more efficient use of their water. Two of the quantifiable elements are discussed in this section.

GOALS

The City of Spokane adopted the Water Stewardship Strategic Plan on May 1, 2006. This Plan includes goals for per capita reductions in water use. The goals are based on per capita consumption for all uses including residential, commercial, industrial, and government. These goals are for reducing the water consumption during a timeframe through 2017, and are specified for seasonal periods of October through March, April through June, and July through September. The goals for these periods are different as is the per capita water use.

The October through March timeframe is typically a period of mostly indoor water use. The amount used during this period is nearest the water use essential for health and safety. Furthermore, a modest, but increasing rate of growth for our community is assumed.

The April through June timeframe is a transitional period from mostly indoor use to increasing outdoor use.

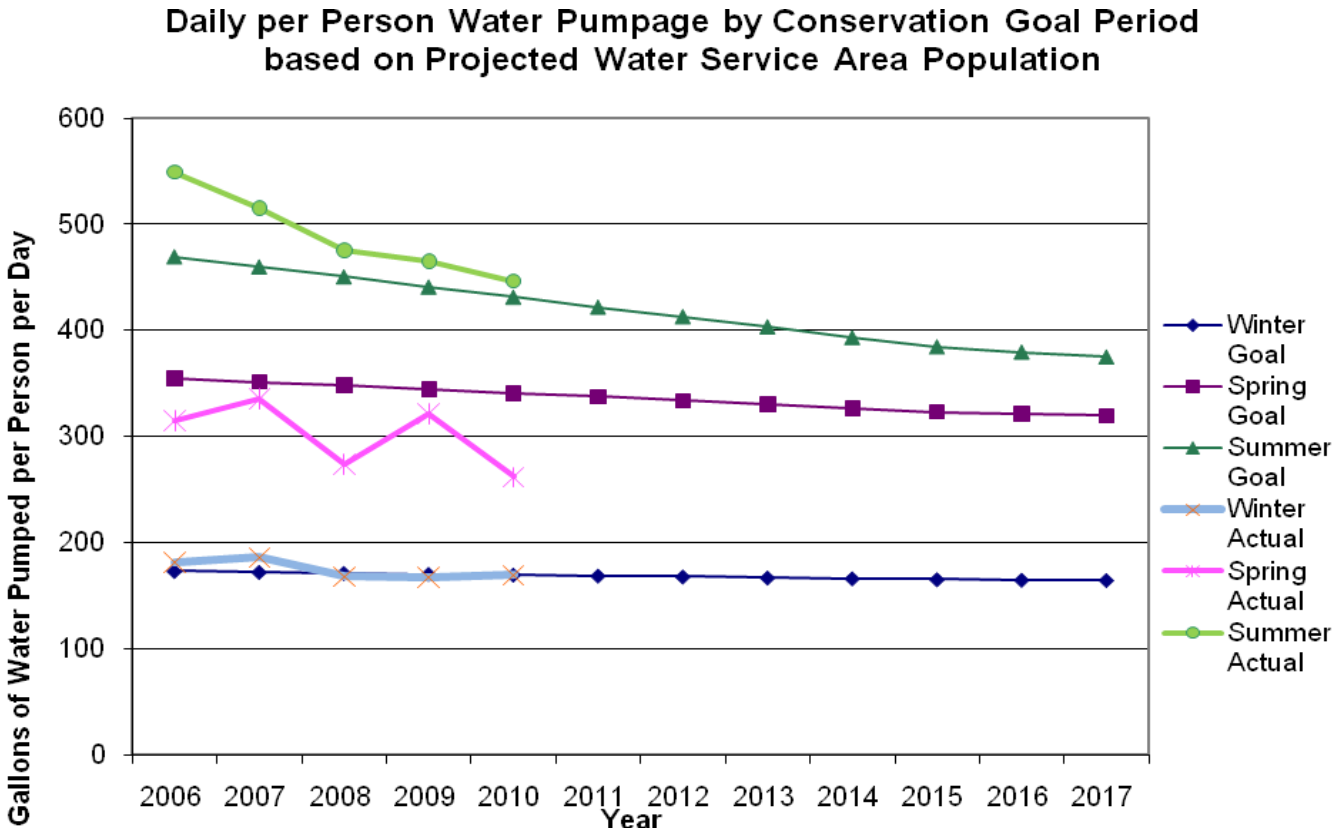
The July through September period is a period of increasing demand for outdoor irrigation. This is also the most critical period for flows in the Spokane River. The per capita reduction in water use for this period is the most ambitious.

The detailed source water pumping totals versus the adopted Water Stewardship Goals are in Appendix I. The following table and graphs illustrates this information for 2010:

WATER YEAR	2010 pumpage (1,000 gallons)		
Period	Total	Goal	Result
October 2009 through March 2010 (winter)	6,778,277	6,870,000	-1.2%
April through June (spring)	5,241,226	6,900,000	-24.0%
July through September (summer)	8,938,048	8,830,000	1.2%
sum of seasonal totals	20,957,551		

The previous table shows the difference between the Goal and the Use as a percentage. A positive value equals exceedances of the goal. Total pumpage for these periods for 2002 - 2010 is available in Appendix I.

It is our estimate that the City, while continuing to show improvement, did not achieve its water conservation pumpage goal for 2010, specifically for the timeframe of July – September 2010. The following graph demonstrates the total pumpage vs. goals for each season for 2006 thru 2010.



In 2010 the City met the conservation goal for the winter period of October 2009 through March 2010. This was the third consecutive year for meeting this conservation goal.

The City of Spokane has consistently met the conservation goal for the months of April, May and June**. The City met its goal for April through June again in 2010.**

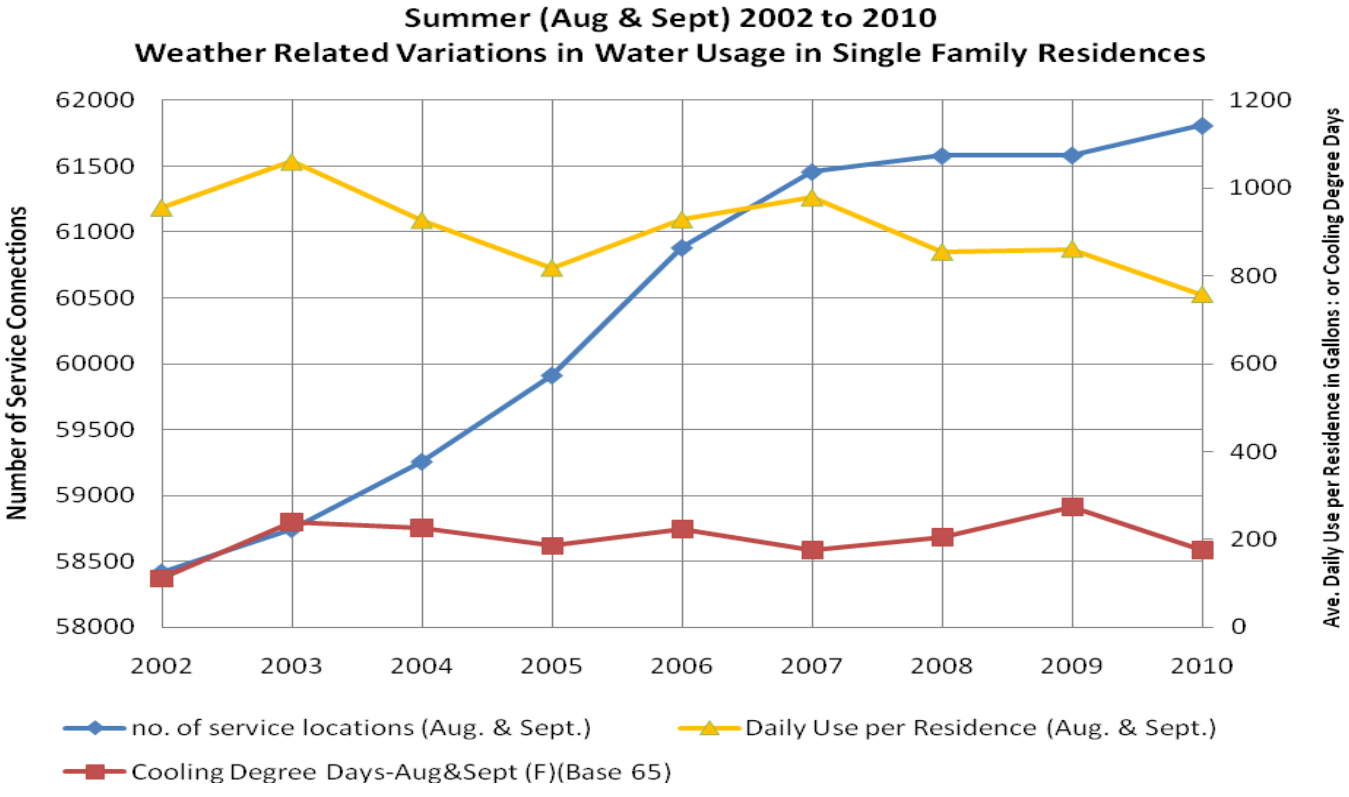
To date, the City has not met its goal for July through September, including 2010. Note that the rate of water use reduction is most ambitious during this season. **Although the City did not meet its goal for July through September in 2010, this was the fifth consecutive year of reduced pumpage.**

It is important to note that the commitment taken on by the City is based on per capita usage and the actual population served in 2010 is not immediately known. However, an indicator of population would be the number of single family residences served. The following table provides the number of single family residences over the last 9 years. Please note that the number of residences is typically lower in the winter because some local residents go south for the winter, and then such residences are not counted as "connections."

	no. of service locations (Jan. & Feb.)	*no. of service locations (Aug. & Sept.)*
2002	57,239	58,418
2003	57,238	58,747
2004	57,978	59,259
2005	58,403	59,914
2006	59,231	60,883
2007	59,881	61,459
2008	60,435	61,581
2009	60,683	61,585
2010	60,608	61,810

The number of single-family residences has increased at an average rate of 0.71% over the past 9 years. This modest increase is in contrast to the 1.28% per capita increase anticipated in the Water Stewardship Strategic Plan. Only 2005, with a 1.62% increase in residential service connections, had growth greater than the plan anticipates.

In addition to total population served, seasonal weather variations impact water use. The following graph illustrates daily usage (City of Spokane billing records) in single-family residences during the summer for the period 2002-2010:



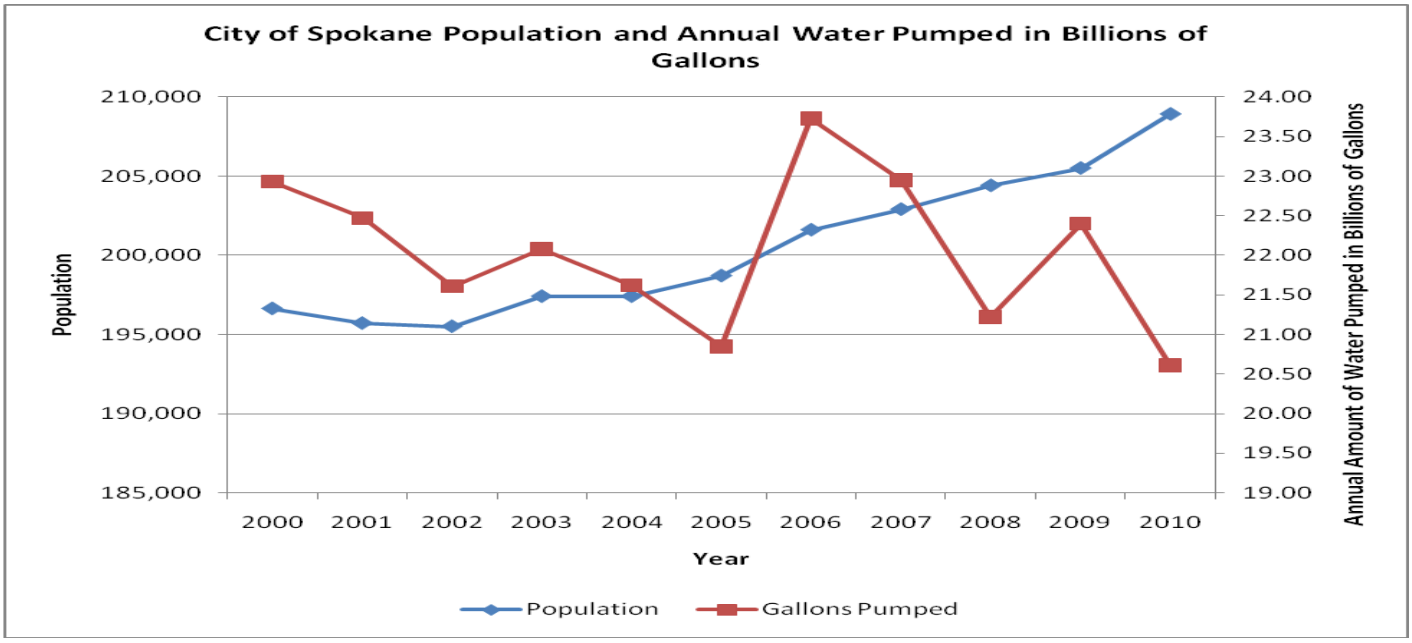
The preceding graph compares water usage of single family residences with temperature (i.e. cooling degree days). The summer of 2010 had fewer cooling degrees days (was cooler) than the previous 7 years and continued the downward trend in summertime water use of single family residences.

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509)-625-6570; FAX (509) 343-5760

The following table shows the daily usage of single family residences during the winter and summer periods:

	Single family residence	
	Gallons used per day, January & February	*Gallons used per day August & September*
2002	199	956
2003	187	1061
2004	214	927
2005	178	818
2006	206	929
2007	176	979
2008	170	855
2009	186	861
2010	170	758

The following graph shows the growth in the City of Spokane and the total amount of water annually pumped by the City of Spokane Water and Hydroelectric Department. The actual population served is greater.

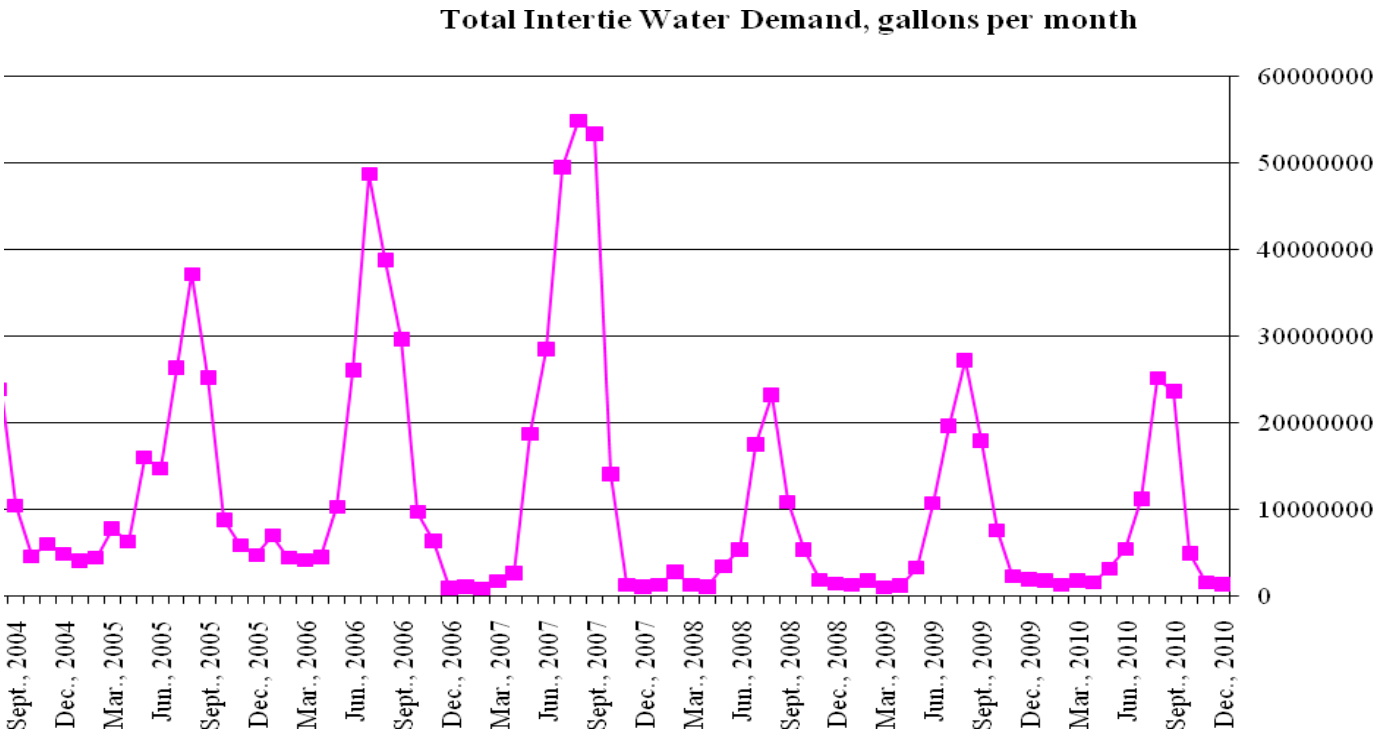


In 2008 there was an unanticipated reduction in demand from water purveyors, particularly on the West Plains. The water demand increased in 2009 but was still below historical levels. The following table shows the annual total gallons delivered to our wholesale customers:

	Annual Total Intertie Demand, gal.	Percent Change
2005	161,179,040	
2006	190,312,144	18.1 %
2007	227,270,824	19.4 %
2008	75,063,296	- 67.0 %
2009	95,439,564	27.1 %
2010	108,846,716	14.0 %

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509)-625-6570; FAX (509) 343-5760

This graph displays the total gallons per month wholesaled to water purveyors outside the City's water service area.



MEANS to ACHIEVE GOALS

The City of Spokane has instituted several programs to achieve conservation goals. The 2010 rebate programs encouraged both indoor and outdoor conservation to meet the goals. The indoor conservation program, coordinated with Spokane County provided 1487 rebates of $100 for WaterSense high efficiency toilets and Energy Star clothes washers. Each single family residential household was allowed up to two toilets and one clothes washer. The City instituted a Sprinkler Controls Upgrade incentive program. This program provided rebates to single family, multifamily and commercial customers for installing smart controls such as rain shutoff switches and evapotransporation controllers. 129 water customers participated in the program. The City also distributed more than 600 mechanical hose timers. These devices conserve irrigation water by allowing a user-limiting time of sprinkling. To help encourage indoor water conservation the City distributed 200 conservation kits comprising a low flow showerhead and low flow faucet aerators for the kitchen and bathroom. In addition to the rebate programs the City of Spokane continued its many public education events. This included sponsoring the water conservation night at the Spokane Chiefs hockey game. The Water Stewardship Program funded a regional multimedia campaign to encourage summer outdoor water conservation.

For further information check these three websites: EPA-WaterSense Program (http://www.epa.gov/watersense/) H2OUSE-Watersaver Home (http://www.h2ouse.net/) and the City of Spokane Water Stewardship Program, at http://www.waterstewardship.org/

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509)-625-6570; FAX (509) 343-5760

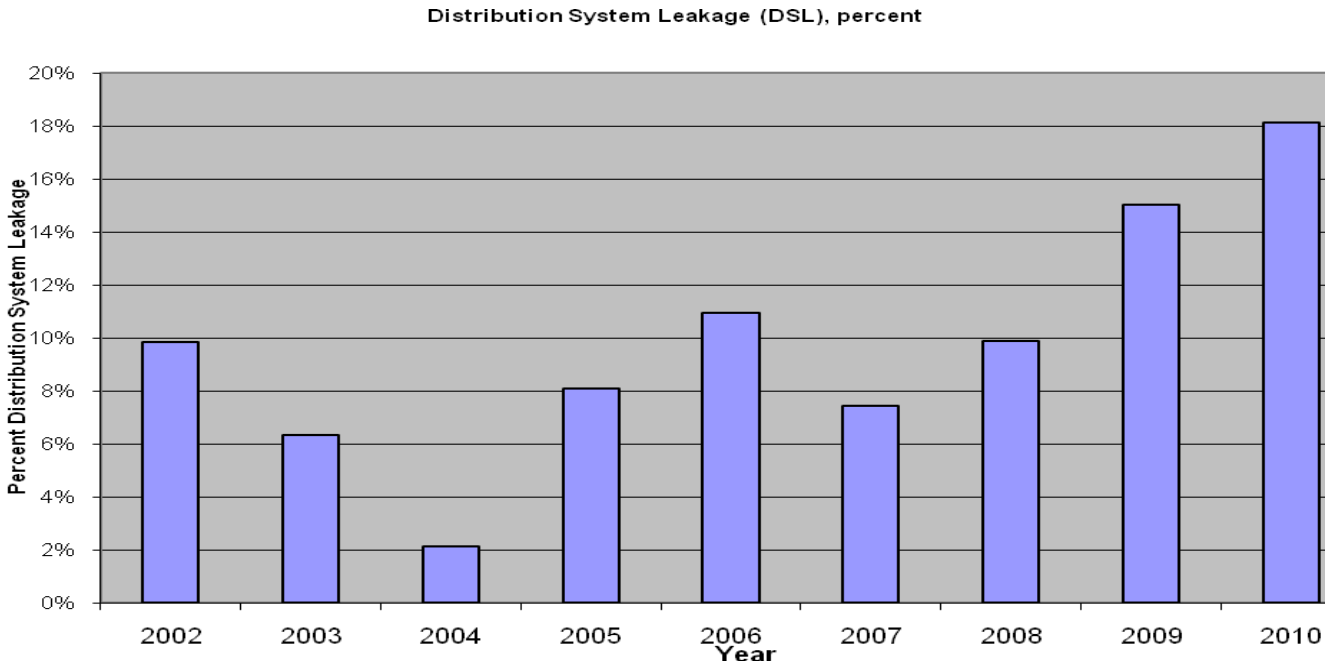
DISTRIBUTION SYSTEM LEAKAGE (DSL)

The Water Use Efficiency Rule requires the calculation of system water loss (leakage). Prior to this calculation, water systems are also required to install service meters on all direct service connections[1] before January 22, 2017. The City of Spokane has had a long-standing policy of metering service connections. The calculations determine the volume of water not attributed to delivery to a customer and thus assumed to be lost to the ground. This loss is to be reported as volume and as percentage. In both cases, the DSL is determined as a running three-year average, and the water system must relate this DSL to the DSL standard promulgated by Washington Department of Health. The water use category of Non-Revenue Accounted-For Water is included in the Total Authorized Consumption (AC). This category, which is estimated (non-metered), includes such uses as street cleaning, cleaning water tanks/reservoirs, fire-fighting, and water system maintenance (flushing). This estimate was reassessed in 2009.

The method for DSL calculation and the data for the calculation are in Appendix I, pg. 33. The volume and percent DSL for the last three years are as follows:

	2008	***2009***	***2010***	***Average***
DSL, percent	9.9%	15.0%	18.1%	14.4%
DSL, volume (gallons x 1000)	2,094,593	3,371,258	3,739,318	3,068,390

The most direct means to comply with the Water Use Efficiency Rule standard for DSL is for the 3-year running average to be less than 10% [2] . **The DSL for the City of Spokane Water System is 14.4 %, which does not meet the standard.** This year's and 2009 Distribution System Leakage are substantially different from previous years. This marked increase is a result of the City's work to more accurately measure the gallons produced and the gallons delivered to our customers. The City will continue to encourage the responsible use of our water resources, continue to assess accuracy of our reporting, and implement projects to reduce our system leakage. Following is a graph depicting the annual DSL for 2002-2010:



[1] WAC 246-290-820(2)(a)
[2] WAC 246-290-820(1)(b)(i)

Quality Drinking Water
An Invaluable Community Resource

INORGANICS

The City typically has a Washington State Department of Ecology certified laboratory run a full drinking water inorganics analysis once every three years on each of our source wells. In addition, nitrates are tested annually, as required. The most recent inorganic results from certified laboratories are in Appendix IV. **All sources are in compliance with existing National Primary Drinking Water Regulations for Inorganic Maximum Contaminant Levels (MCL)**.

ARSENIC

The effective date for compliance with the new Maximum Contaminant Level (MCL) of 10 ppb was in 2006. **The arsenic readings in 2010 at the Central and Well Electric Wells were 3.24 ppb and 4.22 ppb respectively.** For City drinking water, 5.13 ppb of Arsenic in 2009 from Ray Street Well represents the highest result to date. A 2007 result from Well Electric (4.92 ppb) was the previous high.

City drinking water currently meets EPA's revised drinking water standard for Arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water.

Reported detections of arsenic by drinking water certified laboratories are a fairly recent occurrence for the City (first in 2001) and are primarily a result of improved laboratory reporting limits. All source wells were sampled 2 to 3 times at this improved reporting limit during the period 2001-2005. The results ranged from less than the detection limit of 1 ppb to 4.49 ppb.

The EPA had set the MCL for arsenic at 50 ppb in 1975. The new MCL for arsenic was published in a Final Rule on January 22, 2001, and it set the MCL for arsenic at 10 ppb, effective 2006. The Maximum Contaminant Level Goal (MCLG) continues to be zero. After the publication of the Final Rule, the EPA initiated review of the standard for arsenic to reassess the balance between the cost to water utilities of removing arsenic from drinking water and the medical/social costs for the portion left unremoved. The EPA announced on October 31, 2001, its decision to move forward in implementing the standard for drinking water at 10 ppb.

Further information concerning health impact issues, regulatory requirements, and compliance costs for water utilities/water customers can be found at http://water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm and www.doh.wa.gov/ehp/dw/fact_sheets/Arsenic_in_Drinking_Water_questions.htm.

ASBESTOS

Compliance testing for asbestos is no longer required because the City Water Department no longer has any asbestos-containing (AC) pipe in service. Historically, only a small portion (one third of one percent) of the City's water distribution system east of Havana and south of Trent was comprised of asbestos-cement pipe. The asbestos-containing

(AC) pipe had been in service for many decades. The City Water Department Yardley Project replaced 13,603 feet of asbestos-cement pipe.

Testing for asbestos involves counting the number of fibers greater than 10 micrometers in length. On October 29, 1996, and on October 26, 1999, the City took a sample of water from a location in the distribution system being served by asbestos-cement pipe. In 1996, the laboratory detected one fiber and this led to the laboratory reported result of 194,000 asbestos fibers per liter and in 1999 no fibers were detected, which resulted in "less than 98,000 fibers per liter" reported. The MCL is 7 million fibers per liter.

IRON

The iron results for 2010 at the Central and Well Electric wells were below the detection limit (< 0.060 mg/L).

In 2007, there was a detection of iron (0.23 mg/L) in a duplicate sampling for Well Electric, which was attributable to interference in the analysis[3].

There was an iron result from the Nevada St. Well on July 29, 2003, of 0.497 mg/L. This exceeded the Secondary MCL of 0.3 mg/L. Secondary Drinking Water Standards are based on factors other than health effects. As such, these regulated contaminants may cause cosmetic effects or aesthetic effects in drinking water. It was determined that the exceedance was caused by a temporary dislodging of substrate (i.e. sand and silt) from the bottom of the well. Repeat sampling in October was < 0.1 mg/L, which is more typical of aquifer background concentrations.

NITRATE-NITROGEN

The Ray St. Well continues to be monitored quarterly for Nitrate-N. **In 2010, the highest certified lab quarterly result for the Ray St. Well was 3.53 mg/L.** The federal MCL for Nitrate –N is 10 mg/L. The result from a duplicate sample analyzed by the Riverside Park Water Reclamation Facility (RPWRF) Laboratory was 3.86 mg/L. The quarterly results for Ray St. Well for 2010 are as follows:

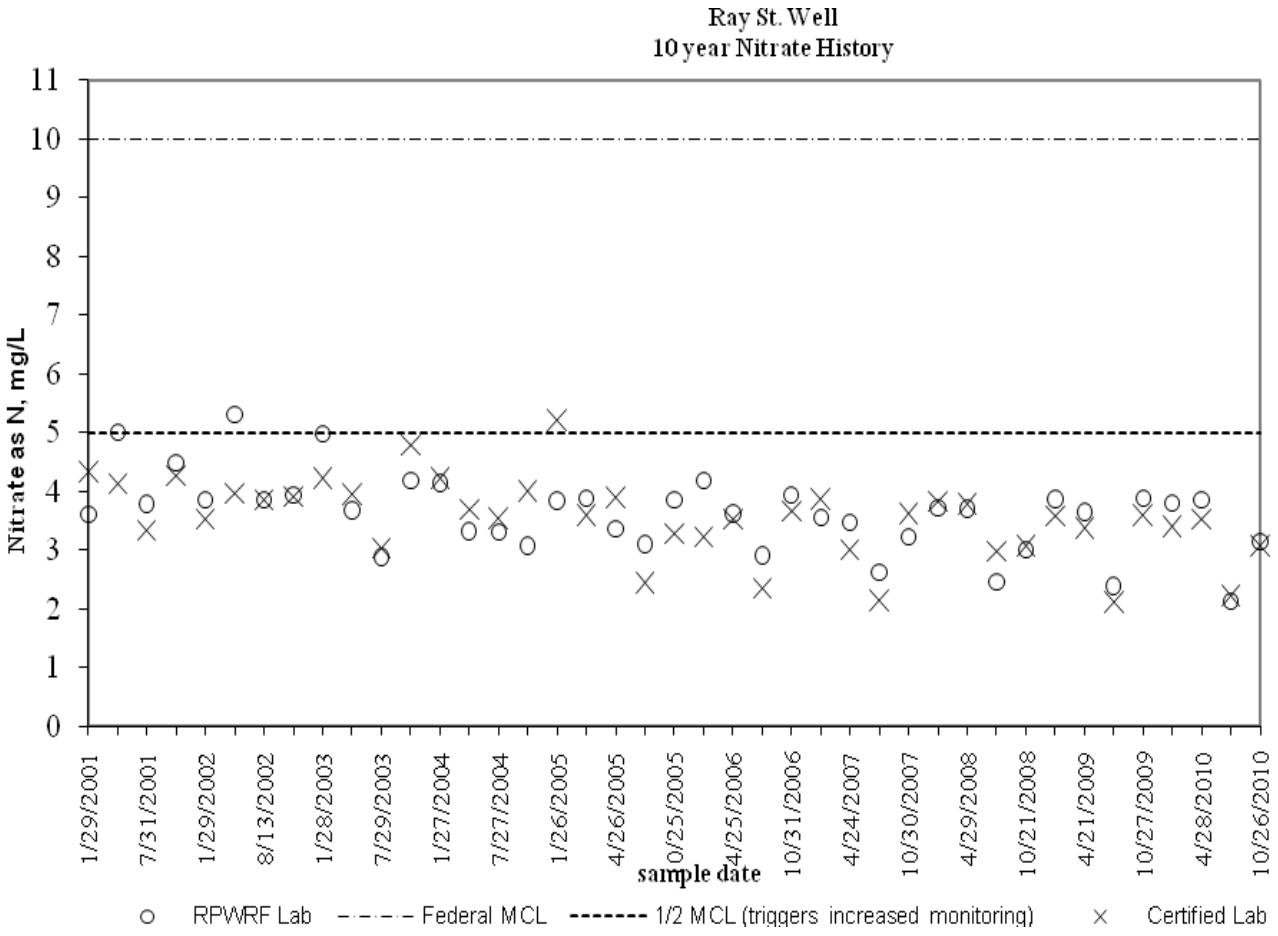
Sample Date	*Certified Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
26-January-2010	3.40	3.80
28-April-2010	3.53	3.86
27-July-2010	2.22	2.13
26-October-2010	3.07	3.15

In July 1997, October 1999, and January 2005 the nitrate-nitrogen levels in the Ray Street Well were reported by a certified lab as exceeding half the MCL, 5.23, 6.2, and 5.21 mg/L, respectively.

The historical data for this well reflects a slow trending from less than 1 mg/L in the 1950s to typically 5 mg/L or less currently, and demonstrates that, while elevated compared to other city wells, the nitrate nitrogen level at Ray Street well appears to have peaked and is still within allowable standards.

[3] The laboratory used Inductively Coupled Plasma-Mass Spectroscopy. Argon Oxide, an inherent contaminate because Argon is the plasma for the method, interferes with the Iron result making it incorrectly positive. The laboratory stated that it was not allowed to correct for this interference.

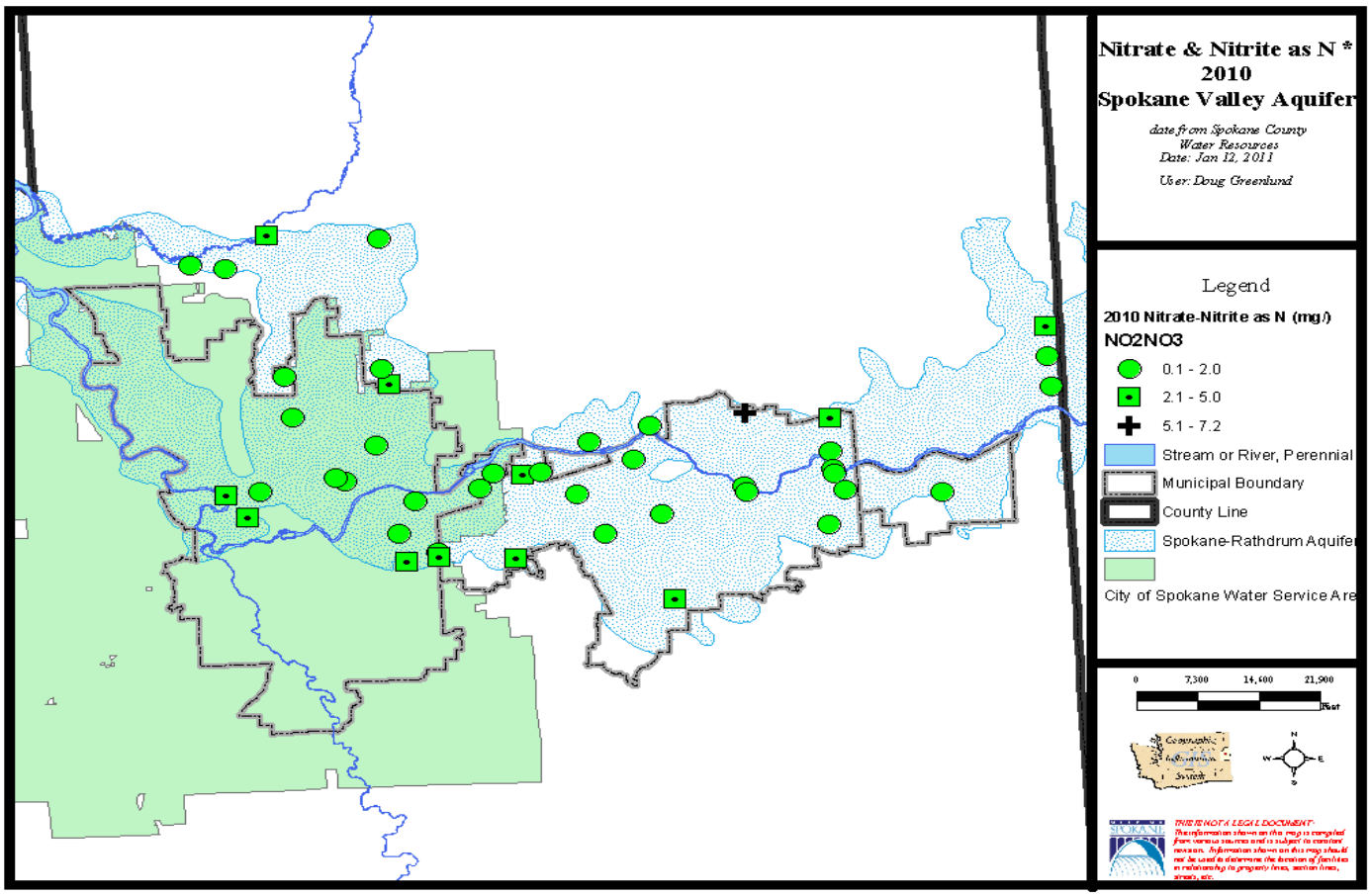
The results for the most recent 10 years of testing for nitrate-nitrogen at the Ray Street Well, from certified labs and from the RPWRF Laboratory, are presented in the following graph. As you will note from the graph, the trend for nitrate-nitrogen at the Ray Street Well has remained constant to slightly declining for a number of years.



All other City sources average 1.13 mg/L for 2010, less than a fifth of the MCL for nitrate-nitrogen. The 2010 results for the other City source wells are as follows:

Source Well	*Certified Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
Well Electric	1.41	1.22
Parkwater	1.36	1.25
Hoffman	1.33	1.14
Grace	0.80	0.67
Nevada	0.90	0.77
Central	0.95	0.84

The following map depicts the results of monitoring wells sampled during 2010 by the Spokane County Water Resources Program. The results are for nitrate+nitrite as nitrogen from monitoring wells, springs along the Spokane River, and purveyor wells over the Spokane Aquifer. Where multiple sampling events occurred at the same location, the highest result is depicted on the map. For the fourth consecutive year, samples at a monitoring well near East Valley High School exceeded 5 mg/L, half of the MCL of 10 mg/L. A long-term trend will need to be assessed, but preliminary analytical results and well drilling descriptions indicate the groundwater at this location is not completely mixed with the Spokane Aquifer. There are a number of wells that had results between 2.5 and 5 mg/L. These wells, including the City of Spokane Ray Street Well, are typically located along the edge of the aquifer, and appear to be subject to nitrate loading to the aquifer that originates at higher elevations.



When present in excess of the MCL, nitrate in drinking water can cause a serious blood disorder (methemoglobinemia), usually in infants. Infants under one year of age should not drink water exceeding the drinking water standard (MCL) of 10 parts per million (ppm) of nitrate expressed as nitrogen. Although no health-based standards exist for adult exposures, the following people may be at risk:

- Individuals with reduced gastric acidity.
- Individuals with a hereditary lack of methemoglobin reductase.
- Women who are pregnant.

For further information concerning nitrate in drinking water and the potential health issues, you can access the EPA website at http://water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm or the Washington State Dept. of Health website at http://www.doh.wa.gov/ehp/dw/Publications/331-214.pdf.
(Para ver información adicional, visite al; http://www.doh.wa.gov/ehp/dw/Publications/331-214s.pdf)

LEAD - COPPER

Lead and Copper testing of sources and at-risk residences were conducted in 2009. The highest reading of lead in a home was 8.06 ppb. The maximum reading for copper was 167 ppb. These results for lead and copper continue to be substantially less than the 15 ppb Action Level for lead and the 1300 ppb Action Level for copper. The lead results, based on City in-home sampling, also continue to qualify our water system as having "Optimized Corrosion Control." Source water is also analyzed for lead and copper concurrent with the in-home testing. **The maximum concentration in 2009 source water testing for lead was 0.3 ppb and for copper was 5.63 ppb.** The next scheduled testing for Lead and Copper in at-risk residences is 2012.

In 1992, the City completed the initial phase of testing for compliance with the Lead - Copper Rule. The City's 8 well stations and 100 "at-risk" household taps were twice checked for lead and copper. Lead was not detected in the source water at or above two parts per billion. Copper levels in the source water were below 20 ppb with the exception of one reading at 30 ppb. The federal government has a 0 ppb Maximum Contaminant Level Goal (MCLG) for lead and a 1300 ppb MCLG for copper.

"At risk" homes were determined before testing. Homes with lead soldered copper plumbing and/or those with lead alloy service lines running from the street to the home are considered at risk. In addition to 1992, in 1995, 1996, 1997, 2000, 2003, 2006, and 2009 50 at-risk homes were checked each summer. Fewer than 10% of at-risk homes had levels in excess of 8 ppb of lead and 200 ppb of copper. These levels were below the Federal 90th percentile action levels of 15 and 1300 ppb respectively. Federal regulations require that 90% of the tested homes be below these levels. The highest readings detected in homes were 71 ppb for lead and 540 ppb for copper.

City records indicate that some 981 homes built during World War II were connected to the City's distribution system with lead alloy pipes. In addition, before lead solder was banned in 1988, it was commonly used to connect copper piping in homes. The Spokane Water Dept., in 2000, notified the then current owners of homes with water service lines made of lead alloy and extended an offer to replace the lead pipe, if the homeowner would pay the replacement cost from the property line into the house. 156 homeowners requested their water service line be replaced. The City has completed work at all 156 sites, replacing the service pipe up to the property line. It was not anticipated, but no lead pipe was found on any homeowner's side of the water service. Additionally, the Water Dept. has been replacing the City lead-alloy services when in-home testing results exceeded Action Limits and when water line work was already being conducted. Currently, 574 lead alloy connections remain in service.

Testing on water left sitting in lead-containing pipes for at least 6 hours clearly demonstrates the fact that some lead moves into the water. We encourage anyone with this kind of plumbing, drawing water for cooking or drinking purposes, to let water run from the tap until cold before filling their container, especially if the water is to be given to infants or children. For further information concerning lead and copper in drinking water, you can access the Washington Dept. of Health website at www.doh.wa.gov/ehp/dw/Programs/lead.htm and http://www.doh.wa.gov/ehp/dw/Publications/copper-dw.htm.

PHOSPHORUS

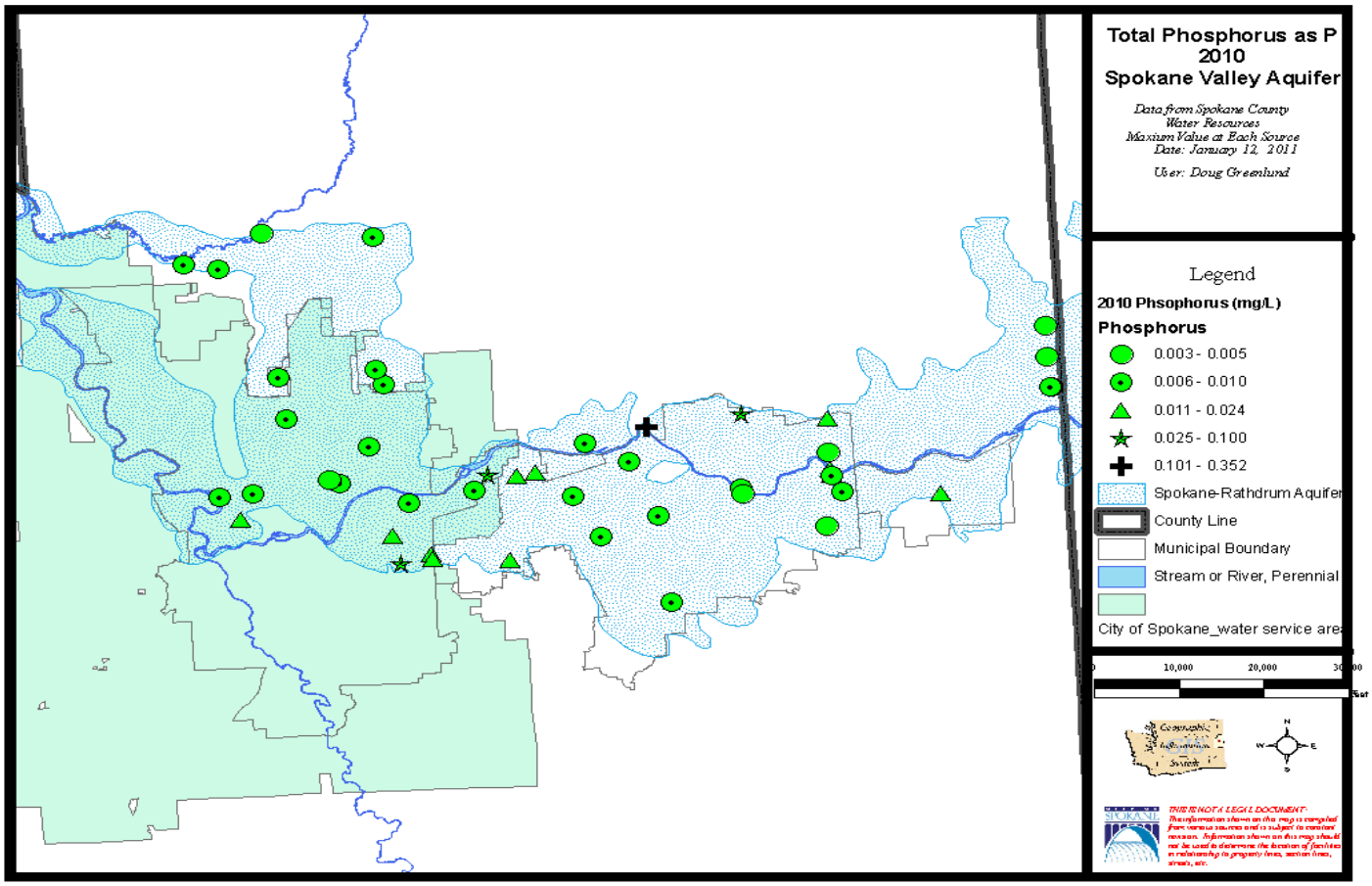
Drinking water regulations typically deal solely with human health related impacts. Phosphorus is not a drinking water regulated contaminant, but is of significant concern in this region as a pollutant of concern in the Spokane River. Local groundwater makes significant contribution to the River and is the background for water discharged to sewer.

In July 2010, groundwater samples from the City source wells were analyzed by the City RPWRF Laboratory. **Similar to Nitrate concentrations, most City wells have fairly low concentrations. The average concentration of the six city wells not including the Ray St. Well was 0.006 mg/L. Ray St. Well was sampled four quarters, and the greatest result was .032 mg/L.** There is no drinking water regulatory limit for phosphorus, but to give this some context, the

Total Maximum Daily Loading for Dissolved Oxygen for the Spokane River calls for a phosphorus concentration limit of 0.010 mg/L in the river during the critical summer season.

Location	*Date Sampled*	*PO4-P, mg/L **	*Location*	*Date Sampled*	*PO4-P, mg/L **
Electric	7/27/2010	0.0089	Central	7/27/2010	0.0048
Parkwater	7/27/2010	0.0046	Ray Street	1/26/2010	0.032
Nevada	7/27/2010	0.0083	Ray Street	4/28/2010	0.021
Grace	7/27/2010	0.0044	Ray Street	7/27/2010	0.020
Hoffman	7/27/2010	0.0048	Ray Street	10/26/2010	0.021

During 2010, the Spokane County Water Resources Program took over 200 samples from 49 locations for Total Phosphorus (including duplicate samples at several locations). Of that number, 36 samples from 12 different locations exceeded 0.010 mg/L. Following is a map demonstrating the distribution of Total Phosphorus results on the Washington side of the Spokane Valley-Rathdrum Prairie Aquifer;



The preceding map illustrates that, similar to nitrate concentrations in groundwater, phosphorus concentrations are greatest along the sides of the valley. This likely indicates loading from run-off from higher elevations. There are a couple of sampling sites with higher values that appear to <u>not</u> be located near the sides of the valley or near the Spokane River. These sampling sites have Total Phosphorus concentrations in the range of 0.011 to 0.024 mg/L.

RADIONUCLIDES & RADON

RADIONUCLIDES

In 2010, the City of Spokane tested all seven source wells for Radium 228 and Gross Alpha. There were no detections of Radium 228 above the federal detection limit of 1 pCi/L. The Gross Alpha particle activity was below the Federal MCL of 15 pCi/L at all of the wells. The Gross Alpha result from Parkwater was greater than 5 pCi/L; therefore the sample was tested for Radium 226. Radium 226 was not detected at a detection limit of 0.5 pCi/L.

Well	*Sample Date*	*Radium 228 , pCi/L*	*Gross Alpha pCi/L*	*Radium 226 pCi/L*
Central	04/28/2010	< 0.5	3.8	
Grace	07/27/2010	< 0.5	2.1	
Hoffman	04/28/2010	0.1	3.5	
Nevada	07/27/2010	0.5	3.6	
Parkwater	07/27/2010	< 0.5	6.1	< 0.5
Ray St.	07/27/2010	< 0.5	2.1	
Well Electric	04/28/2010	0.7	4.7	

The Radionuclide Rule finalized in 2000 specified testing and reporting times for Gross Alpha particle activity, Combined Radium 226 and Radium 228, Uranium , and Beta particle and photon emitters. The Gross Alpha Particle activity levels are reported in the table above. The Radionuclide Rule allows Gross Alpha results to be used in lieu of Radium 226 if the gross alpha particle activity is below 5 pCi/L. The Radionuclide Rule also allows a Gross Alpha particle activity measurement to be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The Gross Alpha activity was below 15 pCi/L so the City has not tested for Uranium. Beta particle and photon emitter testing is only required of a few vulnerable water systems, the City has not been required to do this testing.

For the purpose of calculating the Combined Radium 226 and Radium 228, zero was used as the Radium 228 value because all of the results were below the federal detection limit of 1 pCi/L. Therefore the Combined Radium 226 and Radium 228 was the Gross Alpha Particle activity at each well station except for Parkwater which has a Radium 226 result.

The Federal MCL for Gross Alpha particle activity is 15 pCi/L. The MCL for Gross Beta particle activity and photon emitters is 4 millirems per year. Millirems is a measure of human exposure to radiation. The MCL for uranium is 30 µg/L. The Federal MCL for Radium 226 and Radium 228 (combined) is 5 pCi/L.

For more information on radionuclides in drinking water, access the EPA website at http://water.epa.gov/lawsregs/rulesregs/sdwa/radionuclides/index.cfm

RADON

The Water Dept. monitored its source wells for Radon in 2008, the results are as follows:

Well	*Sample Date*	*Radon , pCi/L*	*Sample Date*	*Radon , pCi/L*
Central	4/29/2008	534	7/29/2008	468
Grace	7/29/2008	284	10/21/2008	440
Hoffman	8/4/2008	488	10/21/2008	467
Nevada	4/29/2008	426	7/29/2008	473
Parkwater	4/29/2008	534	7/29/2008	534
Ray St.	4/29/2008	503	7/29/2008	452
Well Electric	4/29/2008	402	7/29/2008	212

Quarterly readings of radon at the Parkwater Well averaged 475 pCi/L in 1993 and 436 in 1997. Other City sources, with the exception of the Grace Well, were checked in 1992 for radon and results ranged from 210 to 510 with a mean of 392 pCi/L. The City sampled the drinking water wells during 1999 and 2000 to characterize radon concentrations. These radon concentrations, averaged for each well, ranged from 261 pCi/L (Hoffman Well) to 438 pCi/L (Central Well). The radon concentrations found in the 2005 sampling event, averaged for each well, ranged from 495 pCi/L (Central Well) to 517 pCi/L (Parkwater Well).

The Environmental Protection Agency has published a proposed rule for regulating the concentration of radon-222 in drinking water. The rule proposes a maximum contaminant level goal (MCLG) of zero, a maximum contaminant level (MCL) of 300 pCi/L, and an alternative maximum contaminant level (AMCL) of 4000 pCi/L. The proposed rule would require that community water supply systems (including the City's) generally would have to comply with the MCL of 300 pCi/L, unless there is a multi-media mitigation program (MMM) in place. With a MMM, the AMCL of 4000 pCi/L would apply.

The publication of the proposed rule was November 2, 1999, and the comment period closed February 4, 2000. The final rule was expected to be published one year from that date. In preparing for this report (February 2011), a review of the Unified Agenda of Federal Regulatory and Deregulatory Actions shows the status of the radon regulation final action "To Be Determined." For more information on the status of this rule you can go to http://www.reginfo.gov/public/do/eAgendaViewRule?pubId= 201010&RIN= 2040-AA94

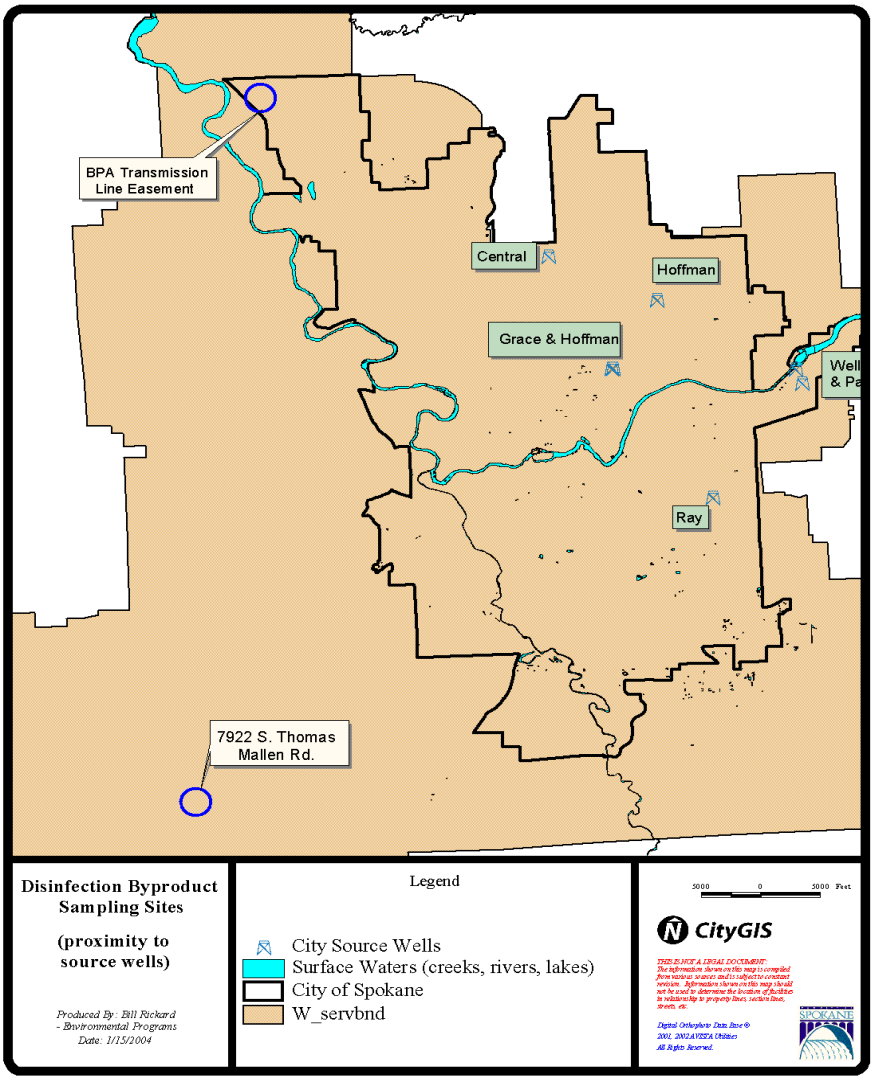
Radon gas is one of a number of radioactive elements that result from the radioactive decay of uranium found locally in natural deposits. Exposure to excessive amounts of radon may increase cancer risk. Most of these risks result from exposure to radon in indoor air. The EPA has determined that 1-2% of the radon in indoor air comes from drinking water. For further information concerning radon in drinking water, access the EPA website at http://www.epa.gov/radon/rnwater.html. For more general information concerning radon in the environment and the associated health issues, access the EPA website at www.epa.gov/radon/index.html or call the Radon Hotline at *1-800-SOS-RADON* [1-800-767-7236]. An EPA publication titled "A Citizen's Guide to Radon" can be downloaded from www.epa.gov/radon/pubs/citguide.html.

ORGANICS

DISINFECTION BY-PRODUCTS – DISTRIBUTION SYSTEM

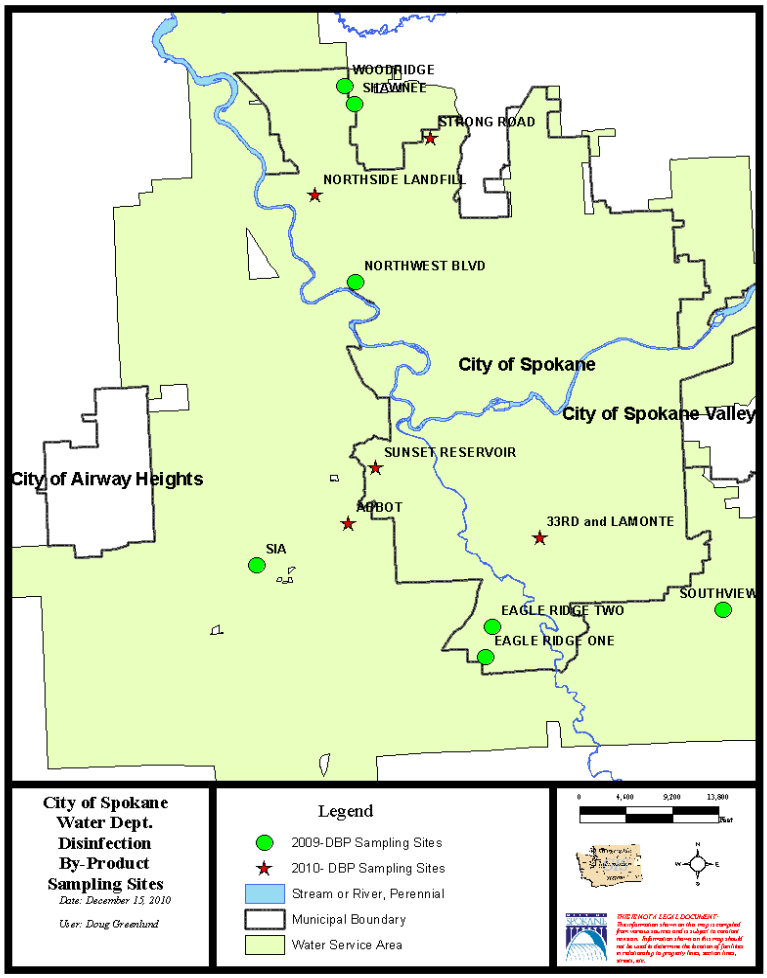
The maximum value during 2010 compliance monitoring of the distribution system for Total Trihalomethanes (TTHM) was 1.57 ppb and for Haloacetic Acids (HAA5) was no detection. This is well below the Federal MCLs and only detected at the extreme end of the distribution system. The 2004 and 2005 results (Appendix V) were used to determine the requirements for the City's water system to comply with the Stage 2 Disinfection By-Products Rule, which became final in January 2006.

The City uses small amounts of chlorine as a drinking water disinfectant. Data on chlorine by-products in the distribution system (such as trihalomethanes) indicates that for the most part, such compounds are not at levels above 1 ppb except out at the far ends of the distribution system. The 1998 Information Collection Rule (ICR) testing for the sum of Haloacetic Acids (HAA5) and for Trihalomethanes (TTHM) resulted in maximums of 5.8 ppb and 3.5 ppb, respectively. The federal MCL is 80 ppb for total Trihalomethanes and 60 ppb for the sum of five Haloacetic acids.



In 2004, the City of Spokane Water Dept. started Disinfection Byproducts Rule routine quarterly monitoring in the distribution system for TTHM and HAA5. The Water Department developed a sampling plan, which identified sampling location(s) that reflected the maximum residence time for water in the distribution system. It was determined that the maximum residence time changed in response to increased irrigation use during the summer/autumn months, requiring two sampling locations.

The Mallen Reservoir, near the west extreme of the City Water Service Area, is regarded as having the longest residence time in the system and is the location for Winter and Spring quarterly monitoring. Increased nearby irrigation during the summer/fall reduces this residence time. The BPA Transmission Easement, near the north city limits, has a longer residence time during these periods, and is the sampling location during Summer and Fall quarterly monitoring. The figure shows the relative positions of these sampling locations.



The City has submitted a certification stating the early monitoring data was less than half the MCL for these contaminants, and the City will develop a monitoring plan to take effect in 2012. Starting in 2007 and continuing until 2010 the City Water Department has performed assessment monitoring at over 20 locations (approximately five each year) to determine the potential for disinfection by-products (DBP) to be formed during the detention period in the distribution system. The DBP assessment sampling sites were selected from the existing Coliform sampling sites. The map to the left shows the 2009 and 2010 sampling locations. The results from the four years of monitoring will be used to determine the future Phase 2 sampling sites. For more information on the Stage 2 DBP rule go to the EPA website http://water.epa.gov/lawsregs/rulesregs/sdwa/stage2/index.cfm

The following table has results from the 2009 and 2010 DBP assessment monitoring:

Sampling date	January 14, 2009			August 13, 2009		
Sample location	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L
Eagle Ridge I (HAA5)	0.18	n/a	< 1	0.28	n/a	< 1
Eagle Ridge II (TTHM)	0.20	1.42	n/a	0.23	1.34	n/a
NW Boulevard	0.23	< 0.5	< 1	0.29	< 0.5	< 1
Shawnee (HAA5)	0.20	n/a	< 1	0.28	n/a	< 1
Southview	0.15	2.26	< 1	0.23	2.55	< 1
SIA	0.21	< 0.5	< 1	0.31	< 0.5	< 1
Woodridge (TTHM)	0.15	1.66	n/a	0.25	< 0.5	n/a
Sampling Date	February 9, 2010			July 26, 2010		
Sample Location	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L	Chlorine residual, mg/L	TTHM, µg/L	HAA5, µg/L
Sunset	0.21	1.85	< 1	0.30	< 0.5	< 1
33rd and Lamont	0.22	< 0.5	< 1	0.28	< 0.5	< 1
Strong	0.15	1.65	< 1	0.26	< 0.5	< 1
NW Landfill	0.19	0.50	< 1	0.28	< 0.5	< 1
Abbott	0.20	1.33	< 1	0.31	0.51	< 1

n/a=not applicable.

During 1998, the City of Spokane completed Information Collection Rule testing. This federal testing and reporting program was aimed at identifying source water contaminants that are treatable with disinfectants, identifying types of disinfectants being used, identifying resulting disinfection by-products produced, and identifying the quantity of these by-products reaching consumers. The testing locations and a summary of the 1998 results are located in Appendix VII. On October 7, 1997, the EPA agreed that City source water testing had demonstrated there was little in the aquifer water to remove and agreed that additional studies on means of treatment before disinfection were unwarranted.

MtBE (Methyl tert-Butyl Ether)

Well Electric was monitored for MtBE in 2010 in conjunction with the regularly scheduled Volatile Organic Compounds (VOC) monitoring. There were no detections at a detection limit of 0.5 µg/L. In addition to regularly scheduled monitoring events, Grace and Nevada Well Stations were sampled monthly from August 2007 to August 2008 for VOC, and there were no detections of MtBE.

The EPA does not currently regulate MtBE, but it was placed on the Contaminant Candidate List (CCL) http://water.epa.gov/scitech/drinkingwater/dws/ccl/ccl1.cfm#chemical (and subsequently on the UCMR-Round 1 List 1). As such, the City of Spokane sampled MtBE under the UCMR in 2002 & 2003. There were no detections in 8 samples (see Appendix VIII).

In 2006, Parkwater, Nevada, and Ray well stations were monitored for MtBE, with no detections. In 2000, the Hoffman and Ray wells were tested for MtBE, with no detections. In 1999, the City tested for MtBE at the Central and Nevada wells in the 1st quarter and Well Electric and Parkwater in the 4th quarter. There were no detections in any of the four samples, with the detection limit of 0.5 ppb. Also in 1999, Spokane County tested 10 aquifer monitoring wells for MtBE. The dedicated monitoring wells were selected for their proximity to large above-ground fuel storage facilities. Again, there were no detections in any of these samples, with a detection limit of 0.5 ppb.

MtBE has been used in gasoline across the nation since the 1970s, first as a replacement for lead and then as an oxygenation source and/or an octane booster (in premium fuel blends). Further information concerning the uses of MtBE can be found on the EPA website www.epa.gov/mtbe/ . Many parts of the country with requirements for oxygenated automobile fuel have experienced MtBE contamination in local groundwater supplies as a result of leaking above-ground and underground fuel tanks and/or fuel spills. The requirement for winter oxygenation has been eliminated in Spokane County. Historically ethanol (ethyl alcohol) was the commonly used oxygenate in our area. Consequently, the local risk of MtBE contamination is considered to be low.

There is currently a drinking water advisory for MtBE http://water.epa.gov/action/advisories/drinking/mtbe.cfm. This Advisory recommends a range of 40 µg/L or less based on potential taste and odor consumer acceptance. The EPA believes this would also provide a large margin of exposure (safety) from toxic effects.

Further information concerning the health impact, environmental effects, and technical background of MtBE can be found at the following website: the EPA Office of Water at http://www.epa.gov/mtbe/water.htm.

OTHER VOLATILE ORGANICS

Appendix VI contains the history of ORGANIC CHEMICAL DETECTIONS summary for each well station that contributes to the City Water System. Only organic compounds that have previously been detected in City water are listed. Many compounds have been tested for and not detected - see Appendix I: "TESTS RUN ON CITY OF SPOKANE WATER."

In 2010 the City of Spokane tested the Well Electric station for Volatile Organic Compounds (VOC). There were no detections.

An unusual incident occurred on July 23, 2007. A fully involved structure fire occurred at the Whitley Fuel facility at 2733 N. Pittsburg. Due to the volumes of petroleum fuel in on-site tanks and tanker trucks, and the fire-fighting foam used in the incident, there was concern that related contaminants might travel to groundwater. The Grace and Nevada wells are west of this location, and the City groundwater model indicated that it was unlikely that contamination would reach these wells, but could not rule out the potential chance and anticipated a 7 to 10 month time of travel to these wells. Investigation at the fire scene indicated that there was little likelihood that contaminants reached groundwater, but weekly monitoring at the Grace and Nevada wells was initiated. County sampling at a nearby sentinel monitoring well on August 21, 2007 resulted in a detection for Diesel-range Total Petroleum Hydrocarbon at 0.130 mg/L. Sampling for Volatile Organic Compounds (including Tentatively Identified Compounds) and Diesel-range Total Petroleum Hydrocarbons were conducted at Grace and Nevada wells on an approximately weekly basis from July 31, 2007, to September 26, 2007. The sampling frequency was decreased to monthly from October through August 2008. There have been no detections at the Grace and Nevada wells and no further detections at the sentinel monitoring well.

The VOC monitoring conducted on July 27, 2004, at Hoffman well included a detection (3.09 ppb) of Tetrachloroethene (aka Perchloroethylene or "Perc"). City staff conducted an investigation of the immediate vicinity (the Well Station property and adjacent neighboring properties). Interviews with Water Dept. staff revealed that routine maintenance of the production pump motor using a commercial solvent with the sole ingredient being Tetrachloroethene occurred just prior to sampling. Standard Operating Procedures were changed so this product would no longer be used inside a well station. Additional sampling was conducted on September 1, 2004, and on October 26, 2004. Both results were less than detection limits. The State Dept. of Health agreed that this excursion did not represent a legitimate characterization of drinking water. The two monitoring events in 2005 at Hoffman concluded four quarters of voluntary monitoring, with no detections of VOC contaminants.

Historically, Central, Grace, Nevada, and Ray well stations have had detections (not exceedances) of regulated volatile organic compounds, other than Trihalomethanes. 1,1,1-Trichloroethane and Tetrachloroethene were detected more than 5 years ago. These detections were well below the MCLs. During 1998, Trichlorofluoromethane (aka Freon 11) was detected at the Hoffman and Grace wells in the July testing. The concentrations were 1.1 and 0.6 ppb, respectively. This volatile compound is not regulated under Federal Drinking Water regulations. These concentrations are well below the Washington State Advisory level (SAL) of 1300 ppb. There was no previous detection of this compound, and there have not been detections in subsequent testing.

On July 25, 2000, the Hoffman well was sampled for VOCs, and the test results showed a detection for dichloromethane of 1.50 ppb. The MCL is 5 ppb and the MCLG is zero. The laboratory was contacted, and the laboratory blank (an analytical sample that is expected to be free of contamination) also had a detection for dichloromethane with a concentration of 4.06 ppb. As this compound is a common laboratory contaminant and present in the blank at over twice the sample result, the Dept. of Health concurred with our assessment that this does not characterize an actual detection in the source water.

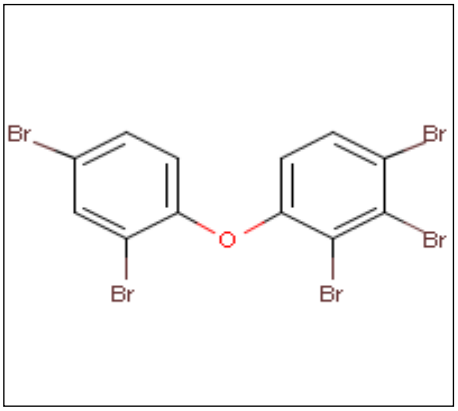
Trihalomethanes (THMs, chloroform, bromoform, bromodichloromethane, dibromochloromethane) are one group of volatile organic, disinfection by-products. That is to say, they can originate from chemical interactions between a disinfectant (chlorine gas in the City's system) and any organic matter present in the raw water. **There were no detections of THM in source water monitoring for 2010**, and the most recent detection in source water was in 2000 when the Hoffman result for total THM was 1.92 ppb. This is well below the new MCL of 80 ppb, which was effective December 1998. Testing results for Trihalomethane, Total Trihalomethane, and Maximum Total Trihalomethane Potential are included in Appendix VI.

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems and may have an increased risk of getting cancer. In February 1998, a California Department of Health Services study linking Trihalomethanes to spontaneous miscarriages was widely reported. The study levels were 75 ppb Total Trihalomethanes and 18 ppb Bromodichloromethane. The maximum historical City readings for comparison were 8.5 ppb and 1.7 ppb respectively.

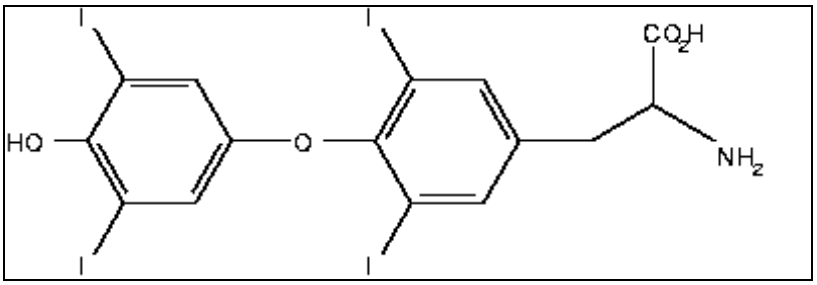
PBDE (Polybrominated diphenyl ethers)

Ecology and Wash. Dept. of Health jointly published *Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Interim Plan on Dec. 31, 2004.* Given concern about this seemingly ubiquitous family of compounds, the Water Dept. conducted investigative monitoring for PBDE.

Polybrominated diphenyl ethers (PBDEs) are a class of additive brominated flame retardants used in a variety of plastics and foams. The PBDE class includes 209 different theoretical forms of the PBDE molecule, called congeners. The illustrations below show the structural similarity between a congener of PBDE, and a thyroid hormone (thyroxine). The similarities in structure may indicate the potential health effects of PBDE. However, actual health effects in humans are not clear at this time.



Left figure: PBDE 85-copyright U.S. Library of Medicine



Right figure: thyroxine – Wikipedia online encyclopedia

The results of one sample (note: results are in parts per trillion) obtained from Well Electric are as follows:

PBDE congeners	*Congener abbr.*	*Results, ng/L*
2,4,4'-Tribromo diphenyl ether (ng/L)	BDE-17	< 0.1
2,2',4,4'-Tetrabromo diphenyl ether (ng/L)	BDE-47	0.36
2,2',4,4',5-Pentabromo diphenyl ether (ng/L)	BDE-99	< 0.1
2,2',4,4',6-Pentabromo diphenyl ether (ng/L)	BDE-100	0.5
2,2',4,4',5,5'-Hexabromo diphenyl ether (ng/L)	BDE-153	< 0.1
2,2',4,4',5,6'-Hexabromo diphenyl ether (ng/L)	BDE-154	< 0.1
2,2',3,4,4',5,6-Heptabromo diphenyl ether (ng/L)	BDE-181	< 0.1
Decabromo diphenyl ether	BDE-209	< 0.1

Drinking water is believed to be a very minor source for the estimated daily exposure from all sources (i.e. water, food, air, etc.). Note that further sampling for four PBDE congeners will occur in the UCMR Round 2 (further discussion on page 24). Also note that during 2007, the Governor of Washington signed into law, a limited prohibition of PBDE in Washington (2007-ESHB-1024). For further information, refer to the *Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Final Plan (Jan. 19, 2006)* at www.ecy.wa.gov/pubs/0507048.pdf
For further information concerning PBDE and EPA activities, go to www.epa.gov/oppt/pbde/

SYNTHETIC ORGANICS

In 2010, the City of Spokane was not required to sample its source wells for Synthetic Organic Chemicals (SOC). The City did complete the UCMR testing. This program also tests for some Synthetic Organic Chemicals. Results from this testing program are discussed below.

In 2006, the October sampling at Well Electric detected Di-Methyl Phthalate at 0.70 ppb (detection limit is 0.4 ppb). The compound is a common laboratory contaminant and is not regulated (i.e. there is no MCL). Because of the low concentration, and no detection on resampling in December, State Department of Health agreed that this did not characterize the source water quality.

Appendix VI contains the historical results for ORGANIC CHEMICALS, including the SOC results. Some of the compounds in the Unregulated Contaminant Monitoring Rule (UCMR) are also in the SOC testing, so the UCMR testing was conducted with SOC testing during 2003.

The City started testing for SOCs in the wells in 1994, with additional tests in 1995, 1997, 1998, and 1999. This testing includes pesticides, herbicides, PCBs, and phthalates. In the first two quarters of 1994, Parkwater testing detected Di(2-ethylhexyl) Phthalate twice (0.3 & 0.2 ppb). Di(2-ethylhexyl) Adipate was detected once (2.1 ppb) at Parkwater and again in 1997 at Hoffman (0.7 ppb). The MCLs for these compounds are 6 ppb, and 400 ppb respectively. Di(2-ethylhexyl) Phthalate has a MCLG of zero. These two compounds are associated with synthetic rubber and plastic, which are common in labs and industry.

Other than the following exceptions the results have all been non-detect. The first exception has to do with those detections listed in the paragraph above. The second exception has to do with a detection of Di-n-Butylphthalate which showed up at low levels in all of the samples taken in August of 1997. This compound, which is currently an unregulated SOC, was also detected in the laboratory blank. The fact it was found in the blank supports the idea that it showed up as a result of laboratory contamination and was never in the sampled water.

UNREGULATED CONTAMINANT MONITORING – Round 2

The Unregulated Contaminant Monitoring Rule is a tool for the EPA to find unregulated contaminants of concern in the nation's drinking water. The contaminants for testing are selected on three main criteria: EPA believes that they are likely to occur in drinking water, they could be harmful, and there are testing methods to look for them in drinking water. Further information on Round 2 testing, including the specific contaminants, can be found at the EPA UCMR Rd2 website, http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr2/index.cfm .

The City of Spokane Water System, given its size, is required to conduct Assessment Monitoring (List 1) for 10 chemicals and Screening Survey (List 2) for 15 contaminants twice during a 12-month period during January 2008 through December 2010. In July of 2009, the City of Spokane began the UCMR Round 2 testing by sampling all of the well sites for the chemicals on both lists. **There were no detections of any of the 25 contaminants on Lists 1 and 2.** In 2010, the City of Spokane again sampled the all wells for the 25 containments on List 1 and 2. **In January 2010 there was a detection of N-nitroso-dimethylamine (NDMA) at the Parkwater well of 0.00216 ppb.** The detection limit for this compound is 0.002 ppb. There are no MCL's for chemicals in the UCMR.

The Unregulated Contaminant Monitoring Rule also required the City to test for the nitrosamine compounds in list 2 at the maximum residence time location of the distribution system. (See page 18 for a discussion on the sampling location.)

The BPA easement location was sampled in 2009 and 2010. **There were no detections of these contaminants at the BPA easement.**

In 2005, the City had previously sampled for four of the list 1 chemicals (see page 22). They were tested at the part per trillion (ppt) level while the current UCMR testing has method detection limits at the part per billion (ppb) level. Appendix X contains the UCMR 2 List 1 and List 2 chemicals and the test results.

UNREGULATED CONTAMINANT MONITORING – Round 1, List 1

The reauthorization of the Safe Drinking Water Act in 1996 resulted in changes to the EPA Unregulated Contaminant Monitoring Regulations (UCMR). Pursuant to these promulgated rules, the City of Spokane participated in UCMR Round 1 during 2002-2003, as required.

The List 1 contaminants were sampled two times at source wells, except Well Electric which we sampled four times (due to its proximity to the Spokane River). **There were no List 1 detections.** List 2 was for those contaminants for which methods had to be developed. Spokane was randomly selected to test for one micro-organism, see page 27. The sampling schedule and results summary are found in Appendix VIII.

Further information concerning the UCMR testing can be found at:
http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/index.cfm

XENOBIOTICS – Emerging Contaminants

In recent years there has been growing concern throughout the nation about organic compounds that are present in our environment, but are not typically thought of as contaminants. The compounds may be present in surface waters, and less likely in groundwater. These compounds are typically not in concentrations that would be acutely toxic, but may have chronic impacts, particularly as interference to the human endocrine system. Chemicals of this kind have had significant impacts on aquatic species.

During 2008, the Water Department conducted investigative monitoring for a broad spectrum of these compounds that are pharmaceuticals and personal care products (PPCPs), and sterols and hormones. A complete list of the compounds is found in Appendix II (page 37). The samples from Grace and Parkwater wells were analyzed by EPA Methods 1694 (Pharmaceuticals and Personal Care Products by HPLC/MS/MS) and 1698 (Steroids and Hormones by HRGC/HRMS). **Of 103 compounds in the laboratory analysis, there were no detections.**

Further information about these emerging contaminants can be found at the EPA website: www.epa.gov/ppcp/ .

MICROBIOLOGICAL CONTAMINANTS

COLIFORM BACTERIA - SOURCE

The City of Spokane well station raw source water has been tested regularly for coliform bacteria. While historically there has been no requirement to test for coliform bacteria in source water, the City of Spokane has monitored for this water quality parameter. More recently, testing requirements to determine whether hydraulic continuity exists with the Spokane River have increased the testing frequency. **In 2010, out of 75 tests for coliform bacteria in the City Source Water Wells, there were no detections of total coliform and no detections of fecal coliform.**

Out of 394 tests over the 5-year period from 2006 through 2010, 5 positive total coliform results were found. The greatest concentration detected was 39.7 colonies per 100 mL for total coliform bacteria (Grace, Jul-25-2006).

HETEROTROPHIC PLATE COUNT BACTERIA – SOURCE

In 2010, out of 76 Heterotrophic Plate Count (HPC) tests on source water, there were 14 positive results. The greatest concentration was 36 colonies per milliliter of sample. HPC tests were conducted 383 times over the 5-year period from 2006 through 2010 on raw source water. There have been 190 positive HPC results. Washington State Drinking Water Regulations state *"Water in a distribution system with a HPC level less than or equal to 500/mL is considered to have a detectable residual disinfectant concentration"*[4]. The maximum detection during this five-year period was 347 colonies per milliliter at the Ray St. Well in April 2007. Without regard to source water HPC levels, City source water is treated with chlorine to safeguard drinking water quality. This is done primarily because of the size and age of the City's distribution system. Some water utilities in this area (drawing from the same aquifer) do not add any disinfectant.

COLIFORM BACTERIA - DISTRIBUTION SYSTEM

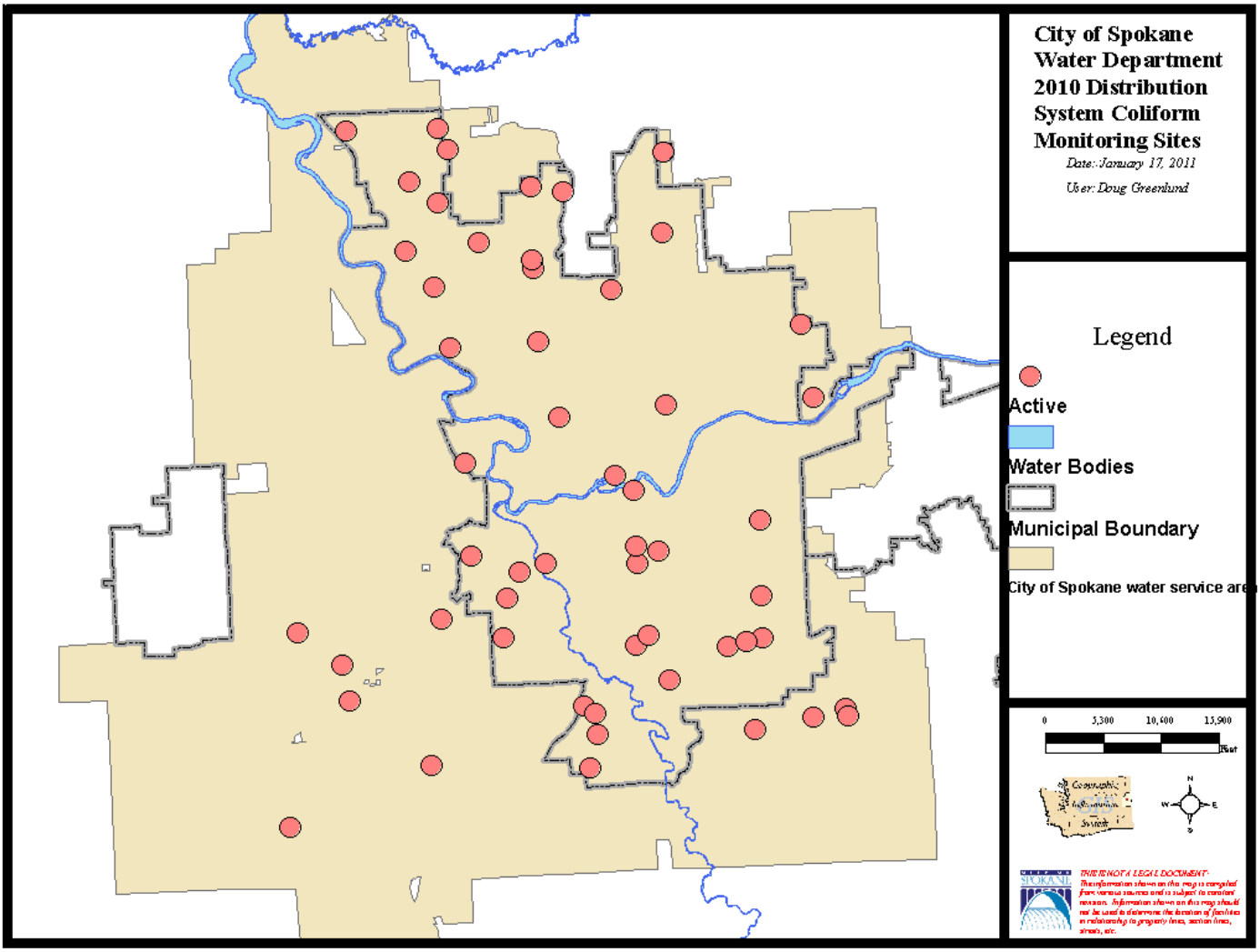
Coliform testing is typically being done four days a week from various points in the distribution system. Historically, the City Water System scheduled 122 samples per month. The Water Department anticipates having greater than 220,000 customers in the near future. This change of population tier[5] would require taking 150 samples per month, which was adopted as the target for distribution system coliform monitoring by the Water Dept. in 2007. When a coliform positive test result is reported, re-sampling is done. **During 2010, the City Water Dept. had 2,010 coliform bacteria samples analyzed, an increase from 1,990 in 2009 and 1,960 in 2008. On July 20, 2010 there was one positive total coliform bacteria result in the distribution system.** Six additional samples (re-sampling of the site, plus one sample each immediately up and down "stream" from the site and 3 source samples) were collected to confirm or deny this result. **These samples were negative for total coliform and the initial result was not confirmed.** The Maximum Contaminant Level is that no more than 5% of the total coliform bacteria tests can be positive per month. In 2010, the greatest number of positive results was 1 in 155 samples. This is 0.65 % of the results, well below the MCL.

On October 17, 2005 there was one E. coli present result, but subsequent re-sampling (resampling of the site, plus one sample each immediately up and down "stream" from the site) was negative, so the result was not confirmed.

The Water Department staff has worked to refine the sampling sites for the distribution system. Concerns about inadvertent contamination of sampling sites and locations that don't adequately represent the distribution of the water system has caused the Water Department staff to establish more dedicated sampling sites at locations more representative of the entire system. Following is a map of the distribution system sampling sites during 2010, overlaid on the water

[4] Ref. WAC 246-290-451 (3)(c)
[5] ref. WAC 246-290-300 (3)(e-Table 2)

service area. It is important to note that the sample sites are evenly sited based on the distribution system and population density, which may not currently reach all parts of the water service area:



Water Department staff state that coliform bacteria have not been confirmed in the distribution system for at least the last 30 years. Sample handling or collection errors are suspected causes of the original detections.

AEROMONAS BACTERIA – DISTRIBUTION SYSTEM

The UCMR Round1 - List 2 candidates were sampled by a small, EPA randomly chosen group of water systems. One group of water systems tested for the chemical candidates and a separate group of water systems tested for the microbiological candidate. The City of Spokane was one of the water systems randomly chosen to test for the microbe, which was *Aeromonas spp.*, with analysis conducted using EPA method 1605**.**

There were no detections of Aeromonas spp. in this sampling.

The List 2 testing for *Aeromonas spp*. was conducted during 2003. Three sampling sites were identified in the distribution system for each sampling event. Three samples (one from each location) were taken from these predetermined locations in the distribution system. These points were chosen based on: 1) an average chlorine residual, 2) a "dead-end" point where the chlorine residual has had its lowest concentration, and 3) the longest (furthest away) residence time in the system. The mid-point sample location (average residual) was set at Fire Station #3 at 1713 W. Indiana. The lowest residual sampling point was selected to be at the Shawnee Water Tank in the distant northwest corner of Spokane. The longest residence time was set at a business located on the West Plains, west of the City.

There were six sampling events during the year, including three of the events during the summer months (July, August, September). Appendix VIII summarizes the sampling schedule and results.

Further information concerning the Aeromonas spp. can be found in an EPA report at:
http://water.epa.gov/action/advisories/drinking/upload/2009_02_03_criteria_humanhealth_microbial_aeromonas-200603.pdf

PROTOZOA

A number of cities and towns throughout the country in recent years have experienced problems with Giardia and/or Cryptosporidium getting into the distribution systems. Most times, problems with these parasitic organisms have been associated with surface water sources. **The City is not aware of, nor has the State Department of Health or Spokane Regional Health District indicated an awareness of, cases where infections with these organisms were traced back to the City's water system**.

In December of 1994 and March of 1995, the City of Spokane tested for the presence of Giardia and Cryptosporidium at the Well Electric Station. Well Electric sits nearer the Spokane River than other sources. **These microorganisms were not detected**. Again in June and September of 1995, similar tests were run and Microscopic Particle Analysis was added. **This testing revealed none of the microorganisms of concern**, nor were other "surface water indicators" seen.

In 1997, the City was formally notified by the State that two City wells were built and located such that a potential to draw river contaminants into the wells might exist. As a result of further testing, a determination was made that Baxter (a former seasonal source, which no longer exists) was not considered to be under the influence of surface water. Well Electric (a permanent source) was determined to be hydraulically connected to the River and further monitoring was conducted through June of 2003 to determine if Well Electric was under the influence of the River. That is to say, to determine if contaminants would move from the river to the source well.

In a letter dated February 11, 2004, the Department of Health stated that Well Electric would be classified as groundwater for regulatory monitoring and compliance purposes, providing that the provisions in the City's operational plan are followed. The operational plan has two main components: first, a requirement to maintain an increased level of disinfection at Well Electric, and second, a plan to avoid using Well Electric when it has the potential

of being under the influence of the Spokane River, which can occur during river high flow events. The City, in consultation with the Washington Dept. of Health, will continue to evaluate the impact of this hydraulic connection.

During 2001, 2002, & 2003, the City Water Department conducted its investigation of this hydraulic connection. Monitoring was conducted at Nevada, Ray St., Parkwater and Well Electric well stations for Microscopic Particle Analysis (MPA). This testing procedure involves pumping large volumes of water through a filter media. This filter media is sent to a laboratory where the media is washed to remove the solid material filtered out of the water. This solid material is concentrated to a volume suitable for observation with a microscope. The observed solid material is counted and identified. A risk value is assigned to the particle information. The risk value corresponds to the probability that the source water is under the influence of surface water (Spokane River).

The following table summarizes the MPA results for this 3-year period:

Well Station	*Total # of tests*	*# of low risk (result less than 9)*	*# of moderate risk (result 10 to 19)*	*# of high risk (result 20 and greater)*
2001				
Nevada St. Well	7	7	0	0
Ray St. Well	6	6	0	0
Parkwater Well	14	11	3	0
Well Electric (#4 & #5)	30	29	1	0
2002				
Nevada St. Well	1	1	0	0
Parkwater Well	2	2	0	0
Well Electric (#4 & #5)	22	19	3	0
2003				
Well Electric (#4 & #5)	6	6	0	0

People who become ill as a result of consuming Giardia and/or Cryptospoidium typically recover after suffering severe bouts of diarrhea. However, people whose immune systems are compromised, or are otherwise in poor health, can die as a result of these infections. For further information concerning the potential health effects issues, access the websites at the Center for Disease Control and Prevention at http://www.cdc.gov/parasites/crypto/index.html (Cryptosporidium) and www.cdc.gov/ncidod/dpd/parasites/giardiasis/default.htm (Giardia) and the EPA website at http://www.epa.gov/safewater/consumer/pdf/crypto.pdf (Para ver información adicional, visite al; http://water.epa.gov/aboutow/ogwdw/agua/upload/crypto_spanish.pdf).

VIRUSES

During 2006, the Water Dept. conducted an investigative sampling for coliphage viruses. The 2006 report detailed the sampling to date and out of 20 results, there was one "presence" result for Host: E. coli Famp (15597) detected at the Grace Well Station (May 3, 2006). **The study concluded in January 2007; out of 4 results (bringing the study total to 24 results) there were no additional detections.** Sampling information (including the January 2007 results) is located in Appendix IX.

Coliphage viruses live in coliform bacteria hosts and their presence in groundwater may be an indication of fecal contamination. Ten samples from five wells were submitted and each sample was tested using Method 1601 qualitative (presence/absence, two-step enrichment procedure) for two types;

- E. coli F_{amp} for male-specific coliphage and,
- E. coli CN-13 for somatic coliphage.

Some cities and other utilities have done virus testing as part of their Information Collection Rule requirements. Results of their testing, as well as recent research studies, demonstrate that viruses react differently than bacteria to deactivation from environmental effects or disinfection treatment. This information should provide valuable insight into what viral concerns we should have and into what testing methods are best used.

Environmental Programs is not aware of any other testing having been done, to date, for viruses in Spokane Valley-Rathdrum Prairie Aquifer water.

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable con alguien que lo entiende bien. (Para ver información adicional, visite al; http://water.epa.gov/drink/aqua/)

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài

GENERAL INFORMATION

Across the nation, 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 radioactive material and can pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include:

- Biological contaminants, such as viruses and bacteria, which 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 run-off, 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, storm water run-off, and residential uses.
- Organic chemicals, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water run-off and septic systems.
- Radioactive materials, 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, Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food & Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

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 contacting the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791, or you can access additional information at EPA websites: http://water.epa.gov/drink/index.cfm or http://water.epa.gov/drink/info/index.cfm

HEALTH INFORMATION

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

Additional information concerning:

Radon: During 2008, the City conducted 14 tests from 7 source wells for Radon-222. The single highest result was 534 pCi/L, the lowest was 212 pCi/L, and the mean average was 444 pCi/L.

Radon is a radioactive gas that you can't see, taste, or smell, and is a known carcinogen. Compared to radon entering the home through soil, radon entering the home through tap water will in most cases be a small source of radon in indoor air. Breathing air containing radon can lead to lung cancer and/or, drinking water containing radon also may cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call EPA's Radon Hotline (800-SOS-RADON) or access the EPA website at http://www.epa.gov/radon/hotlines.html.

Arsenic: The arsenic readings in 2010 at the Central and Well Electric Wells were 3.24 ppb and 4.22 ppb respectively. The Maximum Contaminant Level (MCL) for Arsenic is 10 ppb.

City of Spokane drinking water currently meets EPA's revised drinking water standard for Arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water. Information on arsenic in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm.

Lead: During 2009, the City tested 56 at-risk residences for lead. The single highest result was 8.07 ppb. This result for lead is less than the 15 ppb Action Level for lead**.** The lead results, based on City in-home sampling, also continue to qualify our water system as having "Optimized Corrosion Control." Source water is also analyzed for lead concurrent with the in-home testing. The maximum concentration in 2009 source water testing for lead was 0.3 ppb.

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

CITY OF SPOKANE'S SYSTEM

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie Aquifer - designated a "sole source" aquifer in 1978. The Spokane Aquifer (that portion of the larger aquifer lying within Washington State) and the Spokane River exchange water. The rates and locations of exchange are the subject of continued study.

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good "housekeeping" measures are not followed for all activity over and adjacent to the aquifer. In order to safeguard water quality, the City, in coordination with other stakeholders, is currently implementing a Wellhead Protection Program. This Program endeavors to inform the public about the Spokane Valley-Rathdrum Prairie Aquifer, and about appropriate disposal mechanisms for dangerous and/or critical materials that are generated in the Aquifer Sensitive Area. The program seeks land use regulations to help protect drinking water wells from contamination.

For additional information regarding the City of Spokane's Drinking Water or related issues, you can call:

City of Spokane Water & Hydroelectric Services	509-625-7800
City of Spokane Environmental Programs	509-625-6570

The Mayor recommends Water and Hydroelectric Services policy and rates to the Spokane City Council.
The Council meets most Mondays at 6:00 p.m. in the Council Chambers at
City Hall (808 W. Spokane Falls Blvd., Spokane, WA).

Appendix I - Water Use Efficiency compliance data

22-Feb-2011

Distribution System Leakage (DSL)

	2010	2009	2008	2007	2006	2005	2004	2003	2002
Service Meter Reading-Single Family, cu.ft.	1,112,029,865	1,290,030,800	1,152,981,200	1,202,265,680	1,203,061,552	1,086,928,400	1,193,035,800	1,237,952,600	1,190,542,300
Service Meter Reading-Multi Family, cu.ft.	288,245,615	315,618,069	409,792,300	472,555,248	461,200,784	421,588,600	412,155,800	419,161,800	391,183,100
Service Meter Reading-Commercial/Industrial, cu.ft.	520,982,640	563,865,863	744,076,700	831,283,552	836,985,600	797,205,000	892,540,700	777,286,200	746,383,800
Service Meter Reading-Government, cu.ft.	177,171,760	219,667,715	212,251,200	275,573,144	275,364,760	268,069,400	270,143,600	268,998,700	237,110,500
Emergency Interties, cu.ft.	* *	* *	* *	* *	* *	29,600	23,490,900	17,600	95,300
Wholesale Amount Sold, cu.ft.	14,551,700	12,833,300	10,046,300	29,756,900	21,344,300	13,107,300	9,443,600	9,983,100	11,400,200
Non-Revenue Accounted for Water, cu.ft. (estimate) *	142,296,791	142,296,791	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000
Total Authorized Consumption, cu.ft. *	2,255,278,371	2,544,312,538	2,557,147,700	2,839,434,524	2,825,956,996	2,614,928,300	2,828,810,400	2,741,400,000	2,604,715,200
Total Authorized Consumption (gal. X1000) (AC) *	16,869,482	19,031,458	19,127,465	21,238,970	21,138,158	19,559,664	21,159,502	20,505,672	19,483,270
Total Production (gal. X1000) (TP)	20,608,800	22,402,716	21,222,058	22,947,090	23,735,049	21,278,719	21,615,890	21,896,539	21,611,161
Distribution System Leakage (DSL), volume (gal. X1000)	3,739,318	3,371,258	2,094,593	1,708,120	2,596,891	1,719,055	456,388	1,390,867	2,127,891
Distribution System Leakage (DSL), percent	18.1%	15.0%	9.9%	7.4%	10.9%	8.1%	2.1%	6.4%	9.8%

* Total Authorized Consumption includes Non-Revenue Accounted for Water, which is consistent with Water Use Efficiency Rule guidance (see definition at right). This is different from past practice in previous Water System Plans. The value for Non-Revenue Accounted for Water (estimated, non-metered) was reassessed in 2009.

WAC 246-290-010 Definitions. - "Authorized consumption" means the volume of metered and unmetered water used for municipal water supply purposes by consumers, the purveyor, and others authorized to do so by the purveyor, including, but not limited to, fire fighting and training, flushing of mains and sewers, street cleaning, and watering of parks and landscapes. These volumes may be billed or unbilled.

* * Emergency intertie volumes are combined with Wholesale Amount sold

Method for calculating the Distribution System Leakage (DSL)

Calculating Percent DSL

To calculate percent DSL, use the following equation:

Percent DSL = [(TP - AC) / (TP)] x 100

Where:

DSL = Percent (%) of distribution system leakage

TP = Total water produced and purchased

AC = Authorized consumption

Calculating Volume DSL

To calculate volume DSL, use the following equation:

Volume DSL = TP - AC

Report volume DSL in millions of gallons or gallons

Total System Pumpage vs. Water Stewardship Strategic Plan Goals (source - City of Spokane Water Department)

WATER YEAR (Oct. through Sept.)	2010	2009	2008	2007	2006	2005	2004	2003	2002
					pumpage (1,000 gallons)				
Total - Oct. (prev. yr.)through Mar.	6,778,277	6,618,666	6,551,023	7,161,742	6,884,687	6,305,328	6,743,044	6,095,091	6,703,595
Total - Apr. through Jun.	5,241,226	6,439,647	5,340,540	6,463,462	5,991,545	5,105,476	6,347,928	5,869,848	6,170,680
Total - Jul. through Sept.	8,938,048	9,202,243	9,277,452	9,936,735	10,451,223	9,695,077	8,737,566	9,596,914	9,125,815
Total - sum of seasonal totals	20,957,551	22,170,556	21,168,810	23,561,939	23,327,455	21,105,881	21,828,538	21,561,853	22,000,090
Goal - Oct. (prev. yr.) through Mar.	6,870,000	6,810,000	6,760,000	6,710,000	6,660,000				
Goal - Apr. through Jun.	6,900,000	6,890,000	6,870,000	6,850,000	6,830,000				
Goal - Jul. through Sept.	8,830,000	8,910,000	8,990,000	9,060,000	9,130,000				
Difference between Goal & Use as a percentage (positive value equal exceedance of goal)									
Result - Oct. (prev. yr.) through Mar.	-1.3%	-2.8%	-3.1%	6.7%	3.4%				
Result - Apr. through Jun.	-24.0%	-7.8%	-22.3%	-5.6%	-12.3%				
Result - Jul. through Sept.	1.2%	3.3%	3.2%	9.7%	14.5%				

Single Family Residences, total volume billed (entire service area) (Source - Utility Billing)

year	begin date	gallons (total)	no. of service locations	gal per service location	% change of service locations (Aug. & Sept.)
2002	Jan. & Feb.	661,658,308	57,239	199	
2002	Aug. & Sept.	3,349,808,500	58,418	956	
2003	Jan. & Feb.	621,954,490	57,238	187	
2003	Aug. & Sept.	3,739,564,671	58,747	1061	0.56%
2004	Jan. & Feb.	718,183,965	57,978	214	
2004	Aug. & Sept.	3,297,148,096	59,259	927	0.87%
2005	Jan. & Feb.	604,612,888	58,403	178	
2005	Aug. & Sept.	2,940,177,049	59,914	818	1.11%
2006	Jan. & Feb.	709,090,289	59,231	206	
2006	Aug. & Sept.	3,392,957,337	60,883	929	1.62%
2007	Jan. & Feb.	610,421,856	59,881	176	
2007	Aug. & Sept.	3,610,435,980	61,459	979	0.95%
2008 *	Jan. & Feb.	605,478,234	60,435	170	
2008	Aug. & Sept.	3,158,038,235	61,581	855	0.20%
2009	Jan. & Feb.	655,566,618	60,683	186	
2009	Aug. & Sept.	3,183,286,496	61,585	861	0.01%
2010	Jan. & Feb.	597,449,771	60,608	170	
2010	Aug. & Sept.	2,809,319,289	61,810	758	0.37%
			Avg. percent change of service locations (Aug. & Sept.) 2002-2010		0.71%

* Heavy winter weather during Feb. 2008 resulted in estimating north side accounts at 12 units. Assessing the remaining meters for this period and relating to the next round of meter reading, this appears to be accurate.

Appendix II - Tests Run on City of Spokane Water

10-Jan-2011

FIELD TESTS

* Chlorine Demand
* Chlorine, Free Residual
Chlorine, Total Residual
Conductivity
Hardness
pH
Temperature
Turbidity

RADIONUCLIDES

Alpha emitters (gross)
* Beta/photon emitters (gross)
* Radon 222
Radium 226
Radium 228

MICROBES

BACTERIA

Total Coliform - Before & After Treatment
Fecal Coliform - Before & After Treatment
Heterotrophic Plate Count - Raw water
* Aeromonas sp.

PROTOZOA

* Cryptosporidium
* Giardia
* Microscopic Particle Analysis

* VIRUS

* Coliphage, Male Specific and - Somatic: EPA meth. 1601

GENERAL INORGANICS

* Asbestos
Color
Conductivity
1 Hardness, Calcium
1 Hardness, Magnesium
Hardness, Total
Total Alkalinity
Total Dissolved Solids
Turbidity
* UV254

INORGANIC IONS

Ammonia Nitrogen
* Bromide
Chloride
Cyanide
Fluoride
Nitrate Nitrogen
Nitrite Nitrogen
1 Phosphorus
Sulfate

INORGANIC METALS

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Selenium
Silver
Sodium
Thallium
Zinc

VOLATILE ORGANICS

Benzene
benzene, 1,2,3-Trichloro-
benzene, 1,2,4-Trichloro-
benzene, 1,2,4-Trimethyl-
benzene, 1,3,5-Trimethyl-
benzene, Bromo-
benzene, Butyl-
benzene, Chloro-
benzene, Ethyl
benzene, Isopropyl-
benzene, m-Dichloro-
benzene, o-Dichloro-
benzene, p-Dichloro-
benzene, Propyl-
benzene, sec-Butyl-
benzene, tert-Butyl-
Butadiene, Hexachloro-
Chloride, Carbon Tetra-
Chloride, Methylene (aka methane, dichloro)
Chloride, Vinyl
ethane, 1,1,1,2-Tetrachloro-
ethane, 1,1,1-Trichloro-
ethane, 1,1,2,2-Tetrachloro-
ethane, 1,1,2-Trichloro-
ethane, 1,1-Dichloro-
ethane, 1,2-Dichloro-
ethane, Chloro-
ethene, 1,1-Dichloro-
ethene, cis-1,2-Dichloro-
ethene, Tetrachloro-
ethene, trans-1,2-Dichloro-
ethene, Trichloro-
methane, Bromo-
methane, Bromochloro-
methane, Chloro-
methane, Dibromo-
methane, Dichlorodifluoro-
methane, Trichlorofluoro- (Freon 11)
Naphthalene
2 propane, 1,2,3-Trichloro-
propane, 1,2-Dichloro-
propane, 1,3-Dichloro-
propane, 2,2-Dichloro-
propene, 1,1-Dichloro-
propene, cis-1,3-Dichloro-
propene, trans-1,3-Dichloro-
Styrene
Toluene
toluene, o-Chloro-
toluene, p-Chloro-
toluene, p-Isopropyl-
Xylene, m&p-
Xylene, o-
Xylene, total

1 - Typically run by the City's Wastewater Laboratory only
2 - conducted during 2002-2003 for the Unregulated Contaminant Monitoring Rule.

* Test s were not run in 2010 but have been run in prvious years

Appendix II (continued)
GENERAL ORGANICS

* Total Organic Carbon
* Total Organic Halides

Maximum Total Trihalomethane Potential (MTTP)

MTTP - Bromodichloromethane
MTTP - Bromoform
MTTP - Chloroform
MTTP - Dibromochloromethane
ether, Methyl tert-Butyl (MtBE)
2 Benzene, Nitro
2 toluene, 2,6-Dinitro-
2 DCPA Acid Mono-acid degradate
2 DCPA Acid Di-Acid degradate
2 Perchlorate
2 Acetochlor
Polybrominated Diphenyl ether (PBDE) - (limited list of congeners)

DISINFECTION BY-PRODUCTS

TRIHALOMETHANES

Chloroform
Bromoform
methane, Dibromochloro-
methane, Bromodichloro-
Total Trihalomethanes

FIVE HALOACETIC ACIDS (HAA5)

acetic Acid, Monochloro-
acetic Acid, Dichloro-
acetic Acid, Trichloro-
acetic Acid, Monobromo-
acetic Acid, Dibromo-

OTHER DISINFECTION BY-PRODUCTS

acetic Acid, Bromochloro-
* Hydrate, Chloral
* nitrile, Bromochloroaceto-
* nitrile, Dibromoaceto-
* nitrile, Dichloroaceto-
* nitrile, Trichloroaceto-
* pictrin, Chloro-
* propanone, 1,1,1-Trichloro-
* propanone, 1,1-Dichloro-

* SYNTHETIC ORGANICS

2-Chloronaphthalene
2-Methylnapthalene
4-bromophenyl phenyl ether
4-Chlorophenyl phenyl ether
5-Hydroxydicamba
Acenaphthene
Acenaphthylene
Acifluorfen
Adipate, Di-(2-ethylhexyl)
Alachlor
Aldicarb
Aldicarb Sulfone
Aldicarb Sulfoxide
Aldrin
Ametryn
Amtryne
Anthracene
Anthracene, Benz(a)-
Anthracene, Dibenz(a,h)-
Arochlor 1016
Arochlor 1221
Arochlor 1232
Arochlor 1242
Arochlor 1248
Arochlor 1254
Arochlor 1260
Atraton
Atrazine
Baygon
Benefin
Bentazon
benzene, Hexachloro-
benzoic acid, 3,5-Dichloro-
BHC (alpha)
BHC (beta)
BHC (delta)
Bromacil
Butachlor
Butylate
Caffeine
Carbaryl
Carboxin
Chloramben
Chlordane
Chlordane, alpha-
Chlordane, gamma-
Chlorpropham
Chrysene
Cyanazine
Cycloate
D, 2,4-
Dalapon
DB, 2,4-
DCPA (Dacthal)
DDD, 4,4-
DDE, 4,4-
DDT, 4,4-
Diazinon
Dibenzofuran
Dicamba
Dichlorprop
Dichlorvos
Dieldrin
Diesel (as straight alka chain)
Dimethoate
Dinoseb
Diphenylamine
Diquat
Disulfoton
Disulfoton sulfone
Disulfoton sulfoxide (A)
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endothall
Endrin
Endrin aldehyde
EPTC
Ethoprop
Ethylene Dibromide
Fenamiphos
Fenarimol
Fluoranthene
Fluoranthene, Benzo(b)
Fluoranthene, Benzo(k)
Fluorene
Fluridone
furan, 3-Hydroxycarbo-
furan, Carbo-
Glyphosate
Heptachlor
Heptachlor Epoxide
Heptachlor Epoxide "A"
Heptachlor Epoxide "B"
Hexachloroethane
Hexazinone
Hydrate, Chloral
Isodrin
Isophorone
Isopropalin
Isosafrole
Lindane
Malathion
Merphos
Methiocarb
Methomyl
Methoxychlor
Methyl paraoxon
Methylparathion
Metolachlor
Metribuzin
Mevinphos
MGK-264
Molinate
N-Nitrosodi-N-propylamine
Napropamide
Nonachlor, cis-
Nonachlor, trans-
Norflurazon
Oxadiazon
Oxamyl
Oxyfluorfen
Parathion
Pendamethalin
Pentachloronitrobenzene
pentadiene, Hexachlorocyclo-
Perylene, Benzo(g,h,i)
Phenanthrene
phenol, 2,4,6-Trichloro
phenol, 2,4-Dichloro
phenol, 4-Chloro-3-methyl
phenol, 4-Nitro-
phenol, Pentachloro-
phenyls, Polychlorinated Bi- (PCB, total Arochlor)
phthalate, Butylbenzyl-
phthalate, Di-(2-Ethylhexyl)-
phthalate, Di-n-Butyl-
phthalate, Diethyl
phthalate, Dimethyl-
Picloram
Profuralin
Prometon
Prometryn
Propachlor
propane, Dibromochloro- (DBCP)
Pyrene
pyrene, Benzo a-
Pyrene, Indeno(1,2,3,c,d)
Safrole
Simazine
T, 2,4,5-
Terbacil
Terbuphos
Thiobencarb
2 toluene, 2,4-Dinitro-
Toxaphene
TP, 2,4,5-
Trifluralin
Vernolate

1 - Typically run by the City's Wastewater Laboratory only
2 - conducted during 2002-2003 for the Unregulated Contaminant Monitoring Rule.

* Test s were not run in 2010 but have been run in prvious years

Appendix II (continued)

XENOBIOTICS (screening at Parkwater & Grace, 2008)

METHOD 1694: PHARMACEUTICALS AND PERSONAL CARE PRODUCTS BY

* HPLC/MS/MS

List 1
(Acid extraction, positive ESI)
Acetaminophen
Ampicillin 1
Azithromycin
Caffeine
Carbadox
Carbamazepine
Cefotaxime
Ciprofloxacin
Clarithromycin
Clinafloxacin
Cloxacillin
Codeine
Cotinine
Dehydronifedipine
Digoxigenin
Digoxin
Diltiazem
1,7-Dimethylxanthine
Diphenhydramine
Enrofloxacin
Erythromycin hydrate
Flumequine
Fluoxetine
Lincomycin
Lomefloxacin
Miconazole
Norfloxacin
Norgestimate
Ofloxacin
Ormetoprim
Oxacillin
Oxolinic acid
Penicillin G
Penicillin V
Roxithromycin
Sarafloxacin
Sulfachloropyridazine
Sulfadiazine
Sulfadimethoxine
Sulfamerazine
Sulfamethazine
Sulfamethizole
Sulfamethoxazole
Sulfanilamide
Sulfathiazole
Thiabendazole
Trimethoprim
Tylosin
Virginiamycin

List 2
(Tetracyclines, positive ESI)
Anhydrochlortetracycline (ACTC)
Anhydrotetracycline (ATC)
Chlortetracycline (CTC)
Demeclocycline
Doxycycline
4-Epianhydrochlortetracycline (EACTC)
4-Epianhydrotetracycline (EATC)
4-Epichlortetracycline (ECTC)
4-Epioxytetracycline (EOTC)
4-Epitetracycline (ETC)
Isochlortetracycline (ICTC)
Minocycline
Oxytetracycline (OTC)
Tetracycline (TC)

List 3
(Acid extraction, negative ESI)
Gemfibrozil
Ibuprofen
Naproxen
Triclocarban
Triclosan
Warfarin

List 4
(Base extraction, positive ESI)
Albuterol
Cimetidine
Metformin
Ranitidine

METHOD 1698: STERIODS AND

* HORMONES BY HRGC/HRMS

Native Analyte

Desogestrel
17a-Estradiol
Estrone
Androstenone
Androstenedione
Equilin
17b-Estradiol
Testosterone
Equilenin
Mestranol
Norethindrone
17a-Dihydroequilin-bis
Progesterone
17a-Ethynyl-Estradiol
Norgestrel
Estriol-tris
Coprostanol
Epicoprostanol
Cholesterol
Cholestanol
Desmosterol
Ergosterol
Campesterol
Stigmasterol
b-Sitosterol
b-Stigmastanol
b-Estradiol-3-Benzoate

1 - Typically run by the City's Wastewater Laboratory only
2 - conducted during 2002-2003 for the Unregulated Contaminant Monitoring Rule.

* Test s were not run in 2010 but have been run in prvious years

Appendix II (continued)

Unregulated Contaminant Monitoring Rule - Round 2 (UCMR 2)

List 1 Contaminants

Dimethoate
Terbufos sulfone
2,2',4,4' - tetrabromodiphenyl ether (BDE-47)
2,2',4,4',5 - pentabromodiphenyl ether (BDE-99)
2,2'4,4',5,5' - hexabromobiphenyl (HBB)
2,2',4,4',5,5' - hexabromodiphenyl ether (BDE-153)
2,2'4,4'',6 - pentabromodiphenyl ether (BDE-100)
1,3-dinitrobenzene
2,4,6-trinitrotoluene (TNT)
Hexahydro-1,3,5 -trinitro - 1,3,5 -triazine (RDX)

List 2 Contaminants

Acetochlor
Alachlor
Metolachlor
Acetochlor ethane sulfonic acid (ESA)
Acetochlor oxanilic acid (OA)
Alachlor ethane sulfonic acid (ESA)
Alachlor oxanilic acid (OA)
Metolachlor ethane sulfonic acid (ESA)
Metolachlor oxanilic acid (OA)
N-nitroso-diethylamine (NDEA)
N-nitroso-dimethylamine (NDMA)
N-nitroso-di-n-butylamine (NDBA)
N-nitroso-di-n-propylamine (NDPA)
N-nitroso-methylethylamine (NMEA)
N-nitroso-pyrrolidine (NPYR)

1 - Typically run by the City's Wastewater Laboratory only
2 - conducted during 2002-2003 for the Unregulated Contaminant Monitoring Rule.

* Test s were not run in 2010 but have been run in prvious years

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water 3-Feb-2011

2010 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING

	SOURCE #	8	6	5	1	3	4	2
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
BACTERIA								
COLIFORM - RAW SOURCE *								
Total Coliform -number of samples per year / greatest result		10 / <1	6 / <1	4 / <1	10 / <1	12 / <1	9 / <1	24 / <1
Fecal Coliform - number of samples per year / greatest result		10 / <1	6 / <1	4 / <1	10 / <1	12 / <1	9 / <1	24 / <1
HETEROTROPHIC PLATE COUNT - RAW SOURCE *		10 / 1	6 / 1	4 / 36.5	10 / <1	12 / 1	9 / 1	24 / 1
number of samples per year / greatest result value								
* All operating wells are typically sampled once per month								
INORGANIC								
FULL LIST- CERTIFIED LAB (phase II & V included)	3rd Qtr - Jul	completed-see App. IV						completed-see App. IV
NITRATE	1st Qtr - Jan						3.40	
	2nd Qtr - April						3.53	
	3rd Qtr - Jul	0.95	0.80	1.33	0.90	1.36	2.22	1.41
	4th Qtr - Oct						3.07	
NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan						3.80	
	2nd Qtr - April	1.11	1.02	1.65	1.07	1.23	3.86	1.58
	3rd Qtr - Jul						2.13	
	4th Qtr - Oct						3.15	
ORGANIC								
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL	3rd Qtr - July	< 0.5, 5.45, 0.66, 1.78	<0.5, 8.95, 1.34, 3.29	< 0.5, 7.47, 1.55, 3.62	< 0.5, 7.87, 1.36, 3.4	< 0.5, 7.62, 1.2, 2.54	0.6, 9.16, 2.99, 6.41	< 0.5, 8.81, 1.12, 2.9
(Br,Cl,DiBr,DiCl)								
VOLATILES	1st Qtr - Jan							no detections
(including TRIHALOMETHANES)	2nd Qtr - April							
	3rd Qtr - Jul							
	4th Qtr - Oct							
UCMR Stage 2 List 1 and 2	1st Qtr - Jan	no detections			no detections	NDMC 0.00216	no detections	no detections
	2nd Qtr - April		no detections	no detections				
RADIOACTIVE CONTAMINANTS								
Radium 228 - pCi/L, Gross Alpha - pCi/L	2nd Qtr - April	< 0.5, 3.83		0.11, 3.46				0.68, 4.71
Radium 228 - pCi/L, Gross Alpha - pCi/L	3rd Qrt - July		< 0.5, 2.06		0.54. 3.59	< 0.5, 6.13	< 0.5, 2.14	

UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water						3-Feb-2011		
2009 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING								
	SOURCE #	8	6	5	1	3	4	2
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
BACTERIA								
COLIFORM - RAW SOURCE *								
Total Coliform -number of samples per year / greatest result		9/ <1	7 / <1	3 / <1	11 / <1	12 / <1	7 / <1	23 / <1
Fecal Coliform - number of samples per year / greatest result		9 / <1	7 / <1	3/ <1	11 / <1	12 / <1	7 / <1	23 / <1
HETEROTROPHIC PLATE COUNT - RAW SOURCE *								
number of samples per year / greatest result value		7 / 27	7 / 12	3 / 76	11 / 1	12 / 1	7 / 81	23 / 2
* All operating wells are typically sampled once per month								
INORGANIC								
FULL LIST- CERTIFIED LAB (phase II & V included)	3rd Qtr - Jul				completed-see App. IV	completed-see App. IV	completed-see App. IV	
NITRATE	1st Qtr - Jan						3.58	
	2nd Qtr - May						3.37	
	3rd Qtr - Jul	1.02	0.86	1.44	0.96	1.47	2.11	1.51
	4th Qtr - Oct						3.60	
NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan						3.87	
	2nd Qtr - May						3.65	
	3rd Qtr - Jul	1.11	0.94	1.46	1.24	1.60	2.39	1.66
	4th Qtr - Oct						3.89	
ORGANIC								
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL	3rd Qtr - Jul	< 0.5,4.71,1.03,1.82	< 0.5,9.08,1.91,3.83	< 0.5,7.04,1.51,3.31	< 0.5,4.20,1.39,2.53	< 0.5,4.83,1.77,2.63	< 0.5,5.03,2.13,3.23	< 0.5,3.58,0.98,1.90
(Br,Cl,DiBr,DiCl)								
VOLATILES	1st Qtr - Jan						no detections	
(including TRIHALOMETHANES)	2nd Qtr - May					no detections		
	3rd Qtr - Jul							
	4th Qtr - Oct							
SYNTHETIC ORGANICS (515.1, 525.2, 531.1)	2nd Qtr - May				no detections			
	3rd Qtr - Jul				no detections	no detections	no detections	no detections
	4th Qtr - Oct					no detections	no detections	no detections
UCMR Stage 2 List 1 and 2	3rd Qtr - Jul	no detections	no detections	no detections	no detections	no detections	no detections	no detections
RADIOACTIVE CONTAMINANTS								
Radium 228 pCi/L	2nd Qtr - Apr		1.9			1.1	1.3	
UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.								

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water 3-Feb-2011

2008 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING

SOURCE #	8	6	5	1	3	4	2
WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
BACTERIA								
COLIFORM - RAW SOURCE *								
Total Coliform -number of samples per year / greatest result		7 / <1	7 / <1	4 / <1	7 / <1	12 / <1	9 / <1	36 / <1
Fecal Coliform - number of samples per year / greatest result		7 / <1	7 / <1	4 / <1	7 / <1	12 / <1	9 / <1	36 / <1
HETEROTROPHIC PLATE COUNT - RAW SOURCE *								
number of samples per year / greatest result value		7 / 8	7 / 2	3 / 42.5	7 / 1	12 / 1	9 / 101	32 / 2
* All operating wells are typically sampled once per month								
INORGANIC								
FULL LIST- CERTIFIED LAB (phase II & V included)	3rd Qtr - Jul		completed-see App. IV	completed-see App. IV				
NITRATE	1st Qtr - Jan						3.83	
	2nd Qtr - May						3.78	
	3rd Qtr - Jul	1.06	0.818	1.70	1.05	2.03	2.98	1.86
	4th Qtr - Oct						3.07	
NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan						3.72	
	2nd Qtr - May						3.70	
	3rd Qtr - Jul	0.892	0.676	1.80	0.902	1.76	2.46	1.61
	4th Qtr - Oct						3.00	
ORGANIC								
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL	3rd Qtr - Aug	< 0.5,3.22,< 0.5,0.83	< 0.5,7.82,1.75,2.98	< 0.5,4.01,1.06,1.68	< 0.5,5.19,1.48,2.54	< 0.5,4.13,1.06,1.62	0.59,5.29,2.37,2.93	< 0.5,4.35,0.96,1.51
(Br,Cl,DiBr,DiCl)								
VOLATILES	1st Qtr - Jan	no detections	no detections *		no detections			
(including TRIHALOMETHANES)	2nd Qtr - May		no detections *					
	3rd Qtr - Jul		no detections *	no detections				
	4th Qtr - Oct							
SYNTHETIC ORGANICS (515.1, 525.2, 531.1)	3rd Qtr - Jul	no detections	no detections	no detections				
	4th Qtr - Oct	no detections	no detections	no detections				
RADIOACTIVE CONTAMINANTS								
Radon	2nd Qtr - Apr	534	winterized	winterized	426	534	503	402
	3rd Qtr - Jul	468	284	488	473	534	452	212
	4th Qtr - Oct		440	467				

UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.

* Grace was sampled each month, Jan. - Aug, and analyzed for VOC and NW TPH-Dx, re: Whitley Fire

Appendix IV - Drinking Water Inorganics Summary

CITY OF SPOKANE

reported 3-Nov-2010

DRINKING WATER INORGANICS SUMMARY

MOST RECENT WELL STATION MONITORING ANALYTICAL RESULTS

CERTIFIED LABORATORIES

								Maximum Contaminant Levels		CURRENT DATA SUMMARY			
WELL STATION	CENTRAL	ELECTRIC	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	MCL's**	Goals MCLG's	MEAN	MAX	MIN	COUNT
SAMPLING DATE	27-Jul-2010	27-Jul-2010	29-Jul-2008	29-Jul-2008	28-Jul-2009	28-Jul-2009	28-Jul-2009						
LABORATORY	County (SVL)	County (SVL)	County (SVL)	County (SVL)	County (SVL)	County (SVL)	County (SVL)						
ALKALINITY	114	122	87.5	139	103	150	148	unregulated		123	150	87.5	7
HARDNESS (as CaCO3)	124	131	91.4	154	99.3	155	150	unregulated		129	155	91.4	7
CONDUCTIVITY (µmos/cm)	257	278	100	160	219	329	339	700 t		240	339	100	7
TURBIDITY (NTU)	< 0.100	< 0.100	< 1.0	< 1.0	< 0.100	0.125	0.100	1 t		0.03	0.125	0.1	7
COLOR (color units)	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	< 5.00	15 s		0.000	0.000	< 5.00	7
CHLORIDE	3.19	3.8	3.81	5.77	4.11	5.92	10.1	250 s		5.24	10.1	3.19	7
TOT. DISSOLVED SOLIDS	143	155	100	160	121	191	191	500 t		152	191	100	7
MAGNESIUM	14	13.6	8.01	16.9	8.98	16.8	12.9	unregulated		13.0	16.9	8.01	7
CALCIUM	26.7	30.2	23.4	33.9	25	34.2	38.6	unregulated		30.3	38.6	23.4	7
ORTHO-PHOSPHATE	0.02	< 0.01	< 0.01	< 0.01	< 0.010	< 0.010	0.02	unregulated		0.006	0.02	< 0.010	7
AMMONIA	< 0.030	< 0.030	0.036	< 0.030	< 0.030	< 0.030	< 0.030	unregulated		0.005	0.036	0.036	7
CYANIDE	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	0.0106	0.2	0.2		0.011	< 0.0100	7
FLUORIDE	< 0.100	< 0.100	0.151	< 0.100	< 0.100	< 0.100	< 0.100	2 s	4		0.151	< 0.100	7
NITRATE (NO3-N)	0.95	1.41	0.83	1.70	0.96	1.47	2.11	10	10	1	2.11	0.83	7
NITRITE (NO2-N)	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	1	1		< 0.050	< 0.050	7
SULPHATE	12	10.8	7.83	14.8	9.1	16.6	12.7	250 s	400	12.0	16.6	7.8	7
ALUMINUM	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	0.05 - 0.2 mg/L * *			< 0.080	< 0.020	7
ANTIMONY	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	0.006	0.006		< 0.00300	< 0.001	7
ARSENIC	0.00324	0.00422	0.00310	0.00299	0.00277	0.00324	0.00513	0.010	0	0.0035	0.00513	0.00277	7
BARIUM	0.0249	0.0216	0.0167	0.0306	0.0189	0.0273	0.0418	2	2	0.0260	0.0418	0.0167	7
BERYLLIUM	< 0.000800	< 0.000800	< 0.00200	< 0.00200	< 0.0008	< 0.0008	< 0.0008	0.004	0.004		< 0.00200	< 0.0008	7
CADMIUM	< 0.00200	< 0.00200	< 0.000200	< 0.000200	< 0.0002	< 0.0002	< 0.0002	0.005	0.005		< 0.002	< 0.000200	7
CHROMIUM	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.0060	< 0.0060	0.1	0.1		< 0.0060	< 0.0060	7
COPPER	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	TT	1.3		< 0.010	< 0.010	7
IRON	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	0.3 s			< 0.060	< 0.060	7
LEAD	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	TT	0		< 0.001	< 0.001	7
MANGANESE	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	0.05 s			< 0.0040	< 0.0040	7
MERCURY	< 0.000200	< 0.000200	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.002	0.002		< 0.00020	< 0.00020	7
NICKEL	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.1 * * *	0.1 * * *		< 0.010	< 0.010	7
SELENIUM	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	< 0.00300	0.05	0.05		< 0.00300	< 0.00300	7
SILVER	< 0.0050	< 0.0100	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.1 s			< 0.0050	< 0.0050	7
SODIUM	3.05	3.95	2.67	4.40	2.58	3.81	6.19	unregulated		3.8	6.19	2.58	7
THALLIUM	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	< 0.00100	0.002	0.0005		< 0.00100	< 0.000400	7
ZINC	0.0151	< 0.0100	< 0.0100	< 0.0100	< 0.010	< 0.010	< 0.010	5 s			0.0159	< 0.010	7

RESULTS ARE IN mg/L EXCEPT WHERE OTHERWISE NOTED

* TT = Treatment Technique; s = Secondary MCL; t = State only MCL

* * Aluminum is a secondary regulated contaminant, but is also on the Drinking Water Contaminant Candidate List

* * * The MCL and MCLG for Nickel were remanded on February 9, 1995, monitoring requirements still in effect

Appendix V - Disinfection Byproducts - Distribution System

Distribution System Sampling for Disinfection Byproducts

Reported 3-Feb-2011

Location	Mallen Tank	Mallen Tank	BPA Transmission Easement	BPA Transmission Easement	Mallen Tank	Mallen Tank	BPA Transmission Easement	BPA Transmission Easement	Mallen Tank	Mallen Tank	MAXIMUM CONTAMINANT LEVELS (MCL)
Date	27-Jan-2004	26-Apr-2004	27-Jul-2004	27-Oct-2004	25-Jan-05	26-Apr-05	26-Jul-05	25-Oct-05	31-Jan-06	25-Apr-06	
Organics Lab	North Creek	North Creek	North Creek	North Creek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Total Chlorine Residual, mg/L	0.21	0.28	0.23	0.02	0.21	0.14	0.35	0.04	0.27	0.15	
TRIHALOMETHANES, results micrograms/L											
Chloroform	< 0.5	< 0.5	< 0.5	**1.2**	< 0.5	**0.5**	< 0.5	**0.7**	< 0.5	< 0.5	
Bromodichloromethane	**0.5**	< 0.5	< 0.5	**1.5**	**0.6**	**0.9**	< 0.5	**1.0**	< 0.5	< 0.5	
Dibromochloromethane	**0.6**	**0.5**	< 0.5	**1.3**	**0.6**	**0.9**	< 0.5	**1.5**	< 0.5	< 0.5	
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.8**	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	**1.1**	**0.5**	< 2.0	**4.0**	**1.2**	**2.3**	< 2.0	**4.0**	< 2.0	< 2.0	80
HALOACETIC ACIDS (HAA5), results micrograms/L											
Chloroacetic acid	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	
Bromoacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
Di-Chloroacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
Tri-Chloroacetic acid\	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
Di-Bromoacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	
TOTAL HAA (5)	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6	< 6	< 6	< 6	60
Chloro,bromoacetic acid	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1	< 1	< 1	< 1	

Results are in μg/L (ppb) except where otherwise noted
* State Unregulated

Distribution System Sampling for Disinfection Byproducts

Location	BPA Transmission Easement	BPA Transmission Easement	Mallen Tank	Mallen Tank	BPA Trans Easement	BPA Trans Easement	Mallen Tank	Mallen Tank	BPA Trans Easement	BPA Trans Easement	MAXIMUM CONTAMINANT LEVELS (MCL)
Date	25-Jul-06	31-Oct-06	30-Jan-2007	24-Apr-2007	31-Jul-2007	30-Oct-2007	29-Jan-2008	29-Apr-2008	29-Jul-2008	21-Oct-2008	
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Total Chlorine Residual, mg/L	0.29	0.23	0.19	0.23	0.31		0.20	0.24	0.23	0.19	
TRIHALOMETHANES, results micrograms/L											
Chloroform	< 0.5	**1.1**	< 0.5	**1.3**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	< 0.5	**1.4**	**0.6**	**0.5**	< 0.5	**0.8**	< 0.5	< 0.5	< 0.5	**0.86**	
Dibromochloromethane	< 0.5	**1.2**	**0.8**	**0.7**	< 0.5	**1.1**	**0.63**	< 0.5	< 0.5	**1.03**	
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.5**	< 0.5	< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	< 2.0	**3.7**	**1.4**	**2.5**	< 0.5	**2.4**	**0.63**	< 0.5	< 0.5	**1.89**	80
HALOACETIC ACIDS (HAA5), results micrograms/L											
Chloroacetic acid	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Chloroacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Tri-Chloroacetic acid\	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
TOTAL HAA (5)	< 6	< 6	< 6.0	< 6.0	< 6.0	< 6.0	< 1	< 1	< 1	< 1	60
Chloro,bromoacetic acid *	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	

Results are in μg/L (ppb) except where otherwise noted
* State Unregulated

Distribution System Sampling for Disinfection Byproducts

Location	Mallen Tank	Mallen Tank	BPA Trans Easement	BPA Trans Easement	BPA Trans Easement	Mallen Tank	BPA Trans Easement	BPA Trans Easement	MAXIMUM CONTAMINANT LEVELS (MCL)
Date	27-Jan-09	21-Apr-2009	28-Jul-2009	27-Oct-2009	26-Jan-2010	28-Apr-2010	27-Jul-2010	26-Oct-2010	
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Total Chlorine Residual, mg/L	0.26	0.25	0.27	0.11	0.23		0.24		
TRIHALOMETHANES, results micrograms/L									
Chloroform	< 0.5	< 0.5	< 0.5	**0.9**	< 0.5	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	< 0.5	**0.52**	< 0.5	**1.3**	**0.67**	< 0.5	< 0.5	**0.68**	
Dibromochloromethane	< 0.5	**0.74**	< 0.5	**1.49**	**0.78**	**0.71**	< 0.5	**0.89**	
Bromoform	< 0.5	< 0.5	< 0.5	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	< 2.0	**1.26**	< 0.5	**4.29**	**1.45**	**0.71**	< 0.5	**1.57**	80
HALOACETIC ACIDS (HAA5), results micrograms/L									
Chloroacetic acid	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Chloroacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Tri-Chloroacetic acid\	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Di-Bromoacetic acid	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
TOTAL HAA (5)	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	60
Chloro,bromoacetic acid *	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	

Results are in μg/L (ppb) except where otherwise noted
* State Unregulated

--- Baxter was decommisioned during 2002. ---

WELL STATION **BAXTER** Reported 20-Mar-08

DATE	30-Aug-89	12-Nov-91	28-Jul-92	06-Oct-92	27-Jul-93	26-Jul-94	25-Jul-95	25-Jul-95	30-Jul-96	19-Aug-97	27-Aug-97	21-Jul-98	18-Nov-98	25-Jul-2000	MAXIMUM CONTAMINANT LEVELS
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	Coffey	MWL	Laucks	Laucks	Laucks	Anatek	
Organics Note:															
Sampled by:	R. Butts		R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts		R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL															
Bromoform		1.4	0.6		0.8	< 0.5	0.7		< 0.5		0.35	< 0.5		0.6	
Chloroform		3.1	6.0		4.7	5.6	22.6		10.0		7.8	5.9		10.6	
Dibromochloromethane		2.7	2.4		1.4	1.5	0.7		< 0.5		2.6	0.8		1.9	
Bromodichloromethane		2.7	4.0		1.7	2.8	5.7		< 0.5		4.3	1.1		2.6	
TOTAL		9.9	13.0		9.0	10.0	29.7		10		15.05	7.8		15.7	none
TRIHALOMETHANES															
Bromoform	0.6		< 0.5	< 0.5				**0.7**				< 0.5			
Chloroform	3.0		< 0.5	< 0.5				**2.5**				< 0.5			
Dibromochloromethane	1.2		0.5	0.6				< 0.5				< 0.5			
Bromodichloromethane	1.1		< 0.5	0.5				**1.7**				< 0.5			
TOTAL TRIHALOMETHANES	5.9		0.5	1.1				**4.9**				< 0.5			100.0
VOLATILE ORGANICS															
1,1,1-Trichloroethane	< 0.5		< 0.5	< 0.5				< 0.5				< 0.5			200.0
Tetrachloroethene	< 0.5		< 0.5	< 0.5				< 0.5				< 0.5			5.0
1,3-Dichloropropane	< 0.5		< 0.5	< 0.5				< 0.5				< 0.5			none
SYNTHETIC ORGANICS															
Di (2-ethylhexyl) Adipate								< 0.6		< 0.6		< 1.3	< 1.3	< 1.3	400.0
Di (2-ethylhexyl) Phthalate								< 0.6		< 0.6		< 1.3	< 1.3	< 1.3	6.0
Di-n-Butylphthalate								< 1.3		< 0.6*		< 0.6	< 0.6	< 0.4	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

WELL STATION **CENTRAL** Reported 1-Feb-11

DATE	07-Mar-88	25-Sep-89	15-Jan-90	09-Apr-90	13-Aug-90	29-Oct-90	24-Jul-91	12-Nov-91	11-Feb-92	04-May-92	28-Jul-92	28-Oct-92	27-Jan-93	27-Apr-93	27-Jul-93	MAXIMUM CONTAMINANT LEVELS
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts		R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform								< 0.5			< 0.5					
Chloroform								1.6			10.2				2.7	
Dibromochloromethane								0.7			1.4				0.5	
Bromodichloromethane								1.0			3.5				0.7	
TOTAL								3.3			15.1				4.0	none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Chloroform	< 0.5	< 0.5	< 0.5	**1.0**	**1.4**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Dibromochloromethane	**0.6**	< 0.5	**0.6**	< 0.5	**0.7**	< 0.5	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
Bromodichloromethane	< 0.5	< 0.5	< 0.5	**0.5**	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		
TOTAL TRIHALOMETHANES	**0.6**	< 2.0	**0.6**	**1.5**	**2.7**	< 2.0	< 2.0	0.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0		80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5	**0.7**	**0.8**	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		200
Tetrachloroethene	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		5
1,3-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate																400
Di (2-ethylhexyl) Phthalate																6
Di-n-Butylphthalate																none

WELL STATION **CENTRAL** (CONTINUED)

DATE	26-Jul-94	10-Aug-94	31-Jan-95	25-Jul-95	25-Jul-95	14-May-96	30-Jul-96	06-May-97	19-Aug-97	27-Aug-97	05-May-98	27-Apr-99	03-Aug-99	25-Apr-00	31-Jul-01	MAXIMUM CONTAMINANT LEVELS
Organics Lab	WADOH	IEL	IEL	IEL	IEL	Coffey	Coffey	Coffey	MWL	Laucks	Laucks	Laucks/Anatek	Anatek	County(NCA)	Anatek	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL											21-Jul-98					
Bromoform	< 0.5			< 0.5			< 0.5			0.6	< 0.5		< 0.5	< 0.5	< 0.5	
Chloroform	4.0			6.2			9.3			5.5	4.5		2.8	7.0	14.6	
Dibromochloromethane	0.8			< 0.5			< 0.5			0.6	< 0.5		0.5	0.9	< 0.5	
Bromodichloromethane	1.5			2.2			< 0.5			2.3	0.5		1.1	1.4	1.0	
TOTAL	6.3			8.4			9.3			9.0	5.0		4.4	9.3	15.6	none
TRIHALOMETHANES																
Bromoform		< 0.5			**0.9**	< 0.5		< 0.5			< 0.5	< 0.5		< 0.5		
Chloroform		**1.0**			**1.1**	< 0.5		< 0.5			< 0.5	< 0.5		< 0.5		
Dibromochloromethane		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5		< 0.5		
Bromodichloromethane		**0.8**			**1.0**	< 0.5		< 0.5			< 0.5	< 0.5		< 0.5		
TOTAL TRIHALOMETHANES		**1.8**			**3.0**	< 2.0		< 2.0			< 2.0	< 2.0		< 2.0		80
VOLATILE ORGANICS																
1,1,1-Trichloroethane		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5		< 0.5		200
Tetrachloroethene		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5		< 0.5		5
1,3-Dichloropropane		< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5		< 0.5		none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate			< 0.6					< 0.3	< 0.6			< 1.3	< 1.3			400
Di (2-ethylhexyl) Phthalate			< 0.6					< 1.2	< 0.6			< 1.3	< 1.3			6
Di-n-Butylphthalate			< 1.3						< 0.6*			< 0.4	< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

WELL STATION **CENTRAL** Reported 1-Feb-11

										MAXIMUM CONTAMINANT LEVELS
DATE	13-Aug-02	29-Jul-03	27-Jul-04	2005	2006	31-Jul-07	29-Jul-08	2009	2010	
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:										
Sampled by:	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard	Graf/Greenlund	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL				26-Jul-05	25-Jul-06	31-Jul-07	29-Jul-08	28-Jul-09	27-Jul-10	
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	2.9	3.0	5.3	4.3	4.8	3.4	3.22	4.71	5.45	
Dibromochloromethane	0.5	0.5	0.6	0.6	< 0.5	0.5	< 0.5	1.03	0.66	
Bromodichloromethane	1.2	1.2	1.4	1.3	0.9	1.0	0.8	1.82	1.78	
TOTAL	4.6	4.7	7.3	6.2	5.7	4.9	4.05	7.56	7.89	none
TRIHALOMETHANES	January-02			01-Feb-05			29-Jan-08			
Bromoform	< 0.5			< 0.5			< 0.5			
Chloroform	< 0.5			< 0.5			< 0.5			
Dibromochloromethane	< 0.5			< 0.5			< 0.5			
Bromodichloromethane	< 0.5			< 0.5			< 0.5			
TOTAL TRIHALOMETHANES	< 2.0			< 2.0			< 2.0			80
VOLATILE ORGANICS				01-Feb-05			29-Jan-08			
1,1,1-Trichloroethane	< 0.5			< 0.5			< 0.5			200
Tetrachloroethene	< 0.5			< 0.5			< 0.5			5
1,3-Dichloropropane	< 0.5			< 0.5			< 0.5			none
SYNTHETIC ORGANICS	Aug.&Nov.			7/26 + 10/25			7/29 & 10/21			
Di (2-ethylhexyl) Adipate	< 1.3			< 1.3			< 1.3			400
Di (2-ethylhexyl) Phthalate	< 1.3			< 1.3			< 1.3			6
Di-n-Butylphthalate	< 0.4			< 0.4			< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

WELL STATION GRACE Reported 1-Feb-11

DATE	31-May-88	30-Aug-89	13-Aug-90	29-Oct-90	24-Jul-91	12-Nov-91	28-Jul-92	27-Jul-93	26-Jul-94	10-Aug-94	31-Jan-95	25-Jul-95	25-Jul-95	30-Jul-96	07-Aug-96	MAXIMUM CONTAMINANT LEVELS
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	IEL	IEL	Coffey	Coffey Resample	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform						< 0.5	< 0.5		< 0.5			0.7		< 0.5		
Chloroform						4.8	12.8	9.3	6.0			22.9		11.0		
Dibromochloromethane						1.8	1.2	0.9	0.9			< 0.5		< 0.5		
Bromodichloromethane						2.6	3.2	2.2	2.0			4.0		< 0.5		
TOTAL						9.2	17.2	12.0	9.0			27.6		11.0		none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	
Chloroform	**0.7**	< 0.5	1.0	< 0.5	**0.5**	**1.5**	< 0.5	**0.6**		**0.9**			**0.8**		< 0.5	
Dibromochloromethane	**0.7**	**0.9**	**0.7**	**0.5**	< 0.5	**1.0**	< 0.5	**0.5**		< 0.5			< 0.5		< 0.5	
Bromodichloromethane	**0.5**	**0.7**	**0.8**	< 0.5	**0.5**	**1.0**	< 0.5	**0.5**		**1.0**			**0.8**		< 0.5	
TOTAL TRIHALOMETHANES	**1.9**	**1.6**	**2.5**	**0.5**	**1.0**	**3.5**	< 2.0	**1.6**		**1.9**			**1.6**		< 2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	200
Tetrachloroethene	**1.0**	**1.0**	**0.7**	**0.7**	**0.6**	**0.6**	**0.5**	< 0.5		< 0.5			**0.7**		< 0.5	5
1,3-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	none
Trichlorofluoromethane (Freon 11)																
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate											< 0.6					400
Di (2-ethylhexyl) Phthalate											< 0.6					6
Di-n-Butylphthalate											< 1.3					none

WELL STATION GRACE (CONTINUED)

DATE	29-Jul-97	27-Aug-97	07-Oct-97	21-Jul-98	18-Aug-98	01-Sep-98	27-Oct-98	18-Nov-98	29-Jun-99	03-Aug-99	25-Apr-00	25-Jul-00	24-Oct-00	31-Jul-01	13-Aug-02	MAXIMUM CONTAMINANT LEVELS
Organics Lab	Laucks	Laucks	MWL	Laucks/MWL	MWL	Laucks	Laucks	Anatek	Laucks/NCA	County(NCA)	County(NCA)	County(NCA)	Anatek	Anatek	Anatek	
Organics Note:			Resample													
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform		0.4		< 0.5						< 0.5		< 0.5		< 0.5	< 0.5	
Chloroform		5.8		6.6						7.1		9.7		18.6	8.6	
Dibromochloromethane		1.7		< 0.5						0.8		1.2		< 0.5	3.6	
Bromodichloromethane		2.7		0.7						2.4		2.0		1.2	5.7	
TOTAL		10.6		7.3						10.4		12.9		19.8	19.0	none
TRIHALOMETHANES																
Bromoform	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		
Chloroform	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		
Dibromochloromethane	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		
Bromodichloromethane	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		
TOTAL TRIHALOMETHANES	< 2			< 2		< 2	< 2		< 2	< 2	< 2			< 2		80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		200
Tetrachloroethene	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		5
1,3-Dichloropropane	< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		none
Trichlorofluoromethane (Freon 11)				**0.60**		< 0.5	< 0.5		< 0.5	< 0.5	< 0.5			< 0.5		
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate			< 0.6	< 1.3	< 1.3			< 1.3	< 1.3			< 1.3	< 1.3		< 1.3	400
Di (2-ethylhexyl) Phthalate			< 0.6	< 1.3	< 1.3			< 1.3	< 1.3			< 1.3	< 1.3		< 1.3	6
Di-n-Butylphthalate			< 0.6	< 0.6	< 0.6			< 0.6	< 0.4			< 0.4	< 0.4		< 0.4	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

WELL STATION	GRACE						Reported	1-Feb-11	MAXIMUM CONTAMINANT LEVELS
DATE	29-Jul-03	27-Jul-04	2005	2006	2007 *	2008 *	2009	2010	
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:									
Sampled by:	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard	Graf/Greenlund	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL				25-Jul-06	31-Jul-07	29-Jul-08	28-Jul-09	27-Jul-10	
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	5.4	8.3	5.8	8.0	4.81	3.22	9.08	8.95	
Dibromochloromethane	1.2	1.1	1.1	1.2	1.00	< 0.5	1.91	1.34	
Bromodichloromethane	2.6	2.3	2.2	2.4	1.94	0.8	3.83	3.29	
TOTAL	9.2	11.7	9.1	11.7	7.75	4.05	14.8	13.6	none
TRIHALOMETHANES					*	*			
Bromoform		< 0.5			< 0.5	< 0.5			
Chloroform		< 0.5			< 0.5	< 0.5			
Dibromochloromethane		< 0.5			< 0.5	< 0.5			
Bromodichloromethane		< 0.5			< 0.5	< 0.5			
TOTAL TRIHALOMETHANES		< 2			< 2	< 2			80
VOLATILE ORGANICS									
1,1,1-Trichloroethane		< 0.5			< 0.5	< 0.5			200
Tetrachloroethene		< 0.5			< 0.5	< 0.5			5
1,3-Dichloropropane		< 0.5			< 0.5	< 0.5			none
Trichlorofluoromethane (Freon 11)		< 0.5			< 0.5	< 0.5			
SYNTHETIC ORGANICS	Jul-03		7/26 + 10/25			7/29 & 10/21			
Di (2-ethylhexyl) Adipate	< 1.3		< 1.3			< 1.3			400
Di (2-ethylhexyl) Phthalate	< 1.3		< 1.3			< 1.3			6
Di-n-Butylphthalate	< 0.4		< 0.4			< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Following a fire on July 23, 2007, at a nearby fuel storage facility, monthly VOC and TPH-Dx monitoring was initiated at Grace and Nevada well station until Aug. 2008. There were no detections.

WELL STATION HOFFMAN

										Reported	1-Feb-11					MAXIMUM
																CONTAMINANT
DATE	31-May-88	30-Aug-89	12-Nov-91	28-Jul-92	27-Jul-93	15-Aug-94	25-Jul-95	25-Jul-95	30-Jul-96	19-Aug-97	27-Aug-97	21-Jul-98	18-Aug-98	01-Sep-98	27-Oct-98	LEVELS
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	IEL/WADOH	IEL	IEL	Coffey	MWL	Laucks	Laucks/MWL	MWL			
Organics Note:						SOC's by IEL for State										
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform			0.7	< 0.5	0.6	0.6		0.7	< 0.5		0.3	< 0.5				
Chloroform			18.7	15.4	4.6	6.3		18.4	11.0		9.2	17				
Dibromochloromethane			1.8	1.2	0.9	1.2		0.5	< 0.5		1.0	0.96				
Bromodichloromethane			2.7	3.1	1.1	1.6		4.5	< 0.5		2.1	1.5				
TOTAL			23.9	19.7	7.2	10.0		24.1	11.0		12.6	19.46				none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5		< 0.5			**0.8**					< 0.5		< 0.5	< 0.5	
Chloroform	**1.7**	< 0.5		**8.5**			**4.4**					**1.6**		**1.0**	**2.0**	
Dibromochloromethane	**0.9**	**0.8**		< 0.5			< 0.5					< 0.5		< 0.5	< 0.5	
Bromodichloromethane	< 0.5	**0.6**		< 0.5			**1.1**					< 0.5		< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	**2.6**	**1.4**		**8.5**			**6.3**					1.6		1.0	2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5		< 0.5			< 0.5					< 0.5		< 0.5	< 0.5	200
Tetrachloroethene	< 0.5	< 0.5		< 0.5			< 0.5					< 0.5		< 0.5	< 0.5	5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5			< 0.5					< 0.5		< 0.5	< 0.5	none
Trichlorofluoromethane (Freon 11)												**1.1**		< 0.5	< 0.5	
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate						< 0.6				< 0.6			< 1.3			400
Di (2-ethylhexyl) Phthalate						< 0.6				**0.7**			< 1.3			6
Di-n-Butylphthalate										< 0.6*			< 0.6			none

WELL STATION HOFFMAN (CONTINUED)

																MAXIMUM
																CONTAMINANT
DATE	18-Nov-98	29-Jun-99	03-Aug-99	25-Jul-2000	24-Oct-2000	31-Jul-2001	13-Aug-02	29-Jul-2003	27-Jul-04	1-Sep-2004	26-Oct-2004	2005	2006	2007	2008	LEVELS
Organics Lab	MWL	Laucks	County (NCA)	County (NCA)	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	Wisely	Cribbins	Cribbins	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL												26-Jul-05	25-Jul-06	31-Jul-07	04-Aug-08	
Bromoform			< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform			4.9	9.1		18.5	4.8	5.9	7.0			7.7	6.1	4.15	4.01	
Dibromochloromethane			0.7	1.0		0.6	1.1	1.4	1.1			1.4	0.8	0.80	1.06	
Bromodichloromethane			1.6	1.6		1.0	2.1	2.8	2.0			2.8	1.4	1.50	1.68	
TOTAL			7.2	11.7		20.1	8.0	10.1	10.1			11.9	8.3	6.45	6.75	none
TRIHALOMETHANES												7/26 + 10/25		30-Oct-07	04-Aug-08	
Bromoform		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	
Chloroform		**0.54**	**0.555**	**1.92**		< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	
Dibromochloromethane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	
Bromodichloromethane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	
TOTAL TRIHALOMETHANES		**0.54**	**0.56**	**1.92**		< 2.0			< 2.0		< 2.0	< 2.0		< 2.0	< 2.0	80
VOLATILE ORGANICS												7/26 + 10/25		30-Oct-07	04-Aug-08	
1,1,1-Trichloroethane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	200
Tetrachloroethene		< 0.5	< 0.5	< 0.5		< 0.5			**3.09* * ***	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	5
1,3-Dichloropropane		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	< 0.5		resample 2008	< 0.5	none
Trichlorofluoromethane (Freon 11)		< 0.5	< 0.5	< 0.5		< 0.5			< 0.5		< 0.5	< 0.5		resample 2008	< 0.5	
Dichloromethane (Methylene Chloride, Freon 30)				**1.5 ****		< 0.5			< 0.5		< 0.5	< 0.5		< 0.5	< 0.5	
SYNTHETIC ORGANICS												7/26 + 10/25			7/29 & 10/21	
Di (2-ethylhexyl) Adipate	< 1.3	< 1.3		< 1.3	< 1.3		< 1.3	< 1.3				< 1.3			< 1.3	400
Di (2-ethylhexyl) Phthalate	< 1.3	< 1.3		< 1.3	< 1.3		< 1.3	< 1.3				< 1.3			< 1.3	6
Di-n-Butylphthalate	< 0.6	< 0.4		< 0.4	< 0.4		< 0.4	< 0.4				< 0.4			< 0.4	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

** Dichloromethane was detected. This is a common laboratory contaminant and the laboratory blank had over twice this concentration. WA Dept. of Health concurred with our assessment that the sample is assumed to have been contaminated

*** On routine maintenance of the production pump motor a commercial solvent was used on the date of sampling, with the sole ingredient being Perc.

The State Dept. of Health agreed with the Water Dept. that this excursion did not represent a legitimate characterization of drinking water. The solvent is no longer used and subsequent quarterly tests have had no detections.

WELL STATION **HOFFMAN** (CONTINUED)

			MAXIMUM CONTAMINANT LEVELS
DATE	2009	2010	
Organics Lab	Anatek	Anatek	
Organics Note:			
Sampled by:	Rickard	Graf/Greenlund	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL	28-Jul-09	27-Jul-10	
Bromoform	< 0.5	< 0.5	
Chloroform	7.04	7.47	
Dibromochloromethane	1.51	1.55	
Bromodichloromethane	3.13	3.62	
TOTAL	11.7	12.6	none
TRIHALOMETHANES			
Bromoform			
Chloroform			
Dibromochloromethane			
Bromodichloromethane			
TOTAL TRIHALOMETHANES			80
VOLATILE ORGANICS			
1,1,1-Trichloroethane			200
Tetrachloroethene			5
1,3-Dichloropropane			none
Trichlorofluoromethane (Freon 11)			
Dichloromethane (Methylene Chloride, Freon 30)			
SYNTHETIC ORGANICS			
Di (2-ethylhexyl) Adipate			400
Di (2-ethylhexyl) Phthalate			6
Di-n-Butylphthalate			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

NEVADA

WELL STATION										Reported	1-Feb-11					MAXIMUM CONTAMINANT LEVELS
DATE	7-Mar-1988	31-May-1988	12-Apr-1989	30-Aug-1989	15-Jan-1990	9-Apr-1990	13-Aug-1990	29-Oct-1990	24-Jul-1991	12-Nov-1991	11-Feb-1992	4-May-1992	28-Jul-1992	28-Oct-1992	16-Feb-1993	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	
Organics Note:															Resample	
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform										< 0.5			< 0.5			
Chloroform										7.6			4.1			
Dibromochloromethane										1.3			1.2			
Bromodichloromethane										2.7			2.2			
TOTAL										11.6			7.5			none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**< 0.5**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	< 0.5	**0.5**	**< 0.5**	< 0.5	**0.7**	**0.70**	**0.6**	0.5	< 0.5	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Dibromochloromethane	**< 0.5**	**0.8**	0.6	**0.8**	**0.9**	0.6	**0.5**	< 0.5	< 0.5	**0.7**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Bromodichloromethane	**< 0.5**	**0.6**	< 0.5	**0.5**	**0.7**	**0.60**	< 0.5	< 0.5	**0.5**	**0.7**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	**< 2.0**	**1.9**	**0.60**	**1.3**	**2.3**	**1.90**	**1.1**	**0.5**	**0.5**	**2.0**	**< 2.0**	< 2.0	**< 2.0**	**< 2.0**	< 2.0	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5	< 0.5	< 0.5	**0.5**	**0.5**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	200.0
Tetrachloroethene	**0.6**	**1.0**	**1.1**	**0.8**	**1.1**	**1.0**	**0.6**	**0.7**	< 0.5	**0.7**	< 0.5	< 0.5	< 0.5	**0.6**	**0.6**	5.0
1,3-Dichloropropane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.6**	< 0.5	< 0.5	< 0.5	< 0.5	none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate																400.0
Di (2-ethylhexyl) Phthalate																6.0
Di-n-Butylphthalate																none

NEVADA (CONTINUED)

WELL STATION																MAXIMUM CONTAMINANT LEVELS
DATE	27-Apr-1993	27-Jul-1993	26-Jul-1994	10-Aug-1994	31-Jan-1995	25-Jul-1995	25-Jul-1995	14-May-1996	30-Jul-1996	6-May-1997	19-Aug-1997	27-Aug-1997	28-Apr-1998	1-Sep-1998	27-Apr-99	
Organics Lab	WADOH	WADOH	WADOH	IEL	IEL	IEL	IEL	Coffey	Coffey	Coffey	MWL	Laucks	Laucks	Laucks	Laucks/Anatek	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL														07/21/98		
Bromoform			< 0.5			< 0.5			< 0.5			0.5		< 0.5		
Chloroform		7.6	4.9			19.0			9.0			4.7		5.5		
Dibromochloromethane		0.9	0.8			< 0.5			< 0.5			1.7		< 0.5		
Bromodichloromethane		2.0	1.8			3.9			< 0.5			2.6		0.7		
TOTAL		11.0	8.0			22.9			9.0			9.5		6.18		none
TRIHALOMETHANES																
Bromoform	< 0.5			< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5	< 0.5	
Chloroform	< 0.5			**1.50**			**0.80**	< 0.5		< 0.5			< 0.5	< 0.5	< 0.5	
Dibromochloromethane	< 0.5			< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5	< 0.5	
Bromodichloromethane	< 0.5			**1.00**			**0.80**	< 0.5		< 0.5			< 0.5	< 0.5	< 0.5	
TOTAL TRIHALOMETHANES	< 2.0			**2.50**			**1.60**	< 2		< 2						80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5			< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5	< 0.5	200.0
Tetrachloroethene	**0.5**			< 0.5			**0.5**	< 0.5		< 0.5			< 0.5	< 0.5	< 0.5	5.0
1,3-Dichloropropane	< 0.5			< 0.5			< 0.5	< 0.5		< 0.5			< 0.5	< 0.5	< 0.5	none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate					< 0.6					< 0.4	< 0.6				< 1.3	400.0
Di (2-ethylhexyl) Phthalate					< 0.6					< 1.8	< 0.6				< 1.3	6.0
Di-n-Butylphthalate					< 1.3						< 0.6*				< 0.4	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

NEVADA (CONTINUED)

WELL STATION										Reported	1-Feb-11	MAXIMUM CONTAMINANT LEVELS
DATE	2000	2001	2002	2003	2004	2005	2006	2007 *	2008 *	2009	2010	
Organics Lab	County (NCA)	County (NCA)	County (NCA)	Anatek	03-Jan-00	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:												
Sampled by:				Cribbins	Woodfill	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard	Graf/Greenlund	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL				29-Jul-03	27-Jul-04		25-Jul-06	31-Jul-07	29-Jul-08	28-Jul-09	27-Jul-10	
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	9.7	1.4	5.5	6.0	7.8	8.5	2.1	3.59	5.19	4.20	7.87	
Dibromochloromethane	1.2	< 0.5	1.6	1.2	1.0	1.8	0.9	0.84	1.48	1.39	1.36	
Bromodichloromethane	2.0	0.5	2.9	2.4	2.0	2.8	1.3	1.62	2.54	2.53	3.4	
TOTAL	10.8	1.9	10.0	9.6	10.8	13.1	4.3	6.05	9.21	8.12	12.6	none
TRIHALOMETHANES				06-May-03			25-Apr-06	*	*			
Bromoform	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5			
Chloroform	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5			
Dibromochloromethane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5			
Bromodichloromethane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5			
TOTAL TRIHALOMETHANES	< 2.0			< 2.0			< 2.0	< 2.0	< 2.0			80
VOLATILE ORGANICS	25-Apr-00			06-May-03			25-Apr-06	*	*			
1,1,1-Trichloroethane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5			200.0
Tetrachloroethene	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5			5.0
1,3-Dichloropropane	< 0.5			< 0.5			< 0.5	< 0.5	< 0.5			none
SYNTHETIC ORGANICS				4/29 & 7/29			4/25 + 7/25			4/21 & 7/28		
Di (2-ethylhexyl) Adipate				< 1.3			< 1.3			< 1.3		400.0
Di (2-ethylhexyl) Phthalate				< 1.3			< 1.3			< 1.3		6.0
Di-n-Butylphthalate				< 0.4			< 0.4			< 0.4		none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Following a fire on July 23, 2007, at a nearby fuel storage facility, monthly VOC and TPH-Dx monitoring was initiated at Grace and Nevada well station until Aug. 2008. There were no detections.

WELL STATION **PARKWATER**

DATE	07-Mar-88	30-Aug-89	12-Nov-91	28-Jul-92	06-Oct-92	27-Jan-93	27-Apr-93	27-Jul-93	Reported 25-Jan-94	1-Feb-11 26-Apr-94	26-Jul-94	26-Jul-94	01-Nov-94	25-Jul-95	MAXIMUM CONTAMINANT LEVELS
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	WADOH	IEL	IEL	IEL	
Organics Note:															
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL															
Bromoform			< 0.5	< 0.5							< 0.5			< 0.5	
Chloroform			4.4	2.6				3.4			4.6			28.1	
Dibromochloromethane			1.1	0.9				0.5			0.8			0.5	
Bromodichloromethane			2.0	1.5				0.8			1.6			5.4	
TOTAL			7.5	5.0				5.0			7.0			34.0	none
TRIHALOMETHANES															
Bromoform	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
Chloroform	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
Dibromochloromethane	< 0.5	**0.6**		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
Bromodichloromethane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							
TOTAL TRIHALOMETHANES	< 2.0	**0.6**		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0							80
VOLATILE ORGANICS															
1,1,1-Trichloroethane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							200
Tetrachloroethene	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5	< 0.5							5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5							none
SYNTHETIC ORGANICS															
Di (2-ethylhexyl) Adipate									< 0.2	**2.1**		< 0.6	< 0.6		400
Di (2-ethylhexyl) Phthalate									**0.3**	**0.2**		< 0.6	< 0.6		6
Di-n-Butylphthalate															none

WELL STATION **PARKWATER** (CONTINUED)

DATE	30-Jul-1996	7-Aug-1996	6-May-1997	19-Aug-1997	27-Aug-1997	3-Aug-1999	22-Dec-1999	25-Jul-2000	31-Jul-2001	13-Aug-02	29-Jul-2003	27-Jul-04	2005	2006	31-Jul-07	MAXIMUM CONTAMINANT LEVELS
Organics Lab	Coffey	Coffey	Coffey	MWL	Laucks	NCA/Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:		Resample														
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform	< 0.5				0.4	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	8.9				3.6	4.3		10.1	17.3	3.6	3.7	8.1	6.6	6.6	3.11	
Dibromochloromethane	< 0.5				1.1	0.7		1.0	< 0.5	0.7	0.6	0.8	1.0	0.7	0.68	
Bromodichloromethane	< 0.5				2.1	1.6		1.6	1.2	1.5	1.4	1.8	2.0	1.4	1.22	
TOTAL	8.9				7.2	6.6		12.7	18.5	5.8	5.7	10.7	9.6	8.8	5.01	none
TRIHALOMETHANES											6-May-2003			25-Apr-2006		
Bromoform		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5		
Chloroform		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5		
Dibromochloromethane		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5		
Bromodichloromethane		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5		
TOTAL TRIHALOMETHANES		< 2.0				< 2.0	< 2.0				< 2.0			< 2.0		80
VOLATILE ORGANICS														25-Apr-06		
1,1,1-Trichloroethane		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5		200
Tetrachloroethene		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5		5
1,3-Dichloropropane		< 0.5				< 0.5	< 0.5				< 0.5			< 0.5		none
SYNTHETIC ORGANICS						Aug & Oct 1999					Jul & Oct 2003			7/25 + 10/31		
Di (2-ethylhexyl) Adipate			< 0.25	< 0.6		< 1.3					< 1.3			< 1.3		400
Di (2-ethylhexyl) Phthalate			< 0.9	< 0.6		< 1.3					< 1.3			< 1.3		6
Di-n-Butylphthalate				< 0.6*		< 0.4					< 0.4			< 0.4		none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples, but also in the laboratory blank during this test round.

WELL STATION	PARKWATER			Reported	1-Feb-11	MAXIMUM CONTAMINANT LEVELS
DATE	2008	28-Jul-09	27-Jul-10			
Organics Lab	Anatek	Anatek	Anatek			
Organics Note:						
Sampled by:	Graf/Rickard	Rickard	Graf/Greenlund			
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL						
Bromoform	< 0.5	< 0.5	< 0.5			
Chloroform	4.13	4.83	7.62			
Dibromochloromethane	1.06	1.77	1.2			
Bromodichloromethane	1.62	2.63	2.54			
TOTAL	6.81	9.23	11.4			none
TRIHALOMETHANES		21-Apr-09				
Bromoform		< 0.5				
Chloroform		< 0.5				
Dibromochloromethane		< 0.5				
Bromodichloromethane		< 0.5				
TOTAL TRIHALOMETHANES		< 2.0				80
VOLATILE ORGANICS						
1,1,1-Trichloroethane		< 0.5				200
Tetrachloroethene		< 0.5				5
1,3-Dichloropropane		< 0.5				none
SYNTHETIC ORGANICS		7/28 + 10/27				
Di (2-ethylhexyl) Adipate		< 1.3				400
Di (2-ethylhexyl) Phthalate		< 1.3				6
Di-n-Butylphthalate		< 0.4				none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

WELL STATION	RAY								Reported	1-Feb-11					MAXIMUM CONTAMINANT LEVELS
DATE	7-Mar-1988	30-Aug-1989	12-Nov-1991	28-Jul-1992	6-Oct-1992	27-Jan-1993	11-May-1993	27-Jul-1993	19-Oct-1993	25-Jan-1994	26-Apr-1994	26-Jul-1994	10-Aug-1994	1-Nov-1994	31-Jan-1995	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH RETAKE FOR 3/27/93	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	IEL	
Organics Note:																
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL																
Bromoform			1.9	0.7				0.8				< 0.5				
Chloroform			3.7	7.4				6.5				7.7				
Dibromochloromethane			2.8	2.9				2.7				2.7				
Bromodichloromethane			2.9	4.6				3.9				4.7				
TOTAL			11.3	15.6				14.0				15.0				none
TRIHALOMETHANES																
Bromoform	< 0.5	**1.0**		**0.5**	< 0.5	< 0.5	< 0.5	**0.7**	< 0.5	< 0.5	**1.0**		< 0.5	< 0.5	< 0.5	
Chloroform	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.7**	< 0.5	**0.5**		< 0.5	< 0.5	**0.8**	
Dibromochloromethane	**0.9**	**1.6**		**1.0**	**0.6**	**0.5**	**0.7**	**1.0**	**1.3**	< 0.5	**0.7**		< 0.5	**0.5**	**1.6**	
Bromodichloromethane	< 0.5	**0.8**		**0.6**	< 0.5	< 0.5	< 0.5	**0.6**	**0.9**	< 0.5	**1.3**		< 0.5	< 0.5	**1.4**	
TOTAL TRIHALOMETHANES	**0.9**	**3.4**		**2.1**	**0.6**	**0.5**	**0.7**	**2.3**	**2.9**	< 2.0	**3.5**		< 2.0	0.5	**3.8**	80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5		**0.6**	< 0.5	< 0.5	**0.5**	**1.2**	**1.0**	< 0.5	< 0.5		< 0.5	< 0.5	**2.2**	200
Tetrachloroethene	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate															< 0.6	400
Di (2-ethylhexyl) Phthalate															< 0.6	6
Di-n-Butylphthalate															< 1.3	none

WELL STATION	RAY (CONTINUED)														MAXIMUM CONTAMINANT LEVELS
DATE	2-May-1995	25-Jul-1995	25-Jul-1995	30-Jan-1996	30-Jul-1996	28-Jan-1997	6-May-1997	19-Aug-1997	27-Aug-1997	23-Mar-1998	26-Jan-1999	3-Aug-1999	26-Oct-1999	1-Feb-2000	25-Jul-2000	
Organics Lab	IEL	IEL	IEL	IEL	Coffey	Coffey	Coffey	MWL	Laucks	Laucks	Laucks	Anatek	Anatek	County(NCA)	Anatek	
Organics Note:																
Sampled by:	R. Butts	R. Reid	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	Roy Butts	Roy Butts	Roy Butts	Roy Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL										21-Jul-98						
Bromoform			0.8		< 0.5				1.2	1.1		< 0.5			1.3	
Chloroform			39.3		10.0				13.0	11.0		6.2			11.0	
Dibromochloromethane			1.1		< 0.5				5.3	3.1		2.0			3.4	
Bromodichloromethane			8.2		< 0.5				8.2	4.7		3.6			4.1	
TOTAL			49.4		10.0				27.7	19.9		11.8			19.8	none
TRIHALOMETHANES																
Bromoform	**1.2**	**1.0**		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
Chloroform	< 0.5	**0.8**		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
Dibromochloromethane	< 0.5	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
Bromodichloromethane	**0.9**	**0.8**		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		
TOTAL TRIHALOMETHANES	**2.1**	**2.6**		< 2.0		< 2.0				< 2.0	< 2.0			< 2.0		80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	**1.6**	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		200
Tetrachloroethene	< 0.5	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5		< 0.5				< 0.5	< 0.5			< 0.5		none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate							< 0.3	< 0.6				< 1.3	< 1.3			400
Di (2-ethylhexyl) Phthalate							< 1.1	< 0.6				< 1.3	< 1.3			6
Di-n-Butylphthalate								< 0.6*				< 0.4	< 0.4			none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples, but also in the laboratory blank during this test round.

WELL STATION **RAY** Reported 1-Feb-11

											MAXIMUM CONTAMINANT LEVELS
DATE	31-Jul-2001	13-Aug-02	29-Jul-2003	2004	2005	2006	2007	2008	2009	2010	
Organics Lab	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:											
Sampled by:	R. Butts	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard	Graf/Greenlund	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL				27-Jul-04	26-Jul-05	25-Jul-06	31-Jul-07	29-Jul-09	28-Jul-09	27-Jul-10	
Bromoform	< 0.5	< 0.5	< 0.5	0.8	< 0.5	0.9	< 0.5	0.59	< 0.5	0.6	
Chloroform	16.0	8.6	6.1	11.9	7.3	8.4	5.2	5.29	5.03	9.16	
Dibromochloromethane	1.0	3.6	2.1	2.5	2.3	2.3	2.1	2.37	2.13	2.99	
Bromodichloromethane	1.9	5.7	3.9	4.1	3.5	3.3	3.2	2.93	3.23	6.41	
TOTAL	18.9	19.0	12.1	19.3	13.1	14.9	10.5	11.2	10.4	19.2	none
TRIHALOMETHANES			28-Jan-2003			31-Jan-06			27-Jan-09		
Bromoform	< 0.5		< 0.5			< 0.5			< 0.5		
Chloroform	< 0.5		< 0.5			< 0.5			< 0.5		
Dibromochloromethane	< 0.5		< 0.5			< 0.5			< 0.5		
Bromodichloromethane	< 0.5		< 0.5			< 0.5			< 0.5		
TOTAL TRIHALOMETHANES	< 2.0		< 2.0			< 2.0			< 2.0		80
VOLATILE ORGANICS											
1,1,1-Trichloroethane	< 0.5		< 0.5			< 0.5			< 0.5		200
Tetrachloroethene	< 0.5		< 0.5			< 0.5			< 0.5		5
1,3-Dichloropropane	< 0.5		< 0.5			< 0.5			< 0.5		none
SYNTHETIC ORGANICS			Jul & Oct 2003			7/25 + 10/31			7/28 + 10/27		
Di (2-ethylhexyl) Adipate			< 1.3			< 1.3			< 1.3		400
Di (2-ethylhexyl) Phthalate			< 1.3			< 1.3			< 1.3		6
Di-n-Butylphthalate			< 0.4			< 0.4			< 0.4		none

	MAXIMUM CONTAMINANT LEVELS
	none
	80
	200
	5
	none
	400
	6
	none

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

WELL ELECTRIC

WELL STATION									Reported	1-Feb-11						MAXIMUM CONTAMINANT LEVELS
DATE	31-May-88	30-Aug-89	12-Nov-91	28-Jul-92	27-Jul-93	19-Oct-93	26-Jul-94	31-Jan-95	25-Jul-95	30-Jul-96	07-Aug-96	19-Aug-97	27-Aug-97	18-Aug-98	18-Nov-98	
Organics Lab	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	WADOH	IEL	IEL	Coffey	Coffey	MWL	Laucks	MWL	Anatek	
Organics Note:											Resample					
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Reid	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL														21-Jul-98		
Bromoform			< 0.5	< 0.5			< 0.5		< 0.5	< 0.5			0.4	< 0.5		
Chloroform			11.8	11.1	4.2		6.2		15.0	10.0			5.0	6.6		
Dibromochloromethane			1.6	1.1	0.7		1.0		< 0.5	< 0.5			1.4	0.8		
Bromodichloromethane			3.7	3.0	1.3		2.3		3.2	< 0.5			2.3	1.3		
TOTAL			17.1	15.2	6.0		10.0		18.2	10.0			9.1	8.7		none
TRIHALOMETHANES																
Bromoform	< 0.5	< 0.5		< 0.5		< 0.5					< 0.5					
Chloroform	**0.5**	**0.9**		< 0.5		< 0.5					< 0.5					
Dibromochloromethane	**0.8**	**0.7**		< 0.5		**0.7**					< 0.5					
Bromodichloromethane	**0.7**	**0.6**		< 0.5		**0.6**					< 0.5					
TOTAL TRIHALOMETHANES	**2.0**	**2.2**		< 2.0		**1.3**					< 2.0					80
VOLATILE ORGANICS																
1,1,1-Trichloroethane	< 0.5	< 0.5		< 0.5		< 0.5					< 0.5					200
Tetrachloroethene	< 0.5	< 0.5		< 0.5		< 0.5					< 0.5					5
1,3-Dichloropropane	< 0.5	< 0.5		< 0.5		< 0.5					< 0.5					none
SYNTHETIC ORGANICS																
Di (2-ethylhexyl) Adipate								< 0.6				< 0.6		< 1.3	< 1.3	400
Di (2-ethylhexyl) Phthalate								< 0.6				< 0.6		< 1.3	< 1.3	6
Di-n-Butylphthalate								< 1.3				< 0.6*		< 0.6	< 0.4	none

WELL ELECTRIC (CONTINUED)

WELL STATION															MAXIMUM CONTAMINANT LEVELS
DATE	03-Aug-99	26-Oct-99	22-Dec-99	25-Jul-00	31-Jul-01	13-Aug-02	29-Jul-2003	27-Jul-04	2005	2006	2007	2008	2009	2010	
Organics Lab	County (NCA)	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	Anatek	
Organics Note:															
Sampled by:	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	R. Butts	Wisely	Cribbins	Woodfill	Casci	Graf/Rickard	Graf/Rickard	Rickard	Graf/Greenlund	
MAXIMUM TOTAL TRIHALOMETHANE POTENTIAL									26-Jul-05	25-Jul-06	25-Jul-07	29-Jul-08	28-Jul-09	27-Jul-10	
Bromoform	< 0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.9	< 0.5	< 0.5	< 0.5	< 0.5	
Chloroform	5.3			11.6	10.2	7.0	6.5	9.4	8.6	8.4	4.41	4.35	3.58	8.81	
Dibromochloromethane	0.8			1.1	< 0.5	1.2	1.0	1.0	1.0	2.3	0.77	0.96	0.98	1.12	
Bromodichloromethane	2.2			1.9	0.9	2.6	2.5	2.1	2.4	3.3	1.63	1.51	1.90	2.9	
TOTAL	8.3			14.6	11.1	10.8	10.0	12.5	12.0	14.9	6.81	6.82	6.46	12.8	none
TRIHALOMETHANES							6-May-2003			25-Jul-2006				26-Jan-10	
Bromoform	< 0.5		< 0.5				< 0.5			< 0.5				< 0.5	
Chloroform	< 0.5		< 0.5				< 0.5			< 0.5				< 0.5	
Dibromochloromethane	< 0.5		< 0.5				< 0.5			< 0.5				< 0.5	
Bromodichloromethane	< 0.5		< 0.5				< 0.5			< 0.5				< 0.5	
TOTAL TRIHALOMETHANES	< 2.0		< 2.0				< 2.0			< 2.0				< 2.0	80
VOLATILE ORGANICS															
1,1,1-Trichloroethane	< 0.5		< 0.5				< 0.5			< 0.5				< 0.5	200
Tetrachloroethene	< 0.5		< 0.5				< 0.5			< 0.5				< 0.5	5
1,3-Dichloropropane	< 0.5		< 0.5				< 0.5			< 0.5				< 0.5	none
SYNTHETIC ORGANICS							Jul 29 & Oct 21			Jul & Oct 2006			7/28 & 10/27		
Di (2-ethylhexyl) Adipate	< 1.3	< 1.3					< 1.3			< 1.3			< 1.3		400
Di (2-ethylhexyl) Phthalate	< 1.3	< 1.3					< 1.3			< 1.3			< 1.3		6
Di-n-Butylphthalate	< 0.4	< 0.4					< 0.4			< 0.4			< 0.4		none
Di-methyl Phthalate										**0.70 ****					non-regulated

ALL RESULTS ARE REPORTED IN µg/L (i.e. parts per billion)

* Di-n-Butylphthalate was detected at very low levels in a number of samples and in the laboratory blank during one test round.

* * detected in 10/31/2006 sampling. No detection in re-sample and considered to be a laboratory contamination.

Appendix VII - Information Collection Rule - Sampling Sites

Site # 1 - Raw Source Water from Parkwater Station	Raw water prior to any treatment or distribution
Site # 8 - Treated (chlorinated) Water sampled at the Parkwater Station	sampled at the source just following treatment by chlorination
Site # 9 - Treated (chlorinated) Water held to simulate residence time of Site #50 (1-2 hrs)	newly treated water held in a container to simulate a short residence time in the distribution system (similar to residence time at site # 50)
Site # 50 - Water sampled in distribution system - 1923 N. Waterworks Rd.	approximately 1-2 hour residence time in distribution system
Site # 51 - Water sampled in distribution system - Fire Stn. #3, 1713 N. Ash	approximately midway in the main distribution system
Site # 52 - Water sampled in distribution system - Fire Stn. #4, 8 S. Adams	approximately midway in the main distribution system
Site # 55 - Water sampled in distribution system - Jensen Distribution Services - Aero Road (West Plains area)	sample point to represent the extreme distance (longest residence time) of the distribution system

Appendix VII - Information Collection Rule - 1998 Sampling Results

SITE >		*# 01*		*# 08*		*# 09*		*# 50*		*# 51*		*# 52*		*# 55*	
TEST	*UNITS*	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.	No. of tests	max. conc.
UV-254	cm - 1	12	0.01	12	0.009										
NH3-	mg/L	12	< 0.3												
Bromide	mg/L	12	< 0.3												
Alkalinity	mg CaCO3/L	12	160	13	160	4	160	4	150	4	160	4	150	3	140
Calcium Hardness	mg CaCO3/L	12	110	13	95	4	94	4	95	4	92	4	90	3	88
Total Hardness	mg CaCO3/L	12	190	13	170	4	170	4	170	4	160	4	160	3	140
TOC	mg/L	12	< 0.7	11	< 0.7										
TOX	ug Cl-/L	4	< 50	5	51	4	< 50	4	< 50	4	< 50	4	< 50	3	< 50
Chloroform	ug/L			5	< 1.0	4	< 1.0	3	< 1.0	3	< 1.0	3	< 1.0	2	< 1.0
Trichloroacetonitrile	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Dichloroacetonitrole	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Bromodichloromethane	ug/L			4	< 1.0	3	< 1.0	3	< 1.0	3	< 1.0	3	< 1.0	2	1.5
1,1-Dichloro-2-propanone	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Chloropicrin	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Dibromochloromethane	ug/L			5	< 1.0	4	< 1.0	3	< 1.0	3	< 1.0	3	1.0	2	2.0
Bromochloroacetonitrile	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
1,1,1-Trichloro-2-propanone	ug/L			5	< 0.5	4	0.7	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Bromoform	ug/L			5	1.3	4	< 1.0	3	< 1.0	3	1.5	3	1.8	2	< 1.0
Dibromoacetonitrile	ug/L			5	< 0.5	4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5
Monochloroacetic Acid	ug/L			4	< 2.0	4	< 2.0	4	< 2.0	4	3.5	4	< 2.0	3	5.8
Monobromoacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Dichloroacetic Acid	ug/L			4	< 1.0	4	1.2	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Trichloroacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Bromochloroacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	4	< 1.0	3	< 1.0
Dibromoacetic Acid	ug/L			4	< 1.0	4	< 1.0	4	1.0	4	< 1.0	4	< 1.0	3	< 1.0
Chloral Hydrate	ug/L			4	< 0.5	3	< 0.5	4	< 0.5	4	< 0.5	3	< 0.5	3	< 0.5

Appendix VIII - Unregulated Contaminant Monitoring Rule - Round 1 (UCMR 1)

List 1 Contaminants	2,4 - dinitrotoluene	EPTC	Nitrobenzene	Perchlorate
	2,6 - dinitrotoluene	Molinate	MtBE	Terbacil
	Acetochlor	4,4' - DDE	DCPA, mono & di acid degradate	
*List 2 Contaminants **	1,2-diphenylhydrazine	2-methyl-phenol	2,4-dichlorophenol	2,4-dinitrophenol
	2,4,6-trichlorophenol	Diazinon	Disulfoton	Diuron
	Fonofos	Linuron	Nitrobenzene	
	Prometon	Terbufos	Aeromonas spp. *	

List 1 Monitoring Sites Treated Source Water from All Well Stations

List 2 Monitoring Sites

MD - Fire Station #3 - 1713 W. Indiana	mid-point representation of the residual disinfectant in the distribution system
LD - Shawnee Tank	monitoring point representative of the lowest residual disinfectant in the distribution system
MR - Fairways Golf Course	the most distal point in the distribution system representing the maximum residence time in the distribution system

UCMR 1 - sampling results

	2002 - 3rd qtr	2002 - 4th qtr	2003 - 1st qtr		2003 - 2nd qtr			2003 - 3rd qtr			2003 - 4th qtr	
	AUG	NOV	JAN	FEB	APR	5/1 TO MAY	JUN	JULY	AUG	SEPT	OCT	DEC
List 1	2002	2002	2003	2003	2003	2003	2003	2003	2003	2003	2003	2003
CENTRAL		no detection				no detection						
GRACE						no detection					no detection	
HOFFMAN								no detection				no detection
NEVADA						no detection					no detection	
PARKWATER		no detection				no detection						
RAY		no detection				no detection						
WELL ELECTRIC	no detection	no detection		no detection		no detection						
List 2 - Aeromonas spp. only *												
MD - FIRE STATION #3			< 0.2		< 0.2			< 0.2	< 0.2	< 0.2	< 0.2	
LD - SHAWNEE TANK			< 0.2		< 0.2			< 0.2	< 0.2	< 0.2	< 0.2	
MR - FAIRWAYS GOLF COURSE			< 0.2		< 0.2			< 0.2	< 0.2	< 0.2	< 0.2	

* The City of Spokane was selected to sample and test for the microbial contaminant only.

* * For much of the United States east of the Rocky Mountains, many studies have shown the season of greatest vulnerability for contaminant occurrence is the late-spring, early-summer runoff-recharge period. (EPA 815-R-99-007, Tech. Bkgrd Info for UCMR)

Appendix IX - Viral Investigation Reported 5-Feb-2007

	WELL	Source water	Nevada	Parkwater	Grace	Nevada	Ray St.	Parkwater	Well Electric	Grace	Grace	Well Electric	Well Electric	Nevada
		DATE	3-May-2006	3-May-2006	3-May-2006	25-Jul-06	25-Jul-06	25-Jul-06	25-Jul-06	15-Aug-06	31-Oct-06	31-Oct-06	30-Jan-07	30-Jan-07
		TIME	9:30	8:45	9:15:00	8:35:00	9:15:00	10:40:00	10:00	10:30	10:20		10:15	8:40
	WATER	ELEVA.(FT)	1880.8	1897.6	1879.4	1870.9	1878	1883.4	1893.1	1871.5	1875.1	1895.6	1883.9	1895.9
		GPM.WELL	10215	0	8650	3035	6700	6850	8750	8000	8030	8400	3880	8750
		GPM.FIELD	20215	0	8650	21700	11700	34000	8750	8000	8030	8400	3880	8750
	FIELD													
		Cl.RES.F	-		-	0.24	0.3			0.2	0.21	0.36	0.20	
		COND.F	247	355	240	259	358	358	306	209	271	296	258	314
		pH.F	8.37	7.9	8.4	7.66	7.59	7.71	7.67	7.97	7.67	7.66	7.76	7.79
		TEMP(C).F	12.0	10.5	12.0	15.5	12.5	11	11.5	10.5	11	10.5	12.0	11.0
		TURB.F	0.21	0.1	0.11	0.22	0.15	0.42	0.19	0.27	0.21	0.13	0.11	0.17
		BACT.LAB	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD	SWD
		BBY	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Casci	Graf	Graf
		COLIFORM, FECAL,Raw Source Water	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
		COLIFORM, TOTAL, Raw Source Water	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	3	1	< 1	< 1
		HETEROTROPHIC PLATE COUNT, Raw Source Water	1	1	1	2	9	2	1	0.5	0.5	1	1	1
Viral Investigation														
		EPA meth. 1601 - Famp (p/a, Host: E. coli 15597)	absent	absent	**present**	absent	absent	absent	absent	absent	absent	absent	absent	absent
		EPA meth. 1601 - CN13 (p/a, Host: E. coli 15597)	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent

Appendix X - Unregulated Contaminant Monitoring Rule - Round 2 (UCMR 2)

2/3/2011

List 1 Contaminants	Dimethoate	BDE-99	BDE-100	RDX
	Terbufos sulfone	HBB	1,3-dinitrobenzene	
	BDE-47	BDE-153	2,4,6-trinitrotoluene (TNT)	
List 2 Contaminants	Acetochlor	Acetochlor oxanilic acid (OA)	Metolachlor oxanilic acid (OA)	N-nitroso-di-n-propylamine (NDPA)
	Alachlor	Alachlor ethane sulfonic acid (ESA)	N-nitroso-diethylamine (NDEA)	N-nitroso-methylethylamine (NMEA)
	Metolachlor	Alachlor oxanilic acid (OA)	N-nitroso-dimethylamine (NDMA)	N-nitroso-pyrrolidine (NPYR)
	Acetochlor ethane sulfonic acid (ESA)	Metolachlor ethane sulfonic acid (ESA)	N-nitroso-di-n-butylamine (NDBA)	

List 1 Monitoring Sites Treated Source Water from All Well Stations

List 2 Monitoring Sites Treated Source Water from All Well Stations
For nitrosamines, the sampling locations are both the well stations and a maximum residence time in the distribution system (MR) point(s) associated with the well stations.

UCMR 2 - sampling results

List 1 And List 2	July 2009	August 2009	September 2009	October 2009	November 2009	December 2009	January 2010	February 2010	March 2010	April 2010	May 2010	June 2010
CENTRAL	no detection						no detection					
GRACE	no detection									no detection		
HOFFMAN	no detection									no detection		
NEVADA	no detection						no detection					
PARKWATER	no detection						**NDMA 0.00216 µg/L**					
RAY	no detection						no detection					
WELL ELECTRIC	no detection						no detection					
BPA Easment *	no detection						no detection					

* tested for nitrosamines only

* * For much of the United States east of the Rocky Mountains, many studies have shown the season of greatest vulnerability for contaminant occurrence is the late-spring, early-summer runoff-recharge period. (EPA 815-R-99-007, Tech. Bkgrd Info for UCMR)

CONTAMINANTS FOUND IN DRINKING WATER TESTING IN 2010

CITY OF SPOKANE, WATER & HYDROELECTRIC SERVICES

Data presented, if not from 2010, is from the most recent testing done in accordance with the regulations.

SOURCE WATER TESTING CONTAMINANT	Units	Highest Average	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Arsenic	µg/L	**(a)**	**5.1**	**2.2**	**12**	**12**	**10**	**0**	**Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes**
Nitrate	mg/L	**(a)**	**3.53**	**0.80**	**10**	**10**	**10**	**10**	**Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits**
Gross Alpha	pCi/L	**(a)**	**6.1**	**2.1**	**7**	**7**	**15**	**0**	**Erosion of natural deposits**
Combined Radium 226 and 228 (b)	pCi/L	**(a)**	**4.7**	**ND**	**6**	**7**	**5**	**0**	**Erosion of natural deposits**
Unregulated Contaminant Monitoring									
N-nitroso-dimethylamine (NDMA)	µg/L		**0.00216**	**ND**	**1**	**14**	**N/A**	**N/A**	**By-products in chemical synthesis and manufacture of rubber, leather and plastics; can form by reaction of precursor amines with nitrosing agents, or by action of nitrate-reducing bacteria. Foods such as bacon and malt beverages can contain them. May form in the upper GI tract.**

DISTRIBUTION SYSTEM TESTING CONTAMINANT	Units	Highest Average	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Disinfection Byproducts - TTHMs [Total Trihalomethanes] (c)	µg/L	**1.24**	**1.85**	**0.51**	**7**	**14**	**80**	**0**	**By-product of drinking water chlorination**

CONTAMINANT	MCL	MCLG	Highest Percent Detected	Sample Date	Violation	
Fecal Coliform	5% of monthly samples positive	0	0.60%	one detection on July 20, 2010	No	**Naturally present in the environment**

		date sampled	90th Percentile (e)	Number of Sites exceeding AL	Number Positive Samples	Number of Samples	MCL	MCLG	
Copper (d)	mg/L	**Jul-09**	**0.10**	**0**	**56**	**56**	**TT, AL= 1.3**	**1.3**	**Corrosion of household plumbing systems; Erosion of natural deposits: Leaching from wood preservatives**
Lead (d)	µg/L	**Jul-09**	**5.70**	**0**	**56**	**56**	**TT, AL= 15**	**0**	**Corrosion of household plumbing systems; Erosion of natural deposits**

Notes

(a) Compliance with MCL is determined by single sample results, so no average is used.

(b) Radium 228 was below the Federal detection limit of 1 pCi/L and Gross Alpha results were used in lieu of Radium 226 except for Parkwater which had non detect for radium 226

(c) Detected maximum and min. include results from Stage 2 DBP Rule testing

(d) Faucet samples were from 'at risk' homes (those with lead service lines and those with copper pipes with lead solder joints).

(e) 90% of at-risk homes had this concentration, or less, of lead/copper.

Key to Table

AL = Action Level = The concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow.
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.
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.
pCi/L = picocuries per liter (a measure of radioactivity)
µg/L = micrograms per Liter = parts per billion
mg/L =milligrams per Liter = parts per million
TT = Treatment Technique = A required process intended to reduce the level of a contaminant in drinking water.
ND = None Detected
<= - less than or equal to

Appendix 6.4.5 Water Quality Monitoring Schedule

Washington State Department of Health
Environmental Public Health
Office of Drinking Water

Water Quality Monitoring Schedule

System: SPOKANE, CITY OF
Contact: Daniel R Kegley

PWS ID: 83100 K
Group: A - Comm

Region: EASTERN
County: SPOKANE

NOTE: To receive credit for compliance samples, you must fill out laboratory and sample paperwork completely, send your samples to a laboratory accredited by Washington State to conduct the analyses, AND ensure the results are submitted to DOH Office of Drinking Water. There is often a lag time between when you collect your sample, when we credit your system with meeting the monitoring requirement, and when we generate the new monitoring requirement.

Coliform Monitoring Requirements

	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015
Coliform Monitoring Population	227505	227505	227505	227505	227505	227505	227505	227505	227505	227505	227505	227505
Number of Routine Samples Required	150	150	150	150	150	150	150	150	150	150	150	150

- Collect samples from representative points throughout the distribution system.
- Collect required repeat samples following an unsatisfactory sample. In addition, collect a sample from each operating groundwater source.
- Collect no less than 5 routine samples in the month following one or more unsatisfactory samples, in accordance with your system's Coliform Monitoring Plan.
- For systems that chlorinate, record chlorine residual (measured when the coliform sample is collected) on the coliform lab slip.

Chemical Monitoring Requirements

Distribution Monitoring

Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Lead and Copper	50	Jan 2013 - Dec 2015	standard - 3 year	08/08/2012	***Aug 2015***

Notes on Distribution System Chemical Monitoring

For *Lead and Copper*:
- Collect samples from indoor faucets after the water has sat unused in the pipes for at least 6 hours, but no more than 12 hours.
- Flush sample faucets with cold water the evening prior to collecting the sample.
- If your sampling frequency is annual or once every 3 years, collect samples between June 1 and September 30.

Source Monitoring

- Collect 'source' chemical monitoring samples from a tap after all treatment (if any), but before entering the distribution system.
- Washington State grants monitoring waivers for various test panels or analytes. Please note that we may require some monitoring as a condition of some waivers. We have granted complete waivers for dioxin, endothal, glyphosate, diquat, and insecticides.
- If "R&C" is listed in a monitoring requirement's frequency, the requirements are based on detections which are reliably and consistently below the health standard.

Source S01 *Nevada St - AHC725* | *Well* | *Use - Permanent* | *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Nitrate	1	Jan 2015 - Dec 2015	standard - 1 year	07/29/2014	***Jul 2015***
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	07/31/2012	
Volatile Organics (VOC)	1	Jan 2014 - Dec 2016	standard - 3 year	07/29/2014	
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	07/31/2012	Jul 2021
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	07/31/2012	Jul 2021
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	07/31/2012	
Gross alpha	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		Apr 2016
Radium 228	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		Apr 2016

Source S02 *Well Electric - AHC996* | *Well* | *Use - Permanent* | *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Nitrate	1	Jan 2015 - Dec 2015	standard - 1 year	07/29/2014	***Jul 2015***
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	07/30/2013	
Volatile Organics (VOC)	1	Jan 2014 - Dec 2019	waiver - 6 year	07/31/2012	Jul 2018
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	10/30/2012	Oct 2021
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	10/30/2012	Oct 2021
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	10/30/2012	
Gross alpha	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		***Jul 2015***
Radium 228	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		***Jul 2015***

Source S03 *Park Water - AHC722* | *Well* | *Use - Permanent* | *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Nitrate	1	Jan 2015 - Dec 2015	standard - 1 year	07/29/2014	***Jul 2015***
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	07/31/2012	

Source S03	*Park Water - AHC722*	*Well*	*Use - Permanent*	*Susceptility - High*	
Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Volatile Organics (VOC)	1	Jan 2014 - Dec 2016	standard - 3 year	01/31/2012	Feb 2016
Herbicides	1	Jan 2014 - Dec 2016	waiver - 3 year	10/30/2012	Feb 2016
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	10/30/2012	Feb 2016
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	10/30/2012	
Gross alpha	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		
Radium 228	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		

Source S04	*Ray St - AHC723*	*Well*	*Use - Permanent*	*Susceptility - High*	
Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Nitrate	1	Jan 2015 - Dec 2015	R&C - 1 year	10/28/2014	***Oct 2015***
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	07/31/2012	
Volatile Organics (VOC)	1	Jan 2014 - Dec 2016	standard - 3 year	01/31/2012	Feb 2016
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	10/30/2012	Oct 2021
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	10/30/2012	Oct 2021
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	10/30/2012	
Gross alpha	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		
Radium 228	1	Jan 2014 - Dec 2016	Baseline - 3 year Compliance Period		

Source S05	*Hoffman Ave - AHC728*	*Well*	*Use - Seasonal*	*Susceptility - High*	
Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Nitrate	1	Jan 2015 - Dec 2015	standard - 1 year	07/29/2014	***Jul 2015***
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	07/29/2014	
Volatile Organics (VOC)	1	Jan 2014 - Dec 2016	standard - 3 year	07/30/2013	***Jul 2015***
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	07/29/2014	
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	07/29/2014	
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	07/29/2014	
Gross alpha	1	Jan 2014 - Dec 2019	standard - 6 year		Jul 2019
Radium 228	1	Jan 2014 - Dec 2019	standard - 6 year		Jul 2019

Source S06	*Grace Ave - AHC724*	*Well*	*Use - Seasonal*	*Susceptility - High*	
Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Nitrate	1	Jan 2015 - Dec 2015	standard - 1 year	07/29/2014	***Jul 2015***
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	07/29/2014	
Volatile Organics (VOC)	1	Jan 2014 - Dec 2016	standard - 3 year	07/30/2013	***Jul 2015***
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	07/29/2014	
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	07/29/2014	
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	07/29/2014	
Gross alpha	1	Jan 2014 - Dec 2019	standard - 6 year		Jul 2018
Radium 228	1	Jan 2014 - Dec 2019	standard - 6 year		Jul 2018

Source S08	*Central Ave - AHC726*	*Well*	*Use - Permanent*	*Susceptility - High*	
Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*
Nitrate	1	Jan 2015 - Dec 2015	standard - 1 year	07/29/2014	***Jul 2015***
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	07/30/2013	
Volatile Organics (VOC)	1	Jan 2014 - Dec 2016	standard - 3 year	01/28/2014	
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	10/28/2014	
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	10/28/2014	
Soil Fumigants	0	Jan 2014 - Dec 2016	waiver - 3 year	10/28/2014	
Gross alpha	1	Jan 2014 - Dec 2019	standard - 6 year		Apr 2019
Radium 228	1	Jan 2014 - Dec 2019	standard - 6 year		Apr 2019

Other Information

Other Reporting Schedules	Due Date
Measure chlorine residuals and submit monthly reports if your system uses continuous chlorination:	monthly
Submit Consumer Confidence Report (CCR) to customers and ODW (Community systems only):	07/01/2015
Submit CCR certification form to ODW (Community systems only):	10/01/2015
Submit Water Use Efficiency report online to ODW (Community and other municipal water systems only):	07/01/2015
Send notices of lead and copper sample results to the customers sampled:	30 days after you receive the laboratory results
Submit Certification of customer notification of lead and copper results to ODW:	90 days after end of monitoring period

Special Notes

None

Eastern Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:	Stan Hoffman: (509) 329-2132: or Stan.Hoffman@doh.wa.gov
For questions regarding DBPs:	Russell Mau: (509) 329-2116 or russell.mau@doh.wa.gov
For questions regarding coliform bacteria and microbial issues:	Mark Steward: (509) 329-2134 or Mark.Steward@doh.wa.gov

Additional Notes

The information on this monitoring schedule is valid as of the date in the upper left corner on the first page. However, the information may change with subsequent updates in our water quality monitoring database as we receive new data or revise monitoring schedules. There is often a lag time between when you collect your sample and when we credit your system with meeting the monitoring requirement.

We have not designed this monitoring schedule to display all compliance requirements. The purpose of this schedule is to assist water systems with planning for most water quality monitoring, and to allow systems to compare their records with DOH ODW records. Please be aware that this monitoring schedule does not include constituents that require a special monitoring frequency, such as monitoring affiliated with treatment.

Any inaccuracies on this schedule will not relieve the water system owner and operator of the requirement to comply with applicable regulations.

If you have any questions about your monitoring requirements, please contact the regional office staff listed above.

Appendix 6.4.6 Vulnerability Assessment and Susceptibility Rating

Susceptibility Assessments and Monitoring Waivers For Public Water Supplies

EPA and Vulnerability:

In 1986 Congress passed amendments to the Safe Drinking Water Act (SDWA). These amendments have been implemented in phases. The most recent phases to be implemented are Phase II and Phase V, which go into effect between 1993 and 1995. Phase II and V deal mainly with volatile organic and synthetic organic compounds (VOCs and SOCs). Under Phase II & V the monitoring requirements for these compounds are significantly increased for public water systems. Realizing that the increased monitoring requirements can be very costly to water systems, EPA has allowed states to reduce or waive monitoring requirements depending upon how vulnerable the water system's sources are to contamination. That is, those sources which are vulnerable to contamination will have more monitoring requirements while those sources that are not vulnerable will have reduced or no monitoring required for many chemicals. The Washington State Department of Health (DOH) will actively pursue vulnerability assessments in order to eliminate unnecessary testing while still being fully protective of human health.

What is Vulnerability?

Vulnerability can be thought of as a water source's potential for contamination. Vulnerability is composed of two factors: the source's physical susceptibility to the infiltration of contaminants; and, the source's risk of exposure to contaminants. **Susceptibility** is determined by conditions that affect the movement of contaminants from the land surface into a water supply. This would include the depth of the well, its construction, the geology of the area, the pumping rate, the sources of ground water recharge, and the aquifer material. The **risk of exposure** to contaminants is determined by whether or not contaminants were used in the area of a water supply. However, each type of contaminant may behave differently in the environment, making it difficult to accurately predict ground water pollution from surface exposure. For this reason, susceptibility is the key factor used in determining vulnerability. When physical susceptibility data is incomplete, or where use of contaminants is highly unlikely, then vulnerability will be based more on risk of exposure.

Susceptibility Assessments

In order to determine a drinking water source's vulnerability to surface contamination DOH has developed the **Susceptibility Assessment Survey Form.** This survey form catalogs key susceptibility factors for each source in order to determine an overall susceptibility rating. The following information is needed to evaluate hydrologic susceptibility:

1) Well logs, or other indicators of aquifer characteristics,
2) Depth of open interval,
3) Date and description of construction,
4) Record of monitoring information (inorganic, nitrates, bacteria, and VOCs),
5) A specific (and accurate) location,
6) Water level information,
7) Estimate of wellhead elevation,
8) A general evaluation of land-use surrounding the wellhead, and
9) Size of water system.

Monitoring Waivers

Depending on the results of the susceptibility assessment, DOH may waive some or all of the monitoring requirements for many chemicals. This is considered to be a "susceptibility waiver". If susceptibility information is incomplete for a source, the water system can apply for a "contaminant use waiver", which evaluates the potential for contamination depending upon the use of chemical contaminants in the source's recharge area. "State-wide waivers" may also be granted for chemicals not commonly used in the state (such as dioxin).

Another type of waiver currently being developed is the "area waiver". For this type of waiver, DOH would develop a testing program throughout the state which would provide information on areas where the risk of contamination is high. Susceptible systems within these areas will be required to do the monitoring, whereas sampling will be reduced or waived in areas where there is little evidence that contamination may be expected. The 1994 legislature passed a bill directing DOH to develop this area waiver program. Participation in the area-waiver program is voluntary. If a system chooses not to participate, it must complete the required sampling or use one of the other waiver options. For many susceptible systems, the area-wide waivers will provide a less expensive and less time consuming alternative to either the required sampling or individual waivers.

All of the waiver options will have some sort of fee attached to them. The development of the waiver program and its implementation has and will have a significant impact on DOH resources. The review and evaluation of these waivers will require DOH review and approval. If a system chooses not to pursue a waiver, there is of course no fee. The proposed costs for the vulnerability waivers will be based on the time it takes the department to review and evaluate the waiver request. The department is in the process of determining its costs and establishing the waiver fee schedule. At this time the expected fee for the susceptibility assessment portion of a waiver will be under $100.00 and may be as low as $50.00. Contaminant Use waivers and the new Area waivers will generally cost more than Susceptibility waivers, but are still expected to offer systems savings over the cost of full monitoring.

The fees associated with the new area waiver program are based on the direction provided by the legislation. Under the legislation DOH will receive a loan to fund this program. Those systems that benefit from this waiver option will be charged a fee in order to recoup the cost of the program. The economics of this area waiver approach will allow many systems to benefit from a waiver without having to conduct extensive contaminant inventories or monitoring. As information on the area waiver program and waiver fees are finalized we will send you updates.

The fundamental building block of DOH's waiver program is the susceptibility assessment you have just received. **Regardless of the type of waiver you want to get, you must still complete the Susceptibility Assessment Survey Form.** There will be more information concerning waiver fees and options in April. For now, start gathering your susceptibility information, and plan on attending one of the workshops in your area. Plan on returning your completed Susceptibility Assessment Form by June 15, 1994.

STATE OF WASHINGTON

DEPARTMENT OF HEALTH

1500 West 4th Avenue, Suite 305 • Spokane, Washington 99204
FAX (509) 456-2997

April 6, 1995

Attn: Lloyd Brewer
City of Spokane
Environmental Programs Dept.
2nd Floor City Hall
W. 808 Spokane Falls Blvd.
Spokane WA 99201-3334

ID# 83100K

Dear Lloyd:

As per our conversation this afternoon, you sampled for your first quarter of Synthetic Organic Chemicals for sources one through eight before March 31, 1995.

On January 23, 1995, we received the City of Spokane's Susceptibility Assessment Survey Forms for sources one through eight. The Susceptibility Assessment Survey forms have not been officially reviewed as of today, and you have not received a susceptibility rating.

You will be sent the official susceptibility rating for your sources within the next six weeks. If your system is rated moderate or high, you will be asked if you wish to apply for an area waiver. You should be able to save a substantial amount of money by applying for the area waiver.

Since we have received your susceptibility assessment forms, **you can delay taking any additional Synthetic Organic Chemical Samples until you receive your susceptibility rating and have a chance to review your Area Waiver Options and sampling requirements.**

Please feel free to call me if you have any further questions.

Sincerely

Anita L. Albi

Anita L. Albi
Water Quality Specialist
(509) 456-5067

cc: Tom Wells
Scott Fink
Dan Sander

RECEIVED
APR 07 1995
ENGINEERING SERVICES

1993 - 1995 MONITORING WAIVER SUMMARY
(REPORT DATE: 10/10/96)

ATER SYSTEM NAME: SPOKANE, CITY OF PWSID NO.: 83100 K

OUNTY: SPOKANE REGION: EA SYSTEM TYPE: COMM

SUSCEPTIBILITY RATING INFORMATION:

SOURCE NO.	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
1 S-01	H	1	31320	06/07/95	

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED	
1110	M	06/20/95	07/24/95	$995.00	525	515

SUSCEPTIBILITY RATING INFORMATION:

SOURCE NO.	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
2 S-02	H	0	31320	06/07/95	

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED	
1110	M	06/20/95	07/24/95	$995.00	525	515

1993 - 1995 MONITORING WAIVER SUMMARY
(REPORT DATE: 10/10/96)

TER SYSTEM NAME: SPOKANE, CITY OF PWSID NO.: 83100 K

UNTY: SPOKANE REGION: EA SYSTEM TYPE: COMM

SUSCEPTIBILITY RATING INFORMATION:

URCE D.	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
3 S-03	H	1	31320	06/07/95	

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED
1100	L	06/20/95	07/24/95	$995.00	

SUSCEPTIBILITY RATING INFORMATION:

RCE .	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
S-04	H	1	31320	06/07/95	

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED	
1111	M	06/20/95	07/24/95	$995.00	525	515

1993 - 1995 MONITORING WAIVER SUMMARY
(REPORT DATE: 10/10/96)

ATEP SYSTEM NAME: SPOKANE, CITY OF PWSID NO.: 83100 K

OUNTY: SPOKANE REGION: EA SYSTEM TYPE: COMM

SUSCEPTIBILITY RATING INFORMATION:

OURCE NO.	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
05	H	0	31320	06/07/95	

S-05

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED
1100	L	06/20/95	07/24/95	$995.00	

SUSCEPTIBILITY RATING INFORMATION:

OURCE NO.	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
06	H	1	31320	06/07/95	

S-06

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED	
1110	M	06/20/95	07/24/95	$995.00	525	515

1993 - 1995 MONITORING WAIVER SUMMARY
(REPORT DATE: 10/10/96)

ATER SYSTEM NAME: SPOKANE, CITY OF PWSID NO.: 83100 K

OUNTY: SPOKANE REGION: EA SYSTEM TYPE: COMM

SUSCEPTIBILITY RATING INFORMATION:

OURCE NO.	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
07	H	0	31320	06/07/95	

S-07 - WELL DECOMMISIONED

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED
1100	L	06/20/95	07/24/95	$995.00	

SUSCEPTIBILITY RATING INFORMATION:

URCE O.	SUSCEPTIBILITY RATING	VOC TESTS NEEDED	INVOICE NO.	INVOICE DATE	DATE PAID
8	H	1	31320	06/07/95	

S-08

AREA WAIVER INFORMATION: (for M & H susceptible sources only)

RISK CODE	VULNERABILITY RATING	INVOICE DATE	DATE PAID	AMOUNT	PESTICIDE TESTS REQUIRED
1100	L	06/20/95	07/24/95	$995.00	

Appendix 6.4.7 Ground Water Level Monitoring Sites

AQUIFER LEVEL MONITOR POINTS

Photo Number	Description
0538	Hale's Ales (Hale) Commerce & Fancher
0558	Felts Field (Felts)
0568	Central Premix '208' (CPM) Havana & Broadway
0570	Department of Transportation (DOT) Havana & Second
0594	Franklin Park (Fran) Atlantic & Queen
0611	Northeast Community Center (NECC) Cook & Walton
0616	Trinity Trough (Trin) Adams & Jackson
0621	Wastewater Treatment Plant (WWTP) 4401 N Aubrey L. White Parkway
0634	Marietta (Mari) Marietta & Denver

DSC_0538.JPG 2006/06/29 13:29:38.9

DSC_0558.JPG 2006/06/29 13:41:19.9

DSC_0568.JPG 2006/06/29 14:03:07.7

DSC_0570.JPG 2006/06/29 14:08:19.9

DSC_0594.JPG 2006/06/29 14:42:16

DSC_0611.JPG 2006/06/29 15:03:02

DSC_0616.JPG 2006/06/29 15:17:38.8

DSC_0621.JPG 2006/06/29 15:33:43

DSC_0634.JPG 2006/06/29 15:55:48

Appendix 6.4.8 Coliform Monitoring Plan

COLIFORM MONITORING PLAN

CITY OF SPOKANE WATER DEPARTMENT

PWS ID # 83100K
914 E. North Foothills Dr.
Spokane, WA 99207

24 hour contact phone	509 625-7800
Rick Romero, Utilities Director	509 625-6270 rromero@spokanecity.org
Dan Kegley, Interim Water Dept. Operations Director	509 625-7821 dkegley@spokanecity.org

WATER QUALITY LABORATORY
City of Spokane Water Department

Washington Certified Lab # M1932
EPA #01196, WDOH #152
N. 2701 Waterworks Avenue
Spokane, WA 99212

Stephen Burns, P.E., Interim Water Operations Supervisor	509 742-8155 (office) 509 939-8093 (mobile) sburns@spokanecity.org
Bill Rickard, Water Quality Coordinator	509 742-8166 (office) 509 720-3716 (mobile) brickard@spokanecity.org

Version 5.2 - Effective December 18, 2013

Table of Contents

System Information

Water Facilities Inventory (from submittal dated 02/12/2009 *)

1.	**System ID No.**	**83100 K**
2.	**System Name**	**Spokane, City of**
3.	**County**	**Spokane**
4.	**Group**	**A**
5.	**Type**	**Comm.**
6.	**Primary Contact Information**	**Dan Kegley (Interim Operations Director)** **914 E. North Foothills Dr.** **Spokane, WA 99207-2794**
7.	**Owner Name & Mailing Address**	**Spokane, City of** **Dan Kegley** **808 W. Spokane Falls Blvd** **Spokane, WA 99201-3317**
8.	**Owner No.**	**000830**
9.	**24 Hour Primary Contact Information**	**Primary Contact Daytime Phone: 509 625-7821** **Primary Contact Mobile/Cell Phone: 844-8450** **Primary Evening Phone: 509 625-7800** **Fax: 509 625-7816** **E-mail: dkegley@spokanecity.org**
10.	**Owner Contact Information**	**Owner Daytime Phone: 509 625-7821** **Owner Mobile/Cell Phone: 844-8450** **Owner Evening Phone: 509 625-7800** **Fax: 509 625-7816** **E-mail: dkegley@spokanecity.org**
11.	**Satellite Management Agency – SMA**	**Not applicable**
12.	**Water System Characteristics**	**Agricultural** **Commercial/Business** **Day Care** **Food Service/Foot Permit** **1,000 or more person event for 2 or more days per year** **Hospital/Clinic** **Industrial** **Licensed Residential Facility** **Lodging** **Recreational / RV Park** **Residential** **School** **Other (church, fire station, etc.)**
13.	**Water System Ownership**	**City/Town**
14.	**Storage Capacity (gallons)**	**105,176,000**

*** all information in this table is current, however permanent status of the Operations Director is anticipated to be determined at the beginning of 2014.**

Infrastructure Inventory

FACILITY NAME	TYPE	LOCATION
14th & Grand	Booster Station	1330 S. Grand Blvd
35th & Ray	Booster Station	3444 S. Ray St
9th & "E"	Booster Station	3230 W. 9th Ave
9th & Pine	Booster Station	24 E. 9th Ave
Abbott	Booster Station	2505 S. Abbott Rd
Belt Street	Booster Station	2202 W. Holyoke Ave
Bishop Court	Booster Station	1011 W. Bishop Ct
Cedar Hills	Booster Station	4920 S. Lincoln Way
Division-Manito	Booster Station	3519 W. Manito Blvd
Eagle Ridge	Booster Station	202 W. Eagle Ridge Blvd
Eagle Ridge II	Booster Station	1200 W. Eagle Ridge Blvd
Five Mile	Booster Station	6910 N. Belt St
Garden Park	Booster Station	2403 E. 37th Ave
Glennaire incl. Annex	Booster Station	4311 E. 57th Ave
Indian Hills	Booster Station	4225 W. Indian Trail Rd
Latah	Booster Station	12th Ave and Chestnut St
Lincoln Heights	Booster Station	2308 S. Ray St
Milton	Booster Station	2722 W. 15th Ave
Kempe (formerly N. 5-Mile Prairie)	Booster Station	
Shawnee	Booster Station	4400 W. Shawnee Ave
Southview	Booster Station	5601 S. Savannah
Spotted Rd	Booster Station	7512 W. Westbow
Sunset	Booster Station	4001 W. Canyon Dr (extended)
Thorpe Rd	Booster Station	3302 W. Thorpe Rd
Woodridge	Booster Station	10002 N. Wieber Dr
14th & Grand Standpipe	Reservoir	1330 S. Grand Blvd
33rd & Lamonte Elevated Tank	Reservoir	3216 S. Lamonte St
9th & Pine	Reservoir	8 E. 9th Ave
Browne Park #1	Reservoir	4327 E. 57th Ave
Browne Park #2	Reservoir	4327 E. 57th Ave

Cedar Hills	Reservoir	5202 S. Lincoln Way
Eagle Ridge	Reservoir	1200 W. Eagle Ridge Blvd
Eagle Ridge II	Reservoir	1000 W. Copper Ridge Blvd
Five Mile	Reservoir	2130 W. Woodside Ave
Garden Park	Reservoir	2403 E. 37th Ave
Glennaire #1	Reservoir	5603 S. Savannah
Glennaire #2	Reservoir	5603 S. Savannah
Highland Standpipe	Reservoir	3103 W. 21st Ave
Indian Hills	Reservoir	4005 W. Hiawatha Dr
Indian Trail	Reservoir	4546 W. Strong Rd
Kempe (formerly N. 5-Mile Prairie)	Reservoir	
Lincoln Heights #1	Reservoir	2418 S. Ray St
Lincoln Heights #2	Reservoir	2418 S. Ray St
Mallen Hill	Reservoir	7922 S. Thomas Mallen Rd
Midbank Standpipe	Reservoir	3502 W. Excell Ave
North Hill	Reservoir	4701 E. Valley Springs Rd
Qualchan Hills	Reservoir	4910 S. Lincoln Blvd
Rockwood Vista	Reservoir	1024 Southeast Blvd
Shadle Park	Reservoir	4404 N. Belt St
Shawnee #1	Reservoir	10002 N. Wieber Dr
Shawnee #2	Reservoir	10002 N. Wieber Dr
SIA #1 Standpipe	Reservoir	3726 S. Little
SIA #2 Standpipe	Reservoir	3725 S. Little
Southview	Reservoir	5726 S. Savannah
Strong Rd Standpipe	Reservoir	2216 W. Strong Rd
Sunset	Reservoir	4001 W. Canyon Dr
Thorpe Rd	Reservoir	3302 W. Thorpe Rd
West Drive	Reservoir	812 S. West Dr
Woodridge	Reservoir	10600 N. Wieber Dr
Central Ave	Well Station	5903 N. Normandie St
Grace Ave	Well Station	1024 E. North Foothills Dr
Hoffman Ave	Well Station	2109 E. Hoffman Ave
Nevada St	Well Station	2728 N. Nevada St

Parkwater	Well Station	5317 E. Rutter Ave
Ray Street	Well Station	607 S. Ray St
Well Electric	Well Station	2701 N. Waterworks St

Source Well Details and Distribution System Characterization (excerpt from 2007 Comprehensive Plan)

15	16	17	18										19			20	21						22	23	24			
	Source name	Intertie	Source Category										Use				Treatment						Depth		Source Location			
Source Number	Utility Name for Source and Well Tag ID No.	Intertie System ID No.	Well	Well Field	Well in a Well Field	Spring	Spring Field	Spring in Spring Field	Seawater	Surface Water	Rainney Inf. Gallery	Other	Permanent	Seasonal	Emergency	Source metered?	None	Chlorination	Filtration	Fluoridation	Irradiation (UV)	Other	Depth to First Open Interval in Feet	Capacity (Gallons per Minute)	1/4, 1/4 Section	Section No.	Township	Range
SO1	Nevada St. - AHC725		X										X			Y		X					122	31000	NE NE	8	25N	43E
SO2	Well Electric - AHC996		X										X			Y		X					50	39160	NW NE	11	25N	43E
SO3	Parkwater - AHC722		X										X			Y		X					126	62500	NE SE	11	25N	43E
SO4	Ray St. - AHC723		X										X			Y		X					75	21550	SE NW	22	25N	43E
SO5	Hoffman Ave. - AHC728		X											X		Y		X					235	5460	NW NE	4	25N	43E
SO6	Grace Ave. AHC724		X											X		Y		X					124	19000	NE NE	8	25N	43E
SO7	InAct 11/15/2001 Baxter - AHC 726		X											X		Y		X					126	2600	SE NE	3	25N	42E
SO8	Central Ave. - AHC 726		X										X			Y		X					272	16800	NE NE	31	26N	43E
SO9	InAct 14/7/1995 Indian Canyon - AHC 729		X													Y		X					60	1450	SW SE	14	25N	42E
SO10	InAct 08/23/1995 SIA 1 (abandoned)		X												X	Y		X					367	500	SE SE	29	25N	42E

	Active Service Connections	DOH calculation
25. Single Family Residence		
A. Full Time Single Family Residences (Occupied 180 days or more per year)	69987	74254
B. Part Timer Single Family Residences (Occupied less than 180 days per year)	0	
26. Multi-Family Residential Buildings		
A. Apartment Buildings, condos, duplexes, Dorms	0	
B. Full Time Residential Units in the Apartment Buildings, condos, duplexes, Dorms that are occupied more than 180 days/year	4267	
C. Part Time Residential Units in the Apartment Buildings, condos, duplexes, Dorms that are occupied less than 180 days/year	0	
27. Non-Residential Connections		
A. Recreational Services and/or Transient Accommodations	0	
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	10906	10906
28. Total Service Connections		85160

29. Full-Time Residential Population A. How many residents are serviced by this system 180 or more days per year?	214400

30. n/a

31. n/a

32. n/a

Number of Routine Samples Required Monthly by Regulation*:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
33. Routine Coliform Schedule	120	120	120	120	120	120	120	120	120	120	120	120

The statutory requirement is 120 samples per month (WAC 246-290-300 (3)(c)(i) & Table 1) for the population cited in our 2007 Comprehensive Plan (see line 29, above) at 214,400 and the upper threshold for this category is 220,000. More recent calculations based on the 2010 census estimates our customer population at 227,455. Subsequently, the City samples for no less than 150 samples per month in anticipation of actually being in the next category.

Number of Sample Sites Needed to Represent the Distribution System:

55 sampling sites are active and sited to adequately characterize the distribution system and population weighted to characterize pressure zones.

Laboratory Information

Coliform sampling will typically be conducted by City of Spokane Water Dept. Staff and coliform analysis will typically be conducted by the City of Spokane Water Quality Laboratory. In the event that additional and/or alternative analytical capacity is deemed necessary, contact Anatek Labs, Inc (currently under contract to the City).

Contact information:

City of Spokane Water Dept. – Water Quality Laboratory *2701 N. Waterworks* *Spokane, WA 99212* *Call in order listed*			
Bill Rickard, Water Quality Coordinator	509 742-8166 (wk)	509 838-3352 (hm)	509-720-3716 (cell)
Kris Graf, Laboratory Technican	509 742-8161 (wk)	509 236-2359 (hm)	509 435-3746 (cell)

Anatek Labs, Spokane *504 E Sprague, Ste D* *Spokane, WA 99202* *(509) 838-3999* *(509) 838-4433 (fax)* *Spokane@AnatekLabs.com* *Call in order listed;*			
Kathy Sattler, Lab Manager	509 838-3999 (wk)	509 926-4701 (hm)	509-879-4797 (cell)
Melissa			509 435-3746 (cell)
Karice			509 991-0750 (cell)
Wendy			208 659-3420 (cell)
Katie			425 213-3487 (cell)
Andrew			509 863-3561 (cell)

Routine Coliform Monitoring

Routine Sample Sites (Number / Site Name-characteristic/Pressure System)

(Strike-through designates indefinitely out of service)

Site No.	**Site Name**	**Local Connection**	**Pressure System**
1	Lincoln Heights – dedicated sample tap at sink in work room at Lincoln Heights Booster Station		Intermediate
2	35th and Ray – sink in the 35th and Ray Booster Station	station service	High
3	Glennaire – designated sample tap	transmission main	Southview
4	Southview – designated sample tap	transmission main	Southview
5	Brown Park – designated sample tap	transmission main	Top
6	Garden Park- tap downstairs	transmission main	High
7	33rd and Lamonte – dedicated sample tap in valve room at 33rd and Lamonte tank.	transmission main	High
8	Division and Manito – designated tap downstairs	transmission main	High
9	14th and Grand – dedicated sample tap (continuous running) at sink in 14th and Grand Booster Station	station service	Intermediate
10	9th and Pine – dedicated sample tap (continuous running) at sink in 9th and Pine Booster Station	station service	Intermediate
11	Rockwood – designated sample tap	transmission main	Low
12	North Hill – designated sample tap at 4-way valve	transmission main	North Hill
13	5 Mile – designated tap at the sink	station service	North Hill
14	Belt – continuously running copper tap	station service	North Hill
15	Midbank – sample station	transmission main	Midbank
16	Strong Road – sample station	transmission main	5-Mile
~~**17**~~	~~Indian Trail – designated sample tap~~		~~North Hill~~
18	Shawnee – designated sample tap	transmission main	Shawnee
19	Woodridge – designated sample tap		Woodridge
20	Assembly and Dalke (actual location at Park View Lane & Regency) – sample station	transmission main	Low
21	BPA – sample station * *		Northwest Terrace
~~**22**~~	~~Shadle Park – designated sample tap~~		~~Low~~
23	Mallen – designated sample tap	transmission main	Plains
24	~~Geiger Heights – designated sample tap~~		~~Geiger~~

25	Spotted – bathroom sink	station service	SIA
26	SIA – designated sample tap	transmission main	SIA
27	Abbott – bathroom sink	station service	Geiger
28	Sunset Reservoir – designated sample tap	transmission main	Highland
29	Milton – designated sample tap	transmission main	Low
30	Highland – sample station	transmission main	Highland
31	Cedar Hills – designated sample tap at 4-way valve	transmission main	Cedar Hills
32	Qualchan – designated sample tap at 4-way valve	transmission main	Cedar Hills
33	Eagle Ridge I – designated sample tap	transmission main	Eagle Ridge 2
34	Eagle Ridge II – designated sample tap	transmission main	Eagle Ridge 2
35	Thorpe – bathroom sink	station service	Low
36	Latah – designated sample tap	transmission main	Low
37	~~Northside Landfill- scale house sink~~ (out of service 5/2013)		Northwest Terrace
38	Yards – designated sample tap in Meter building	station service	Low
39	Central- bathroom sink ***	station service	North Hill
~~40~~	~~Wastewater – designated sample tap in janitor's closet, □ontinuously running~~		
41	~~NW Boulevard – Sample Station~~ (out of service 5/2013)		Low
42	Cedar Springs – Sample Station (service for Cedar Springs Estate III)	customer service	North Hill
43	Manito Golf- Sample Station	customer service (P.U.D.)	Top
44	Regal off 57th - Sample Station	customer service	Top
45	Artisan- Sample Station	customer service	Top
46	Sand Ridge - Sample Station	customer service	Low
47	5th and Ray- Sample Station	customer service	Low
48	N. River Drive- Sample Station		Low
49	Olive Road- Sample Station		Low
50	Westview Court- Sample Station		North Hill
51	Ash at Safeway- Sample Station		Low
52	Strong and Cedar- Sample Station		Five Mile
53	Barnes at Indian Trail- Sample Station		North Hill
54	Buckeye and Custer- Sample Station		Low
55	Airport Way- Sample Station		SIA
56	Freya-North – Sample Station		North Hill
57	Lidgerwood – Sample Station		North Hill

58	Wellesley & Belt – Sample Station		North Hill
59	Cowley – Sample Station		Intermediate
60	Broadway and Havana – Sample Station *		Low *
61	Fairview and Dearborn - Sample Station *		North Hill *
62	Kempe (formerly N. Five-Mi. Prairie) – designated sample tap		North Hill
63	VA Hospital – Sample Station		Low
64	Oxford – Sample Station		Northwest Terrace
	* CT6 sites-Well Electric/Parkwater only, not distribution system monitoring		
	* * BPA Easement for Disinfection Byproducts sampling only		
	* * * Central Well Station not sampled unless Well Station pump is in use.		
	Strike-through designates indefinitely out of service		

Routine Monitoring Rotation Schedule

Routine sample monitoring is typically the same pattern each month. The following table identifies the daily sampling rotation for a typical month.

Week	Monday	Tuesday	Wednesday	Thursday
1 Comprehensive sampling on Monday & Tuesday of the 1st full week of the month. Covers all sampling sites and includes Heterotrophic Plant Count testing for each site	Yards, Buckeye and Custer, North Hill, Cedar Springs, Westview Court, *Central*, Belt, 5 Mile, Strong and Cedar, Strong Tank, Midbank, Barnes at Indian Trail, Shawnee, Woodridge, Oxford, Kempe, Assembly & Dalke, VA Hospital, Sand Ridge	5th and Ray, Lincoln Heights, 35th and Ray, Artisan, Garden Park, 33rd and Lamonte, Division and Manito, Manito Golf, Regal off 57th, Glennaire, Southview, 14th and Grand, Rockwood, 9th and Pine, Brown	N. River Drive, Olive Rd., Mallen, SIA, Airport Way, Spotted, Abbott, Sunset, Thorpe, Milton, Highland Latah, Eagle Ridge I&II, Qualchan, Cedar Hills,	Yards, North Hill, Cedar Springs, Westview Court, *Central*, Belt, 5 mile, Barnes at Indian Trail, Milton, Latah, Thorpe, Manito Golf
2	N. River Drive, Olive Road, Yards, Buckeye and Custer, Cedar Springs, Westview, Strong and Cedar, 5-mile, Belt, Barnes, Assembly & Dalke, VA Hospital, Ash at Safeway, Sand Ridge	5th and Ray, Lincoln Heights, 35th and Ray, Artisan, Garden Park, 33rd and Lamonte, Division and Manito, Manito Golf, Regal off 57th, 14th and Grand, Rockwood, 9th and Pine	Yards, North Hill, Cedar Springs, Westview Court, *Central*, Belt, 5 mile, Barnes at Indian Trail, Milton, Latah, Thorpe, Manito Golf (Week 2 and 4 only- Airport Way and Mallen)	
3	N. River Drive, Olive Road, Yards, Buckeye and Custer, Cedar Springs, Westview, Strong and Cedar, 5-mile, Belt, Barnes, Assembly & Dalke, VA Hospital, Ash at Safeway, Sand Ridge	5th and Ray, Lincoln Heights, 35th and Ray, Artisan, Garden Park, 33rd and Lamonte, Division and Manito, Manito Golf, Regal off 57th, 14th and Grand, Rockwood, 9th and Pine	Yards, North Hill, Cedar Springs, Westview Court, *Central*, Belt, 5 mile, Barnes at Indian Trail, Milton, Latah, Thorpe, Manito Golf (Week 2 and 4 only- Airport Way and Mallen)	
4	N. River Drive, Olive Road, Yards, Buckeye and Custer, Cedar Springs, Westview, Strong and Cedar, 5-mile, Belt, Barnes, Assembly & Dalke, VA Hospital, Ash at Safeway, Sand Ridge	5th and Ray, Lincoln Heights, 35th and Ray, Artisan, Garden Park, 33rd and Lamonte, Division and Manito, Manito Golf, Regal off 57th, 14th and Grand, Rockwood, 9th and Pine	Yards, North Hill, Cedar Springs, Westview Court, *Central*, Belt, 5 mile, Barnes at Indian Trail, Milton, Latah, Thorpe, Manito Golf (Week 2 and 4 only- Airport Way and Mallen)	

Routine Reporting

Weekly laboratory logs are generated using Microsoft Excel 2007 and are saved with the format "MM-DD-YY.xlsx" (MM designates month, DD designates day, YY designates last two digits of the year). Each coliform sample from the distribution system is logged into this spreadsheet with a unique identifier. These sample number are generated from the first day of each year with the format 265YY0001 (265 designating DOH, YY designating the year, 0001 the first number of an ongoing sequence).

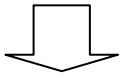
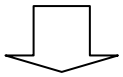
Each week, on Friday (or before if coliform monitoring is completed for that week), the weekly log is scrubbed to remove non-regulatory worksheets and administrative worksheets. The regulatory only sample log is saved as "MM-DD-YY_XX.xlsx (XX designates the number of regulatory samples in that specific weekly log).

This regulatory-only Excel sheet is emailed as an attachment to the DOH designated recipient for data entry:
Currently - Jodi Russell-DOH (DOH-Olympia) at Jodi.Russell@doh.wa.gov .

The weekly log Excel spreadsheet is moved to the archive section of the lab computer. This computer is not hardwired to any outside network. The archive is also saved daily to an archive hard drive and also saved on Fridays (typically) onto a flash drive with always leaves the site with the Water Quality Coordinator.

Unsatisfactory Routine Coliform Sample

Response Action Scenario

Action A: Routine Coliform Monitoring sample is unsatisfactory:	If result is Total Coliform positive and *E. Coli* negative: • advise DOH-ERO Drinking Water Office, • notify Director of City of Spokane Water Department, • notify appropriate consecutive system(s).
(notification from a consecutive water system monitoring result unsatisfactory, go to Action C)	If result is Total Coliform positive and *E. Coli* positive: • DOH-ERO Drinking Water Office must be notified, • notify Director of City of Spokane Water Department, • notify appropriate consecutive system(s).
	
Action B (to be implemented simultaneously with Action C): Identify the five connections upstream and five connections downstream from the sample site with the unsatisfactory sample, and	Within 24 hours of unsatisfactory sample result obtain one sample from the original sample site, one sample from the set of five upstream connections and one sample from the set of five downstream connections. If possible, priority would be given to sites with at-risk populations (i.e. nursing homes, day cares, medical facilities, etc.).
	
Action C: Identify the pressure zone for the sample site with the unsatisfactory sample. Identify every source pump directly contributing to this pressure zone during the previous 4 days and every booster pump contributing to this same pressure zone.	Every contributing source well pump to be sampled for raw (unchlorinated) water. If coliform present, further escalated sampling to be determined in consultation with DOH. If coliform absent, no further sampling.

Distribution System Monitoring (Total Coliform Rule)

Repeat samples will be collected when following up after positive coliform sample.
Repeat samples will be collected at;

- the original unsatisfactory routine site,
- one sample within the first 5 connections upstream from the original routine site, and
- one sample within the first 5 connections downstream from the original routine site.

Refer to Appendix II – Repeat Sampling Sites for previously identified locations for resampling.

Triggered Source Water Response (Groundwater Rule)

Source Well Sampling (raw water) – coordinated with Repeat Sampling.
Identify the pressure zone where the unsatisfactory sample was located. Sample all source wells corresponding to that pressure zone that operated in the previous 4 days.

Systems	Potential Contributing Source Wells			
Low	DOH No.	Well Name	Well No.	Pump No.
Eagleridge Eagleridge 2 Cedar Hills	SO1	Nevada	1	pump no. 1
		Nevada	1	pump no. 2
		Nevada	1	pump no. 3
		Nevada	1	pump no. 4
SIA	SO2	Well Electric	5	pump no. 3
West Plains Woodland Heights Highland Geiger Heights	SO3	Parkwater	2	pump no. 3
		Parkwater	2	pump no. 4
		Parkwater	3	pump no. 5
		Parkwater	3	pump no. 6
		Parkwater	4	pump no. 7
		Parkwater	4	pump no. 8
Intermediate				
High Top Glennaire Southview	SO2	Well Electric	5	pump no. 1
	SO3	Parkwater	1	pump no. 1
		Parkwater	1	pump no. 2
	SO4	Ray	1	pump no. 1
		Ray	1	pump no. 2
		Ray	2	pump no. 3
North Hill				
Five Mile Prairie Midbank Indian Hills Shawnee Woodridge	SO2	Well Electric	4	pump no. 4
		Well Electric	5	pump no. 2
	SO5	Hoffman	1	pump no. 1
	SO6	Grace	1	pump no. 1
		Grace	1	pump no. 2
	SO8	Central	1	pump no. 1
		Central	1	pump no. 2
		Central	2	pump no. 3
		Central		pump no. 4
	SO5	Hoffman **	2 **	pump no. 2
	** no pump in Well #2 at Hoffman			

Notification of Consecutive Water Systems

In the event of a coliform present result (total or *E. coli*) notify the wholesale customer(s), as appropriate;

Lance Peterson City of Airway Heights-Public Works 1208 S. Lundstrom Airway Heights, WA 99001-9000	lpeterson@cawh.org 244-5429 (Public Works Dept.)
Susan McGeorge, General Manager Whitworth Water District #2 10828 N. Waikiki Rd. Spokane, WA 99218	mcgeorge@asisna.com 466-0550
Ty Wick, General Manager Spokane County Water District No. 3 1225 N. Yardley Street Spokane, WA 99212-7001	scwd3@comcast.com 536-0121
Joe Duricic, Utility System Maintenance Foreman Fairchild Air Force Base 100 W. Ent St., Suite 171 Fairchild Air Force Base, WA 99011	joseph.duricic@fairchild.af.mil 247-2318
Dennis Overbay Vel View WD #13 3609 W. Velview Rd. Spokane, WA 99208-8863	doverbay@9mile.org (509) 466-4322
Philip J. Kercher FASHE, CHFM, CEM Manager of Facilties Providence Sacred Heart Medical Center & Children's Hospital 101 W Eighth Avenue, PO Box 2555 Spokane WA 99204 (Non-Community Transient, TNC)	(509) 474-3290 Philip.Kercher@providence.org

Receiving Notification of Unsatisfactory Coliform Result from Consecutive Water Systems

In the event of notification from a consecutive water system (except Spokane County Water District #3 – Manito system, see below) of an unsatisfactory result from routine coliform monitoring, consult with DOH-DW ERO to determine specific requirements for source water sampling. In lieu of other sample the raw water from all the appropriate wells that have been in use for the previous 4 days.

Specific Response in the event of notification from Spokane County Water District #3 – Manito System PWSID # 933589 (SCWD3-Manito System #8) of an unsatisfactory result from routine coliform monitoring;

Compile a list of the sampling date/time and results for the sites in the following table for the 48 hours prior to the sampling date/time of the unsatisfactory result.

City of Spokane Coliform Monitoring Sites most representative of water provided to SCWD3-Manito System #8

Site No.	*Site Name*	*Pressure Zone*
1	Lincoln Heights	High
3	Garden Park	High
4	35th and Ray	High
9	14th and Grand	High
10	Brown Park	Glennaire
11	Division and Manito	Top
19	Southview	Southview
22	33rd and Lamonte	High
41	Artisan	Top
42	Regal & 57th	Top
45	Manito Golf	Top
55	Cowley	Intermediate
60	Glennaire	

Also compile a list of well(s) operating for the Intermediate System during the previous 4 days.

Provide these compilations to Ty Wick (SCWD3-Manito) and to DOH-Eastern Region-Drinking Water (current May, 2013; Ed Parry and Mark Steward) with an informed opinion of whether the distribution system samples more accurately represent water being provided to SCWD3-Manito or whether a triggered response of raw source water sampling should be initiated.
Respond to the consensus.

Month Following Unsatisfactory Samples

Provided that the cause for an Unsatisfactory Sample is resolved and there is no Acute MCL Violation, the size of the City Water System allows for returning to normal sample schedule in the following month.

System Map

CITY OF SPOKANE
WATER DEPARTMENT
WATER FACILITIES

ID	TANKS
1	14TH & GRAND
2	33RD & LAMONTE
3	9TH & PINE
4	BROWNE PARK 1 & 2
5	CEDAR HILLS
6	EAGLE RIDGE I
7	EAGLE RIDGE II
8	FIVE MILE
9	GARDEN PARK
10	GEIGER HEIGHTS
11	GLENNAIRE 1 & 2
12	HIGHLAND
13	INDIAN HILLS
14	INDIAN TRAIL
15	KEMPE
16	LINCOLN HEIGHTS 1 & 2
17	MALLEN HILL
18	MIDBANK
19	NORTH HILL
20	QUALCHAN
21	ROCKWOOD VISTA
22	SHADLE PARK
23	SHAWNEE 1 & 2
24	SIA 1 & 2
25	SOUTHVIEW
26	STRONG RD
27	SUNSET
28	THORPE RD
29	WEST DR
30	WOODRIDGE

ID	BOOSTERSTATIONS
1	35TH & RAY
2	9TH & E ST
3	ABBOTT
4	BELT ST
5	BISHOP CT
6	DIVISION & MANITO
7	LATAH
8	MILTON
9	SHAWNEE
10	SPOTTED
11	EAGLE RIDGE

ID	WELLSTATIONS
1	CENTRAL
2	GRACE & NEVADA WELLS
3	HOFFMAN
4	PARKWATER
5	RAY ST
6	WELL ELECTRIC

ID	PRESSURE REDUCING STATIONS
1	16TH & MILTON
2	3303 S INLAND EMPIRE WAY
3	BPA TRANSMISSION EASEMENT
4	BURCHWOOD & NINE MILE ROAD
5	EAGLE RIDGE 2 TANK
6	ELECTRIC & SODA (SIA)
7	F ST & WOODLAND
8	GROVE ST ISLAND
9	GROVE & SUMNER ISLAND
10	HATCH RD #1
11	HATCH RD & TOMAKER LN
12	J & WALTON ISLAND
13	KEMPE
14	LATAH HILLS CT & SHELBY RIDGE
15	LINCOLN WY & OSPREY HGTS
16	MORAN VIEW & WOODLAND CT
17	PANORAMA & WOODLAND CT
18	PRAIRIE DR & FLEETWOOD CT
19	RIVER RIDGE & N INLAND ST
20	RIVER RIDGE & SAND RIDGE
21	SHOSHONE & LINCOLN
22	SUMMERWOOD & SHELBY RIDGE
23	SUNDANCE DR & ACOMA DR
24	W REGENCY LN & N PARK VIEW LN
25	WALNUT ST ISLAND
26	WALNUT ST & CEDAR RD
27	WESTWOOD LN

- Individual Booster Station
- Tank or Reservoir with or without adjoining Booster Station
- Pressure Reducing Station
- Well Station

Water Pressure Zones

- Cedar Hills
- Eagle Ridge
- Eagle Ridge 2
- Five Mile
- Geiger Heights
- Glennaire
- Hatch Road
- High
- Highland
- Indian Hills
- Intermediate
- Kempe
- Low
- Midbank
- North Hill
- Northwest Terrace
- SIA
- Shawnee
- Southview
- Top
- West Plains
- Woodland Heights
- Woodridge

- Water Transmission Lines
- Highway
- Arterials
- Railroad
- Rivers
- City Limits

0 5,000 10,000 15,000 Feet

Geographic Information System

N W E S

CITY OF SPOKANE

THIS IS NOT A LEGAL DOCUMENT: The information shown on this map is compiled from various sources and is subject to constant revision. Information shown on this map should not be used to determine the location of facilities in relationship to property lines, section lines, streets, etc.

Print date: 12/16/2013

Figure 1.3.2

Preparation Information

System Name:City of Spokane Water Department, PWS ID #83100K
Date Plan Completed: Nov. 1, 2012
Dates Modified:

Name of Plan Preparer: Bill Rickard
Position: Water Quality Coordinator
Daytime Phone # (509) 742-8166

State Reviewer Date Last Review

Appendix I - Individual Sites; Map, Picture, and Description

Appendix I

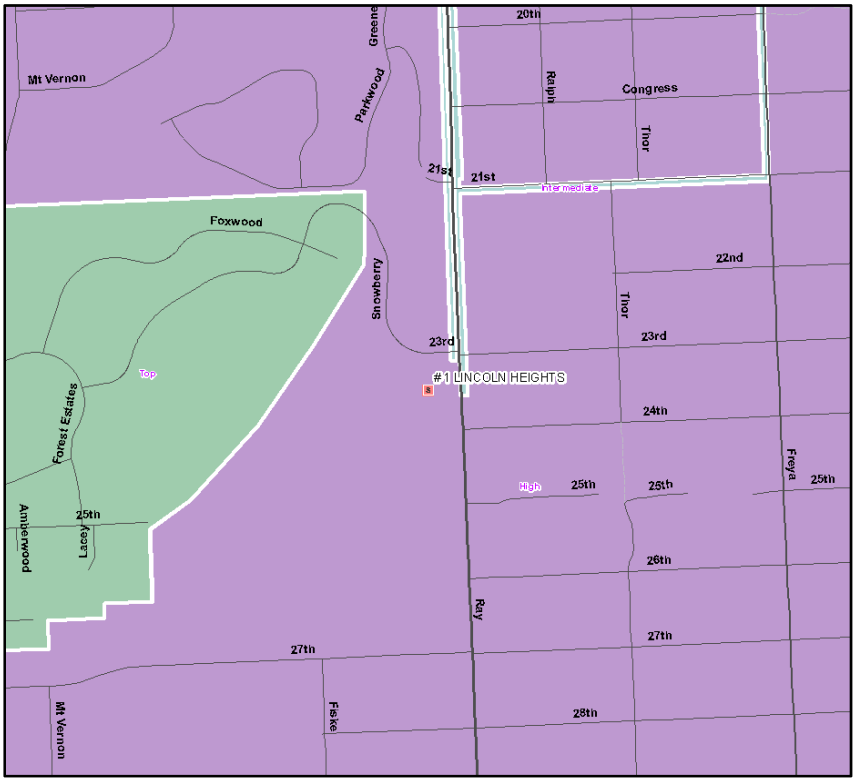
Individual Sites; Map, Picture, and Description

Typical Sample Location Installations:

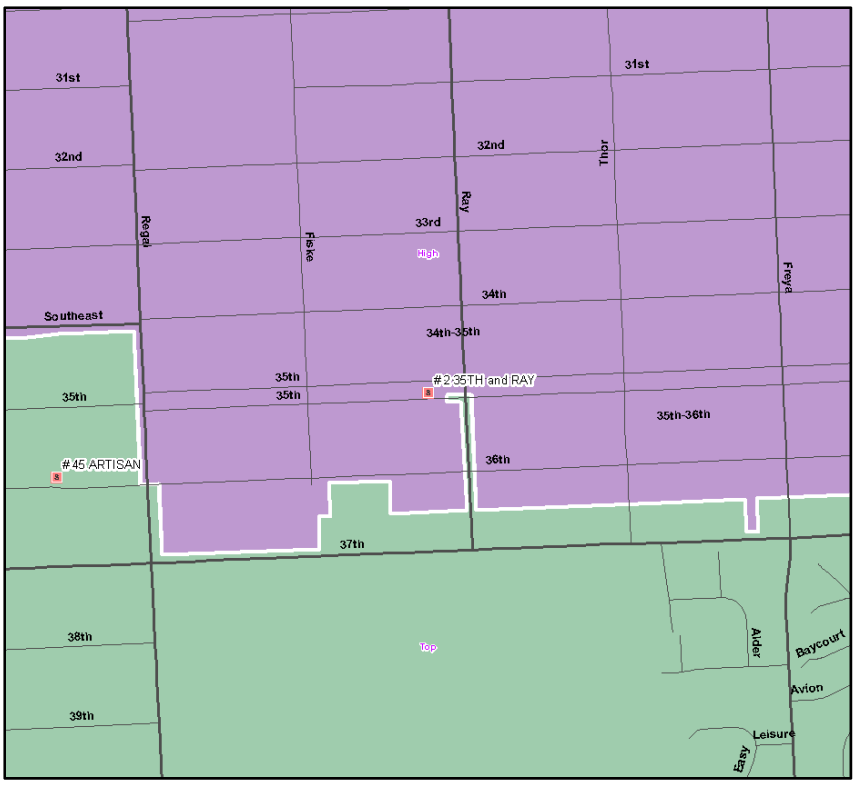
Many of our samples locations are located in water system facilities like booster stations. A typical example is 35th and Ray. Following is a picture of the exterior of the booster station and a picture of a designated sample tap (copper tubing tap) at a sink inside the building;

Approximately half of our sampling locations are Sample Stations (stand-alone sampling taps):

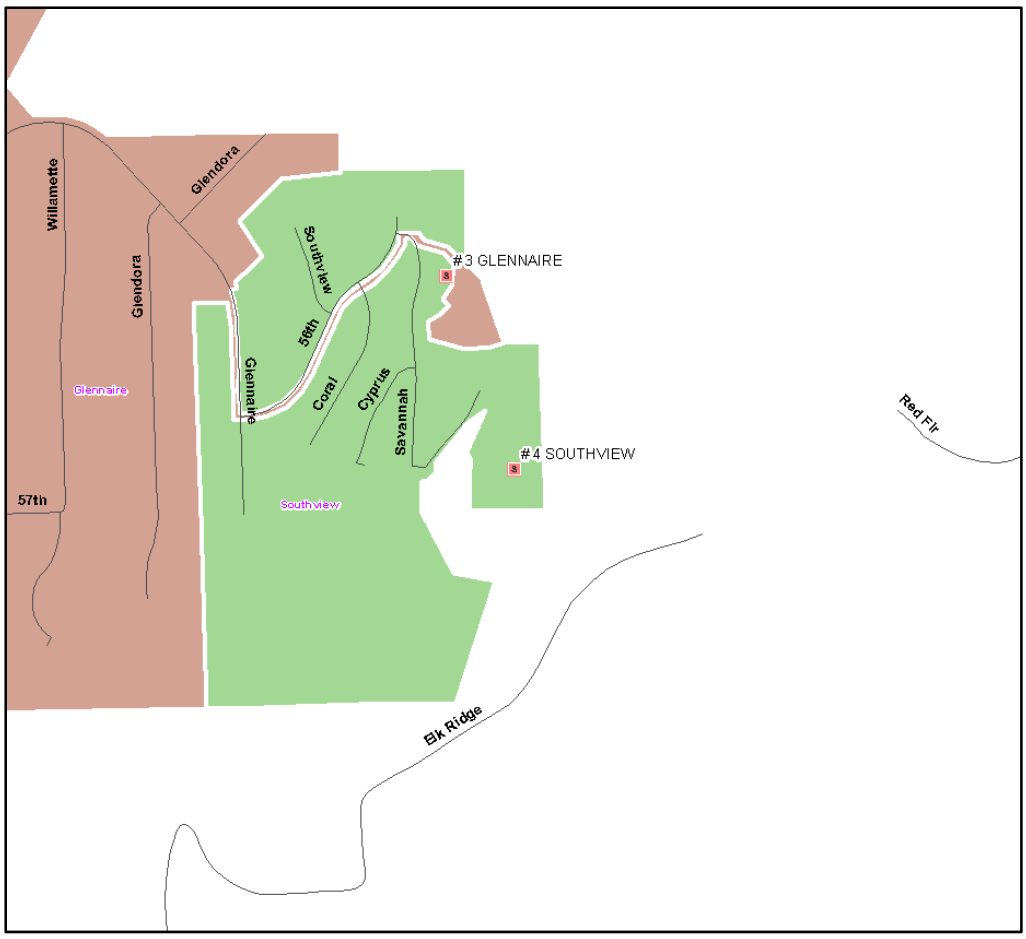
Individual Sites; Map, Picture, and Description



#1 - Lincoln Heights - sample line at the sink inside the building at the back



#2 – 35th & Ray – inside booster station at the sink

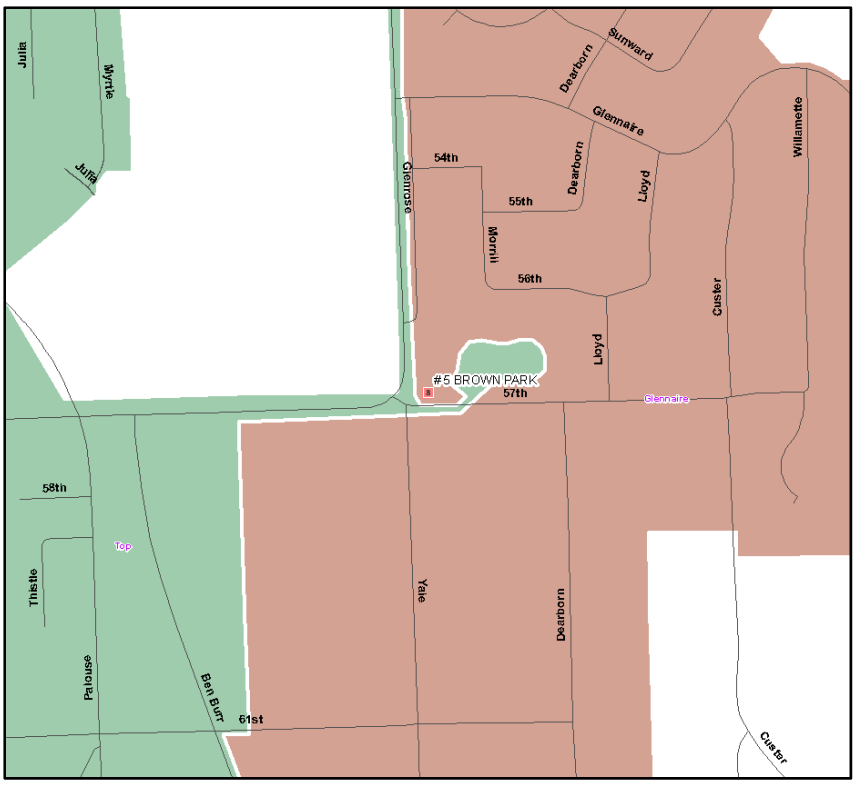


#3 – Glennaire – designated tap in booster station tapped into header main

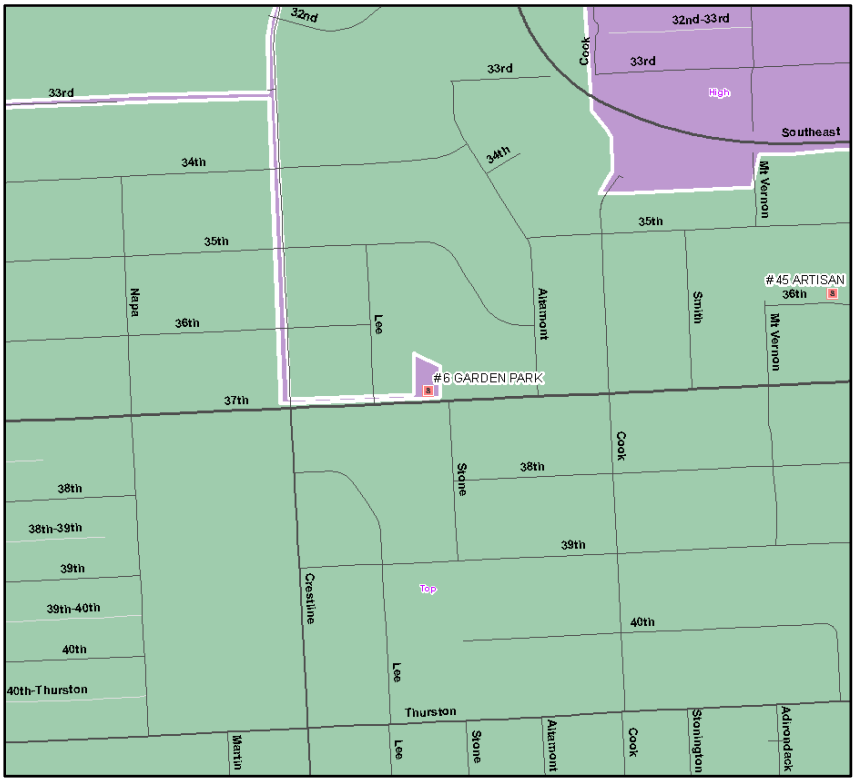
#4 – Southview – designated tap inside valve room tapped into main for the tank

Pix next page

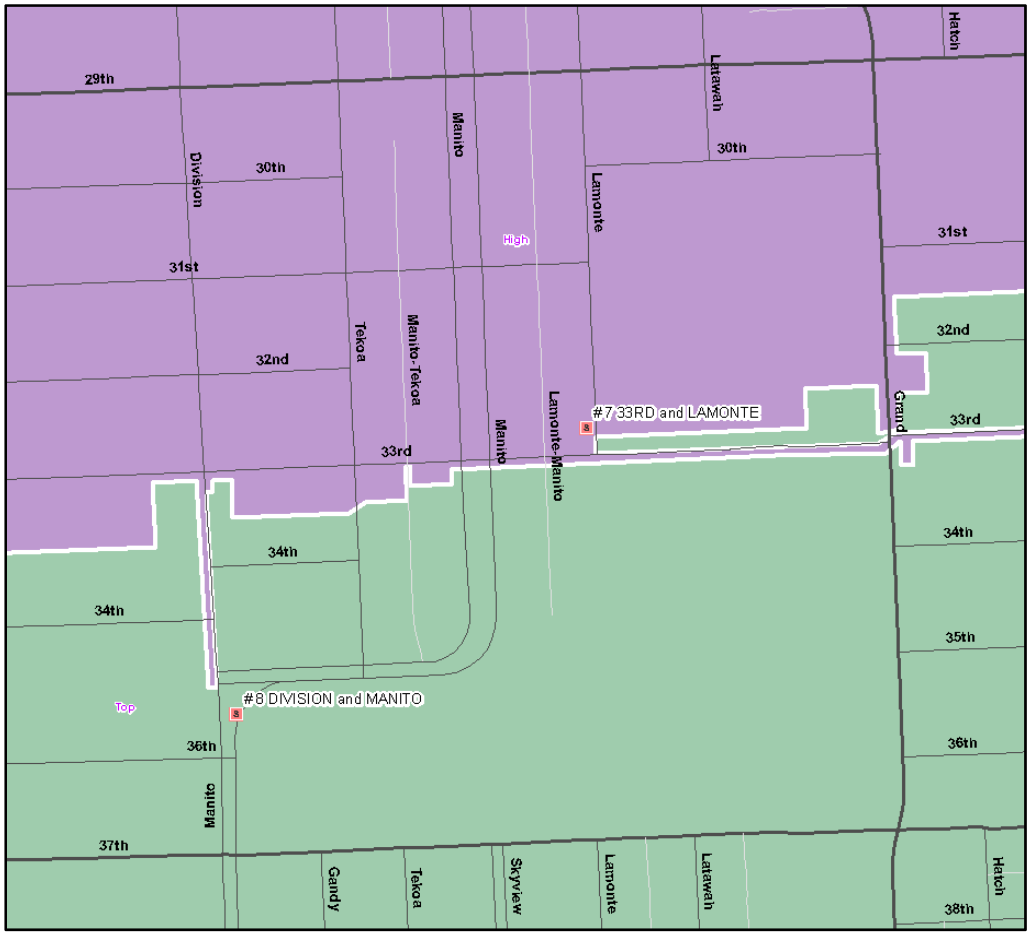
Glennaire↑
Southview ↓



#5– Brown Park – designated tap inside booster station



#6 Garden Park – inside booster station tapped into header main

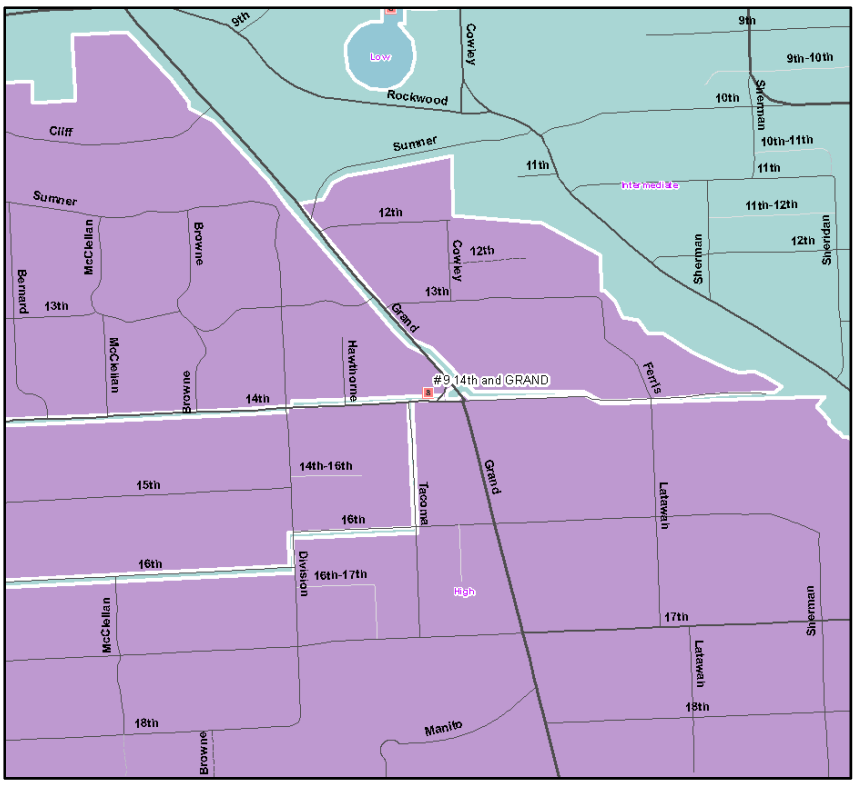


#7 – 33rd & Lamonte – designated tap inside tank structure. Use a flashlight, enter and go diagonally to the left. Good luck

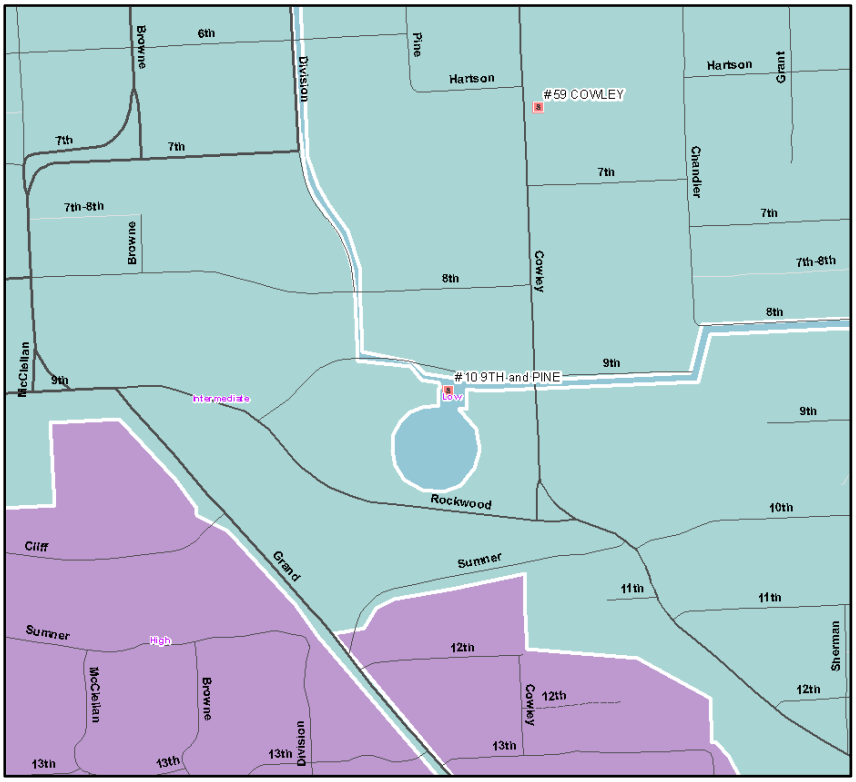
#8 – Division & Manito – designated tap inside booster station in the basement

Pix next page

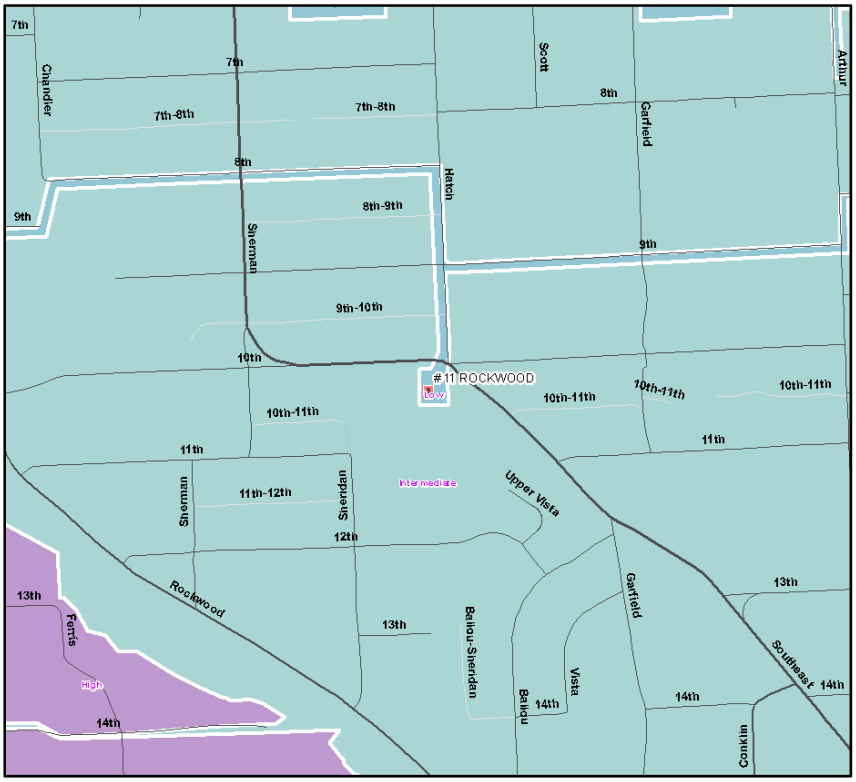
33rd & Lamonte ↑
Division & Manito ↓



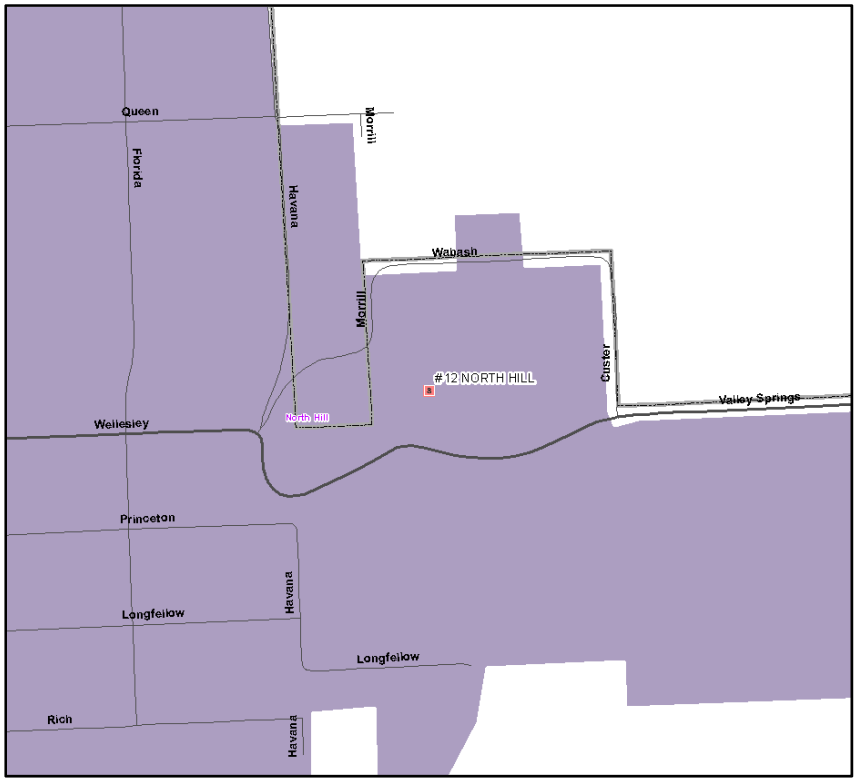
9 – 14th & Grand – designated tap at the sink (continuous running)



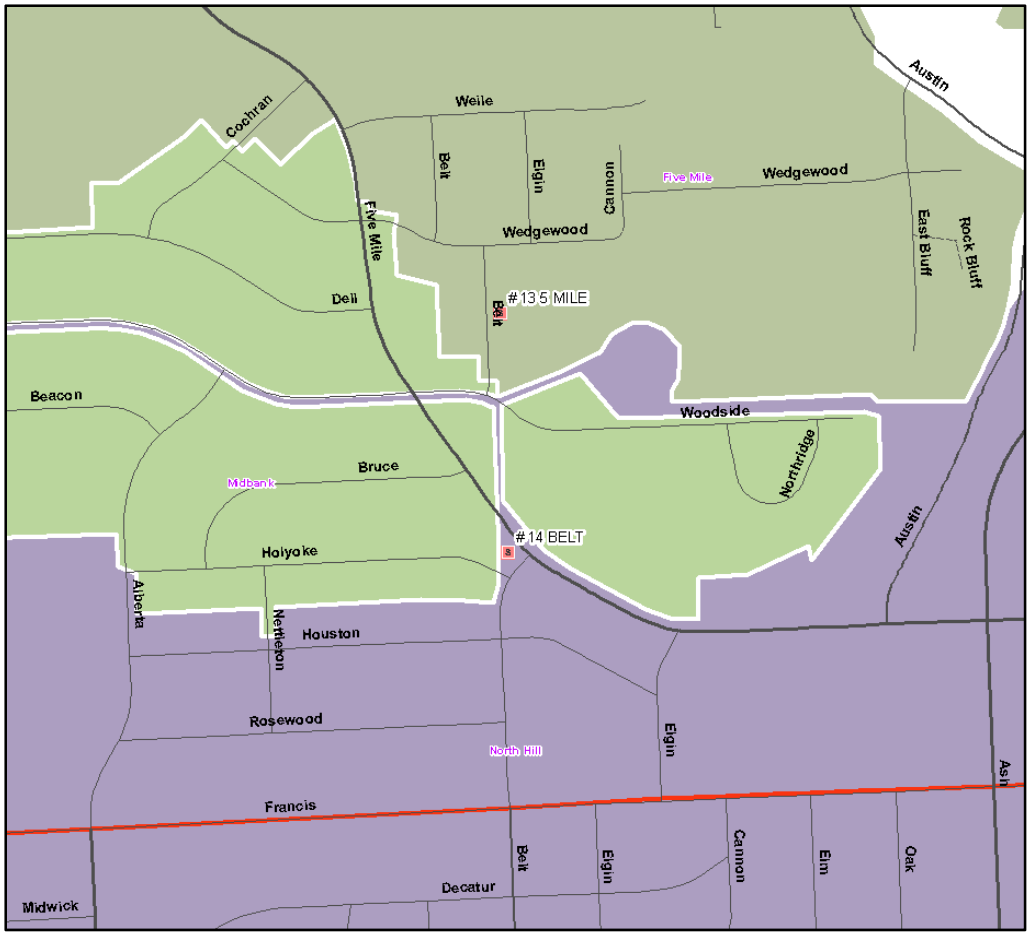
10 - 9th & Pine – designated tap inside booster station (continuous running)



11 – Rockwood – inside access door, designated tap into main pipe



#12 – North Hill – designated tap in booster station at North Hill tank.



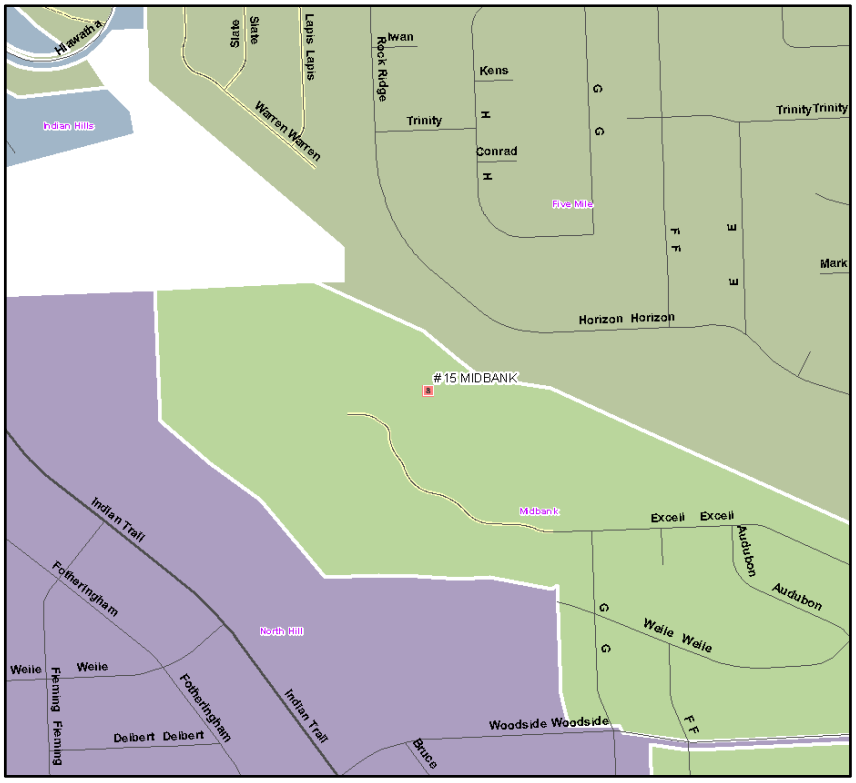
13 – 5 mile – designated sample tap in the booster station N.W. from the 5 mile tank

#14 – Belt – designated tap in the Belt booster station (continuous running)

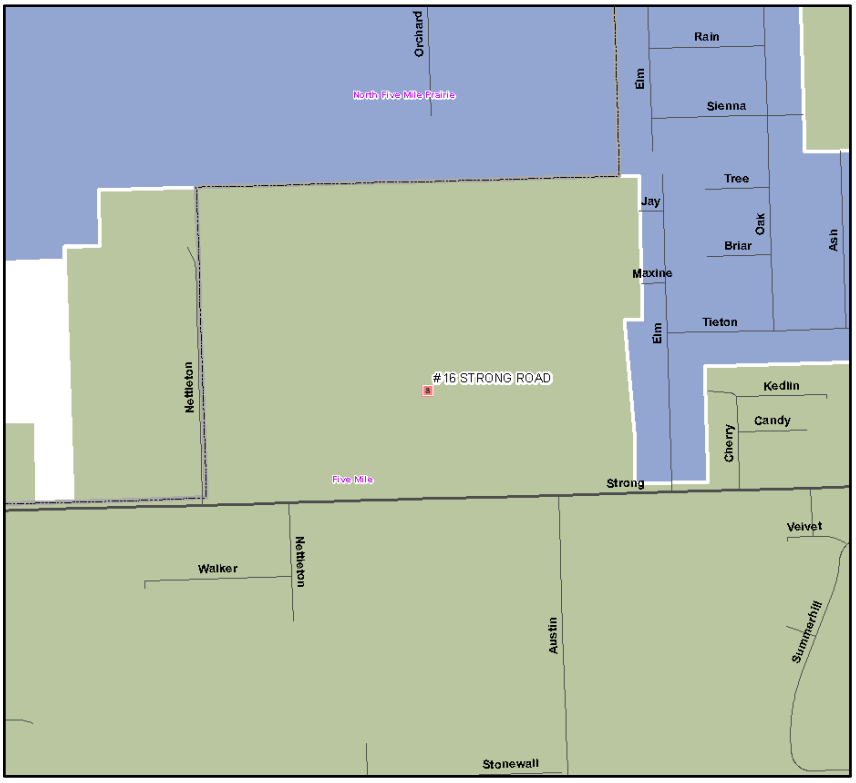
Pix on next page

13 – 5 mile ↑

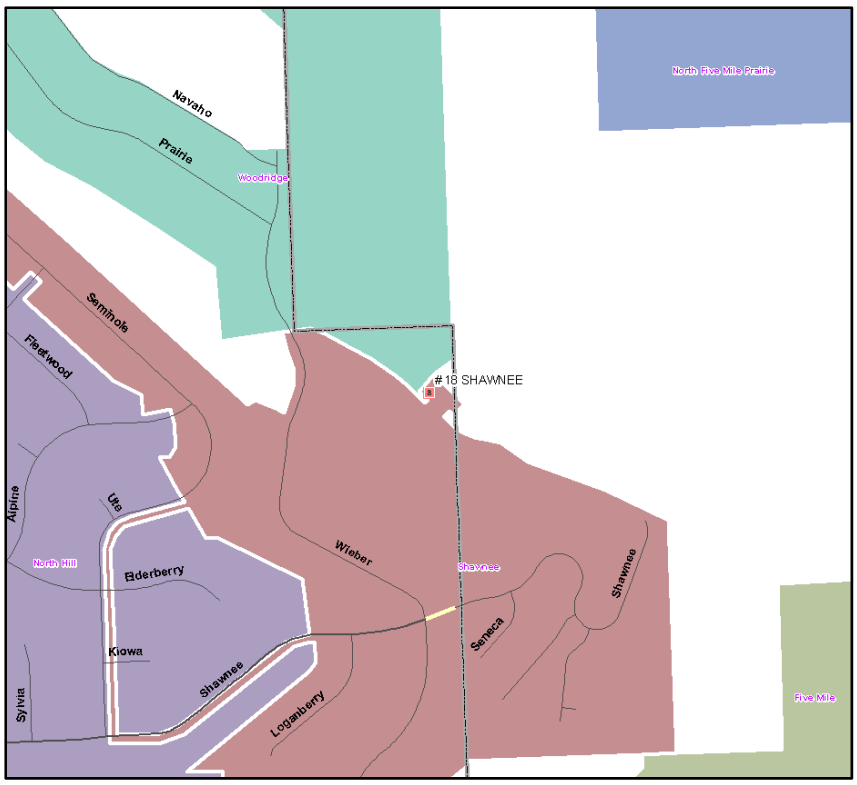
14 – Belt ↓



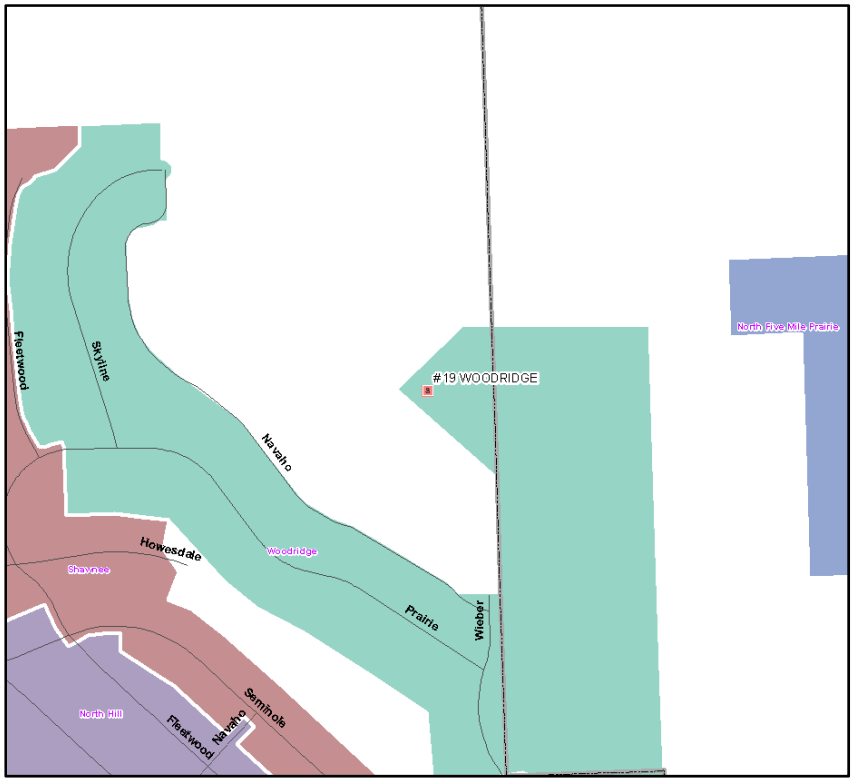
#15 – Midbank – sample station on vault



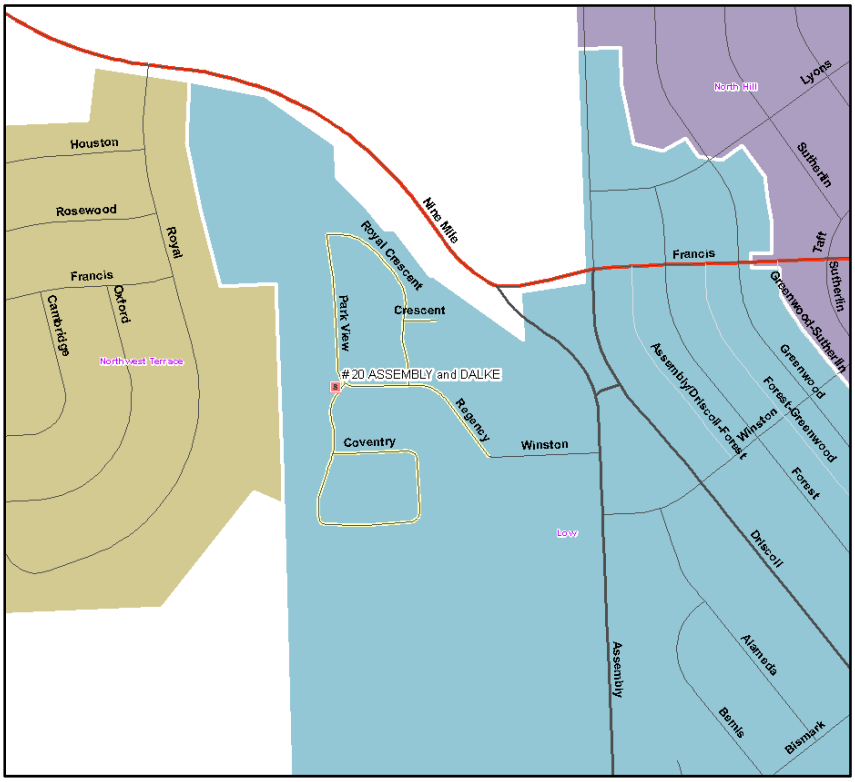
#16 – Strong Rd. – Sample Station on vault to the right of the door.



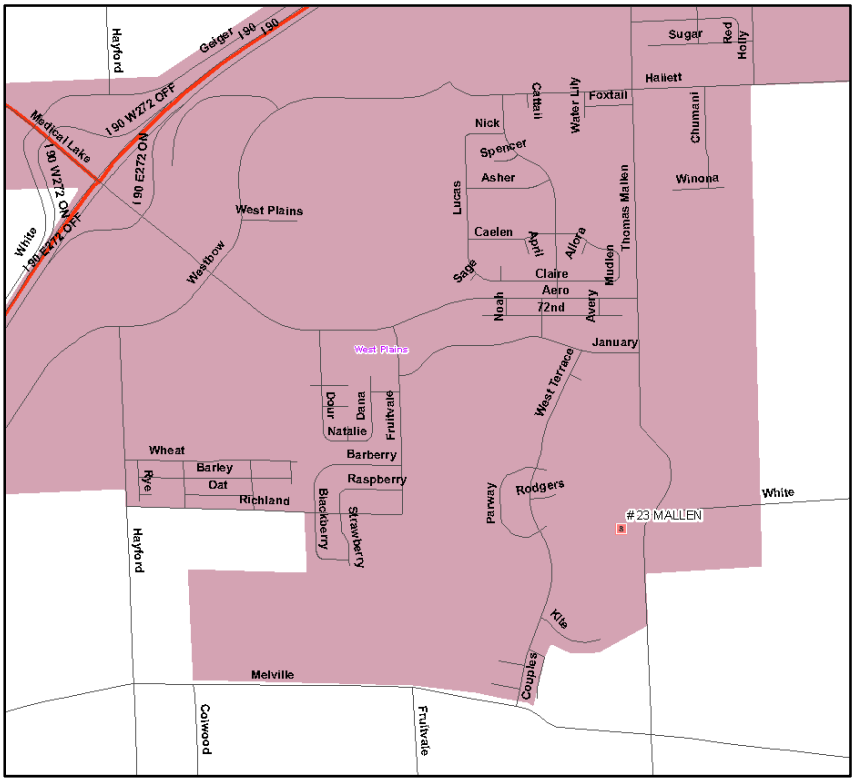
#18 – Shawnee – designated sample tap inside valve room (driving access to site off either Wieber or Shawnee)



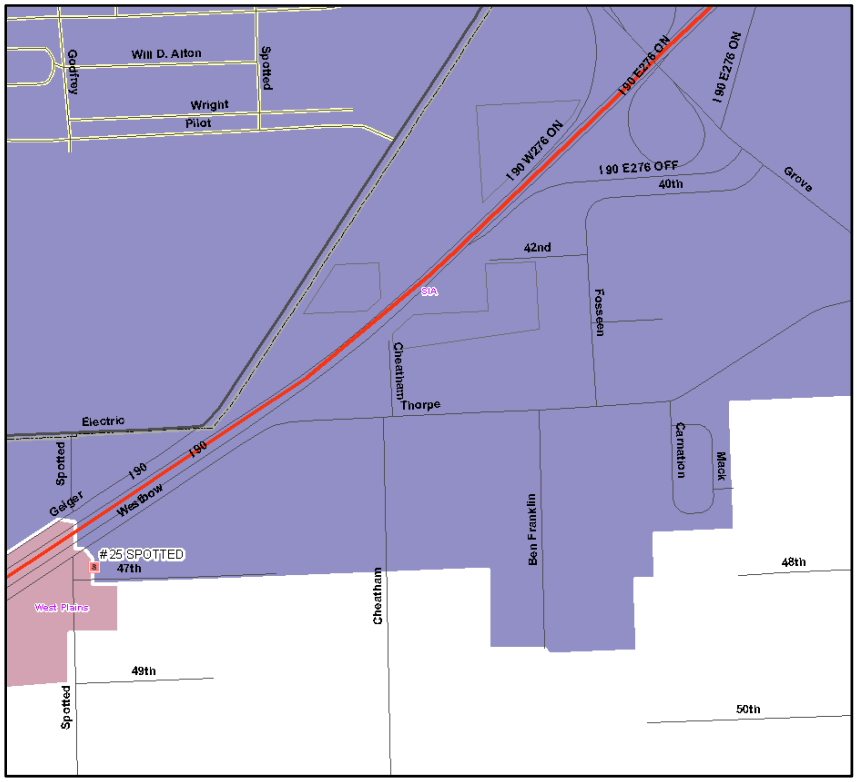
#19 – Woodridge – designated sampling tap inside valve room.



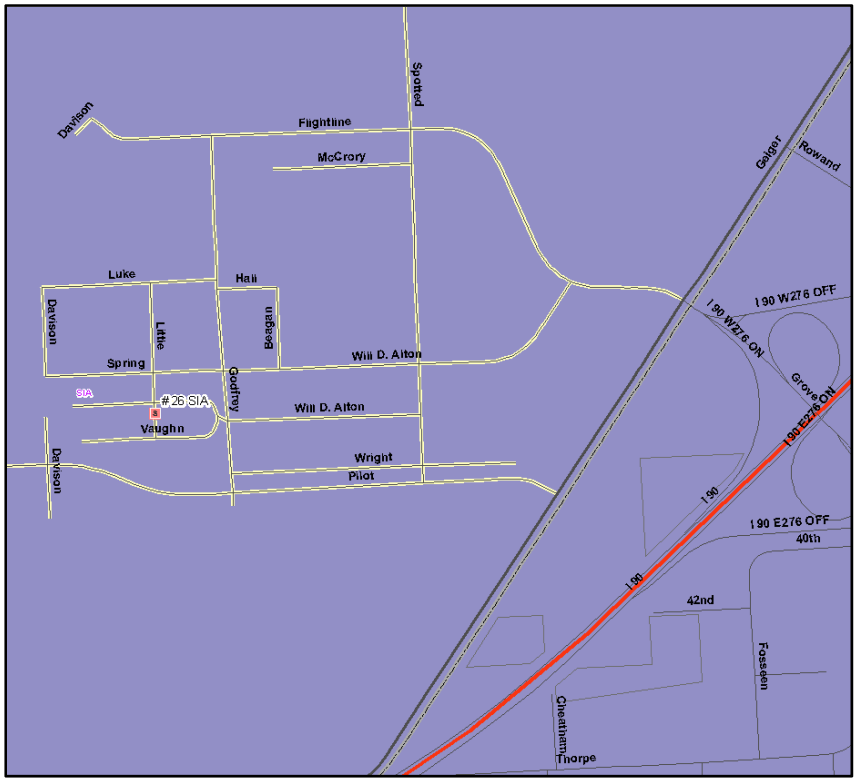
#20 – Assembly & Dalke – Sample Station (actual location Park View Lane & Regency)



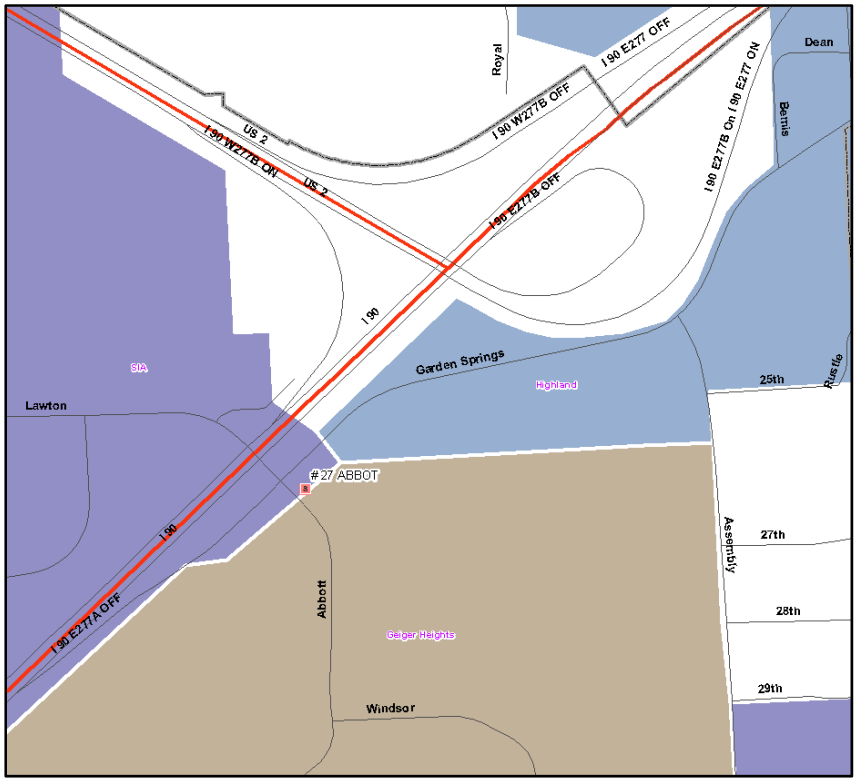
#23 – Mallen –designated sample tap inside valve room located at Mallen Tank



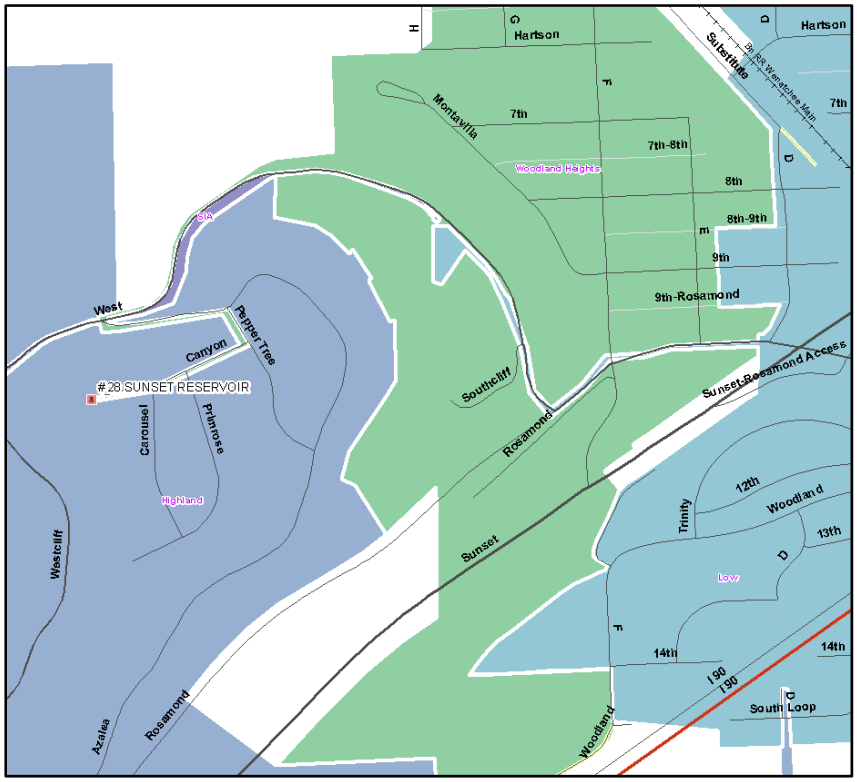
#25 – Spotted – sample inside booster station at separate tap at the sink



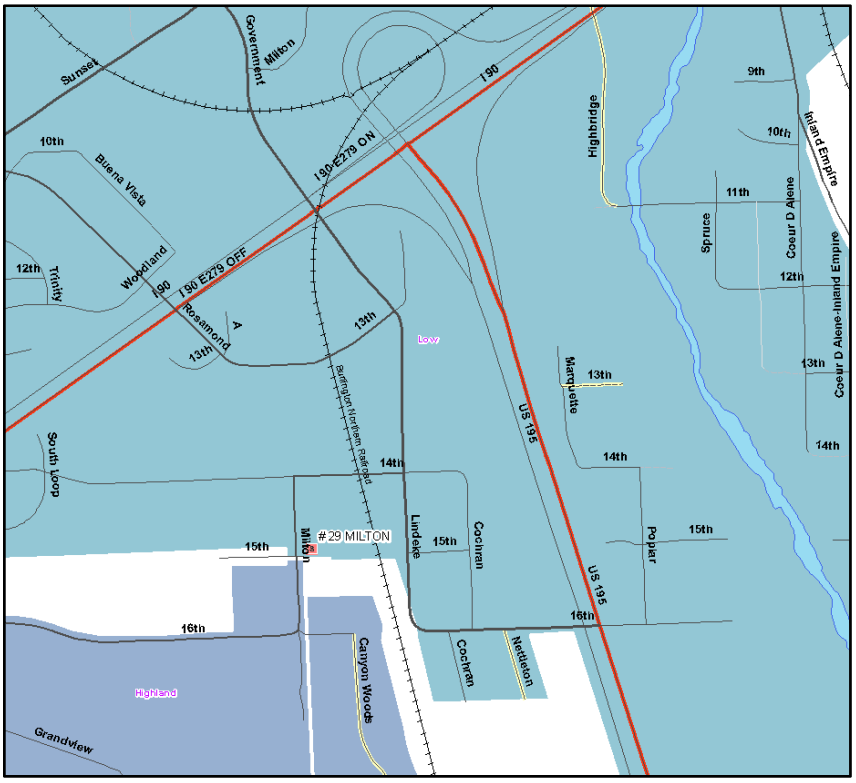
#26 – SIA – designated sample tap inside tank structure



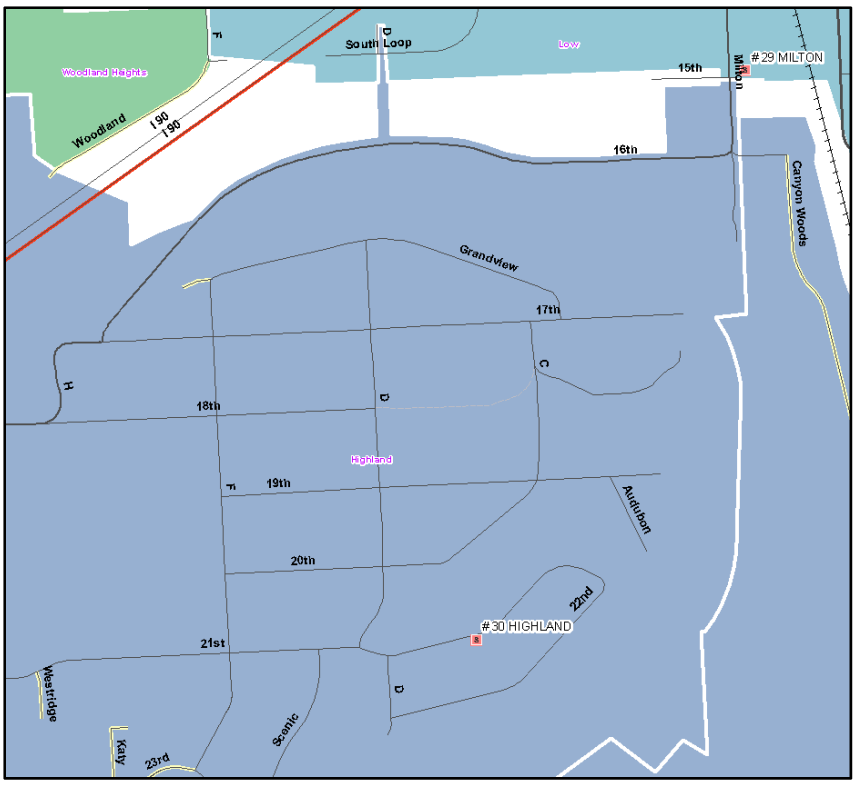
#27 – Abbott – sample at the sink inside the booster station



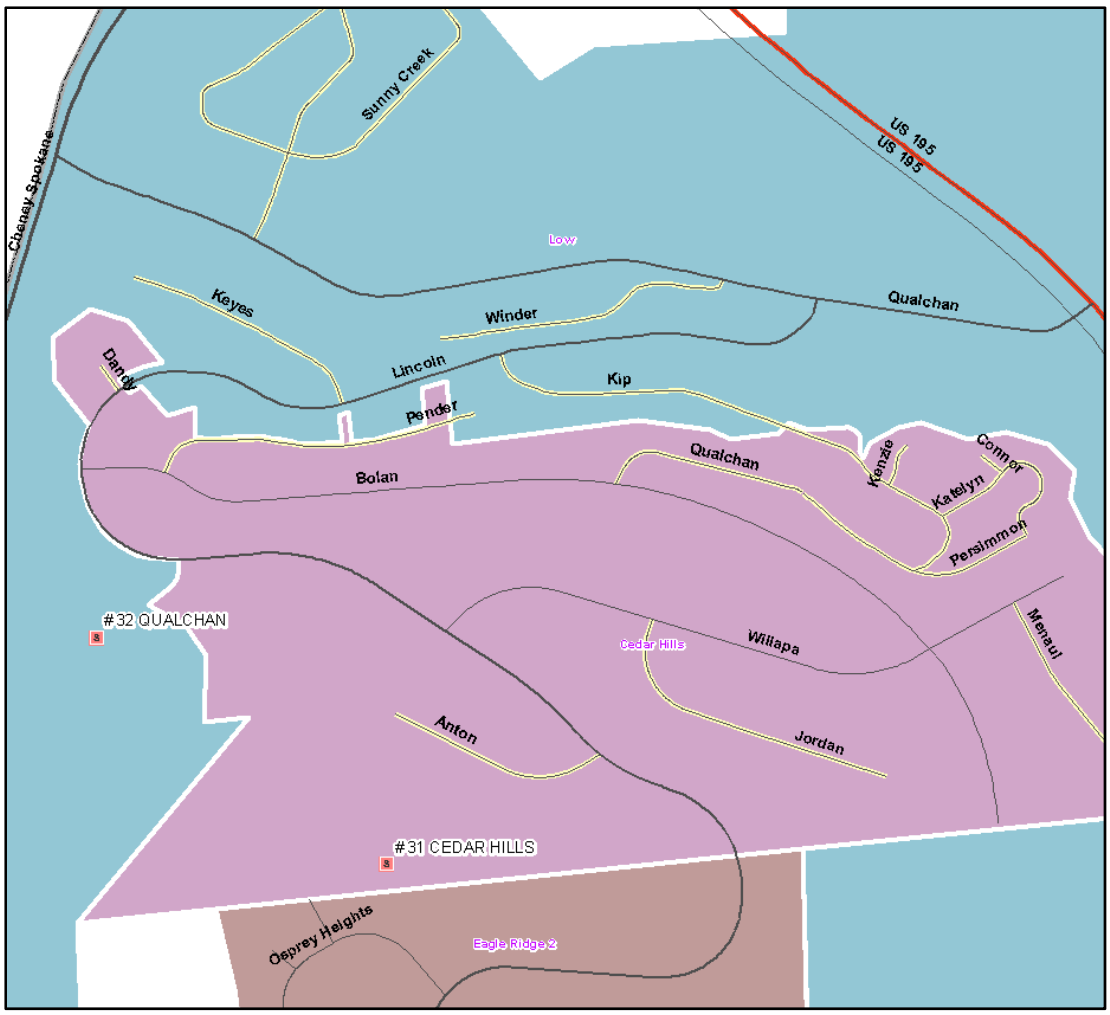
#28 – Sunset Reservoir – designated sample tap next to bucket valve



#29 – Milton – designated sample tap inside booster station



#30 – Highland – Sample Station on vault lid near access



31 – Cedar Hills

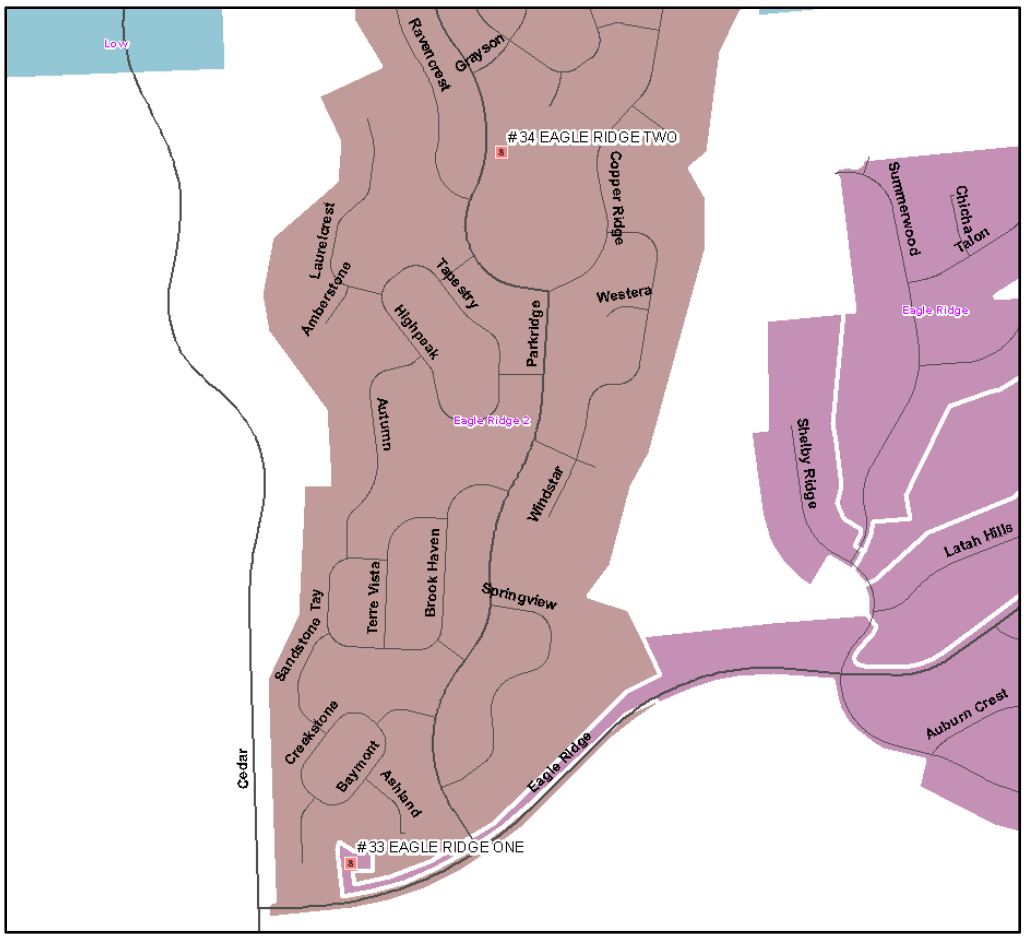
14 – Qualchan

Both designated sample taps in valve rooms, off of 4-way valve

Pix, next page

31 – Cedar Hills ↑

14 – Qualchan ↓



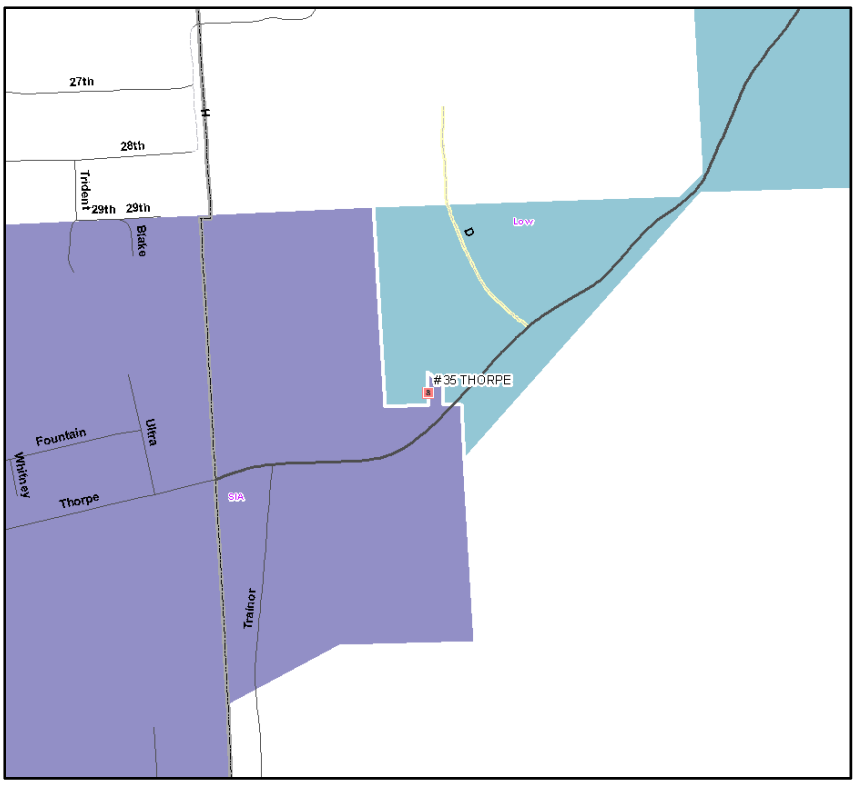
33– Eagle Ridge One – designated sample tap in booster station; off of 4-way valve

34 – Eagle Ridge Two – designated sample tap in booster station; off of chlorine analyzer line

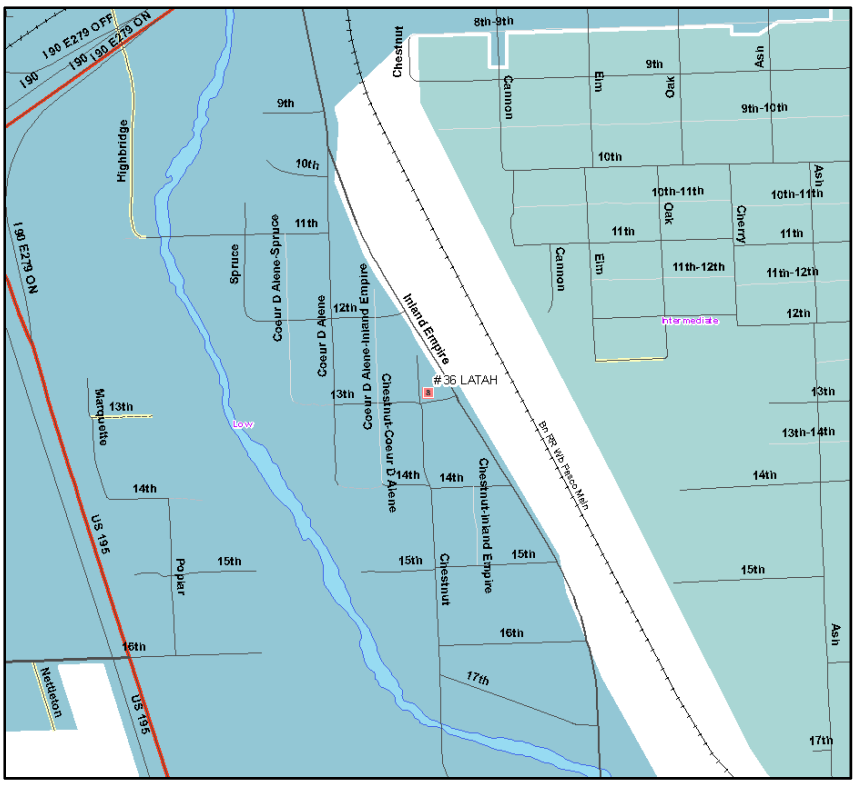
Pix next page

33 – Eagle Ridge One ↑

14 – Eagle Ridge Two ↓



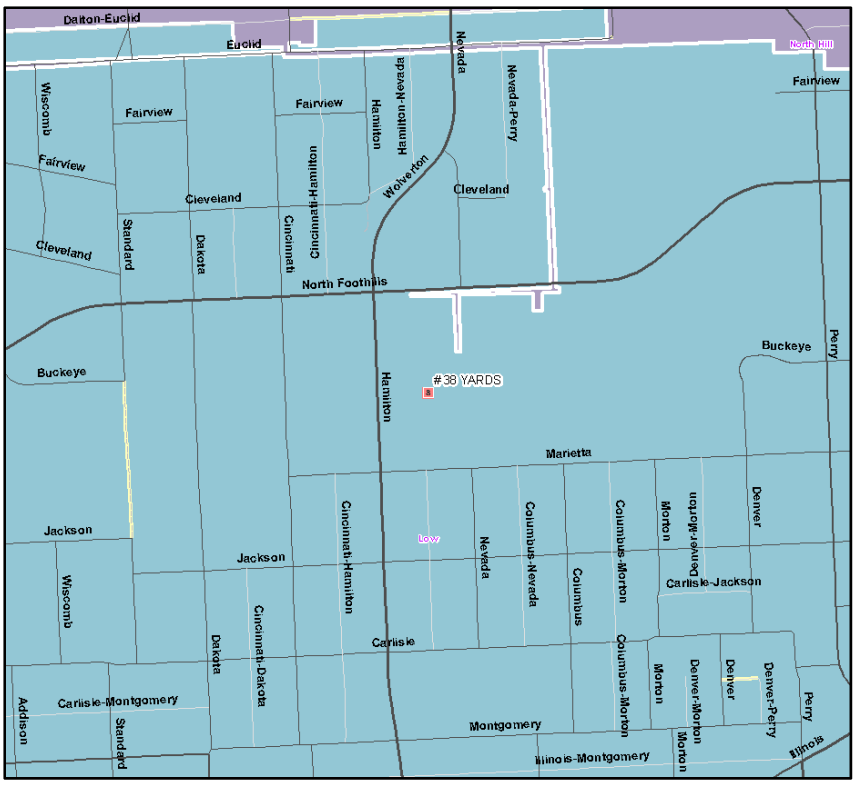
#35 – Thorpe – sample at sink I booster station



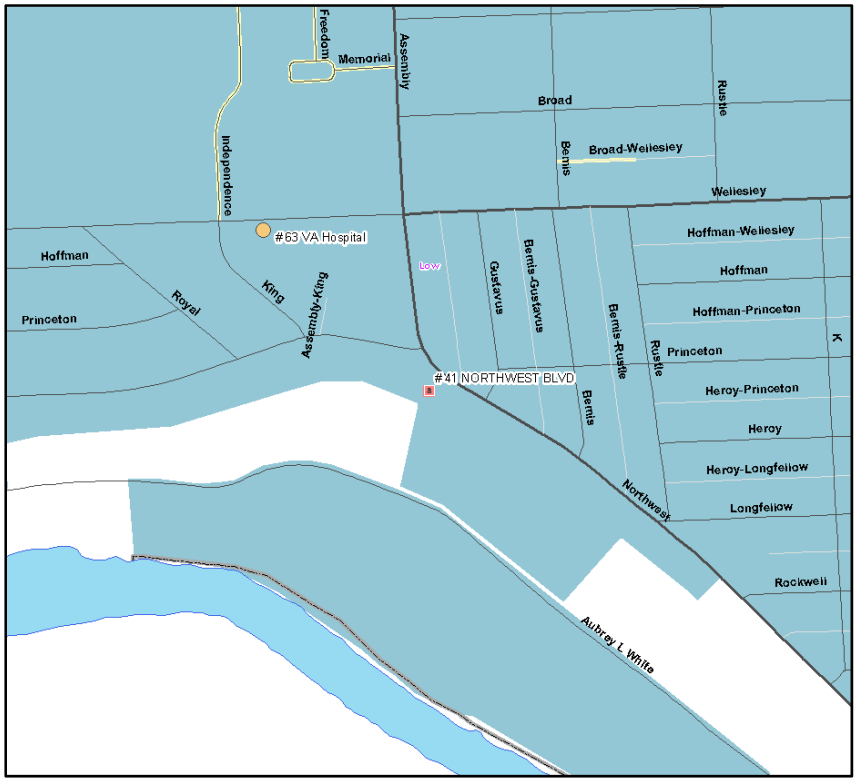
#36 – Latah – designated sample tap on main pipe from pump

#37 – Northside Landfill – sample the sink in the scale house

* * NOTE: EFFECTIVE MAY 1, 2013, DUE TO LIMITED AVAILABILITY OF THE SCALE HOUSE THIS SAMPLE SITE WILL BE INACTIVE FOR THE INDEFINATE FUTURE.



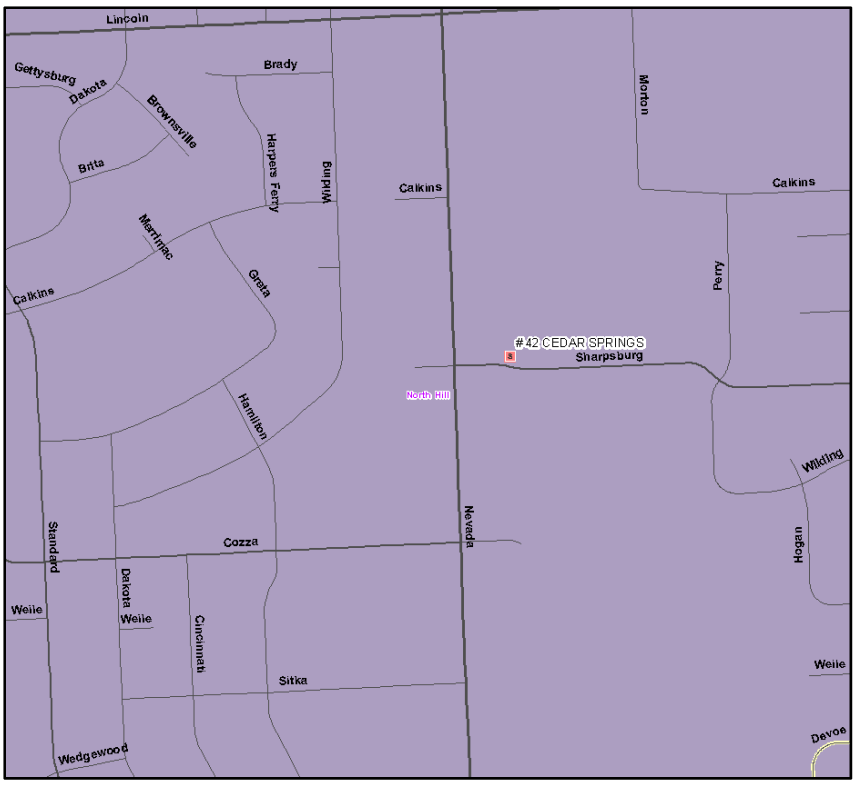
#38 Yards – designated sample tap in the meter shop at the Water Dept. Yards



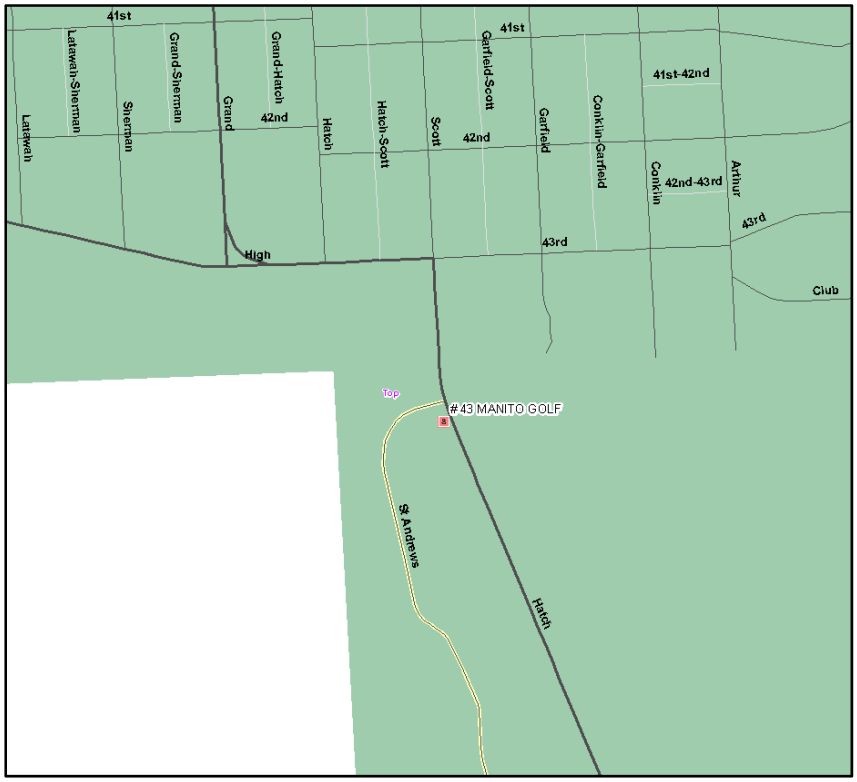
#41 – NW Boulevard – stand-alone sample tap west off the roadway

NOTE: EFFECTIVE MAY 1, 2013, THIS SAMPLE SITE WILL NO LONGER IS USED.

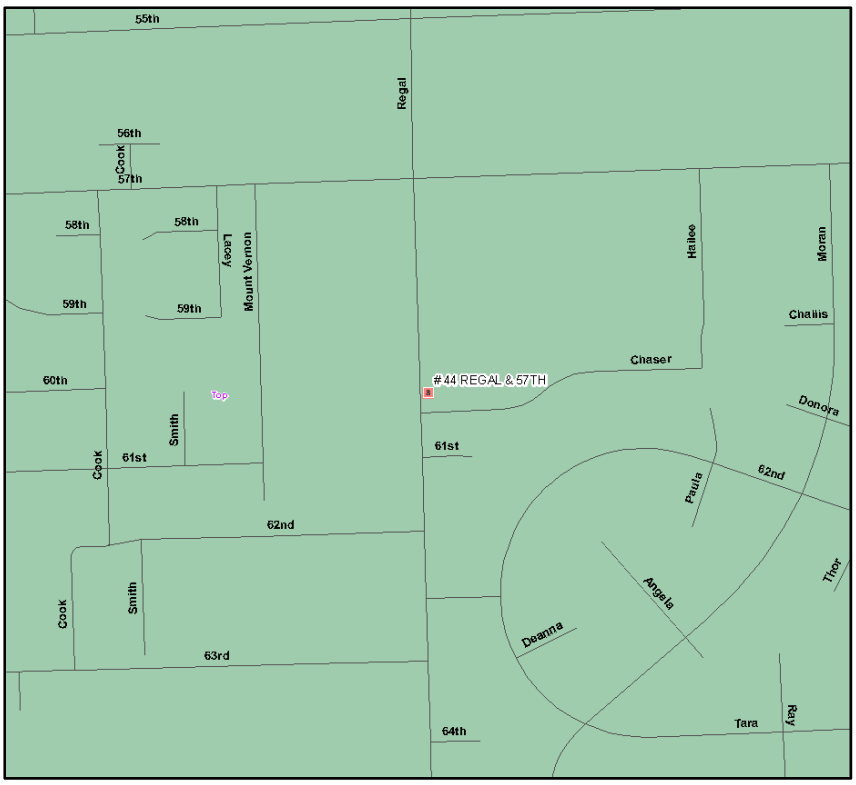
(See #63 VA Hospital, also depicted on map above)



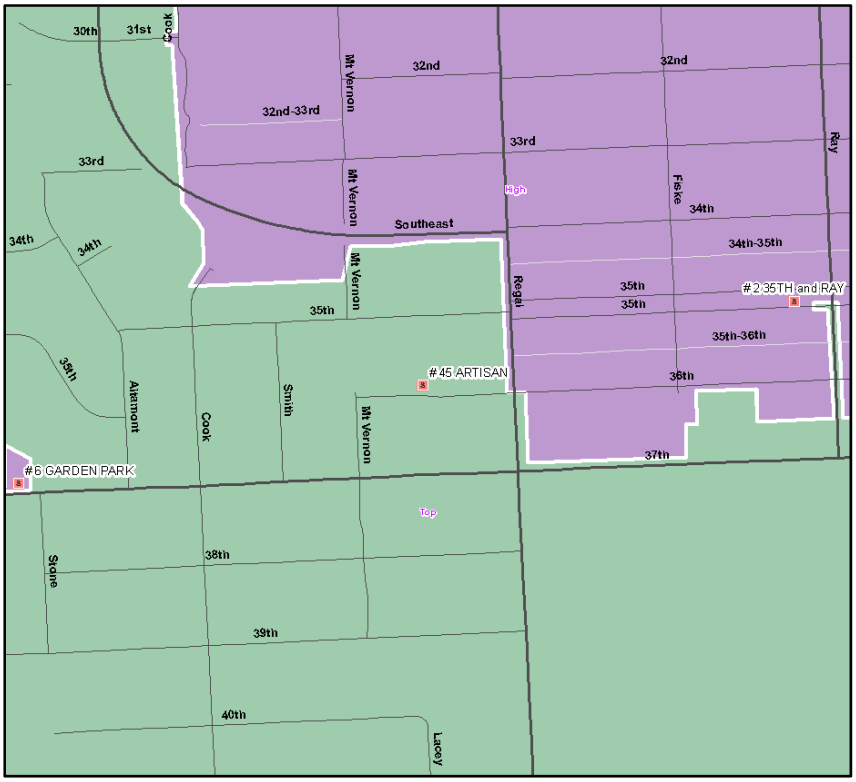
#42 – Cedar Springs – Sample Station in landscaping off the south curbline.



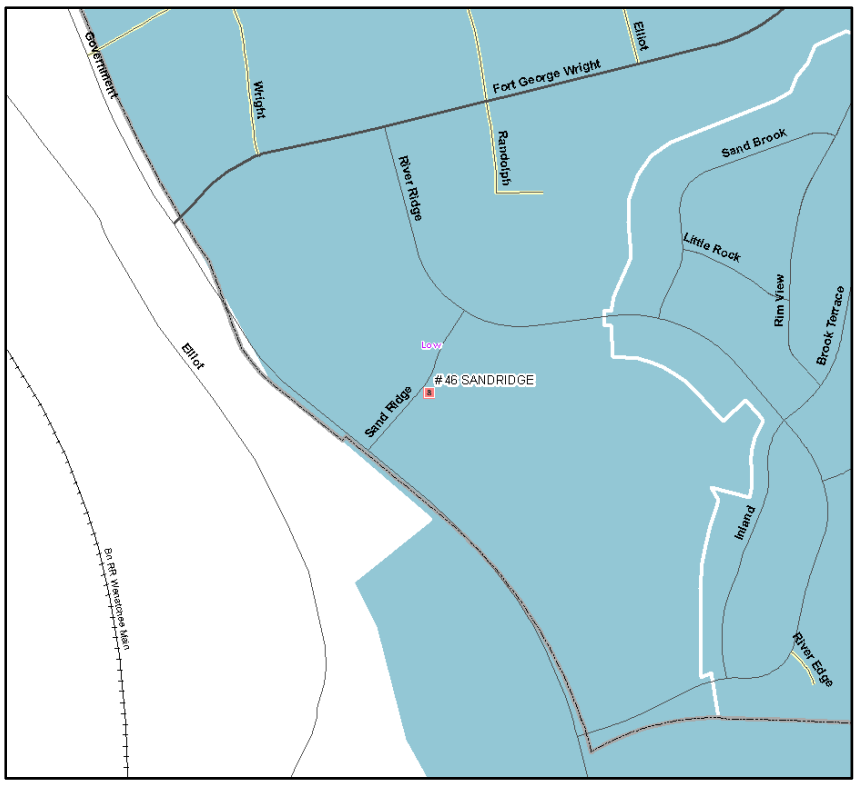
#43 – Manito Golf – Sample Station in lawn off west curbline



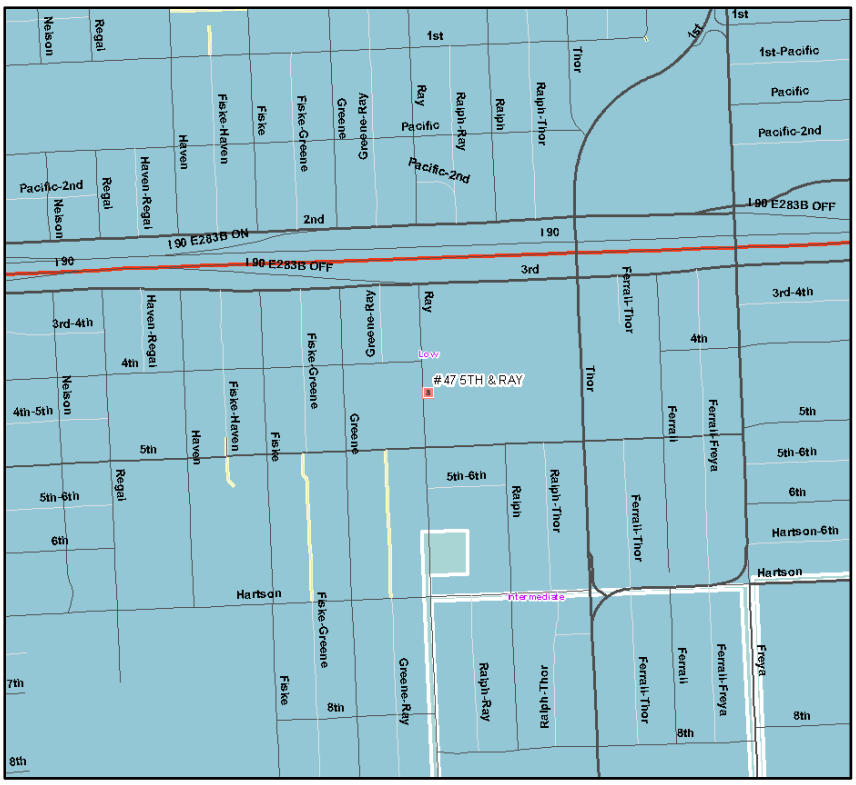
#44 – Regal off 57th – Sample Station in landscaping near driveway, off west curbline



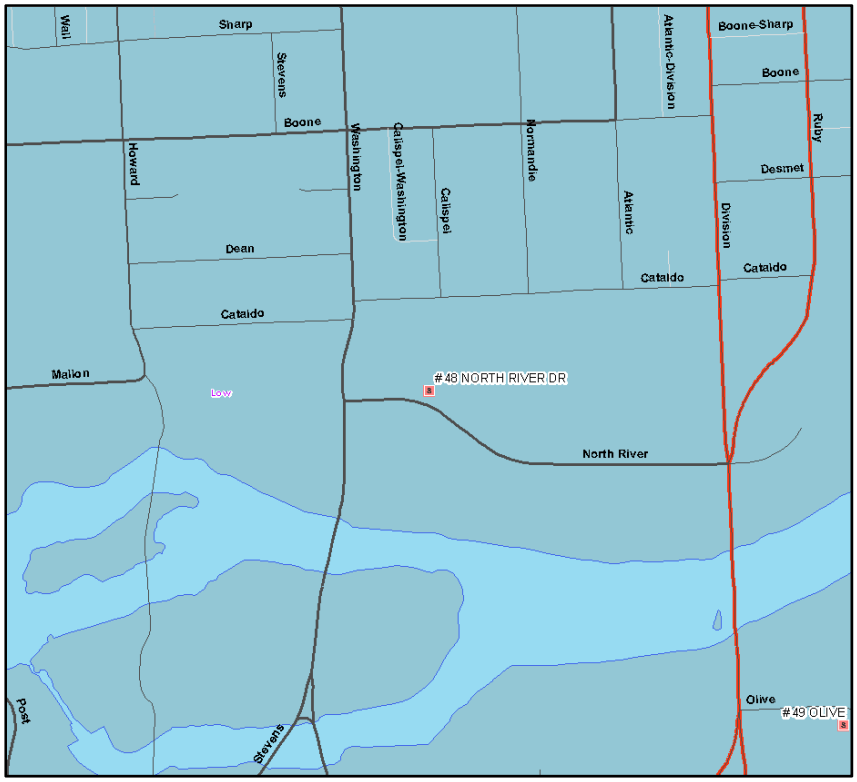
#45 – Artisan – Sample Station in median in the driveway



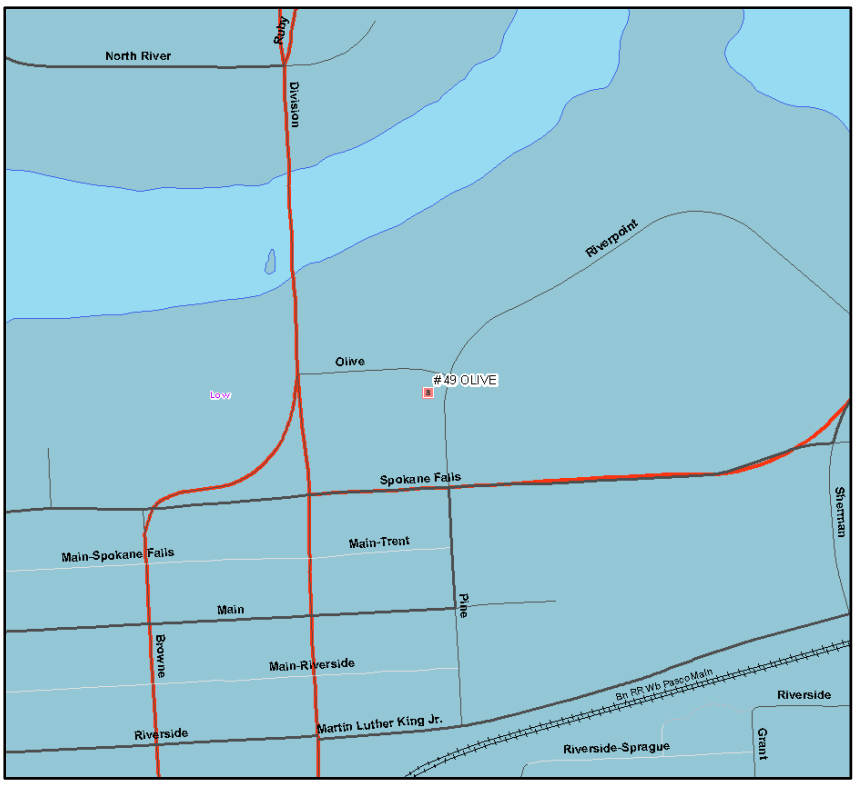
#46 – Sandridge – Sample Station in lawn



#47 – 5th & Ray – Sample Station in landscaping on west side of Fred Meyers store

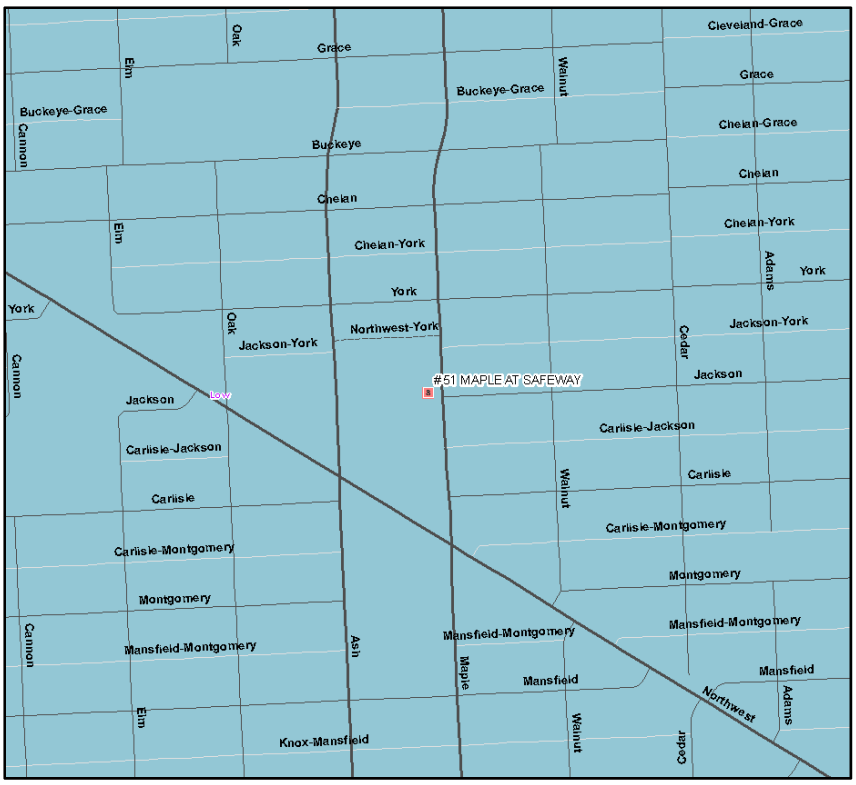


#48 – North River Drive – Sample Station in landscaping near *GroupHealth-Riverfront* sign

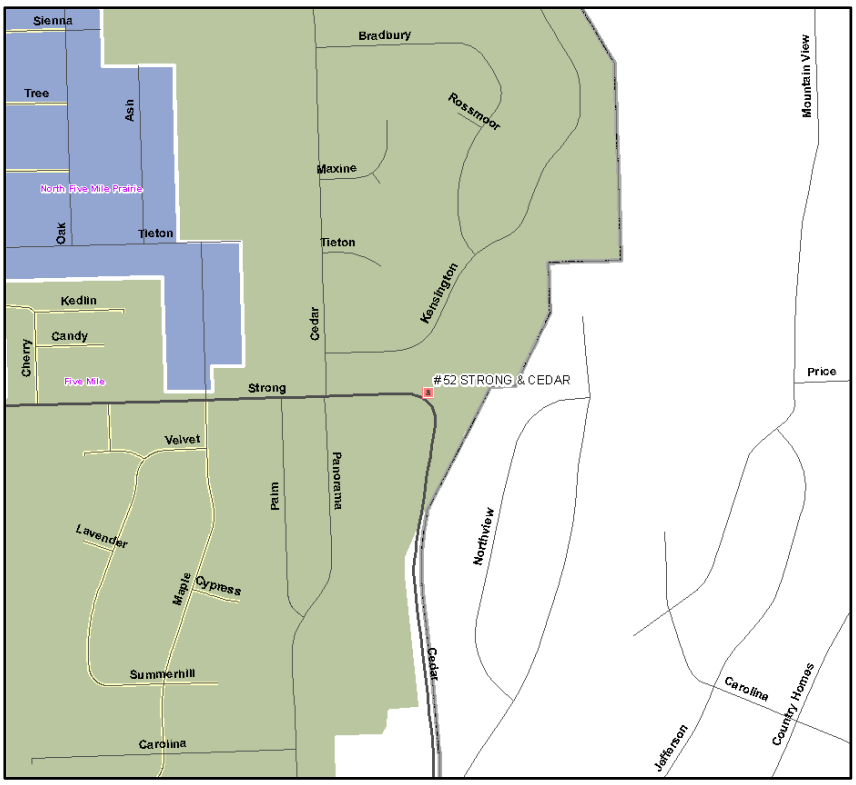


#49 – Olive – Sample Station in landscaping off the corner of Olive & Riverpoint

#50 – Westview – Sample Station in landscaping off the driveway of a commercial building

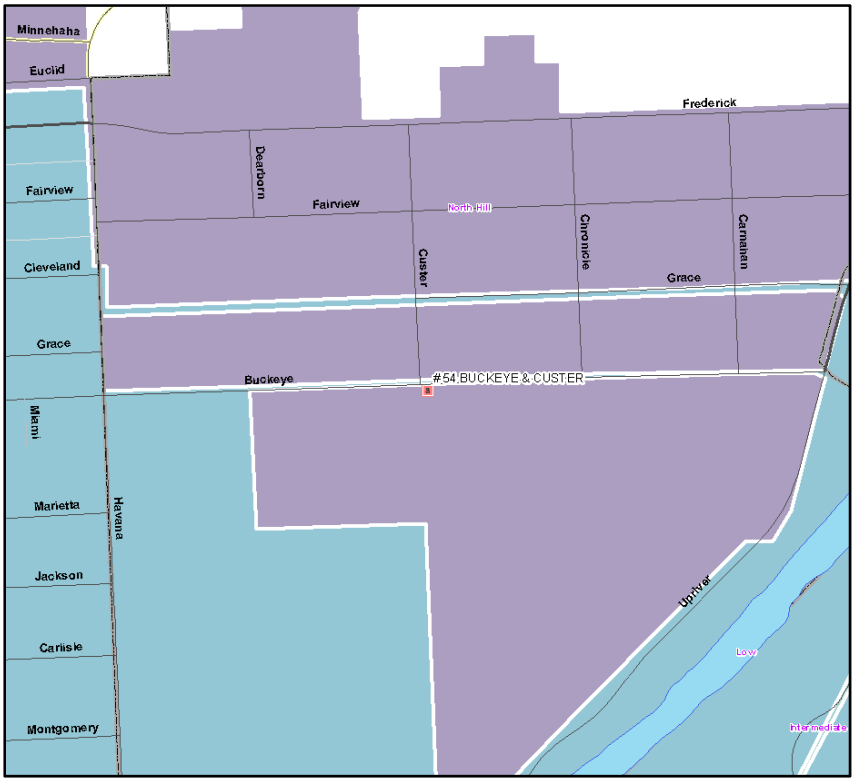


#51 – Ash at Safeway (just off Maple) – Sample Station in the stormwater swale/landscaping for Safeway

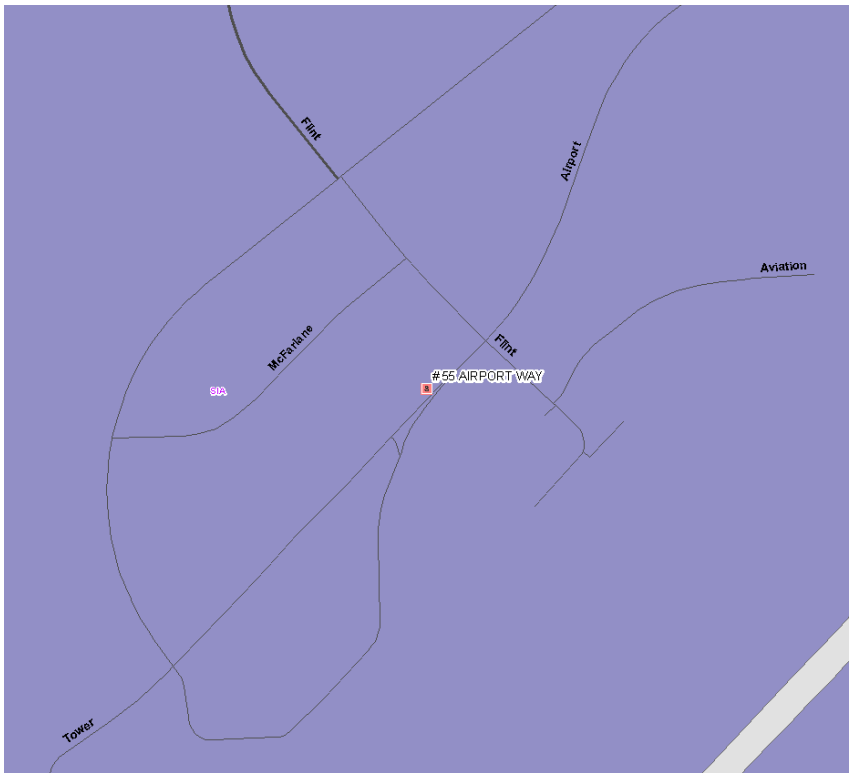


#52 – Strong Rd. – Sample Station in landscaping behind Jersey barriers at the curve.

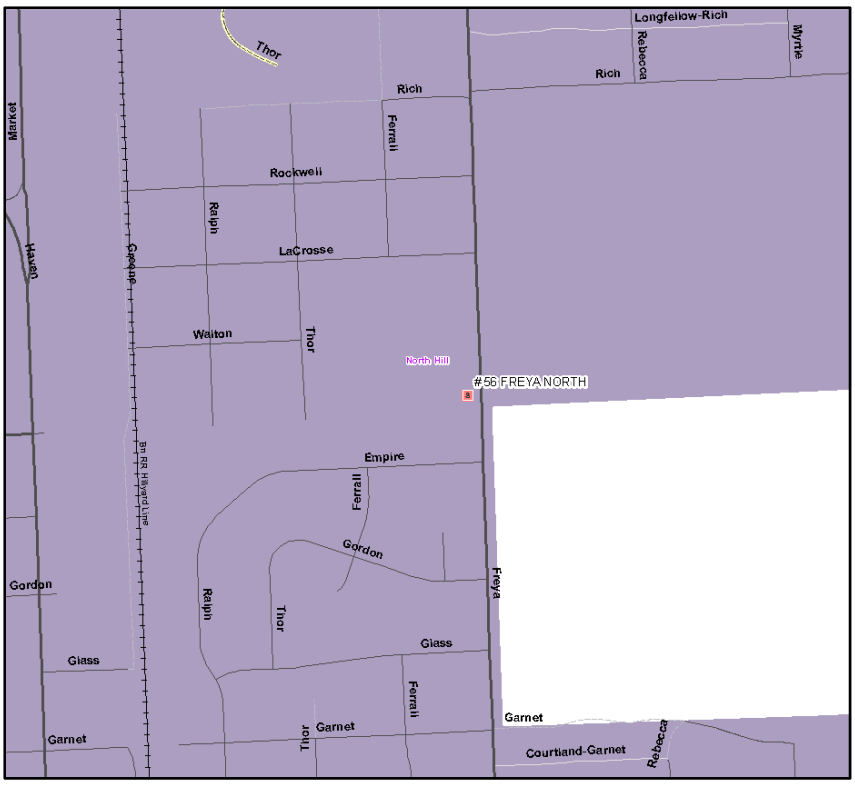
#53 – Barnes at Indian Trail – Sample Station at n.e. corner of Barnes & Coursier Ln.



54 – Buckeye & Custer – Sample Station south of the roadway

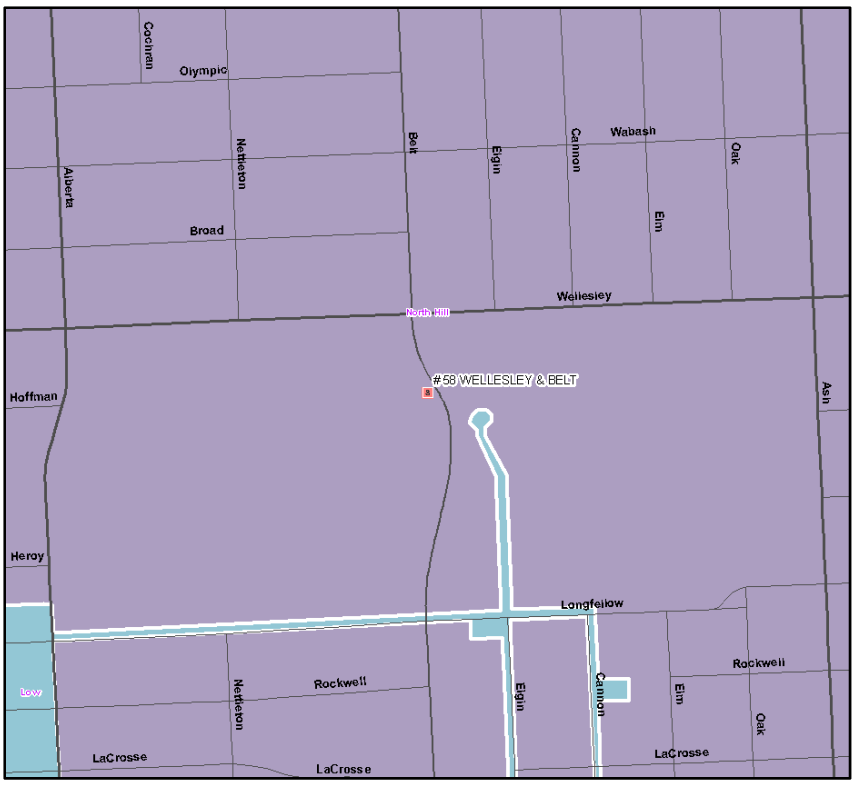


55 – Airport Way – Sample Station off the north curbline in landscaping for Wingate Motel

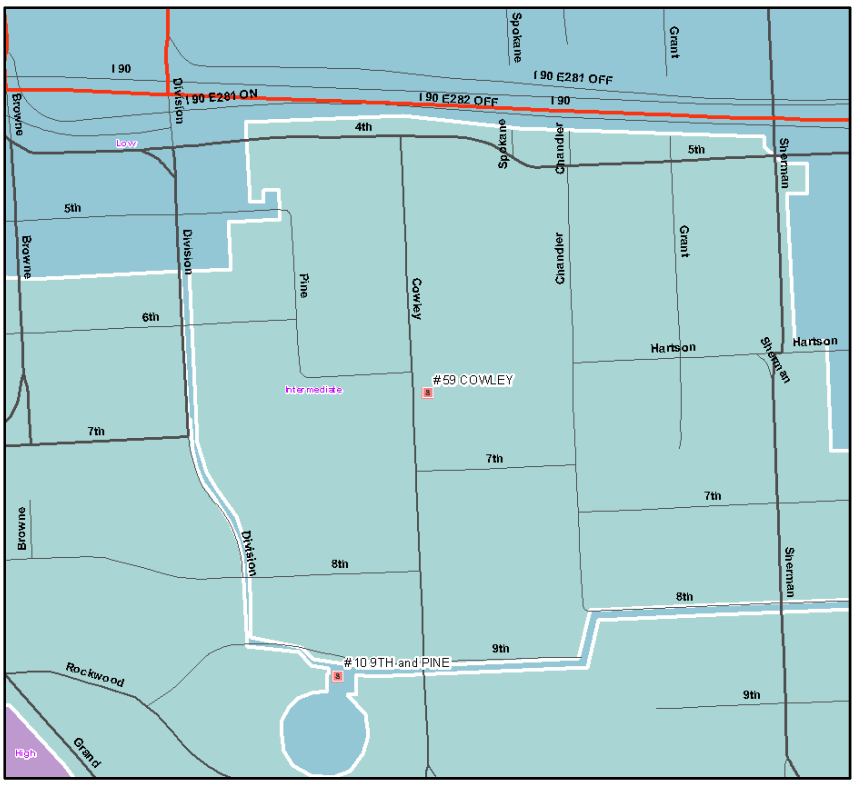


56 – Freya-North – Sample Station in dense landscaping off the west curbline

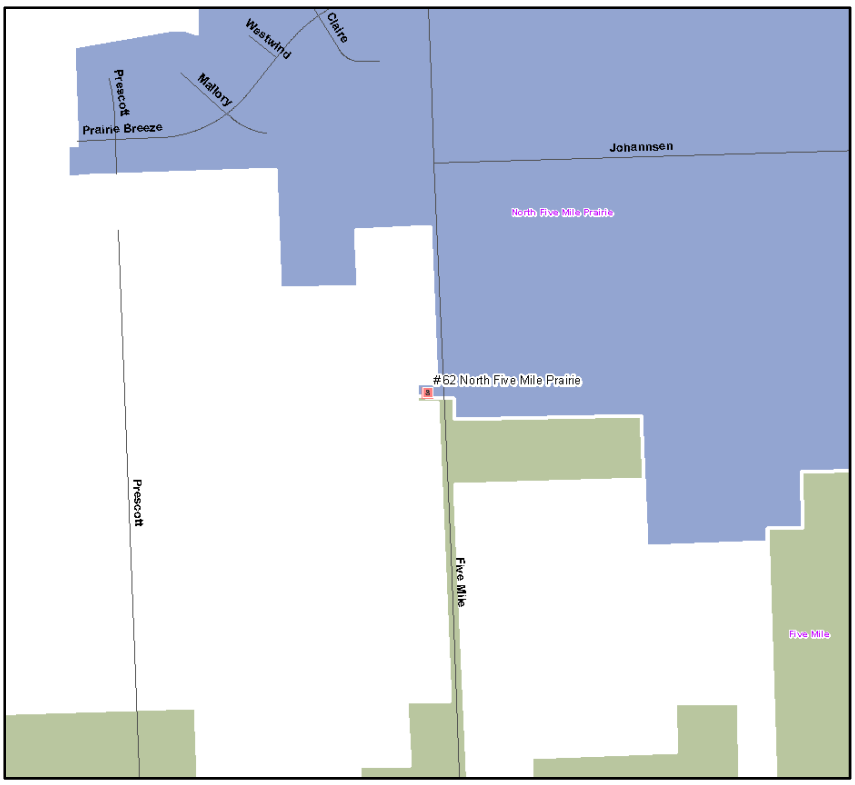
#57 – Lidgerwood – Sample Station in landscaping near Emergency entrance at Holy Family Hospital



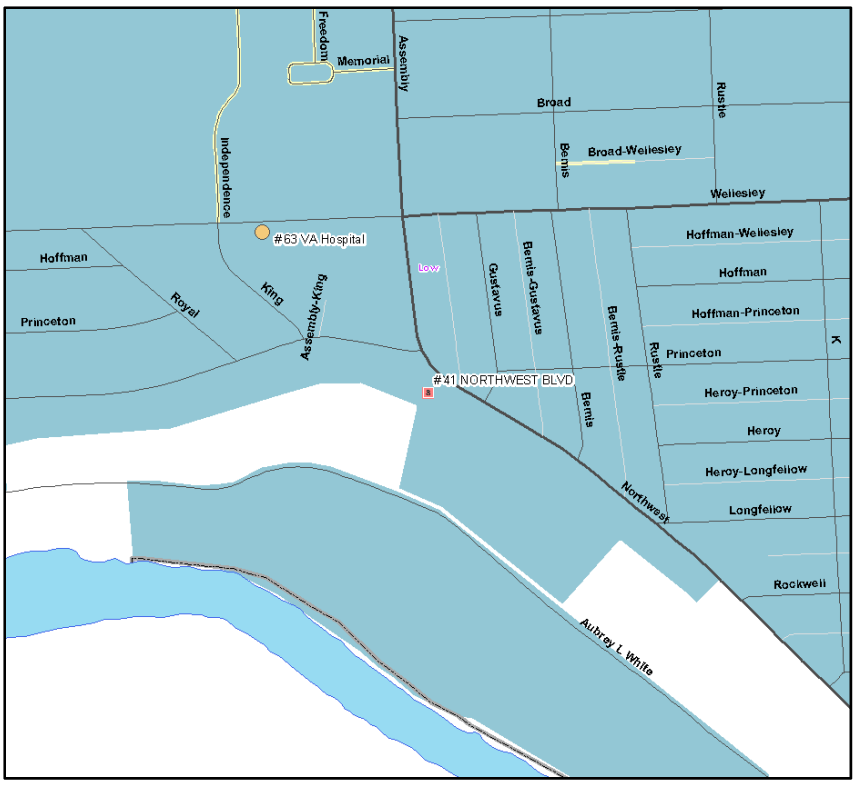
58 – Wellesley & Belt – Sample Station in landscaping off east curbline near Rite-Aid



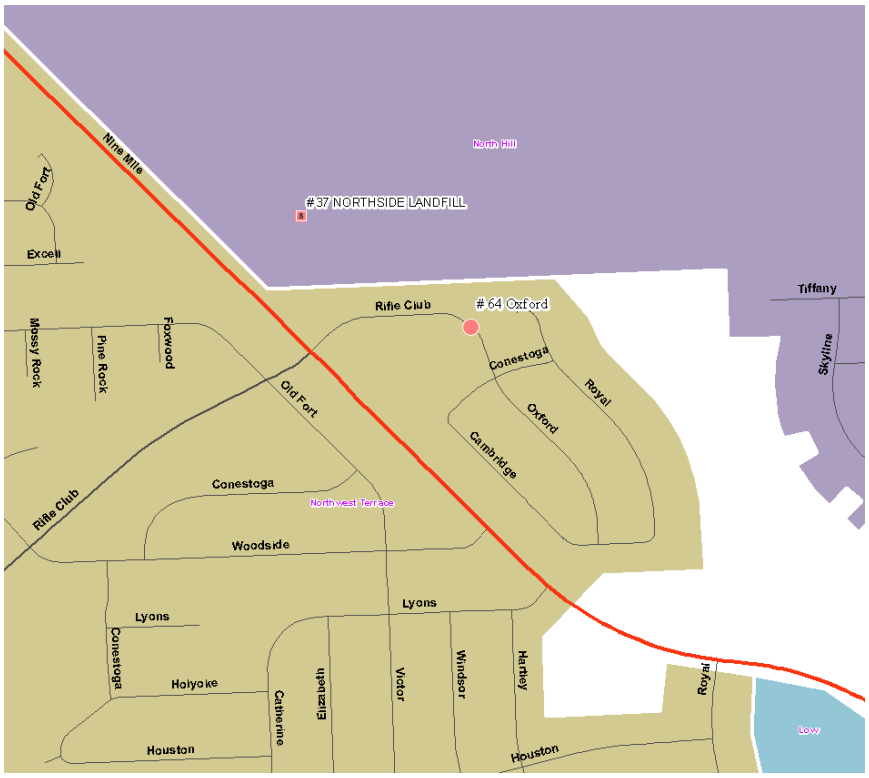
#59 – Cowley – Sample Station off east curbline at St. Lukes Rehab Institute



62 – Kempe (formerly N. Five Mi. Prairie) – designated sample tap in elbow for main pipe in the booster station for Kempe



#63 – VA Hospital – Sample Station off the south curbline of Wellesley near driveway for strip-mall



64 – Oxford (intersection of Oxford & Rifle Club Rd.) – Sample Station in the traffic island in the middle of the street

Appendix II – Repeat Sampling Sites

Appendix 6.4.9 Lead-Copper Rule Testing sites

count		Lead (ppb)
58	2429 W EVERETT	13.50
57	2323 W. SANSON AVE	7.34
56	2633 W. WASBASH	6.51
55	1408 E. BROAD ST	5.92
54	5011 N. ELGIN ST.	5.44
53	5117 N OAK ST	5.12
52 *	**4927 N. CANNON**	**5.00**
51	5227 N. OAK ST	4.81
50	5407 N ELM ST	4.27
49	4910 N. A ST.	3.97
48	4918 N. ELGIN	3.85
47	2308 W. CROWN AVE	3.57
46	3714 E. 29TH AVE	3.55
45	1654 E. BROAD ST	3.54
44	2328 W OLYMPIC	3.47
43	923 E GLASS	3.44
42	5217 N. JEFFERSON ST	3.13
41	5008 N BELT	2.96
40	10015 N. MOORE ST.	2.93
39	5917 N. COOK ST.	2.79
38	715 E. SANSON AVE.	2.60
37	5418 N. BELT ST.	2.59
36	3718 E. 29TH	2.33
26	4924 N. ELGIN	1.82
35	5227 N. ELGIN ST.	1.35
34	3812 E. 48TH AVE	1.35
33	508 E. VICKSBURG PL	1.31
32	1227 E COURTLAND AVE	1.31
31	3427 E 36TH AVE	1.23
30	5303 W. RIDGECREST	1.20
29	4310 W. SHAWNEE AVE	1.16
28	3518 E 31ST AVE	1.04
27	5317 N. ELGIN ST.	1.02
25	3718 E. 28TH AVE	0.94
24	1221 E COURTLAND AVE	0.89
23	5603 W LYONS CT	0.86
22	4306 S MIAMI	0.81
21	5108 W. RIDGECREST	0.80
20	5624 W. LYONS CT	0.79
19	6007 W. SHAWNEE AVE	0.75
18	2211 W ROWAN	0.71
17	8518 N. VALERIE	0.66
16	9414 N FARMDALE	0.65
15	5219 W. RIDGECREST DR.	0.64
14	6011 N. MONROE ST	0.62
13	1618 E. BROAD ST	0.61
12	8710 N. KELLY COURT	0.52

11	9522 N LOGANBERRY	0.52
10	711 E 35TH	0.50
9	206 E. ST. THOMAS MOORE WAY	0.45
8	8205 N. GENERAL LEE WAY	0.44
7	6003 W SHAWNEE AVE	0.39
6	7638 N WISCOMB	0.36
5	706 E. 34TH	0.35
4	7510 N. WISCOMB	0.22
3	2127 E. COLUMBIA AVE	0.21
2	5218 W EDGEWOOD CT	0.16
1	1211 E. COURTLAND AVE	<0.1
	~~5108 N. CANNON ST.~~	~~<0.1~~
	~~8601 N. KELLY COURT~~	~~0.14~~
	~~9615 N. SYLVIA~~	~~0.14~~
	~~1417 W. CHELAN~~	~~0.10~~

* address 52 is the 90th percentile result

Strikethrough addresses were invalidated for incorrect service line material

Note that any address may be removed from the list at any time following lead service line removal

Appendix 6.4.10 Report on Drinking Water

REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2014

Reported by
Doug Greenlund, Environmental Analyst
1 April 2015

Note: *This report provides a summary of the drinking water monitoring conducted during 2014 only. For a comprehensive review of past monitoring, please see the 2010 report and subsequent annual reports.*

The City of Spokane's water is of very high quality. Many different tests are conducted at varying intervals to confirm that the City's drinking water meets Washington state and federal EPA drinking water quality standards. The City's drinking water supply, to date, has consistently met all state and federal standards. This report is meant to provide consumers and other interested parties with insight into what analytical tests have been conducted and, in some cases, substances that have been detected. The state and federal Maximum Contaminant Level (MCL) information is provided as a risk benchmark.

This report also summarizes the amount of water the City used in 2014, and documents some indicators to show the progress being made to meet conservation goals adopted by the City in its Water Stewardship Strategic Plan.

The final pages (appendices) of this report summarize the most recent analytical testing. Appendix II has a comprehensive list of substances tested in City water. Appendix III summarizes the testing completed during 2014. Appendix IV provides a summary of inorganic testing results. Appendix V provides the results from distribution system disinfection by-product testing. The following narrative and attachments summarize and explain recent results in more detail. Appendix VI and the last two pages of this narrative (General Information) contain information relevant to the annual Consumer Confidence Report. As such, the information may be redundant, relative to the main text of this report.

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie Aquifer - designated a sole source aquifer in 1978. The Spokane Valley-Rathdrum Prairie Aquifer slowly flows through two different states and a number of different counties and is the source water for a large number of water purveyors including the City of Spokane. This water and any contaminants freely move across political boundaries. Many groups and/or private individuals may claim this water to be used for diverse purposes. Some of these competing interests include (but are not limited to) drinking water rights, irrigation, fisheries, hydroelectric power, and industrial processes. The Spokane Aquifer (that portion of the larger aquifer lying within Washington State) and the Spokane River exchange water. While the aquifer contains a large volume of water, many factors play into the volume of water in the Spokane River, complicating the management of these resources. Some of these factors include pumping for irrigation and potable water, hydroelectric dam operations, and the variations of weather and precipitation. The rates and locations of exchange between the aquifer

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable co
n alguien que lo entiende bien.
(Para ver información adicional, visite al; www.epa.gov/espanol/ciudadanos.html

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài liệu này.

and the Spokane River have been re-examined as part of the Bi-State Aquifer Study. In January 2008, the states of Washington and Idaho announced signing a Memorandum of Agreement (www.idwr.idaho.gov/WaterInformation/projects/svrp/PDFs/svrp_MOA_10-26-07.pdf) concerning the *"…continued coordination involving the maintenance and improvement of the technical tools developed in a bi-state water study."* Discussions to agree on how to utilize these technical tools to manage this valuable resource will continue. The results of these studies and agreements will help give the City information it needs to continue to supply high-quality water to the citizens of Spokane.

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good housekeeping measures are not followed for all activity over and adjacent to the aquifer. The physical and economic health of our area depends on the quality of our drinking water. In order to safeguard water quality, the City continues its efforts to make available to the community information about, and appropriate disposal mechanisms for, dangerous wastes that are generated in the Aquifer Sensitive Area. The City, in cooperation with other local governments and the Spokane Aquifer Joint Board, continues to work toward strengthening regulations for the storage and use of critical materials to safeguard the local water supply.

For additional information regarding the City of Spokane's drinking water or related issues:

City of Spokane Water Department	(509) 625-7800	www.spokanewater.org/
City of Spokane-Environmental Programs	(509) 625-6570	www.greenspokane.org/
Spokane County - Water Resources	(509) 477-3604	www.spokanecounty.org/WQMP/
Spokane Regional Health District – Environmental Health Div.	(509) 324-1560	www.srhd.org/services/environment.asp
Washington State Department of Health - Eastern Regional Office (Drinking Water)	(509) 329-2100	www.doh.wa.gov/YouandYourFamily/HealthyHome/DrinkingWater
Washington State Department of Ecology – Eastern Regional Office	(509) 329-3400	www.ecy.wa.gov/
U.S. EPA Safe Drinking Water Hotline	1-800-426-4791	water.epa.gov/drink/index.cfm

REPORT ON CITY OF SPOKANE DRINKING WATER FOR 2014

Table of Contents

To obtain free software to read some of these digital files:

- Adobe Acrobat files: www.adobe.com/products/acrobat/readstep2.html
- Microsoft Word files: www.microsoft.com/downloads/details.aspx?FamilyID=3657ce88-7cfa-457a-9aec-f4f827f20cac&displaylang=en

QUANTITY - Water for the Future

As a result of increasing recognition of the limits of our groundwater resources, the state has encouraged local interests and authorities to come together to manage this resource. The City of Spokane has taken an active role in area-wide partnerships to safeguard the quality and quantity of our water supply. The City of Spokane and all its water customers are challenged to use water resources wisely and responsibly. The City of Spokane Water Stewardship Program Strategic Plan was established by resolution of the City Council on May 1, 2006 (Resolution 06-49).

Changes in federal building standards have resulted in water savings nationwide. The City's Building Services Dept. enforces these standards. The City of Spokane Water Department has taken additional steps to conserve water through education programs, metering water use, reducing the loss of water resulting from leaking pipes, and implementing a conservation-oriented rate structure. The Water Use Efficiency Rule (WAC 246-290-810) requires that municipal water suppliers adopt a plan to make more efficient use of their water. Two of the quantifiable elements, conservation goals and distribution system leakage, are discussed in this section.

GOALS

In April 2014, the City of Spokane updated the Water Use Efficiency Goals. These new goals were adopted on April 21 through resolution 2014-0046. There are four new goals based on metered consumption. Of the four goals three of them deal with reduction in outdoor water use for the largest sectors: commercial/industrial, government, and residential. Residential includes single family residences. The government sector includes all levels of government served by the water department as well as parks, public schools, and public post-secondary education facilities. The commercial/industrial sector focuses only on identified outdoor irrigation uses. The fourth goal deals with indoor water use for residential customers. The updated goals differ from the City's previous goals. They are based on measured use not measured pumping, associated with a specific customer segment, and primarily cover the outdoor summertime use. The goals, as adopted, are stated below:

1. Continue the reduction of indoor residential use by one half percent (0.5%) on average for residential connections annually, over the next six (6) years.
2. Reduce outdoor residential use by two percent (2%) on average for residential connections annually, over the next six (6) years.
3. Reduce metered outdoor irrigation commercial/industrial use by two percent (2%) for Commercial/Industrial connections annually, over the next six (6) years.
4. Reduce outdoor metered government use by two percent (2%) for governmental connections annually, over the next six (6) years.

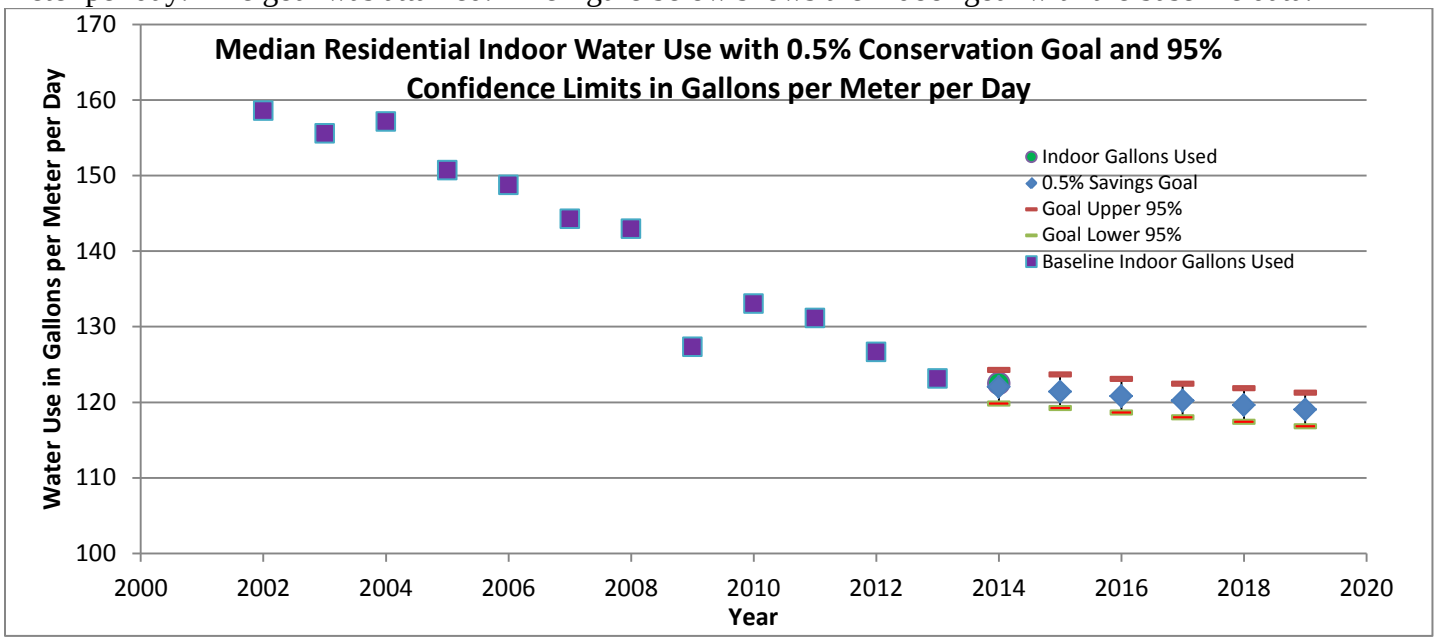
Three of the four goals were attained in 2014. The commercial/industrial goal was above the 95% confidence interval and therefore very likely not met.

All of the conservation goals are based on a reduction in use from the baseline period of 2002 to 2013. The indoor use is for the period of December 15 to February 14. The outdoor use is for the period of July 15 to September 14. The outdoor use is the read summer time use minus the indoor use for the preceding period. The outdoor use is further corrected for the pan evaporation as measured at the Spokane National Weather

Service office. The results presented are comparing pan evaporation corrected baseline goals with pan evaporation corrected results

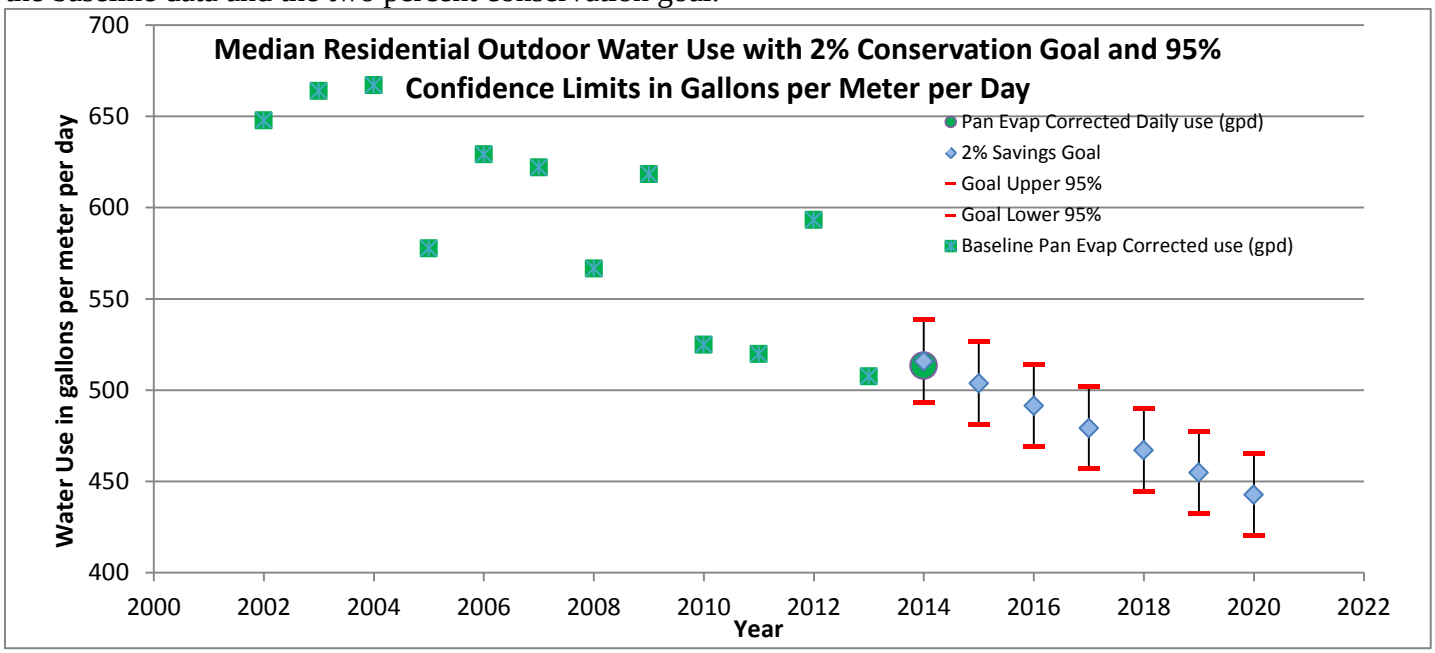
Indoor Residential

The indoor residential goal for 2014 was 122 gallons per meter per day. The measured use was 122 gallons per meter per day. The goal was attained. The figure below shows the indoor goal with the baseline data.



Outdoor Residential

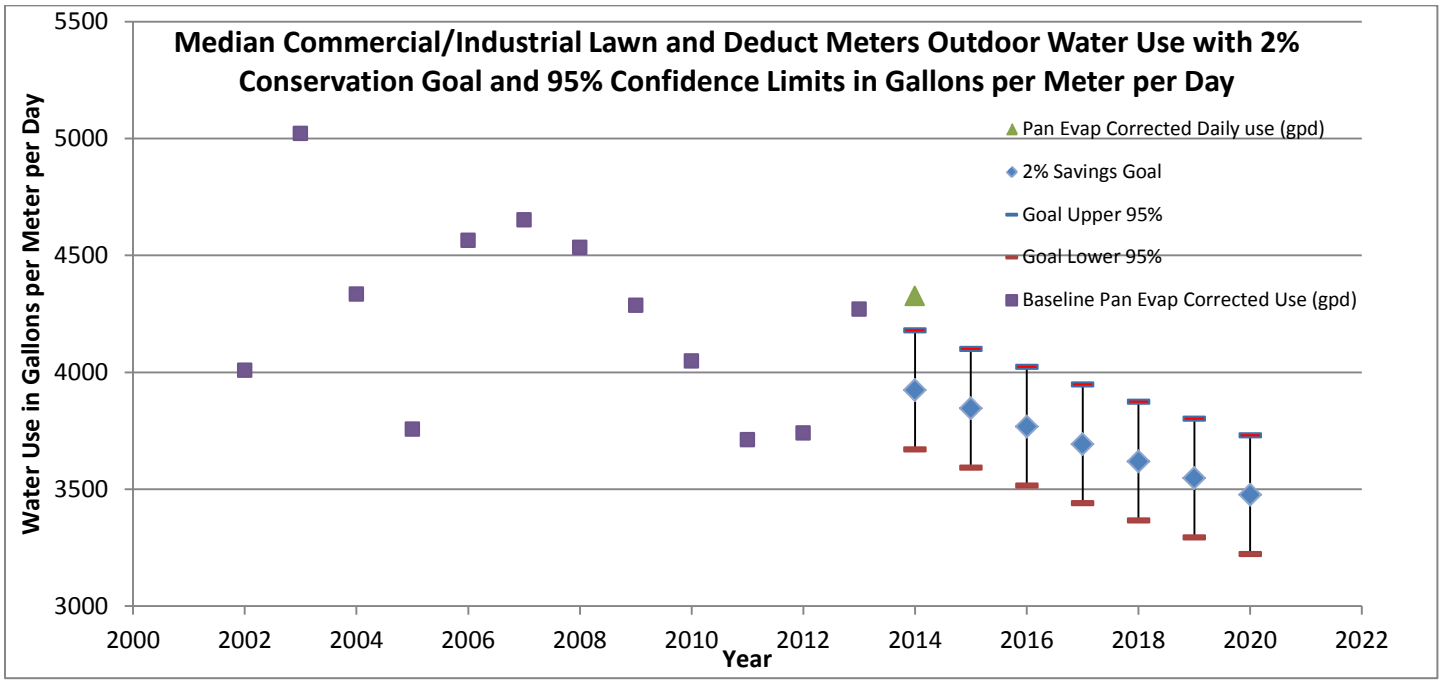
The outdoor residential goal for 2014 was 516 gallons per meter per day. The measured results were 513 gallons per meter per day. This goal was also attained. The figure below is for the residential outdoor use with the baseline data and the two percent conservation goal.



CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

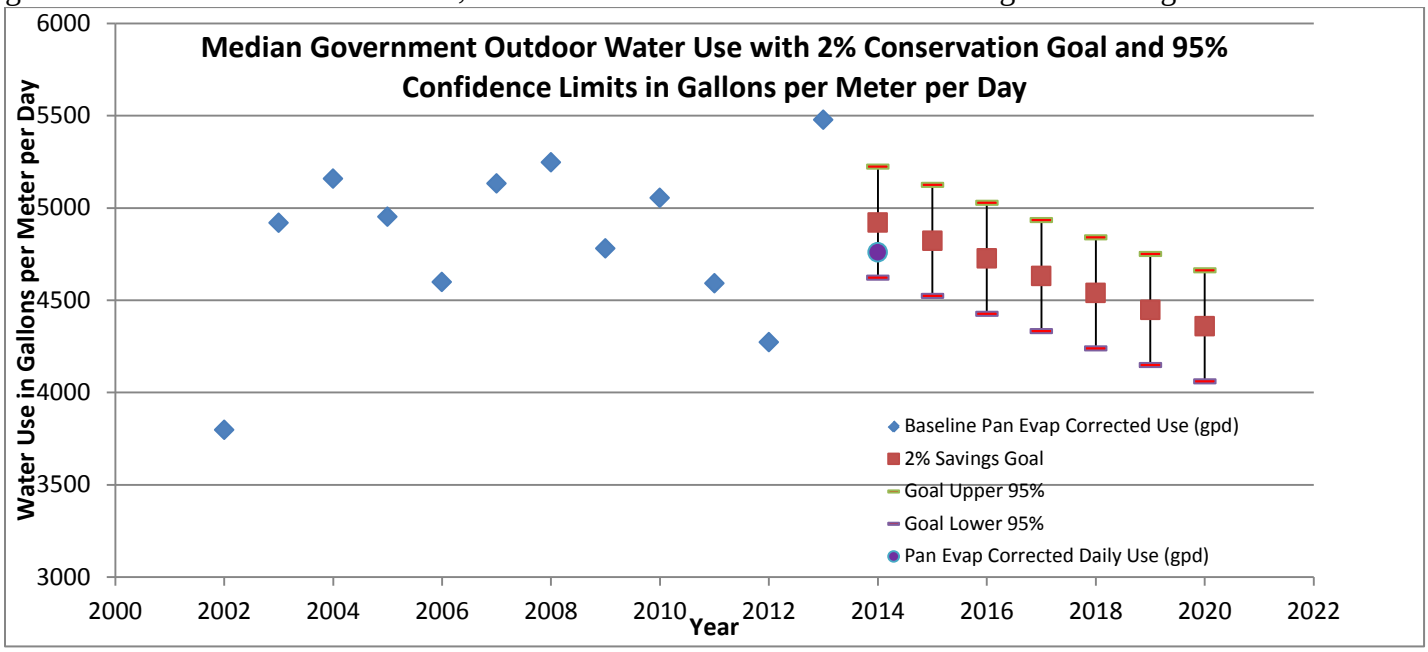
Outdoor Commercial/Industrial

The conservation goal for the commercial/industrial sector was 3,923 gallons per meter per day. The measured result was 4,325 gallons per meter per day. This is above the 95% confidence; therefore it is very likely the goal was not met. The figure below shows the baseline commercial/industrial data with the conservation goal and confidence intervals.



Outdoor Government

The 2014 government sector outdoor conservation goal was 4,921 gallons per meter per day. The pan evaporation corrected use was 4,759 gallons per meter per day. The figure below shows the 2% conservation goal with 95% confidence intervals, and the baseline water use. The outdoor government goal was attained.



CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

Goals 2006 to 2014

The 2006 City of Spokane Water Stewardship Strategic Plan included goals for per capita reductions in water use. The goals were based on total pumpage for all uses including residential, commercial, industrial, and government, and are expressed on a per capita basis. These goals were set for limiting the water consumption through 2017 and were specified for seasonal periods of October through March, April through June, and July through September. The goals differ by year and period.

The October through March timeframe is typically a period of mostly indoor water use. The amount used during this period is nearest the water use essential for health and safety. Furthermore, a modest, but constant rate of growth for our community is assumed.

The April through June timeframe is a transitional period from mostly indoor use to increasing outdoor use.

The July through September period includes increasing demand for outdoor irrigation. This is also the most critical period for flows in the Spokane River. The per capita reduction in water use for this period is the most ambitious.

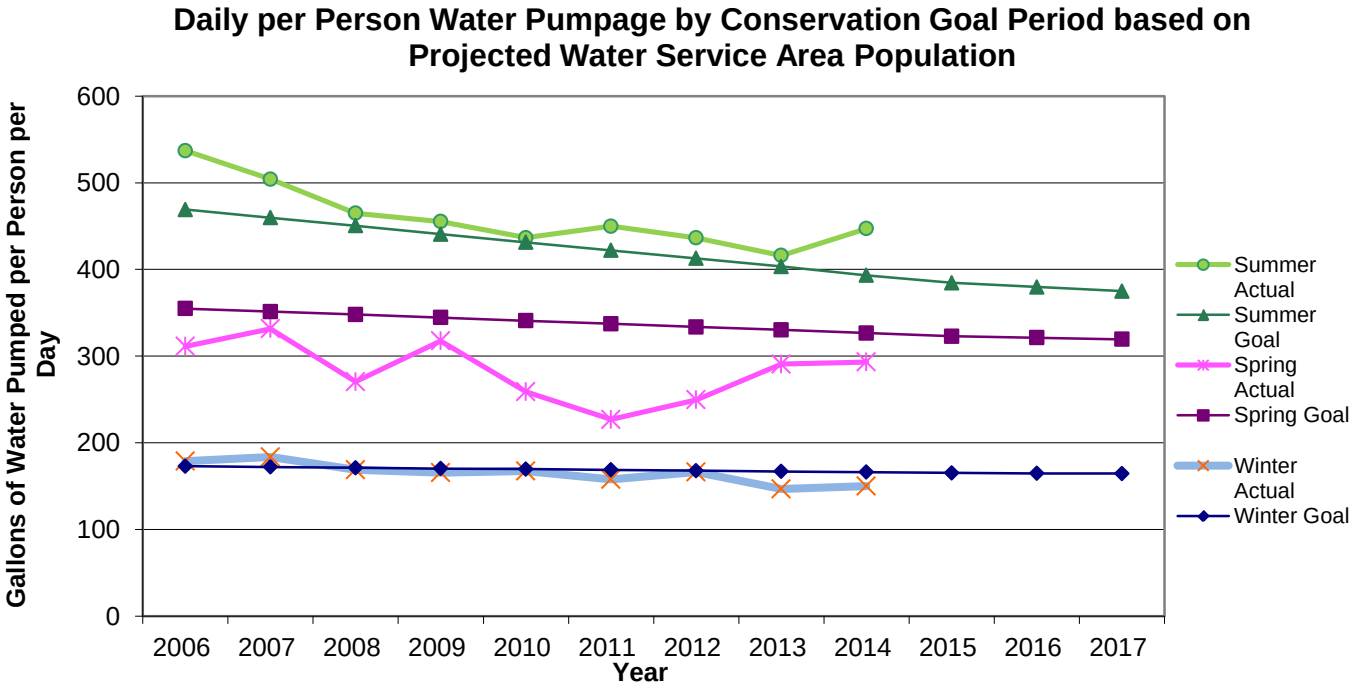
The detailed source water pumping totals versus the adopted Water Stewardship Goals are in Appendix I. The following table and graphs illustrates this information for 2014:

WATER YEAR	2014 pumpage (x1,000 gallons)		
Period	Total	Goal	Result
October 2013 through March 2014 (winter)	6,397,435	7,080,000	-9.6%
April through June (spring)	6,246,070	6,960,000	-10.3%
July through September (summer)	9,632,114	8,470,000	13.7%
Sum of seasonal totals	22,275,619		

The preceding table shows the difference between the Goal and the actual Use as a percentage. A positive value equals exceedance of the goal. Total pumpage for the periods for 2006 - 2014 is available in Appendix I.

It is our estimate that the City, while continuing to show improvement, did not achieve its water conservation pumpage goal for 2014, specifically for the timeframe of July – September 2014. The following graph demonstrates the actual pumpage and goals for each season for 2006 thru 2014 on a per person per day basis. The water service area projected population from the Water Stewardship Strategic Plan is available in Appendix I.

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760



In 2014, the City met the conservation goal for the winter period of October 2013 through March 2014. This was the seventh consecutive year for meeting this conservation goal.

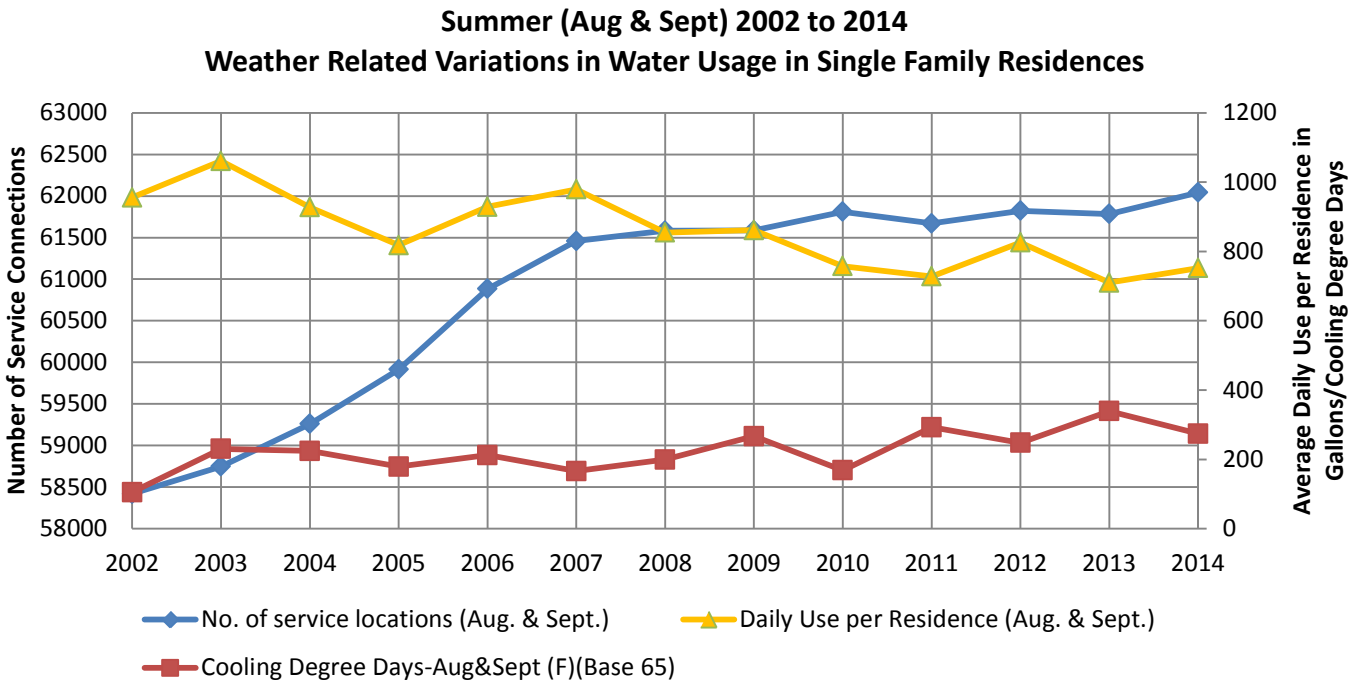
The City of Spokane has consistently met the conservation goal for the months of April, May and June**. The City met its goal for April through June again in 2014.**

The City did not meet its goal for July through September in 2014. To date, the City has not met its goal for July through September. Note that the rate of water use reduction is most ambitious during this season.

It is important to note that the commitment taken on by the City is based on per capita usage and the actual population served in 2014 is not immediately known. However, an indicator of population would be the number of single-family residences served. The following table provides the number of single-family residences over the last 10 years. Please note that the number of residences is typically lower in the winter because some local residents go south for the winter, and during that time, such residences are not counted as "connections."

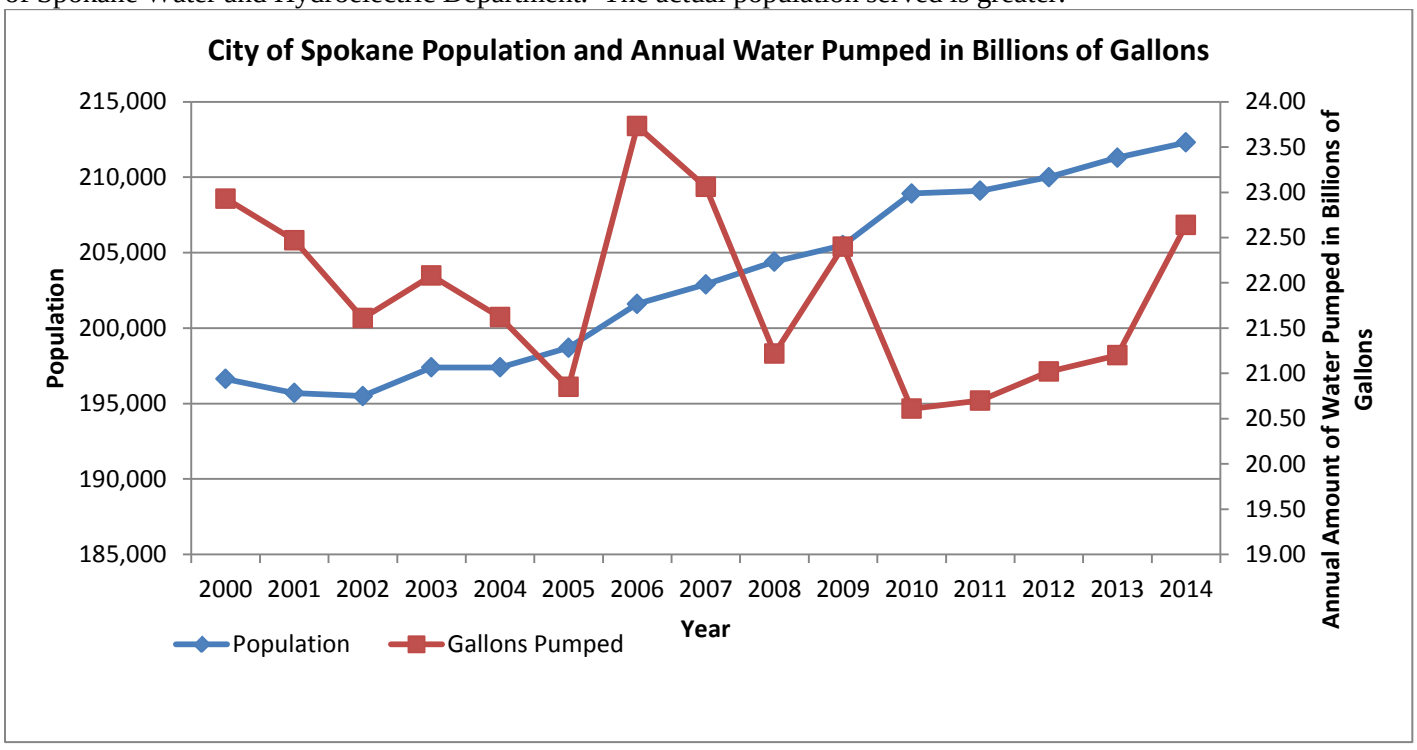
	No. of service locations (Jan. & Feb.)	***No. of service locations (Aug. & Sept.)***
2005	**58,403**	**59,914**
2006	**59,231**	**60,883**
2007	**59,881**	**61,459**
2008	**60,435**	**61,581**
2009	**60,683**	**61,585**
2010	**60,608**	**61,810**
2011	**60,492**	**61,671**
2012	**60,478**	**61,822**
2013	**59,384**	**61,783**
2014	**61,403**	**62,042**

In addition to total population served, seasonal weather variations impact water use. The following graph illustrates daily usage (City of Spokane billing records) in single-family residences during the summer for the period 2002-2014:



The preceding graph compares water usage of single-family residences with temperature (i.e. cooling degree days). July 2014, which is not included in this data, was the hottest July in Spokane since 1906. There was Water Stewardship Program outreach and communication in 2014.

The following graph shows the growth in the City of Spokane and the total amount of water annually pumped by the City of Spokane Water and Hydroelectric Department. The actual population served is greater.



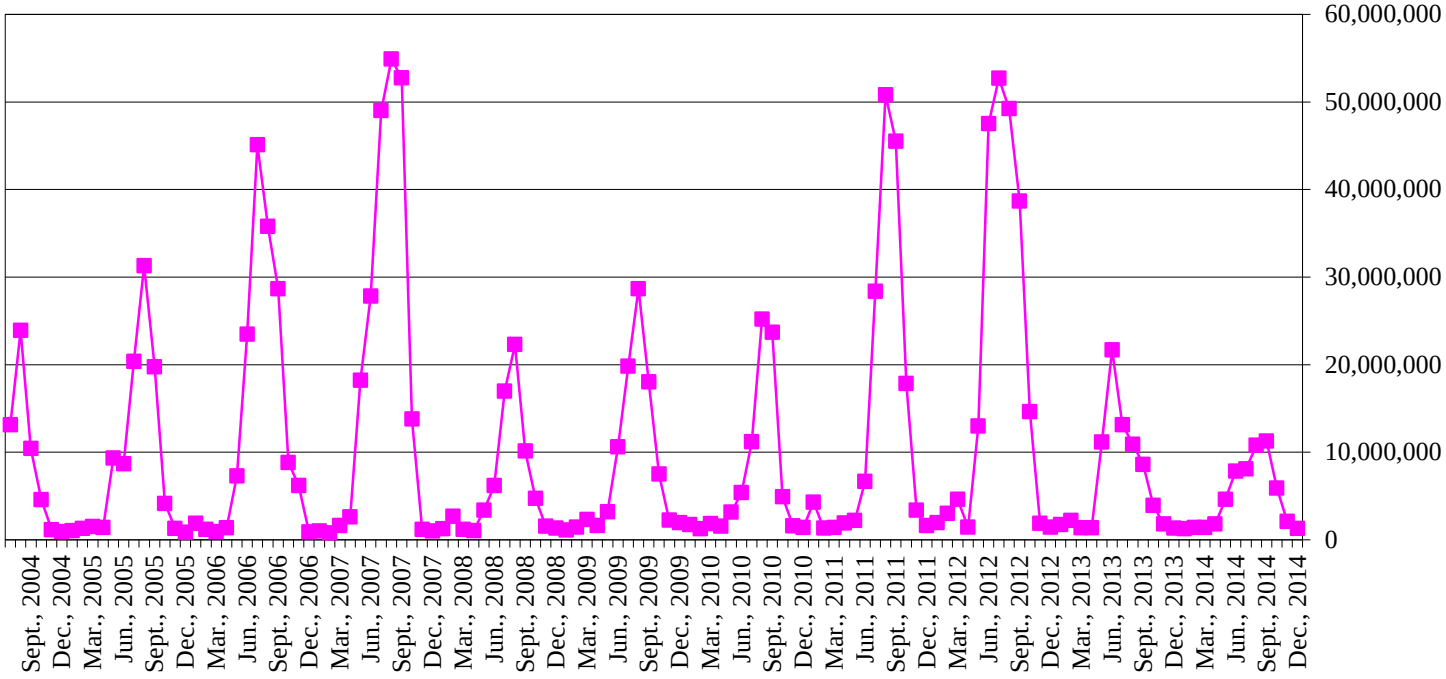
CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

The following table shows the annual total gallons delivered to our wholesale customers:

	Annual Total Intertie Demand, gal.	Percent Change From Previous Year
2005	161,179,040	
2006	190,312,144	18.1 %
2007	227,270,824	19.4 %
2008	75,063,296	- 67.0 %
2009	95,439,564	27.1 %
2010	108,846,716	14.0 %
2011	165,106,788	51.7%
2012	231,569,580	40.3%
2013	79,169,816	-65.8%
2014	51,154,224	-35.4%

The following graph displays the total gallons per month wholesaled to water purveyors outside the City's water service area:

Total Intertie Water Demand, gallons per month



WATER YEAR	2014 pumpage (x1,000 gallons)				
Period	Total	Intertie Demand	Adjusted Total	Goal	Adjusted Result
October 2013 through March 2014 (winter)	6,397,435	11,103	6,386,332	7,080,000	-9.8%
April through June (spring)	6,246,070	14,251	6,231,819	6,960,000	-10.5%
July through September (summer)	6,632,114	30,130	9,601,984	8,470,000	13.4%
Sum of seasonal totals	22,275,619				

If wholesale water use were not counted in the conservation goal measurements, we would be 0.4 % closer to achieving the summer goal.

2014 Water Use Efficiency Program Summary

The City of Spokane continues to engage and educate water customers in water efficient practices. Water Stewardship outreach was concentrated in crucial summer months where water use more than triples and water efficiency goals are at their highest.

Our work for 2014 included:

- Participation in nine community events over the summer, distribution of educational materials and hosting activities on water wise practices
- Presentation of water conservation lessons to two after school programs
- Sponsorships of a Hoopfest Court and the Spokane Indians Baseball grounds crew, with associated advertising and awareness opportunities
- Partnering with local agencies and universities to create, plan, and host four community engagement events
- Information sharing through social media outlets, the City's website, utility bill inserts, and media interviews
- Offering free irrigation assessments to customers
- Providing 216 indoor water saving toilet accessories, low-flow showerheads, aerators, and leak detectors as well as 103 outdoor hose timers to customers

In November 2014, the City Council adopted a new wastewater bill discount for customers who use less water. Under the credit program, which will begin in January 2015, the lowest 20 percent of indoor water users receive credits totaling $60 a year. The lowest 20 percent of indoor water users is determined annually based on water use during the winter when most water use is for indoor purposes and ultimately reaches the City's Riverside Park Water Reclamation Facility. Credits for 2015 will be based on 2014 winter water usage numbers. Although the credit is designed primarily to introduce equity in the City's wastewater rate system and lower operating costs for the City's wastewater utility, it also helps the City achieve its water use efficiency goals, especially the goal for lower residential indoor water use.

Outreach education and engagement with water customers is designed to increase awareness over time and encourage responsible use of our water resources. Statistical data and customer feedback will provide critical information on customer behavior and program effectiveness. For more information, visit: EPA-WaterSense Program (www.epa.gov/watersense/) H2OUSE-Watersaver Home (www.h2ouse.net/) and the City of Spokane Water Stewardship Program at www.waterstewardship.org/

Distribution System Loss (DSL)

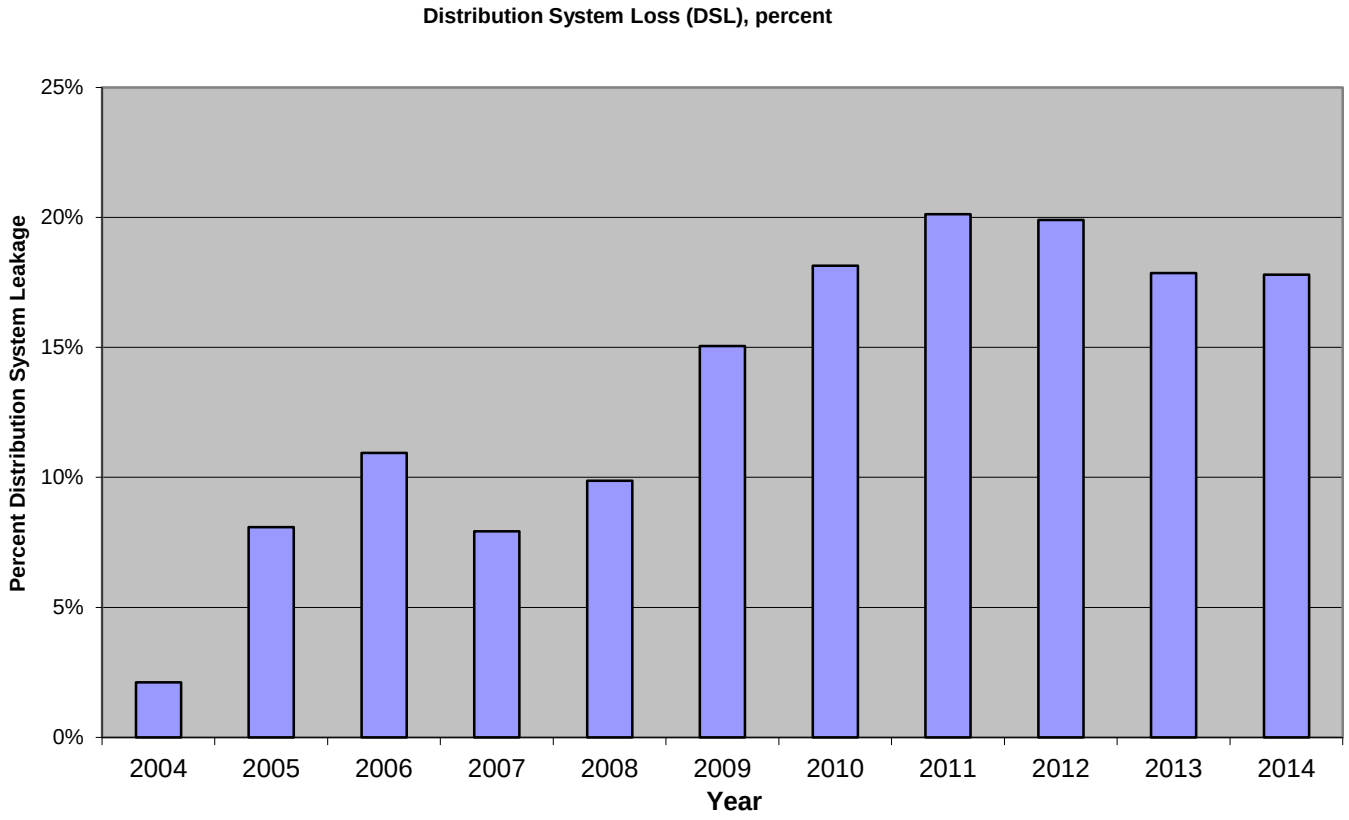
The Water Use Efficiency Rule requires the calculation of system water loss. Prior to this calculation, water systems are required to install service meters on all direct service connections[1] before January 22, 2017. The City of Spokane has had a long-standing policy of metering service connections. The calculations determine the volume of water not attributed to delivery to a customer and thus assumed to be lost to the ground. This loss is to be reported as a volume and as a percentage. In both cases, the DSL is determined as a running three-year average, and the water system must relate this DSL to the DSL standard promulgated by Washington Department of Health. The water use category of Non-Revenue Accounted-For Water is included in the Total Authorized Consumption (AC). This category, which is estimated (non-metered), includes such uses as street cleaning, cleaning water tanks/reservoirs, and water system maintenance (flushing). This estimate was reevaluated in 2013.

The method for DSL calculation and the data for the calculation are in Appendix I, pg. 24. The volume and percent DSL for the last three years are as follows:

[1] WAC 246-290-820(2)(a)

	2012	*2013*	*2014*	*Average*
DSL, percent	19.9%	17.9%	17.8%	18.5%
DSL, volume (gallons x 1000)	4,190,911	3,787,117	4,032,455	4,003,494

The most direct means to comply with the Water Use Efficiency Rule standard for DSL is for the three-year running average to be less than 10% [2]. **The DSL for the City of Spokane Water System is 18.5%, which does not meet the standard.** The City will continue to encourage the responsible use of our water resources, continue to assess the accuracy of our reporting, and implement projects to reduce our system leakage. In 2014, the City of Spokane Water Department continued to improve accounting of water from hydrant permits by using hydrant meters with select permit holders. Following is a graph depicting the annual DSL for 2004-2014:



[2] WAC 246-290-820(1)(b)(i)

CITY OF SPOKANE - ENVIRONMENTAL PROGRAMS
2nd Floor City Hall; 808 W. Spokane Falls Blvd.; Spokane, WA 99201-3334; (509) 625-6570; FAX (509) 343-5760

QUALITY Drinking Water
An Invaluable Community Resource

INORGANICS

The City typically has a Washington State Department of Ecology accredited laboratory run a full drinking water inorganics analysis once every three years on each of our source wells. In addition, nitrates are tested annually, as required. The most recent inorganic results from accredited laboratories are in Appendix IV. **All sources are in compliance with existing National Primary Drinking Water Regulations for Inorganic Maximum Contaminant Levels (MCL)**.

ARSENIC

The arsenic readings in 2014 at the Grace and Hoffman wells were 2.55 µg/L, and 3.00 µg/L respectively. The MCL for arsenic is 10 µg/L, or parts per billion (ppb). For City drinking water, 5.13 µg/L of arsenic in 2009 from Ray Street Well represents the highest result to date.

City drinking water currently meets EPA's drinking water standard for arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water.

Further information concerning health impact issues, regulatory requirements, and compliance costs for water utilities/water customers can be found at water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm and www.doh.wa.gov/Portals/1/Documents/Pubs/331-167.pdf.

FIELD MEASUREMENTS

The City of Spokane routinely measures water parameters at the wells including water pH and temperature.

These are the average, maximum, and minimum pH measurements from the source wells in 2014. pH has a secondary maximum contaminate level (SMCL) of 6.5 to 8.5. SMCL's are guidelines for water purveyors to manage drinking water for cosmetic, aesthetic, and technical effects. Technical effects include scaling and corrosion.

Source Water pH

Source Well	*Average*	*Maximum*	*Minimum*
Central	7.99	8.18	7.57
Grace	7.88	8.18	7.21
Hoffman	7.95	8.09	7.83
Nevada	7.91	8.14	7.51
Parkwater	7.87	8.26	7.35
Ray Street	7.63	7.78	7.10
Well Electric	7.97	8.72	7.39

The following are average, maximum, and minimum source water temperatures in degrees Fahrenheit for 2014. We track and provide this information as water temperature changes can result in water quality changes and because of the increased interest in using the aquifer and aquifer water as a heat source and/or sink.

	Water Temperature ° F		
Source Well	*Average*	*Maximum*	*Minimum*
Central	54.1	57.2	51.8
Grace	53.8	55.4	52.7
Hoffman	53.9	54.5	53.6
Nevada	54.3	55.4	53.6
Parkwater	52.9	55.4	50
Ray Street	53.8	55.4	51.8
Well Electric	53.8	59	50

These are measurements at the source. The values at a service location will be different based on the season and where it resides within the distribution system. The federal government has not established guidelines for drinking water temperature.

NITRATE - NITROGEN

The Ray Street Well continues to be monitored quarterly for Nitrate-N. **In 2014, the highest accredited lab quarterly result for the Ray Street Well was 3.23 mg/L.** The federal MCL for Nitrate –N is 10 mg/L. The result from a duplicate sample analyzed by the Riverside Park Water Reclamation Facility (RPWRF) Laboratory was 3.54 mg/L. The quarterly results for Ray Street Well for 2014 are as follows:

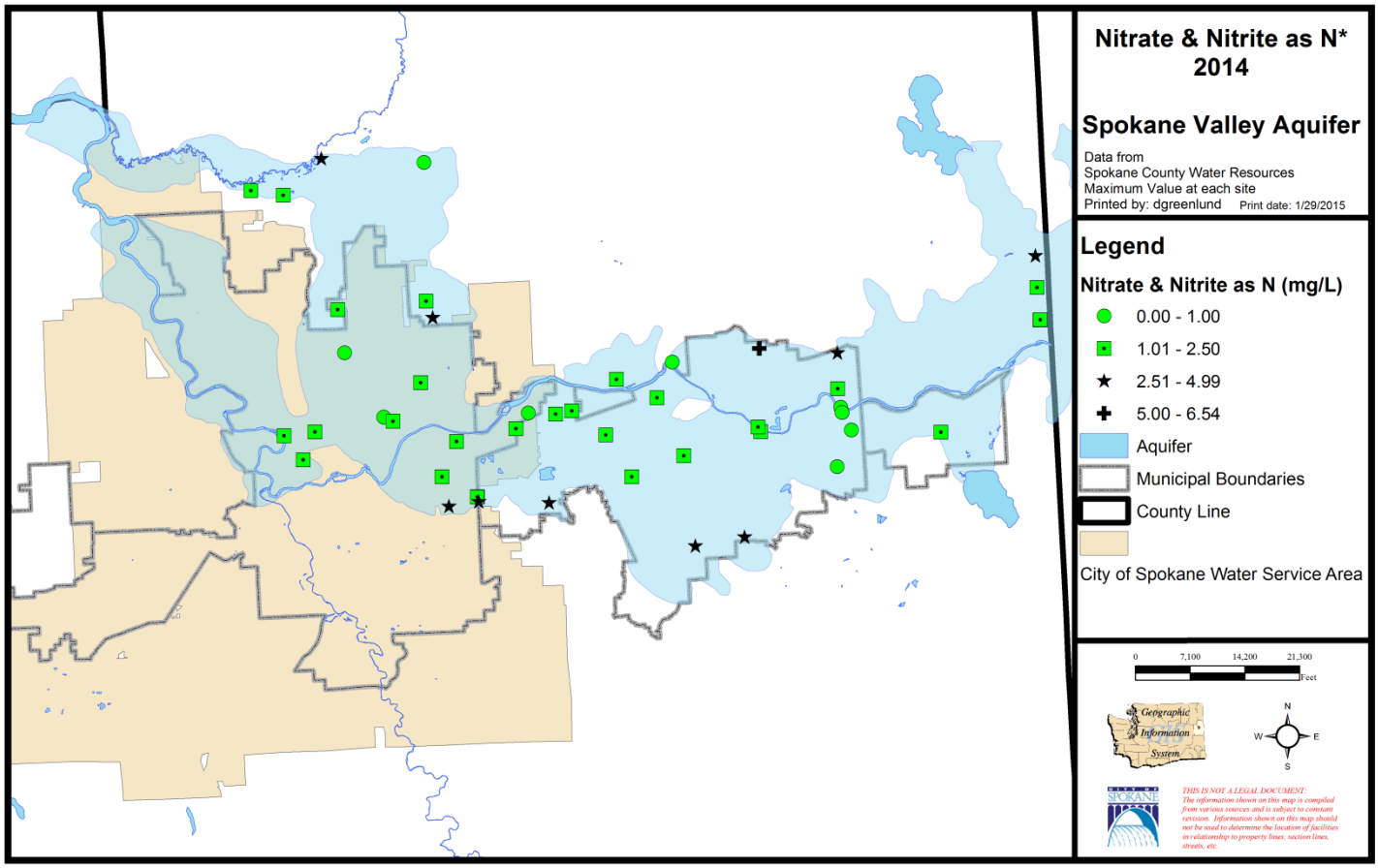
Sample Date	*Accredited Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
28-January-2014	3.15	3.42
29-April-2014	3.07	3.08
29-July-2014	2.82	3.17
28-October-2014	3.23	3.54

The trend for nitrate-nitrogen at the Ray Street Well has remained constant to slightly declining for a number of years.

All other City sources average 1.19 mg/L for 2014, less than a fifth of the MCL for nitrate-nitrogen. The 2014 results for the other City source wells are as follows:

Source Well	*Accredited Laboratory Result - Nitrate-N, mg/L*	*RPWRF Laboratory Result – Nitrate+Nitrite-N, mg/L*
Well Electric	1.37	1.58
Parkwater	1.55	1.68
Hoffman	1.24	1.38
Grace	0.68	0.72
Nevada	0.80	0.86
Central	0.90	0.93

The following map depicts the results of monitoring wells sampled during 2014 by the Spokane County Water Resources Program. The results are for nitrate+nitrite as nitrogen from monitoring wells and springs along the Spokane River and purveyor wells over the Spokane Aquifer. Where multiple sampling events occurred at the same location, the highest result is depicted on the map. There are a number of wells that had results between 2.51and 6.54 mg/L. These wells, including the City of Spokane Ray Street Well, are typically located along the edge of the aquifer and appear to be subject to nitrate loading to the aquifer that originates at higher elevations.



For further information concerning nitrate in drinking water and potential health issues, you can access the EPA website at water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm or the Washington State Dept. of Health website at www.doh.wa.gov/Portals/1/Documents/Pubs/331-214.pdf.
(Para ver información adicional, visite al; www.doh.wa.gov/Portals/1/Documents/Pubs/331-214s.pdf)

PHOSPHORUS

Drinking water regulations primarily deal with human health-related impacts. Phosphorus is not a drinking water regulated contaminant, but is of significant concern in this region as a pollutant in the Spokane River. Local groundwater makes significant contribution to the River and is the background for water discharged to sewer.

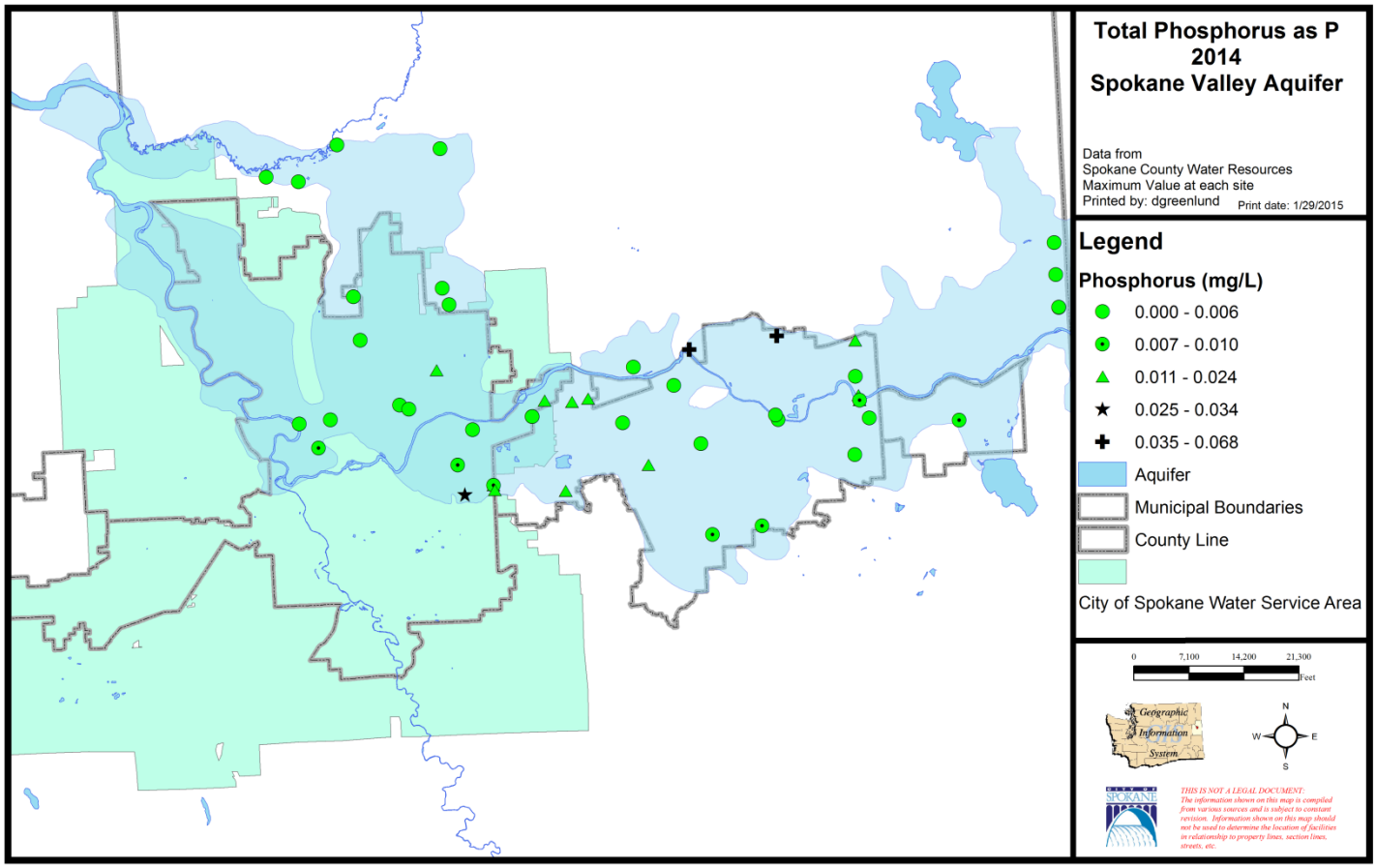
In July 2013, groundwater samples from the City source wells were analyzed by the City RPWRF Laboratory. **Similar to nitrate concentrations, most City wells have fairly low concentrations. The average concentration of the six city wells not including the Ray Street well was 0.004mg/L. Ray Street Well was sampled four quarters and the greatest result was .025mg/L.**

Location	*Date Sampled*	*PO4-P, mg/L*	*Location*	*Date Sampled*	*PO4-P, mg/L*
Electric	7/29/2014	0.0031	Central	7/29/2014	0.0008
Parkwater	7/29/2014	0.0006	Ray Street	1/28/2014	0.0206
Nevada	7/29/2014	0.0012	Ray Street	4/29/2014	0.048 *
Grace	7/29/2014	0.0001	Ray Street	7/29/2014	0.0157
Hoffman	7/29/2014	0.0184	Ray Street	10/28/2014	0.0246

*RPWRF analyzed this sample with SM Method 4500P-E not the low level method, EPA 365.3 The result is presented but is not considered a representative result.

There is no drinking water regulatory limit for phosphorus, but to give this some context, the Total Maximum Daily Loading for Dissolved Oxygen for the Spokane River calls for a phosphorus concentration limit of 0.010 mg/L in the river during the critical summer season.

During 2014, the Spokane County Water Resources Program collected and analyzed 133 samples from 49 locations for total phosphorus (including duplicate samples at several locations). Of that number, 32 samples from 14 different locations exceeded 0.010 mg/L. Following is a map demonstrating the distribution of total phosphorus results on the Washington side of the Spokane Valley-Rathdrum Prairie Aquifer.



This map illustrates that, similar to nitrate concentrations in groundwater, phosphorus concentrations are greatest along the sides of the valley. This likely indicates loading from run-off from higher elevations. There are a couple of sampling sites with higher values that appear <u>not</u> to be located near the sides of the valley or near the Spokane River. These sampling sites have total phosphorus concentrations in the range of 0.011 to 0.024 mg/L.

RADIONUCLIDES & RADON

RADIONUCLIDES

In 2014, the City of Spokane tested the Parkwater and Ray Street source wells for Radium 228 and Gross Alpha. The table below has the results.

	Gross Alpha Particle Activity	Radium 228	Combined Radium 226/228 *
Parkwater	2.10	.52	2.10
Ray Street	< 1	1.04	1.54

All results in pCi/L

Gross Alpha particle activity has an MCL of 15 pCi/L. The federal MCL for Radium 226 and Radium 228 (combined) is 5 pCi/L. The City of Spokane results were below the MCL.

The radionuclide rule allows Gross Alpha results to be used in lieu of Radium 226 if the Gross Alpha particle activity is below 5 pCi/L. If the gross alpha particle activity result is below the detection limit, one-half of the detection limit is used to determine compliance[3]. The radionuclide rule also allows a Gross Alpha particle activity measurement to be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The Gross Alpha activity was below 15 pCi/L so the City did not test for Uranium.

* If the Radium 228 or 226 value is <1.0, a value of zero will be used to calculate the Combined Radium 226/228[4].

For more information on radionuclides in drinking water, access the EPA website at water.epa.gov/lawsregs/rulesregs/sdwa/radionuclides/index.cfm

RADON

The Water Department monitored the Parkwater, and Ray Street wells in 2014, with results of 441 pCi/L, and 443 pCi/l respectively. The Environmental Protection Agency has published a proposed rule for regulating the concentration of radon-222 in drinking water. The rule proposes a maximum contaminant level goal (MCLG) of zero, a maximum contaminant level (MCL) of 300 pCi/L, and an alternative maximum contaminant level (AMCL) of 4000 pCi/L. The proposed rule would require that community water supply systems (including the City's) generally would have to comply with the MCL of 300 pCi/L, unless there is a multi-media mitigation program (MMM) in place. With a MMM, the AMCL of 4000 pCi/L would apply.

The publication of the proposed rule was November 2, 1999, and the comment period closed February 4, 2000. The final rule was expected to be published one year from that date. The rule had been listed on the Unified Agenda of Federal Regulatory and Deregulatory Actions with the status of the radon regulation final action "To Be Determined." In the January 2012 update of the Unified Agenda, the rule was removed.

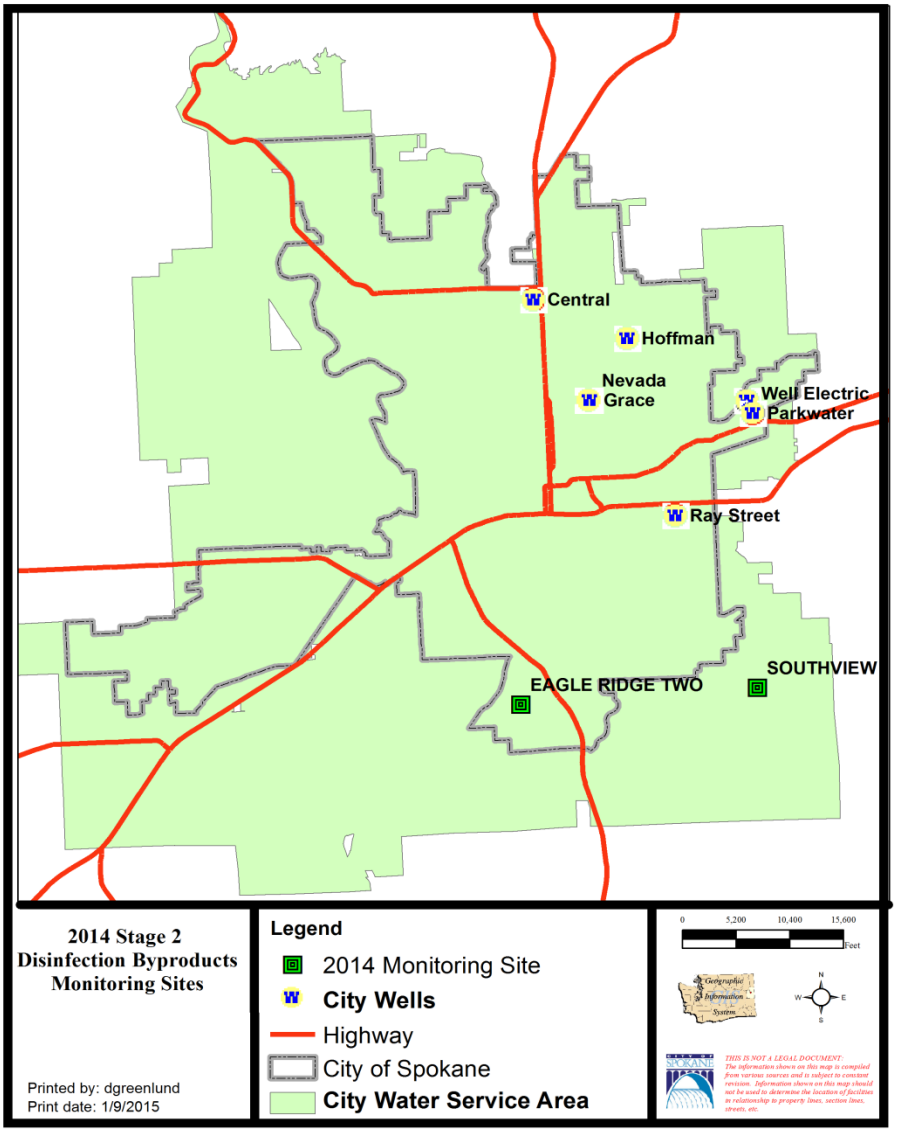
Radon gas is one of a number of radioactive elements that result from the radioactive decay of uranium found locally in natural deposits. Exposure to excessive amounts of radon may increase cancer risk. Most of these risks result from exposure to radon in indoor air. The EPA has determined that 1-2% of the radon in indoor air comes from drinking water. For further information concerning radon in drinking water, access the EPA website at www.epa.gov/radon/rnwater.html. For more general information concerning radon in the environment and the associated health issues, access the EPA website at www.epa.gov/radon/index.html or call the Radon Hotline at *1-800-SOS-RADON [*1-800-767-7236]. An EPA publication titled "A Citizen's Guide to Radon" can be downloaded from www.epa.gov/radon/pubs/citguide.html.

[3] 40 CFR 141.26a (5)
[4] 40 CFR 141.26c (3) v

ORGANICS

DISINFECTION BY-PRODUCTS – DISTRIBUTION SYSTEM

The maximum value during 2014 compliance monitoring of the distribution system for total trihalomethanes (TTHM) was 3.94 ppb and for haloacetic acids (HAA5) was no detection. This is well below the federal MCL of 80 ppb for total trihalomethanes and 60 ppb for the sum of five haloacetic acids and is only detected at the extreme end of the distribution system. The Stage 2 Disinfectants and Disinfection By-products Rule requires a Locational Running Annual Average (LRAA) be used for reporting compliance. This is the average of four quarterly samples for each sampling location. The City uses small amounts of chlorine as a drinking water disinfectant. However, the disinfectants themselves can react with materials in the water to form byproducts, which may pose health risks. The maximum value for TTHM was 5.02 ppb. Appendix V has the results for all 2014 quarterly sampling. There were no detections of haloacetic acids at any sampling site in 2014. The Stage 2 Disinfectants and Disinfection By-products Rule allows for reduced monitoring if the results are less than one half the MCL. This is 40 ppb for TTHM and 30 ppb for HAA5. The City met this requirement and was granted a reduced monitoring schedule from the Washington State Department of Health. Beginning in 2014, the City sampled quarterly at the Southview and Eagle Ridge Two locations.



In 2014, two sites were sampled every quarter. They were Eagle Ridge Two, and Southview. For more information on the Stage 2 DBPR, go to the EPA website water.epa.gov/lawsregs/rulesregs/sdwa/stage2/index.cfm

2014 was the third year of sampling under the Stage 2 Disinfectants and Disinfection Byproducts Rule. Starting in 2007 and continuing until 2010, the City Water Department performed assessment monitoring at over 20 locations (approximately five each year) to determine the potential for disinfection by-products (DBP) to be formed during the detention period in the distribution system. The DBP assessment sampling sites were selected from the existing coliform sampling sites. Based on this sampling and analysis of the retention time of water in the distribution system, locations were determined for the Stage 2 distribution system sampling program.

MtBE (Methyl tert-Butyl Ether)

Central and Nevada well stations were monitored for MtBE in 2014 in conjunction with the regularly scheduled Volatile Organic Compounds (VOC) monitoring. There were no detections at a detection limit of 0.5 µg/L. The City has included testing for MtBE with the VOC monitoring since 2005 and has had no detections.

MtBE is a gasoline additive used throughout the United States to reduce carbon monoxide and ozone levels caused by automobile emissions. There is currently a drinking water advisory for MtBE water.epa.gov/action/advisories/drinking/mtbe.cfm. This advisory recommends a range of 40 µg/L or less based on consumer acceptance of potential taste and odor. The EPA believes this would also provide a large margin of exposure safety from toxic effects.

Further information concerning the health impact, environmental effects, and technical background of MtBE can be found at the following website: the EPA Office of Water at water.epa.gov/drink/contaminants/unregulated/mtbe.cfm

Other Volatile Organics

Many compounds have been tested for and not detected. Appendix II: "TESTS RUN ON CITY OF SPOKANE WATER" on page **26** has a comprehensive list of the volatile and synthetic organic chemicals tested in 2014. Refer to Appendix VI in the 2010 Drinking Water Report for a historic summary of ORGANIC CHEMICAL DETECTIONS for each well station that contributes to the City Water System. Only organic compounds that have previously been detected in City water are listed in the 2010 Drinking Water Report table.

In 2014, the City of Spokane tested the Central and Nevada well stations for Volatile Organic Compounds (VOC). There were no detections.

Trihalomethanes (THMs, chloroform, bromoform, bromodichloromethane, dibromochloromethane) are one group of volatile organic, disinfection by-products. That is to say, they can originate from chemical interactions between a disinfectant (chlorine gas in the City's system) and any organic matter present in the raw water. **There were no detections of THMs in source water monitoring for 2014**.

Synthetic Organics

The City of Spokane tested the Central, Grace, and Hoffman wells for Synthetic Organic Chemicals (SOC) in 2014. There were no detections. The City conducts tests for more than 140 different chemicals including pesticides, herbicides, PCBs, and phthalates (plasticizers).

Microbiological Contaminants

Coliform Bacteria - Source

The City of Spokane well station raw source water (the water before disinfectant chlorination) has been tested regularly for coliform bacteria. While historically there has been no requirement to test for coliform bacteria in source water, the City has monitored for this water quality parameter. More recently, testing requirements to determine whether hydraulic continuity exists with the Spokane River have increased the testing frequency. **In 2014, out of 74 tests for coliform bacteria in the City source water wells, there were no detections of total coliform, and no detections of fecal coliform.**

Out of 409 tests over the five-year period from 2010 through 2014, there have been no detections of total coliform. There have been no detections of fecal coliform in the source water during this time frame.

HETEROTROPHIC PLATE COUNT BACTERIA – SOURCE

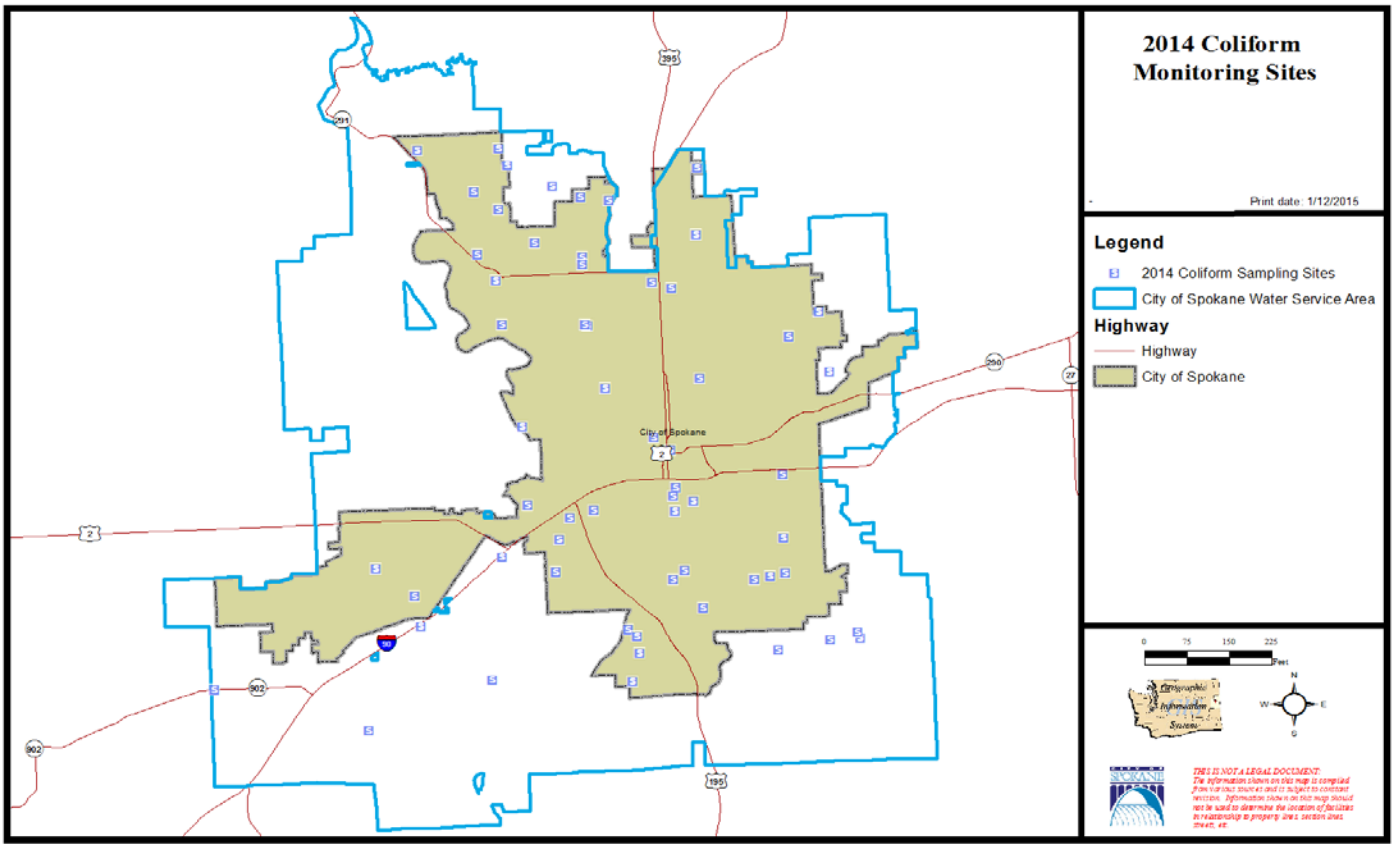
In 2014, out of 58 Heterotrophic Plate Count (HPC) tests on source water, there were 10 positive results. The greatest concentration was 22 colonies per milliliter of sample at the Hoffman Well. HPC tests were conducted 354 times over the five-year period from 2010 through 2014 on raw source water. There have been 89 positive HPC results. Washington state drinking water regulations state: *"Water in a distribution system with a HPC level less than or equal to 500/mL is considered to have a detectable residual disinfectant concentration."*[5] The maximum detection during this five-year period was 806 colonies per milliliter at the Hoffman well in 2011. Without regard to source water HPC levels, City source water is treated with chlorine to safeguard drinking water quality. This is done based on the historical use of open reservoirs (which no longer exist) and to preserve the sanitary quality when a well or piping is open to the environment during construction, repair or routine maintenance. Some water utilities in this area (drawing from the same aquifer) do not add any disinfectant.

COLIFORM BACTERIA - DISTRIBUTION SYSTEM

Coliform testing is typically done four days a week from various points in the distribution system. The Water Department has more than 220,000 customers. This population tier[6] requires taking 150 samples per month, which was adopted as the target for distribution system coliform monitoring by the Water Dept. in 2007. When a coliform positive test result is reported, re-sampling is done in compliance with the Total Coliform Rule and the Groundwater Rule. **During 2014, the City Water Department had 1,974 coliform bacteria samples analyzed. There were no detections.** 1,974 samples were analyzed in 2013 and, 1,974 samples were analyzed in 2012.

The Water Department staff has worked to refine the sampling sites for the distribution system. Concerns about inadvertent contamination of sampling sites and locations that don't adequately represent the distribution of the water system has caused the Water Department staff to establish more dedicated sampling sites at locations more representative of the entire system. Following is a map of the distribution system sampling sites during 2014, overlaid on the City's water service area. It is important to note that the sample sites are evenly placed based on the distribution system, which may not currently reach all parts of the water service area, and population density.

[5] Ref. WAC 246-290-451 (3)(c)
[6] ref. WAC 246-290-300 (3)(e-Table 2)



Water Department staff state that coliform bacteria have not been confirmed in the distribution system for at least the last 35 years. Sample handling or collection errors are suspected causes of the original detections.

PROTOZOA

A number of cities and towns throughout the country, in years past, have experienced problems with giardia and/or cryptosporidium getting into the distribution systems. Most times, problems with these parasitic organisms in potable water have been associated with surface water sources. **The City is not aware of, nor has the State Department of Health or Spokane Regional Health District indicated an awareness of, cases where infections with these organisms were traced back to the City's water system**.

Please note that cryptosporidium and other water borne organisms can be spread in many ways. For further risk information go to the Centers for Disease Control and Prevention (CDC) at www.cdc.gov/parasites/crypto/gen_info/infect.html. People who become ill as a result of consuming giardia and/or cryptosporidium typically recover after suffering severe bouts of diarrhea. However, small children, people whose immune systems are compromised, or who are otherwise in poor health can die as a result of these infections. For further information concerning the potential health effects issues, access the websites at the CDC at www.cdc.gov/parasites/crypto/index.html (cryptosporidium) and www.cdc.gov/parasites/giardia/index.html (giardia) and the EPA website at www.epa.gov/safewater/consumer/pdf/crypto.pdf (Para ver información adicional, visite water.epa.gov/drink/agua/upload/crypto_spanish.pdf)

GENERAL INFORMATION

English:
This report contains important information about the drinking water supplied by the City of Spokane. Translate it, or speak with someone who understands it well.

Spanish:
Este reporte contiene información importante acerca del agua potable suministrada por la Ciudad de Spokane. Tradúzcalo, o hable con alguien que lo entiende bien. (Para ver información adicional, visite al; www.epa.gov/espanol/ciudadanos.html)

Russian:
В этом отчете содержится важная информация относительно питьевой воды, поставляемой службой города Спокэн. Переведите этот отчет или поговорите с тем, кто его хорошо понимает.

Vietnamese:
Bản phúc trình này chứa đựng những thông tin quan trọng về nước uống được cung cấp bởi City of Spokane. Hãy phiên dịch, hay hỏi thăm người nào hiểu rõ về tài liệu này.

Across the nation, 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 radioactive material and can pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include:

- Biological contaminants, such as viruses and bacteria, which 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 run-off, 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, storm water run-off, and residential uses.
- Organic chemicals, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water run-off and septic systems.
- Radioactive materials, 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, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food & Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protections for public health.

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 contacting the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791, or you can access additional information at EPA websites: water.epa.gov/drink/index.cfm or water.epa.gov/drink/info/index.cfm

HEALTH INFORMATION

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

Additional information concerning:

Radon: During 2014, the City conducted tests at Parkwater and Ray Street wells for Radon-222. The results were 441 pCi/L, and 443 pCi/L. The EPA has proposed a MCL of 300 pCi/L, which has not been finalized.

Radon is a radioactive gas that you can't see, taste, or smell and is a known carcinogen. Compared to radon entering the home through soil, radon entering the home through tap water will, in most cases, be a small source of radon in indoor air. Breathing air containing radon can lead to lung cancer and/or drinking water containing radon also may cause increased risk of stomach cancer. If

you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call EPA's Radon Hotline (866-730-GREEN) or access the EPA website at www.epa.gov/radon/hotlines.html.

Arsenic: The arsenic readings in 2014 at the Grace, and Hoffman wells were 2.55 ppb and 3.00 ppb respectively. The Maximum Contaminant Level (MCL) for Arsenic is 10 ppb.

City of Spokane drinking water currently meets EPA's revised drinking water standard for arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water. Information on arsenic in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm.

Lead: During 2012, the City tested 54 at-risk residences for lead. The single highest result was 15 ppb. This result for lead is equal to the 15 ppb Action Level for lead**.** The lead results, based on City in-home sampling, also continue to qualify our water system as having "Optimized Corrosion Control." Source water is analyzed for lead concurrent with the in-home testing. The maximum concentration in 2012 source water testing for lead was 0.35 ppb.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Spokane is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline, 1-800-426-4791 or at water.epa.gov/drink/info/lead/index.cfm

CITY OF SPOKANE'S SYSTEM

All of the City of Spokane's drinking water comes from the Spokane Valley-Rathdrum Prairie (SVRP) Aquifer - designated a "sole source" aquifer in 1978. The Spokane Aquifer (that portion of the SVRP aquifer lying within Washington State) and the Spokane River exchange water. The rates and locations of exchange are the subject of continued study.

Due to the porous nature of the ground surface and the number of potential contaminant sources, the possibility of contaminating the aquifer exists if good "housekeeping" measures are not followed for all activity over and adjacent to the aquifer. In order to safeguard water quality, the City, in coordination with other stakeholders, is currently implementing a Wellhead Protection Program. This program endeavors to inform the public about the Spokane Valley-Rathdrum Prairie Aquifer, and about appropriate disposal mechanisms for dangerous and/or critical materials that are generated in the Aquifer Sensitive Area. The program seeks land use regulations to help protect drinking water wells from contamination.

For additional information regarding the City of Spokane's Drinking Water or related issues, you can call:

City of Spokane Water & Hydroelectric Services	509-625-7800
City of Spokane Environmental Programs	509-625-6570

The Mayor recommends Water and Hydroelectric Services policy and rates to the Spokane City Council.
The Council meets most Mondays at 6:00 p.m. in the Council Chambers at
Spokane City Hall (808 W. Spokane Falls Blvd., Spokane, WA).

Appendix I - Water Use Efficiency compliance data 18-Feb-2015

Distribution System Leakage (DSL)

	2014	2013	2012	2011	2010	2009	2008	2007	2006
Service Meter Reading-Single Family, gallons	9,024,016,000	8,481,889,000	8,340,082,788	8,004,190,202	8,317,983,390	9,649,430,384	8,624,299,376	8,992,947,286	8,998,900,409
Service Meter Reading-Multi Family, gallons	2,312,170,000	2,281,194,000	2,209,050,964	2,123,911,196	2,156,077,200	2,360,823,156	3,065,246,404	3,534,713,255	3,449,781,864
Service Meter Reading-Commercial/Industrial, gallons	4,020,022,000	3,934,823,000	3,810,799,262	3,712,856,606	3,896,950,147	4,217,716,655	5,565,693,716	6,218,000,969	6,260,652,288
Service Meter Reading-Government, gallons	1,481,666,000	1,412,515,000	1,450,574,304	1,340,906,695	1,325,244,765	1,643,114,508	1,587,638,976	2,061,287,117	2,059,728,405
Purchased, permit ***	1,128,395,000	646,646,000	5,349,696						
Emergency Interties, gallons	**	**	**	**	* *	* *	* *	* *	* *
Wholesale Amount Sold, gallons	56,198,736	79,169,816	231,569,580	165,106,788	108,846,716	95,993,084	75,146,324	222,581,612	159,655,364
Non-Revenue Accounted for Water, gallons (estimate) *	583,677,000	580,548,000	784,644,731	1,189,855,000	1,064,380,000	1,064,380,000	209,440,000	209,440,000	209,440,000
Total Authorized Consumption, gallons *	18,606,144,736	17,416,784,816	16,832,071,326	16,536,826,487	16,869,482,218	19,031,457,788	19,127,464,796	21,238,970,240	21,138,158,330
Total Authorized Consumption (gal. X1000) (AC) *	18,606,145	17,416,785	16,832,071	16,536,826	16,869,482	19,031,458	19,127,465	21,238,970	21,138,158
Total Production (gal. X1000) (TP)	22,638,600	21,203,902	21,022,982	20,702,520	20,608,800	22,402,716	21,222,058	23,066,258	23,735,049
Distribution System Loss (DSL), volume (gal. X1000)	4,032,455	3,787,117	4,190,911	4,165,694	3,739,318	3,371,258	2,094,593	1,827,288	2,596,891
Distribution System Loss (DSL), percent	17.8%	17.9%	19.9%	20.1%	18.1%	15.0%	9.9%	7.9%	10.9%

* Total Authorized Consumption includes Non-Revenue Accounted for Water, which is consistent with Water Use Efficiency Rule guidance (see definition at right). This is different from past practice in previous Water System Plans. The value for Non-Revenue Accounted for Water (estimated, non-metered) was reassessed in 2009 and again in 2012

WAC 246-290-010 Definitions. - "Authorized consumption" means the volume of metered and unmetered water used for municipal water supply purposes by consumers, the purveyor, and others authorized to do so by the purveyor, including, but not limited to, fire fighting and training, flushing of mains and sewers, street cleaning, and watering of parks and landscapes. These volumes may be billed or unbilled.

* * Emergency intertie volumes are combined with wholesale amount sold

*** Prior to 2012, this was included in non-revenue accounted for water. Water use by selected permit holders was monitored with hydrant meters in 2013 and the estimated use revised.

Method for calculating the Distribution System Loss (DSL)

Calculating Percent DSL

To calculate percent DSL, use the following equation:

Percent DSL = [(TP - AC) / (TP)] x 100

Where:

DSL = Percent (%) of distribution system loss

TP = Total water produced and purchased

AC = Authorized consumption

Calculating Volume DSL

To calculate volume DSL, use the following equation:

Volume DSL = TP - AC

Report volume DSL in millions of gallons or gallons

Total System Pumpage vs. Water Stewardship Strategic Plan Goals (source - City of Spokane Water Department)

WATER YEAR (Oct. through Sept.)	2014	2013	2012	2011	2010	2009	2008	2007	2006
					pumpage (x1,000 gallons)				
Total - Oct. (prev. yr.)through Mar.	6,397,435	6,178,688	6,910,801	6,475,952	6,778,277	6,618,666	6,670,191	7,161,742	6,884,687
Total - Apr. through Jun.	6,246,070	6,118,455	5,184,227	4,655,473	5,241,226	6,439,647	5,340,540	6,463,462	5,991,545
Total - Jul. through Sept.	9,632,114	8,850,530	9,164,570	9,329,077	8,938,048	9,202,243	9,277,452	9,936,735	10,451,223
Total - sum of seasonal totals	22,275,619	21,147,673	21,259,598	20,460,502	20,957,551	22,170,556	21,288,183	23,561,939	23,327,455
Goal - Oct. (prev. yr.) through Mar.	7,080,000	7,020,000	6,970,000	6,920,000	6,870,000	6,810,000	6,760,000	6,710,000	6,660,000
Goal - Apr. through Jun.	6,960,000	6,950,000	6,930,000	6,920,000	6,900,000	6,890,000	6,870,000	6,850,000	6,830,000
Goal - Jul. through Sept.	8,470,000	8,580,000	8,670,000	8,750,000	8,830,000	8,910,000	8,990,000	9,060,000	9,130,000
Population Estimate	234,154	231,194	228,250	225,387	222,538	219,726	216,947	214,207	211,500
Difference between Goal & Use as a percentage (positive value equal exceedance of goal)									
Result - Oct. (prev. yr.) through Mar.	-9.6%	-12.0%	-0.8%	-6.4%	-1.3%	-2.8%	-1.3%	6.7%	3.4%
Result - Apr. through Jun.	-10.3%	-12.0%	-25.2%	-32.7%	-24.0%	-7.8%	-22.3%	-5.6%	-12.3%
Result - Jul. through Sept.	13.7%	3.2%	5.7%	6.6%	1.2%	3.3%	3.2%	9.7%	14.5%

Single Family Residences, total volume billed (entire service area) (Source - Utility Billing)

year	billing period	gallons (total)	no. of service locations	gal per service location per day	% change of service locations (Aug. & Sept.)
2002	Jan. & Feb.	661,658,308	57,239	199	
2002	Aug. & Sept.	3,349,808,500	58,418	956	
2003	Jan. & Feb.	621,954,490	57,238	187	
2003	Aug. & Sept.	3,739,564,671	58,747	1061	0.56%
2004	Jan. & Feb.	718,183,965	57,978	214	
2004	Aug. & Sept.	3,297,148,096	59,259	927	0.87%
2005	Jan. & Feb.	604,612,888	58,403	178	
2005	Aug. & Sept.	2,940,177,049	59,914	818	1.11%
2006	Jan. & Feb.	709,090,289	59,231	206	
2006	Aug. & Sept.	3,392,957,337	60,883	929	1.62%
2007	Jan. & Feb.	610,421,856	59,881	176	
2007	Aug. & Sept.	3,610,435,980	61,459	979	0.95%
2008 *	Jan. & Feb.	605,478,234	60,435	170	
2008	Aug. & Sept.	3,158,038,235	61,581	855	0.20%
2009	Jan. & Feb.	655,566,618	60,683	186	
2009	Aug. & Sept.	3,183,286,496	61,585	861	0.01%
2010	Jan. & Feb.	597,449,771	60,608	170	
2010	Aug. & Sept.	2,809,319,289	61,810	758	0.37%
2011	Jan. & Feb.	622,672,473	60,492	177	
2011	Aug. & Sept.	2,693,465,720	61,671	728	-0.22%
2012	Jan. & Feb.	520,332,871	60,478	146	
2012	Aug. & Sept.	3,064,418,368	61,822	826	0.24%
2013	Jan. & Feb.	527,271,506	59,384	153	
2013	Aug. & Sept.	2,631,712,994	61,783	710	-0.06%
2014	Jan. & Feb.	602,851,273	61,403	170	
2014	Aug. & Sept.	2,799,952,511	62,042	752	0.42%
			Avg. percent change of service		0.50%

* Heavy winter weather during Feb. 2008 resulted in estimating north side accounts

Appendix II - Tests Run on City of Spokane Water 12-Jan-2015

FIELD TESTS
Chlorine, Total Residual
Conductivity
Hardness
pH
Temperature
Turbidity

RADIONUCLIDES
Alpha emitters (gross)
Radon 222
Radium 228

MICROBES
BACTERIA
Total Coliform - Before & After Treatment
Fecal Coliform - Before & After Treatment
Heterotrophic Plate Count - Raw water

GENERAL INORGANICS
Color
Conductivity
Hardness, Total
Total Dissolved Solids
Turbidity

INORGANIC IONS
Chloride
Cyanide
Fluoride
Nitrate Nitrogen
Nitrite Nitrogen
Phosphorus
Sulfate

INORGANIC METALS
Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Copper
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Selenium
Silver
Sodium
Thallium
Zinc

VOLATILE ORGANICS
Benzene
benzene, 1,2,3-Trichloro-
benzene, 1,2,4-Trichloro-
benzene, 1,2,4-Trimethyl-
benzene, 1,3,5-Trimethyl-
benzene, Bromo-
benzene, Butyl-
benzene, Chloro-
benzene, Ethyl
benzene, Isopropyl-
benzene, m-Dichloro-
benzene, o-Dichloro-
benzene, p-Dichloro-
benzene, Propyl-
benzene, sec-Butyl-
benzene, tert-Butyl-
Butadiene, Hexachloro-
Chloride, Carbon Tetra-
Chloride, Methylene (aka methane, dichloro)
Chloride, Vinyl
ethane, 1,1,1,2-Tetrachloro-
ethane, 1,1,1-Trichloro-
ethane, 1,1,2,2-Tetrachloro-
ethane, 1,1,2-Trichloro-
ethane, 1,1-Dichloro-
ethane, 1,2-Dichloro-
ethane, Chloro-
ethene, 1,1-Dichloro-
ethene, cis-1,2-Dichloro-
ethene, Tetrachloro-
ethene, trans-1,2-Dichloro-
ethene, Trichloro-
methane, Bromo-
methane, Bromochloro-
methane, Chloro-
methane, Dibromo-
methane, Dichlorodifluoro-
methane, Trichlorofluoro- (Freon 11)
Naphthalene
propane, 1,2,3-Trichloro-
propane, 1,2-Dichloro-
propane, 1,3-Dichloro-
propane, 2,2-Dichloro-
propene, 1,1-Dichloro-
propene, cis-1,3-Dichloro-
propene, trans-1,3-Dichloro-
Styrene
Toluene
toluene, o-Chloro-
toluene, p-Chloro-
toluene, p-Isopropyl-
Xylene, m&p-
Xylene, o-
Xylene, total

Appendix II (continued)

GENERAL ORGANICS

ether, Methyl tert-Butyl (MtBE)

DISINFECTION BY-PRODUCTS

TRIHALOMETHANES

Chloroform
Bromoform
methane, Dibromochloro-
methane, Bromodichloro-
Total Trihalomethanes

FIVE HALOACETIC ACIDS (HAA5)

acetic Acid, Monochloro-
acetic Acid, Dichloro-
acetic Acid, Trichloro-
acetic Acid, Monobromo-
acetic Acid, Dibromo-

OTHER DISINFECTION BY-PRODUCTS

acetic Acid, Bromochloro-

SYNTHETIC ORGANICS

2-Chloronaphthalene
2-Methylnapthalene
4-bromophenyl phenyl ether
4-Chlorophenyl phenyl ether
5-Hydroxydicamba
Acenaphthene
Acenaphthylene
Acifluorfen
Adipate, Di-(2-ethylhexyl)
Alachlor
Aldicarb
Aldicarb Sulfone
Aldicarb Sulfoxide
Aldrin
Amtryne
Anthracene
Anthracene, Benz(a)-
Anthracene, Dibenz(a,h)-
Arochlor 1016
Arochlor 1221
Arochlor 1232
Arochlor 1242
Arochlor 1248
Arochlor 1254
Arochlor 1260
Atraton
Atrazine
Baygon
Benefin
Bentazon
benzene, Hexachloro-
benzoic acid, 3,5-Dichloro-
BHC (alpha)
BHC (beta)
BHC (delta)
Bromacil
Butachlor
Butylate
Carbaryl
Carboxin
Chloramben
Chlordane
Chlordane, alpha-
Chlordane, gamma-
Chlorpropham
Chrysene
Cyanazine
Cycloate
D, 2,4-
Dalapon
DB, 2,4-
DCPA (Dacthal)
DDD, 4,4-
DDE, 4,4-
DDT, 4,4-
Diazinon
Dibenzofuran
Dicamba
Dichlorprop
Dichlorvos
Dieldrin
Diesel (as straight alka chain)
Dimethoate
Dinoseb
Diphenylamine
Diquat
Disulfoton
Disulfoton sulfone
Disulfoton sulfoxide (A)
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endothall
Endrin
Endrin aldehyde
EPTC
Ethoprop
Ethylene Dibromide
Fenamiphos
Fenarimol
Fluoranthene
Fluoranthene, Benzo(b)
Fluoranthene, Benzo(k)
Fluorene
Fluridone
furan, 3-Hydroxycarbo-
furan, Carbo-
Glyphosate
Heptachlor
Heptachlor Epoxide
Hexachloroethane
Hexazinone
Isodrin
Isophorone
Isopropalin
Isosafrole
Lindane
Malathion
Merphos
Methiocarb
Methomyl
Methoxychlor
Methyl paraoxon
Methylparathion
Metolachlor
Metribuzin
Mevinphos
MGK-264
Molinate
N-Nitrosodi-N-propylamine
Napropamide
Nonachlor, cis-
Nonachlor, trans-
Norflurazon
Oxadiazon
Oxamyl
Oxyfluorfen
Pendamethalin
Pentachloronitrobenzene
pentadiene, Hexachlorocyclo-
Perylene, Benzo(g,h,i)
Phenanthrene
phenol, 2,4,6-Trichloro
phenol, 2,4-Dichloro
phenol, 4-Chloro-3-methyl
phenol, Pentachloro-
phenyls, Polychlorinated Bi- (PCB, total Arochlor)
phthalate, Butylbenzyl-
phthalate, Di-(2-Ethylhexyl)-
phthalate, Di-n-Butyl-
phthalate, Diethyl
phthalate, Dimethyl-
Picloram
Profuralin
Prometon
Propachlor
propane, Dibromochloro- (DBCP)
Pyrene
pyrene, Benzo a-
Pyrene, Indeno(1,2,3,c,d)
Safrole
Simazine
T, 2,4,5-
Terbacil
Terbuphos
Toxaphene
TP, 2,4,5-
Trifluralin
Vernolate

Appendix III - Annual Testing Summary - Tests Run on City of Spokane Water 4-Feb-2015

2014 DRINKING WATER SOURCE - COMPLETED QUARTERLY MONITORING

	SOURCE #	8	6	5	1	3	4	2
	WELL	CENTRAL	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	WELL ELECTRIC
BACTERIA								
COLIFORM - RAW SOURCE *		8 / 0	8 / 0	4 / 0	5 / 0	12 / 0	10 / 0	27 / 0
Total Coliform -number of samples per year / number of positive detections		8 / 0	8 / 0	4 / 0	5 / 0	12 / 0	10 / 0	27 / 0
Fecal Coliform - number of samples per year / number of positive detections								
HETEROTROPHIC PLATE COUNT - RAW SOURCE *		8 / 1	8 / 1	4 / 22	5 / 0	12 / 1	10 / 1	21 / 10
number of samples per year / greatest result value								
* All operating wells are typically sampled once per month								
INORGANIC								
FULL LIST- ACCREDITED LAB (phase II & V included)	3rd Qtr - Jul		completed-see App. IV	completed-see App. IV				
NITRATE	1st Qtr - Jan						3.15	
	2nd Qtr - April						3.07	
	3rd Qtr - Jul	0.9	0.683	1.24	0.80	1.55	2.82	1.37
	4th Qtr - Oct						3.23	
NITRATE + NITRITE - RPWRF LAB	1st Qtr - Jan						3.42	
	2nd Qtr - April						3.08	
	3rd Qtr - Jul	0.93	0.72	1.38	0.86	1.68	3.17	1.58
	4th Qtr - Oct						3.54	
ORGANIC								
VOLATILES	1st Qtr - Jan	no detections						
(including TRIHALOMETHANES)	2nd Qtr - April							
	3rd Qtr - Jul				no detections			
	4th Qtr - Oct							
SYNTHETIC ORGANICS (515.1, 525.2, 531.1)	2nd Qtr - April							
	3rd Qtr - Jul	no detections	no detections	no detections				
	4th Qtr - Oct	no detections						
	4th Qtr - Dec		no detections					
RADIOACTIVE CONTAMINANTS								
Radium 228 - pCi/L,	2nd Qtr - April					0.52	1.04	
Gross Alpha - pCi/L	2nd Qtr - April					2.10	<1	
Radon - pCi/L	2nd Qtr - April					441	443	

UNITS ARE AS REPORTED, ppb FOR ORGANICS, ppm FOR INORGANICS, except where noted.

CITY OF SPOKANE 18-Feb-2015

DRINKING WATER INORGANICS SUMMARY

MOST RECENT WELL STATION MONITORING ANALYTICAL RESULTS

ACCREDITED LABORATORIES

								Maximum Contaminant Levels		CURRENT DATA SUMMARY			
WELL STATION	CENTRAL	ELECTRIC	GRACE	HOFFMAN	NEVADA	PARKWATER	RAY	MCL's**	Goals MCLG's	MEAN	MAX	MIN	COUNT
SAMPLING DATE	30-Jul-2013	30-Jul-2013	29-Jul-2014	29-Jul-2014	31-Jul-2012	31-Jul-2012	31-Jul-2012						
LABORATORY	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)	(Anatek)						
ALKALINITY	not tested	not tested	not tested	not tested	90	147	155	unregulated		131	155	90	3
HARDNESS (as CaCO3) #	131	131	96	136	97	163	171	unregulated		132	171	96	7
CONDUCTIVITY (µmos/cm)	256	284	214	305	207	335	383	700 t		283	383	207	7
TURBIDITY (NTU)	< 0.100	< 0.100	< 0.1	< 0.1	< 0.100	< 0.100	< 0.100	1 t			< 0.1	< 0.1	7
COLOR (color units)	< 5.00	< 5.00	< 5	< 5	< 5.00	< 5.00	< 5.00	15 s			< 5.00	< 5.00	7
CHLORIDE	3.67	3.91	3.66	5.24	3.67	5.59	12.8	250 s		5.51	12.8	3.66	7
TOT. DISSOLVED SOLIDS	140	148	136	167	119	201	220	500 s		162	220	119	7
MAGNESIUM	14.1	14.0	8.3	15.1	8.74	17.6	16.3	unregulated		13.4	17.6	8.3	7
CALCIUM	27.1	31.8	23	29	23.9	35.9	49.4	unregulated		31.4	49.4	23	7
ORTHO-PHOSPHATE	0.02	< 0.01	< 0.01	0.02	< 0.01	< 0.01	0.02	unregulated		0.02	0.02	< 0.010	7
AMMONIA	< 0.030	< 0.030	not tested	not tested	< 0.05	< 0.05	< 0.05	unregulated			< 0.05	< 0.030	5
CYANIDE	< 0.0100	< 0.0100	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.2	0.2		< 0.0100	< 0.0100	7
FLUORIDE	< 0.5	< 0.5	< 0.01	< 0.01	< 0.1	< 0.1	< 0.1	2 s	4		< 0.5	< 0.01	7
NITRATE (NO3-N)	0.87	1.36	0.68	1.24	0.8	1.35	2.51	10	10	1.26	2.51	0.68	7
NITRITE (NO2-N)	< 0.050	< 0.050	< 0.01	< 0.01	< 0.1	< 0.1	< 0.1	1	1		< 0.1	< 0.01	7
SULPHATE	11.5	11	6.68	11.5	7.58	15.1	13.1	250 s	400	10.9	15.1	6.7	7
ALUMINUM	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01	< 0.01	0.05 - 0.2 s			< 0.080	< 0.01	7
ANTIMONY	< 0.00300	< 0.00300	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.006	0.006		< 0.00300	< 0.001	7
ARSENIC	0.0035	0.00475	0.00255	0.003	0.00288	0.00326	0.00458	0.010	0	0.0035	0.00475	0.00255	7
BARIUM	0.0232	0.0201	0.0164	0.0255	0.0168	0.0277	0.0472	2	2	0.0253	0.0472	0.0164	7
BERYLLIUM	< 0.000800	< 0.000800	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.004	0.004		< 0.0008	< 0.0003	7
CADMIUM	< 0.00200	< 0.00200	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.005	0.005		< 0.001	< 0.000200	7
CHROMIUM	< 0.0060	< 0.0060	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.1	0.1		< 0.0060	< 0.001	7
COPPER	0.0083	< 0.010	0.00445	0.00458	0.00298	0.00058	0.000481	TT	1.3	0.0036	0.0083	0.000481	7
IRON	< 0.060	< 0.060	< 0.01	< 0.01	0.019	< 0.01	< 0.01	0.3 s		0.0190	0.019	< 0.01	7
LEAD	< 0.00100	< 0.00100	< 0.00100	< 0.00100	0.00013	0.00003	0.00035	TT	0	0.00017	0.00035	0.00003	7
MANGANESE	< 0.01	< 0.01	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	0.05 s			< 0.01	< 0.001	7
MERCURY	0.0002	0.00022	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.002	0.002	0.0002	0.00022	< 0.0001	7
NICKEL	< 0.005	0.00133	< 0.001	0.00114	< 0.001	< 0.001	< 0.001	0.1 * * *	0.1 * * *	0.00124	0.00133	< 0.001	7
SELENIUM	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.05	0.05		< 0.002	< 0.001	7
SILVER	< 0.1	< 0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.1 s			< 0.1	< 0.001	7
SODIUM	3.11	3.84	2.48	3.87	2.57	3.94	7.35	unregulated		3.9	7.35	2.48	7
THALLIUM	< 0.00100	< 0.00100	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.0005		< 0.00100	< 0.001	7
ZINC	0.0283	0.00537	0.0116	0.0156	0.0125	0.012	0.0153	5 s		0.01438	0.0283	0.00537	7

RESULTS ARE IN mg/L EXCEPT WHERE OTHERWISE NOTED

* TT = Treatment Technique; s = Secondary MCL; t = State only MCL

* * Aluminum is a secondary regulated contaminant

* * * The MCL and MCLG for Nickel were remanded on February 9, 1995, monitoring requirements still in effect

divide by 17.1 to convert to grains per gallon

Appendix V - Distribution System Disinfection By Products

CITY OF SPOKANE 4-Feb-2015

Disinfection By Products TriHaloMethanes (THMs)

2013	Sample Date	Location	Chloroform	Bromodichloromethane	Chlorodibromomethane	Bromoform	Total THMs	LRAA (locational running annual average)
First Quarter (Q1)	1/17/2013	Strong Road	< 0.25	0.62	0.93	< 0.50	1.55	
	1/17/2013	Cedar Hills	< 0.25	0.59	0.95	< 0.50	1.54	
	1/17/2013	Mallen Hill	< 0.25	0.55	0.81	< 0.50	1.36	0.79
	1/17/2013	BPA Easement	0.55	1.12	1.35	< 0.50	3.02	1.82
	1/17/2013	Eagle Ridge Two	0.42	0.76	1.23	0.52	2.93	2.16
	1/17/2013	Southview	0.39	0.92	1.58	0.65	3.54	3.55
Second Quarter (Q2)	4/4/2013	Strong Road	0.42	0.9	1.15	< 0.50	2.47	2.69
	4/4/2013	Cedar Hills	0.29	0.59	0.86	< 0.50	1.74	1.63
	4/4/2013	Mallen Hill	0.29	0.66	0.91	< 0.50	1.86	1.1
	4/4/2013	BPA Easement	0.58	1.00	1.19	0.50	3.27	2.16
	4/4/2013	Eagle Ridge Two	0.44	0.81	1.03	< 0.50	2.38	2.12
	4/4/2013	Southview	0.41	0.95	1.21	0.58	3.15	3.14
Third Quarter (Q3)	7/18/2013	Strong Road	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	1.52
	7/18/2013	Cedar Hills	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	1.24
	7/18/2013	Mallen Hill	< 0.25	< 0.5	0.54	< 0.5	0.54	1.23
	7/18/2013	BPA Easement	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	2.16
	7/18/2013	Eagle Ridge Two	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	2.35
	7/18/2013	Southview	0.26	0.76	1.40	0.85	3.27	3.26
Fourth Quarter (Q4)	10/17/2013	Strong Road	0.39	0.70	1.19	< 0.5	3.19	1.80
	10/17/2013	Cedar Hills	0.28	< 0.5	0.66	0.51	1.57	1.21
	10/17/2013	Mallen Hill	< 0.25	< 0.5	< 0.5	< 0.5	< 0.5	0.94
	10/17/2013	BPA Easement	0.27	< 0.5	0.62	< 0.5	0.89	1.80
	10/17/2013	Eagle Ridge Two	0.37	0.73	1.02	< 0.5	2.95	2.07
	10/17/2013	Southview	0.46	0.98	1.52	0.78	4.26	3.56
2014								
First Quarter (Q1)	1/16/2014	Eagle Ridge Two	0.49	0.76	1.02	< .5	2.27	1.90
	1/16/2014	Southview	0.58	1.11	1.43	0.6	3.72	3.60
Second Quarter (Q2)	4/16/2014	Eagle Ridge Two	0.43	0.76	0.87	< .5	2.06	1.82
	4/16/2014	Southview	0.47	1.00	1.22	0.69	3.38	3.66
Third Quarter (Q3)	7/17/2014	Eagle Ridge Two	< 0.25	< .5	< .5	< .5	< 0.5	1.82
	7/17/2014	Southview	0.36	0.9	1.36	1.03	3.65	3.75
Fourth Quarter (Q4)	10/16/2014	Eagle Ridge Two	< 0.25	< .5	< .5	< .5	< 0.5	1.08
	10/16/2014	Southview	0.37	0.99	2.01	1.65	5.02	3.94

All values are reported in µg/L

First quarter LRAA 2014 would include Total THM for second, third and fourth quarters of 2013 and first quarter 2014.

CONTAMINANTS FOUND IN DRINKING WATER TESTING IN 2014

CITY OF SPOKANE, WATER & HYDROELECTRIC SERVICES

Data presented, if not from 2014, is from the most recent testing done in accordance with the regulations.

SOURCE WATER TESTING CONTAMINANT	Units	Highest Average	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Arsenic	µg/L	**(a)**	**3.0**	**2.6**	**2**	**2**	**10**	**0**	**Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes**
Nitrate	mg/L	**(a)**	**3.23**	**0.68**	**10**	**10**	**10**	**10**	**Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits**
Gross Alpha	pCi/L	**(a)**	**2.1**	**< 1.0**	**1**	**2**	**15**	**0**	**Erosion of natural deposits**
Combined Radium 226 and 228 (b)	pCi/L	**(a)**	**2.1**	**1.54**	**2**	**2**	**5**	**0**	**Erosion of natural deposits**
DISTRIBUTION SYSTEM TESTING CONTAMINANT	Units	LRAA	Detected Maximum	Detected min.	Number Positive Samples	Number of Samples	MCL	MCLG	MAJOR SOURCES
Disinfection Byproducts - TTHMs [Total Trihalomethanes]	µg/L	**3.94**	**5.02**	**2.06**	**6**	**8**	**80**	**0**	**By-product of drinking water chlorination**
		date sampled	**90th Percentile (d)**	**Number of Sites exceeding AL**	**Number Positive Samples**	**Number of Samples**	**MCL**	**MCLG**	
Copper (c)	mg/L	**Aug-12**	**0.09**	**0**	**54**	**54**	**TT, AL= 1.3**	**1.3**	**Corrosion of household plumbing systems; Erosion of natural deposits: Leaching from wood preservatives**
Lead (c)	µg/L	**Aug-12**	**3.80**	**0**	**54**	**54**	**TT, AL= 15**	**0**	**Corrosion of household plumbing systems; Erosion of natural deposits**

Notes

(a) Compliance with MCL is determined by single sample results, so no average is used.

(b) Gross Alpha results were used in lieu of Radium 226, one half of the detection limit of 1.0 was used for the ND

(c) Faucet samples were from 'at risk' homes (those with lead service lines and those with copper pipes with lead solder joints).

(d) 90% of at-risk homes had this concentration, or less, of lead/copper.

Key to Table

AL = Action Level = The concentration of a contaminant which, if exceeded, triggers treatment or other requirement which a water system must follow.

LRAA = Locational Running Annual Average

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.

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.

pCi/L = picocuries per liter (a measure of radioactivity)

µg/L = micrograms per Liter = parts per billion

mg/L =milligrams per Liter = parts per million

TT = Treatment Technique = A required process intended to reduce the level of a contaminant in drinking water.

ND = None Detected

< less than

Appendix 6.6.1 Safety Program

First Aid Guide-Link

General Information: pcheney@spokanecity.org
Webmaster: pcheney@spokanecity.org

Risk Management and Safety Risk & Safety Manual

Home
Risk Services Page
Benefits
BP Loss Control
First Aid
Insurance
Liability
Safety
Safety Bulletin
Safety Calendar
Safety Programs
Risk & Safety Manual
SafetyTraining
Safety Links
Shelter-In-Place

Introduction

Supervisor's Guide

General Safety Rules

Seasonal Safety

Office Safety

General Field Safety

Construction Safety

Unique Safety Topics

Annual Compliance Plans

- Bloodborne Pathogen Program
- Confined Space Entry Program
- Lockout/Tagout Program
- Hazard Communication Program
- Hearing Conservation Program
- Respiratory protection Program

Workers' Compensation

- Reporting
- Volunteers

Benefits

- Time Loss Benefits
- Payroll Codes

Return to Work

- Return to Work Program

Risk & Insurance

- HIPPA Health Insurance Portability & Accountability Act of 1996

Appendix

- Hazard Report
- New Employee Orientation
- Decision Tree, Inspections
- Take a minute for Safety
- Employee Injury Report
- Health Services
- First Aid Kit Small
- First Aid Kit Large
- First Aid Poster - Short
- First Aid Poster - Long
- First Aid Kit Building
- Chemical List
- Temp/Seasonal Orientation
- Office Safety Checklist
- Flagging
- Excavation Checklist
- Exposure List - Labs
- Chemical Exception Form
- Hep B Declination Form
- FC2.1 - BBP Employee Classifications
- FC2.2 - Hep B Declination Form
- FC2.3 - Infectious Disease Exposure Form
- FC2.4 - Authorization for Hep Vaccination
- FC2.5 - BBP Poster
- FC3.1 - Departments in Respiratory Program
-

- FC3.2 - Respirator Types & Hazards
- FC3.3 - Table of Respiratory Hazards
- FC3.4 - Respirator Fit Test Health Questionnaire
- FC4.1 - Confined Space Entry Evaluation
- FC4.2 - Confined Space Entry Permit
- FC4.3 - Hot Work Permit
- Lockout/Tagout Worksheet
- Lockout/Tagout Checklist
- Group Lockout/Tagout
- Lockout Removal
- Registration as a Volunteer
- Adult Volunteer Waiver
- Minor Volunteer Waiver
- Volunteer Hours Reporting Form
- Volunteer Safety Program
- Waiver & Release of Liability (Adult)
- Waiver & Release (Minor)
- Use of Illness Leave Form
- Physician Disability Statement (PDS)
- Temporary Work Assignment (TWA)
- Essential Function Analysis Example
- Take a Child to Work Day Waiver
- Transitional Job Offer
- Evacuation Plan
- Glossary

First Aid Guide-Link

Purpose

The primary purpose of the City of Spokane's Risk Management & Safety Manual is to provide City employees with the information necessary to prevent accidents. The second function of the manual is to establish guidelines for departments to use when preventing and/or responding to accidents. General information, interpretations of state and federal regulations, and City policies relating to safety, insurance, workers' compensation, and other claims administration are all included in this manual. And while this manual does not cover all of the City's risk managing activities (certain departments may have risk management procedures not covered herein), the written guidelines contained in this manual must be adhered to in all work areas of the City.

Department heads and supervisors are required to know, reference, and use this manual. They are also responsible for conveying this information to employees whenever such information is relevant to an employee's job. In addition to this, department heads and supervisors must develop and implement department specific safety programs which include monthly safety meetings, job specific training, provisions for safety equipment, and record keeping procedures. Most importantly, department heads and supervisors must understand and convey that safety is an important component of job performance.

Mission

All employees are responsible for cooperating with and supporting the risk managing activities of the City. Every employee is expected, as a condition of employment, to be concerned with personal safety, safety of fellow workers, safety of the general public, and timely reporting of accidents. In affirmation of this, all City employees should share the mission of the City's Risk Management Department. The mission of the City's Risk Management Department is as follows.

To protect the City from loss by

- ***minimizing financial risk,***
- ***promoting physical well being of employees and citizens who come in contact with City operations, and***
- ***preventing the disruption of services.***

Accidents don't just happen by themselves. They are "caused." Effective supervision coupled with a safety conscious work force can usually prevent accidents. This is why the City is committed to providing an environment where all employees are expected to be safety conscious and every supervisor is required to follow, promote, and enforce safe work practices and procedures. Cooperation and communication is essential to creating such an environment. So for your own safety and personal risk management, as well as for the safety of others, talk about safety issues, read this manual, follow the written procedures, and always think of the "safest" way to do the job.

Note: Additional information on occupational safety, insurance, workers' compensation, and other claims administration is available from the City's Risk Management Department upon request. Consultation and training services may also be available depending on topic.

Table of Contents

Appendix 6.7.1 Cross Connection Control Program

City of Spokane

Cross Connection Control Program

Protecting The Water Distribution System from Cross-Connection Contamination

meeting the requirements of WAC246-290-490

Water and Hydroelectric Services

November, 2000

APPENDIX 6.7.1

Table of Contents

BACKFLOW INCIDENT

INVESTIGATION PROCEDURES

First Edition, December 1996

Published by

PACIFIC NORTHWEST SECTION
AMERICAN WATER WORKS ASSOCIATION

Prepared and Edited by

CROSS CONNECTION CONTROL COMMITTEE
PACIFIC NORTHWEST SECTION
AMERICAN WATER WORKS ASSOCIATION

APPENDIX 6.7.1 A

FOREWORD
First Edition

This manual was prepared as a supplement to the Pacific Northwest Section, American Water Works Association's publication *CROSS CONNECTION CONTROL MANUAL, ACCEPTED PROCEDURE AND PRACTICE*, Sixth Edition, December 1995. In the administration of a cross connection control program, the Sixth Edition recommends the inclusion of procedures for the investigation of water quality complaints that indicate any possible backflow contamination.

This manual is divided into two segments. The first part of the manual deals in general terms with the procedures for investigating a backflow incident. The second part, incorporated as an appendix, includes reference material that will assist a cross connection control manager or inspector in identifying the type of contaminants that may be found on the property of different categories of customers. This appendix may also be useful in the initial survey of premises to assess the requirements for premise isolation.

DISCLAIMER

This manual was prepared to provide general guidance to a water utility investigating a backflow incident. The potential sources of contamination of a water system, and categories of chemical and bacteriological contaminants are too numerous to provide specific instructions. Therefore, the responsibility for the procedures used for the investigation of a backflow incident must lie with the water utility personnel responding to each particular incident.

BACKFLOW INCIDENT INVESTIGATION PROCEDURES

First Edition
Table of Contents

Tables and Figures

City of Spokane Water Department
Water Quality Complaint

Date_____ Time_____ Last Name_____ First Name_____

Address_____ Apt#_____

Business Name_____ Home #_____ Work #_____

General Complaint?

_____

_____

_____

When was problem first noticed_____

Is Premise New? _____ Has there been any Recent Plumbing work? _____

Has water been shut off recently? _____

General Water Quality
Color, Taste, Odor: _____

_____

Suspended matter or solids: _____

_____

Oily appearance or sheen: _____

Resolution: _____

_____

_____

_____

Inspector_____ Sample taken _____ Results_____

Remarks:

_____

_____

_____

_____

_____

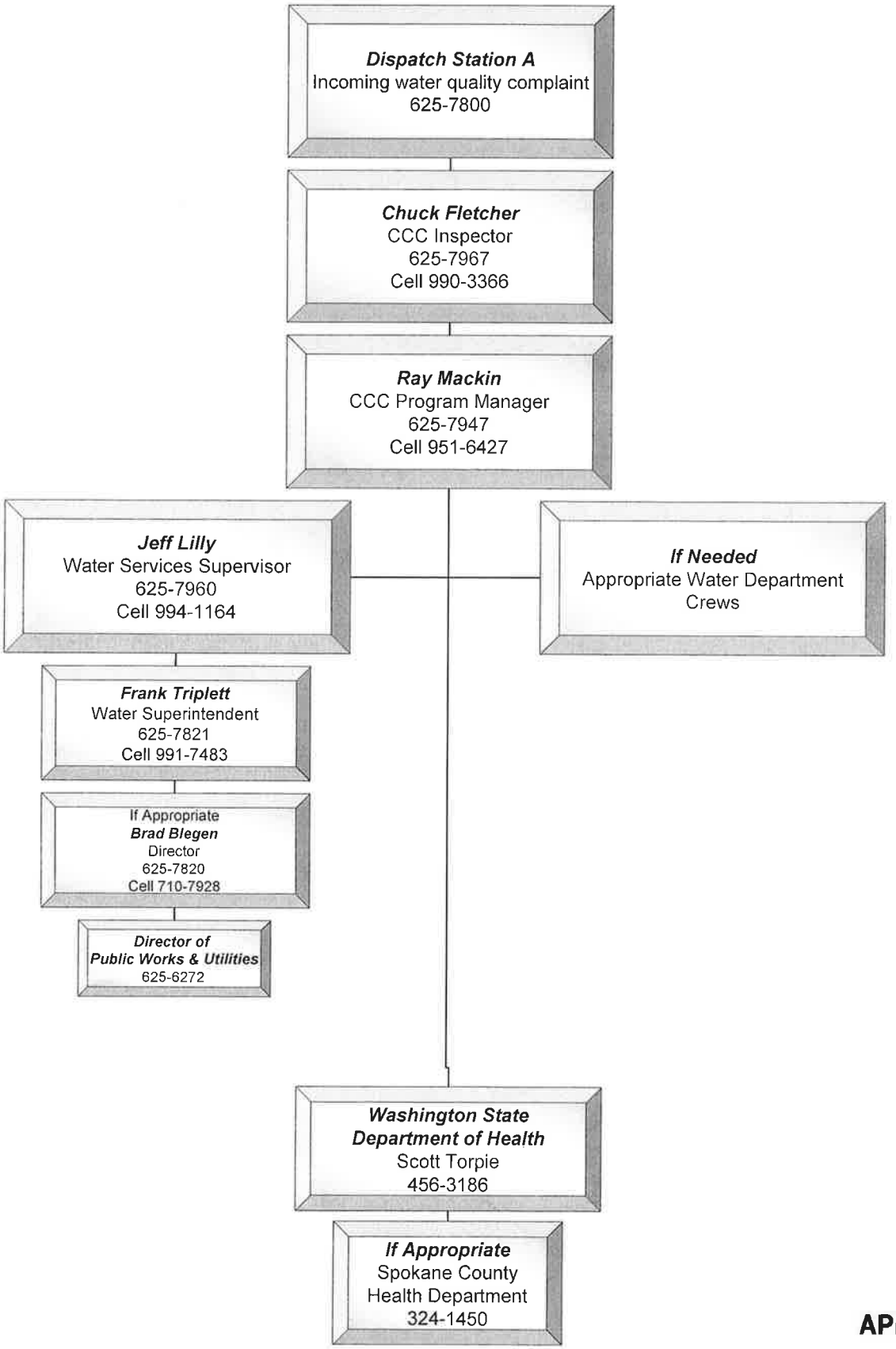
_____

_____

APPENDIX 6.7.1 B

City of Spokane Water Department
Backflow Incident Response

Backflow Incident Notification Chart



APPENDIX 6.7.1C

Appendix D
Cross Connection Annual Summary Report

Washington State Department of Health

Office of Drinking Water

Public Water System Cross-Connection Control Activities
Annual Summary Report for Year 2005

Part 1: Public Water System (PWS) and Cross-Connection Control Specialist (CCS) Information

PWS ID: 83100	PWS Name: SPOKANE, CITY OF	County: SPOKANE
Provide name and Cert No. of CCS who develops and implements your CCC program		
CCS Name (last, first & mi): Fletcher, Chuck D.		CCS Phone: (509) 625-7967
CCS Cert No.: 5542	BAT Cert. No. (if applicable):	
CCS is (check one):	PWS owner or employee ☑	On contract to PWS ☐ Volunteer or other ☐

Part 2: Status of Cross-Connection Control (CCC) Program at end of 2005

PWS has(check one box in each column below):	
A written CCC program plan Y ☑ N ☐	CCC implementation activities Y ☑ N ☐

B3675
(Written program may be a separate document, or part of water system plan or small water system management program).

Provide information regarding PWS's specific CCC Program Elements

Program Element Number	Description of Element [See WAC 246-290-490(3)]	This Program Element is Currently:	
		Included in Written Program	Being Implemented or Is Completed
1	Legal Authority Established	Y ☑ N ☐	Y ☑ N ☐
2	Hazard Evaluation Procedures and Schedules	Y ☑ N ☐	Y ☑ N ☐
3	CCC Procedures and Schedules	Y ☑ N ☐	Y ☑ N ☐
4	Certified CCS Provided	Y ☑ N ☐	Y ☑ N ☐
5	Backflow Preventer Inspection and Testing	Y ☑ N ☐	Y ☑ N ☐
6	Testing Quality Control Assurance Program	Y ☑ N ☐	Y ☑ N ☐
7	Backflow Incident Response Procedures	Y ☑ N ☐	Y ☑ N ☐
8	Public Education Program	Y ☑ N ☐	Y ☑ N ☐
9	CCC Records	Y ☑ N ☐	Y ☑ N ☐
10	Reclaimed Water Permit	Y ☐ N ☐ N/A ☑	Y ☐ N ☐ N/A ☑

Part 3A: System Characteristics at End of 2005

Indicate the number of connections of each type that the PWS serves (whether or not they are protected by backflow preventers). **Estimate if necessary.**

Type of Service Connection	Number
Residential (As defined by PWS)	61387
All Other (Include dedicated fire sprinkler and irrigation lines and PWS-owned facilities such as water and wastewater treatment plants and pumping stations, parks, piers and docks.)	11218
Total Number of Connections	72605

Part 3B: Cross-Connection Control for High-Hazard Premises or Systems Served by the PWS

1 /S does not serve any high-hazard premises or systems, check here ☐ and go to Part 4.

- Complete all cells. Enter zero (0) in cells if PWS does not serve such premises.
- Estimate number of connections served if necessary (OK to use phone book).
- Hazard evaluations do not need to be done to complete this table.

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections at end of 12/31/2005			
	A. Being Served Water by PWS[1]	B. With Premises Isolation by AG/RP	C. With Premises Isolation AG Inspected or RPBA Tested[2]	D. Granted Exception from Mandatory Premises Isolation
Agricultural (farms and dairies)	0	0	0	0
Beverage bottling plants (including breweries)	8	5	4	0
Car washes	36	34	31	0
Chemical plants	3	3	3	0
Commercial laundries and dry cleaners	36	13	13	0
Both reclaimed water and potable water provided	0	0	0	0
Film processing facilities	17	3	3	0
Dedicated fire protection systems with chemical addition or using ›pproved auxiliary supplies	8	8	8	0
·ood processing plants (including canneries, slaughter houses, rendering plants)	7	3	3	0
Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers	169	98	93	0
Separate irrigation systems using purveyor's water supply and chemical addition[4]	1	1	1	0
Laboratories	10	8	7	0
Metal plating industries	3	3	2	0
Mortuaries	8	4	3	0
Petroleum processing or storage plants	2	1	1	0
Piers and docks	0	0	0	0
Radioactive material processing plants or nuclear reactors	0	0	0	0
Survey access denied or restricted	0	0	0	0
Wastewater lift/pump stations (non-residential only)	23	23	21	0
Wastewater treatment plants	1	1	1	0
Unapproved auxiliary water supply interconnected with potable water supply	39	14	12	0
	0	0	0	0
Totals	371	222	206	0

[1]Count multiple connections or parallel installations as ***separate*** connections.

[2]Count only those connections with AG or RPBA installed for premises isolation. Don't include connections with in-premises protection only, or connections with DCVA/DCDAs installed for premises isolation.

[3] ›unt only those connections whose premises isolation preventers were inspected (AG) or tested (RPBA) during 2005.

. example, dedicated lines to irrigation systems in parks, playgrounds, golf courses, cemeteries, estates, etc.

[5]Premises with hazardous materials or processes (requiring isolation by AG or RPBA) such as: aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, e.g.: other manufacturing or other

commercial. If needed, attach additional sheet giving same information as requested in table.

Part 4: Backflow Preventer Inventory and Testing Data During Year 2005

Complete all cells. Enter zero (0) if there are no backflow preventers in that category.

- Count only the backflow preventers that the PWS relies upon for protection of the distribution system. If your records do not distinguish between premises isolation and in-premises protection preventers, enter all data in Premises Isolation section and check the box.
- Count AVBs on irrigation systems only. **If you do not track AVBs, enter "UNK".**
- Count multiple tests or failures for any particular backflow preventer as one test or failure for that backflow preventer.
- Multiple Service or Parallel Connections: Count each assembly separately.
- Assemblies on Dedicated Fire or Irrigation Lines: Count as Premises Isolation Assemblies.

If PWS does not track AVBs Check here: ☑

Backflow Preventer Category and Testing/Inspection Information		Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Premises Isolation, including preventers isolating PWS-owned facilities. ***If In-Premises Protection preventers are also included, check here.*** ☑									
Rows 1-3 pertain ONLY to Premises Isolation preventers in service at beginning of 2005									
1	In service on 1/1/2005	0	321	1	1608	460	0	0	unk
2	Inspected and/or Tested in 2005[1]	0	319	0	1372	429	0	0	unk
3	Failed Inspection or Test in 2005	0	27	0	116	25	0	0	unk
Rows 4 - 6 pertain ONLY to NEW Premises Isolation preventers installed during 2005									
4	New preventers installed in 2005[2]	0	40	0	52	49	0	0	unk
5	Inspected and/or Tested in 2005[1]	0	37	0	47	31	0	0	unk
6	Failed inspection or test in 2005[3]	0	4	0	11	3	0	0	unk
	Preventers taken out of service in 2005[3]	0	1	1	11	0	0	0	unk
Premises Isolation Total at end of 2005[4]		0	360	0	1649	509	0	0	unk
In-Premises Protection (Fixture Protection or Area Isolation), including preventers within PWS-owned facilities.									
Rows 8 - 10 pertain ONLY to In-Premises Protection Preventers in service at beginning of 2005									
8	In service on 1/1/2005	6	1854	0	2088	0	95	29	unk
9	Inspected and/or Tested in 2005[1]	6	1347	0	582	0	78	29	unk
10	Failed Inspection or Test in 2005	0	125	0	46	0	9	0	unk
Rows 11 - 13 pertain ONLY to NEW In-Premises Protection Preventers installed during 2005									
11	New preventers installed in 2005[2]	0	171	0	223	0	7	0	unk
12	Inspected and/or Tested in 2005[1]	0	162	0	173	0	7	0	unk
13	Failed inspection or test in 2005	0	21	0	13	0	1	0	unk
14	Preventers taken out of service in 2005[3]	0	5	0	0	0	0	0	unk
In-Premises Protection Total at end of 2005[4]		6	2020	0	2311	0	102	29	unk
Grand Total at end of 2005		6	2380	0	3960	509	102	29	unk

[1]Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only using DOH/USC test procedures).Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at beginning of 2005. Replacement preventers may be of a different type than the original.

[2]Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at the beginning of 2005. Replacement preventers may be of a different type than the original.

[3]New or existing preventers taken out of service, whether or not they were replaced by the same type or different type of preventer.

[4]Total at end of 2005 should be equal to the number of preventers in service at beginning of 2005 plus those installed during 2005 minus the number of preventers taken out of service during 2005.

Part 4B: Other Implementation Activities in 2005

C 'ete all cells. Enter zero (0) if not applicable.

Activity or Condition	Number
New service connections evaluated for cross-connection hazards to PWS in 2005.	900
New service connections requiring backflow protection to protect PWS.[1]	75
Existing service connections evaluated for cross-connection hazards to PWS in 2005.	264
Existing service connections requiring backflow protection to protect PWS.[1,2]	166
Exceptions granted to high-hazard premises per WAC 246-290-490(4)(b) in 2005.[3]	0
CCC enforcement actions taken by PWS during 2005.[4]	0

[1]Include services where either premises isolation or in-premises preventers were required to protect the PWS.

[2]Include existing services that need new, additional or higher level backflow prevention.

[3]A DOH Exceptions to Hazard Premises Form *must* be attached for each exception granted during the year.

[4]"Enforcement actions" mean actions taken by the PWS (such as water shut-off, PWS installation of backflow preventer) when the customer fails to comply with PWS's CCC requirements.

Part 5: Backflow Incidents and "Off-Normal" Events in 2005

	Backflow Incidents, Risk Factors and Indicators during 2005	Number (Enter 0 if none)	Check if Data Not Available
Backflow Incidents during 2005			
1	Backflow incidents that contaminated the PWS[5].	0	☐
2	Backflow incidents that contaminated the customer's drinking water system ***only***[5].	0	☐
: Factors for Backflow during 2005			
3	Distribution main breaks per 100 miles of pipe.	4.00	☐
4	Low pressure events (<20 psi in PWS distribution system).	0	☐
5	Water outage events.	0	☑
Indicators of Possible Backflow during 2005			
6	Total health-related complaints received by PWS.[6]	0	☐
7	Received during BWA or PN events.[7]	0	☐
8	Received during low pressure or water outage events.	0	☐
9	Total aesthetic complaints (color, taste, odor, air in lines, etc.).	18	☐
10	Received during BWA or PN events.[7]	0	☐
11	Number of these complaints received during low pressure or water outages events.	0	☐

[5]Complete and submit a Backflow Incident Report form for each known backflow incident.

[6]Such as stomach ache, headache, vomiting, diarrhea, skin rashes, etc.

[7]"**BWA**" means ***Boil Water Advisory*** and "**PN**" means ***Public Notification*** for water quality reasons.

Part 6: Comments and Clarifications

F comments or clarifications to any of the information included in this report. Note for on-screen completion: Comments will not "word wrap" from one li to the next. Press to continue on new line. Maximum length of each comment is 255 characters, including spaces.

Part No.	Comment
Gener	Part #3 RPDA was mis-marked, should have been RPBA

Part 7: Report Completion Information

I certify that the information provided in this CCC Activities Report is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name[1]: Chuck D. Fletcher		Title: Water Inspector
Signature:		Date: 03/29/2006
Phone: (509) 625-7967	E-mail: cfletcher@spokanecity.org	
I have reviewed this report and certify that the information provided is complete and accurate to the best of my knowledge.		
PWS Mgr./Owner Name[2]: Jeff Lilly		Title: Water Services Supervisor
Signature:	Op. Cert. No.: 2365	Date: 03/29/2006

[1] CCC Program Manager is generally the CCS who is responsible for development and implementation of the PWS's CCC Program.

[2] The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of the CCC program.

Washington State Department of Health

Office of Drinking Water

Cross-Connection Control Program Summary Report For 2005

Describe the characteristics of the PWS's CCC Program at the end of 2005. Complete this form only if PWS had written CCC program plan, policies or procedures at end of 2005.

Part 1: Public Water System (PWS) Identification

PWS ID: 83100	PWS Name: SPOKANE, CITY OF	County: SPOKANE

Part 2: Cross-Connection Control (CCC) Program Characteristics

A. Type of Program Currently Implemented

Type of Program	Check One
Premises isolation only.	☐
Combination program: reliance on both premises isolation and in-premises protection.	☑
In transition from a combination program to a premises isolation only program.	☐

B. Coordination with Local Administrative Authority (LAA) on Cross-Connection Issues

Indicate the status of coordination with LAAs in your service area. The LAA is the entity that enforces the Uniform Plumbing Code. ***Check one box in each of last 3 columns for each LAA in your service area.***

A	Name of LAA (e.g., the City or County Building Department)	PWS Currently:		LAA Declined to Coordinate
		Coordinates with LAA	Has Written Agreement with LAA	
1	City of Spokane	Y ☑ N ☐	Y ☑ N ☐	Y ☐ N ☑
2	Spokane County	Y ☐ N ☑	Y ☐ N ☑	Y ☑ N ☐
3		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
4		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
5		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐

[1] If more than 5 LAAs, attach separate sheet giving the above information.

C. Corrective or Enforcement Actions Available to the Purveyor

Type of Corrective Action	Indicate Whether Available	Most Often Used (Check One)
Denial or discontinuance of water service.	Y ☑ N ☐	☑
Purveyor installs backflow preventer and bills customer.	Y ☑ N ☐	☐
Assessment of fines (in addition to elimination or control of cross-connection).	Y ☐ N ☑	☐
Other corrective actions (describe): NA	Y ☐ N ☐	☐

D. CCC Program Responsibilities

Do not include enforcement action related procedures or circumstances.

CCC Program Activity	Responsible Party (Check one per row)	
	Customer	Purveyor
Hazard Evaluation by DOH-certified CCS	☐	☑
Backflow preventer (BP) ownership	☑	☐
BP installation	☑	☐
BP ***initial*** inspection (for proper installation - all BPs)	☐	☑
BP ***initial*** test (for testable assemblies)	☑	☐
BP ***annual*** inspection (Air Gaps and AVBs)	☑	☐
BP ***annual*** test (for testable assemblies)	☑	☐
BP maintenance and repair	☑	☐

E. Backflow Protection for Fire Protection Systems

Please remember to enter number of days allowed if you require retrofitting.

PWS coordinates with ***LAA*** on CCC issues for fire protection systems(FPS).	Y ☑ N ☐ N/A ☐
PWS coordinates with ***local Fire Marshal*** on CCC issues for FPS.	Y ☑ N ☐ N/A ☐
PWS ensures backflow prevention is installed before serving ***new*** connections with FPS.	Y ☑ N ☐
PWS requires retrofits to ***high***-hazard FPS.	Y ☑ No. of days allowed: 90 N ☐ N/A ☐
PWS requires retrofits to ***low***-hazard FPS.	Y ☑ No. of days allowed: 90 N ☐ N/A ☐

F. Backflow Protection for Irrigation Systems

Minimum level of backflow prevention required on irrigation systems ***without*** chemical addition.	Not Addressed ☐ AVB ☐ PV/SVBA ☑ DCVA ☐ RPBA ☐
PWS currently inspects AVBs upon ***initial*** installation.	Y ☐ N ☑ N/A ☐
PWS currently inspects AVBs upon repair, reinstallation or relocation.	Y ☐ N ☑ N/A ☐

G. Used Water

PWS prohibits, by ordinance, rules, policy or agreement, the intentional return of used water (e.g. for heating or cooling) into the distribution system.	Y ☑ N ☐
If not prohibited at present, date plan to prohibit use.	N/A ☑
Current number of service connections returning used water to distribution system.	0

H. Backflow Protection for Auxiliary Water Supplies[1] NOT Interconnected with PWS

Indicate the minimum backflow preventer and type of protection required for service connections having unapproved auxiliary water supplies when they are NOT interconnected to the PWS. Check one box per row.

Existing service connections.	None ☐ DCVA ☐ RPBA ☑ AG ☐
Type of protection required.	None ☐ In-premises protection ☐ Premises isolation ☑
New service connections.	None ☐ DCVA ☐ RPBA ☑ AG ☐

Type of protection required.	None ☐ In-premises protection ☐ Premises isolation ☑

1 auxiliary water supply is any water supply on or available to customer's premises in addition to the purveyor's potable water supply.

I. Backflow Protection for Tanker Trucks and Temporary Water Connections

...*num* level of backflow protection (installed on or associated with the truck) required for tanker trucks taking water from PWS.	AG ☑ DCVA ☐ RPBA ☐ Not Specified ☐ Tanker trucks not allowed ☐
PWS requires tanker trucks to obtain water at designated filling sites each equipped with permanently installed backflow preventer(s).	Y ☐ (Min. protection: DCVA ☐ RPBA ☐) N ☐ N/A ☐ No sites provided ☑
PWS currently accepts tanker trucks approved by other PWSs without further inspection or testing.	Y ☐ N ☑ N/A ☐
Minimum level of backflow protection required for temporary water connections (e.g. for construction sites).	AG ☐ DCVA ☐ RPBA ☐ Not specified ☐ Temp. connections not allowed ☑
PWS requires testing each time the temporary connection backflow preventer is relocated.	Y ☐ N ☐ N/A ☑ (Temp. connections not allowed)
PWS provides approved backflow preventer for temporary connections.	Y ☐ N ☐ N/A ☑ (Temp. connections not allowed)

J. Backflow Protection for Non-Residential Connections

For each category shown, indicate whether PWS has non-residential connections of that type and the **minimum** level of ***premises isolation*** backflow protection required (whether or not PWS currently has that type of customer).

Type of Connection	PWS has Customers of this Type	Minimum Premises Isolation Backflow Protection Required
...mercial	Y ☑ N ☐	Not Required ☑ DCVA ☐ RPBA ☐
Industrial	Y ☑ N ☐	Not Required ☐ DCVA ☐ RPBA ☑
Institutional	Y ☑ N ☐	Not Required ☐ DCVA ☐ RPBA ☑
Other (specify):	Y ☐ N ☐	Not Required ☐ DCVA ☐ RPBA ☐

K. Backflow Protection for Wholesale Customers

Indicate whether the PWS requires backflow protection at interties with wholesale customers (other PWSs).

Type of Intertie	PWS has (plans to have) Customers of this Type	Backflow Protection Required
Existing	Y ☑ N ☐	Not specified / Not required ☐ Always required ☐ Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☑ RPBA ☐
		Not specified / Not required ☐ Always Required ☐

New	Y ☑ N ☐	Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☑ RPBA ☐

Part 3: CCC Program Record-Keeping and Inventory

Indicate the type or name of computer software used by the PWS to track CCC records.

-Track (BMI) ☐	BPMS ☐	XC2 (Engsoft) ☑	Tokay ☐	Other commercial CCC software (specify) ☐
Custom developed for or by PWS[1] ☐	Other non-CCC software (e.g. Excel) ☐	None Used ☐		

[1] Do not include commercial CCC software customized for PWS. If PWS uses customized commercial software, check the box for the appropriate commercial software name.

Part 4: Comments and Clarifications

Enter comments or clarifications to any of the information provided in this report.

Part No.	Comment

Part 5: CCC Program Summary Completion Information

I certify that the information provided in this CCC Program Summary is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name[1]: Chuck D. Fletcher		Title: Water Inspector
Signature:		Date: 03/29/2006
Phone: (509) 625-7967	E-mail*: cfletcher@spokanecity.org	
I certify that the information provided in this report accurately represents the status and description of this water system's CCC Program.		
PWS Mgr/Owner Name[2]: Jeff Lilly		Title: Water Services Supervisor
:ature:	Op. Cert. No.: 2365	Date: 03/29/2006

*Required Field. For security reasons, an e-mail address must be provided. DOH will e-mail you to confirm any changes made to your data

1 The CCC Program Manager is generally the CCS responsible for developing and implementing the PWS's CCC program.

2 The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of the CCC program. This person doesn't need to be in charge of the entire water system.

Appendix 6.7.2 Enforcement information

Spokane Municipal Code

Title 13 Public Utilities and Services

Chapter 13.04 Water

Article I. General Provisions

Section 13.04.0814 Purpose

The purpose of the City of Spokane cross-connection control program is to establish and codify a municipal cross-connection control program to protect the public health and safety, consistent with WAC 246 290-490. In implementing this program the director is guided by the manual of Accepted Practice and Procedure in Cross-Connection Control – Pacific Northwest Section – American Waterworks Association.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.0816 Definitions

For purposes of the cross-connection control program, the following definitions apply:

A. "Backflow" is the flow of water or other liquids, fluids, gases, or any substance whatsoever from a source outside the public water supply back into the public water supply. Backflow or reversed flow may occur due to either back pressure (pushing) or back siphonage (pulling).

B. "Backflow prevention device" is a device or assembly, approved by the director or health officer, designed and tested to counteract back pressure

and back siphonage.

C. "Containment" is a method of backflow prevention requiring the installation of a backflow prevention assembly or device at the point a water service line enters the premises served.

D. "Contamination" is the entry into or presence in the public water supply of any substance which the director or health officer determines will or might adversely affect the public health or the aesthetic qualities of the water (appearance, taste, or odor).

1. "Contaminated water" is water with contamination.

E. "Cross-connection" is any physical arrangement whereby the public water supply of the City of Spokane is connected, directly or indirectly, or in the judgment of the director or health officer has a risk of becoming connected, to a source of contamination as a result of backflow. Sources of contamination might include, but are not limited to:

1. public or private water supply system,
2. tank or storage reservoir,
3. sewer line,
4. sewer drain,
5. conduit,
6. pool, or
7. any plumbing or fixture whatsoever.

F. "Cross-connection control manual" or "Manual" is the latest edition of "Accepted Practice and Procedure in Cross-Connection Control" promulgated by the Pacific Northwest section of the American Waterworks Association. A copy of the manual is available for public inspection at the water and hydroelectric services department offices.

G. "Cross-connection control program" is the City of Spokane's effort to prevent and control cross-connections, as required by WAC 246-290-490, expressed in the cross-connection control manual, SMC 13.04.0814 through SMC13.04.0824, and any regulations or orders issued by the director in implementation of said program.

H. "Customer" is any person or other entity at premises reflected in the files of the water and hydroelectric services department as an authorized connection to the City's public water service system.

I. "Director" is the director or administrative head of the water and hydroelectric services department.

J. "Isolation" is a method of backflow prevention where a backflow prevention assembly or device is located at a point of a cross-connection, rather than the premises or property line.

K. "Service connection" or "service line" is the connection between the public water supply system to a customer's premises or customer-operated distribution system.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 3

Section 13.04.0818 Cross-connections Prohibited – Nuisance Declared

A. No person or entity may install, maintain or permit a cross-connection in violation of the cross-connection control program requirements. Consistent with the definition of cross-connection herein, this prohibition is specifically intended to include potential sources or risks of contamination through backflow to the public water system. Any such cross-connection shall be immediately removed by the customer, or the water and hydroelectric services department may do so and bill the costs to the customer and/or other responsible parties, as determined by the director.

B. The installation or maintenance of a cross-connection condition is declared a public nuisance, subject to immediate abatement or removal by the City at the customer's sole risk and liability.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 18

Section 13.04.0820 Director's Authority

A. The director or an authorized representative of the water and hydroelectric services department may require any customer or occupant of premises to cooperate in providing any information, access to premises or any building, or testing or inspection requested relating to the enforcement of the City's cross-connection control program. Failure to cooperate with any such request, in addition to being a violation of this chapter, is grounds for denial or termination of water service, with or without further notice.

B. In addition to the specifications in the Cross-Connection Control Manual, the director may issue regulations or, in a specific case, an order to

implement the City's cross-connection control program and may assess additional fees or charges to customers and/or other responsible persons for inspections, tests, equipment or other items furnished in the course of implementing the City's cross-connection control program. Such regulations or orders may address:

1. minimum cross-connection control operating policies;
2. backflow prevention device installation practices, containment and isolation requirements; and
3. backflow prevention device testing procedures and records-keeping requirements.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 19

Section 13.04.0822 Inspection and Testing – Customers to Cooperate

A. Customers are required to cooperate fully with the City in implementing the cross-connection control program. Customers may be required to provide satisfactory evidence of cross-connection control to the water and hydroelectric services department and to allow inspection, testing or other examination, including inspection and testing of backflow prevention devices, all as deemed necessary to implement the City's cross-connection control program.

B. The water and hydroelectric services department shall have access to all service connections, premises and buildings served by the City's public water system during regular business hours for inspection and testing purposes to ascertain the need to eliminate or control cross-connections, or at any time in case of emergency.

C. Compliance with the City's cross-connection control program requirements are additional terms and conditions under which the City of Spokane supplies water service to its customers. The water and hydroelectric services department may terminate service by any means, with or without prior notice, for failure to comply with the City's cross-connection control program. This specifically includes installation and maintenance of backflow prevention devices required by the water and hydroelectric services department.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 20

Section 13.04.0824 No Duty – Ratification

A. Notwithstanding any other provision, no duty on the part of the City of Spokane, its officers, agents or employees is created. Any duty nonetheless deemed to arise is declared to be a duty to the general public only and not to any particular person, group, class or entity.

B. All actions taken by City departments or officials pursuant to the provisions of chapter 246-290 WAC and the Cross-Connection Control Manual are hereby ratified and confirmed.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Chapter 7

Design and Construction Standards

Exhibits and Appendices

Appendix 7.1.1 Design Standards (Water section only)

AGENDA SHEET FOR COUNCIL MEETING OF: February 5, 2007

RECEIVED
JAN 24 2007
CITY CLERK'S OFFICE
SPOKANE, WA

Submitting Dept.	Contact Person/Phone No.	Council Sponsor
Engineering Services	Gary Nelson/625-6678	Public Works Committee

ADMINISTRATIVE SESSION
- o Contract
- ● Report
- o Claims

LEGISLATIVE SESSION
- o Emergency Ord
- o Resolution
- o Final Reading Ord
- o First Reading Ord
- o Special Consideration
- o Hearing

CITY PRIORITY
- o Communications
- o Economic Development
- o Growth Management
- o Human Services
- o Neighborhoods
- o Public Safety
- o Quality Service Delivery
- o Racial Equity/Cultural Diversity
- ● Rebuild/Maintain Infrastructure

STANDING COMMITTEES (Date of Notification)
- o Finance ____
- o Neighborhoods ____
- o Planning/Community & Econ Dev ____
- o Public Safety ____
- o Public Works 11/13/06

CLERK'S FILE OPR 1999-0977
RENEWS
CROSS REF CPR 2001-0025
ENG
BID
REQUISITION

Neighborhood/Commission/Committee Notified:

Action Taken:

AGENDA WORDING: (If contract include the term.)

Recommendation to adopt the City of Spokane Design Standards

BACKGROUND: (Attach additional sheet if necessary)

Engineering Services maintains a set of Design Standards used by both City and private engineers to design public works projects. The Design Standards specify how to construct the requirements of the development standards (contained in the SMC) and the recommendations of the Comprehensive Plan. The Design Standards require periodic updates as the development standards, the Comprehensive Plan, construction practices and terminology change over time. The last update to the Design Standards was in 2000. The City Engineer will have the authority to implement and adopt interim amendments to the Design Standards as defined therein.

RECOMMENDATION:

Adopt

Fiscal Impact o N/A	**Budget Account:** o N/A
o Expenditure: $	#
o Revenue: $	#
o Budget Neutral	

ATTACHMENTS:

Include in Packets: BRIEFING PAPER
On file for Review in Office of City Clerk:

SIGNATURES:

Director, Engineering Services

Director, Public Works & Utilities

Finance

Legal

Deputy Mayor for Mayor

~~Council President~~

DISTRIBUTION: Engineering Services, S Decker Neighborhood Services, G Hecht

Design standards\2006 agenda.doc

COUNCIL ACTION:

ADOPTED BY
SPOKANE CITY COUNCIL:
February 5, 2007
CITY CLERK

OPR 99-977

BRIEFING PAPER

Department of Public Works & Utilities

Date: November 13, 2006

Subject:
Design Standards update

Background:
The Department of Engineering Services maintains a set of Design Standards used by both City and private engineers to design public works projects. The Design Standards specify how to construct the requirements of the development standards (contained in the SMC) and the recommendations of the Comprehensive Plan.

The Design Standards require periodic updates as the development standards, the Comprehensive Plan, construction practices and terminology change over time. The last update to the Design Standards was in 2000.

This proposed update does not affect the development standards that the Council recently approved nor ongoing coordination with SRTC.

The proposed changes are relatively minor. The majority involve wording changes necessary for clarity. Examples of changes made are as follows:

Current	Proposed Revision
Section 1: City Engineer – the Spokane City Engineer or his designated representative	Engineer The Director of Engineering Services, Streets, Water or Wastewater Management or his designated representative.
Section 4: Manholes are required on private sewers 300 or more feet in length. Where manholes are used, spacing shall be 300'.	Manholes are required on private sewers 300 or more feet in length. Where required, manholes shall be at maximum 300' spacing.
Section 5: Air release valves of a type suitable for sewerage service shall be located at all high points along the force main. The use of air release valves shall be restricted to installations where in the opinion of the Engineer there is no possible alternative.	The use of air release valves shall be restricted to installations where, in the opinion of the Engineer, there is no possible alternative. Air release valves, when permitted, shall be located at localized high points along the force main, shall be of a type suitable for sewage service and shall be located in a manhole for purposes of maintenance.

Impact:
No fiscal impact.

Action:
We propose adoption of the Design Standards by the Council and the granting of authority the Director of Engineering Services to implement and adopt interim amendments to these Design Standards as he may periodically judge necessary.

For further information on this subject contact Dave Mandyke, Acting Director, Public Works & Utilities, at 625-6320 or dmandyke@spokanecity.org.

CITY OF SPOKANE

DEPARTMENT OF ENGINEERING SERVICES

DESIGN STANDARDS

FEBRUARY, 2007

CITY OF SPOKANE
ENGINEERING SERVICES

DESIGN STANDARDS
TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

1.0 OVERVIEW

1.1 Purpose and Scope

The purpose of these Standards is to standardize design elements where necessary for consistency and to help assure that the minimum requirements of the public are met, including safety, welfare, convenience, aesthetics and economical maintenance.

These Standards cannot provide for all situations. They are intended to assist, but not to substitute for competent work by design professionals. It is expected that land surveyors, engineers, and architects will bring to each project the best skills and abilities from their respective disciplines to see that the project is designed in a manner consistent with the intent of the Standards.

These Standards are not intended to limit unreasonably any innovative or creative effort which could result in higher quality, lower cost or both. Any proposed departure from these Standards will be judged, however, on the likelihood that such variance produces a compensating or comparable result, in every way suitable for public use.

These Standards shall govern design for new construction and major upgrades to all streets, sewers, water lines and other utilities in new or existing City rights-of-way, easements or areas which are proposed for dedication to the City of Spokane.

Before the City accepts any improvements which are to be maintained by City forces, such improvements shall meet or exceed these Standards.

If any part of these Design Standards is found to be invalid, all other non-conflicting parts shall remain in effect.

1.2 Definitions

The following definitions apply to terms and abbreviations used throughout this manual. Additional terms applicable to specific aspects of design are defined at the beginning of each section.

AASHTO The American Association of State Highway Transportation Officials. The abbreviation may also be used throughout these Standards to reference AASHTO's publication, "A Policy on Geometric Design of Highways and Streets".

ADA Americans with Disabilities Act.

ADAAG Americans with Disabilities Act Accessibility Guidelines.

Applicant An individual or firm applying for design approval from the City for a project.

AWWA The American Water Works Association.

Designer The project engineer or architect.

Developer Refers to the owner (or financial sponsor) of a privately funded project. May also be taken to mean the owner's consulting architect, engineer or other agent.

Engineer The Director of Engineering Services, Streets, Water or Wastewater Management as applicable or his designated representative.

MUTCD The U.S. Department of Transportation Manual on Uniform Traffic Control Devices.

Owner Legal owner of the property on which a project is to be constructed.

Private Project A project which is to be constructed on privately-owned property.

Public Project A project which is to be constructed within the public right-of-way. Public projects may be designed by either private consultants or the City's in-house engineering staff.

P.U.D** or **PUD "Planned Unit Development". A privately developed project normally consisting of multiple residences or commercial units within a single tax parcel. Typically water, sewer and roadway systems within a P.U.D. are privately owned, with maintenance for these systems funded through home owner association dues or a similar arrangement.

RCW Revised Code of Washington.

SEPA State Environmental Policy Act.

SMC Spokane Municipal Code.

Specifications Defined as the most current versions of the following documents:

1. WSDOT Standard Specifications for Road, Bridge and Municipal Construction and the and amendments thereto
2. the City of Spokane General Special Provisions for Private Development (which are intended for privately funded projects) or City of Spokane General Special Provisions (which are intended for City funded projects). Henceforth both are referred to as City of Spokane GSPs.

STA Spokane Transit Authority.

Standard Plans The City of Spokane Standard Plans.

Variance A grant of relief from the requirements of this section that permits construction in a manner that would otherwise be prohibited by these design standards.

WSDOT Washington State Department of Transportation.

1.3 References

Except where these Standards provide otherwise, design, detail, workmanship, and materials shall be in accordance with the current editions of the following publications:

a) Standard Specifications for Road, Bridge, and Municipal Construction as amended. (Published by WSDOT).
b) City of Spokane GSPs.
c) Spokane Regional Stormwater Manual.
d) WSDOT Standard Plans for Road and Bridge Construction..
e) WSDOT Design Manual.
f) WSDOT Hydraulics Manual.
g) NRCS Urban Hydrology for Small Water Sheds TR-55.
h) AWWA Standards.
i) WSDOH Water System Design Manual.
j) Department of Transportation Manual on Uniform Traffic Control Devices, as amended (MUTCD).
k) A Policy on Geometric Design of Highways and Streets (AASHTO).
l) Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG). (Published by the U.S. Architectural and Transportation Barriers Compliance Board).
m) Spokane Transit Authority Design Guidelines.
n) Washington State Department of Ecology Criteria for Sewage Works Design.
o) City and County Design Standards for the Construction of Urban and Rural Arterials and Collectors, Washington State. (Published by WSDOT.)
p) The following elements of the City of Spokane Comprehensive Plan:
   - Arterial Street Plan
   - Comprehensive Water Management Plan
   - Downtown Spokane Development Plan
   - Growth Management Plan
   - Bikeways Plan
   - Critical Areas Report
   - Fire Station Plan
   - Historic Preservation Plan

- Land Use Plan
- Park and Open Spaces Plan
- Shorelines Plan
- Wastewater System Plan
- Neighborhood Design Plans:
  - Browne's Addition
  - East Central
  - Hillyard
  - Lincoln Heights
  - Manito Cannon Hill
  - North Hill
  - West Central
  - Chief Garry Park
  - Emerson Garfield
  - Latah Creek
  - Logan
  - Nevada-Lidgerwood
  - Peaceful Valley
- North River Bank Design Plan
- Sewerage Facilities Plan
- Solid Waste Management Plan
- Wetlands Plan

n) Other specifications. These include the following, which shall be applicable when pertinent, when specifically cited in the Standards, or when required by funding authorities. This list is not intended to be all inclusive, and designers are responsible to meet all requirements applicable to their project(s).
   1. City of Spokane codes and ordinances.
   2. International Building Code (IBC).
   3. Design criteria of governing federal and state agencies.

1.4 Variance Requests

To gain approval for a variance from these Design Standards, the designer shall complete and submit a "Variance Request Form" to the Engineering Services Department, documenting the reasons for the variance request. Additional supporting information, plans or design data prepared by a professional engineer, licensed in the State of Washington should be attached to the form as needed.

Variances from these Standards may be granted by the Engineer upon evidence that such variances are in the public interest, and that requirements for safety, function, fire protection, appearance, and maintainability are fully met.

Variances must be approved prior to construction. Whenever the need for a variance can be identified in advance, the variance should be proposed at the preliminary design stage and included for consideration during plan review and public hearing.

1.5 Environmental Checklist

The State Environmental Policy Act (SEPA) chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. The SEPA environmental checklist, together with the SEPA rules contained in chapter 197-11 WAC are used as guidelines to assess the probable environmental impact of any development which is not otherwise exempt from the process. Categorical exemption guidelines and thresholds are described and defined in the above references. Use of the SEPA checklist provides information to help the developer reduce or avoid impacts from the proposal and to help the agency determine whether an environmental impact statement (EIS) is required. An EIS must be prepared for all proposals with probable significant adverse impacts on the quality of the environment.

The designer is referred to the Spokane Environmental Ordinance (SMC 17E.050), adopted by the City of Spokane on September 17, 1984; and the Spokane Wetlands Protection Ordinance (SMC 11.19), adopted on November 1, 1993.

1.6 Design Coordination/Technical Assistance

Design in accordance with the Standards presented herein will often involve coordinating with

individual sections of the Engineering Services department, and with City departments and divisions outside of Engineering Services. Throughout these Standards, the designer is referred to appropriate City agencies as needed.

Figure 1-1 is provided to show the organization of the Engineering Services Department.

1.7 Permits and Licenses

Applicants are responsible to acquire all permits and licenses necessary for the completion of the project. The City of Spokane will not be held responsible, financially or otherwise, for any delay or additional expenses the applicant may incur due to the Applicant's oversight in obtaining all necessary permits and licenses.

1.8 Material Acceptance

It shall be the applicant's responsibility to provide the City with a materials acceptance list for all materials used on the project when required by the City. The materials acceptance list shall confirm that the items meet City specifications through supplier's verification, materials testing reports or reports stamped and signed by a professional engineer.

All reports, materials verifications and other documents submitted to the City for acceptance shall be stamped and signed by an engineer.

If the Applicant desires to have materials tested after non-acceptance by the City, all materials testing shall be at the expense of the applicant.

1.9 Amendments; Process and Authority

The Engineer has the authority to oversee, approve and implement all amendments issued to these Design Standards. Noted errors or suggested revisions to these Standards should be addressed to the Engineer. All such suggested amendments must be in writing, identifying an issue, providing supporting information as well as providing a suggestion on how to address the issue.

City of Spokane
Department of Engineering Services
808 West Spokane Falls Boulevard
Spokane, Washington 99201-3343

DESIGN STANDARDS VARIANCE REQUEST FORM

Project Name:_____

City Project Number (if applicable):_____

List below any deviations from the City of Spokane Design Standards you are proposing. For each variance requested, explain fully the reasons why City Standards cannot be met, and describe how the proposed variance will satisfy fundamental requirements for safety, function, fire protection, appearance and maintainability. Attach additional supporting information as needed.

_____

_____

_____

_____

_____

_____

_____

_____

Submitted by:
Name (please print)_____

Company _____

Signature _____ Date ____/____/____

FOR CITY USE ONLY

____Approved ____Denied

_____ _____
Director of Engineering Services Date

8.0 WATER

8.1 Definitions

Air/Vacuum Relief Valve An *air valve* placed at the high points in a pipeline to release air automatically and prevent the pipeline from becoming air-bound with a resultant increase of pressure and also permits inlet of air into an empty pipe to relieve a vacuum.

Backflow A flow condition, induced by a differential in pressure, that causes the flow of water or other liquid into the distribution pipes of a potable water supply from any source or sources other than its intended source.

Check Valve A valve provided with a hinged disk that opens in the direction of normal flow and closes with reversal of flow.

Distribution Main A public water pipe comprising part of the *distribution system* used to deliver potable water, for customer needs which, in many cases, includes irrigation and fire protection, to the customer's individual service line(s); and to deliver water to fire hydrant leads for fire protection.

Distribution System That portion of a public water system which conveys water from the transmission facilities to consumers.

Fire Flow: A water demand calculated by the fire or building official for a specific development to be used in the design of the water system for the project. The system must be designed to deliver this flow, on top of the maximum day demand, without dropping the pressure below 20 PSI, and without exceeding a velocity of 15 feet per second, in any portion of the system, whether new or existing.

Gate Valve A valve in which the closing element consists of a disk which slides over the opening or cross-sectional area through which water passes, and fits tightly against it.

Pressure Reducing Valve (PRV) An automatic control valve designed to reduce a higher inlet pressure to a lower constant outlet pressure regardless of fluctuating flow rates and/or varying inlet pressure.

P.U.D. See Section 1.2

Transmission Main A large diameter public water pipe comprising part of the *distribution system* used to deliver large quantities of potable water over long distances from the source to a reservoir, booster pumping facility, and/or to a networked system of *distribution mains*. Typically, services and fire hydrants are not connected to *transmission mains*.

Water Service Tap & Service Line The *water service tap* is the connection to the *distribution main* of a *service line*. The *service line* is the pipe which extends from the *service tap* into the customer's property used to deliver potable water, for domestic needs as well as, in some cases, irrigation and fire protection.

8.2 Water Demands

8.2-1 Average Day and Maximum Day Demands

The Maximum Day Demands shall be estimated in accordance with the City of Spokane's Comprehensive Water System Plan, 2000 or its most current edition. Calculations shall be based upon the following Spokane area planning factors:

Gallon per Day per Capita (gpcd) Average Day Demand per Captia (ADD)	261
Persons per House	2.5
Houses Per Acre	4
Peaking Factor: Maximum Day Demand MDD/ADD	2.6
Peaking Factor: Peak Hour Demand PHD/MDD	1.7

Use the gross developable acreage when calculating the demands. This demand is used for designing most systems within a well established water grid.

8.2-2 Peak Hour Demands

The Peak Hour Demands shall be estimated as stated above. Use the gross developable acreage when calculating the demands. This demand is used for sizing remote systems, single feed systems, or newly developing areas.

8.2-3 Fire Flow Demands

A minimum fire flow of 1,000 gallons per minute for a two hour duration is required for residential areas with homes containing 3,600 square feet or less floor space (includes the sum of all interior floor levels including overhangs but excluding the garage) and a minimum fire flow of1,500 gallons per minute for a two hour duration is required for residential areas with homes containing over 3,600 square feet floor space. In all cases water facilities shall be provided to supply fire flows commensurate with the fire code.

Where the area served by a reservoir is relatively small and water quality could be affected by large storage volumes, the duration requirement may be reduced, but to not less than 30 minutes, when approved by the Fire Marshall and the Director of the Water Department. In considering such a reduction, factors such as home size, density, topography, landscaping and traffic flow will be evaluated.

Fire flow requirements for commercial and industrial areas are determined on a case-by-case basis.

In sizing piping and other public water system components, the required fire flows are added to Maximum Day Demands for determining total consumptive use.

8.2-4 Hydraulic Modeling

On some projects, the Water Department will require that a hydraulic model be performed to prove that the design meets minimum standards. The determination of whether a project must be modeled is at the sole discretion of the Water Department.

Steady-state hydraulic models are allowed, provided the following conditions are met:

- The system reservoirs shall be modeled at the lowest elevation in their operating range.
- Fire-flow scenarios shall be evaluated under max-day demand conditions.
- The existing water system must be included in the model back to the reservoir, or to a main determined by the Water Department to be large enough that the project's demands would be hydraulically insignificant.

- Demands shall be calculated only in accordance with the method contained in the City of Spokane Water Department's Comprehensive Plan. This calculation shall be included in the model submission.

- The datum used for elevations within the model shall be clearly referenced.

- The model submission shall include a map with pipe and node numbers legibly marked, and reservoirs identified as actual or representative of a tie-in to the existing water system. The map shall also include references to existing streets and features to help orient the map properly.

8.3 Water Pressure

Water pressures during maximum day demand conditions, with reservoirs at average water level, should be designed between 45 and 100 psi at every point in the system with few exceptions. Noted exceptions, upon approval of the Water Department Director, are near the intake of booster stations where pressures may be lower and in rough topography where pressures may be allowed to exceed the 100 psi limit.

Residual water pressures during fire flow demand conditions shall be designed to be no less than 20 psi at every point in the system.

Pressures Over 80 psi: If static pressures exceed 80 psi then each service line shall be required to have an individual pressure reducing valve set to reduce pressures to a maximum of 80 psi. Refer to regulations pertaining to water service taps and meters.

Where the water system is expanded in such a way as to be delivering water in excess of 80 psi of static pressure, a PRV station shall be installed on the distribution line at the location necessary to reduce delivered pressures to below 80 psi.

Areas Served by Pressure Reducing Valves: Some areas may be supplied through pressure reducing valves in the main supply system. In areas where this is allowed, no matter what the local service pressure is, an individual pressure reducing valve is also required for each service connection. Refer to City regulations pertaining to water service taps and meters, available at the Permits counter in Engineering Services.

8.4 Size of Pipe

8.4-1 Standard Sizes

Only City of Spokane standard sizes of pipes shall be allowed. Standard sizes are 6", 8", 10", 12", 18" and increments of every 6" above 18".

Exceptions to the above sizes are as follows:

a) In cases of a bridge crossing (existing bridge) or other conditions where a standard size would be infeasible or would limit the capacity below that needed, special consideration may be given to using non-standard sizes.
b) On permanent cul-de-sacs where fire service can be provided from a hydrant at the entrance to the cul-de-sac a 4" water service line may be allowed. No hydrants shall be allowed to be fed from or through 4" water lines. Guidelines for the distance from any occupiable building to the hydrant must be strictly complied with.

Service line sizes shall be coordinated with the Water Department.

8.4-2 Sizing Based on Velocity

The following criteria shall be used to determine the sizes of the pipes to be used:

a) At maximum day demand, 5 fps maximum design velocity.
b) At fire flow demand, 15 fps maximum at required fire flow.
c) See design parameters above.

8.5 Type of Pipe

Only ductile iron pipe meeting the requirements of Section 9-30.1(1) of the Specifications shall be used for water mains. On bridge crossings or in other locations where pipes are not directly buried in earth fill, restraint shall be provided by the use of TR Flex restrained joint pipe and fittings, or approved equal. On bridge crossings or in other locations where structural constraints exclude the use of bell and spigot pipe, welded steel pipe may be considered.

Service lines smaller than 2" are to be type "K" copper; 2" services are to be high density polyethylene (HDPE) or type "K" copper; and services larger than 2" are to be ductile iron.

8.6 Location For Fittings, Valves, Air Valves, Blow-Off Valves

8.6-1 Distribution Mains

Fittings: Bends are required where a change of direction of the water main occurs which cannot be accommodated by pipe joint deflection as provided in Section 8.11 below. Tees and crosses are required where lateral mains are needed as part of the project and where future needs dictate. Tees are required where fire hydrant leads are needed as part of the project and where future fire hydrant needs dictate. Reducers are needed where a change of pipe size is required. All fittings shall be mechanical joint type unless otherwise specified.

Valves: In-line valves are needed at street intersections so as to allow the distribution system to be isolated and shutdown, block by block, for repairs to the piping and fittings. Generally, the valves are to be installed in line with the intersection right-of-way lines in order to keep the valves out of the intersection itself - the desire here is for the safety of the valve operating personnel in that the intersection itself presents traffic from multiple directions. In-line valves on the distribution main are needed between fire hydrants. Valves are needed on all fire hydrant leads, and shall be located approximately 2 feet from the main between the main and the fire hydrant. All valves shall be mechanical joint type unless otherwise specified.

Air/Vacuum Relief Valves: Air/vacuum relief valves are not typically needed on distribution mains.

Blow-Off Valves: Blow-off valves are not typically needed on distribution mains.

8.6-2 Transmission Mains

Fittings: Bends are required where a change of direction of the water main occurs which cannot be accommodated by pipe joint deflection as provided in Section 8.11 below. Tees and crosses are required where lateral mains are needed as part of the project and where future needs dictate. Reducers are needed where a change of pipe size is required. All fittings shall be mechanical joint type unless otherwise specified.

Valves: In-line valves are needed at intersecting points with other mains and, if possible, at street intersections. Otherwise, in-line valve spacing should generally be 1,500 feet, unless otherwise specified, in order to limit the extent of main shut-down for repair and maintenance. Generally, the valves are to be installed in line with the intersection right-of-way lines in order to keep the valves out of the intersection itself - the desire here is for the safety of the valve operating personnel in that the intersection itself presents traffic from multiple directions. All valves shall be mechanical joint type unless otherwise specified. Operating nuts shall be oriented to the north or east side of

the water main.

Air/Vacuum Relief Valves: Air/vacuum relief valves are needed on transmission mains at high points to allow release of air during filling the pipe with water as well as to allow accumulated air to be expelled under normal operation. Further, air valves are needed to prevent a vacuum from occurring and to allow air into the main when draining the pipe. At least one air valve is required between in-line valves. The high point on the main often occurs on the downhill side of an in-line valve. Typically 2" air valves suffice.

Blow-Off Valves: Blow-off valves are needed on transmission mains at low points to allow the pipe to be drained. At least one blow-off valve is required between in-line valves. The low point on the main often occurs on the uphill side of an in-line valve. Typically 4" blow-off valves suffice. Drained water is generally discharged into a drywell.

8.6-3 Pipe Thrust Restraint Design

The City of Spokane does not allow the use of thrust blocks on water mains as a means of resisting thrust.

The City has developed a Restrained Joint Table (Table 8-A) as a generically approved design standard for restraining pipe sizes 4", 6", 8" and 12". The table is for ductile iron pipe not incorporating polyethylene encasement. The table was established from field experience by City Water Department construction and maintenance personnel and represents conservative results.

Alternatively, the designer is allowed the option of designing the required pipe thrust restrained lengths for the specific project under design. In this case, the criteria and basis of design shall be as published by the Ductile Iron Pipe Research Association (DIPRA) entitled Thrust Restraint Design For Ductile Iron Pipe, current edition.

The parameters to be used shall be as follows:

- Valves, tees (branch direction only), and 90^{o} bends shall be designed as "dead ends".
- When designing a deflection utilizing multiple bends, determine the total angle of deflection and increase the angle design to that of the next standard bend for determining the angle to be restrained.
- Design test pressures shall be 175 psi or 1.5 times working pressure - whichever is greater.
- Factor of safety shall be as follows:
  - 12" and smaller water mains - 2.5
  - 18" water mains - 2.0
  - 24" and larger water mains - 1.5

When DIPRA is used for restraint design, so note this fact on the plans listing: A pipe thrust restraint table along with design pressure, factor of safety, soil type, trench type, and any other assumptions or factors utilized.

In addition to DIPRA, a computer software program for pipe thrust restraint design has been developed by EBAA Iron Sales, Inc. entitled Restrained Length Calculator, current version. The program has been examined and utilized by City Engineering staff. The program is based on the same engineering principles, criteria, and analytical approach as the DIPRA design requirements. Thus, the use of the program by EBAA is hereby approved. The parameters to be used shall be the same as those listed above for DIPRA.

When the EBAA program is used for restraint design, so note this fact on the plans listing: A pipe thrust restraint table along with design pressure, factor of safety, soil type, trench type, and any other assumptions or factors utilized.

8.7 Depth of Pipes

Water mains shall be installed with a depth to invert of 5 1/2 feet. The following exceptions may apply:

a) 7 feet to the invert is maximum and will be allowed only in special cases.
b) 4 1/2 feet to the invert for short distances will be permitted on a case by case basis to allow for adjustment to other previously existing utilities. This is not allowed for lines with little or no flow (i.e. fire hydrant lines, building fire lines, lines feeding irrigation systems).
c) Consideration shall be given to the vertical alignment of future or proposed roadways whenever known.

8.8 Location of Fire Hydrants

Within the City limits, fire hydrant locations will be reviewed by the City Fire Department. Hydrants inside the City limits should ordinarily be located within 250 unobstructed feet along a path of travel to the property line. Hydrants located on the opposite side of four-laned, or larger, arterials shall not be considered in calculating service to a property. Consideration shall be given to placing hydrants at intersections or other access points that allow service in multiple directions. Based on these considerations the maximum distance may be extended to 300 feet.

Locations of hydrants outside the City limits shall be reviewed by the presiding Fire Department or District. Not all Fire Districts follow the same guidelines and each of them may interpret fire codes differently. (Most outside fire districts require hydrants to be within 300 feet of occupiable buildings.) All plans must be reviewed and signed by the fire districts prior to approval, however, the more stringent of the guidelines shall prevail.

All supply valves serving hydrants must meet the City of Spokane standards as provided in the Specifications.

Hydrants shall be located at the ER's (end of radius) at intersections, 2 feet inside of the right-of-way line. The hydrant flange shall be installed 3 inches above the top of curb elevation. Where curbs and sidewalks do not exist, hydrants shall be installed at the intersection of right-of-way lines with the hydrant flange 3 inches above finish grade elevation.

Hydrants shall not be located within 5 feet of wheelchair drops or within 3 feet of driveway drops.

Hydrants shall be installed in locations that provide clear and unobstructed access for operations and maintenance.

8.9 Distance From Other Utilities

Water line locations and distances from other utilities shall be shown in Standard Plans W-110, W-111 and W-112. No new utility pole shall be located within 8 feet of an existing hydrant or water line.

8.10 Pressure Systems

A pressure system consists of its own pumps, reservoirs and distribution mains. In some limited instances, a system consists of pressure reducing valves to maintain water pressure.

As development continues and the water system is expanded, areas will be encountered which are at elevations that will require the establishment of additional pressure zones in order provide water service within appropriate water pressures. Generally this will require the construction of additional booster pumping stations and reservoirs. In some cases the use of pressure reducing valves will be the means of establishing the pressure zone. However, when considering the use of pressure reducing valves, an examination of the potential and feasibility of extending service from an

established pressure zone which will provide the area within appropriate water pressures and which is supported by reservoir(s) storage will be required. If such an established pressure zone can be extended and utilized, preference in this regard will be generally the required approach. The creation of a new pressure zone will be allowed only on approval of the Director of the Water Department.

8.11 Laying Pipe on a Radius

Pipe may be laid on a radius provided the radius is a minimum of 1.33 times the minimum radius allowed by the manufacturer (75% of the manufacturer's allowable joint deflection). If pipe cannot be laid on a radius then it shall be laid on tangent sections with appropriate bends placed at approximately equal intervals around the curve.

For additional information, refer to Section 9-30 of the Specifications and the City of Spokane GSPs.

8.12 Easements

No easement shall be allowed unless approved in advance by the Director of the Water Department. If an easement is to be used it must provide all weather access for two wheel drive service vehicles. In addition, sleeving may be required as directed by the Director of the Water Department.

8.13 Special Regulations for P.U.D.'s

"Wheeling" water through a P.U.D. or any other private water system shall not be permitted. Water from the City's distribution system entering a P.U.D., must not be allowed to return to the public system. A meter and a double check valve assembly must be provided at each connection to the City Water System to prevent water from re-entering the City water system from the P.U.D.

All meter vaults shall be constructed immediately behind the property line of the P.U.D. and all pressure reducing valves and double check valve assemblies shall be placed downstream of the meter. The City's water system and responsibility for maintenance terminates at the meter.

Connections to P.U.Ds are similar to service connections and are subject to City tap and meter regulations. Current regulations are available from the permits counter in the Engineering Services Department.

8.14 Booster Stations

General:
General construction of pump station buildings and appurtenances is required to conform to International Building Code, Uniform Plumbing Code and National Electrical Code. Further, during design and procurement of components that go into the system, many national standards are specified for minimum conformance.

They are as follows:

ANSI -	American National Standards Institute
ASTM -	American Society for Testing and Materials
AWWA -	American Water Works Association
CFR -	Code of Federal Regulations
FSS -	Federal Specifications and Standards, General Services Administration
HIPS -	Hydraulic Institute Pump Standards
IEEE -	Institute of Electrical and Electronics Engineers
NEC	National Electrical Code

NEMA - National Electrical Manufacturers' Association
NEPA - National Environmental Policy Act
NFPA - National Fire Protection association
OSHA - Occupational Safety and Health Administration
RCW - Revised Code of Washington (Laws of the State)
SEPA - State Environmental Policy Act
SSPC - Steel structures Painting Council
UL - Underwriter Laboratory listing
WAC - Washington Administrative Code
WISHA - Washington Industrial Safety and Health Administration

Pump Station:

Booster pump stations shall be incorporated whenever a development needs higher pressure than is available from the existing source. The pump stations shall be above ground, cement block construction, with good insulation and sound barrier unless otherwise approved by the Director of the Water Department. Underground booster stations are not allowed. The roofing shall be long lasting (50- year life), low maintenance type with good insulation for energy conservation.

The pump station shall be designed and located such that it pumps from a storage source on the suction side to a storage facility on the discharge side. There shall be suction and discharge headers with easy accessibility. On the discharge side, there shall be a sufficient straight run of transmission pipe in order to incorporate a flow meter. For maintenance, the flow meter shall be installed inside a vault.

The pump station shall be built to minimize vandalism and break-in. The station shall be equipped with intrusion alarms wired to communicate to the water system operators through the SCADA system.

The pump station shall have provisions to install antennas (provided by City) for radio communication connected to SCADA system.

Pump station site shall be landscaped and irrigated with timed automatic sprinklers. Preference shall be given to shrub patches rather than grass to provide screening and decrease maintenance.

Telephone service to the station is required in order to operate the station with the City's SCADA system.

Ventilation and/or a cooling system is required in or to protect pump motors from high temperatures.

A heating system is required for heating during cold weather.

A flow meter is required on either the suction line or discharge line.

The station shall be designed so as to ease removal of existing pumps and motors for maintenance as well as to allow installation of future pumps and motors. Easy access to the station must be provided for maintenance as well as for daily status inspection.

Pumps and Motors:

The pump stations shall have at least TWO pumps to provide redundancy. The number of pumps required will generally be dictated by the capacity size of the station keeping with prudent modern design for efficiency and flexibility of operation to meet varying demands considering summer to winter average daily demand varies over a factor of two. The station shall be so designed that

required maximum day demand can be met with the largest pump out of service. As the electrical tariff uses a demand factor, it is important to size the pumps so that pump run times are maximized, rather than larger size pumps running for repeated short periods.

The pumps selected shall conform to hydraulic standards and the manufacturer shall conform to applicable NEMA and ANSI standards. Pump types in the order of preference are as follows: horizontal split case, end suction, and vertical.

Pump performance curve shall have smooth drooping characteristic from the cut-off head to the lowest operating head. The pumps chosen shall operate with high efficiency (75% or more) in the operating range.

Pump motor shall always be directly coupled and sized to meet the power required by the pump through the designed range of total pumping heads and pumping volumes. Motors shall have copper windings and operate at efficiency of 92% or above in the operating range. Motors 10 hp or above shall be three phase squirrel cage induction motors.

Pumps shall not be set directly on the floor. Rather, pumps shall be mounted on concrete pedestals to a height for ease of maintenance.

Pump selection shall meet the following criteria:

- The pump performance curve shall support proper pump performance through the designed range of total pumping heads and pumping volumes while operating within the most efficient portion of the pump curve. The proper operation includes performing without cavitation and within suction heads designed for the pump. The performance curve shall always be positive from shutoff head throughout the range of the curve. No pump shall be selected which has the potential of reaching shutoff head through possible adverse system pressure ranges.
- Pump motor shall be sized so as not to exceed maximum rated horsepower through the designed range of the pump.
- Wire-to-water pump/motor efficiency through the designed range of the pump shall be an important consideration when selecting such equipment.
- Pumps with discharge pressures exceeding 100 psi shall be furnished with mechanical seals.
- Generally greased lubricated bearings are preferred.

Each pump shall be equipped with isolation valves in the suction and discharge lines and a check valve in the discharge line.

Electrical:

Electrical service from the utility shall be 3 – phase, 480 volt or lower. If a transformer is provided, the primary shall be connected delta and the distribution side wye with neutral grounded. A separate 240 / 120 volt station service shall be provided by the electric utility or derived from a station service transformer.

All station electrical shall conform to the latest National Electrical Code. All electrical components and wirings shall be UL listed as applicable, and be industrial grade.

Protection systems are required on electrical equipment to protect against phase-to-phase and phase-to-ground faults as well as to protect against single phasing. The booster station shall have a well designed grounding system to which all the equipment grounds need to be connected.

The short circuit ratings of electrical switchgear shall be the calculated available or the industry standard, whichever is higher.

Stations shall have receptacles conveniently placed to ease maintenance equipments to be plugged in without extension cords. All the receptacles shall be GFI or distributed from a GFI circuit breaker installed in the station service panel. One of the duplex receptacles shall be an isolated ground type installed near the enclosure containing the SCADA Remote Terminal Unit (RTU).

The stations shall have good interior lighting and dusk to dawn motion sensor, tamper proof exterior lighting.

All the controllers and the associated protection equipment shall be centrally located in a free standing motor control center (MCC) with copper incoming bus sized adequately in order to allow future expansion. NEMA 12 enclosures are preferred. The control shall be soft-start/soft-stop with pump control and running bypass circuitry.

Each motor drive shall have a motor circuit protector. Further, each motor shall have an integrated protection module to detect and isolate the motor for overload, phase loss, phase reversal and ground faults, as a minimum. There shall be push button switches to turn the pump on and off locally and a selector switch (Local – Off – Remote) to switch from local to remote control. Also, there shall be LED indicator lights – red to indicate running, green as stand-by.

The MCC shall have indicator instrumentation for station voltage, current, power factor, and kW / kWh. Additionally, each of those meters shall incorporate an output signal 4 – 20 mA and / or pulse in order to communicate over the RTU. An integrated instrumentation module with RS 232 / RS 485 output connector (MODBUS PROTOCOL) shall be incorporated.

Provision shall be made to install City supplied RTU by mounting a Hoffman Enclosure (A162006LP for storage facilities and A 242408LP for pump station) on the wall near the MCC and the isolated ground receptacle.

8.15 Reservoirs

Reservoirs shall be above ground, steel, and of “standpipe” design or either “hydropillar” or “spheroid” in design unless otherwise approved by the Director of the Water Department.

All reservoirs constructed and added to the City’s water system shall incorporate an internal passive water mixing system. Water mixing systems shall have no external piping and no mechanical or motorized elements. Water mixing systems shall be the *Tideflex Mixing System* manufactured by The Red Valve Company of Carnegie, Pennsylvania, or approved equal.

8.16 Tables and Figures

Table 8-A Pipe Restraint Table

FITTING TYPE / SIZE	PIPE SIZE			
	12" & 10"	8"	6"	4"
	Number of 18' Pipe Lengths Required with Restrained Joints in Each Direction:			
90° bends, tee branches, valves and dead-ends	6	5	4	3
11-1/4° bends	2	2	1	1
22-1/2° bends	3	3	2	2
45° bends	5	4	3	3

NOTE: For static system pressures greater than 85 psi, adjust as follows:

- For 12" & 10" pipe, add one full 18' pipe length per each 10 psi in excess of 85 psi.
- For 8" pipe, add one full 18' pipe length per each 15 psi in excess of 85 psi.
- For 4" and 6" pipe, add one full 18' pipe length per each 20 psi in excess of 85 psi.

8.17 References

American Water Works Association. AWWA Standards.

City of Spokane Department of Water and Hydroelectric Services. City of Spokane Water Department Rules and Regulations. (Handout.)

2000 Comprehensive Water System Plan, City of Spokane, Water & Hydroelectric Services.

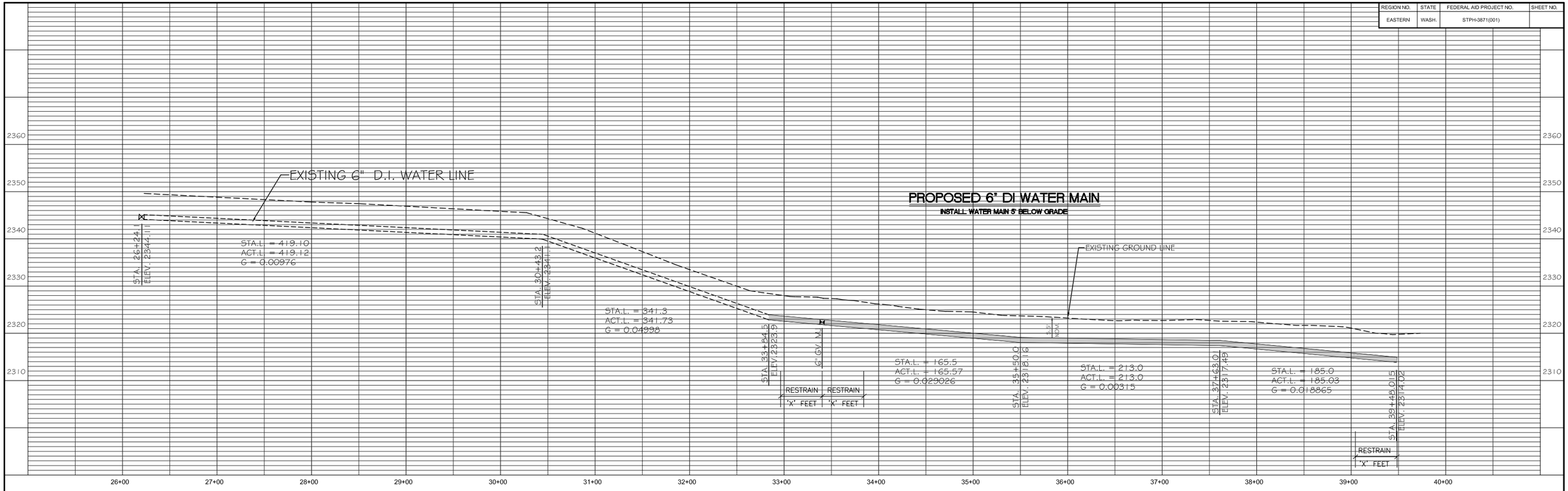
Culp, Wesner, Culp, 1986. Handbook of Public Water Systems. New York: Van Nostrand Reinhold Company.

Great Lakes - Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. 2003 Edition. Recommended Standards for Water Works. Health Educations Services; Albany, New York.

Washington State Department of Health, Division of Environmental Health, Office of Drinking Water. Water System Design Manual. August 2001.

APPENDIX D - Sample Plans

REGION NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
EASTERN	WASH.	STPH-3871(001)	

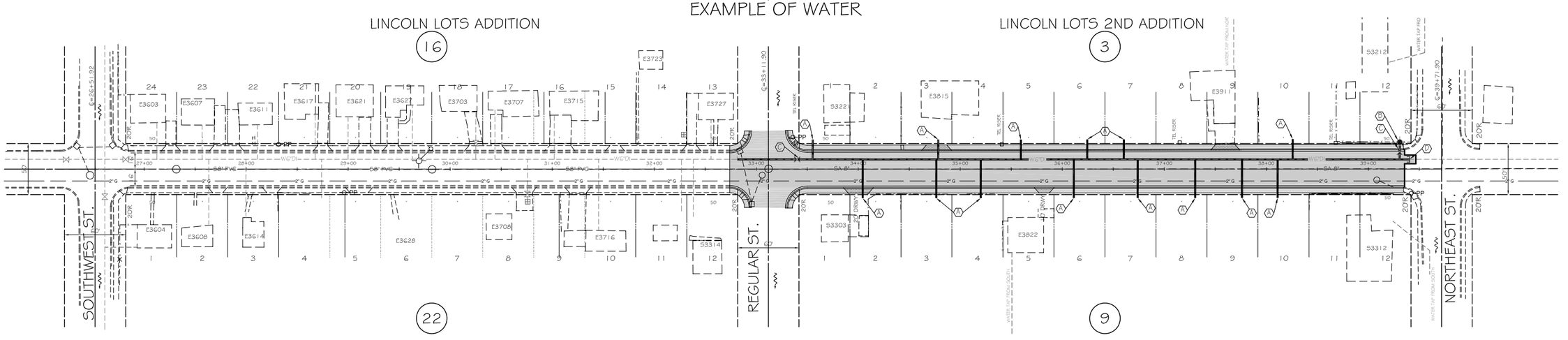


ELEVATIONS ARE TO NAVD88 DATUM

AS-BUILT PROJECT

PROPOSED PROJECT

EXAMPLE OF WATER



The Engineer's Seal was removed during the As-Built process. The information of record is as follows:			
City Project Number	Name of Engineer of Record	State Engineering License Number	Engineer's Approval Date
77345	L.I. Censed	#005041	01/21/99

PROJECT LEGEND

- (A) CONSTRUCT WATER TAP - BY CITY FORCES
- (B) INSTALL FIRE HYDRANT
- (C) INSTALL GATE VALVE
- (D) INSTALL DIMJ CAP

WA-1
01 of 03

DATE	BY	PROJ	DESCRIPTION

REVISIONS

DATE	BY	PROJ	E.F.N. - U.S.N.	FROM	TO	COUNCIL ACCEPT DATE

AS BUILT

FROM	TO	ORD. NO.	DATE	FILE NO.

GRADE ORDINANCE LIST

NAVD88 = (OLD CGM ELEV.) - (1.3.13)

AS OF JANUARY, 2000 USE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

BENCH MARK LOCATION

FIRST LINE DESCRIPTION
SECOND LINE DESCRIPTION
THIRD LINE DESCRIPTION

NAVD88 ELEV. ELEVATION

CBM NO. CBM #

NAVD88 DATUM

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

HORIZONTAL PLAN/PROFILE 1" = 50'

VERTICAL PROFILE ONLY 1" = 10'

SCALE

CURRENT CITY/COUNTY DESIGN STANDARDS ADOPTED FEB.1995

	BY	DATES
DRAWN:	DGB	05/00
REVISED:	RDC	09/06
CHECKED:	RJS	09/06
APPROVED:	RJS	09/06

CITY OF SPOKANE, WASHINGTON

DEPARTMENT OF ENGINEERING SERVICES

808 WEST SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6300

PROJECT NAME: EXAMPLE AVENUE

SEGMENT LIMITS:

EXAMPLE AVENUE
SOUTHWEST ST. to NORTHEAST ST.

PROJECT LIMITS: SOUTHWEST TO NORTHEAST

TYPE OF IMPROVEMENT: WATER

CITY PROJECT NUMBER	CITY PLAN NUMBER
2006000	EXMPL V(4)4 5-25-43

EFN: 123450 MA.DWG

CALL BEFORE YOU DIG 1-800-424-5555

MEMORANDUM **DEPARTMENT OF ENGINEERING SERVICES**

DATE: March 17, 2008

TO: City of Spokane Design Standards Holders

FROM: Dan Buller, P.E., Senior Engineer - Design

VIA: Gary S. Nelson, P.E., Principal Engineer - Design

RE: City of Spokane Design Standards Amendment

This memorandum contains Amendment #1 to the February 2007 City of Spokane Design Standards which consists of 3 pages. The following have been updated:

1. 5.8 Force Mains
2. 5.11-5 Alarm System
3. 8.6-3 Pipe Thrust Restraint Design
4. 8.7 Depth of Pipes
5. 10.3-1 Cover Sheet

Please update your Design Standard notebooks.

Design standards\amendment 1 memo

5.8 Force Mains

Add the following after the first sentence of the first paragraph:

"A minimum of two brass continuity wedges shall be installed at each pipe joint."

Delete the last sentence of the first paragraph which begins "Alternative pipe materials…"

5.11-5 Alarm System

In the second sentence after the words "use of lag pump," **add** the words "high water level,"

8.6-3 Pipe Thrust Restraint Design

Replace this section in its entirety with following:

The City of Spokane does not allow the use of thrust blocks on water mains as a means of resisting thrust.

The City has developed a Restrained Pipe Length Table (Table 8-A) as a generically approved design standard for restraining pipe sizes 4", 6", 8", 10" and 12". The table is for ductile iron pipe not incorporating polyethylene encasement. The table was established from field experience by City Water Department construction and maintenance personnel and represents conservative results.

Alternatively, the designer is encouraged to exercise the option of designing the required pipe thrust restrained lengths for the specific project under design. In this case, the criteria and basis of design shall be as published by the Ductile Iron Pipe Research Association (DIPRA) entitled "Thrust Restraint Design For Ductile Iron Pipe," current edition.

For locations that are serviced by a Pressure Reducing Valve (PRV), restrained length shall reflect the maximum possible static pressure (i.e., pressures that would result if the PRV fails). Calculations for the DIPRA thrust restraint design method shall assume PRV failure and use the maximum possible static pressure to determine the design test pressure for the restraint calculations.

When using the Restrained Pipe Length Table the restrained length shall be adjusted for the maximum possible static pressure in excess of 85 psi in accordance with the table notes. Whenever the maximum static pressure exceeds 120 psi, restrained lengths shall be calculated using the DIPRA thrust restraint design method, and the use of the Restrained Pipe Length Table is not allowed.

Regardless of which method of restrained pipe length determination is used, the restrained pipe length shall be shown on the plans. The length of restrained pipe shall be clearly shown in the profile and labeled restraint as shown in the example plans in Appendix D.

The parameters to be used in the DIPRA thrust restraint design program shall be as follows:

- Valves, tees (branch direction only), and 90^{o} bends shall be designed as "dead ends".
- When designing a deflection utilizing multiple bends, determine the total angle of deflection and increase the angle design to that of the next standard bend for determining the angle to be restrained.
- Design test pressures shall be 175 psi or 1.5 times working pressure - whichever is greater.
- Factor of safety shall be as follows:
  12" and smaller water mains - 2.5
  18" water mains - 2.0
  24" and larger water mains - 1.5

When DIPRA is used for restraint design, so note this fact on the plans listing: DIPRA edition used along with design pressure, factor of safety, soil type, trench type, depth of cover, and any other assumptions or factors utilized.

In addition to DIPRA, a computer software program for pipe thrust restraint design has been developed by EBAA Iron Sales, Inc. entitled “Restrained Length Calculator,” current version. The program has been examined and utilized by City Engineering staff. The program is based on the same engineering principles, criteria, and analytical approach as the DIPRA design requirements. Thus, the use of the program by EBAA is hereby approved. The parameters to be used shall be the same as those listed above for DIPRA.

When the EBAA program is used for restraint design, so note this fact on the plans listing: version of program used along with design pressure, test pressure, factor of safety, soil type, trench type, depth of cover, and any other assumptions or factors utilized.

Replace Table 8-A Restrained Pipe Length Table with the following:

FITTING TYPE / SIZE	**PIPE SIZE**			
	12" & 10”	8"	6"	4"
	Length (feet) of Restrained Pipe Required in Each Direction:			
90^{o} bends, tee branches, valves and dead-ends	150’	107’	74’	53’
11-1/4^{o} bends	10’	8’	6’	4’
22-1/2^{o} bends	20’	14’	10’	8’
45^{o} bends	40’	28’	20’	14’

NOTE:

For static system pressures greater than 85 psi, adjust as follows:

- Add 1 foot of restraint length for each psi over 85 psi for all pipe diameters in the table.
- For locations that are served by a Pressure Reducing Valve (PRV) restrained lengths shall reflect PRV failure.

Restrained lengths shown are required each side of fitting
For pipe diameters greater than 12” restraint shall be calculated
For static pressures greater than 120 psi restraint shall be calculated

8.7 Depth of Pipes

Replace the first sentence with the following:

> "Water mains shall be installed with a minimum depth to invert of 5 ½ feet AND a minimum of 3 feet of cover over the pipe."

10.3-1 Cover Sheet

In subparagraph d):

- **replace** the words "Deputy Mayor" with "City Administrator"
- **replace** the words "Director – Public Works" with "Director – Public Works & Utilities"

Appendix 7.1.2 General Special Provisions for Private Contracts (Water Sections)

05/29/07 2:00

RECEIVED
MAY 16 2007
CITY CLERK'S OFFICE
SPOKANE

AGENDA SHEET FOR COUNCIL MEETING OF: May 29, 2007

Submitting Dept.	Contact Person/Phone No.	Council Sponsor
Engineering Services	Eldon Brown/625-6305	Public Works Committee

ADMINISTRATIVE SESSION
- o Contract
- • Report
- o Claims

LEGISLATIVE SESSION
- o Emergency Ord
- o Resolution
- o Final Reading Ord
- o First Reading Ord
- o Special Consideration
- o Hearing

CITY PRIORITY
- o Communications
- o Economic Development
- o Growth Management
- o Human Services
- o Neighborhoods
- o Public Safety
- o Quality Service Delivery
- o Racial Equity/Cultural Diversity
- • Rebuild/Maintain Infrastructure

STANDING COMMITTEES (Date of Notification)
- o Finance _____
- o Neighborhoods _____
- o Planning/Community & Econ Dev _____
- o Public Safety _____
- • Public Works 5/14/07

CLERK'S FILE	PRO 2007-0019
RENEWS	
CROSS REF	
ENG	2004027
BID	
REQUISITION	

Neighborhood/Commission/Committee Notified: _____

Action Taken: _____

AGENDA WORDING: (If contract include the term.)

Adoption of the City of Spokane's General Special Provisions for Private Contracts which is a supplement to the 2006 Standard Specifications for Road, Bridge and Municipal Construction.

BACKGROUND: (Attach additional sheet if necessary)

The City's General Special Provisions for Private Contracts have been reviewed and drafted to conform to the 2006 Washington State Department of Transportation and American Public Works Association Combined Standard Specifications for Road, Bridge, and Municipal Construction. Both the State Specifications and the General Special Provisions for Private Contracts are submitted to you for adoption. Both are published and adopted in their entirety every two years. The City Engineer will have the authority to implement and adopt interim amendments to the City's General Special Provisions for Public Contracts as defined therein.

RECOMMENDATION:

Adopt

Fiscal Impact o N/A	**Budget Account:** o N/A
o Expenditure: $	#
o Revenue: $	#
• Budget Neutral	

ATTACHMENTS:

Include in Packets:

On file for Review in Office of City Clerk: General Special Provisions for Private Contracts

SIGNATURES:

Director, Engineering Services

Director, Public Works & Utilities

Accounting

Legal

Chief Operating Officer for Mayor

Council President

DISTRIBUTION: Engineering Services, S Decker Neighborhood Services, G Hecht

\agenda\2006 GSP agenda.doc

COUNCIL ACTION:

ADOPTED BY SPOKANE CITY COUNCIL:
May 29, 2007
CITY CLERK

General
Special Provisions
for Private Contracts

CITY OF SPOKANE 2006

These Supplemental Specifications contain information and requirements for construction of City of Spokane Public Street, Bridge, Sanitary Sewer, Domestic Water and Storm Water facilities. This information has been developed over the course of many years, and represents methodologies, materials and standards common to the area, and to which the local construction community has had considerable input.

The City of Spokane General Special Provisions for Private Contracts add, delete, or revise sections of The Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction, 2006. The chapter and subsection numbering follow the same format as the numbering in the WSDOT Standard Specifications except that where an additional section is added it is denoted with a COS (City Of Spokane) identifier. In absence of any City of Spokane Supplemental Specification, the WSDOT Standard Specification provides the controlling information and requirements for construction of City of Spokane public works facilities.

The City of Spokane General Special Provisions for Private Contracts has been approved by City Council with the approving ordinance and council agenda sheet included immediately following this foreword. Through the approving ordinance Spokane City Council has authorized the City of Spokane Director of Engineering Services to oversee, approve and implement all amendments issued to the City of Spokane Supplemental Specifications.

Potential errors or suggested revisions for amendments shall be addressed to the City of Spokane Director of Engineering Services. All such suggested amendments must be in writing, identify an issue, providing supporting information as well as providing a suggestion on how to address the issue.

The Supplemental Specifications are available for purchase at the City of Spokane Engineering Services Department, Second Floor, Municipal Building, 808 West Spokane Falls Boulevard, 99201-3343, phone 625-6700.

The following Special Provisions are made a part of the standards for construction and supersede any conflicting provisions of the 2006 Standard Specifications for Road, Bridge and Municipal Construction, and the foregoing Amendments to the Standard Specifications.

Several types of Special Provisions are included in this contract; General, Region, Bridges and Structures City of Spokane, and Project Specific. Special Provisions types are differentiated as follows:

(Date) General Special Provision

(******) Notes a revision to a WSDOT General Special Provision and also notes a Project Specific Special Provision.

(Regions date) Region Special Provision

(Date APWA GSP) American Public Works Association General Special Provision

(****** APWA GSP) Notes a revision to an APWA General Provision

(Date COS GSP) City of Spokane General Special Provision

(****** COS GSP) Notes a revision to a City of Spokane General Special Provision

(BSP date) Bridges and Structures Special Provision

General Special Provisions are similar to Standard Specifications in that they typically apply to many projects, usually in more than one Region. Usually, the only difference from one project to another is the inclusion of variable project data, inserted as a "fill-in".

Region Special Provisions are commonly applicable within the designated Region. Region designations are as follows:

Regions	
ER	Eastern Region
NCR	North Central Region
NWR	Northwest Region
OR	Olympic Region
SCR	South Central Region
SWR	Southwest Region
WSF	Washington State Ferries Division

Bridges and Structures Special Provisions are similar to Standard Specifications in that they typically apply to many projects, usually in more than one Region. Usually, the only difference from one project to another is the inclusion of variable project data, inserted as a "fill-in".

Project Specific Special Provisions normally appear only in the contract for which they were developed.

CITY OF SPOKANE GENERAL SPECIAL PROVISIONS FOR PRIVATE CONTRACTS

SUPPLEMENT
to the
2006 STANDARD SPECIFICATIONS
FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION

TABLE OF CONTENTS

Manholes which fail the vacuum test shall be repaired and re-tested until they pass with subsequent retests being borne by the Contractor.

SECTION 7-08 GENERAL PIPE INSTALLATION REQUIREMENTS

7-08.3 Construction Requirements

Add the following new Section:

7-08.3(100) Temporary Adjacent Utility Support
(April 1, 2006 COS GSP)

Where indicated on the project or required by field conditions, the contractor shall temporarily support and protect adjacent utilities which are exposed or affected as the utility under construction is installed. Prior to backfill, adjacent utilities shall be properly bedded with sand.

Add the following new Section:

7-08.3(101) Encase Water/Sewer at Crossings
(April 1, 2006 COS GSP)

Where water pipes crosses sewer pipes, including storm sewer pipes with other than standard separations as defined in the COS Standard Plans in the 'W' series, either the water or sewer shall be cased as defined in the COS Standard Plans in the 'W' series.

7-08.3(1)A Trenches
(April 1, 2006 COS GSP)

Add the following before the first paragraph:

Rock excavation shall cover the removal and disposal of rock that requires systematic drilling and blasting or use of a Hoe-Ram for its removal and also boulders exceeding 1 cubic yard. Material should be considered rock when at the discretion of the Engineer, the Contractor is unable to progress with a Caterpillar 235 Track Hoe or equal.

Hardpan, hard clay, glacial till, sandstone, siltstone, shale, or other sedimentary rocks, which are soft, weathered, or extensively fissured will not be classified as rock excavation.

Ledge rock, boulders, or stones shall be removed to provide a minimum clearance of 6-inches under the pipe. Materials removed shall be replaced with gravel backfill for pipe zone bedding, pipe zone backfill, or trench backfill as designated by the Engineer.

Add the following after the last paragraph:

Cut-off Walls: At locations to be determined in the field, cut-off walls shall be constructed as shown on the COS Standard Plans in the 'B' series to prevent water flow along the pipe after construction. The purpose is not to provide a water-tight seal or dam but to represent as close as practicable the pre-construction condition. The cut-off wall shall extend a minimum of 6-feet along the pipe, shall be the full width of the excavation, and shall have a height of 2-feet above the highest point of groundwater and/or top of rock as determined in the field.

The cut-off wall may be constructed using naturally-occurring clay or silty clay capable of being compacted to required density in the pipe zone or with a bentonite-pea gravel slurry. Both sides of the cut-off wall shall be faced with a spunbonded polypropylene filter fabric -- DuPont TYPAR Style 3601 or an approved equal.

7-08.3(1)B Shoring
(April 1, 2006 COS GSP)

Add the following after the first paragraph:

The Contractor shall provide a trench safety system meeting the requirements of WAC 296-155 Part N, for trenches in excess of 4-feet in depth, regardless of whether the Contractor is subject to WISHA or not.

7-08.3(1)C Bedding the Pipe
(April 1, 2006 COS GSP)

Replace the first sentence of the second paragraph with the following:

Bedding placement and compaction procedures within the pipe zone shall meet the requirements of COS Standard Plan B-18C.

Add the following after the second paragraph:

Bedding and sidefill material for flexible pipe shall meet the requirements of Section 9-03.12(3) for sand or native material. If the pipe is to be installed where rock or ground water is present, the bedding material shall meet the requirements of Section 9-03.9(3) for crushed surfacing top course.

Bedding material for rigid pipe shall meet the requirements of Section 9-03.12(3), pea gravel, sand, or native material. Subject to prior approval of the Engineer, bedding for rigid pipes may consist of Portland cement concrete commercial class in accordance with the COS Standard Plans in the 'Y' series for trench bedding. Sidefill material for rigid pipe shall meet the requirements of Section 9-03.14, gravel Borrow, except rocks or lumps larger than 1-inch per foot of pipe diameter shall not be used.

Unless otherwise specified, bedding procedures shall be Class 'B' for rigid pipe and Class 'F' for flexible pipe.

7-08.3(2)B Pipe Laying – General
(April 1, 2006 COS GSP)

Add the following after the last paragraph:

Pipeline Marking Tape: The Contractor shall install a synthetic tape at mid-depth in the trench, directly over the pipe to mark the pipe location. Such tape shall be a blue pigmented inert polyethylene film specifically intended by the manufacturer for this purpose, and shall have a minimum thickness of 4 mils and a minimum width of 3-inches. The words, "CAUTION WATER LINE BURIED BELOW" or similar warning as appropriate for the utility being installed shall be indelibly printed in large bold letters on at least one side of the tape, with a repeat pattern of no more than 30-inches. Tape shall be approved by the Engineer prior to installation.

7-08.3(2)C Pipe Laying – Concrete
(April 1, 2006 COS GSP)

Add the following after the first paragraph:

Rigid pipe shall provide sufficient ultimate strength to resist the anticipated earth and live loads for and at the required installation depth, assuming a wide trench condition, and shall reflect a safety factor of 1.5 and an assumed bedding (or load) factor of 1.9.

7-08.3(3) Backfilling
(April 1, 2006 COS GSP)

In the first sentence of the third paragraph **replace** "90 percent maximum density" with "in accordance with the COS Standard Plans in the 'B' series."

Replace the third and fourth sentences of the fourth paragraph with the following:

Backfill shall be placed in lifts and each lift shall be compacted to the density specified herein. Lift thickness shall meet the requirements of Section 2-03.3(14)C 'Method B'. At the request of the Contractor and approval of the Engineer, the specified lift thickness may be increased to a maximum of 18-inches PROVIDED the lift thickness shall be contingent on the Contractor's demonstrated ability to maintain the proper compaction throughout the entire depth of the lift, as verified by compaction test results.

In roadways or traveled areas, compaction above the pipe zone shall meet the requirements of Section 2-03.3(14)C 'Method B'. In non-traveled areas, trench backfill materials above the pipe zone shall be compacted to 85 percent of maximum density per AASHTO T-180/T-224 and Section 2-03.3(14)D. Backfill and compaction procedures above the pipe zone shall meet the requirements of Standard Plan B-18D.

Compaction of backfill above PVC pipe shall not be done with impact compactors until 3-feet of pipe cover is in place. Within 3-feet, use vibratory compaction equipment. Care shall be taken to avoid contact between the pipe and mechanical compaction equipment.

Where it is not practical to compact backfill to the required density, the Contractor may elect to use free flowing Controlled Density Fill (CDF) in lieu of "native backfill" in accordance with Section 2-09.3(1)E. Such use shall be pre-approved by the Engineer.

Replace the sixth and seventh sentences of the fourth paragraph with the following:

Materials excavated from the trench shall be used for backfill if the materials meet the gradation requirements specified on the COS Standard Plan B-18D for trench backfill.

For cover more than 4-feet above the crown of the pipe, backfill material with a maximum dimension of 12-inches may be used.

The top 12-inches of trench backfill below the roadway section aggregate shall be well-graded granular material with a maximum particle size of 6-inches and with the voids filled.

Backfill material shall not have organic material, frozen lumps, and other materials capable of damaging the pipe. Materials determined by the Engineer to be unsuitable for backfill at the time of excavation shall be removed and replaced with imported backfill material at no cost to the City. Imported backfill material shall meet the requirements of Section 9-03.14 Gravel Borrow.

Imported foundation material shall consist of screened gravel borrow as set forth above.

SECTION 7-09 WATER MAINS

7-09.1 Description
(April 1, 2006 COS GSP)

Replace the first paragraph with the following:

The Contractor shall furnish and install water main pipe and fittings of the size indicated on the Plans or as directed by the Engineer.

Pipe shall be installed in accordance with the Standard Specifications, these Special Provisions, the manufacturer's printed specifications and instructions, and to the standards of the AWWA for installing the type of pipe used. The Contractor shall provide the tools and equipment, including special tools required for installing each particular type of pipe used.

7-09.2 Materials
(April 1, 2006 COS GSP)

Add the following before the first paragraph:

Unless pre-authorized in writing by the Director of Water and Hydroelectric Services or otherwise indicated on the Plans and Special Provisions, ONLY ductile iron pipe (push-on) and ductile iron mechanical joint fittings shall be used for water main installations within the service area of the City of Spokane Department of Water and Hydroelectric

Services.

Water mains shall be a minimum of pressure class 50 or a thickness class with an equal or greater wall thickness at the Contractor's option.

Delete the following items from the list titled "Pipe for Main Line:"

Steel Pipe (6-inches and over)	9-30.1(4)A
Polyvinyl Chloride (PVC) Pressure Pipe (4-inches and over)	9-30.1(5)A
Polyvinyl Chloride (PVC) Pressure Pipe (under 4-inches)	9-30.1(5)B
Polyethylene (PE) Pressure Pipe (4-inches and over)	9-30.1(6)

Delete the following items from the list titled "Fittings for Main Lines:"

Steel Pipe (6-inches and over)	9-30.2(4)A
Polyvinyl Chloride (PVC) Pipe (4-inches and over)	9-30.2(5)A
Polyvinyl Chloride (PVC) Pipe (under 4-inches)	9-30.2(5)B
Polyethylene (PE) Pipe (4-inches and over)	9-30.2(10)

Delete the following items from the list titled "Appurtenances:"

Concrete Blocking	6-02.3(2)B
Steel Pipe (4-inches and under)	9-30.1(4)B
Fittings for Steel Pipe (4-inches and under)	9-30.2(4)B

7-09.3(6) Existing Utilities
(April 1, 2006 COS GSP)

Add the following after the last paragraph:

The Contractor is responsible for damage during construction to existing sanitary or storm sewer facilities, including those lying below the excavation. Payment for repairing or reconnecting the existing sanitary or storm sewers during construction will be made only if adjustment of the sewer was required for placement of the water transmission main as determined by the Engineer.

The Contractor shall take care to avoid damage to those facilities below the excavation that could be damaged by backhoe teeth or the shoring system.

The City maintains copies of existing side sewer cards and the Contractor may review this information to help determine approximate locations and depths for existing side sewers. Side sewer card information may not represent the actual side sewer locations and depths. Side sewer card information is recorded at the time of installation (as an example, modifications of right-of-way or grading may invalidate records) and is provided only as an information aid in allowing the Contractor to determine approximate locations and depth of existing side sewers. The City of Spokane accepts no responsibility for the accuracy of information on the side sewer card.

The Contractor shall excavate the lines identified by the Engineer within 18-inches of the invert of the new water line to allow inspection of the integrity of the sewer line. The Contractor shall exercise necessary caution and care exposing the sewer line to include the use of hand tools as directed by the Engineer. Any sewer damaged by the Contractor's operations below the invert of the new water line shall be repaired at the Contractor's own expense.

Side Sewers. Existing side sewers damaged or removed by the Contractor shall be reconnected as soon as possible to prevent contamination of the area. The Engineer must pre-approve the reconnection method using materials other than standard watertight fittings.

Existing side sewers are typically either 4-inches or 6-inches in diameter. If the actual size of the side sewers is uncertain the Contractor shall replace each side sewer with the same size pipe as removed. Installation shall conform to Sections 7-08, 7-17, and 7-18.

Reconnect Existing Catch Basins. Reconnection of existing catch basins consists of excavation, backfill, installation of sewer pipe, and connection of the new pipe to existing structures or sewer pipes. Other related items including surface restoration are described in other sections.

The designated catch basins shall be connected to the existing structure/pipe as shown on the Plans or required in the field. The City shall clean the catch basins prior to construction. However, the required subsequent cleanings shall be performed by the Contractor or, if desired by the Contractor, the City will perform subsequent cleanings on a charge basis. The Contractor shall notify the Wastewater Management Department at least 2 working days prior to the desired cleaning.

Contractor shall verify the locations of drain lines from the catch basins to determine the location and conflicts with new water line installation. Where conflicts exist, the catch basin lines are to be relocated and reconnected as necessary to re-establish connection to the storm sewer system.

Existing catch basin laterals are believed to be either 6-inch or 8-inch diameter pipe. The actual size of the pipe is uncertain and the Contractor shall replace each lateral with the same size pipe as removed. The work, materials, and equipment involved shall be considered to be the same for both pipe sizes. Installation shall conform to Sections 7-04, 7-08, and 7-17.

Where relocation of storm or sanitary sewer lines is required, the Contractor shall plug existing sewer pipes, manholes, drywells, or catch basin connections. The type of plugs to be constructed may vary to best suit the particular conditions encountered at each location. Each plug shall be so constructed as to be watertight when subjected to normal trench backfilling and potential groundwater. Written approval shall be obtained from the Engineer for the proposed method of plugging, before plugs are actually installed.

Pipe material shall meet the requirements of Section 7-04.2 and/or Section 7-17.2, provided that the pipe used in conjunction with grate inlets shall be ductile iron for the full length of the connection.

Pipe used for reconnection of catch basins shall be either PVC or ductile iron, depending on depth-of-cover. In areas where the connecting pipe has less than 36-inches of cover in a traveled way, the Contractor shall provide ductile iron pipe for the entire length.

Bedding, backfill, and compaction shall be done in accordance with Section 7-08.

Connections to Existing Pipes or Structures. Connections to existing structures shall meet the requirements of Section 7-05. Connections to existing sewer pipes shall be made utilizing only pre-approved couplings or adapters and "standard" construction methods. The proposed fittings and methods must be submitted to the Engineer for approval prior to their use.

The Contractor shall abandon or remove existing structures as required for placement of new structures.

7-09.3(7) Trench Excavation
(April 1, 2006 COS GSP)

Add the following before the first paragraph:

Trench excavation shall include excavation, backfill, import material from a borrow site, dewatering, bedding, compaction, haul, disposal of surplus and unsuitable material, and the other work incidental to the construction of trenches for water mains or taps.

The Contractor shall provide a trench safety system meeting the requirements of WAC 296-155 Part N, for trenches in excess of 4-feet in depth, regardless of whether the Contractor is subject to WISHA or not.

7-09.3(7)B Rock Excavation
(April 1, 2006 COS GSP)

Replace the first sentence of the first paragraph with the following:

Rock excavation shall cover the removal of rock that requires systematic drilling and blasting or use of a Hoe-Ram for its removal and also boulders exceeding 1 cubic yard in volume. Material shall be considered rock when, at the discretion of the Engineer, the Contractor is unable to progress with a Caterpillar 235 Track-Hoe (or equal) or a D-8 Caterpillar equipped with a single tooth ripper (or equal).

Revise the second sentence of the first paragraph as follows:

"...clearance of 6-inches under the pipe."

Delete the last sentence in the second paragraph.

Add the following after the second paragraph:

When blasting for rock in advance of trench excavation causes bulges or heaving of the surface of a road, street, or driveway, the affected area shall be re-smoothed to accommodate traffic as directed by the Engineer.

7-09.3(9) Bedding the Pipe
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Bedding material shall meet the requirements of Section 9-03.12(3) for pea gravel, sand or native material, hand tamped to 92 percent under the pipe haunches to provide side support, and be in accordance with the COS Standard Plans in the 'B' series for trench bedding procedures.

7-09.3(10) Backfilling Trenches
(April 1, 2006 COS GSP)

Replace the second sentence of the second paragraph with the following:

Materials excavated from the trench shall be used for backfill if the materials meet the gradation requirements specified on COS Standard Plan B-18D. Backfill material shall not have organic material, frozen lumps, and other materials capable of damaging the pipe. Materials determined by the Engineer to be unsuitable for backfill at the time of excavation shall be removed and replaced with imported backfill material at no cost to the City. Imported backfill material shall meet the requirements of Section 9-03.14, Gravel Borrow.

7-09.3(11) Compaction of Backfill
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Compaction shall be in accordance with the COS Standard Plans in the 'B' series.

Backfill shall be placed in lifts and each lift shall be compacted to the density specified herein. Lift thickness shall meet the requirements of Section 2-03.3(14)C 'Method B'. At the request of the Contractor and approval of the Engineer, the specified lift thickness may be increased to a maximum of 18-inches PROVIDED the lift thickness shall be contingent on the Contractor's demonstrated ability to maintain the proper compaction throughout the entire depth of the lift, as verified by compaction test results.

In roadways or traveled areas, compaction above the pipe zone shall meet the requirements of Section 2-03.3(14)C 'Method B'. In non-traveled areas, trench backfill materials above the pipe zone shall be compacted to 85 percent of maximum density per AASHTO T-180/T-224 and Section 2-03.3(14)D. Backfill and compaction procedures above the pipe zone shall meet the requirements of Standard Plan B-18D.

Where it is not practical to compact backfill to the required density, the Contractor may elect to use free flowing Controlled Density Fill (CDF) in lieu of "native backfill" in accordance with Section 2-09.3(1)E.

Materials excavated from the trench shall be used for backfill if the materials meet the gradation requirements specified on the COS Standard Plan B-18D for trench backfill.

Backfill material shall not have organic material, frozen lumps, and other materials capable of damaging the pipe. Materials determined by the Engineer to be unsuitable for backfill at the time of excavation shall be removed and replaced with imported backfill material at no cost to the City. Imported backfill material shall meet the requirements of Section 9-03.14, Gravel Borrow.

Water settling or flood tamping may be used only in trenches that are excavated in soils which are determined suitable for water settling by the Engineer. Water-jetting is not permitted as a means to compact the backfill.

If using movable trench supports, care shall be exercised not to disturb the pipe location, jointing, or its embedment. Removal of trench protection below the top of the pipe and within 2-1/2 pipe diameters of each side of the pipe shall be prohibited after the pipe embedment has been compacted. Movable trench supports, where supports extend below the top of the pipe, shall only be used in wide trench construction. Use of movable trench supports supported on a shelf above the pipe with the pipe installed in a narrow, vertical wall sub-ditch is also acceptable.

Voids left in the embankment material by support removal shall be carefully filled with granular material and compacted to 92 percent of the maximum density as determined by the above referenced test methods. When advancing trench boxes or shield, there shall be no longitudinal pipe movement or disjointing.

If ground water is encountered, the Contractor shall take care in placing the bedding and haunching materials to prevent migration into the voids of the embedment or trench soils. In all cases, trench side support shall remain intact. The use of manufactured granular bedding and backfill material other than specified shall be at the discretion of the Engineer.

Damages resulting from improper shoring or failure to shore shall be the sole responsibility of the Contractor.

7-09.3(15)B Polyvinyl Chloride (PVC) Pipe (4 Inches and Over)
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

7-09.3(17) Laying Ductile Iron Pipe with Polyethylene Encasement
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Where shown on the Plans or where directed by the Engineer, water main pipe shall be wrapped in 8 mil polyethylene film. Polyethylene film material and installation procedures shall meet the requirements of AWWA C-105 (latest version) and shall be pre-approved by the Engineer.

7-09.3(19)A Connections to Existing Mains
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Connections to water mains in use shall be made by the City Water Department. The tees, crosses, saddles or other special fittings required to be inserted in a main already in use shall be furnished by the Contractor and be installed by the City Water Department. The Contractor shall furnish the special fittings and the other material required or as shown on the Plans. The Contractor shall make the necessary

excavations to assure gradual transition between the new and existing water main and the Contractor shall perform the necessary backfilling and compaction.

Where the connection of new work to the existing system requires interruption of service and customers will be affected, the Director of Water/Hydroelectric Services and the Contractor shall mutually agree upon a date for connection which will allow ample time for assembling labor and materials and to notify the affected customers.

7-09.3(20) Detectable Marking Tape
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Pipeline Marking Tape: The Contractor shall install a synthetic tape at mid-depth in the trench, directly over the pipe to mark the pipe location. Such tape shall be a blue pigmented inert polyethylene film (detectable style not required) specifically intended by the manufacturer for this purpose, and shall have a minimum thickness of 4 mils and a minimum width of 3-inches. The words, "CAUTION WATER LINE BURIED BELOW" or similar warning referencing the appropriate utility shall be indelibly printed in large bold letters on at least one side of the tape, with a repeat pattern of no more than 30-inches. Tape shall be approved by the Engineer prior to installation.

Add the following new Section

7-09.3(20)W Electrical Continuity
(April 1, 2006 COS GSP)

Electrical continuity shall be provided for the entire piping system. Where the joint provides continuous metal-to-metal contact such as in some restrained flexible fittings and flanged joints, no additional electrical continuity devices are required. However, for push on joints or mechanical joint fittings, where direct metal to metal contact is not made in the joint, continuity shall be effected by installing brass continuity wedges at each joint.

Brass continuity wedges shall be installed on each push-on joint, two per joint for pipe sizes under 12-inches and three per joint for pipe sizes 12-inches and larger.

7-09.3(21) Concrete Thrust Blocking
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

7-09.3(21) Restraint
(April 1, 2006 COS GSP)

Where indicated on the Plans and as directed by the Engineer, pipe restraint shall be installed at bends (vertical and horizontal), tees, crosses, plugs, end caps, and valves. Piping shall be properly stabilized at required locations in order to prevent joint separation. Unless otherwise provided for in these Special Provisions or directed by the Engineer, thrust blocking shall not be used for permanent pipe restraint. Rather, pipe restraint shall be accomplished by the use of suitably designed and fabricated pipe joint restraint systems.

The required restraint lengths shall be in accordance with the City of Spokane Design Standards or has shown on the accepted plans as directed by the Engineer.

Manufactured restraint joint systems shall be installed in accordance with the directions of the manufacturer.

The restraint shall be in the form of acceptable manufactured restraint joints per Section 9-30.2(6) and shall meet the following requirements:

For 12-inches and under ductile iron pipe where installing a push-on end plug into a push-on bell, the restraint shall be:

- Install a push-on end plug manufactured with two shackle lugs.
- Install one or more pipe clamp(s), as required, behind the bell and tie-rod the end plug to the pipe clamp(s) with two lengths of ¾-inch threaded tie rods with double nutting.
- Pipe clamps shall be manufactured by the manufacturer as detailed in the COS Standard Plans in the 'Y' series.
- The pipe clamps shall be cleaned and coated with two coats of asphalt varnish or such other bituminous paint as may be approved by the Engineer, prior to installation.
- The tie rods shall be cleaned and coated with two coats of asphalt varnish or such other bituminous paint as may be approved by the Engineer, after installation.

Other approved mechanical restraint systems may be used. However, Field-Lok® gaskets shall not be installed on push-on end plugs or push-on end caps.

When restrained joint pipe is being used in lieu of Field-Lok gasket type restraint or Megalug (restrained joint harnesses) type restraint, custom lengths of pipe shall be used as appropriate to provide the proper spacing of valves, tees, or special fittings, which pipe shall be factory fabricated by the appropriate restrained joint pipe manufacturer.

7-09.3(22) Blowoff Assemblies
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

The Contractor shall install blowoff assemblies on water transmission mains where shown on the Plans or as designated by the Engineer.

Blowoff assemblies shall meet the requirements of the COS Standard Plans in the 'Y' series. The work shall include, but not be limited to, furnishing and installing the complete valve chamber or drywell, transmission main tee or tapping sleeve, gate valve, necessary pipe and fittings, appurtenances, and other items necessary to complete the installation in a satisfactory manner. The 4-inch gate valve shall OPEN RIGHT and have the standard AWWA 2-inch nut.

7-09.3(23) Hydrostatic Pressure Test
(April 1, 2006 COS GSP)

Replace the first nine paragraphs of this section (through "... the 15 minute test period.") with the following:

Water mains and appurtenances shall be tested in sections of convenient length under a hydrostatic pressure equal to the larger of:

1. One and one-half times the local operating pressure or
2. The local operating pressure plus surge pressure.

In no case shall the test pressure be less than 175 PSI. The differential pressure across valves shall not exceed pressures recommended by the valve manufacturer. Pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the tests shall be furnished and operated by the Contractor.

The following combined pressure and leakage test shall be conducted at least TWICE on each individual section of installed pipe between valves.

The pipeline shall be filled with water provided by the City Water Department for a minimum of 24 hours before being tested, to allow the air to escape and to allow the pipe lining or gaskets to absorb water. Allowable project-specific test leakages will be indicated in the individual project's contract, which values are based on the following equation:

$$Q_1 = \frac{ld\sqrt{P_t}}{430{,}000}$$

Where: Q_1 = allowable leakage, gallons/hour

l = length of line tested, feet

d = nominal diameter of pipe, inch

P_t = test pressure, PSI

Under no circumstances will leakage be allowed for defective materials or installations. The pressure tests shall measure leakage over a continuous 2 hour time period, unless otherwise directed by the Engineer.

Initial Pressure Test. An initial pressure and leakage test shall be conducted as soon as possible but not until sufficient backfill has been placed or other effective means have been provided to prevent the movement of the pipe. Backfill shall be placed in such a manner that the couplings, fittings, valves and connections, including service connections, are completely exposed for visual inspection during the test except at locations such as road crossings where complete backfill may be allowed by the Engineer.

NOTE: The Contractor shall assess and quantify the requirements and provide adequate temporary lateral, longitudinal, and vertical restraint to the pipe, valves, and fittings during the first test.

During the initial test, the pipe joints, couplings, fittings, valves, and hydrants shall be examined by the Engineer and Contractor. The defective elements shall be replaced. Observed leakage, regardless of the amount shall be corrected. The amount of water pumped into the lines to maintain test pressure shall be accurately measured by the Contractor and shall not exceed the allowable leakage. The hydrostatic test shall be of at least a 2 hour duration.

Second Pressure Test. A second pressure and leakage test shall be conducted after the backfilling has been completed and before placement of permanent surfacing or structures, where possible.

During the second test, the amount of water pumped into the lines to maintain the test pressure shall be accurately measured by the Contractor and unless allowed otherwise by the Engineer, the amount of makeup water shall not exceed that measured in the initial test. If the test leakage in the pipeline is greater than the leakage measured during the initial test, the leakage source shall be located and repaired. The test shall be repeated until the leakage rate is at or below the rate measured in the initial test or at the discretion of the Engineer until the leakage is at least less than the allowable. The hydrostatic test shall be of at least a 2 hour duration.

Testing - Alternate Method. The Hydrostatic Pressure Test provisions shall apply provided the initial (visual) pressure test may be waived by the Engineer at the written request of the Contractor. In lieu of leaving the couplings, fittings, valves and connections, including service connections completely exposed for visual inspection, the Contractor may bury the entire pipeline prior to testing. However, should the pipeline fail the test, the Contractor shall be responsible for the costs associated with locating the leak(s).

7-09.3(23)A Testing Extensions From Existing Mains
(April 1, 2006 COS GSP)

Replace the last sentence with the following:

The final connection to the existing main shall be made by the City Water Department with Contractor furnished pre-tested, pre-chlorinated pipe.

7-09.3(23)C Testing Hydrants Installed on Existing Mains
(April 1, 2006 COS GSP)

Replace the first paragraph with the following:

Hydrants shall be installed and connected to an existing main in accordance with the COS Standard Plans in the 'Y' series and Section 7-14. The Contractor shall furnish the necessary components for the hydrant connection, including hydrant, hydrant base, tee, connection pipe, and auxiliary gate valves. The actual connection to the existing main shall be made by the City Water Department with the Contractor furnished pre-tested materials.

7-09.3(24) Disinfection of Water Mains
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Disinfection of the pipeline shall be performed by the City Water Department before being placed into service. Taps required for chlorination purposes shall be provided by the City Water Department, unless otherwise provided in the Special Provisions. The Contractor shall assist the City Water Department as may be required during the disinfection process.

7-09.3(24)O Repetition of Flushing and Testing
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Should the initial treatment result in an unsatisfactory bacteriological test, the original chlorination procedure will be repeated by the City until satisfactory results are obtained. Failure to get a satisfactory test shall be considered as failure of the Contractor to keep the pipe clean during construction, unless it can be established that proper chlorination of the main was not achieved by the City. Rechlorination of the main due to failure of the Contractor to keep the pipe clean during construction shall be charged to the Contractor on a time and material basis.

SECTION 7-12 VALVES FOR WATER MAINS

7-12.1 Description
(April 1, 2006 COS GSP)

Add the following before the first paragraph:

The Contractor shall install valves of the type and size specified on the Plans or as directed by the Engineer.

Replace the second paragraph with the following:

Valves shall open CLOCKWISE (open right) and shall be equipped with a 2-inch square AWWA standard operating nut. Unless otherwise specified, valves shall be non-rising stem type. Valve boxes shall be installed on the buried valves. Cast iron valve boxes shall be manufactured as detailed on the COS Standard Plans in the 'Y' series.

7-12.2 Materials
(April 1, 2006 COS GSP)

Replace the reference to gate valves (3-inches to 16-inches) with (3-inches to 12-inches).

7-12.3 Construction Requirements
(April 1, 2006 COS GSP)

Add the following before the last paragraph:

Air Valve Installation. The City Water Department will furnish air valves, which shall be installed by the Contractor in accordance with these Special Provisions and the COS Standard Plans in the 'Y' series.

The Contractor shall furnish and install a standard 2-inch ball valve with a tee top operating nut, as shown, equal to McDonald Model 3131B Ball Valve.

The Contractor's work shall include, but not be limited to, furnishing and installing the complete valve chamber, transmission main tapping saddle, isolation ball valve, necessary pipe and fittings and other supplemental material necessary to complete the installation in a satisfactory manner.

The air valve assembly shall be installed in accordance to COS Standard Plan Y-102.

Adjust Valve Box. The Contractor shall adjust valve box(es) in accordance with Section 7-05.3(1).

7-14.2 Materials
(April 1, 2006 COS GSP)

Add the following items at the end of the Materials List:

Operating Nuts	9-30.5(2)
6" D. I. Pipe	9-30.1(1)
6" Gate Valve	9-30.3(1)
Valve Boxes	9-30.3(4)

7-14.3(1) Setting Hydrants
(April 1, 2006 COS GSP)

Replace the first sentence with the following:

The hydrant assembly shall be connected, restrained, and constructed with the incidentals as shown on the Plans and COS Standard Plans in the 'Y' series.

Add the following after the first paragraph:

Hydrants installed at a corner shall be installed:

1. At the end of a radius (of the street the hydrant lead and tee are on).
2. Two feet inside Right-of-Way (not on private property).
3. At the back of sidewalks.
4. At the back of swales, **not in swales if possible.**

Hydrants shall not be installed within 3-feet of a traveled roadway or within 7-feet of a driveway.

Add the following after the last paragraph:

A hydrant in need of repair shall be identified by a white plastic disk, 8-inches in diameter, marked "OUT OF SERVICE", and placed on the port nozzle of the hydrant.

7-14.3(2) Hydrant Connections
(April 1, 2006 COS GSP)

Add the following after the last paragraph:

Vertical hydrant-offsets shall be constructed where shown on the Plans and as directed

by the Engineer. The hydrant piping, fittings, bends, valve, and the other component parts necessary to complete the installation of vertical offsets shall be restrained as shown on the COS Standard Plans in the 'Y' series.

7-14.3(3) Resetting Existing Hydrants
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

7-14.3(4) Moving Existing Hydrants
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

7-14.3(5) Reconnecting Existing Hydrants
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

7.14.3(6) Hydrant Extensions
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

SECTION 7-15 SERVICE CONNECTIONS

Replace this Section in its entirety with the following:

7-15.1 General
(April 1, 2006 COS GSP)

This work consists of constructing domestic water service taps and 1-inch irrigation water service taps to serve the street scape drip systems where shown on the Plans. The installation(s) will also include water meters.

7-15.2 Materials
(April 1, 2006 COS GSP)

Materials shall meet the applicable requirements of Section 9-30.6.

Water service taps (hardware) will be supplied and installed by the City Water Department. The Contractor shall be required to excavate and backfill the trench for the City Water Department, as directed by the Engineer.

7-15.3(1) Extending Water Service Taps Into Private Property.
(April 1, 2006 COS GSP)

When the extension of a water service tap to the private property line will involve the future removal and replacement of a sidewalk, the water service tap may be extended if necessary into the private property in order to achieve a distance of 5-feet behind the sidewalk, at the Engineer's option and as indicated on the Plans, Specifications, and estimate, subject to the procurement of necessary permits.

7-15.3(2) Removal and Replacement of Curbing and Sidewalk.
(April 1, 2006 COS GSP)

When the installation of a water service involves routing beneath existing curbs, sidewalks, or both, the removal and replacement of the curbing and sidewalk shall be performed in accordance with Sections 2-02.3(3), 8-04.3, and 8-14.3, as appropriate. When specified herein, the removal and replacement of curbs, sidewalk, or both will be paid for separately from other water service bid items. Curb and sidewalk shall be in accordance to the applicable COS Standard Plans in the 'F' series.

7-15.3(3) End Pipe Marker
(April 1, 2006 COS GSP)

The location of water service pipe at the property line shall be marked by the Contractor with a 2 x 4 wooden stake buried in the ground from pipe invert to the ground elevation. The top of the 2 x 4 shall be painted traffic white and the depth to the side sewer or tee to the tenths of a foot be indicated in black paint. A 1-foot section of #4 rebar shall be attached to the 2 x 4 with galvanized nails (top of the rebar shall be at ground elevation or below). In addition, a length of 12 gage galvanized wire shall be provided to extend from the plugged end of the side sewer or tee. The upper end shall emerge at the stake but shall not be fastened to it.

7-15.3(4) Trench Excavation
(April 1, 2006 COS GSP)

The Contractor shall provide for trench safety in accordance with Section 7-09.3(7).

The Contractor shall provide a trench safety system meeting the requirements of WAC 296-155 Part N, for trenches in excess of 4-feet in depth, regardless of whether the

Contractor is subject to WISHA or not.

Trench excavation shall be in accordance with Section 7-09.3(7). Trench excavation for water service taps shall be a minimum depth of 5 ½-feet and a width of 2 ½-feet for single taps or 4 ½-feet for double taps.

7-15.3(5) Rock Excavation
(April 1, 2006 COS GSP)

Rock excavation shall be defined in accordance with Section 7-09.3(7)B.

7-15.3(6) Fees
(April 1, 2006 COS GSP)

Water Tap Application Fee. The Contractor shall be required to obtain a permit for each water service tap and pay the accompanying application fee for each.

SECTION 7-17 SANITARY SEWERS

7-17.2 Materials
(April 1, 2006 COS GSP)

Delete the following item from the Materials List:

Profile Wall PVC Sanitary Sewer Pipe	9-05.12(2)

Add the following after the last paragraph:

When pipe material is not specified in the Special Provisions, the Contractor may select appropriate material listed above, subject to the approval of the Engineer.

Flexible pipe shall provide sufficient strength to meet the deflection requirements of Section 7-17.3(2)G.

7-17.3 Construction Requirements
(April 1, 2006 COS GSP)

Replace this paragraph with the following:

Sanitary sewers shall be constructed in accordance with Section 7-08.3.

Pavement removal shall be in accordance with Section 2-02.3(3).

Pavement patching shall be scheduled to accommodate the demands of traffic and shall be performed as rapidly as possible to provide maximum safety and convenience

The AC service shall be designed so that the street lighting branch circuit and the controller branch circuit may be separately de-energized.

SECTION 9-30 WATER DISTRIBUTION MATERIALS

(April 1, 2006 COS GSP)

Delete the first sentence which begins with "This specification addresses ...".

9-30.1(1) Ductile Iron Pipe

(April 1, 2006 COS GSP)

Add the following before the first paragraph:

Be advised that the referenced "Standard Thickness Class" designation was used in previous editions of the AWWA Standard which are no longer current and is now listed under "Special Classes" Thickness Class in the current edition of the AWWA C151/A21.51 Standard.

9-30.1(5) Polyvinyl Chloride (PVC) Pipe

(April 1, 2006 COS GSP)

Delete this Section in its entirety.

9-30.1(5)A Polyvinyl Chloride (PVC) Pipe (4-Inches and Over)

(April 1, 2006 COS GSP)

Delete this Section in its entirety.

9-30.1(5)B Polyvinyl Chloride (PVC) Pipe (Under 4-Inches)

(April 1, 2006 COS GSP)

Delete this Section in its entirety.

9-30.1(6) Polyethylene (PE) Pressure Pipe (4-Inches and Over)

(April 1, 2006 COS GSP)

Delete this Section in its entirety.

9-30.2(1) Ductile Iron Pipe
(April 1, 2006 COS GSP)

Replace first sentence with the following:

Fittings for ductile iron pipe shall be manufactured of ductile iron and shall meet the requirements of AWWA C110 or AWWA C153.

9-30.2(5) Polyvinyl Chloride (PVC) Pipe
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

9-30.2(5)A Polyvinyl Chloride (PVC) Pipe (4-Inches and Over)
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

9-30.2(5)B Polyvinyl Chloride (PVC) Pipe (Under 4-Inches)
(April 1, 2006 COS GSP)

Delete this Section in its entirety.

9-30.2(6) Restrained Joints
(April 1, 2006 COS GSP)

Replace the last sentence in the first paragraph with the following:

Any device utilizing set screws shall not be permitted.

Add the following after the last paragraph:

For pipe 12-inches and under, acceptable manufactured restraint joint systems are as follows:

- MJ Gripper Gland as manufactured by U.S. Pipe;
- TR Flex restraint joints as manufactured by U.S. Pipe; Lok-tyton restraint joints as manufactured by U.S. Pipe;
- Field-Lok restraint joint as manufactured by U.S. Pipe;
- Tyton-Lok mechanical joints as manufactured by the Pacific States Cast Iron Pipe Company;

- MEGALUG as manufactured by Ebaa Iron, Inc.; and
- American Fast Grip Gaskets as manufactured by American Ductile Iron Pipe.

For pipe larger than 12-inches the acceptable manufactured restraint joint systems are as follows:

- TR Flex Gripper Ring as manufactured by U.S. Pipe;
- TR flex restraint joints as manufactured by U.S. Pipe; Lok-Tyton restraint joints as manufactured by U.S. Pipe;
- Tyton-Lok mechanical joints as manufactured by Pacific States Cast Iron Pipe Company;
- American Lok-Ring restraint joints as manufactured by American Ductile Iron Pipe Company;
- Flex-Ring Joint Including Field Flex-Ring for sizes 14-inch through 36-inch restraint joints as manufactured by American Ductile Iron Pipe Company;
- MEGALUG [pipe 48-inches and under] as manufactured by EBAA Inc.;
- Field Lok Gaskets as manufactured by United States Pipe & Foundry Company;
- American Fast Grip Gaskets as manufactured by American Ductile Iron Pipe;
- SuperLug as manufactured by Sigma Corporation; and
- Snap-loc restraints for push-on joints as manufactured by Griffin Pipe Products Co.

9-30.2(10) Polyethylene (PE) Pipe (4-Inches and Over)
(April 1, 2006 COS GSP)

Delete this Section in its entirety

9-30.3 Valves
(April 1, 2006 COS GSP)

Replace the last sentence with the following:

Valves shall open CLOCKWISE (open right).

The size and rating of valves will be approved by the Engineer prior to installation. Valves shall be the same size and have a pressure rating in excess of the test pressure of the lines.

Gate Valves. Gate valves shall be resilient seat. Where indicated on the Plans or directed by the Engineer, ends shall be flange x mechanical joint, flange x flange, or mechanical joint x mechanical joint.

Check Valves. Check valves shall be wafer type resilient seat double disc swing check valves, of class specified on the Plans or Special Provisions with cast or ductile iron plate and body, Buna-N seals and plain or flat face, Marlin Duo-Check II, HMP, or an

approved substitute.

The Contractor shall pressure test the check valves and butterfly valves provided by the City at the beginning of the contract, prior to installation, in order to verify the suitability of the valves. The tests shall be conducted in the presence of the Engineer.

9-30.3(1) Gate Valves (3-inches to 16-inches)
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Gate valves shall be the "resilient-seated" type valves and shall meet the requirements of ANSI/AWWA C509. Valves shall be non-rising stem type and shall be designed for buried service unless otherwise specified on the Plans for outside screw-and-yoke (OS&Y) type valves.

Valve ends shall be mechanical joint conforming to ANSI/AWWA C111/A21.11 or as specified on the Plans.

Valve stem seal shall be O-ring type.

Markings shall be cast on each valve showing the manufacturer's name or mark, the year the valve casting was made, the size of the valve, and the design water working pressure.

Bidders shall submit with their bid a catalog or brochure that describes the valves, including materials used in the valve construction, they propose to furnish.

9-30.3(3) Butterfly Valves
(April 1, 2006 COS GSP)

Add the following after the first paragraph:

Valve shafts shall be constructed of 18-8 Type 304 stainless steel or protected with 18-8 Type 304 stainless steel journals.

The valve mating seat shall be constructed of 18-8 Type 304 stainless steel.

Valve ends shall be mechanical joint conforming to ANSI/AWWA C111/A21.11 or as specified on the Plans.

The vendor and/or Contractor shall furnish the City of Spokane an affidavit of compliance that the valves furnished comply with, or exceed the applicable provisions of these Specifications as well as those of the ANSI/AWWA C504 (latest revision).

9-30.3(4) Valve Boxes
(April 1, 2006 COS GSP)

Add the following before the first paragraph:

Cast iron valve boxes shall be Spokane Rich Model 930 or approved equal, manufactured as detailed on the COS Standard Plans in the 'Y' series.

Add the following new Sections:

9-30.3(100) Frames and Covers for Valve Chambers
(April 1, 2006 COS GSP)

9-30.3(100)A Cast Iron Frames and Covers
(April 1, 2006 COS GSP)

Cast iron frames and covers shall conform to the Standard Plans and shall be marked "WATER" as specified on the Standard Plans. Castings shall conform to the requirements of ASTM A48, Class 30 and shall be free of porosity, shrink cavities, cold shuts, or cracks, or any surface defects which would impair serviceability. Repair of defects by welding or by the use of "smooth-on", or similar material will not be permitted. The manufacturer shall provide test bars per ASTM A 48 for all orders of 200 or more units.

A bituminous coating shall be applied to all surfaces. The finished coating shall be continuous, smooth, neither brittle when cold nor sticky when exposed to the sun, and shall be strongly adherent to the casting. The Owner shall have the right to require inspection and approval of all castings prior to painting.

When lock type castings are called for, the locking device shall be such that the cover may be readily released from the ring, and all movable parts shall be made of noncorrosive metals and otherwise arranged to avoid possible binding.

Ductile iron covers, when specified, shall conform to ASTM A 536, Grade 80-55-06.

9-30.3(100)B Machine Surfaces
(April 1, 2006 COS GSP)

The horizontal seating surface and inside vertical recessed face of the frame, and the horizontal seating and vertical outside edge of the cover shall be machine finished to the tolerances shown on the Standard Plans. At the request of the Owner, there shall be made available at the foundry standard rings and standard covers for use by Inspectors in testing fit and seating.

When specified, a groove shall be machined in the edge of the cover to retain a rubber gasket as shown on the Standard Plans.

9-30.3(100)C Identification
(April 1, 2006 COS GSP)

Valve chamber frames and covers shall be identified by the name or symbol of the manufacturer. This identification shall be in a plainly visible location when the frame and cover is installed. In addition to the manufacturer's identification, when ductile iron is specified, the material shall be identified by the following: "NOD" or "DUC" for nodular or ductile iron respectively. The manufacturer's identification and the material identification shall be adjacent to each other and shall be minimum ½-inch letters recessed to be flush with the adjacent surfaces.

9-30.3(100)D Mortar
(April 1, 2006 COS GSP)

Portland cement mortar shall be 1 part portland cement to not less than 1-1/2 parts nor more than 3 parts of plaster sand, mixed with the least amount of water necessary to provide a workable mix. Dehydrated lime in an amount not exceeding 50 percent of the portland cement by weight, may be added to the mix at the option of the Contractor.

9-30.5 Hydrants
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Fire hydrants shall conform to AWWA C502-94, or latest revision thereof, and the Standard for Dry-Barrel Fire Hydrants. Fire hydrants shall be of standard manufacture and of a pattern approved by the City of Spokane.

The fire hydrant shall be designed and manufactured such that the valve seat can be replaced without the necessity of digging the hydrant.

The fire hydrant shoe (hydrant bottom section containing the hydrant main valve seat assembly) shall be ductile iron with epoxy coating (**NOTE:** Cast iron is not acceptable).

Hydrants shall be equipped with hose port and steamer port cap chains.

Hydrants shall be painted in accordance to AWWA C502, Section 4.2 Painting, and in accordance to the City of Spokane's standard color(s) as follows:

- **Solid Yellow** (for public hydrants being part of the public water system).
- **Yellow Barrel with Silver Bonnet and Port Caps** (for private hydrants not being part of the public water system).

9-30.5(1) End Connections
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

The end connection shall be mechanical joint conforming to AWWA C-110 and C-111.

9-30.5(2) Hydrant Dimensions
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

The dimensions and details of the hydrant and nozzles, unless otherwise noted, shall be as follows:

1. Working pressure shall be 150 PSI.
2. Hydrant connection pipes shall be 6-inch inside diameter, ductile iron mechanical joint pipe.
3. Main valve seat: only fire hydrants with a compression type main valve that closes with water pressure will be accepted. The design shall allow for the operating parts, including the valve seat to be removed through the barrel without excavation. The minimum diameter opening shall be 5 ¼-inch. Main valve seats must be threaded type.
4. Hydrants shall have two 2 ½-inch nozzles and one 4 ½-inch nozzle. Nozzels shall be threaded-in type or 1/4 turn O-ring with lock.

   (**NOTE:** Threaded nozzles shall not be accepted.)
5. Hydrants shall be suitable for 5-foot, 5 ½-foot, and 6-foot bury (as specified) and equipped with ground line safety flange.
6. There shall be a minimum of 18-inches between the center of the pumper nozzle nut and the ground line.
7. There shall be a minimum of 34-inches between the ground line and the top of the operating nut.
8. Hydrants shall have a ductile iron shoe with epoxy coating.
9. Hydrants shall open left (COUNTER CLOCKWISE).
10. Hydrants shall have national standard stems and caps meeting the following:
    a. Pattern of nut: pentagon.
    b. Height of nut: 1-inch minimum.
    c. Size: 1 ½-inch at the base, 1 7/16-inch at the top, faces to be tapered uniformly.
11. Hydrants shall be equipped with hose port and streamer port cap chains attached to the nozzle section.

12. Hydrants shall have O-ring stuffing boxes.
13. Stortz fitting:
    a. Harrington Model – Stortz 125 – 5-inch or equal.
    b. 1/4 turn hydrant streamer port adapter.
    c. 5-inch Stortz X 4.5-inch female thread.
    d. National hose thread 4.5-inch to match the existing pattern.
    e. Stortz blind cap with cable.
    f. Two lock screws to hydrant nozzle for theft protection.

9-30.6(1) Saddles
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Saddles shall be ductile iron, bronze, or stainless steel.

Saddles used for 3/4-inch, 1-inch, 1 ½-inch, and 2-inch services shall be double strap and shall be female iron pipe thread outlet.

SECTION 9-34 PAVEMENT MARKING MATERIAL
(April 1, 2006 COS GSP)

Supplement this Section with the following:

The following durable pavement marking material sources are pre-approved. The Contractor shall provide a catalog submittal for these products, even though they are pre-approved.

3M Tape Series 380i lane and edgeline, and for symbol and legends

3M Tape Series Intersection Grade for high shear transverse lines

Flint Trading, Inc.: Premark, 125 mil

Flint Trading, Inc.: HotTape, 125 mil

SECTION 9-35 TEMPORARY TRAFFIC CONTROL MATERIALS
(April 1, 2006 COS GSP)

9-35.4 Sequential Arrow Signs
(April 1, 2006 COS GSP)

Replace this Section in its entirety with the following:

Appendix 7.1.3 Standard Plans (Water Only)

STANDARD PLANS

CITY OF SPOKANE

STANDARD PLANS TO THE "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION

FOREWORD

These Standard Plans contain information and requirements for construction of City of Spokane Public Street, Bridge, Sanitary Sewer, Domestic Water and Storm Water facilities. This information has been developed over the course of many years, and represents methodologies, materials and standards common to the area, and to which the local construction community has had considerable input.

The City of Spokane Standard Plans have been approved by City Council with the approving ordinance and council agenda sheet included immediately following this foreword. Through the approving ordinance, Spokane City Council has authorized the City of Spokane Director of Engineering Services to oversee, approve and implement all updates issued to the City of Spokane Standard Plans. Approved updates shall not become effective until sent to all known City of Spokane Standard Plans holders.

Potential errors or suggested revisions for updates shall be addressed to the City of Spokane Director of Engineering Services. All such suggested updates must be in writing, identify an issue, provide supporting information as well as provide a suggestion and plan (drawing) on how to address the issue.

The Standard Plans are available for purchase at the City of Spokane Engineering Services Department, Second Floor, Municipal Building, 808 West Spokane Falls Boulevard, 99201-3343, phone 625-6700.

RECEIVED
MAY 16 2007
CITY CLERK'S OFFICE
SPOKANE, WA

Rem

AGENDA SHEET FOR COUNCIL MEETING OF: May 29, 2007

Submitting Dept.	Contact Person/Phone No.	Council Sponsor
Engineering Services	Eldon Brown/625-6305	Public Works Committee

ADMINISTRATIVE SESSION
- o Contract
- • Report
- o Claims

LEGISLATIVE SESSION
- o Emergency Ord
- o Resolution
- o Final Reading Ord
- o First Reading Ord
- o Special Consideration
- o Hearing

CITY PRIORITY
- o Communications
- o Economic Development
- o Growth Management
- o Human Services
- o Neighborhoods
- o Public Safety
- o Quality Service Delivery
- o Racial Equity/Cultural Diversity
- • Rebuild/Maintain Infrastructure

STANDING COMMITTEES (Date of Notification)
- o Finance _____
- o Neighborhoods _____
- o Planning/Community & Econ Dev _____
- o Public Safety _____
- • Public Works 5/14/07

CLERK'S FILE PRO2007-0018
RENEWS
CROSS REF
ENG 2004027
BID
REQUISITION

Neighborhood/Commission/Committee Notified:
Action Taken:

AGENDA WORDING: (If contract include the term.)
Adoption of the 2006 City of Spokane Standard Plans.

BACKGROUND: (Attach additional sheet if necessary)
The City's Standard Plans have been reviewed and revised to incorporate needed changes and improvements in construction. These Standard Plans contain information and requirements for construction of City of Spokane public street, bridge, sanitary sewer, domestic water and storm water facilities. This information has been developed over the course of many years and represents methodologies, materials and standards common to the area, and to which the local construction community has had considerable input. The City Standard Plans are submitted to you for adoption. The City Engineer will have the authority to implement and adopt interim amendments to these plans based on the process defined therein.

RECOMMENDATION:
Adopt

Fiscal Impact o N/A	**Budget Account:** o N/A
o Expenditure: $	#
o Revenue: $	#
• Budget Neutral	

ATTACHMENTS:
Include in Packets:
On file for Review in Office of City Clerk: City's Standard Plans

SIGNATURES:

Director, Engineering Services
Director, Public Works & Utilities
Accounting
Legal
Chief Operating Officer for Mayor
Council President

DISTRIBUTION: Engineering Services, S Decker Neighborhood Services, G Hecht

\agenda\2006 standard plans agenda.doc

COUNCIL ACTION:

ADOPTED BY
SPOKANE CITY COUNCIL:
May 29, 2007
CITY CLERK

TABLE OF CONTENTS

CITY OF SPOKANE STANDARD PLANS

B-101B = Revised Standard Plan
***W-108A = New Standard Plan

TABLE OF CONTENTS

TABLE OF CONTENTS

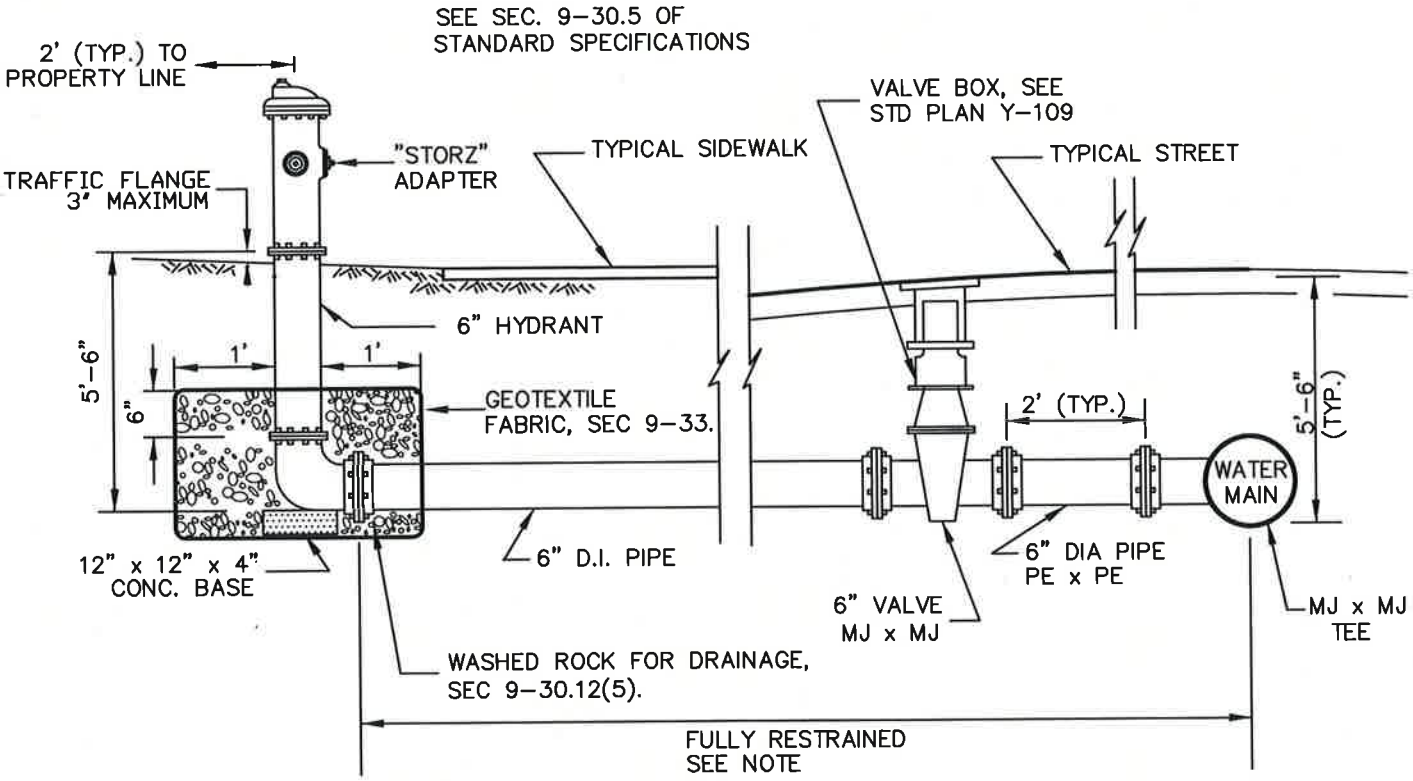
TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

SIGNIFICANT CHANGES HAVE BEEN MADE TO THE HYDRANT REQUIREMENTS UNDER SECTION 9-30.5. SPECIFICALLY, THE REFERENCE TO "CITY STANDARD" FIRE HYDRANT HAS BEEN DELETED.



PROFILE

NOTE:
WATER DISTRIBUTION MATERIALS AND APPURTENANCES SHALL CONFORM TO SEC 9-30.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — P. MIKE TAYLOR, P.E.

PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

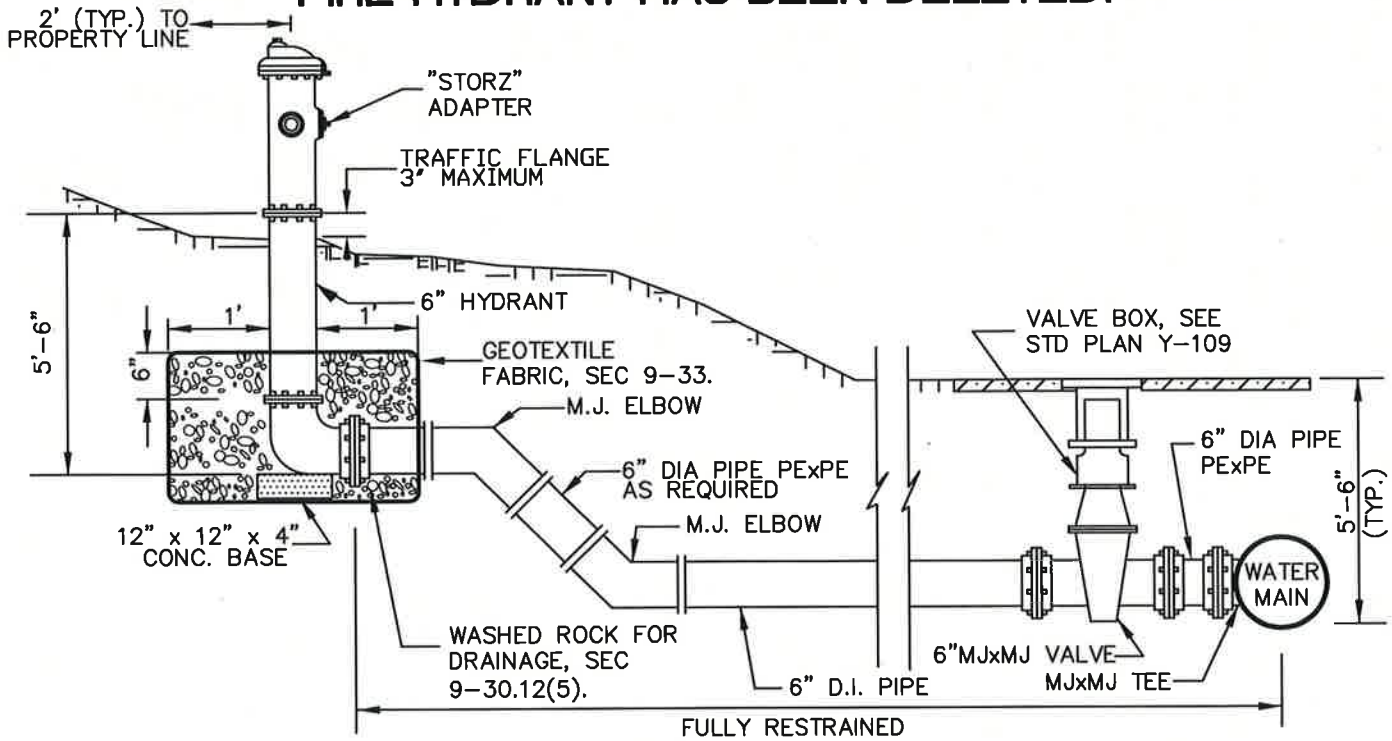
ADOPTED: 02/1986
REVISED: 04/2012
SUPERSEDES: 12/1999
SCALE: NTS
DWG./REV BY: MB

HYDRANT SETTING STANDARD

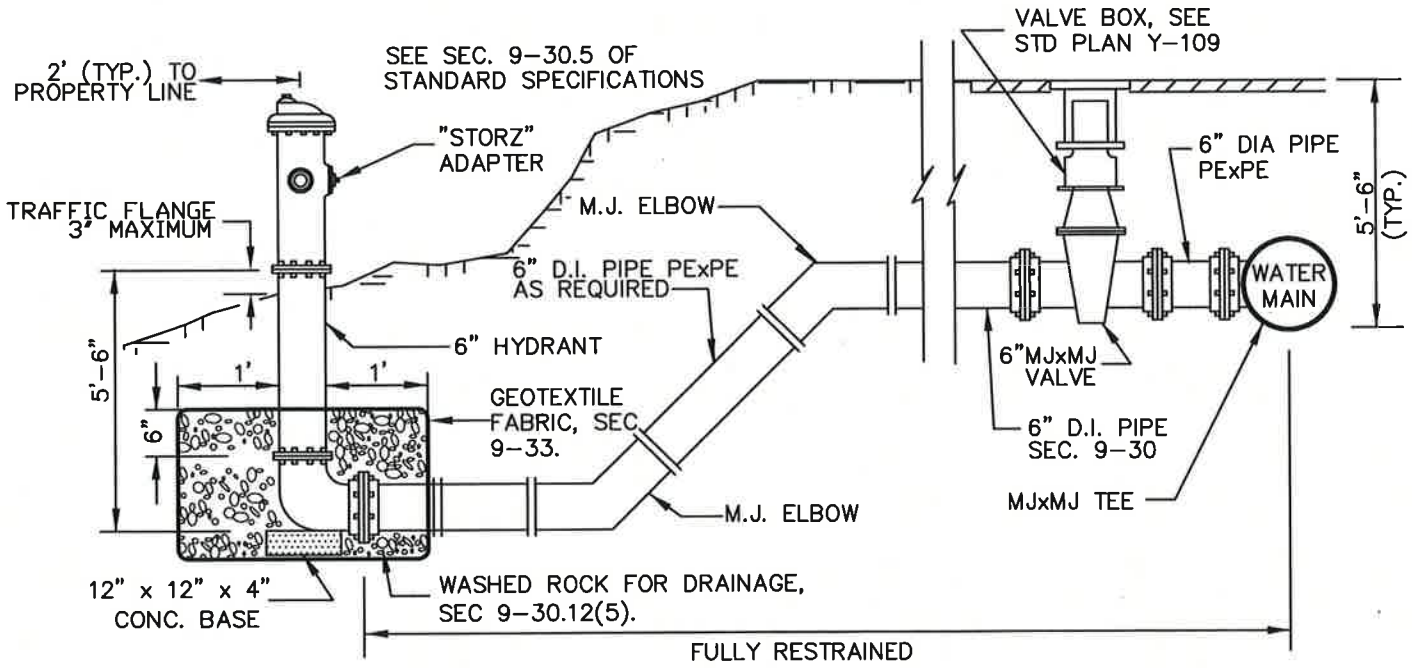
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-101

SIGNIFICANT CHANGES HAVE BEEN MADE TO THE HYDRANT REQUIREMENTS UNDER SECTION 9-30.5. SPECIFICALLY, THE REFERENCE TO "CITY STANDARD" FIRE HYDRANT HAS BEEN DELETED.



RAISED OFFSET



DEPRESSED OFFSET

NOTE:

WATER DISTRIBUTION MATERIALS AND APPURTENANCES SHALL CONFORM TO SEC 9-30.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — P. MIKE TAYLOR, P.E.

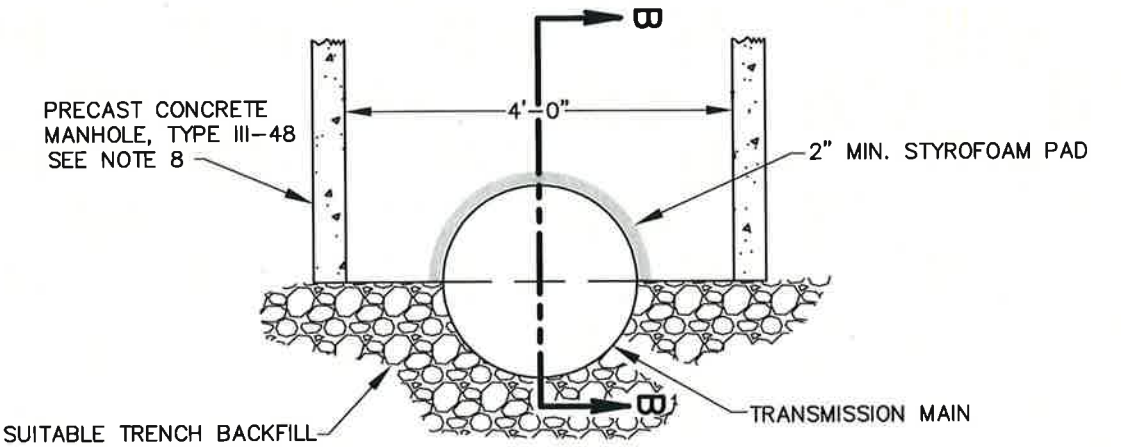
PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

ADOPTED:	08/1991
REVISED:	04/2012
SUPERSEDES:	12/1999
SCALE:	NTS
DWG./REV BY:	MB

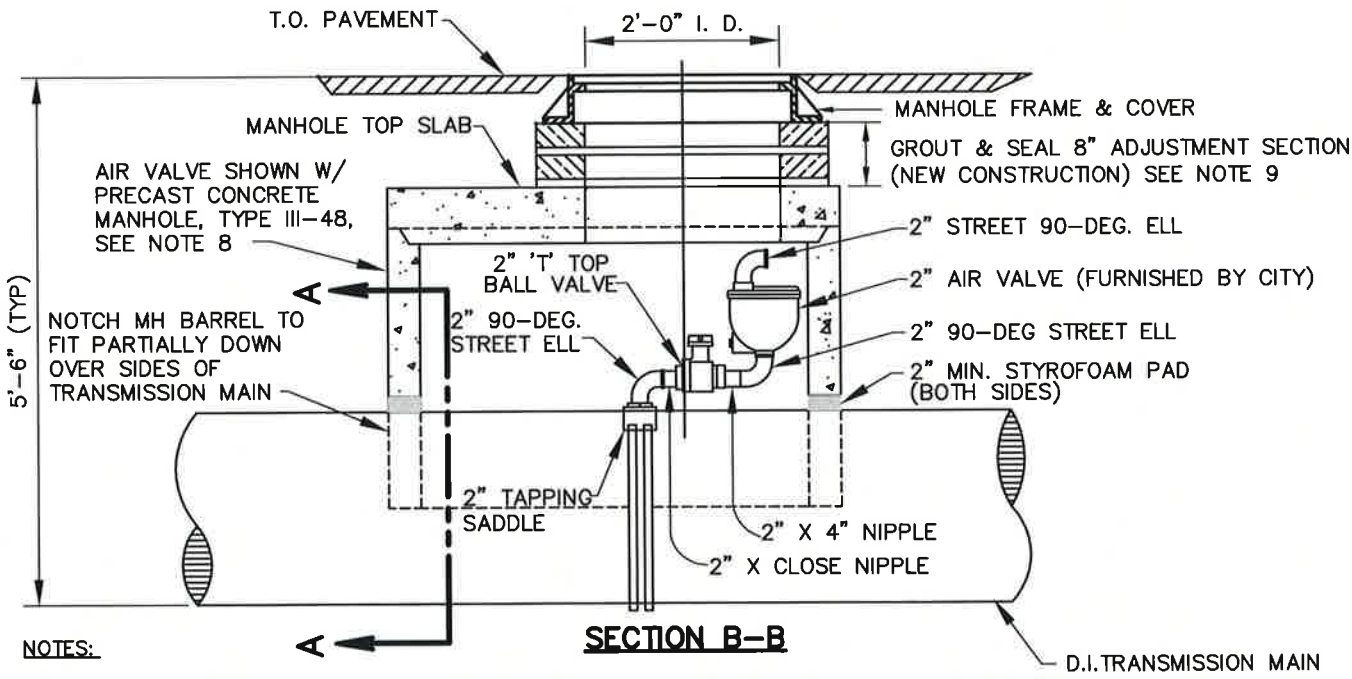
HYDRANT SETTING OFFSETS

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-101A



SECTION A-A



SECTION B-B

NOTES:

1. SEE SEC. 7-100 FOR VALVE CHAMBERS, & SEC. 9-12.4 FOR PRECAST CONCRETE MANHOLES.
2. SEE SECS. 7-12 & 9-30 FOR WATER FITTINGS.
3. SEE STD PLANS B-112 & B-112A FOR MANHOLE FRAME & COVER.
4. SEE STD PLAN Z-101 FOR MANHOLE, TYPE 1-48 & Z-105A FOR MANHOLE, TYPE III-54.
5. SEE STD PLAN Z-108 FOR MANHOLE TOP SLAB REINFORCEMENT DETAILS.
6. TOP SLAB & BARREL JOINT(S) MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
7. ADJUSTMENT SECTION, TOP SLAB, & BARREL JOINT(S) TO BE SEALED PER SECS. 7-05 & 9-04.
8. USE MANHOLE, TYPE 1-48 W/ CONCENTRIC CONE TOP WHEN VERTICAL CLEARANCE IS ADEQUATE. USE MANHOLE, TYPE III-54 W/ TOP SLAB AS SHOWN ABOVE, WHEN VERTICAL CLEARANCE IS MINIMAL.
9. ADJUSTMENT SECTION HEIGHT FOR EXISTING STRUCTURES TO MATCH FIELD CONDITIONS AS REQ'D (3" MIN-16" MAX)

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — P. MIKE TAYLOR, P.E.

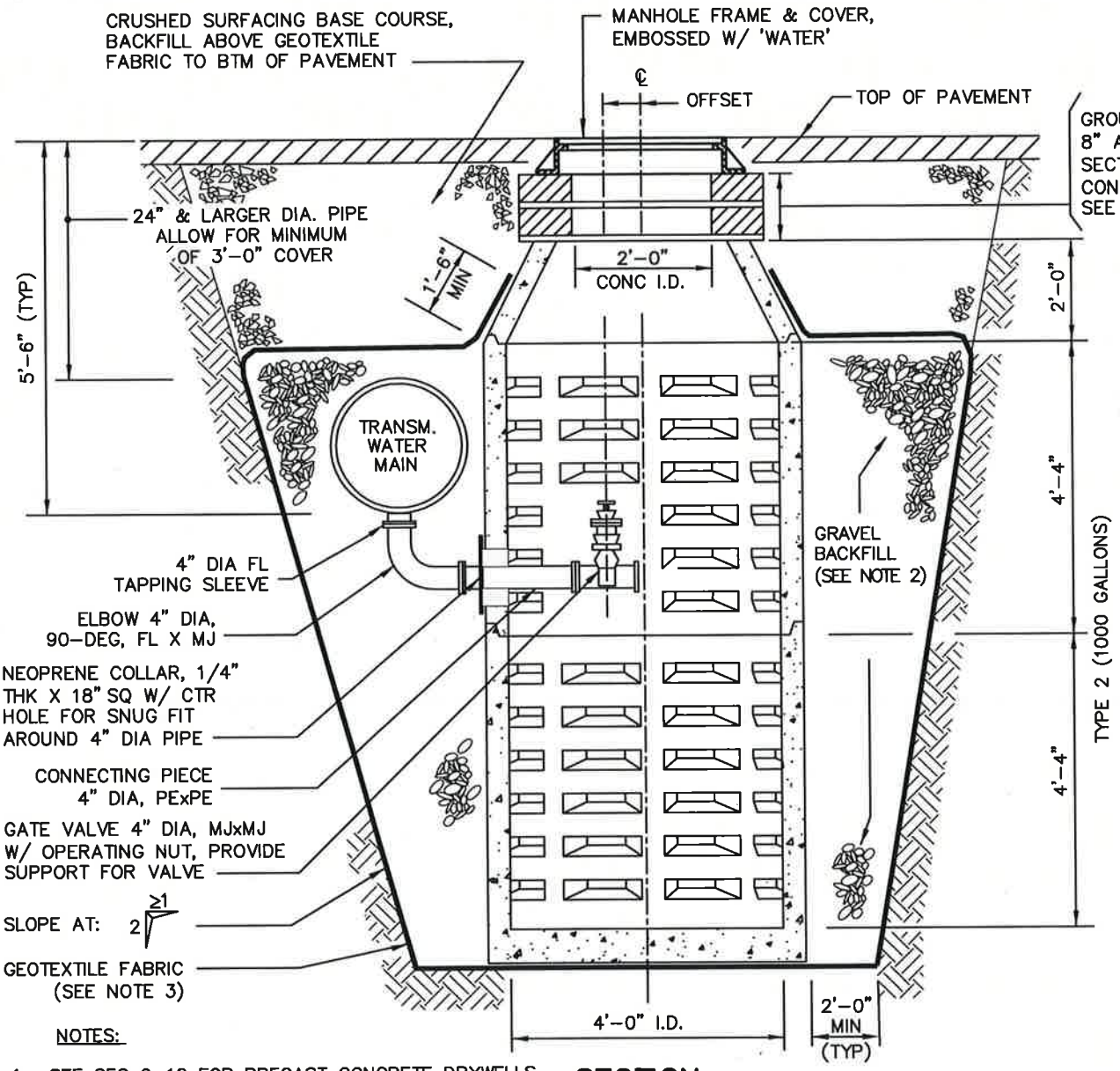
PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

ADOPTED:	02/1986
REVISED:	04/2012
SUPERSEDES:	05/2007
CHECKED BY:	JAG
SCALE:	NTS
DWG/REV. BY:	SRM

2" AIR VALVE
FOR DUCTILE IRON PIPE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-102



SECTION

NOTES:

1. SEE SEC 9-12 FOR PRECAST CONCRETE DRYWELLS.
2. SEE SEC 9-03.12(5) FOR GRAVEL BACKFILL FOR DRYWELLS.
3. SEE SEC 9-33 FOR GEOTEXTILE FABRIC. OVERLAP ALL FABRIC JOINTS 1'-6" MIN.
4. SEE STD PLANS B-112 & B-112A FOR MANHOLE FRAME & COVER.
5. SEE STD PLANS B-102C & B-122 FOR BASE & FOUNDATION DETAILS.
6. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
7. ADJUSTMENT SECTION, CONE & BARREL JOINTS TO BE SEALED PER SEC 7-05.
8. ONE DRYWELL MAY SERVE MORE THAN ONE INT'R BLOW-OFF VALVE.
9. ADJUSTMENT SECTION HEIGHT FOR EXISTING STRUCTURES TO MATCH FIELD CONDITIONS AS REQ'D (3" MIN-16" MAX).
10. WATER DISTRIBUTION MATERIALS AND APPURTENANCES SHALL CONFORM TO SEC 9-30.
11. ALL JOINTS SHALL BE RESTRAINED JOINTS PER SEC 9-30.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — P. MIKE TAYLOR, P.E.

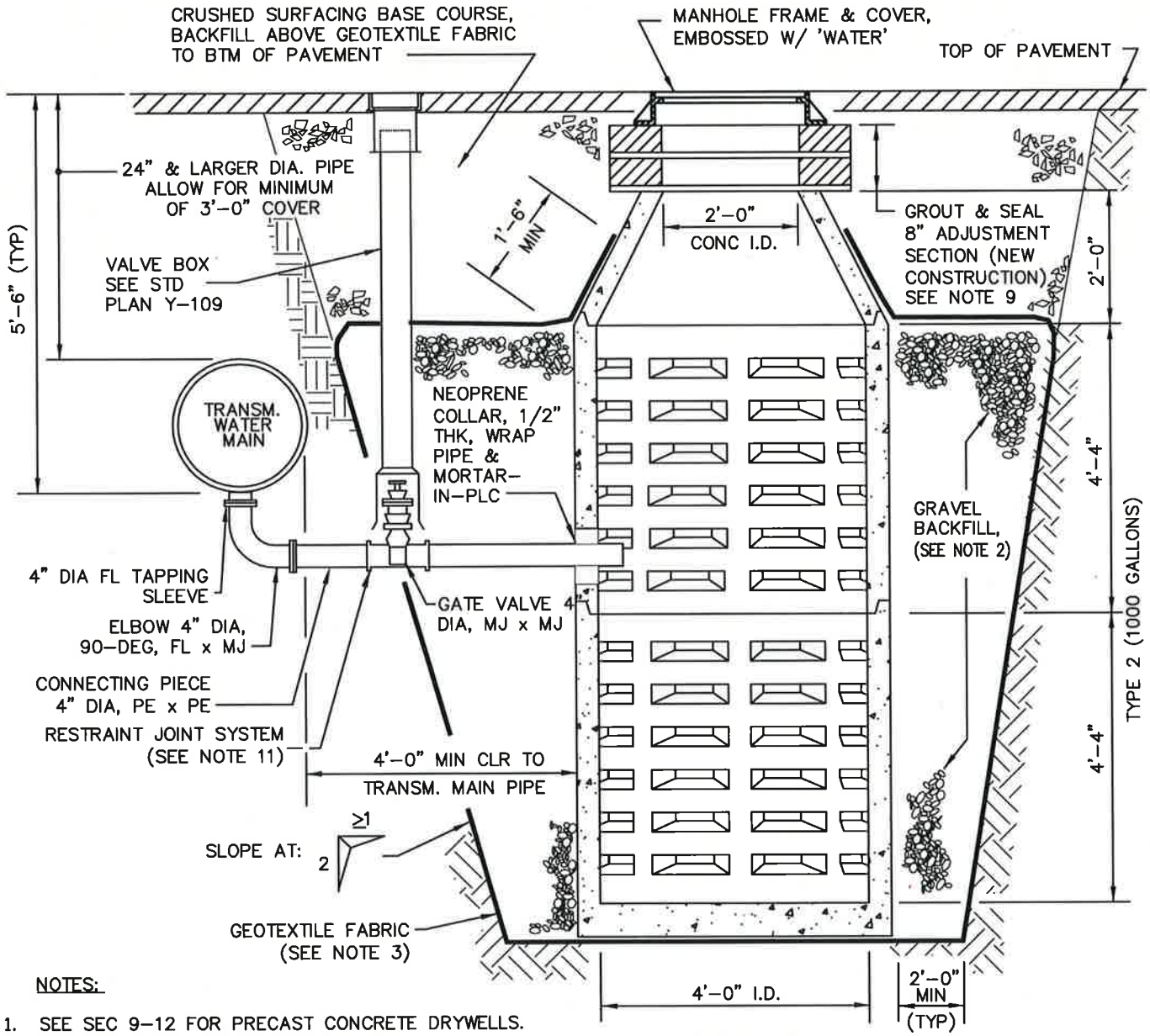
PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

ADOPTED: 02/1986
REVISED: 04/2012
SUPERSEDES: 01/2009
SCALE: NTS
DWG/REV. BY: SRM/MDH

DRYWELL BLOW-OFF
INTERIOR 4" GATE VALVE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-103



SECTION

NOTES:

1. SEE SEC 9-12 FOR PRECAST CONCRETE DRYWELLS.
2. SEE SEC 9-03.12(5) FOR GRAVEL BACKFILL FOR DRYWELLS.
3. SEE SEC 9-33 FOR GEOTEXTILE FABRIC. OVERLAP ALL FABRIC JOINTS 1'-6" MIN.
4. SEE STD PLANS B-112 & B-112A FOR MANHOLE FRAME & COVER.
5. SEE STD PLANS B-102C & B-122 FOR BASE & FOUNDATION DETAILS.
6. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
7. ADJUSTMENT SECTION, CONE & BARREL JOINTS TO BE SEALED PER SEC 7-05.
8. ONE DRYWELL MAY SERVE MORE THAN ONE EXT'R BLOW-OFF VALVE.
9. ADJUSTMENT SECTION HEIGHT FOR EXISTING STRUCTURES TO MATCH FIELD CONDITIONS AS REQ'D (3" MIN-16" MAX).
10. WATER DISTRIBUTION MATERIALS AND APPURTENANCES SHALL CONFORM TO SEC 9-30.
11. ALL JOINTS SHALL BE RESTRAINED JOINTS PER SEC 9-30.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — F. MIKE TAYLOR, P.E.

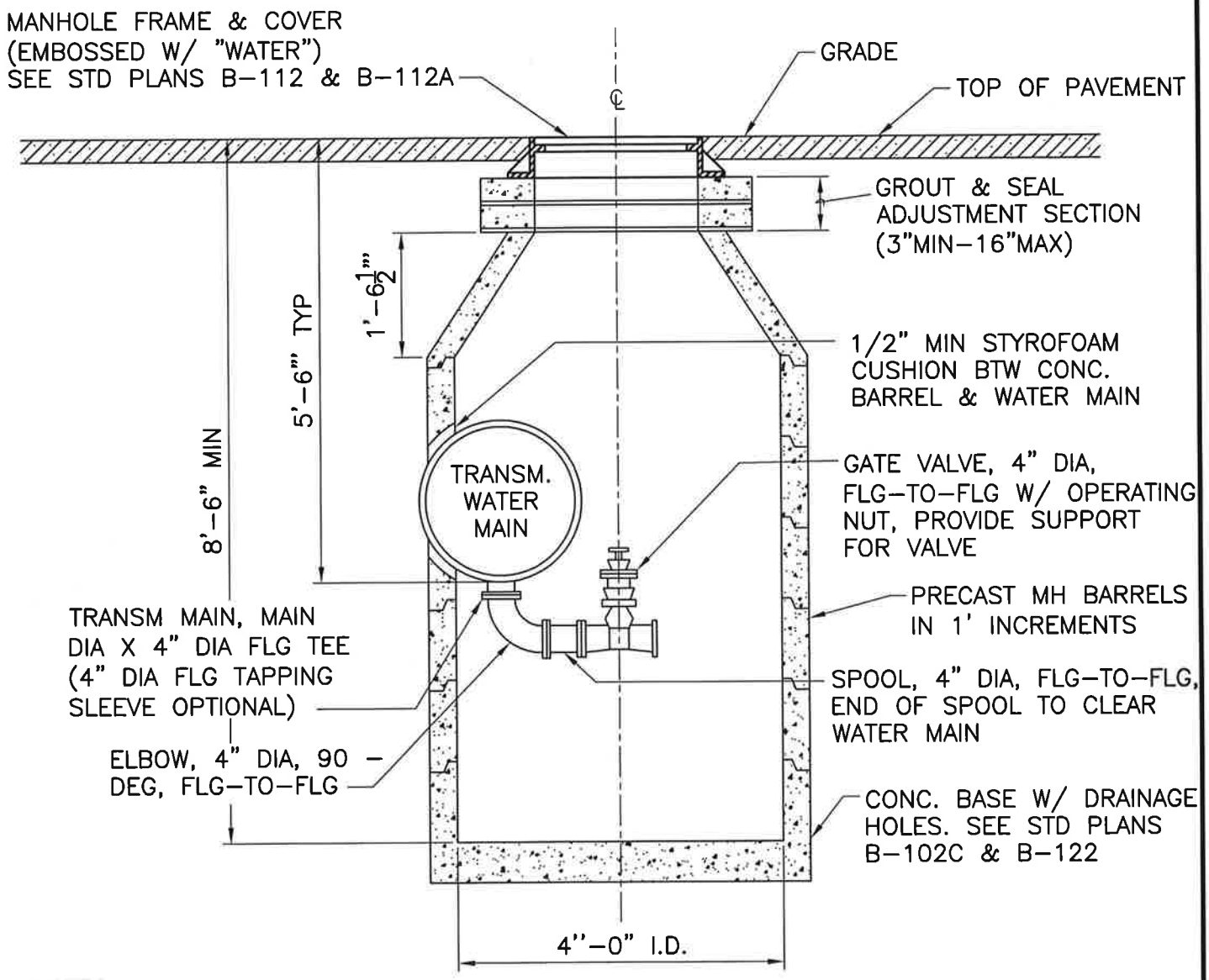
PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

ADOPTED: 03/1992
REVISED: 04/2012
SUPERSEDES: 01/2009
SCALE: NTS
DWG/REV. BY: SRM/MDH

DRYWELL BLOW-OFF
EXTERIOR 4" GATE VALVE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-103A



NOTES:

1. SEE SECTIONS 7-05 & 9-12.4 FOR PRECAST CONCRETE MANHOLES
2. SEE SECTIONS 7-12 & 9-30 FOR WATER FITTINGS.
3. SEE STD PLAN Z-109 FOR MANHOLE STEP DETAILS.
4. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — TOM L. ARNOLD, P.E.

PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

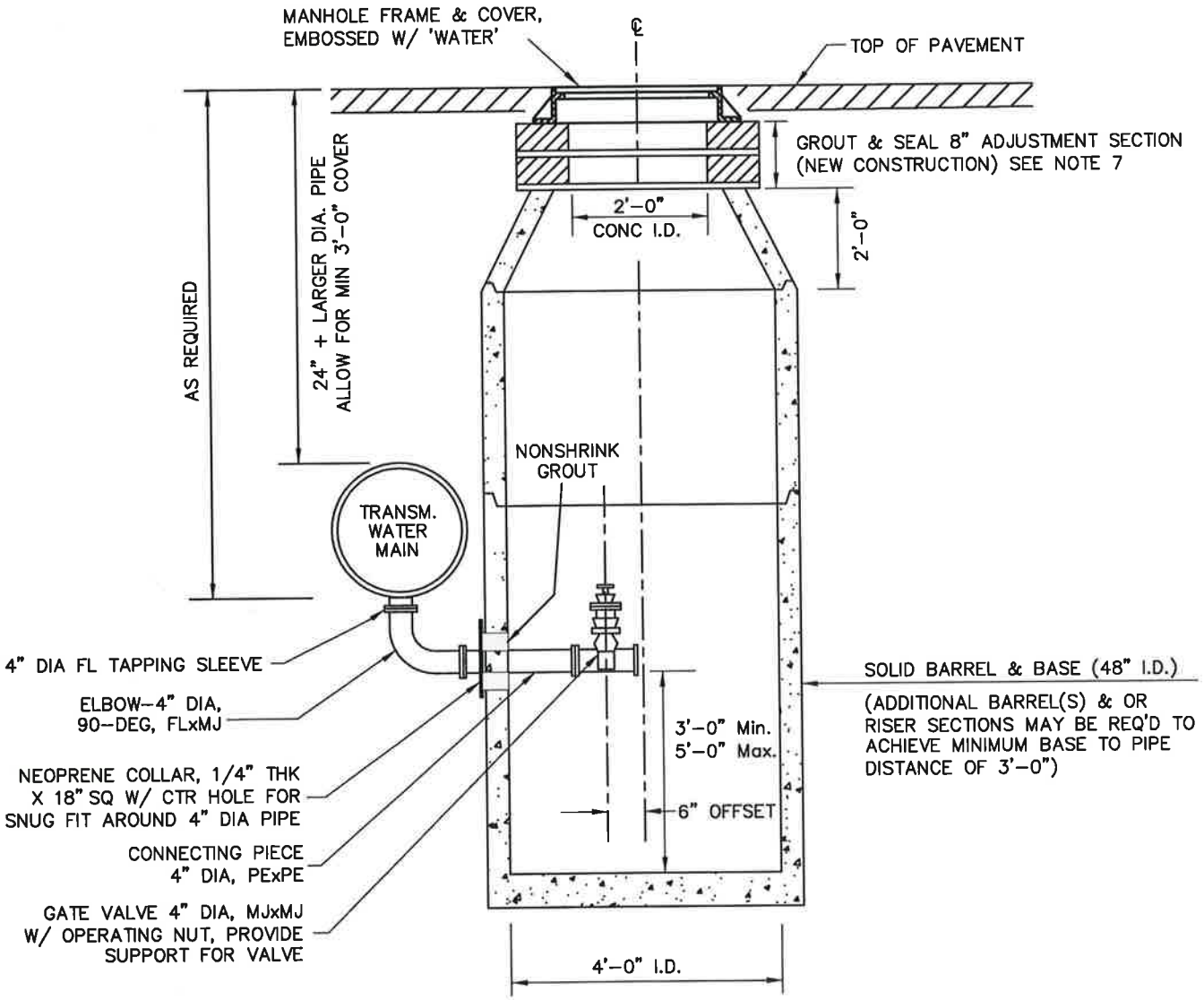
ADOPTED:	2/1986
REVISED:	05/2007
SUPERSEDES:	
CHECKED BY:	JAG
SCALE:	NTS
DWG/REV. BY:	RLB

MANHOLE BLOW-OFF
INTERIOR 4" GATE VALVE

SPOKANE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-104



SECTION

NOTES:

1. SEE SEC 9-12 FOR PRECAST CONCRETE MANHOLES.
2. SEE STD PLANS B-112 & B-112A FOR MANHOLE FRAME & COVER.
3. SEE STD PLANS B-102C & B-122 FOR BASE & FOUNDATION DETAILS.
4. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
5. ADJUSTMENT SECTION, CONE & BARREL JOINTS TO BE SEALED PER SEC 7-05.
6. ONE MANHOLE MAY SERVE MORE THAN ONE INT'R BLOW-OFF VALVE.
7. ADJUSTMENT SECTION HEIGHT FOR EXISTING STRUCTURES TO MATCH FIELD CONDITIONS AS REQ'D (4" MIN-12" MAX).
8. WATER DISTRIBUTION MATERIAL AND APPURTENANCES SHALL CONFORM TO SEC 9-30.
9. ALL JOINTS SHALL BE RESTRAINED JOINTS PER SEC 9-30.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — PERRY M. TAYLOR, P.E.

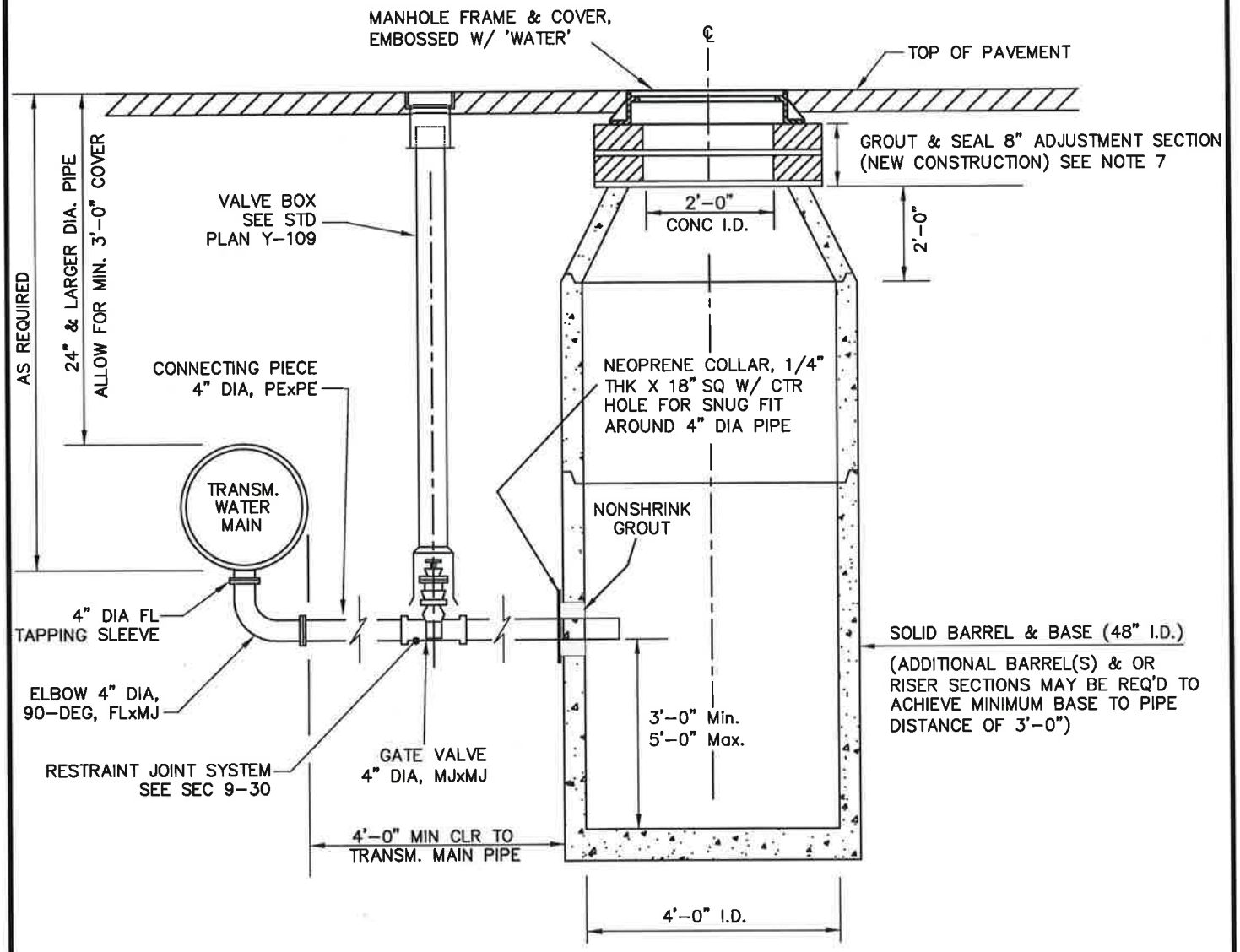
PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

ADOPTED: 01/2008
REVISED: 04/2013
SUPERSEDES: 04/2012
CHECKED BY: JTG
SCALE: NTS
DWG/REV. BY: LWK

PUMPER STYLE BLOW-OFF
INTERIOR 4" GATE VALVE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-105



SECTION

NOTES:

1. SEE SEC 9-12 FOR PRECAST CONCRETE MANHOLES.
2. SEE STD PLANS B-112 & B-112A FOR MANHOLE FRAME & COVER.
3. SEE STD PLANS B-102C & B-122 FOR BASE & FOUNDATION DETAILS.
4. CONE & BARREL JOINTS MAY BE EITHER TONGUE & GROOVE OR REVERSE TONGUE & GROOVE.
5. ADJUSTMENT SECTION, CONE & BARREL JOINTS TO BE SEALED PER SEC 7-05.
6. ONE MANHOLE MAY SERVE MORE THAN ONE INT'R BLOW-OFF VALVE.
7. ADJUSTMENT SECTION HEIGHT FOR EXISTING STRUCTURES TO MATCH FIELD CONDITIONS AS REQ'D (4" MIN-12" MAX).
8. WATER DISTRIBUTION MATERIAL AND APPURTENANCES SHALL CONFORM TO SEC 9-30.
9. ALL JOINTS SHALL BE RESTRAINED JOINTS PER SEC 9-30.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — PERRY M. TAYLOR, P.E.

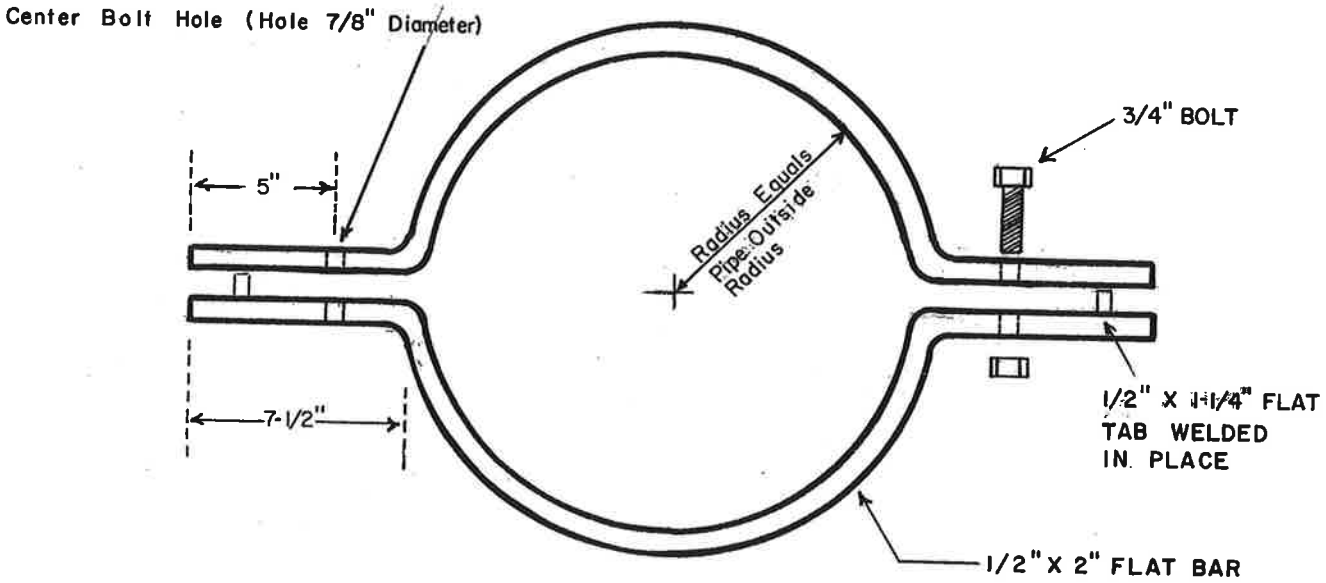
PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

ADOPTED: 01/2009
REVISED: 04/2013
SUPERSEDES: 04/2012
CHECKED BY: JTG
SCALE: NTS
DWG/REV. BY: LWK

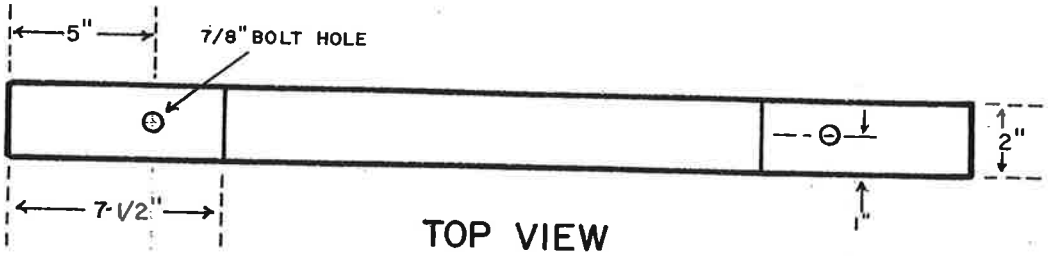
PUMPER STYLE BLOW-OFF
EXTERIOR 4" GATE VALVE

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-105A

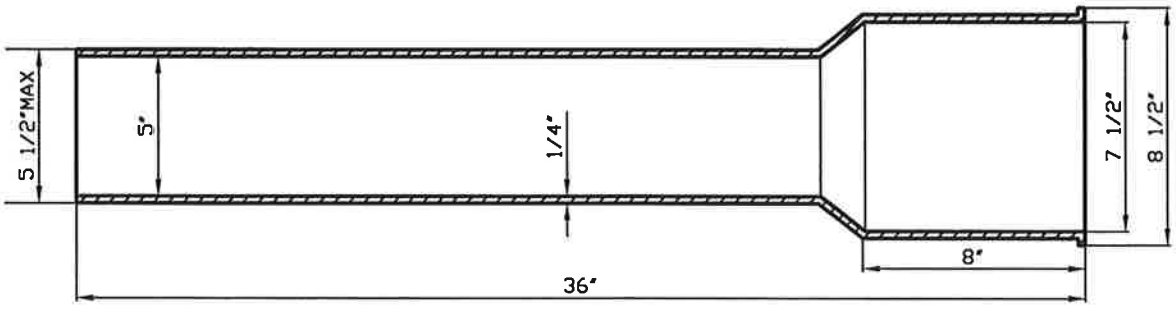


SIDE VIEW

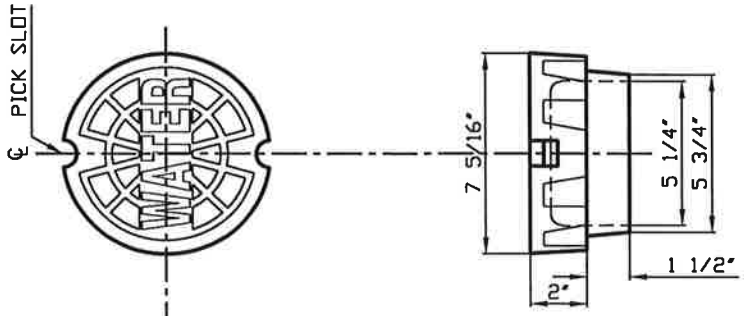


TOP VIEW

APPROVED BY CITY ENGR. Brad W Blegen CH. DES. ENGR. [illegible]	SCALE NONE ADOPTED 2-86 REVISED	TYPICAL DUCTILE IRON PIPE CLAMP FOR PIPE UP TO 12" DIA. DEPT. OF PUBLIC WORKS ENGR. DIVISION SPOKANE, WN.	STANDARD PLAN No. Y-108

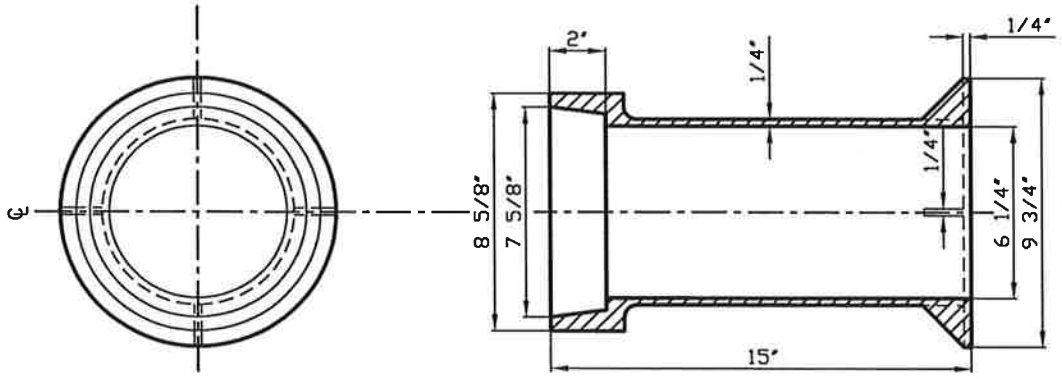


BOTTOM SECTION



COVER

MINIMUM COVER WEIGHT
13 LBS.



TOP SECTION

BOTTOM SECTION

COVER

TOP SECTION

APPROVED BY

Katy Allen
DIRECTOR, ENGINEERING SERVICES KATY O. ALLEN, P.E.

Jim R. Smith
PRINCIPAL ENGINEER, DESIGN JIM R. SMITH, P.E.

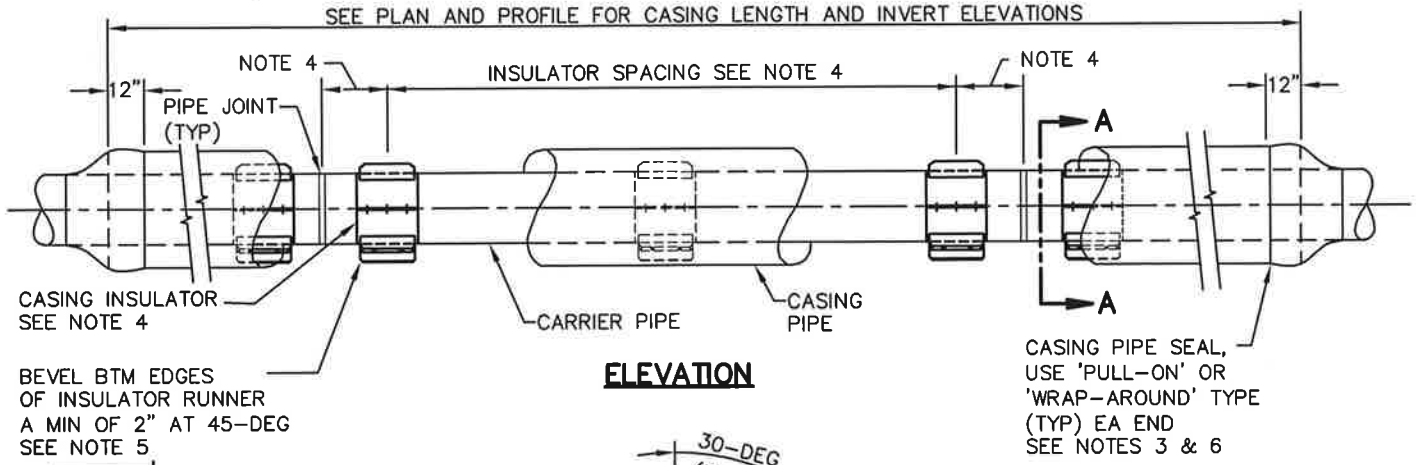
ADOPTED: 4/88
REVISED: CAD 10/98
SUPERSEDES: 10/95
SCALE: NOT TO SCALE
DWG./REV BY: DGB

CAST IRON VALVE BOX

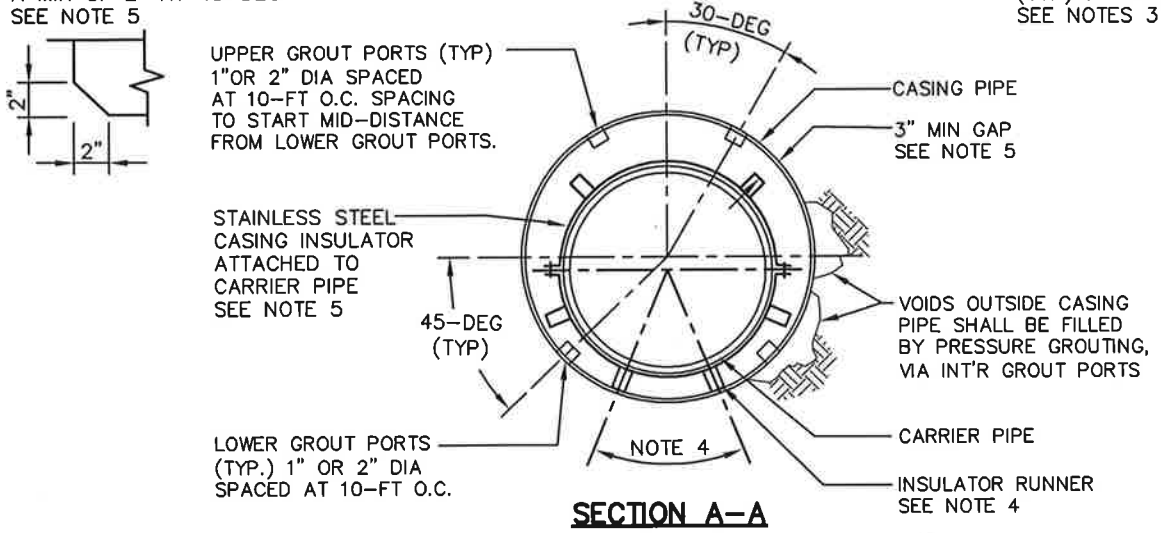
SPOKANE RICH MODEL 930

SPOKANE
ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-109



ELEVATION



SECTION A-A

STEEL CASING DETAIL

NOTES:

1. CASING SHALL BE SMOOTH STEEL PIPE MANUFACTURED TO ASTM A-53, TYPE 'E', GRADE 'B' FOR NPS UP TO 26-INCH DIA & ASTM A-252, GRADE '2' FOR NPS GREATER THAN 26-INCH DIA, THAT CONFORMS TO AWWA C-200 QUALITY CONTROL PROCEDURES & HAVE A MIN YEILD OF 35 KSI.

2. CARRIER PIPE SHALL BE INSTALLED PER MANUFACTURER'S REQ'MTS & CITY OF SPOKANE CONTRACT PROVISIONS.

3. CARRIER PIPE SHALL BE PRESSURE TESTED PER CITY OF SPOKANE CONTRACT PROVISIONS PRIOR TO SEALING ENDS OF CASING PIPE.

4. PER-FABRICATED CASING INSULATORS SHALL BE POSITIONED & SPACED PER MANUFACTURER'S REQ'MTS & CASING/ CARRIER PIPE APPLICATION. INSULATOR SPACING SHALL NOT EXCEED 8-FT O.C. NOR BE LOCATED MORE THAN 1'-6" FROM CARRIER PIPE JOINTS. CASING INSULATORS SHALL BE PRE-APPROVED BY THE ENGINEER PRIOR TO PLAN APPROVAL OR INSTALLATION. THE CONTRACTOR SHALL COORDINATE W/ THE INSULATOR MANUFACTURER SO THAT THE INSULATOR RUNNER POSITIONS AROUND THE OUTER CIRCUMFERENCE OF THE CARRIER PIPE DO NOT INTERFERE W/ THE GROUT PORT POSITIONS AROUND THE INT'R CIRCUMFERENCE OF THE CASING PIPE.

5. INSULATOR RUNNER HEIGHT SHALL EXTEND BEYOND THE O.D. OF THE CARRIER PIPE'S BELL OR JOINT A MIN OF 1". RUNNER LENGTH SHALL EXCEED RUNNER HEIGHT BY A 2:1 MIN RATIO. RUNNER WIDTH SHALL BE EQUAL TO OR GREATER THAN RUNNER HEIGHT. MIN CLEARANCE SHALL BE 3" BETWEEN RUNNERS NEAR TOP OF CARRIER PIPE & INSIDE DIA OF CASING PIPE. CASING INSULATORS SHALL HAVE STAINLESS STEEL (SS) ATTACHMENT BANDS CONNECTED TO THE CARRIER PIPE VIA (SS) BOLTS/NUTS.

6. CASING PIPE SHALL BE SEALED AT BOTH ENDS W/ A STD 'PULL-ON' OR 'WRAP-AROUND' SYNTHETIC RUBBER CASING SEAL. SECURE CASING SEAL W/ STAINLESS STEEL BANDS. CASING SEALS SHALL BE PRE-APPROVED BY THE ENGINEER PRIOR TO PLAN APPROVAL OR INSTALLATION.

APPROVED BY

DIRECTOR, ENGINEERING SERVICES — TOM L. ARNOLD, P.E.

PRINCIPAL ENGINEER, DESIGN — GARY S. NELSON, P.E.

ADOPTED:	4/2004
REVISED:	05/2007
SUPERSEDES:	4/2004
CHECKED BY:	JAG
SCALE:	NTS
DWG/REV. BY:	TSS/MDH

CASING/CARRIER PIPE
DETAILS

ENGINEERING SERVICES
CITY OF SPOKANE, WASHINGTON

STANDARD PLAN No. Y-110

Exhibit 7.3.1 SMC 13.04 - Water Code

Spokane Municipal Code

Search

Home | Title 13 | Chapter 13.04 | Sections 13.04.000...

Highlight Word

Title 13 Public Utilities and Services

Chapter 13.04 Water

Article I. General Provisions

Section 13.04.000 Title

This chapter may also be referred to as the "water code."

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.020 Water Fund

Payments for City water utility service and/or any other payment or charge, including labor and materials, are made to the city treasurer and placed to the credit of the water fund, as provided in SMC 7.08.400.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.030 Rates – Regulations

A. The director of the water and hydroelectric services department (hereinafter referred to as "director"), subject to the approval of the city council, fixes a schedule of prices to be charged and paid for water service from the City or for related services provided by the City. The director may assess a reasonable charge for items or services not encompassed in the fee schedule.

B. The director, subject to the approval of city council, makes such rules and regulations concerning matters covered by this chapter and as may be required for the proper operation of the water and hydroelectric services department.

C. Approved rates, rules and regulations shall be published in one issue of the *Official Gazette* and shall then have the effect of law. Changes to the rates, rules and regulations are accomplished in the same way.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 1

Section 13.04.040 Equipment – Projects – Minor Expenditures

A. To the maximum extent permitted by law, the City may acquire such equipment, engage in projects, enter into contracts and perform such functions as may enable it to carry out its water supply, management and conservation responsibilities and such other purposes as the city council may direct. These powers shall be broadly construed to accomplish their intended purpose.

B. Subject to the various limits as established in City policies, the city council approves departmental expenditures of funds for equipment and projects, which may be funded by the water fund, by grant or by appropriation from federal, state or local resources as the city council may authorize, subject to the requirements of law.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.050 Applications

See SMC 13.04.0502 through SMC 13.04.0512.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.0502 Applications for Connection

A. Connections or installations with the City water system are permitted only upon submission of a proper application, on a form approved by the director and payment of required fees.

B. Except as otherwise specifically allowed, the service applicant shall be the property owner or an authorized agent. The director may require permission of or notice to the property owner for connection or change if the service applicant is not the owner.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 2

Section 13.04.0504 Application Information

The applicant shall provide such information as required by the director, which may include:

A. all the purposes for which the water shall be used;

B. the number of service pipes desired;

C. whether there is to be more than one structure or building, or more than one separate parcel or property, supplied by the one service connected with the City main, and the number and kind of buildings and properties so supplied;

D. the number of flats or apartments in the building;

E. the location where the City main is to be tapped, and the size of the tap to be made; and

F. the location of the property by lot, block, addition and street number.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 3

Section 13.04.0506 Applicant to Furnish Building Permit

Any person desiring to have premises connected with the water supply system of the City of Spokane shall present a copy of the building permit or furnish such comparable information as required by the director.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 4

Section 13.04.0508 Building Construction or Repair – Report from Building Official

The director may request the building official to report the beginning of construction or repairs of all buildings in the City, including a copy of the building permit issued, containing a general description of the building to be erected or repaired, the name of the owner and contractor thereof, the official house number and street name, the lot, block and addition.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 5

Section 13.04.0510 Effect of Application

All applicants and their successors shall be required, and shall be deemed to have agreed, to comply with all the rules and regulations of the water and hydroelectric services department and the provisions of this chapter, to pay the cost of making the connection and supplying and installing the meter, and to pay for all water used on the premises, at the rate provided in said rules.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.0512 Changes in Service

Service connections may be removed or changed on request to the director by approved application furnished by the director, and upon payment of applicable tapping and inspection fees, subject to all other requirements for new connections.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 6

Section 13.04.060 Meter Required

Connections shall be made only through a water meter or other device approved by the director.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 7

Section 13.04.0602 Meter Supply

A. Water meters shall be supplied by the water and hydroelectric services department.

B. Costs of the water meter and installation must be paid by the service applicant, in addition to any testing and/or inspection fees required by the director.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 8

Section 13.04.0604 Authority Over Meters and Valves

A. So long as water service is connected or available to the premises, all meters, valves or other such devices upstream from the meter and including the meter shall remain subject to the strict regulation of the water and hydroelectric services department and no person may tamper with, repair or replace any such items.

B. Meters and other such devices of a particular type or capacity shall be deemed fungible and the water and hydroelectric services department, in the course of maintenance and repair of meters and other such devices, may replace the same with others of equal condition and value.

C. This section shall not be construed to create any obligation on the part of the City to make repairs nor create liability or responsibility for acts or omissions of the property owner or any third party.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 9

Section 13.04.0606 Inspection/Reading of Meters

Water meters shall at all times be accessible to water and hydroelectric services department personnel. Where it is necessary for the property owner or lessee to place the meter under lock and key, a key shall be furnished to the water and hydroelectric services department meter reader foreperson. Except as hereafter required, meter tests are to be paid for by the party requesting them.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 10

Section 13.04.0608 Testing Meters – Expense

A. Where the accuracy of record of a water meter is questioned, it may be removed at the customer's request and tested in the shops of the water and hydroelectric services department by means of the apparatus there provided or other reasonable means, and a report thereon will be duly made.

B. It shall be the privilege of the customer to be present at the water and hydroelectric services department shops and witness such test. Both parties to the test must accept the findings so made.

C. If the test discloses an error against the customer of more than three percent on the meter's registry, the water and hydroelectric services department will bear the entire expense of the test. Where no such error is found, the person who has requested the test shall pay a fee of two hundred fifty dollars ($250.00) for such test.

D. The director may require a reasonable deposit, sufficient to secure the costs of removal and testing, prior to the test to be refunded if an error against the customer is discovered as above provided.

E. The fees in this section shall be adjusted as provided in SMC 13.04.2030

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 1

Section 13.04.070 REPEALED (Materials – Removal for Nonpayment)

Repealed by ORD C34374.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 18

Section 13.04.080 Construction Specifications

A. Every service pipe shall be provided with a ball valve for each recipient, easily accessible, placed inside the foundation wall, beyond damage from frost, and so situated that the water can be conveniently shut off and drained from the pipes.

B. All water pipes in buildings shall be so arranged as to drain toward the stop and waste cock or drain cocks placed for that purpose.

C. All water pipe shall be soft annealed Type K copper water pipe or approved equal as provided in the director's regulations. Use of HDPE is outlined in the City of Spokane Water Department Rules and Regulations for Water Service Installations.

D. All service pipes inside property lines shall hereafter be laid to a depth of at least five and one-half feet below the surface of the ground.

E. All service pipes laid inside the property line on any premises shall be left exposed in the trench until inspected by the water service inspector, and when they have passed inspection and have been approved the pipes shall be properly covered by the property owner.

Date Passed: Monday, August 18, 2014

Effective Date: Thursday, October 2, 2014

ORD C35137 Section 1

Section 13.04.0802 Separate Service

A. Each building served must have a separate connection and separate meter unless otherwise specifically authorized by the director, but such privilege may be revoked at any time by the director for any reason.
    1. Service connections are provided to the public water system in the public right-of-way unless otherwise approved.
    2. The director may waive the requirement in cases of two or more adjacent buildings under a common ownership or for other good reasons consistent with the public health and safety (e.g. no accessible water main on abutting streets).

B. The director may further require the property owner(s) to execute and record at their expense an easement appurtenant to and for the benefit of parcels served by the service main on a form supplied by the director, allowing perpetual access to said service main by parcels served and mutually covenanting to maintain said service main for the enjoyment of all such premises.
    1. Said easement shall prohibit construction over or interference with the easement area and shall not be subject to revocation without the written approval of the director.
    2. The City shall have no repair or maintenance obligations as to any such service main.

C. Where the requirement of the prior paragraph is waived because of common ownership, the waiver expires automatically when premises or buildings are separately owned, unless affirmatively extended by the director.

D. Exceptions to the requirement of separate connection may be revoked by the director without cost or liability to the City and the premises/building served shall thereafter be required to make a separate connection and install a separate meter at the property owner's sole expense and liability.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 12

Section 13.04.0804 Unauthorized Extensions Unlawful

Extensions of City utilities services from any building or premises to other buildings or premises without submitting written application on forms provided by the director, payment of required fees, and the director's approval, are unlawful.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 13

Section 13.04.0806 Service Pipes – Cocks

A. Cost of all service pipes from the City mains to the premises, including a service cock, shall be paid by the property owner(s). A private contractor shall excavate the entire trench and install the service line from the property line to the premises, subject to inspection and approval of the water and hydroelectric services department. The water and hydroelectric services department shall install the portion of the service line from the City main to the property line.

B. Locations that have retaining walls within City right-of-way, the service pipes shall be laid by the City only to the street side of the wall. The property owner(s) must install and maintain, at their own expense, all service pipes from that point to the premises, subject to inspection and approval of the water and hydroelectric services department.

C. Multiple service pipes are not permitted without specific written approval from the director.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 2

Section 13.04.0808 Standpipe and Sprinkler Connections

A. Connections with the City mains for standpipe and sprinkler service to be used for protection in case of fire are subject to the same requirements as other service connections unless otherwise determined by the director.

B. In all cases, the applicant shall provide such valves, meters or other devices as approved by the director at the applicant's sole cost and liability.

C. Such connections may be made entirely separate from regular service taps, the complete installation to be made under the supervision of the water and hydroelectric services department.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 15

Section 13.04.0810 Charge for Standpipe or Sprinkler

To cover the costs of carrying a supply of water under pressure in such service, inspection and possibility of leakage and waste, an annual or other charge for standpipe or sprinkler service connections may be assessed at the rates to be provided in the rules of the director.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.0812 Actual Connections to be Made by Department

All actual connections to the City water system, whether to mains or to service stubs, shall be accomplished by the water and hydroelectric services department and not by any private agency.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 16

Section 13.04.0814 Purpose

The purpose of the City of Spokane cross-connection control program is to establish and codify a municipal cross-connection control program to protect the public health and safety, consistent with WAC 246 290-490. In implementing this program the director is guided by the manual of Accepted Practice and Procedure in Cross-Connection Control – Pacific Northwest Section – American Waterworks Association.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.0816 Definitions

For purposes of the cross-connection control program, the following definitions apply:

A. "Backflow" is the flow of water or other liquids, fluids, gases, or any substance whatsoever from a source outside the public water supply back into the public water supply. Backflow or reversed flow may occur due to either back pressure (pushing) or back siphonage (pulling).

B. "Backflow prevention device" is a device or assembly, approved by the director or health officer, designed and tested to counteract back pressure and back siphonage.

C. "Containment" is a method of backflow prevention requiring the installation of a backflow prevention assembly or device at the point a water service line enters the premises served.

D. "Contamination" is the entry into or presence in the public water supply of any substance which the director or health officer determines will or might adversely affect the public health or the

aesthetic qualities of the water (appearance, taste, or odor).

1. "Contaminated water" is water with contamination.

E. "Cross-connection" is any physical arrangement whereby the public water supply of the City of Spokane is connected, directly or indirectly, or in the judgment of the director or health officer has a risk of becoming connected, to a source of contamination as a result of backflow. Sources of contamination might include, but are not limited to:

1. public or private water supply system,
2. tank or storage reservoir,
3. sewer line,
4. sewer drain,
5. conduit,
6. pool, or
7. any plumbing or fixture whatsoever.

F. "Cross-connection control manual" or "Manual" is the latest edition of "Accepted Practice and Procedure in Cross-Connection Control" promulgated by the Pacific Northwest section of the American Waterworks Association. A copy of the manual is available for public inspection at the water and hydroelectric services department offices.

G. "Cross-connection control program" is the City of Spokane's effort to prevent and control cross-connections, as required by WAC 246-290-490, expressed in the cross-connection control manual, SMC 13.04.0814 through SMC13.04.0824, and any regulations or orders issued by the director in implementation of said program.

H. "Customer" is any person or other entity at premises reflected in the files of the water and hydroelectric services department as an authorized connection to the City's public water service system.

I. "Director" is the director or administrative head of the water and hydroelectric services department.

J. "Isolation" is a method of backflow prevention where a backflow prevention assembly or device is located at a point of a cross-connection, rather than the premises or property line.

K. "Service connection" or "service line" is the connection between the public water supply system to a customer's premises or customer-operated distribution system.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 3

Section 13.04.0818 Cross-connections Prohibited – Nuisance Declared

A. No person or entity may install, maintain or permit a cross-connection in violation of the cross-connection control program requirements. Consistent with the definition of cross-connection herein, this prohibition is specifically intended to include potential sources or risks of contamination through backflow to the public water system. Any such cross-connection shall be immediately removed by the customer, or the water and hydroelectric services department may do so and bill the costs to the customer and/or other responsible parties, as determined by the director.

B. The installation or maintenance of a cross-connection condition is declared a public nuisance,

subject to immediate abatement or removal by the City at the customer's sole risk and liability.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 18

Section 13.04.0820 Director's Authority

A. The director or an authorized representative of the water and hydroelectric services department may require any customer or occupant of premises to cooperate in providing any information, access to premises or any building, or testing or inspection requested relating to the enforcement of the City's cross-connection control program. Failure to cooperate with any such request, in addition to being a violation of this chapter, is grounds for denial or termination of water service, with or without further notice.

B. In addition to the specifications in the Cross-Connection Control Manual, the director may issue regulations or, in a specific case, an order to implement the City's cross-connection control program and may assess additional fees or charges to customers and/or other responsible persons for inspections, tests, equipment or other items furnished in the course of implementing the City's cross-connection control program. Such regulations or orders may address:
    1. minimum cross-connection control operating policies;
    2. backflow prevention device installation practices, containment and isolation requirements; and
    3. backflow prevention device testing procedures and records-keeping requirements.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 19

Section 13.04.0822 Inspection and Testing – Customers to Cooperate

A. Customers are required to cooperate fully with the City in implementing the cross-connection control program. Customers may be required to provide satisfactory evidence of cross-connection control to the water and hydroelectric services department and to allow inspection, testing or other examination, including inspection and testing of backflow prevention devices, all as deemed necessary to implement the City's cross-connection control program.

B. The water and hydroelectric services department shall have access to all service connections, premises and buildings served by the City's public water system during regular business hours for inspection and testing purposes to ascertain the need to eliminate or control cross-connections, or at any time in case of emergency.

C. Compliance with the City's cross-connection control program requirements are additional terms and conditions under which the City of Spokane supplies water service to its customers. The water and hydroelectric services department may terminate service by any means, with or without prior notice, for failure to comply with the City's cross-connection control program. This specifically includes installation and maintenance of backflow prevention devices required by the water and hydroelectric services department.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 20

Section 13.04.0824 No Duty – Ratification

A. Notwithstanding any other provision, no duty on the part of the City of Spokane, its officers, agents or employees is created. Any duty nonetheless deemed to arise is declared to be a duty to the general public only and not to any particular person, group, class or entity.

B. All actions taken by City departments or officials pursuant to the provisions of chapter 246-290 WAC and the Cross-Connection Control Manual are hereby ratified and confirmed.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.090 Water Local Improvement District Waiver Agreement

A. Where an owner of property seeks to connect to the public water supply and the city engineer determines the premises concerned are or may be in need of additional water main or other facilities construction to be financed by means of a local improvement district mechanism, such owner shall obtain from the director of engineering services and execute, as a condition of connection, a water waiver agreement for a local improvement district (LID) water assessment.

B. Said agreement shall provide the signatory waives the right to protest the establishment of any local improvement district for the installation of a public water main which may be proposed and/or to claim lack of benefit or less benefit than the amount of the assessment and to join in said local improvement district petition creating said district. Said owner shall file said waiver and pay all filing fees required for the recording of said agreement with the County auditor.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 21

Section 13.04.100 Protection of Service Facilities – Owner's Obligations

See SMC 13.04.1002 through SMC 13.04.1008.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1002 Service Pipes and Connections Within Private Property – Repair and Protection from Freezing – Hot Water Damage

A. The service pipe connections and other apparatus within any private premises must be kept in good repair and protected from freezing at the expense of the owner or lessee, who will be responsible for all damages resulting from leaks and breaks.

B. The repairs of any meter damage by hot water shall be charged to the owner of the property for which such meter was installed. The deformation or warping of a metered disc or a register figure disc or other comparable device of any meter shall be held to be prima facie evidence of such damage having been caused by the action of heat.

C. In case of neglect to promptly repair any service or fixture, or make any changes or alterations required in this chapter, the director shall have authority, when deemed necessary, to go on the premises and make or cause to be made such changes, alterations or repairs, and charge the same against the premises and the owner thereof.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 22

Section 13.04.1004 Securing Meters and Pipes Against Damage, Strain or Settling

A. Whenever a meter is to be or has been installed within that portion of the street lying between the curbline and the property line and in which an areaway exists, the director shall cause the erection of such bases, supports or barriers as will reasonably secure the meter and pipes connected therewith against any damage or strain or settlement.

B. The cost of the erection of such bases, supports or barriers shall be charged against the property for which the meter was installed and to the owner thereof.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 23

Section 13.04.1006 Driveways – Removal or Protection of Service Pipes

A. Whenever a driveway or crossing, to be used for vehicular traffic, is constructed within that portion of a City street lying between the curb line and the property line, the director shall cause the removal and relocation of any water service connection or any part thereof which may be within the lines of such driveway or crossing, provided, however, that instead of such removal of water service connection the director may, if he deems it advisable, cause the construction and placing of an iron or masonry box or chamber of sufficient strength to withstand the stress of vehicular traffic.

B. The cost of removal, relocation or maintenance of water service connections as provided in this section shall be charged against the property for which the driveway or crossing was constructed and to the owner thereof.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 24

Section 13.04.1008 Valves and Outlets Sealed – Fire Inspections

A. Every valve or outlet must be sealed. Seals may be broken only in case of fire, and in such

case prompt notification must be made to the water and hydroelectric services department, and the valve will be resealed.

B. The premises upon which any such fire protection service is installed shall be open to the inspection of any authorized representative of the water and hydroelectric services department at all times, and the owner or tenant shall give such representative all reasonable facilities for making the inspection and any information he may require. The owner or tenant can test the apparatus at any time by notifying the water and hydroelectric services department that such a test is desired, and a time will be fixed for the test to be made.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 25

Section 13.04.110 Repairs on Private Property

A. Unless specifically authorized by the director, all repairs to any portion of a facility or the water supply system located on private property are the responsibility of the property owner and in the event the director orders such repairs to be performed by City crews or others for the protection of the system and/or public health and safety, such repairs shall be paid for by the property owner as a condition of continued service.

B. This section shall not be construed to create any obligation on the part of the City to make repairs.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 26

Section 13.04.120 Entry of Premises – Testing

The water and hydroelectric services department reserves the right to enter at any reasonable time any premises where City water is used for the purpose of making an examination of the premises, or a reading or test of the meter, or for any other reasonable purpose related to utility service, and it also reserves the right to remove the meter from the premises for examination and test when necessary.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.130 Use of Fire Hydrants – Stop Valves and Stopcocks

A. It is unlawful for any person, except when duly authorized by the director, and except a member of the fire department, to open, operate, close, turn on, turn off, interfere with, attach any pipe or hose to or connect anything with any fire hydrant, stop valve or stopcock belonging to the City.

B. Any person, other than employees of the fire department, requiring the use of any hydrant, stopcock or valve belonging to the City must make written application for the same in advance to the director. The director shall then send a hydrant inspector to open such hydrant, stopcock

or valve, and the time of such inspector shall be charged to the person making application for the use of such hydrant, stopcock or valve.

C. Should it be necessary for the inspector to remain at the hydrant, stopcock or valve until the person using the same has secured the necessary supply of water, the full time consumed by the inspector shall be charged to the person securing such service. The director may require a deposit in advance as a condition for supply of such water.

D. The director may also permit qualified plumbers, licensed and bonded in accordance with state laws, to open and shut the street cock in order to make the necessary repairs or to test their work, and in every such case such persons shall leave the stop cock as they found it. They shall be responsible for any damage, losses or liabilities of the City or third parties arising from their acts, errors or omissions.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 27

Section 13.04.140 Responsibility for Water Supply – Mains

A. The City assumes no responsibility whatsoever for any private water pipes, mains, devices, fixtures or appurtenances not located upon public property or the public right-of-way. This lack of City responsibility applies to costs of construction, repair and/or maintenance and liability for losses, claims, damages or injuries arising directly or indirectly from the use or existence of said nonpublic pipes and fixtures.

B. Except as required by the general laws of this state, the City assumes no additional responsibilities for the maintenance, pressure or supply of water and this code shall not be construed to expand such responsibilities.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1402 Specific Municipal Disclaimer – Damage Prevention Devices

A. The City specifically disclaims all liability for damage to property or injury to persons accruing from temporary or permanent shut-off of water for necessary repairs, in time of emergency or for other good cause, or because of breakage of any pipe or fixture of the City water supply system, or due to high or low pressure or changes in pressure, this non-liability being a condition of accepting service from the City, except as otherwise required by the laws of this state.

B. Water consumers who have any machinery, material, process or plant which requires a constant supply of water shall install upon their premises such water storage facilities as will prevent any damage in case the City water supply may, for any reason, be interrupted or discontinued.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.150 Water Supply

See SMC 13.04.1502 through SMC 13.04.1508.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1502 Temporary Hookup

The director may allow temporary connections to the City water supply directly or through current authorized recipients of City water. The director shall furnish applications therefore and require such inspections and fees as necessary for the protection of the public health and safety, the needs of the system and to insure proper payment for enjoyment of its benefits. Except as thus permitted, all connections are prohibited.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1504 Interruption or Restriction of Service

A. Service may be interrupted or terminated, restricted, rationed or curtailed, with or without notice, as the director shall determine, for all necessary repairs, construction or alterations and in case of emergency, threat or danger to the public health or safety.

B. In case of severe dry weather, fire or other disaster or calamity, the director shall be authorized to restrict, ration or curtail the public use of water when he finds it necessary to do so to protect the public health and safety.

C. Service to any premises may be suspended for nonpayment of accounts. Such suspension shall not relieve the person owing such account from the duty of complying with the provisions of this chapter. Such suspension shall render the premises where such service is suspended subject to condemnation for sanitary reasons and/or exercise of municipal power to abate a public nuisance at the risk and expense of the owner of the premises and/or other responsible persons.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1506 Locale of Shut-off

A. The director determines the method and location of shutoffs. In general, shutoff locations shall be at the curb cock, placed at the property line.

B. No person may turn on water shut off by the water and hydroelectric services department without the director's consent or approval. The director sets fees for shutoff and turn on.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 28

Section 13.04.1508 Refusal of Service – No Rights Created

A. Water service may be refused or reconnection denied where the provisions of this chapter or the rules or regulations of the director are violated. This section includes failure to obtain all inspections, perform proper installations due to localized contamination or health hazards, or failure to pay all fees required.

B. This chapter shall not create rights to require construction of public works mains or supply facilities, to make connection thereto, or otherwise to receive water service from the City on the part of any person. The City reserves all rights to deny, limit or curtail service consistent with federal and state laws.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.160 Payment – Liens

A. All charges for the services rendered, including utility service, special jobs, and labor and materials, are payable to the city treasurer.

B. If such charges are not paid, upon delinquency the amount thereof shall become a lien against the premises receiving water service as provided in RCW 35.21.290 and RCW 35.21.300 and any other applicable laws.

C. All additional lien and enforcement rights by statute and at common law are reserved by the City of Spokane.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1602 Appointment of Agent for Multiple-dwelling Units

A. In cases of hotels, motels, mobile home parks, condominiums, apartment houses, other multiple dwelling unit arrangements or any other areas whatsoever requiring water service, the director may require multiple tenants or property owners to appoint an agent responsible and accountable to the water and hydroelectric services department for making payment for City water service when the director deems multiple billings unreliable or inconvenient.

B. Failure of an agent to discharge any duty imposed by this section shall not relieve any property owner or any other person of any legal obligation imposed herein and the City reserves all rights and remedies at contract and law.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 29

Section 13.04.170 Time of Commencement

Rates will be charged for service from the day the premises are connected to the City water supply and the water turned on.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.180 Abatement of Public Nuisance

A. Notwithstanding any other provision of this chapter, and in addition thereto, the maintenance of any condition creating or tending to create a risk to the public health and safety, specifically including the public water supply system, shall constitute a public nuisance and, in the discretion of the director, or other authorized official, shall be subject to immediate abatement by the City at the premises owner's and/or responsible person's expense and liability.

B. Abatement of any nuisance as above defined may be billable as utility service furnished to the premises wherein the condition arose or exists.

C. This section shall not limit the premises owner's or other party's rights to seek recovery against other responsible persons.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 4

Section 13.04.190 Prohibitions

See SMC 13.04.1902 through SMC 13.04.1920.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1902 Leaking Fixtures – Waste of Water

A. No water recipient or owner of premises served may permit unnecessary waste or use of water because of leaking faucets or fixtures.

B. No water recipient or owner of premises served may waste or permit the waste of water or use an amount in excess of that actually needed for domestic, irrigation or other lawful purposes.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1904 Stealing Water

No person may take water or permit water to be taken from the water supply of the City through any means unauthorized by the water and hydroelectric services department, or use or permit the use of said water without making payment for the service.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 5

Section 13.04.1906 Call-ins

No person may call in false or erroneous meter readings.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1908 Tampering

No person may:

A. open or shut any street cock or in any way tamper with or injure any meter, hydrant, valve or service pipe connecting any premises or building with the City water supply; or

B. tap or in any manner tamper with any fire line unless such person be a regular employee of the City and have authority to do so, or as otherwise provided herein.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1910 Unauthorized Keys

No unauthorized person may knowingly have and keep in his possession or under his control any curb cock key, valve key or hydrant wrench to the City water supply system, and no person may without authority make, construct, buy, sell or in any wise dispose of to any person, any curb cock key, valve key or hydrant wrench to the City water supply system.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1912 Bathing – Fishing

No person may bathe in, fish in or throw any substance into any reservoir or standpipe, or to place any foreign substance upon any grounds belonging to or under the control of the water supply system of the City.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1914 Contamination

No person may contaminate, pollute or endanger in any way, directly or indirectly, the water supply system of the City or permit others to do so. A contaminant is any substance introduced without specific authorization of the City.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1916 Duty to Report Contamination

A. Every person, upon knowledge of the facts, is required to report immediately to the director any contamination, pollution, or introduction of any unauthorized substance into the water supply system of the City.

B. This duty applies to accidental, careless, or intentional incidents regardless of the agency or means of introduction or the person or persons responsible.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 6

Section 13.04.1918 Obstructing Fire Hydrants

No person may:

A. obstruct the access to any fire hydrant by placing around, thereon, or within twenty feet thereof, any stone, brick, lumber, dirt, rubbish or other material; or

B. open or operate any fire hydrant; or

C. draw or attempt to draw water therefrom; or

D. willfully or carelessly injure the same; or

E. fill up or cover over any valve box; or

F. in any manner tamper with or injure the same.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.1920 Miscellaneous Prohibitions

Every person who, with intent to injure or defraud, shall commit a misdemeanor when that person:

A. breaks, moves, disturbs, or defaces the seal of any water meter or any other seal applied to any other device by water and hydroelectric services department employees; or

B. obstructs, alters, injures, or prevents the action of any meter or other instrument used to measure or register the quantity of water supplied to the consumer thereof; or

C. Bypassing Meter.
   1. makes or permits any connection by means of a pipe, or otherwise, with any main or pipe used for the delivery of water in such manner as to take or permit the taking of water from said main or pipe without its passage through the meter or other instrument provided for registering the amount or quantity consumed; or
   2. uses any water so obtained; or

D. makes any connection or reconnection with such main or pipe, or turn on or off, or in any manner interferes with any valve, stop cock or other appliance connected therewith; or

E. prevents by the erection of any device or construction, or by any other means, free access to any meter or other instrument for registering or measuring the amount of water consumed, or interferes with, obstructs, or prevents, by any means, the reading or inspection of such meter or instrument, by any of the officers or authorized employees of the City.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 7

Section 13.04.1921 City Retail Water Service Area

A. The City of Spokane's water utility Retail Water Service Area shall be established pursuant to state law and set forth in the City's Comprehensive Water System Plan approved by the City Council.

B. Properties located within the City's Retail Water Service Area that do not currently receive water service from the City may request connection to the City's water supply system. Water service connections shall only be granted if the property is included within the Retail Water Service Area, the request complies with the City's water service area policies, and the request meets the four thresholds of RCW 43.20.260. Water service connections, or Certificates of Water Availability, will not be granted outside the City's Retail Water Service Area unless authorized under state law based on a public health emergency.

   Certificate of Water Availability shall expire if the accompanying development permit expires or is revoked or one (1) year from the date of signature whichever is later.

C. New water service connections and Certificates of Water Availability outside the boundaries of the City's Retail Water Service Area will not be approved until the City's Comprehensive Water System Plan is amended to include the area under consideration. Amendments to the Comprehensive Water System Plan to expand the Retail Water Service Area to include new

customers outside of the boundaries of the Retail Water Service Area shall be considered cumulatively on an annual basis or more frequently by a vote of City Council. Requests for such amendments must be submitted prior to March 31st in order to be considered in the annual amendment cycle.

Date Passed: Monday, February 9, 2015

Effective Date: Sunday, March 15, 2015

ORD C35223 Section 1

Article I. General Provisions

Section 13.04.1922 Outside the City Water Service

A. City water utility service is initially intended to provide for the needs of the residents of the City of Spokane. The City reserves the right to decline to serve any area outside the City, or to condition such service upon entry into a written contract, upon such additional terms and conditions as may be determined at the time service is requested or thereafter, as municipal needs may require, considering additional expenses imposed or burdens created by outside the City service.

B. Pursuant to authority granted by RCW 35.92.020, the director is authorized to enter into agreements for and on behalf of the City with owners of property beyond the City limits permitting connection of such property to the City's water utility service upon the terms and conditions and subject to the payments prescribed in this Article when, in his judgment, such connection will not overload or imperil the City's water system, including domestic and fireflow pressure, supply resources and municipal water rights, all as may be needed by current or future city customer needs, and as further subject to any other applicable laws or restrictions.

C. In the event all aspects of service are not specifically addressed by contract or otherwise specifically provided any other portions of this chapter or chapter 13.01 SMC may be applied by the director, where deemed necessary, as terms and conditions of service to outside the City customers.

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Article II. Rates

Section 13.04.2002 City Residence Rates

A. Single-family Residence – Basic Charge.

1. Within the City limits, the basic monthly service charge for each single-family residence where the water is being used or reflected as on in the records of the City of Spokane utilities billings office shall be:

a.

2015	2016	2017
$14.92	$15.35	$15.80

b. Unless otherwise provided, for two or more single-family residences on one meter, the above service charge shall apply for each residence.

2. For purposes of this chapter, a "single-family residence" or "equivalent residential unit" designation applies to each self-contained, stand-alone living unit with at least one:

a. kitchen or cooking area room, which must include a sink;

b. bathroom, which must include a toilet, bathtub, and sink or a toilet, shower, and sink.

c. a separate entrance that does not require residents to co-mingle.

B. Consumption Charge.
The following consumption charge rate schedule is adopted to encourage water conservation and promote environmental quality. Within the City limits, for each one hundred cubic feet, or major fraction (approximately seven hundred fifty gallons) of water used, there will be the following consumption charges:

1. Monthly Water Usage / Charge Rate Per Hundred Cubic Feet.

a. Zero cubic feet to six hundred cubic feet per month:

2015	2016	2017
$0.2849	$0.2932	$0.3017

b. Greater than six hundred cubic feet to one thousand cubic feet per month:

2015	2016	2017
$0.6028	$0.6203	$0.6383

c. Greater than one thousand cubic feet to four thousand five hundred cubic feet per month:

2015	2016	2017
$0.8110	$0.8345	$0.8587

d. Greater than four thousand five hundred cubic feet per month:

2015	2016	2017
$1.0411	$1.0713	$1.1024

C. No vacancy allowance will be made on any house in a group served by one meter unless all houses served by one meter are vacant and the water is shut off at the City valve by the water and hydroelectric services department upon proper request in writing.

D. Family daycare homes shall be billed at the single-family rate. For purposes of this provision, "family daycare homes" shall mean a daycare facility:

1. furnishing care, supervision, and guidance for persons twelve years of age or younger for more than four but less than twenty-four hours in a day;

2. licensed as such by the state department of social and health services; and;

3. which regularly provides such care during part of a twenty-four hour day for no more than twelve children in the dwelling of the person(s) in charge.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 2

Section 13.04.2004 City Commercial and Industrial Rates

A. These rates apply to commercial and industrial customers and to all other customer premises not specifically identified on City utilities billing records as single-family residences or PUDs. The rates are for service inside the city limits of the City of Spokane.

1. Size of Service / Meter Charge Per Month.

a. One-inch or less:

2015	2016	2017
$15.82	$16.28	$16.75

b. One-and-one-half inch:

2015	2016	2017
$25.81	$26.56	$27.33

c. Two-inch:

2015	2016	2017
$36.57	$37.63	$38.72

d. Three-inch:

2015	2016	2017
$58.58	$60.28	$62.03

e. Four-inch:

2015	2016	2017
$80.68	$83.02	$85.43

f. Six-inch:

2015	2016	2017

$114.12	$117.43	$120.84

g. Eight-inch:

2015	2016	2017
$233.83	$240.61	$247.59

h. Ten-inch:

2015	2016	2017
$341.47	$351.37	$361.56

B. Consumption.
The following rate schedule is adopted to encourage water conservation and promote environmental quality. For each one hundred cubic feet, or major fraction (approximately seven hundred fifty gallons) of water used, there will be the following monthly consumption charges:

1. Monthly Water Use / Charge Rate Per Hundred Cubic Feet.

a. Zero cubic feet to six hundred cubic feet per month:

2015	2016	2017
$0.2955	$0.3041	$0.3129

for all use.

b. Greater than six hundred cubic feet up to one thousand cubic feet per month:

2015	2016	2017
$0.6134	$0.6312	$0.6495

for all use zero cubic feet to one thousand cubic feet.

c. Greater than one thousand cubic feet per month:

2015	2016	2017
$0.8873	$0.9130	$0.9395

for all use zero cubic feet to the amount used.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 3

Section 13.04.2005 City Planned Unit Developments (PUD)

A. Basic Charge.
In general, a planned unit development (PUD) designation is one approved in accord with applicable PUD development standards and served by a master water meter. However, if a dwelling unit would otherwise be included within a PUD designation but has its own individual City water meter, it will be billed as a single family residence under SMC 13.04.2002 or other applicable rate section. Questions of applicability are determined by the director. [Cross Reference: SMC 17A.020.160(T)]

B. Consumption.
For billing water consumption, the PUD basic charge will include seventy units of service. Consumption beyond seventy units of service will be assessed a per unit rate of:

2015	2016	2017
$0.0658	$0.0677	$0.0696

C. Size of Service / Meter Charge Per Month.

1. One-inch or less:

2015	2016	2017
$15.82	$16.28	$16.75

2. One-and-one-half inch:

2015	2016	2017
$25.81	$26.56	$27.33

3. Two-inch:

2015	2016	2017
$36.57	$37.63	$38.72

4. Three-inch:

2015	2016	2017
$58.58	$60.28	$62.03

5. Four-inch:

2015	2016	2017
$80.68	$83.02	$85.43

6. Six-inch:

2015	2016	2017
$114.12	$117.43	$120.84

7. Eight-inch:

2015	2016	2017
$233.83	$240.61	$247.59

8. Ten-inch:

2015	2016	2017
$341.47	$351.37	$361.56

D. Water-Wastewater Integrated Capital.

Rates for water-wastewater integrated capital are established and provided for in SMC 13.035.500.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 4

Section 13.04.2006 Small Meter – Multi-meter

A. When meters smaller than the service are used, the size of the meter shall control the service charge. The meter shall not be less than one standard pipe size smaller.

B. Except where otherwise specified, two or more accounts on multiple metering under one ownership in the same complex shall take the commercial rate plus service charge of each meter.

Date Passed: Monday, October 15, 2012

Effective Date: Tuesday, January 1, 2013

ORD C34923 Section 4

Section 13.04.2008 Construction Rates

A. Rates for water used during construction will be charged per month, or fractional part thereof, in accord with the following rates, until the meter is set.

1. Worksite will be inspected at least every ninety days to determine meter status.

2. The meter installation will be made at the earliest possible date.

3. Residential meters installed prior to occupancy construction rates will apply until certificate of occupancy is granted.

B. Size of Service / Meter Charge Per Month.

1. One-inch or less:

2015	2016	2017
$15.82	$16.28	$16.75

2. One-and-one-half inch:

2015	2016	2017
$25.81	$26.56	$27.33

3. Two-inch:

2015	2016	2017
$36.57	$37.63	$38.72

4. Three-inch:

2015	2016	2017
$58.58	$60.28	$62.03

5. Four-inch:

2015	2016	2017
$80.68	$83.02	$85.43

6. Six-inch:

2015	2016	2017
$114.12	$117.43	$120.84

7. Eight-inch:

2015	2016	2017
$233.83	$240.61	$247.59

8. Ten-inch:

2015	2016	2017
$341.47	$351.37	$361.56

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 5

Article II. Rates

Section 13.04.2010 Water for Private Fire Protection

A. For inside the City of Spokane metered and unmetered connection on the City's water mains supplying hydrants, standpipes, or automatic sprinklers for private fire protection to the premises, charges will be made in accord with the following rates:

1. Size of Connection / Service Charge Per Month.

a. Three-inch or smaller:

2015	2016	2017
$16.75	$17.24	$17.74

b. Four-inch:

2015	2016	2017
$23.63	$24.32	$25.03

c. Six-inch:

2015	2016	2017
$32.86	$33.81	$34.79

d. Eight-inch:

2015	2016	2017
$39.75	$40.90	$42.09

e. Ten-inch:

2015	2016	2017
$47.54	$48.92	$50.34

B. For outside the City of Spokane metered and unmetered connection on the City's water mains supplying hydrants, standpipes, or automatic sprinklers for private fire protection to the premises, charges will be made in accord with the following rates:

1. Size of Connection / Service Charge per Month.

a. Three-inch or smaller:

2015	2016	2017
$25.13	$25.86	$26.61

b. Four-inch:

2015	2016	2017
$35.45	$36.48	$37.54

c. Six-inch:

2015	2016	2017
$49.29	$50.72	$52.19

d. Eight-inch:

2015	2016	2017
$59.63	$61.35	$63.13

e. Ten-inch:

2015	2016	2017
$71.31	$73.38	$75.51

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 6

Section 13.04.2012 Outside City Residence Rates

A. Basic Charge: Single-family Residence.

1. Outside the City, for each single-family residence, the monthly service charge where the water is being used or reflected as on in the records of the City of Spokane utilities billings office shall be:

2015	2016	2017
$22.38	$23.03	$23.70

2. For two or more single-family residences on one meter the above service charge shall apply for each residence. "Single-family residence" has the meaning in SMC 13.04.2002 (A)(2).

B. Consumption.
The following rate schedule is adopted to encourage water conservation and promote environmental quality. Outside the City limits, for each one hundred cubic feet or major fraction (approximately seven hundred fifty gallons) of water used, there will be the following consumption charges:

1. Monthly Water Use / Charge Rate Per Hundred Cubic Feet.

a. Zero cubic feet to six hundred cubic feet per month:

2015	2016	2017
$0.4274	$0.4398	$0.4525

b. Greater than six hundred cubic feet up to one thousand cubic feet per month:

2015	2016	2017
$0.9042	$0.9304	$0.9574

c. Greater than one thousand cubic feet to four thousand five hundred cubic feet per month:

2015	2016	2017
$1.2164	$1.2517	$1.2880

d. Greater than four thousand five hundred cubic feet per month:

2015	2016	2017
$1.5617	$1.6070	$1.6536

C. No vacancy allowance will be made on any house in a group served by one meter unless all houses served by one meter are vacant and the water is shut off at the City valve by the water and hydroelectric services department upon proper request in writing.

D. Family daycare homes shall be billed at the single-family rate. For purposes of this provision, "family daycare homes" shall mean a day care facility:

1. furnishing care, supervision, and guidance for persons twelve years of age or younger for more than four but less than twenty-four hours in a day;

2. licensed as such by the state department of social and health services; and

3. which regularly provides such care during part of a twenty-four hour day for no more than twelve children in the dwelling of the person(s) in charge.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 7

Section 13.04.2014 Outside City Rate to Other Purveyors

The charge to other purveyors for water use outside the City's service area shall be at the following rate per one hundred cubic feet of water used plus outside City commercial monthly service charge, unless modified by separate agreement:

2015	2016	2017
$1.1069	$1.1390	$1.1720

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 8

Section 13.04.2015 Outside City Planned Unit Developments (PUD)

A. Basic Charge.
In general, a planned unit development (PUD) designation is one approved in accord with applicable PUD development standards and served by a master water meter. However, if a dwelling unit would otherwise be included within a PUD designation but has its own individual city water meter, it will be billed as a single-family residence under SMC 13.04.2012 or other applicable rate section. Questions of applicability are determined by the director. [Cross Reference: SMC 17A.020.160(T)]

B. Consumption.
For billing water consumption, the outside city PUD basic charge will include seventy units of service. Consumption beyond seventy units of service will be assessed a rate of

2015	2016	2017
$0.987	$0.1015	$0.1045

per one hundred cubic feet used per month.

C. Size of Service / Meter Charge Per Month.

1. One-inch or less:

2015	2016	2017
$30.65	$31.53	$32.44

2. One-and-one-half inch:

2015	2016	2017
$45.63	$46.95	$48.31

3. Two-inch:

2015	2016	2017
$61.77	$63.56	$65.40

4. Three-inch:

2015	2016	2017
$94.79	$97.53	$100.36

5. Four-inch:

2015	2016	2017
$127.94	$131.64	$135.46

6. Six-inch:

2015	2016	2017
$178.10	$183.26	$188.57

7. Eight-inch:

2015	2016	2017
$357.66	$368.03	$378.80

1. Ten-inch:

2015	2016	2017
$519.12	$534.18	$549.67

D. Water-Wastewater Integrated Capital.
Rates for water-wastewater integrated capital are established and provided for in SMC 13.035.500.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 9

Section 13.04.2016 Outside City Commercial and Industrial Rates

A. These rates apply to commercial and industrial customers and to all other customer premises not specifically identified as single-family residences or PUDs. The rates are for service outside the city limits of the City of Spokane.

B. Size of Service / Service Charge Per Month.

1. One-inch or less:

2015	2016	2017
$30.65	$31.53	$32.44

2. One-and-one-half-inch:

2015	2016	2017
$45.63	$46.95	$48.31

3. Two-inch:

2015	2016	2017
$61.77	$63.56	$65.40

4. Three-inch:

2015	2016	2017
$94.79	$97.53	$100.36

5. Four-inch:

2015	2016	2017
$127.94	$131.64	$135.46

6. Six-inch:

2015	2016	2017
$178.10	$183.26	$188.57

7. Eight-inch:

2015	2016	2017
$357.66	$368.03	$378.70

8. Ten-inch:

2015	2016	2017
$519.12	$534.18	$549.67

C. The following rate schedule is adopted to encourage water conservation and promote environmental quality. Outside the City limits, for each one hundred cubic feet, or major fraction (approximately seven hundred fifty gallons) of water used, there will be the following consumption charges:

1. Monthly Water Use / Charge Rate Per Hundred Cubic Feet.

a. Zero cubic feet to six hundred cubic feet per month:

2015	2016	2017
$0.4433	$0.4562	$0.4694

for all use.

b. Greater than six hundred cubic feet up to one thousand cubic feet per month:

2015	2016	2017
$0.9201	$0.9468	$0.9743

for all use zero cubic feet to one thousand cubic feet.

c. Greater than one thousand cubic feet per month:

2015	2016	2017
$1.3310	$1.3695	$1.4092

for all use zero cubic feet to the amount used.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 10

Section 13.04.2017 Golf Course Irrigation Conservation Rate for Potable Water

A. Findings.
   1. Golf courses served by the water and hydroelectric services department are high consumers of potable City water for irrigation. There is a significant opportunity for water conservation in this area through measures that include the use of stored stormwater runoff, reclaimed sanitary wastewater, and more efficient irrigation systems.
   2. A rate rule encouraging water conservation is an appropriate utility ratemaking consideration under RCW 35.92.010. Golf courses applying conservation measures as approved under subsections (C), (D), and (E) of this section hereafter should be considered a separate user classification. The director may require a golf course to receive irrigation service under a separate account.

B. Application.
The provisions of this section pertaining to the use of potable City water are subject to the following conditions.
   1. They apply only to:
      a. golf course irrigation and not to any other customer class or usage;
      b. that portion of the water bill based on water consumption and not to any other charges;
      c. direct water and hydroelectric services department retail customer golf course accounts, whether inside or outside the City.
   2. They do not apply to any accrued billings or usage prior to the effective date of this section. The director is authorized to adjust the commencement of billings under this section for a customer billing cycle as is most administratively convenient.
      a. The customer must apply in writing for the basic rate discount in subsection (C) and/or the supplemental rate credit in subsection (D) of this section.
      b. The application must be approved by the director in writing.
      c. No claims for refund or credits for any billings prior to such application and approval may be recognized.
   3. The basic rate discount in subsection (C) of this section is limited to customers who reduce their irrigation consumption to less than forty million gallons per year through the implementation of water and hydroelectric services department approved water conservation measures. It does not apply to any water irrigation consumption savings for usages above forty million gallons per year.
   4. If customer circumstances under which approval was granted do not continue to apply in full for any reason, the customer must immediately notify the water and hydroelectric services department in writing.
      a. In addition, the rates for potable water will be adjusted by the director from the time of change of circumstances, in proportion to the effect of the change as determined by the director.
      b. In calculating any adjustments due the City, if any, the director may use information from the customer, or in absence of information being submitted, the director is authorized to calculate amounts due based upon any information available to the director.
   5. Golf course irrigation conservation rates will be reviewed annually for qualification or as ordered by the director.

C. Basic Rate Discount.

1. The basic rate discount under this subsection applied for the current calendar year shall be based on the previous year's water use and shall be calculated as a fraction of the commercial water rate that otherwise would be charged to the golf course for its irrigation use consumption.
    a. The numerator of this fraction is the gallons usage for the previous calendar year, as recognized by the director as a result of implementation of conservation programs approved by the water and hydroelectric services department.
    b. The denominator is forty million gallons.
2. The written approval of the director under subsection (B)(2) of this section may include a guarantee of a minimum time the basic rate discount will continue consistent with this section, but may not exceed such time as:
    a. reclaimed wastewater service under subsection (E) of this section becomes available to the customer; or
    b. there has been a change of conditions;
    c. either item to be determined by the director, in the exercise of reasonable business judgment. In addition, the maximum time may not exceed ten years.

D. Supplemental Rate Credit.
Where a golf course customer adds potable City water to ponds used for golf course irrigation, there are significant evaporation losses of potable City water. An additional rate credit not to exceed twenty cents per unit is allowed if the golf course customer implements new irrigation system improvements that eliminate existing evaporation of potable City water from irrigation ponds.
    1. The total supplemental credit granted may not exceed the cost of improvements installed by the golf course customer to prevent evaporation loss.
    2. The credit may only be applied one time per golf course for one twelve-consecutive-month period, which may overlap a calendar year.

E. Reclaimed Sanitary Wastewater.
    1. Reclaimed sanitary wastewater is water reclaimed from the treatment of sanitary sewage that can be supplied for golf course irrigation. Such water may not meet potable drinking water standards, but is safe and reliable for golf course irrigation. The City water utility does not supply this service, but it may become available from the City wastewater management department or other water reclamation utility service providers.
    2. Because the use of reclaimed sanitary wastewater provides the greatest savings in potable water use for golf course irrigation, whenever the director determines that such service is available to a golf course customer, considering the factors set forth hereafter, he may order disconnection of an account from potable water service provided by the water and hydroelectric services department. The decision shall be in writing and grant a reasonable time frame for conversion, which shall be at least twelve months. The time may be extended by the director, in the exercise of sound discretion.
    3. Director decisions under this subsection shall be guided by the following factors:
        a. Reliable reclaimed sanitary wastewater service is available to the customer under reasonable conditions and at a reasonable cost.
        b. Water conservation requirements and mandates applicable by law to the City water utility.
        c. The individual customer cost of conversion.
        d. Fairness to the customer and to other water service customers.
    4. The director may request a customer objecting to disconnection under this section to submit information for his consideration. The decision may be appealed to the City hearing examiner within thirty days.
        a. The hearing shall be within thirty days of the appeal.
        b. The decision may be appealed to a court of competent jurisdiction within thirty

days, based on the record, reversible because of violation of law or arbitrary and capricious.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 15

Section 13.04.2018 Major Fraction

All charges assessed based upon stated consumption units (e.g., per hundred cubic feet) shall be billed based upon the major unit fraction (e.g., fifty cubic feet or more billed as the next one hundred cubic feet).

Date Passed: Monday, October 15, 2007

Effective Date: Wednesday, November 28, 2007

Recodification ORD C34122 Section 1

Section 13.04.2019 Water-Wastewater Integrated Capital

Rates for water-wastewater integrated capital are established and provided for in SMC 13.035.500.

Date Passed: Monday, November 18, 2013

Effective Date: Wednesday, January 1, 2014

ORD C35057 Section 10

Section 13.04.2020 REPEALED (Remote Reading Equipment Installation)

Repealed by ORD C34374.

Date Passed: Monday, January 5, 2009

Effective Date: Wednesday, February 11, 2009

ORD C34374 Section 19

Section 13.04.2022 Turning Water On or Off – Other Charges

A. The fee for valve replacement service for customer-owned meter valves two inches or less is one hundred fifty-five dollars ($155.00).

B. The fees for frozen meter replacement are as follows:

1. Size of Service / Frozen Meter Replacement Charge.

a. Five-eighths inch: Two hundred forty dollars ($240.00).

b. Three-quarter inch: Two hundred ninety-five dollars ($295.00).

c. One-inch: Three hundred fifty-five dollars ($355.00).

d. One-and-one-half inch: Four hundred fifty dollars ($450.00).

e. Two-inch: Four hundred ninety dollars ($490.00).

C. The director assesses a reasonable charge for items not otherwise specifically encompassed herein.

D. The fees in this section shall be adjusted as provided in SMC 13.04.2030.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 11

Section 13.04.2024 Hydrant Fees

Hydrant fees are as follows:

A. Hydrant Permit Fees.

1. Hydrant permit daily: Fifty dollars ($50.00).

2. Hydrant permit monthly: Two hundred dollars ($200.00).

3. Hydrant permit yearly: Four hundred fifty dollars ($450.00).

4. Hydrant permit where meter is needed to measure water use: Six hundred dollars ($600.00) meter deposit.

5. Valve rental fee daily: Thirty-five dollars ($35.00).

6. Valve rental fee monthly: Seventy-five dollars ($75.00).

B. Hydrant Flow Tests: Two hundred eighty-five dollars ($285.00).

C. Construction Estimates: Three hundred seventy-five dollars ($375.00).

D. Other Charges.

1. Three hundred seventy-five dollars ($375.00) for each hydrant disk that is not returned at the time the hydrant permit expires.

2. Fifty dollar ($50.00) replacement charge for any lost or stolen hydrant disk.

3. Seventy-five dollars ($75.00) for any hydrant wrench not returned upon hydrant permit expiration.

4. Hydrant gate valves may be rented from the water and hydroelectric services department for a maximum of thirty calendar days.

a. Daily rental fee is Thirty-five dollars ($35.00).

b. Monthly rental fee is Seventy-five dollars ($75.00).

5. Two hundred fifty dollar ($250.00) refundable deposit is required for all valve rentals. Failure to return the hydrant valve or failure to return it within the thirty-day time frame will result in forfeiture of the deposit.

6. Three hundred seventy-five dollar ($375.00) fine for anyone using a hydrant, other than for fire protection, without purchasing a hydrant permit and without using the hydrant disk.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 12

Section 13.04.2025 Tap and Meter Requirements and Fees

A. Outside City taps must sign a water annexation covenant approved by the City legal department.

B. Local improvement district and future main extension waivers are required on all approved long services.

C. Taps one inch and smaller: Pressure reducing valve (PRV) is required before meter if pressure is greater than eighty pounds.

D. Taps one-and-one-half inch and larger: Pressure reducing valve (PRV) is required after meter if pressure is greater than eighty pounds.

E. Remote reader charges are included in meter fees.

F. City taps that need to be installed at a time other than normal water department business hours must pay an additional seven hundred fifty dollars ($750.00).

G. Duplexes must have a minimum of one-inch tap and one-inch meter.

H. Triplexes must have a minimum of two-inch tap and either a one-and-one-halfinch or two-inch meter.

I. Any taps two inches and smaller, installed on a main eighteen inches or larger must pay an additional two hundred dollars ($200.00) for a tapping saddle.

J. Taps four inches and larger installed by private contractors during a main construction require an inspection fee of one hundred fifty dollars ($150.00).

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 13

Section 13.04.2026 Small Taps and Meters – Additional

A. Tap Fees: [Reserved].

B. Street:

1. One-inch tap – All: Nine hundred fifty dollars ($950.00).

2. Two-inch tap – All: One thousand five dollars ($1,005.00).

C. Meter Fees.

1. All new One-inch and Three-quarter inch residential meters will be installed in a meter box within three feet of property line or in a dedicated utility easement. The meter and box will be sold as one unit.

2. Three-quarter inch – Domestic/Meter and Box: One thousand three hundred seventy-five dollars ($1,375.00).

3. Three-quarter inch – Meter: Six hundred fifty dollars ($650.00).

4. One-inch – Domestic/Meter and Box: One thousand four hundred thirty-five dollars ($1,435.00).

5. One-inch – Meter: Seven hundred fifty-five dollars ($755.00).

6. One-and-one-half inch – Domestic: One thousand four hundred sixty dollars ($1,460.00).

7. One-and-one-half inch – Irrigation: One thousand four hundred seventy dollars ($1,470.00).

8. Two-inch – Domestic: One thousand five hundred sixty dollars ($1,560.00).

9. Two-inch – Irrigation: One thousand six hundred thirty-five dollars ($1,635.00).

10. Two-inch – Fire, with DCVA: One thousand eight hundred ninety-five dollars ($1,895.00).

11. Two-inch – Fire, no DCVA: One thousand three hundred eighty dollars ($1,380.00).

12. Twenty-four inch concrete box installation – No excavation: One thousand one hundred sixty-five dollars ($1,165.00).

D. Prices do not include the forty dollars ($40.00) processing fee for staff costs.

E. If a utility offset is needed, the fee will be one thousand five hundred thirty dollars ($1,530.00).

F. Work performed outside of normal business hours will be charged an additional seven hundred fifty dollars ($750.00).

G. The fees in this section shall be adjusted as provided in SMC 13.04.2030.

H. Permit shall be valid for twelve months after which it will expire and a new permit will be

required.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 14

Section 13.04.2028 Large Taps and Meters

The following fees apply to large taps and meters and are firm prices.

A. Tap Fees:

1. Four-inch tap: Two thousand seven hundred dollars ($2,700.00).
2. Six-inch tap: Two thousand eight hundred forty-five dollars ($2,845.00).
3. Eight-inch tap: Three thousand five hundred ten dollars ($3,510.00).
4. Ten-inch tap: Four thousand three hundred eighty-five dollars ($4,385.00).
5. Twelve-inch tap: Four thousand six hundred twenty dollars ($4,620.00).

B. Meter Fees:

1. Three-inch domestic – With DCVA (TruFlow): Five thousand six hundred ninety dollars ($5,690.00).
2. Three-inch domestic – No DCVA (TruFlow): Five thousand seventy dollars ($5,070.00).
3. Three-inch irrigation – With DCVA (Turbine): Four thousand one hundred sixty dollars ($4,160.00).
4. Three-inch irrigation – No DCVA (Turbine): Three thousand one hundred ten dollars ($3,110.00).
5. Four-inch domestic – With DCVA (TruFlow): Six thousand eight hundred seventy-five dollars ($6,875.00).
6. Four-inch domestic – No DCVA (TruFlow): Five thousand nine hundred sixty-five dollars ($5,965.00).
7. Four-inch fire – With DCDVA: Two thousand seven hundred five dollars ($2,705.00).
8. Four-inch fire – No DCDVA (vault): One thousand three hundred seventy-five dollars ($1,375.00).
9. Four-inch fire – No DCDVA (building – bypass only): Six hundred ninety dollars ($690.00).
10. Four-inch fire/dom – With DCVA (Protectus): Nine thousand three hundred sixty dollars ($9,360.00).

11. Four-inch fire/dom – No DCVA (Protectus): Eight thousand five dollars ($8,005.00).

12. Four-inch irrigation – With DCVA (Turbine): Five thousand one hundred seventy-five dollars ($5,175.00).

13. Four-inch irrigation – No DCVA (Turbine): Three thousand eight hundred twenty dollars ($3,820.00).

14. Six-inch domestic – With DCVA (TruFlow): Ten thousand six hundred forty-five dollars ($10,645.00).

15. Six-inch domestic – No DCVA (TruFlow): Nine thousand three hundred fifty dollars ($9,350.00).

16. Six-inch fire – With DCDVA: Three thousand three hundred sixty dollars ($3,360.00).

17. Six-inch fire – No DCDVA (vault): One thousand four hundred ninety-five dollars ($1,495.00).

18. Six-inch fire – No DCDVA (building – bypass only): Six hundred ninety dollars ($690.00).

19. Six-inch fire/dom – With DCVA (Protectus): Thirteen thousand eight hundred forty dollars ($13,840.00).

20. Six-inch fire/dom – No DCVA (Protectus): Eleven thousand nine hundred twenty-five dollars ($11,925.00).

21. Six-inch irrigation – With DCVA (Turbine): Nine thousand one hundred five dollars ($9,105.00).

22. Six-inch irrigation – No DCVA (Turbine): Seven thousand one hundred ninety dollars ($7,190.00).

23. Eight-inch fire – With DCDVA: Five thousand eight hundred twenty dollars ($5,820.00).

24. Eight-inch fire – No DCDVA (vault): One thousand eight hundred forty-five dollars ($1,845.00).

25. Eight-inch fire – No DCDVA (building – bypass only): Six hundred ninety dollars ($690.00).

26. Eight-inch fire/dom – With DCVA (Protectus): Nineteen thousand three hundred forty dollars ($19,340.00).

27. Eight-inch fire/dom – No DCVA (Protectus): Fifteen thousand nine hundred five dollars ($15,905.00).

28. Ten-inch fire – With DCDVA: Six thousand one hundred ninety–five dollars ($6,195.00).

29. Ten-inch fire – No DCDVA (vault): One thousand nine hundred dollars ($1,900.00).

30. Ten-inch fire – No DCDVA (building – bypass only): Six hundred ninety dollars ($690.00).

31. Ten-inch fire/dom – With DCVA (Protectus): Estimate required.

32. Ten-inch fire/dom – No DCVA: Estimate required.

C. Prices do not include the forty dollars ($40.00) processing fee for staff costs.

D. If a utility offset is needed, the fee will be one thousand five hundred thirty dollars ($1,530.00).

E. Work performed outside of normal business hours will be charged an additional seven hundred fifty dollars ($750.00).

F. The fees in this section shall be adjusted as provided in SMC 13.04.2030.

G. Permit shall be valid for twelve months after which it will expire and a new permit will be required.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 15

Section 13.04.2030 Periodic Fee Adjustment

The fees in SMC 13.04.0608, SMC 13.04.2022, SMC 13.04.2026, and SMC 13.04.2028 shall be subject to adjustment as follows:

Fees will be adjusted annually to reflect actual increases in labor, equipment, and materials as calculated from August of the previous year to August of the current year. Increases will be rounded up to the nearest five dollars and take effect January 1st of the following year.

Date Passed: Monday, November 24, 2014

Effective Date: Friday, January 2, 2015

ORD C35183 Section 16

Article III. Water General Facilities Charge

Section 13.04.2040 Water General Facilities Charge General Provision – Long Connection

A. There is hereby imposed a water general facilities charge (GFC). The GFC is a utility rate surcharge assessed at the time of connection or service upgrade. Its purpose is to defray costs created by new system demand, such as costs of providing increased system capacity for new or increased demand and other capital costs. Nothing in the GFC program affects local improvement districts.

B. The GFC is collected at the time of connection, application for a building permit or other time as deemed most administratively convenient by the director and shall be considered a contribution to capital and not a cost of providing service.

1. The amount of the GFC for water utility connections will be based on water tap size for water service to the premises.
2. In case of a planned unit development or other circumstance where a new direct customer connection is not made to the water system, but where there is the effect of a new dwelling unit or customer demand increase, as where new dwelling units are added to a master meter account, a GFC shall be assessed in like manner as if the demand upgrade were through a direct new customer connection.

C. Long Connection Option.

1. Where a customer near an area with existing utility service desires to connect to such service because lines have not yet been extended for direct service to the customer's area (a "long connection"), the director may allow a long connection to existing facilities. The decision to allow a long connection is discretionary, considering the needs of the existing customers, the limits of the current system or any other appropriate factors.
2. As a condition of a long connection, the customer must satisfy any conditions imposed by the director, including obtaining any necessary easements, payment of all costs of additional installations and payment of a non-refundable charge determined by the director based on engineering principles estimated to be what the customer would be required to pay if connection were deferred until direct service became available. Such charge may be accepted as a nonrefundable prepayment for the size of the connection furnished. This option may also be applied to upgrades.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 42

Section 13.04.2042 Water General Facilities Charge – Schedule of Charges

A. Findings – General Facilities Charge (GFC).
The city council finds:

1. under the previous system providing for collection of latecomer connection charges under chapter 35.91 RCW or special connection changes under RCW 35.92.025, customers happening to connect in certain areas must pay extra costs, although the primary benefit of access to the public water system is the same to a new customer, whether the customer is within or outside an area subject to such special connection charges. Additionally, upgraded customers moving from a smaller to a larger connection capacity gain additional system benefits, but may otherwise escape paying a special connection or latecomer charge, once having connected and paid an initial connection charge based on a smaller size connection.
2. undue administrative burdens and costs are created in administering various connection and latecomer charges, each of which may have differing trigger dates and which may also have differing limits in terms of allowable interest accruing on such payments as well as the period or periods such charges may be collected.
3. there is a system-wide benefit, served by a uniform, adjustable GFC, in encouraging system growth through infilling certain unserved areas and considering that expanding the overall customer ratebase and customer densities will reduce fixed costs which must otherwise be spread over all classes of ratepayers.
4. it is in the public interest to provide for a more uniform rate structure and to replace individual area connection or latecomer fees with a single GFC rate, except only as may be distinguished by the size of connection or connection upgrade, as provided hereafter.
5. it is further in the public interest that those adding additional costs or burdens to the City water system by creating need and demand for new system growth and infill needs in the City water system should pay a GFC therefore. Such customers should be treated and classified in common with customers formerly also subject to a special connection or latecomer connection charge, so that only one uniform GFC should be paid by all customers with new or upgraded utility service.

B. Findings; Empowerment Zone.
The city council finds:

1. Washington State's growth management laws, including RCW 36.70A.110, encourage

development first within existing urban areas before moving to other areas.

2. the City of Spokane's comprehensive plan and state growth management policies encourage the "infilling" of developed areas that still have some growth capacity. A consequence of not doing this is sprawling development out in long corridors or scattered areas, making the extension of needed urban services more expensive and less efficient for the public.
3. costs of encouraging development in more densely populated areas already served by existing utility lines is lower than extending new lines to more remote undeveloped areas. Existing utility lines are installed and designed to serve the full growth potential of an area, so it is an unwise use of resources to continue extending lines where some growth can still occur in developed areas.
4. the empowerment zone established herein is in the category of a more densely populated area rather than a more remote, undeveloped area. The savings that City sewer and water utilities realize by encouraging development in the empowerment zone, through not assessing a GFC to customers located there, is roughly proportional to the loss of the GFC revenues.
5. properties within the empowerment zone are identified as generally of lower value investment than other areas served. The opportunity for new development in the empowerment zone to recover acceptable investment value is of a more marginal, doubtful and unlikely character than customers connecting in areas outside the empowerment zone. Adding a GFC charge to the class of customers in the empowerment zone would make it significantly more difficult for further development or new connections in such areas. This result is contrary to public policy, growth management laws, and responsible utility system management for the overall benefit of the ratepayers. Encouraging development in the empowerment zone will benefit the City sewer and water utilities by new customer revenues, which would otherwise be lost if a GFC were assessed because such development would be less likely to occur.
6. the empowerment zone as an area substantially deficient in development and heavily populated with low income and fixed income, poor or elderly customers.
7. there is a reasonable basis to classify customers seeking connections to premises in an empowerment zone not to be subject to GFC charge.

C. Empowerment Zone boundaries are:

All that property located within the following described area:

Census tracts 1, 2, 4, 14, 15, 16, 20, 23, 24, 25, 26, 27, 28, 30, 31, 33, 34, 35, 36, 40 according to the U.S. Census Bureau 1990 TIGER census data. Situate in the City of Spokane, Spokane County, Washington.

The director of public works is authorized to adjust this boundary consistent with the findings and purpose of this section. A copy of the empowerment zone map shall be maintained on file with the director of public works for public inspection.

D. Service inside empowerment zone: No charge.

E. Service Outside Empowerment Zone.

1. For new service or new upgrades of existing service to the City water system, a GFC is assessed as provided hereafter. The charge will be based upon the tap size required for the facility. If the size of a previous connection is upgraded to a larger connection, only the difference between the charges for the size of a connection, as shown at the time of connection, is charged.

TYPE	WATER TAP SIZE	GFC
House*	NA	$1,232

Duplex	NA	$2,464
Multi-family**	2-inch or less	$3,485
Multi-family	3-inch	$6,402
Multi-family	4-inch	$9,857
Multi-family	6-inch	$18,108
Multi-family	8-inch	$27,878
Multi-family	10-inch	$38,961
Multi-family	12-inch	$51,216
Commercial	1-inch or less	$1,232
Commercial	2-inch	$3,485
Commercial	3-inch	$6,402
Commercial	4-inch	$9,857
Commercial	6-inch	$18,108
Commercial	8-inch	$27,878
Commercial	10-inch	$38,961
Commercial	12-inch	$51,216
* In a PUD, each house is charged individually the rate listed for "house." ** Multi-family represents three or more living units.		

2. The water GFC is intended to supersede all prior special connection capital charges assessed to defray an equitable share of the cost of the City water system, except for such charges the City may be bound to continue pursuant to chapter 35.91 RCW (developer latecomer charges), or which the City remains legally bound to collect.
    a. Except for such charges, it is the intent of the city council to supersede all previous special connection capital charges of any form or nature, replacing all such charges with a single water GFC for any new connections or connection or service demand upgrades to the City water system at any location served by said system.
    b. The GFC is to be used to finance new system growth and infill needs created by new or upgraded customers. In the case of latecomer contracts entered into under chapter 35.91 RCW and the like, the GFC herein supersedes the amount to be collected from a party seeking connection.
    c. However, any GFC collected does not increase or decrease amounts the City may previously have contracted to reimburse to a third party at the time of allowing a connection, said parties to be paid by the City as provided under the preexisting contract.
    d. Hereafter, consistent with this ordinance, the director may make provision for

reimbursement of third parties for facility construction costs, but hereafter, the amount of reimbursement per connection shall not exceed the GFC amount collected, which may change from year to year as the city council may adjust the GFC.

3. Adjustments.
The charge for a water connection can be adjusted upon a showing of prior payment of similar charges, or for other sound considerations of fairness, as determined by the director.
    a. To be eligible for such adjustment, a party required to pay a water GFC must submit a written application to the director, together with any supporting materials and explanation.
    b. The director must receive such materials no later than the time of connection of the subject premises.
    c. No adjustment may exceed the amount of the water GFC applicable to the connection requested.
4. The water GFC applies, in addition to all other non-capital connection, permit or other fees required by this code or elsewhere. The charge is due and payable in full at or before the time of connection or as otherwise ordered by the director.
5. The director may record appropriate notice with the county auditor concerning areas subject to the water GFC pursuant to the requirements of RCW 65.08.170 and RCW 65.08.180, as applicable, reserving the possibility of upgrade charges.

Date Passed: Monday, December 14, 2009

Effective Date: Saturday, January 16, 2010

ORD C34521 Section 9

Article IV. Violation – Penalty

Section 13.04.300 Penalty

A. Any person violating any of the provisions of this chapter, or the rules and regulations of the director, except for those violations designated infractions in SMC 1.05.190, commits a misdemeanor.

B. Each day of a continuing violation shall constitute a new and separate violation unless otherwise specified.

Date Passed: Monday, January 14, 2008

Effective Date: Friday, February 22, 2008

ORD C34171 Section 44

Exhibit 7.5.1 Construction Documentation Examples

PROJECT REPORT AND AMENDMENT TO

City of Spokane Water System Plan (2007)

Relating to

KENDICK AVENUE WATER MAIN
Sundance Estates Connection to City of Spokane Water System

May 12, 2014

TABLE OF CONTENTS

NARRATIVE

APPENDIX

1. PROJECT OVERVIEW

WAC 246-290-110 (4)(a)

1.1 Purpose of Project, Project Need

The City of Spokane's Kendick Avenue distribution main project includes a housing development served by the Sundance Estates private water system identified as the Nine Mile Manor Water System which is having increasing difficulties providing quality potable water to its owners/clients. Kendick Home Owner's Association approached the City of Spokane to connect to the City of Spokane Water System and secured DWSRF Loan through the Department of Health and the Department of Commerce for the extension of service and the necessary upgrades services to meet City of Spokane Standards. Located within the City's Water Service Area (1999) the City has agreed to extend water distribution infrastructure to the Kendick Avenue Home Owner's Association and supply them with potable drinking water as well as competitively bidding the project through the City bidding system and providing Construction Management. This project will consolidate the Nine Mile Manor Water System into the City of Spokane Water System.

1.2 SEPA DNS

A SEPA checklist has been completed and a Determination of Non-Significance (DNS) issued for this project on July 12, 2013.

1.3 Source Development/Treatment

The proposed distribution main project and connection to the City water system does not pertain to source development or treatment. The City has adequate source capacity and water rights to supply the existing and future homes located within this project. Please refer to the City's 2007 WSP, Chapter 4.

1.4 Consumer Complaints

The City Water Department has received complaints related to current water supply and the request to connect to the City of Spokane Water System. This project is being undertaken by the Water Department to assist an existing Home Owner's Association in overcoming ever increasing issues of a failing private water system and provide them with a quality drinking water product.

1.5 Purpose/Scope of Project Report/WSP Amendment

This project consists of the construction of approximately 1,200 linear feet of 8-inch ductile iron water main, two 6" standard fire hydrants, twenty one 1-inch service taps, eighteen 1-inch water meters, and eighteen 24-inch concrete meter vaults/boxes. Water main installation includes trench excavation and associated valves and fittings; removal of existing PVC water main and hydrant leads; trench backfill, full-depth reconstruction of roadway patch; 1,300 SY of HMA CL. ½ in. PG 64-28, 2-inch thick. This project will result in the absorption of the Sundance Estates/Nine Mile Manor water system into the City of Spokane Municipal Water System.

The improvements for the Kendick Avenue Water Main project including the service connections are distribution system improvements that occur within the City of Spokane Water Service Area and are not specifically listed in the 2007 WSP.

1.6 Compatibility with City Planning Requirements

The Kendick Avenue distribution main is Compatible with City Planning Requirements in that it lies within City of Spokane Water Service Area as determined by Approved and Adopted Spokane County Coordinated Water System Plan – CWSP 1999 (Amended) and within the Urban Growth Area (UGA).

2. PLANNING DATA

WAC 246-290-110 (4)(b)

2.1 Planning Area

The Kendick Avenue Water Main Project is located in the City of Spokane Water Service area and the City of Spokane Present Water Retail Service Area has defined in the Water System Plan. The project location borders the corporate limits of the City of Spokane and is within the UGA in the area defined as Joint Planning Area by the City of Spokane and Spokane County.

2.2 Estimated Water Demand

The Kendick Avenue project area is a fully developed residential area. There are 21 existing lots in the project area with 18 existing single family homes. One existing lot is a double lot where two lots were aggregated and could be divided in the future by boundary line adjustment. The two remaining lots without homes are currently extended yard area for an adjacent existing single family residence. Since the project area is fully developed single family residential the estimation of water demand is calculated using a total single family residential lot count of 22 total lots that could be developed with single family residences.

From Chapter 2 of the 2007 WSP the Equivalent Residential Unit (ERU) is the average quantity of water, in units of gallons per day, needed by a single family residential unit and is calculated at 393 GPD. A peaking factor of 2.6 is used to calculate max day demand. With these assumptions the max day demand is calculated as follows:

(393 GPD/Unit) x (22 Units) x 2.6 = 22,480 GPD

2.3 Impact on Neighboring Systems

This project will consolidate the Nine Mile Manor Water system into the City of Spokane Water System. The Nine Mile Manor water system boundary is defined by the project limits and is surrounded on all sides by the City of Spokane Water System. The project and resulting consolidation of the system is at the request of the system owner and the Sundance Estates development that is served by the Nine Mile Manor Water System.

2.4 Proposed Construction Schedule, Cost, Financing

Construction of the Kendick Avenue Water Main project is scheduled for public bid early summer 2014 and project construction mid to late summer 2014.

The Engineers Estimate for construction of the project is $212,014.42. The Engineers Estimate Report for the City of Spokane Bid Estimate system is provided in the Appendix.

The project will be fully funded by a Drinking Water State Revolving Fund (DWSRF) Loan secured by the Sundance Estates Homeowners Association for the specific purpose of connection to the City of Spokane Water System. DWSRF Loan number DM11-952-034 is administered though the Department of Commerce and the City of Spokane has taken the lead in providing engineering, public bidding and construction management of the project.

3. ALTERNATIVES CONSIDERED

WAC 246-290-110 (4)(c)

3.1 Alternatives

Alternatives to connection to the City of Spokane Water System considered included 1.) Do nothing, 2.) Develop a second well in another location, 3.) Connect to an alternative water system other than the City of Spokane.

1.) Do nothing – This was not considered a viable alternative, the need for reliable quality drinking water for the health and safety of the residence supplied by the Nine Mile Manor Water System removed this option from serious consideration.

2.) Develop a second well location – Area available to the Nine Mile Manor Water System is limited and therefore the development of a second well was not a feasible alternative. A second well within the area available would most likely not produce a well with the desired water quality.

3.) Connect to an alternative water System other than the City of Spokane – The Nine Mile Manor Water System is surrounded on all sides by the City of Spokane Water Service Area. Connection to another water system other than to the City of Spokane is cost prohibitive since no other water systems have the required infrastructure to serve the Nine Mile Manor water system.

4. SUPPLY & WATER RIGHTS ASSESSMENT

WAC 246-290-110 (4)(d, e)

As documented in Section 4 of the 2007 WSP, the City is well within both its water rights and supply capacity for both current and 20 year projected demands. Two tables, one comparing projected demand and existing water rights and the other comparing projected demand with existing supply capacity, both from the 2007 WSP, are included in the Appendix.

5. SIZING JUSTIFICATION

WAC 246-290-110 (4)(f)

5.1 Overview

The Kendick Avenue Water Main Project will connect to the existing City of Spokane water infrastructure on the existing 8" ductile iron water distribution main in the continuation of Kendick Avenue to the east. The proposed water distribution main will be 8" ductile iron pipe and the with a calculated system static pressure of 121 PSI at the hydrant located at the connection location to the City of Spokane water system.

6. MISCELLANEOUS

WAC 246-290-110 (4)(g, i)

6.1 Design & Construction Standards

Section 7 of the City's 2000 WSP references design & construction standards which will be followed for this project.

6.2 Right Of Way

The proposed main will be installed in Spokane County ROW.

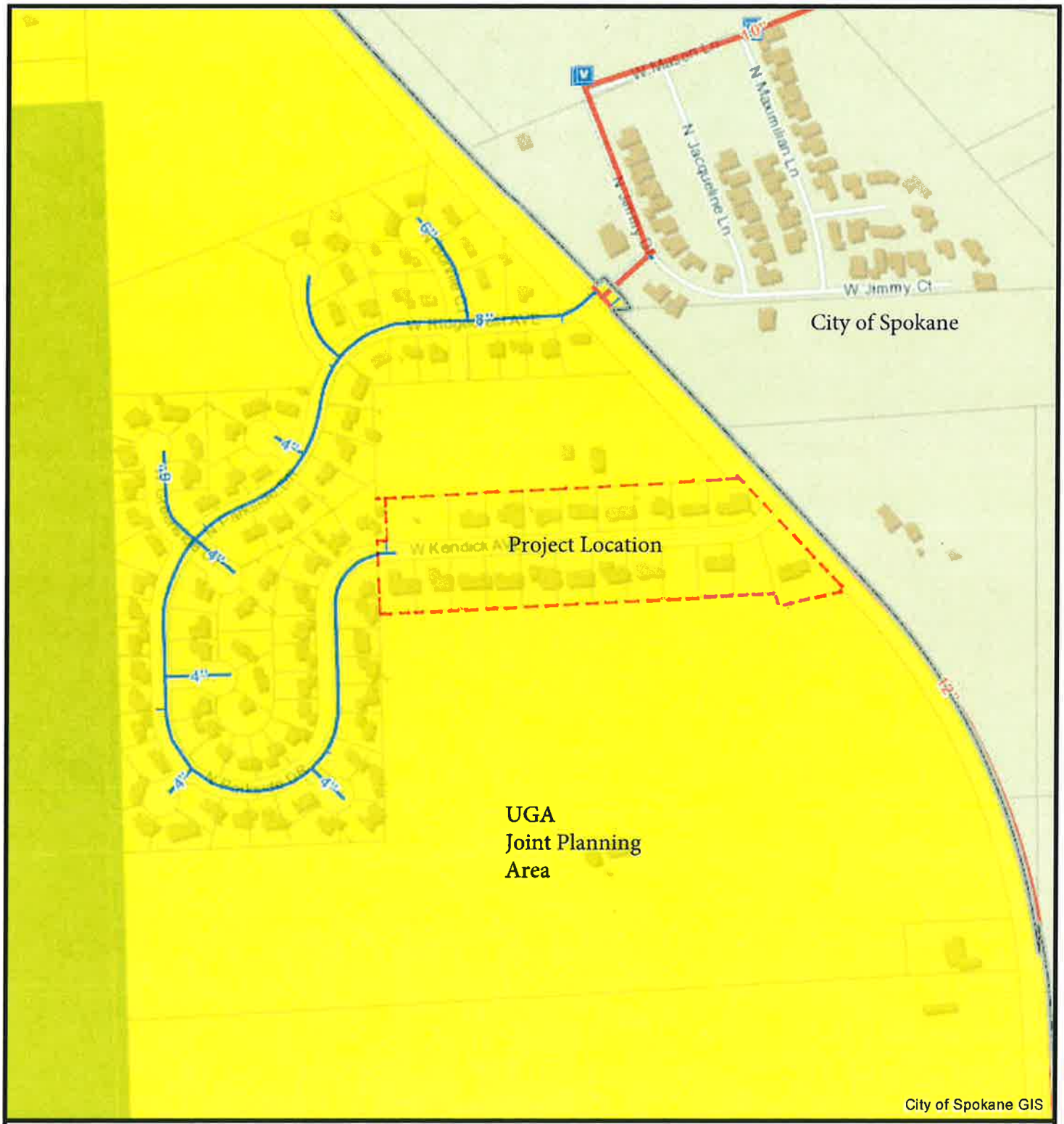
Appendix

Kendick Avenue Project Location

Engineers Estimate Report

2007 WSP Table 3.4.1 (Supply Capacity)

2007 WSP Table 4.5.3 (Water Rights Status)



Kendick Avenue Project Location

May 16, 2014

Legend

- City of Spokane
- Temporary Open Valve
- Normally Closed Valve
- Temporary Closed Valve
- System Change
- Pressure Reducing Valves
- Pumps
- Well
- Storage Facilities
- Distribution Main
- Hydrant Lead
- Transmission Main
- Joint Planning Area
- Urban Growth Area

1:4,800

0 165 330 660 Feet

0 45 90 180 Meters

N

COSGIS
City of Spokane GIS

CITY OF SPOKANE

City of Spokane Engineering Services

*** Engineer's Estimate Report ***

Prepared by: Steve Burns

Project No: 2012042 **Project Description** Kendick Avenue Water Main an
Funding Source Federal **Tax Classification** Not Public Street Improvemen
Original Date Prepared 1/9/2014 **Latest Update** 1/9/2014
SCHEDULE: 01 Water

Item Num	Bid Item Description	PRN	Estimated Quantity		Unit Price	Estimated Cost
101	REIMBURSEMENT FOR THIRD PARTY DAMAGE	☑	-1	EST	$1.00	($1.00)
102	SPCC PLAN	☐	*****	LS		$686.57
103	ARCHAEOLOGICAL AND HISTORICAL SALVAGE	☐	0	EST	$1,000.00	$0.00
104	POTHOLING	☐	5	EA	$500.00	$2,500.00
105	MOBILIZATION	☐	*****	LS		$5,000.00
106	PUBLIC LIAISON REPRESENTATIVE	☐	*****	LS		$2,500.00
107	PROJECT TEMPORARY TRAFFIC CONTROL	☐	*****	LS		$2,500.00
108	REMOVE CEMENT CONCRETE SIDEWALK AND DRIVEWAY	☐	36	SY	$12.00	$432.00
109	SAWCUTTING FLEXIBLE PAVEMENT	☐	5032	LFI	$1.00	$5,032.00
110	ABANDON METER BOX	☐	18	EA	$10.00	$180.00
111	ROADWAY EXCAVATION INCL. HAUL	☐	180	CY	$20.00	$3,600.00
112	PREPARATION OF UNTREATED ROADWAY	☐	1150	SY	$5.00	$5,750.00
113	CRUSHED SURFACING TOP COURSE	☐	54	CY	$33.00	$1,782.00
114	CRUSHED SURFACING BASE COURSE	☐	108	CY	$30.00	$3,240.00
115	CSTC FOR SIDEWALK AND DRIVEWAYS	☐	5	CY	$42.00	$210.00
116	HMA CL. 1/2 IN. PG 64-28, 2INCH THICK	☐	1150	SY	$25.00	$28,750.00
117	COMPACTION PRICE ADJUSTMENT	☐	1	EST	$1,000.00	$1,000.00
118	DI PIPE FOR WATER MAIN 8 IN. DIAM.	☐	1100	LF	$30.00	$33,000.00
119	TRENCH SAFETY SYSTEM	☐	*****	LS		$1,435.81
120	EXTRA TRENCH EXCAVATION	☐	50	CY	$15.00	$750.00
121	REMOVE EXISTING 6" PVC WATER MAIN	☐	1100	LF	$2.00	$2,200.00
122	TEMPORARY ADJACENT UTILITY SUPPORT	☐	*****	LS		$3,036.20
123	GATE VALVE 8 IN.	☐	2	EA	$1,120.00	$2,240.00
124	HYDRANT ASSEMBLY	☐	2	EA	$3,200.00	$6,400.00
125	TRENCH EXCAVATION FOR WATER SERVICE TAP	☐	360	CY	$60.00	$21,600.00
126	WATER TAP APPLICATION FEE	☑	21	EA	$41.16	$864.36
127	WATER SERVICE GENERAL FACILITIES CHARGE	☑	21	EA	$1,232.00	$25,872.00
128	1 INCH DOMESTIC WATER TAP INSTALLATION FEE	☑	21	EA	$710.01	$14,910.21
129	1 INCH DOMESTIC WATER METER INSTALLATION FEE	☑	18	EA	$622.55	$11,205.90
130	WATER METER BOX INSTALLATION FEE	☑	18	EA	$450.00	$8,100.00
131	ESC LEAD	☐	*****	LS		$500.00
132	STREET CLEANING	☐	10	HR	$100.00	$1,000.00
133	INLET PROTECTION	☐	6	EA	$75.00	$450.00
134	REMOVE AND REPLACE EXISTING SPRINKLER HEADS AND LINES	☐	*****	LS		$2,258.37

Item Num	Bid Item Description	PRN	Estimated Quantity		Unit Price	Estimated Cost
Project No: 2012042			**Project Description**		Kendick Avenue Water Main an	
Funding Source Federal			**Tax Classification**		Not Public Street Improvemen	
Original Date Prepared 1/9/2014			**Latest Update**		1/9/2014	
SCHEDULE: 01	Water					
135	CEMENT CONC. GUTTER	☐	56	LF	$30.00	$1,680.00
136	CEMENT CONCRETE DRIVEWAY	☐	18	SY	$40.00	$720.00
137	CEMENT CONCRETE DRIVEWAY TRANSITION	☐	18	SY	$35.00	$630.00
			Total for Schedule: 01			$202,014.42

* * * Estimate Recap * * *

Schedule No.	Schedule Name	Schedule Total
01	Water	$202,014.42

Total for All Schedules: $202,014.42

Other Project Costs

Description	Unit Measure	Quantity	UnitCost	EstCost
Spokane Tribe of Indians	EA	1	$10,000.00	$10,000.00

Total Estimated Other Costs $10,000.00

Engineer's Estimate: 2012042 $212,014.42

TABLE 3.4.1
Source Capacity and Future Demands

		Maximum Day Demand (MGD) (including unaccounted water)				
			w/o Conservation		With Conservation	
Supply Well	**Capacity MGD**	**2013**	**2018**	**2033**	**2018**	**2033**
		Low Zone System				
Nevada Street	44.6					
Well Electric	21.6					
Parkwater	69.0					
Total Capacity	135.2	86.4	91.5	109.0	90.9	103.7
		Intermediate Zone System				
Well Electric	10.8					
Parkwater	21.7					
Ray Street	26.9					
Total Capacity	59.4	41.6	44.2	52.6	43.5	49.2
		North Hill Zone System				
Well Electric	24.2					
Grace	23.0					
Hoffman	7.9					
Central	17.1					
Total Capacity	72.2	51.3	54.3	64.7	53.5	60.7

TABLE 4.5.3: Existing Water Right(s) Status

Permit Certificate of Claim #	Name of Right-holder or claimant	Priority Date	Source Name/ Number	Primary or Supplemental	Existing Water Rights		Existing Pumping Capacity & Annual Consumption		Current Water Right Status (Excess/Deficiency)	
					Maximum Instantaneous Flow Rate (Q_i) gpm	Maximum Annual Volume (Q_a) Acre-ft	Maximum* Instantaneous Flow Rate (Q_i) gpm	Maximum Annual Volume (Q_a) Acre-ft	Maximum Instantaneous Flow Rate (Q_i) gpm	Maximum Annual Volume (Q_a) Acre-ft
3199-A	CITY	1956	S 01 NEVADA ST	Primary	25,000	20,000	25,000	12,615	0	7,385
504-D	CITY	1926 1907	S 02 WELL ELECTRIC	Primary	54,750	36,000	39,300	20,519	15,450	15,481
548-A	CITY	1946	S 03 PARKWATER	Primary	63,000	51,240	63,000	24,791	0	26,449
505-D 593-D 504-D 507-D	CITY	1937 1907 1926 1945	S 04 RAY STREET	Primary	14,000 7,000 1,250 2,600**	1,870 350 2,000 520**	21,550	6,057	3,300	(1,317)
506-D	CITY	1938	S 05 HOFFMAN AVE	Primary	11,600	1,280	10,920	1,418	680	(138)
728-A 593-D	CITY	1950 1907	S 06 GRACE AVE	Primary	11,000 20,000	4,080 1,000	19,000	4,026	12,000	1,054
3903-A 593-D 4503 728-A	CITY	1959 1907 1961 1950	S 08 CENTRAL AVE	Primary	7,000 7,000 7,900 9,000	11,480 350 12,640 4,760	16,800	12,084	14,100	17,146
TOTAL FOR PRIMARY WELLS					241,100	147,570	195,570	70,374***	45,530	77,196***
G3-27181	CITY		SIA	Not presently used	200****	526****			200	526
508-D	CITY (PARKS)		S 09 INDIAN CANYON	Golf Course Irrigation	728	265	750	250	(22)	15

PENDING WATER RIGHT APPLICATION	NAME ON PERMIT	DATE SUBMITTED	PRIMARY or SUPPLEMENTAL	PENDING WATER RIGHTS	
				Maximum Instantaneous Flow Rate (Q_i) Requested gpm	Maximum Annual Volume (Q_a) Requested Acre-ft
None					

* Based on water right or maximum installed pumping capacity, whichever is the lesser amount. Nevada Street Well Station is only one based on water right. Maximum pumping capacity of Nevada Street is 31,000 gpm.

** These are Baxter Well water rights which was officially decommissioned in 2003 with water rights transferred to the Ray Street Well as shown. Priority date is January 12, 1945.

*** Based on maximum total from **Table 4.3.2**. Individual well volumes based on maximum year for that well in **Table 4.3.2**. Well use can vary from year to year based on energy costs, pump maintenance, etc. Therefore, sum of individual numbers will not equal total numbers.

**** 250 gpm and 89 acre feet were sold and transferred to Goodrich Corporation in 2005 for $350 per acre-foot, processed through the Washington State Department of Ecology. The City is looking for a beneficial use of the remaining water right.

TABLE 4.5.4: 20 Year Forecasted Water Right(s) Status with Conservation

Permit Certificate of Claim #	Name of Right-holder or claimant	Priority Date	Source Name/ Number	Primary or Supplemental	Existing Water Rights		Forecasted Pumping Capacity & Annual Consumption		Forecasted Water Right Status	
					Maximum Instantaneous Flow Rate (Q_i) gpm	Maximum Annual Volume (Q_a) Acre-ft	Maximum* Instantaneous Flow Rate (Q_i) gpm	Maximum Annual Volume (Q_a) Acre-ft	Maximum Instantaneous Flow Rate (Q_i) gpm	Maximum Annual Volume (Q_a) Acre-ft
3199-A	CITY	1956	S 01 NEVADA ST	Primary	25,000	20,000	25,000	14,500	0	5,500
504-D	CITY	1926 1907	S 02 WELL ELECTRIC	Primary	54,750	36,000	49,000	23,500	5,750	12,500
548-A	CITY	1946	S 03 PARKWATER	Primary	63,000	51,240	63,000	29,300	0	21,940
505-D 593-D 504-D 507-D	CITY	1937 1907 1926 1945	S 04 RAY STREET	Primary	14,000 7,000 1,250 2,600	1,870 350 2,000 520	24,850	4,700	0	40
506-D	CITY	1938	S 05 HOFFMAN AVE	Primary	11,600	1,280	11,600	1,200	0	80
728-A 593-D	CITY	1950 1907	S 06 GRACE AVE	Primary	11,000 20,000	4,080 1,000	19,000	4,700	12,000	380
3903-A 593-D 4503 728-A	CITY	1959 1907 1961 1950	S 08 CENTRAL AVE	Primary	7,000 7,000 7,900 9,000	11,480 350 12,640 4,760	19,000	14,100	11,900	15,130
TOTAL FOR PRIMARY WELLS					241,100	147,570	211,450	80,500**	29,650	67,070**

PENDING WATER RIGHT APPLICATION	NAME ON PERMIT	DATE SUBMITTED	PRIMARY or SUPPLEMENTAL	PENDING WATER RIGHTS	
				Maximum Instantaneous Flow Rate (Q_i) Requested gpm	Maximum Annual Volume (Q_a) Requested Acre-ft
None					

* Based on water right or maximum installed pumping capacity, whichever is the lesser amount.

** Based on projected use as presented in **Table 2.2.3.** Individual well volumes based on maximum potential use on a year to year basis subject to which wells are used as determined by energy costs, pump maintenance, etc. Therefore, sum of individual numbers will not equal total numbers.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

CONSTRUCTION COMPLETION REPORT FORM

In accordance with WAC 246-290-120 (5), a ***Construction Completion Report*** is required for all approved construction projects. Purveyors **must** submit a Construction Completion Report to the Office of Drinking Water (ODW) within sixty (60) days of completion and before use of any water system facility. This includes any source, water quality treatment, storage tanks, booster pump facilities, and distribution projects.

Please type or print legibly in ink:

City of Spokane
Name of Water System

DOH System ID No.: **83100K**

Dan Kegley, Director – City of Spokane Water Department
Name of Purveyor (Owner or System Contact)

DOH Project No.: **#14-0308A** (if applicable)

914 E. North Foothills Dr.
Mailing Address

Date Construction Documents Approved by DOH **June 4, 2014** (If applicable)

Spokane, WA 99207-2794
City State Zip

PROJECT NAME AND DESCRIPTIVE TITLE: Kendick Avenue Water Main Project

CHECK ONE: ☒ Entire Project Completed. ☐ Description of Portions Completed.

PROFESSIONAL ENGINEER'S ACKNOWLEDGMENT *(Complete items below–Attach additional sheets as needed)*

The undersigned professional engineer (PE), or their authorized agent, has inspected the above-described project which, as to layout, size and type of pipe, valves and materials, reservoir and other designed physical facilities, has been constructed and is substantially completed in accordance with construction documents reviewed by the purveyor's engineer or approved by the DOH. In the opinion of the undersigned engineer, the installation, physical testing procedures, water quality tests, and disinfection practices were carried out in accordance with state regulations and principles of standard engineering practice.

I have reviewed the disinfection procedures ☒, pressure test results ☒, and results of the bacteriological test(s) ☒ for this project and certify that they comply with the requirements of the construction standards/specifications approved by the DOH. (Check all boxes that apply that are consistent with the nature of the project.)

This project changes the physical capacity of the system to serve consumers. The system is now able to serve **an additional 21** equivalent residential units (ERUs.) ☐ Not applicable

November 5, 2014
Date Signed

City of Spokane, Water Department
Name of Engineering Firm

James S. Sakamoto, P.E.
Name of PE Acknowledging Construction

914 E. North Foothills Dr.
Mailing Address

Spokane, WA 99207-2794
City State Zip

Engineer's Signature

State/Federal Funding Type (if any) DWSRF

Please return completed form to DOH regional office checked below.

☐ **NWRO Drinking Water**
Department of Health
20425 72nd Ave. S, Ste 310
Kent, WA 98032-2358
(253) 395-6750

☐ **SWRO Drinking Water**
Department of Health
PO Box 47823
Olympia, WA 98504-7823
(360) 236-3030

☒ **ERO Drinking Water**
Department of Health
16201 E. Indiana Ave, Suite 1500
Spokane Valley, WA 99216
(509) 329-2100

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

The purveyor must attach a completed Water Facilities Inventory (WFI) form in accordance with WAC 246-290-120(6), if applicable. Contact the regional office in your area for WFI forms or additional Construction Completion Report forms.

Exhibit 7.5.2 Construction Documentation Examples

5498

INSPECTORS DAILY REPORT

INSPECTOR: _____ PROJECT NO.: 2004042

PROJECT: BROOKE MEADOWS/FALCON RIDGE (WATER

CONTRACTOR: MOUNTAINCREST WORK PERIOD: 7:00 A.M. 3:30 P.M.

WEATHER A.M.: COLD/OVERCAST/RAIN P.M.: _____

VISITORS: _____

MANPOWER AND EQUIPMENT

SUPERINTENDENT: _____ FOREMAN: _____

OPERATORS: _____ LABORERS: _____ SURVEYORS: _____ FLAGMEN: _____

OTHERS: _____

EQUIPMENT USED: N/A

ACCOUNT OF WORK AND DISCUSSIONS

TRAFFIC SIGNS AND BARRICADES CHECKED: _____ A.M. _____ P.M.

STREETS CLOSED: _____

TIME: WORK:

8:00AM ON SITE, TOOK CHLORINE RESIDUALS

AT END OF RUSTLE & MAXINE FOREST

CT OK,

8:15AM STARTED FLUSHING INTO SEWER MANHOLES

8:20AM LEFT JOB SITE.

9:30AM BACK ON SITE, NO CHLORINE (continued on back)

TESTS: _____

WORK DELAYS: _____

AS BUILT NOTES: _____

CITIZENS CONCERNS: _____

UTILILTY/PROPERTY DAMAGE: _____

REVIEWED BY - PROJECT ENGINEER _____ CONSTRUCTION ENGINEER: _____

PAGE ___ OF ___ DATE: 4/7/05

EXHIBIT 7.5.1

5498

INSPECTORS DAILY REPORT

INSPECTOR: RANDALL J. HATHAWAY PROJECT NO.: 2004042
PROJECT: BROOKE MEADOWS / FALCON RIDGE (WATER
CONTRACTOR: MOUNTAINCREST WORK PERIOD: 7:00 A.M. 3:30 P.M.
WEATHER A.M.: OVERCAST / COOL / 44° P.M.:
VISITORS:

MANPOWER AND EQUIPMENT

SUPERINTENDENT: FOREMAN:
OPERATORS: LABORERS: SURVEYORS: FLAGMEN:
OTHERS: N/A
EQUIPMENT USED:

ACCOUNT OF WORK AND DISCUSSIONS

TRAFFIC SIGNS AND BARRICADES CHECKED: A.M. P.M.
STREETS CLOSED:
TIME: WORK:
7:45AM ON SITE, CONTRACTOR HAS HOSES ON ENDS OF LINES & IS READY TO FLUSH & CHLORINATE
8:00AM CHLORINATOR ON SITE & SETTING UP TO CHLORINATE
8:30AM STARTED FLUSHING & CHLORINATING FLUSHING AT END OF RUSTLE & MAKING CT. (continued on back)
TESTS:
WORK DELAYS:
AS BUILT NOTES:
CITIZENS CONCERNS:
UTILILTY/PROPERTY DAMAGE:

REVIEWED BY - PROJECT ENGINEER CONSTRUCTION ENGINEER:

DATE: 4/6/05

CITY OF SPOKANE

DEPARTMENT OF ENGINEERING SERVICES
1423 N. NORMANDIE STREET
SPOKANE, WASHINGTON 99201
(509) 625-7722
FAX (509) 625-7705

JAMES G. LAUGHTLAND, P.E.
PRINCIPAL ENGINEER
CONSTRUCTION MANAGEMENT

5408

February 14, 2006

Spokane Regional Health Office
Water Supply & Waste Section
1500 W. 4th Avenue, Suite 305
Spokane, WA 99204

Gentlemen:

The enclosed Construction Report for Water Systems Projects for the following project is forwarded for your records:

#2004042 – BROOKE MEADOWS @ FALCON RIDGE - WATER

Sincerely,

James Laughtland, P.E.
Principal Eng.-Const. Mgmt.

GH:rld

cc: File
Water Dept.

WATER BACTERIOLOGICAL ANALYSIS

5,428

www.anateklabs.com

DATE COLLECTED MONTH DAY YEAR	TIME COLLECTED	COUNTY NAME
4 / 7 / 05	9 : 30 ☒AM ☐PM	Spokane

TYPE OF SYSTEM
XX ☐ PUBLIC
☐ INDIVIDUAL (serves only 1 residence)

IF PUBLIC SYSTEM, COMPLETE:
I.D. No. 8 3 1 0 0 K
CIRCLE GROUP A B

NAME OF SYSTEM

City of Spokane

SPECIFIC LOCATION WHERE SAMPLE COLLECTED	TELEPHONE NO.
Strong Rd & Rustle Rd W.O. # 14473	DAY (509) 625-7800
	EVENING (509) 625-7800
SAMPLE COLLECTED BY: (Name) Ronald O. Hatton	SYSTEM OWNER/MGR: (Name) City of Spokane

SOURCE TYPE XX
☐ SURFACE ☐ WELL or WELL FIELD ☐ SPRING ☐ GROUND WATER UNDER SURFACE INFLUENCE ☐ PURCHASED or INTERTIE ☐ COMBINATION or OTHER

SEND REPORT TO: (Print Full Name, Address and Zip Code)
Water & Hydroelectric Svcs
914 E North Foothills Dr
Spokane WA 99207

TYPE OF SAMPLE (check on one in this column)

- ☐ ROUTINE DRINKING WATER check treatment
  - ☐ Chlorinated (Residual: ___Total ___Free)
  - ☐ Filtered
  - ☐ Untreated or Other _____
- ☐ REPEAT SAMPLE previous Coliform presence
  - Lab# _____
  - Date ___/___/____
- ☐ RAW SOURCE WATER — Source # [S] [ ][ ] — ☐ Total Coliform ☐ Fecal Coliform
- XX ☒ NEW CONSTRUCTION or REPAIRS
- ☐ OTHER (Specify) _____

Remarks: Priority 18 hr

(LAB USE ONLY) DRINKING WATER RESULTS

☐ UNSATISFACTORY, Coliforms present
REPEAT SAMPLES REQUIRED: ☐ Total Present ☐ Total Absent ☐ E. Coli Present ☐ E. Coli Absent

☒ SATISFACTORY, Coliform absent

OTHER LABORATORY RESULTS

☐ TOTAL COLIFORM _____/100ml ☐ E. COLI _____/100ml
☐ FECAL COLIFORM _____/100ml ☐ PLATE COUNT _____/ ml

ANOTHER SAMPLE REQUIRED

SAMPLE NOT TESTED BECAUSE:
- ☐ Sample too old
- ☐ Wrong container
- ☐ Incomplete form
- ☐ _____

TEST UNSUITABLE BECAUSE:
- ☐ Confluent Growth
- ☐ TNTC
- ☐ Turbid Culture
- ☐ Excess Debris

LAB NO. (8 DIGITS)	DATE, TIME RECEIVED	
11249 [illegible]	4/7/05 10:00 ☐AM ☐PM	KTS RECEIVED BY

DATE REPORTED 4-20-05 KS

LABORATORY:
Anatek Labs, Inc. (509) 838-3999
504 E. Sprague Ave Ste D
Spokane, WA 99202

White - DP Center Copy
Canary - Laboratory Copy
Pink - Water Supplier Copy
Gold - DOH Reg. Office Copy

Spokane Water Department

Form 11 Rev. 5/2000

VALVE REPORT

NEW ☒ CHANGE ☐ DELETE ☐ REPLACED ☐

DATE 18-Apr-05 FILE # 5498 WO# 14473

LOCATION Reese Ct. at Rustle Rd.

3'E + 25'S Hydt. SIZE 8" AVK (RS)

FOUND LEFT

OPEN ☐ CLOSED ☒ OPEN ☒ CLOSED ☐ NUMBER OF TURNS _____

REMARKS:

#2064820 . 2064830

SB 1/5/06

RADIO/ENGINEERS ✓m Bischoff OPERATOR

Spokane Water Department

VALVE REPORT

NEW ☒ CHANGE ☐ DELETE ☐ REPLACED ☐

DATE 18-Apr-05 FILE # 5498 WO# 14473

LOCATION Maxine Ave. at Rustle Rd.

18' W + 34' S Hydt. SIZE 8" AVK (RS)

FOUND LEFT

OPEN ☐ CLOSED ☒ OPEN ☒ CLOSED ☐ NUMBER OF TURNS _____

REMARKS:

#1614000 . 1614780

SB 1/5/06

RADIO/ENGINEERS ✓m Bischoff OPERATOR

VALVE REPORT

NEW ☒ CHANGE ☐ DELETE ☐ REPLACED ☐

DATE 18-Apr-05 FILE # 5498 WO# 14473

LOCATION Rustle Rd. at Maxine Ave.

3'S + 21' W Hydt. SIZE 8" AVK (RS)

FOUND LEFT

OPEN ☐ CLOSED ☒ OPEN ☒ CLOSED ☐ NUMBER OF TURNS _____

REMARKS:

#2190100 . 2190110

SB 1/5/06

Spokane Water Department

Form 11 Rev. 5/2000

VALVE REPORT

NEW ☒ CHANGE ☐ DELETE ☐ REPLACED ☐

DATE 18-Apr-05 FILE # 5498 WO# 14473

LOCATION Rustle Rd. at Reese Ct.

10' N + 36' E Hydt. SIZE 8" AVK(RS)

FOUND LEFT

OPEN ☐ CLOSED ☒ OPEN ☒ CLOSED ☐ NUMBER OF TURNS _____

REMARKS:

#2190100, 2190120

SB 1/5/06

RADIO/ENGINEERS ✓m Bischoff OPERATOR ✓

Spokane Water Department

Form 11 Rev. 5/2000

VALVE REPORT

NEW ☒ CHANGE ☐ DELETE ☐ REPLACED ☐

DATE 18-Apr-05 FILE # 5498 WO# 14473

LOCATION Rustle Rd. at Strong Rd.

125' W + 13' S Hydt. in Strong Rd. SIZE 8" MH Flx MJ

FOUND LEFT

OPEN ☐ CLOSED ☒ OPEN ☒ CLOSED ☐ NUMBER OF TURNS _____

REMARKS:

#2190100, 2190130

SB 1/5/06

RADIO/ENGINEERS ✓m Bischoff OPERATOR ✓

Exhibit 7.5.3 Construction Documentation Examples

MIKE CAVANAUGH
WATER/HYDROELECTRIC

CITY OF SPOKANE
DEPARTMENT OF ENGINEERING SERVICES
808 W. SPOKANE FALLS BLVD.
SPOKANE, WASHINGTON 99201-3343
(509) 625-6700
FAX (509) 625-6349 / (509) 625-6124
www.spokaneengineering.org

December 27, 2004

FILE # 5508

MR MARK ARONSON PE
TAYLOR ENGINEERING INC
106 W MISSION AVE
SPOKANE WA 99201

RE: Public Sewer and Water Improvements for Bluegrass 10th Addition; File 2004165 Swr, 2004166 Wtr

Dear Mark:

We have conducted a general plan review of your recent submittal dated December 22, 2004, on behalf of your client, C & L Developments, Inc., for the subject project and find that this submittal appears to meet the minimum requirements contained in the City of Spokane Design Standards and the 2002 Supplemental Specifications to the State of Washington 2002 Standard Specifications and shall be constructed according to said standards and specifications. We are therefore able to accept your design plans as shown on the following drawings:

Public Sewer:

WEILE AVENUE (Sta. 17+80.79 to Sta. 21+67.64)	WEILE V(3)2 28-26-43
PITTSBURG STREET (Sta. 23+44.01 to Sta. 31+96.95)	PITTS S(2)2 28-26-43

Public Water:

WEILE AVENUE (Sta. 17+80.79 to Sta. 21+67.64)	WEILE V(3)2 28-26-43
PITTSBURG STREET (Sta. 23+44.01 to Sta. 31+96.95)	PITTS S(2)2 28-26-43

We are enclosing stamped accepted blueline prints of the above design plans for this project. We will retain the original set of mylars on file in the Engineering Services Department. This acceptance is valid until November 1, 2005. If the construction of these facilities has not yet started or has not been completed by this date, you will need to request an extension of the acceptance for an additional one year. The plans may need to be revised with additional plan review fees prior to granting the extension.

EXHIBIT 7.5.3

(10) working days, from the agreed upon date indicated in the "Notification to Commence Work", in which to commence project construction.

3. Permission for the contractor to begin construction will be given by the Construction Management Office and will depend upon the availability of personnel, existing weather conditions, the type of temporary or permanent materials that must be used, and/or the construction procedures that must be followed for construction in inclement weather.

4. Marking tape will be placed in the excavation trench at mid-depth location for all underground side service installations for the purpose of alerting any future excavation in the specific area.

If you have any questions regarding the exact nature of the items listed above, please contact the City Construction Management Office.

Sincerely,

Kristen Becker, P.E.
Associate Engineer – Developer Services

I, Corey Gordon, as the owner of the project assets or as owner's representative agree to construct the above referenced project in accordance with the conditions set forth above.

Signed this 29th day of December, 2004

By: Corey P. Gordon

Title: Owner's Representative

KJB/jme

Enclosure: Accepted Public Sewer and Water Plans

cc: Tom Arnold, P.E. Director (file copy)
Eldon Brown, P.E., Principal Engineer – Developer Services (e-mail)
Jim Laughtland, P.E., Principal Engineer – Const. Mgmt. (5 Sets Plans)
Tim Coles, Developer Services
Brad Blegen, P.E., Director, Water & Hydroelectric Services (W&HS)
Ken Brown, P.E., Principal Engineer – Design
Kristen Becker, P.E., Associate Engineer – Developer Services (1 Set Plans)
Jim Sakamoto, P.E., Senior Engineer – Developer Services (e-mail)
Bill Peacock, P.E., Principal Engineer – WWM (1 Set Plans)
Mike Cavanaugh, Water & Hydroelectric Services (3 Sets Water Plans)
Dave Kokot, Fire Code Plan Review (1 Set Water Plans)
Dan Eaton, Permit Coordinator (1 Set Plans)
Gary Kaesemeyer, WWM (1 Set Sewer Plans)
Don Carlson, Senior Planner – Current Planning
Qwest

CITY OF SPOKANE

DEPARTMENT OF
ENGINEERING SERVICES
1423 N. NORMANDIE STREET
SPOKANE, WASHINGTON 99201
(509) 625-7722
FAX (509) 625-7705

JAMES G. LAUGHTLAND, P.E.
PRINCIPAL ENGINEER
CONSTRUCTION MANAGEMENT

January 24, 2005

Mr. Mark Aronson, P.E.
Taylor Engineering, Inc.
106 W. Mission Ave.
Spokane, WA 99201

5502

RE: #2004166 – BLUEGRASS 10TH ADDITION - WATER

Gentlemen:

You are hereby notified to commence work on the above project under terms of the Letter of Permission dated, Dec. 27, 2004. Prior to start of work all necessary permits must have been issued. Please call this office at 625-7722, to coordinate your exact start date so that we may mobilize inspection. The Water Construction Inspector must be present during all construction and testing activities.

The Construction Engineering Office must be given notification of anticipated daily construction by the Contractor. If no notification is given, an inspection charge of two hours per day for each day without notification will be charged.

Inspection, connection and chlorination fees and charges for this project will be billed to your client, ***C & L Developments, Inc., Attn: Craig Condron, 802 W. Rosewood, Spokane, WA, 99208.***

Chlorination will be by chlorine gas and can be scheduled through the Water Construction Inspector.

Services will be staked as per direction of Engineer. Permission to connect new service taps to this project prior to acceptance will only be authorized after the following conditions have been satisfied:

1. The new water main has been satisfactorily pressure tested, chlorinated, flushed and sampled for the laboratory test.
2. Appropriate tapping permits have been issued.

Thirty (30) days after satisfactory bacteriological testing the following conditions must be met or the water service will be terminated.

A. A complete set of "As Built" drawings, construction notes and system transfer agreement are submitted.
B. An itemized statement of the cost of materials, equipment, labor and engineering is submitted.
C. Payment of all fees and charges.

If items A, B and C listed above, are not submitted to the City Field Engineering Division within 30 days from the date of substantial completion of construction of the referenced improvements. No additional permits will be issued for connections to any new structures to be served by the referenced improvements until items A, B and C are received by the City Field Engineering Division. Any time required for processing incomplete submittals will be charged to your client.

Sincerely,

James G. Laughtland, P.E.
Principal Eng.-Const.

BD:rld

cc: File
Water Dept.
Avista, Jim Marks
R. Hathaway
Bob Turner, Transp. Dept.
ES
Craig Condron, 802 W. Rosewood, Spokane, WA 99208

Chapter 8

Capital Improvement Program

Exhibits and Appendices

Exhibit 8.1.1 6-Year Capital Summary

(Water Only)

Water/Distribution Mains

1st Avenue ET AL

WAT-2015-172

Executive Summary

This project replaces older (1940's) distribution lines that likely will not survive construction of other utilities.

Project Justification

These water lines will not survive the construction of the storm line and the paving work.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Perry Street between 1st Avenue and 2nd (upper) Avenue and 1st. Avenue between Perry Street and Helena Street.

Project Status

Active

The project Charter was delivered to Engineering Services. Design is expected to start in late Fall of 2015.

External Factors

None at this time.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Distribution Mains

1st Avenue ET AL

WAT-2015-172

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$372,000	$0	$0	$0	$0	$0	$372,000	$372,000
Design	$13,000	$40,000	$0	$0	$0	$0	$0	$40,000	$53,000
Total	$13,000	$412,000	$0	$0	$0	$0	$0	$412,000	**$425,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Utility Rate Fees	Local	Identified	$13,000	$412,000	$0	$0	$0	$0	$0	$425,000
Total			$13,000	$412,000	$0	$0	$0	$0	$0	**$425,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Distribution Mains

Barnes Road Water Main

WAT-2015-125

Executive Summary

This project will complete the connection from the top of Five Mile Prairie to the water system extending up Barnes Road.

Project Justification

This pipeline will provide serve along Barnes Road as well as providing a looping connection. It will also increase the level of service to existing customers on the lower portion of Barnes Road.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Barnes Road, from Phoebe to Strong Road.

Project Status

Active

Estimates have been completed.

External Factors

Coordination with the roadway project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Distribution Mains

Barnes Road Water Main

WAT-2015-125

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$350,000	$0	$0	$0	$0	$0	$350,000	$350,000
Design	$0	$35,000	$0	$0	$0	$0	$0	$35,000	$35,000
Total	$0	$385,000	$0	$0	$0	$0	$0	$385,000	**$385,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$385,000	$0	$0	$0	$0	$0	$385,000
Total			$0	$385,000	$0	$0	$0	$0	$0	**$385,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Distribution Mains

Clarke Ave./Water Ave. Distribution Replacement

WAT-2014-141

Executive Summary

This project would replace a portion of old cast iron distribution main that is in need of replacement in conjunction with a road and trail project in the same right of way.

Project Justification

This project would replace the existing pipeline with ductile iron, greatly increasing its useful life. The existing pipe would not survive the other work in the right of way.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Clarke and Water Avenues, Cedar St. to approximately Latah Creek.

Project Status

Active

Design in 2014/2015. Construction in 2015.

External Factors

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Distribution Mains

Clarke Ave./Water Ave. Distribution Replacement

WAT-2014-141

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$25,000	$450,000	$0	$0	$0	$0	$0	$450,000	$475,000
Total	$25,000	$450,000	$0	$0	$0	$0	$0	$450,000	**$475,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$25,000	$450,000	$0	$0	$0	$0	$0	$475,000
Total			$25,000	$450,000	$0	$0	$0	$0	$0	**$475,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Distribution Mains

Integrated Distribution Main Rehabilitation

WAT-2013-164

Executive Summary

This annual project would be to address the worst distribution pipeline as identified by repair records, condition assessment, service outages, and property damage. This would be an on-going program to address at least one problem area per year.

Project Justification

This project will eliminate problem areas within the distribution system.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

City wide.

Project Status

Active

Distribution Main Rehabilitation annual program work started in 2014. Work under this program for 2016 will be the Clarke Ave./Water Ave. Distribution Replacement.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Distribution Mains

Integrated Distribution Main Rehabilitation

WAT-2013-164

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$550,000	$1,000,000	$1,000,000	$1,000,000	$3,550,000	$3,550,000
Total	$0	$0	$0	$550,000	$1,000,000	$1,000,000	$1,000,000	$3,550,000	**$3,550,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$550,000	$1,000,000	$1,000,000	$1,000,000	$3,550,000
Total			$0	$0	$0	$550,000	$1,000,000	$1,000,000	$1,000,000	**$3,550,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Distribution Mains

Long Service Elimination

WAT-2013-158

Executive Summary

This would be a program designed to install sections of distribution main then reconnect service lines that are currently several hundred feet long.

Project Justification

There are over 7,000 service lines in the city which are in excess of 250 feet long; typically before the meter. These lines are often leaking, and a source of lost water and revenue.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

City wide

Project Status

Active

Ongoing. Long Service Elimination annual program work started in 2014. Work under this program for 2015 will be the 13th Avenue; Wall to Bernard.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Distribution Mains

Long Service Elimination

WAT-2013-158

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$200,000	$200,000	$200,000	$200,000	$200,000	$1,000,000	$1,000,000
Total	$0	$0	$200,000	$200,000	$200,000	$200,000	$200,000	$1,000,000	**$1,000,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$200,000	$200,000	$200,000	$200,000	$200,000	$1,000,000
Total			$0	$0	$200,000	$200,000	$200,000	$200,000	$200,000	**$1,000,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Distribution Mains

Monroe-Lincoln Couplet Phase 3

WAT-2015-126

Executive Summary

Renewal of the water mains within the couplet streets project.

Project Justification

This existing mains are at the end of their service life and need to be renewed in order to provide reliable service.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Monroe and Lincoln from 2nd to Main.

Project Status

Active

Estimates completed.

External Factors

Coordination with the other elements of this integrated project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Distribution Mains

Monroe-Lincoln Couplet Phase 3

WAT-2015-126

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$670,000	$0	$0	$0	$0	$0	$670,000	$670,000
Total	$0	$670,000	$0	$0	$0	$0	$0	$670,000	**$670,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$670,000	$0	$0	$0	$0	$0	$670,000
Total			$0	$670,000	$0	$0	$0	$0	$0	**$670,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Distribution Mains

Sharp Avenue Main Replacement

WAT-2015-128

Executive Summary

Replacement of a 10-inch 1893 cast iron water main with a new 12-inch ductile iron main.

Project Justification

The existing pipe is aged to the point where failure risk is significant. Replacement is necessary to provide adequate level of service and reliability.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Sharp Avenue from Pearl to Hamilton

Project Status

Active

Estimates have been completed. No additional right of way is required.

External Factors

Coordination with the integrated project elements.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Distribution Mains

Sharp Avenue Main Replacement

WAT-2015-128

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$482,000	$0	$0	$0	$0	$482,000	$482,000
Total	$0	$0	$482,000	$0	$0	$0	$0	$482,000	**$482,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$482,000	$0	$0	$0	$0	$482,000
Total			$0	$0	$482,000	$0	$0	$0	$0	**$482,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

Backhoe

WAT-2015-139

Executive Summary

A new, replacement backhoe.

Project Justification

The existing backhoe condition is to the point where repair costs are greater than justifiable. A replacement is the more affordable option.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Water Department.

Project Status

Active

Estimate obtained.

External Factors

Council approval of funds expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

Backhoe

WAT-2015-139

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Purchases	$0	$218,000	$0	$0	$0	$0	$0	$218,000	$218,000
Total	$0	$218,000	$0	$0	$0	$0	$0	$218,000	**$218,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$218,000	$0	$0	$0	$0	$0	$218,000
Total			$0	$218,000	$0	$0	$0	$0	$0	**$218,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

Metering

WAT-2013-156

Executive Summary

This would be an ongoing annual costs for upgrading the meter reading equipment: meters, radios, readers, programs, etc.

Project Justification

This equipment allows the water department to account for usage and accurately bill usage.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

City wide.

Project Status

Active

This project is ongoing.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

Metering

WAT-2013-156

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$500,000	$500,000	$500,000	$300,000	$300,000	$300,000	$2,400,000	$2,400,000
Total	$0	$500,000	$500,000	$500,000	$300,000	$300,000	$300,000	$2,400,000	**$2,400,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$500,000	$500,000	$500,000	$300,000	$300,000	$300,000	$2,400,000
Total			$0	$500,000	$500,000	$500,000	$300,000	$300,000	$300,000	**$2,400,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

Powerhouse #1 HVAC

WAT-2015-138

Executive Summary

Upgrading of the HVAC system in powerhouse #1.

Project Justification

To provide adequate cooling for the generating equipment and for the workspace.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Upriver Dam Powerhouse #1

Project Status

Active

Estimates completed.

External Factors

Council approval of the funds expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

Powerhouse #1 HVAC

WAT-2015-138

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$250,000	$0	$0	$0	$0	$0	$250,000	$250,000
Total	$0	$250,000	$0	$0	$0	$0	$0	$250,000	**$250,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
water Rates	Local	Funded	$0	$250,000	$0	$0	$0	$0	$0	$250,000
Total			$0	$250,000	$0	$0	$0	$0	$0	**$250,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

Rebuild Generator #1 in Powerhouse #1

WAT-2014-149

Executive Summary

Rebuilding of generator #1 in powerhouse #1 at Upriver Dam.

Project Justification

This generator has not been rebuilt in over 30 years. This project will increase asset life while improving performance and power generation.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Upriver Dam

Project Status

Active

Design in 2017. Construction in 2018.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

Rebuild Generator #1 in Powerhouse #1

WAT-2014-149

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$300,000	$0	$0	$0	$300,000	$300,000
Design	$0	$0	$30,000	$0	$0	$0	$0	$30,000	$30,000
Total	$0	$0	$30,000	$300,000	$0	$0	$0	$330,000	**$330,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$30,000	$300,000	$0	$0	$0	$330,000
Total			$0	$0	$30,000	$300,000	$0	$0	$0	**$330,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

Rebuild Generator #2 in Powerhouse #1

WAT-2014-164

Executive Summary

Rebuilding generator #2 in Powerhouse #1.

Project Justification

This generator has not been rebuilt in over 30 years. This project will increase asset life while improving performance and power generation.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Upriver Dam

Project Status

Active

construction in 2019

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

Rebuild Generator #2 in Powerhouse #1

WAT-2014-164

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$300,000	$0	$0	$300,000	$300,000
Design	$0	$0	$0	$30,000	$0	$0	$0	$30,000	$30,000
Total	$0	$0	$0	$30,000	$300,000	$0	$0	$330,000	**$330,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$30,000	$300,000	$0	$0	$330,000
Total			$0	$0	$0	$30,000	$300,000	$0	$0	**$330,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

Rebuild Generator #3 in Powerhouse #1

WAT-2014-151

Executive Summary

Rebuilding of generator #3 in powerhouse #1 at Upriver Dam.

Project Justification

This generator has not been rebuilt in over 30 years. This project will increase asset life while improving performance and power generation.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Upriver Dam

Project Status

Active

Design in 2019. Construction in 2020.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

Rebuild Generator #3 in Powerhouse #1

WAT-2014-151

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$0	$300,000	$0	$300,000	$300,000
Design	$0	$0	$0	$0	$30,000	$0	$0	$30,000	$30,000
Total	$0	$0	$0	$0	$30,000	$300,000	$0	$330,000	**$330,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$0	$30,000	$300,000	$0	$330,000
Total			$0	$0	$0	$0	$30,000	$300,000	$0	**$330,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

SCADA System

WAT-2013-157

Executive Summary

This would be an ongoing annual costs for upgrading control equipment: radios, PLCs, data collectors, control programs, etc.

Project Justification

This equipment allows the department to monitor the system.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

City wide.

Project Status

Active

Ongoing.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

SCADA System

WAT-2013-157

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Purchases	$0	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$360,000	$360,000
Total	$0	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$360,000	**$360,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$360,000
Total			$0	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	**$360,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Facilities and Operations

Upriver Dam Spillway Rehabilitation

WAT-2013-153

Executive Summary

The spillway at upriver dam is a concrete structure that is in need of work in order to remain safe and fully functional.

Project Justification

This project will be designed to rehabilitate the spillway such that it can be operated many more years rather than deteriorate to a point beyond use.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Upriver Dam

Project Status

Active

Design is underway during 2014. Construction will begin in 2015.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Facilities and Operations

Upriver Dam Spillway Rehabilitation

WAT-2013-153

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$980,000	$20,000	$0	$0	$0	$0	$0	$20,000	$1,000,000
Design	$200,000	$0	$0	$0	$0	$0	$0	$0	$200,000
Total	$1,180,000	$20,000	$0	$0	$0	$0	$0	$20,000	**$1,200,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$1,180,000	$20,000	$0	$0	$0	$0	$0	$1,200,000
Total			$1,180,000	$20,000	$0	$0	$0	$0	$0	**$1,200,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Central Avenue Station 1st Well Rehabilitation

WAT-2012-47

Executive Summary

Construct a new building and install new pumps and motors at Central Avenue Well Station #1.

Project Justification

Central Avenue Well Station has two wells located at Central Avenue and Normandie Street. The Number 1 well station will be upgraded and modernized with a new building housing new pumps and motors. Both wells contain older submersible style pumps which are not energy efficient and are very expensive to maintain.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Central Avenue and Normandie Street in the northern portion of the City of Spokane.

Project Status

Active

Property has been acquired

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Central Avenue Station 1st Well Rehabilitation

WAT-2012-47

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$1,835,000	$20,000	$0	$0	$0	$0	$0	$20,000	$1,855,000
Design	$75,000	$0	$0	$0	$0	$0	$0	$0	$75,000
Total	$1,910,000	$20,000	$0	$0	$0	$0	$0	$20,000	**$1,930,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$1,910,000	$20,000	$0	$0	$0	$0	$0	$1,930,000
Total			$1,910,000	$20,000	$0	$0	$0	$0	$0	**$1,930,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Central Avenue Station 2nd Well Rehabilitation

WAT-2012-48

Executive Summary

The Central Avenue Well Station consists of two wells, with two submersible pumps in them. These pumps are old, very inefficient and very costly to maintain.This project would upgrade the second of the two wells to meet current state standards, and to increase capacity, efficiency and reliability

Project Justification

Central Avenue Well Station has two wells located at Central Avenue and Normandie Street. The Number 2 well station will be upgraded and modernized with a new building housing new pumps and motors. Both wells contain older submersible style pumps which are not energy efficient and are very expensive to maintain.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Central Avenue and Normandie Street in the northern portion of the City of Spokane.

Project Status

Active

Property has been acquired.

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Central Avenue Station 2nd Well Rehabilitation

WAT-2012-48

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$1,500,000	$0	$0	$0	$1,500,000	$1,500,000
Design	$0	$0	$135,000	$0	$0	$0	$0	$135,000	$135,000
Total	$0	$0	$135,000	$1,500,000	$0	$0	$0	$1,635,000	**$1,635,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$135,000	$1,500,000	$0	$0	$0	$1,635,000
Total			$0	$0	$135,000	$1,500,000	$0	$0	$0	**$1,635,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Chlorine Injection Station/ West Plains

WAT-2015-146

Executive Summary

Construction of a chlorine injection station along highway 902 pipeline.

Project Justification

This area is of the greatest distance from the supply wells. The residual chlorine in the water is reduced by the time the water travels to this point. A chlorine injection station will be constructed to boost chlorine levels such that water quality will be assured at the point of delivery.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Plains Pressure System, along highway 902.

Project Status

Active

Scoping estimates have been completed.

External Factors

Council approval of funds expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Chlorine Injection Station/ West Plains

WAT-2015-146

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$200,000	$0	$0	$0	$0	$0	$200,000	$200,000
Total	$0	$200,000	$0	$0	$0	$0	$0	$200,000	**$200,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$200,000	$0	$0	$0	$0	$0	$200,000
Total			$0	$200,000	$0	$0	$0	$0	$0	**$200,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Five Mile Booster Twin

WAT-2013-171

Executive Summary

Booster Station replacement.

Project Justification

The current booster station can no longer keep up with the required load. A twin station, at a separate location, provides more redundancy and reliability than a single replacement station at a single location.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Five Mile

Project Status

Active

Design is scheduled for 2017 with Construction in 2018.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Five Mile Booster Twin

WAT-2013-171

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$1,800,000	$0	$0	$0	$1,800,000	$1,800,000
Design	$0	$0	$450,000	$0	$0	$0	$0	$450,000	$450,000
Total	$0	$0	$450,000	$1,800,000	$0	$0	$0	$2,250,000	**$2,250,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$450,000	$1,800,000	$0	$0	$0	$2,250,000
Total			$0	$0	$450,000	$1,800,000	$0	$0	$0	**$2,250,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Hoffman Well

WAT-2013-172

Executive Summary

This project would be to determine what could be done to salvage the well and put it back in service for the city.

Project Justification

The Hoffman Well station consists of two hand dug, brick lined wells. One well has a 'kink' in it due to the ground shifting, and is not safe to use. This project would determine rehabilitation options.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Wellesley Avenue and Hoffman Street in the northern portion of the City of Spokane.

Project Status

Active

Rehabilitation of existing wells.

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Hoffman Well

WAT-2013-172

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Design	$0	$150,000	$0	$0	$0	$0	$0	$150,000	$150,000
Total	$0	$150,000	$0	$0	$0	$0	$0	$150,000	**$150,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$150,000	$0	$0	$0	$0	$0	$150,000
Total			$0	$150,000	$0	$0	$0	$0	$0	**$150,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Indian Trail In-Line Booster Station

WAT-2015-145

Executive Summary

The construction of an in-line booster station for the Indian Trail area.

Project Justification

The Indian Trail area is served by wells a considerable distance to the east. Water pressure is lost over the long transit distance. An in-line booster station will be constructed to help move water west, increasing service levels and reliability to the area.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Northwest Spokane. Final site has not yet been selected.

Project Status

Active

Scoping estimates have been completed.

External Factors

Site selection.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Indian Trail In-Line Booster Station

WAT-2015-145

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$1,000,000	$0	$0	$0	$0	$1,000,000	$1,000,000
Design	$0	$75,000	$0	$0	$0	$0	$0	$75,000	$75,000
Total	$0	$75,000	$1,000,000	$0	$0	$0	$0	$1,075,000	**$1,075,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$75,000	$1,000,000	$0	$0	$0	$0	$1,075,000
Total			$0	$75,000	$1,000,000	$0	$0	$0	$0	**$1,075,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

New Water Supply Well

WAT-2013-174

Executive Summary

This project would site, develop, and connect a well in the central or western portion of the city to the city's existing water system.

Project Justification

Currently the city's wells all lie in the eastern portion of the city.This project would increase efficiencies of operation by not pumping water as far, and increase system reliability and flexibility by not having all the wells on one side of the city.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Central to West Spokane.

Project Status

Active

Evaluating location.

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

New Water Supply Well

WAT-2013-174

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$10,000,000	$0	$0	$10,000,000	$10,000,000
Design	$0	$700,000	$0	$0	$0	$0	$0	$700,000	$700,000
Total	$0	$700,000	$0	$0	$10,000,000	$0	$0	$10,700,000	**$10,700,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$700,000	$0	$0	$10,000,000	$0	$0	$10,700,000
Total			$0	$700,000	$0	$0	$10,000,000	$0	$0	**$10,700,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Parkwater Pump and Motor Replacements

WAT-2015-144

Executive Summary

Replacement of old, worn out and in efficient pumps and motors for the water system. Pump and motors will be replaced for stations 5, 6, 7, and 8.

Project Justification

The existing pumps and motors have reached the end of their useful/efficient life. They will be replaced with more reliable, efficient pumps and motors.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Parkwater Well Station.

Project Status

Active

Scoping estimated have been completed.

External Factors

Council approval of fund expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Parkwater Pump and Motor Replacements

WAT-2015-144

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Design	$0	$30,000	$0	$0	$0	$0	$0	$30,000	$30,000
Purchases	$0	$0	$250,000	$250,000	$250,000	$250,000	$0	$1,000,000	$1,000,000
Total	$0	$30,000	$250,000	$250,000	$250,000	$250,000	$0	$1,030,000	**$1,030,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$30,000	$250,000	$250,000	$250,000	$250,000	$0	$1,030,000
Total			$0	$30,000	$250,000	$250,000	$250,000	$250,000	$0	**$1,030,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Plains System New Booster

WAT-2012-141

Executive Summary

Design and construct a new booster station to increase supply to the West Plains area.

Project Justification

A new booster station will be constructed in the West Plains area. The new booster station will improve water service to the Plains Pressure System by providing redundancy and increased capacity. The exact location of this booster station has not been determined, but is needed in the vicinity of the existing Spotted Road Booster Station. This booster station will supply customers and the increasing demands south and west of the SIA area. Demand in the Plains System is increasing as marketable land near and around the Spokane International Airport develops. This proposed booster station will balance our system of supply by eliminating a weak link in the supply system that provides water to this area.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

North of the Spokane International Airport in the vicinity of the existing Spotted Road Booster Station.

Project Status

Active

Property has been purchased.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Plains System New Booster

WAT-2012-141

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$0	$1,250,000	$0	$1,250,000	$1,250,000
Design	$0	$0	$0	$0	$150,000	$0	$0	$150,000	$150,000
Total	$0	$0	$0	$0	$150,000	$1,250,000	$0	$1,400,000	**$1,400,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$0	$150,000	$1,250,000	$0	$1,400,000
Total			$0	$0	$0	$0	$150,000	$1,250,000	$0	**$1,400,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Ray Street Well Pump, Motor, and MCC #1

WAT-2015-141

Executive Summary

Replacement of aged and worn out pumping equipment.

Project Justification

The existing equipment is worn out and no longer operates efficiently. New equipment will be up to current safety an operational standards as well as providing increased efficiency and reliability.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Ray Street Well Station.

Project Status

Active

Estimated have been completed.

External Factors

Council approval of funds expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Ray Street Well Pump, Motor, and MCC #1

WAT-2015-141

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Purchases	$0	$350,000	$0	$0	$0	$0	$0	$350,000	$350,000
Total	$0	$350,000	$0	$0	$0	$0	$0	$350,000	**$350,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$350,000	$0	$0	$0	$0	$0	$350,000
Total			$0	$350,000	$0	$0	$0	$0	$0	**$350,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

System Metering

WAT-2013-159

Executive Summary

This project would upgrade and/or install system meters over the next three years.

Project Justification

Many of the City's 25 booster stations have old, poorly functioning, or non-existent meters.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

City wide.

Project Status

Active

Construction will began in 2014.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

System Metering

WAT-2013-159

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$180,000	$0	$0	$0	$0	$0	$180,000	$180,000
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$180,000	$0	$0	$0	$0	$0	$180,000	**$180,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$180,000	$0	$0	$0	$0	$0	$180,000
Total			$0	$180,000	$0	$0	$0	$0	$0	**$180,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Thorpe Road Booster Station MCC

WAT-2015-142

Executive Summary

Replacement of outdated and in efficient motor control center equipment for the Thorpe Road Booster Station. New equipment will meet current safety and energy efficiency requirements.

Project Justification

See above.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Thorpe Road Booster Station.

Project Status

Active

Estimated costs have been verified.

External Factors

Council approval of fund expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Thorpe Road Booster Station MCC

WAT-2015-142

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Purchases	$0	$200,000	$0	$0	$0	$0	$0	$200,000	$200,000
Total	$0	$200,000	$0	$0	$0	$0	$0	$200,000	**$200,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$200,000	$0	$0	$0	$0	$0	$200,000
Total			$0	$200,000	$0	$0	$0	$0	$0	**$200,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Source Well and Booster Pump Stations

Upriver Headers

WAT-2013-168

Executive Summary

Steel Pipe Replacement.

Project Justification

Well Electric Station was constructed in 1925. It is one of the two largest water feeds to the City. The pipes directly outside the station are old steel pipes that are in need of replacement to insure system reliability and avoid unscheduled, potentially very long outages.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

2701 N. Waterworks Street near Upriver Dam. Located in the East Central portion of the City of Spokane.

Project Status

Active

Pipes scheduled for replacement in 2020.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Source Well and Booster Pump Stations

Upriver Headers

WAT-2013-168

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$0	$1,850,000	$0	$1,850,000	$1,850,000
Design	$0	$0	$0	$0	$200,000	$0	$0	$200,000	$200,000
Total	$0	$0	$0	$0	$200,000	$1,850,000	$0	$2,050,000	**$2,050,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$0	$200,000	$1,850,000	$0	$2,050,000
Total			$0	$0	$0	$0	$200,000	$1,850,000	$0	**$2,050,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Storage System Improvements

High System Tank

WAT-2013-173

Executive Summary

This project will construct a reservoir to increase the amount of storage in the High system such that it would meet state standards on its own, providing increased emergency and operational reliability.

Project Justification

The High System (pressure zone) is currently undeserved in terms of water storage, both for operational and emergency purposes.The emergency portion of the required water storage has been provided by the reservoirs further up the hill, and in the case of emergency they would backfeed down as needed. This project would allow this system to stand alone in meeting requirements.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

South Hill, Spokane.

Project Status

Active

Preliminary estimate complete; additional right of way needed. Construction in 2017.

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Storage System Improvements

High System Tank

WAT-2013-173

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$2,800,000	$0	$0	$0	$0	$2,800,000	$2,800,000
Design	$0	$200,000	$0	$0	$0	$0	$0	$200,000	$200,000
Total	$0	$200,000	$2,800,000	$0	$0	$0	$0	$3,000,000	**$3,000,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$200,000	$2,800,000	$0	$0	$0	$0	$3,000,000
Total			$0	$200,000	$2,800,000	$0	$0	$0	$0	**$3,000,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Storage System Improvements

Lincoln Heights Tank #2

WAT-2014-123

Executive Summary

This 10 million gallon reservoir is a concrete tank with an interior liner.

Project Justification

The existing liner is beyond it's service life and is leaking substantially. This project would replace the liner as well as complete any other repairs to the reservoir that are needed.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Lincoln Heights

Project Status

Active

This project will be constructed in 2015.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$10	$10	$10	$10	$10	$0	$50

Maintenance Comments

Water/Storage System Improvements

Lincoln Heights Tank #2

WAT-2014-123

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$680,000	$20,000	$0	$0	$0	$0	$0	$20,000	$700,000
Total	$680,000	$20,000	$0	$0	$0	$0	$0	$20,000	**$700,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$680,000	$20,000	$0	$0	$0	$0	$0	$700,000
Total			$680,000	$20,000	$0	$0	$0	$0	$0	**$700,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Storage System Improvements

Plains System Large Capacity Reservoir

WAT-2012-160

Executive Summary

This project will construct a new reservoir in the Plains Pressure System.

Project Justification

This second reservoir provides needed storage in the western portion of the City's water service area. As development continues, this area is becoming under served by the existing facilities. Additional storage, both in volume and location, will address this. Furthermore, increased water supply in the area will create more operational flexibility and better customer service.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

In the vicinity of Thomas-Mallen and White Roads.

Project Status

Active

Initial estimate complete; property acquired. Construction in 2021.

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Storage System Improvements

Plains System Large Capacity Reservoir

WAT-2012-160

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$0	$0	$5,340,000	$5,340,000	$5,340,000
Design	$0	$0	$0	$0	$0	$350,000	$0	$350,000	$350,000
Land purchase	$400,000	$0	$0	$0	$0	$0	$0	$0	$400,000
Total	$400,000	$0	$0	$0	$0	$350,000	$5,340,000	$5,690,000	**$6,090,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$400,000	$0	$0	$0	$0	$350,000	$5,340,000	$6,090,000
Total			$400,000	$0	$0	$0	$0	$350,000	$5,340,000	**$6,090,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Storage System Improvements

SIA System Additional Reservoir

WAT-2013-167

Executive Summary

This project will construct a third reservoir in the SIA system.

Project Justification

The two existing reservoirs in the SIA system are not of adequate capacity to fully serve the area and are located on one side of the zone. This additional reservoir will both provide adequate storage but also balance the system for smoother service and operations.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Planned for the vicinity of Highway 2 and Hayford Road. Property will need to be acquired.

Project Status

Active

Preliminary estimate complete; no additional right of way needed.

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Storage System Improvements

SIA System Additional Reservoir

WAT-2013-167

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$0	$0	$1,850,000	$1,850,000	$1,850,000
Design	$0	$0	$0	$0	$0	$150,000	$0	$150,000	$150,000
Land purchase	$0	$250,000	$0	$0	$0	$0	$0	$250,000	$250,000
Total	$0	$250,000	$0	$0	$0	$150,000	$1,850,000	$2,250,000	**$2,250,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$250,000	$0	$0	$0	$150,000	$1,850,000	$2,250,000
Total			$0	$250,000	$0	$0	$0	$150,000	$1,850,000	**$2,250,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Storage System Improvements

Sunset Reservoir Rehabilitation

WAT-2015-147

Executive Summary

Rehabilitation of the Sunset Reservoir to include sandblasting and recoating the interior and cleaning and recoating of the exterior.

Project Justification

The existing coating systems are failing. To preserve the life and value of the asset the rehabilitation needs to occur.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Sunset Reservoir; 4390 South Assembly Street.

Project Status

Active

Project selection and estimate completed.

External Factors

Council approval of the funding expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Storage System Improvements

Sunset Reservoir Rehabilitation

WAT-2015-147

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$10,000	$1,000,000	$0	$0	$0	$0	$1,010,000	$1,010,000
Total	$0	$10,000	$1,000,000	$0	$0	$0	$0	$1,010,000	**$1,010,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$10,000	$1,000,000	$0	$0	$0	$0	$1,010,000
Total			$0	$10,000	$1,000,000	$0	$0	$0	$0	**$1,010,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Storage System Improvements

Tank Rehabilitation

WAT-2013-163

Executive Summary

The water department has 34 reservoirs. The coatings and liners used have a life expectancy of 10 to 40 years depending on tank style and materials used. A rehabilitation schedule has not been in place or followed for many years. This would be the continuation of a program started in 2014.

Project Justification

These projects will extend the service life of the reservoirs as well as limit leaking and potential contamination issues associated with the City's storage facilities.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

City wide.

Project Status

Active

Annual Construction will began in 2014.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Storage System Improvements

Tank Rehabilitation

WAT-2013-163

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$1,000,000	$0	$1,000,000	$2,000,000	$2,000,000
Total	$0	$0	$0	$0	$1,000,000	$0	$1,000,000	$2,000,000	**$2,000,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$0	$1,000,000	$0	$1,000,000	$2,000,000
Total			$0	$0	$0	$0	$1,000,000	$0	$1,000,000	**$2,000,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Storage System Improvements

Thorpe Road Reservoir No. 2

WAT-2012-184

Executive Summary

This project will construct a 3.5 million gallon second reservoir next to the existing one on Thorpe Road.

Project Justification

The existing reservoir serves the Low Pressure Zone and the new 3.5 million gallon reservoir will provide redundancy and additional capacity for growth in the Spokane International Airport (SIA) and Plains pressure zones on the West Plains.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Adjacent to the existing Thorpe road reservoir located West of Spokane near Thorpe Road, south of Interstate 90.

Project Status

Active

Preliminary estimate complete; no additional property needed. Construction in 2020.

External Factors

Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Storage System Improvements

Thorpe Road Reservoir No. 2

WAT-2012-184

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$0	$3,000,000	$0	$3,000,000	$3,000,000
Design	$0	$0	$0	$0	$200,000	$0	$0	$200,000	$200,000
Total	$0	$0	$0	$0	$200,000	$3,000,000	$0	$3,200,000	**$3,200,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$0	$200,000	$3,000,000	$0	$3,200,000
Total			$0	$0	$0	$0	$200,000	$3,000,000	$0	**$3,200,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

16th Ave Transmission Main, Chestnut to Milton Booster

WAT-2014-163

Executive Summary

Replacement of a 30' steel transmission line

Project Justification

The existing steel line is exposed and vulnerable to failure. This project would replace the steel main with a buried ductile iron pipe.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

16th Ave crossing Latah Creek.

Project Status

Active

Design in 2019. Construction 2020.

External Factors

Permitting as to what time of year the creek crossing would be allowed.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

16th Ave Transmission Main, Chestnut to Milton Booster

WAT-2014-163

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$0	$0	$2,000,000	$0	$2,000,000	$2,000,000
Design	$0	$0	$0	$0	$150,000	$0	$0	$150,000	$150,000
Total	$0	$0	$0	$0	$150,000	$2,000,000	$0	$2,150,000	**$2,150,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$0	$0	$150,000	$2,000,000	$0	$2,150,000
Total			$0	$0	$0	$0	$150,000	$2,000,000	$0	**$2,150,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

37th Avenue Water Transmission Main

WAT-2015-124

Executive Summary

Completion of a second water transmission feed to the Brown Park Reservoirs, in conjunction with the Havana Glenrose Project.

Project Justification

This section of transmission main completes the second feed to the southern portion of the city.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

37th Avenue from Havana to Ray Street.

Project Status

Active

Project estimates have been completed.

External Factors

Coordination with the other elements of the integrated project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

37th Avenue Water Transmission Main

WAT-2015-124

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$1,500,000	$0	$0	$0	$0	$0	$1,500,000	$1,500,000
Total	$0	$1,500,000	$0	$0	$0	$0	$0	$1,500,000	**$1,500,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$1,500,000	$0	$0	$0	$0	$0	$1,500,000
Total			$0	$1,500,000	$0	$0	$0	$0	$0	**$1,500,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

57th Transmission Main Rehabilitation/Replacement

WAT-2013-169

Executive Summary

This project would be the designs to replace or rehabilitate the existing old transmission main.

Project Justification

The transmission main that runs from Perry to Glenrose is currently the only main feeding into or out of the Brown Park Reservoirs, who in turn feed the majority of the south hill. This main is in need of rehabilitation/replacement. An evaluation study is scheduled for 2016. The design, based on the 2016 study, will be done in 2017.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

57th Avenue from Perry to Glenrose.

Project Status

Active

Project will be designed in 2017.

External Factors

The 57th/Glenrose/37th project slated for construction in 2015 and 2016 would be in place to provide water service such that this main can be worked on. This project may need to be broken into as many as 3 phases for constructability. Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

57th Transmission Main Rehabilitation/Replacement

WAT-2013-169

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Design	$0	$0	$350,000	$0	$0	$0	$0	$350,000	$350,000
Total	$0	$0	$350,000	$0	$0	$0	$0	$350,000	**$350,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$350,000	$0	$0	$0	$0	$350,000
Total			$0	$0	$350,000	$0	$0	$0	$0	**$350,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Five Mile Road Water Main

WAT-2015-119

Executive Summary

This project will replace 1972 18-inch steel and a 1972 12-inch cast iron mains with a combined 18-inch ductile iron main.

Project Justification

This project will be done as part of the integrated road project, renewing pipelines that have been degraded through years and aggressive soil conditions.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Five Mile Road between Lincoln Road and Strong Road.

Project Status

Active

Initial estimates have been completed. No additional right of way is anticipated to be required.

External Factors

Coordination with the integrated work, and council approval will be needed for expenditure of funds.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Five Mile Road Water Main

WAT-2015-119

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$650,000	$0	$0	$0	$0	$650,000	$650,000
Design	$0	$65,000	$0	$0	$0	$0	$0	$65,000	$65,000
Total	$0	$65,000	$650,000	$0	$0	$0	$0	$715,000	**$715,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$65,000	$650,000	$0	$0	$0	$0	$715,000
Total			$0	$65,000	$650,000	$0	$0	$0	$0	**$715,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Glenrose/57th/Havana/37th

WAT-2013-148

Executive Summary

This project would provide a much needed second connection to the reservoirs at 57th and Glenrose. Currently, much of the south hill is fed by a single line that is currently in need of repair.

Project Justification

This project would provide redundancy, reliability, and the opportunity to maintain other elements of the water system.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

South Spokane

Project Status

Active

Project will be designed in 2014 with construction in 2015.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Glenrose/57th/Havana/37th

WAT-2013-148

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$4,029,000	$20,000	$0	$0	$0	$0	$0	$20,000	$4,049,000
Total	$4,029,000	$20,000	$0	$0	$0	$0	$0	$20,000	**$4,049,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$4,029,000	$20,000	$0	$0	$0	$0	$0	$4,049,000
Total			$4,029,000	$20,000	$0	$0	$0	$0	$0	**$4,049,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Howard Street Bridge Pipe Replacement

WAT-2015-122

Executive Summary

Replacement of the existing 1912 12-inch steel water main that crossed the Howard Street Bridge.

Project Justification

The existing main is corroded and at risk of failure. Replacement with the bridge renewal project is the best time to renew the pipeline.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Howard Street Bridge

Project Status

Active

Scoping estimates have been completed. No additional right of way is anticipated to be required.

External Factors

Coordination with the Parks Department on the bridge replacement project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Howard Street Bridge Pipe Replacement

WAT-2015-122

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$5,100,000	$0	$0	$0	$0	$5,100,000	$5,100,000
Total	$0	$0	$5,100,000	$0	$0	$0	$0	$5,100,000	**$5,100,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$5,100,000	$0	$0	$0	$0	$5,100,000
Total			$0	$0	$5,100,000	$0	$0	$0	$0	**$5,100,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Kempe to Woodridge Transmission Main

WAT-2013-161

Executive Summary

This would be a transmission/distribution main project that would connect the Kempe reservoir to the Woodridge reservoir.

Project Justification

This project will increase supply availability and eliminate stagnant water issues for the department.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Five Mile area.

Project Status

Active

Design will begin in 2015.

External Factors

Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Kempe to Woodridge Transmission Main

WAT-2013-161

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$270,000	$0	$0	$0	$0	$0	$270,000	$270,000
Design	$30,000	$0	$0	$0	$0	$0	$0	$0	$30,000
Total	$30,000	$270,000	$0	$0	$0	$0	$0	$270,000	**$300,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$30,000	$270,000	$0	$0	$0	$0	$0	$300,000
Total			$30,000	$270,000	$0	$0	$0	$0	$0	**$300,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Large Diameter In-Place Condition Assessment

WAT-2015-108

Executive Summary

Perform in-place pipeline condition assessment on identified transmission main sections.

Project Justification

This project will help determine the condition of existing pipelines; to determine the best use of funds for replacement or rehabilitation and to maximize useful life without early replacement nor undue risk of failure.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

57th Avenue from South Glennrose Road to South Perry Street and 14th Avenue from 485 feet east of South Latawah Street to East Rockwood Boulevard.

Project Status

Active

Initial estimates are complete; no additional right of way is necessary.

External Factors

Council action is required to approve the use of Water Rate funds to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Large Diameter In-Place Condition Assessment

WAT-2015-108

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$1,000,000	$0	$0	$0	$0	$0	$1,000,000	$1,000,000
Total	$0	$1,000,000	$0	$0	$0	$0	$0	$1,000,000	**$1,000,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$1,000,000	$0	$0	$0	$0	$0	$1,000,000
Total			$0	$1,000,000	$0	$0	$0	$0	$0	**$1,000,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Manito Boulevard from 14th to 33rd Avenue

WAT-2012-192

Executive Summary

Replace about 1.3 miles of steel transmission main with 24-inch ductile iron pipe.

Project Justification

This project replaces about 1.3 miles of 24-inch steel transmission main with 24-inch ductile iron pipe. The pipe route follows Manito Boulevard from 33rd Avenue to 21st Avenue and through Manito Park roadways to 14th Avenue. The existing steel main has had multiple repairs and is in poor condition due to age and corrosive soils.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Manito Boulevard from 33rd Avenue to 14th Avenue.

Project Status

Active

Initial Estimates are complete; no additional right of way is necessary.

External Factors

Events in and around Manito Park. Council action is required to approve Water Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Manito Boulevard from 14th to 33rd Avenue

WAT-2012-192

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$3,324,000	$0	$0	$0	$0	$0	$3,324,000	$3,324,000
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$3,324,000	$0	$0	$0	$0	$0	$3,324,000	**$3,324,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	State	Funded	$0	$3,324,000	$0	$0	$0	$0	$0	$3,324,000
Total			$0	$3,324,000	$0	$0	$0	$0	$0	**$3,324,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Monroe Street Main Replacement: Indiana to Montgomery

WAT-2015-117

Executive Summary

Replacement of 1902 16-inch cast iron water transmission main.

Project Justification

Infrastructure renewal of water main that is over 100 years old.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Monroe Street; Indiana to Montgomery

Project Status

Active

Initial estimates have been completed; no additional right of way required.

External Factors

Coordination with other elements of integrated project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Monroe Street Main Replacement: Indiana to Montgomery

WAT-2015-117

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$350,000	$0	$0	$0	$350,000	$350,000
Design	$0	$0	$35,000	$0	$0	$0	$0	$35,000	$35,000
Total	$0	$0	$35,000	$350,000	$0	$0	$0	$385,000	**$385,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$35,000	$350,000	$0	$0	$0	$385,000
Total			$0	$0	$35,000	$350,000	$0	$0	$0	**$385,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

North/South Freeway Crossings

WAT-2013-149

Executive Summary

The DOT project, the North-South Freeway, will cross two of the city's major transmission lines: one at Wellesley and one at LaCrosse. This project would be to do work in coordination with that DOT to relocate those lines and keep the system in tact.

Project Justification

This project would relocate the piping crossing the new freeway.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

North South Freeway crossings at LaCrosse and at Wellesley.

Project Status

Active

Construction will begin in 2017.

External Factors

Coordination with DOT. Council action is required to approve Enterprise Fund Rates in order to fully fund this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

North/South Freeway Crossings

WAT-2013-149

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$1,200,000	$0	$0	$0	$0	$1,200,000	$1,200,000
Total	$0	$0	$1,200,000	$0	$0	$0	$0	$1,200,000	**$1,200,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$1,200,000	$0	$0	$0	$0	$1,200,000
Total			$0	$0	$1,200,000	$0	$0	$0	$0	**$1,200,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

North/South Freeway Crossings-Wellesley Roundabout

WAT-2015-165

Executive Summary

Replacement of transmission main and valves that runs under the to be constructed roundabout that is a WSDOT project in conjunction with the North/South Freeway at the Wellesley exchange.

Project Justification

The existing transmission main is at the end of its service life and needs to be replaced prior to new roadway improvements being constructed over it. Also, the roadway grade is changing, which will necessitate its replacement.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Wellesley at Freya

Project Status

Active

construction will begin in 2016.

External Factors

The project schedule will be determined by the WSDOT's schedule for the roadway improvements.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

North/South Freeway Crossings-Wellesley Roundabout

WAT-2015-165

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$500,000	$0	$0	$0	$0	$0	$500,000	$500,000
Total	$0	$500,000	$0	$0	$0	$0	$0	$500,000	**$500,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$500,000	$0	$0	$0	$0	$0	$500,000
Total			$0	$500,000	$0	$0	$0	$0	$0	**$500,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Plains to SIA Systems Connection

WAT-2015-120

Executive Summary

Installation of a pipeline connecting the two intersections above, thereby connecting the Plains Pressure Zone and the SIA Pressure Zone via the Fairchild/West Plains pipeline. This will allow circulation of water through the larger transmission main and enable pipeline use.

Project Justification

This project will allow the existing pipeline to become serviceable as well as providing needed service level improvements to the northern portion of the SIA Pressure Zone.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

South Craig Road and West McFarlane Road to South Hayford Road and West McFarlane Road.

Project Status

Active

Preliminary routing and estimates have been completed.

External Factors

Final routing needs to be established as well as council approval for expenditure of funds.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Plains to SIA Systems Connection

WAT-2015-120

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$1,500,000	$0	$0	$0	$0	$0	$1,500,000	$1,500,000
Design	$150,000	$0	$0	$0	$0	$0	$0	$0	$150,000
Total	$150,000	$1,500,000	$0	$0	$0	$0	$0	$1,500,000	**$1,650,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$150,000	$1,500,000	$0	$0	$0	$0	$0	$1,650,000
Total			$150,000	$1,500,000	$0	$0	$0	$0	$0	**$1,650,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Post Street Bridge Water Main

WAT-2015-121

Executive Summary

Installation of a water main on the reconstructed Post Street Bridge.

Project Justification

The Post Street Bridge used to have a water main on it, but long ago became unserviceable. Reestablishment of a water connection across the rive at this point would increase reliability and redundancy of the downtown water system.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Post Street Bridge

Project Status

Active

Scoping level estimates have been completed.

External Factors

Coordination with the bridge project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Post Street Bridge Water Main

WAT-2015-121

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$80,000	$0	$0	$0	$0	$80,000	$80,000
Design	$0	$8,000	$0	$0	$0	$0	$0	$8,000	$8,000
Total	$0	$8,000	$80,000	$0	$0	$0	$0	$88,000	**$88,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$8,000	$80,000	$0	$0	$0	$0	$88,000
Total			$0	$8,000	$80,000	$0	$0	$0	$0	**$88,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Ray Street Water; Well to 17th

WAT-2015-115

Executive Summary

Replacement of 1936 steel water main; 36-inch.

Project Justification

The existing transmission main is in poor shape, and at the end of it's useful life. Replacement in conjunction with the roadway project is planned.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Ray Street, from approximately Hartson to 17th Ave.

Project Status

Active

Initial estimates are complete; no additional right of way is necessary

External Factors

Coordination with other departments and approval by the council for use of Water Rates funds.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Ray Street Water; Well to 17th

WAT-2015-115

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$1,500,000	$0	$0	$0	$0	$1,500,000	$1,500,000
Design	$0	$150,000	$0	$0	$0	$0	$0	$150,000	$150,000
Total	$0	$150,000	$1,500,000	$0	$0	$0	$0	$1,650,000	**$1,650,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$150,000	$1,500,000	$0	$0	$0	$0	$1,650,000
Total			$0	$150,000	$1,500,000	$0	$0	$0	$0	**$1,650,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Rowan Avenue Water; phase 2

WAT-2015-114

Executive Summary

Replacement of aged existing water mains; 18-inch 1927 steel and 12- inch 1944 cast iron pipes.

Project Justification

The existing water mains are old, at or beyond their service life, and need replacement to assure system reliability and reduce failure risks.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

Rowan Avenue; Alberta to Monroe

Project Status

Active

Initial estimates are complete; no additional right of way is necessary.

External Factors

Coordination with the integrated project and council approval for use of Water Rates funding.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Rowan Avenue Water; phase 2

WAT-2015-114

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$1,450,000	$0	$0	$0	$0	$0	$1,450,000	$1,450,000
Total	$0	$1,450,000	$0	$0	$0	$0	$0	$1,450,000	**$1,450,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$1,450,000	$0	$0	$0	$0	$0	$1,450,000
Total			$0	$1,450,000	$0	$0	$0	$0	$0	**$1,450,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

TJ Meenach Dr. Water Transmission Main; Bridge to NW Blvd

WAT-2015-104

Executive Summary

Replacement of 1,700 feet of 18 inch cast iron transmission main.

Project Justification

The roadway along this section is being completely reconstructed as part of other city projects, and this project will replace the aged 18-inch cast iron line with a new ductile iron water main. This will complete the renewal of the roadway system and insure system functionality for the next 100 years or more.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

TJ Meenach Drive from the TJ Meenach Bridge to Northwest Blvd.

Project Status

Active

Initial estimates are complete.

External Factors

Coordination with the other elements of the integrated project and council action is required to approve funding this project.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

TJ Meenach Dr. Water Transmission Main; Bridge to NW Blvd

WAT-2015-104

Spending

Project Phase	Spending to Date	Estimated Spending						Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$345,000	$0	$0	$0	$0	$345,000	$345,000
Design	$0	$35,000	$0	$0	$0	$0	$0	$35,000	$35,000
Total	$0	$35,000	$345,000	$0	$0	$0	$0	$380,000	**$380,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$35,000	$345,000	$0	$0	$0	$0	$380,000
Total			$0	$35,000	$345,000	$0	$0	$0	$0	**$380,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Water/Transmission Mains

Wellesley Ave Transmission Main

WAT-2015-118

Executive Summary

Replacement of existing 1912 and 1926 steel water main with ductile iron water main.

Project Justification

The existing main, in part or in whole, is riveted steel from the 1910's and 20's. It is beyond it's service life and requires replacement in order to provide reliability and reduce the risk of failure.

This project meets the following comprehensive plan goals and/or policies:

Location

Other Location

East Wellesley Avenue from North Perry to North Freya Street

Project Status

Active

Initial estimates completed; no additional right of way is required.

External Factors

Coordination with other utilities and streets department. This project will require council approval of funds expenditure.

Maintenance

Maintenance of capital facilities, buildings and infrastructure has an impact on a Department's operating budget, and thus routine maintenance costs for new and ongoing projects are identified in the table below.

	2016	2017	2018	2019	2020	2021	Total
Expected Annual Maintenance	$0	$0	$0	$0	$0	$0	$0

Maintenance Comments

Water/Transmission Mains

Wellesley Ave Transmission Main

WAT-2015-118

Spending

Project Phase	Spending to Date	Estimated Spending							Total
		2016	2017	2018	2019	2020	2021	6 Year Total	
Construction	$0	$0	$0	$3,500,000	$0	$0	$0	$3,500,000	$3,500,000
Design	$0	$0	$350,000	$0	$0	$0	$0	$350,000	$350,000
Total	$0	$0	$350,000	$3,500,000	$0	$0	$0	$3,850,000	**$3,850,000**

Funding

Funding Name	Source	Status*	Funding to Date	Estimated Funding						
				2016	2017	2018	2019	2020	2021	Total
Water Rates	Local	Funded	$0	$0	$350,000	$3,500,000	$0	$0	$0	$3,850,000
Total			$0	$0	$350,000	$3,500,000	$0	$0	$0	**$3,850,000**

*Status definitions

- Unidentified: Funding source has not yet been determined
- Identified: Funding source has been found, but not yet requested
- Applied: Grant or loan application has been submitted, or budget has been requested
- Awarded: Grant or loan has been offered but the contract has not yet been signed or budget has not yet been approved by Council
- Encumbered: Project contract has been signed and funds have been allocated to spend on the project

Funding amounts in red reflect sources that are unidentified, identified, or anticipated.

Chapter 9

Financial Program

Exhibits and Appendices

Exhibit 9.1.1 Water – Wastewater 20-Year Pro Forma

COMBINED WATER/SEWER/STORMWATER FUND
Pro-Forma
DRAFT 9/15/2014

Budget	2014 Budget	2015 Proposed	2016 Proposed	2017 Proposed	2018 Proposed	2019 Proposed	6-Year TOTAL
Revenue	122,918,732	126,483,375	130,151,393	133,925,784	137,809,631	141,806,111	
Operating Expenses	89,439,110	90,307,287	92,926,198	95,621,058	98,394,069	101,247,497	
Annual Lease Streets ROW	*2,500,000*						
Annual Lease Parks ROW	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	
Net Inc Available for Capital/Debt	**$29,979,622**	**$35,176,088**	**$36,225,195**	**$37,304,725**	**$38,415,562**	**$39,558,614**	
Capital Expenditures							
Water Capital	15,809,000	10,094,000	11,503,000	9,690,000	12,390,000	7,410,000	66,896,000
SW/WW Capital	30,957,400	72,847,000	111,765,850	104,124,000	57,643,000	22,583,000	399,920,250
Integrated Projects/Levy commitment	*3,250,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*28,250,000*
Utilities/Bridges		15,000,000					
Total Capital	**$50,016,400**	**$102,941,000**	**$128,268,850**	**$118,814,000**	**$75,033,000**	**$34,993,000**	**$510,066,250**
Capital Paid by Rates	-169,983,600	12,941,000	128,268,850	118,814,000	75,033,000	34,993,000	$200,066,250
Capital Paid by Borrowing (Bonds)	200,000,000						$200,000,000
Capital Paid by Borrowing (SRF)	20,000,000	30,000,000					$50,000,000
Capital Paid by Grant		60,000,000					$60,000,000
Total Debt Service (Bonds)		15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	
Total Debt Service (SRF/PWT)	1,517,237	1,517,237	3,333,333	3,333,333	3,333,333	3,333,333	
Capital/Debt Service Expenditure	**-168,466,363**	**29,930,202**	**147,074,148**	**137,619,298**	**93,838,298**	**53,798,298**	
County Capital Contribution	**$2,649,606**	**$5,825,181**	**$10,000,000**	**$10,000,000**	**$2,000,000**	**$2,000,000**	
Impact on Reserves	201,095,591	11,071,067	-100,848,953	-90,314,573	-53,422,736	-12,239,684	
ENDING RESERVE BALANCE	292,882,484	303,953,551	203,104,597	112,790,025	59,367,289	47,127,605	
Less Reserve for Debt Service		15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	
TOTAL OPERATING RESERVE	**$292,882,484**	**$288,481,586**	**$187,632,632**	**$97,318,060**	**$43,895,324**	**$31,655,640**	

COMBINED WATER/SEWER/STORMWATER FUND
Pro-Forma
DRAFT 9/15/2014

Budget	2020 Proposed	2021 Proposed	2022 Proposed	2023 Proposed	2024 Proposed	2025 Proposed	2026 Proposed	2027 Proposed	2028 Proposed	2029 Proposed	2030 Proposed	2031 Proposed	2032 Proposed	2033 Proposed	TOTAL
Revenue	*145,918,488*	*150,150,124*	*154,504,477*	*158,985,107*	*163,595,675*	*168,339,950*	*173,221,809*	*178,245,241*	*183,414,353*	*188,733,369*	*194,206,637*	*199,838,629*	*205,633,950*	*211,597,334*	
Operating Expenses	*104,183,674*	*107,205,001*	*110,313,946*	*113,513,050*	*116,804,929*	*120,192,272*	*123,677,847*	*127,264,505*	*130,955,176*	*134,752,876*	*138,660,709*	*142,681,870*	*146,819,644*	*151,077,414*	
Annual Lease Streets ROW															
Annual Lease Parks ROW	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	*1,000,000*	
Net Inc Available for Capital/Debt	**$40,734,814**	**$41,945,123**	**$43,190,532**	**$44,472,057**	**$45,790,747**	**$47,147,678**	**$48,543,961**	**$49,980,736**	**$51,459,177**	**$52,980,494**	**$54,545,928**	**$56,156,760**	**$57,814,306**	**$59,519,921**	
Capital Expenditures															
Water Capital	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	**241,896,000**
SW/WW Capital	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	**574,920,250**
Integrated Projects/Levy commitment	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	*5,000,000*	***98,250,000***
Utilities/Bridges															
Total Capital	**$25,000,000**	**$25,000,000**	**$25,000,000**	**$25,000,000**	**$25,000,000**	**$25,000,000**	**$25,000,000**	**$35,000,000**	**$35,000,000**	**$35,000,000**	**$35,000,000**	**$35,000,000**	**$35,000,000**	**$35,000,000**	**$930,066,250**
Capital Paid by Rates	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000	25,000,000	35,000,000	35,000,000	35,000,000	35,000,000	35,000,000	35,000,000	35,000,000	**$620,066,250**
Capital Paid by Borrowing (Bonds)															**$200,000,000**
Capital Paid by Borrowing (SRF)															**$50,000,000**
Capital Paid by Grant															**$60,000,000**
Total Debt Service (Bonds)	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	$15,471,965	
Total Debt Service (SRF/PWT)	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	$3,333,333	
Capital/Debt Service Expenditure	**43,805,298**	**43,805,298**	**43,805,298**	**43,805,298**	**43,805,298**	**43,805,298**	**43,805,298**	**53,805,298**	**53,805,298**	**53,805,298**	**53,805,298**	**53,805,298**	**53,805,298**	**53,805,298**	
County Capital Contribution	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	**$2,000,000**	
Impact on Reserves	-1,070,485	139,825	1,385,234	2,666,759	3,985,449	5,342,380	6,738,663	-1,824,562	-346,121	1,175,195	2,740,630	4,351,462	6,009,008	7,714,622	
ENDING RESERVE BALANCE	46,057,120	46,196,945	47,582,179	50,248,938	54,234,386	59,576,766	66,315,429	64,490,867	64,144,746	65,319,942	68,060,571	72,412,033	78,421,041	86,135,663	
Less Reserve for Debt Service	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	15,471,965	
TOTAL OPERATING RESERVE	**$30,585,155**	**$30,724,980**	**$32,110,214**	**$34,776,973**	**$38,762,421**	**$44,104,801**	**$50,843,464**	**$49,018,902**	**$48,672,781**	**$49,847,977**	**$52,588,606**	**$56,940,068**	**$62,949,076**	**$70,663,698**	