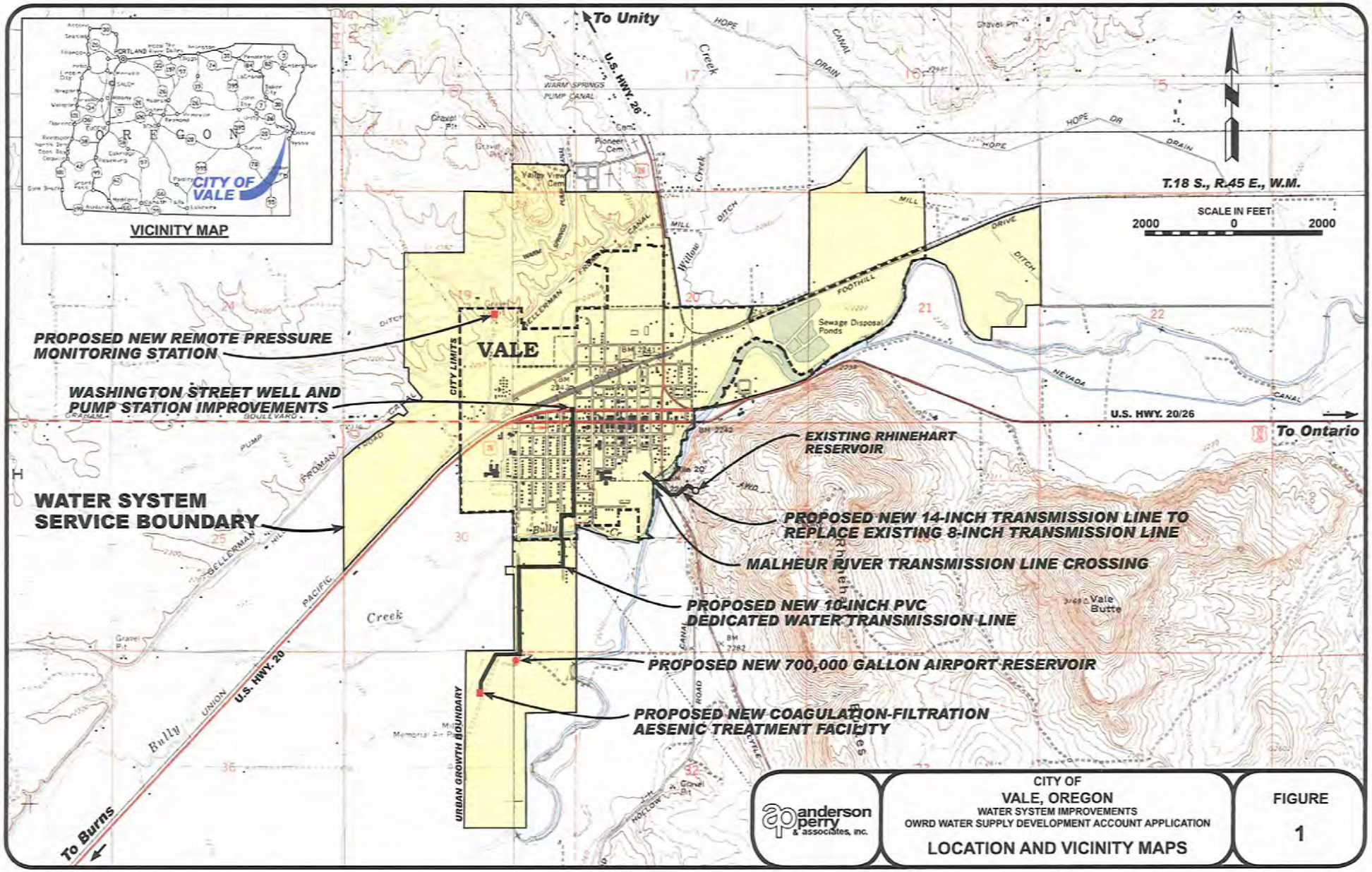
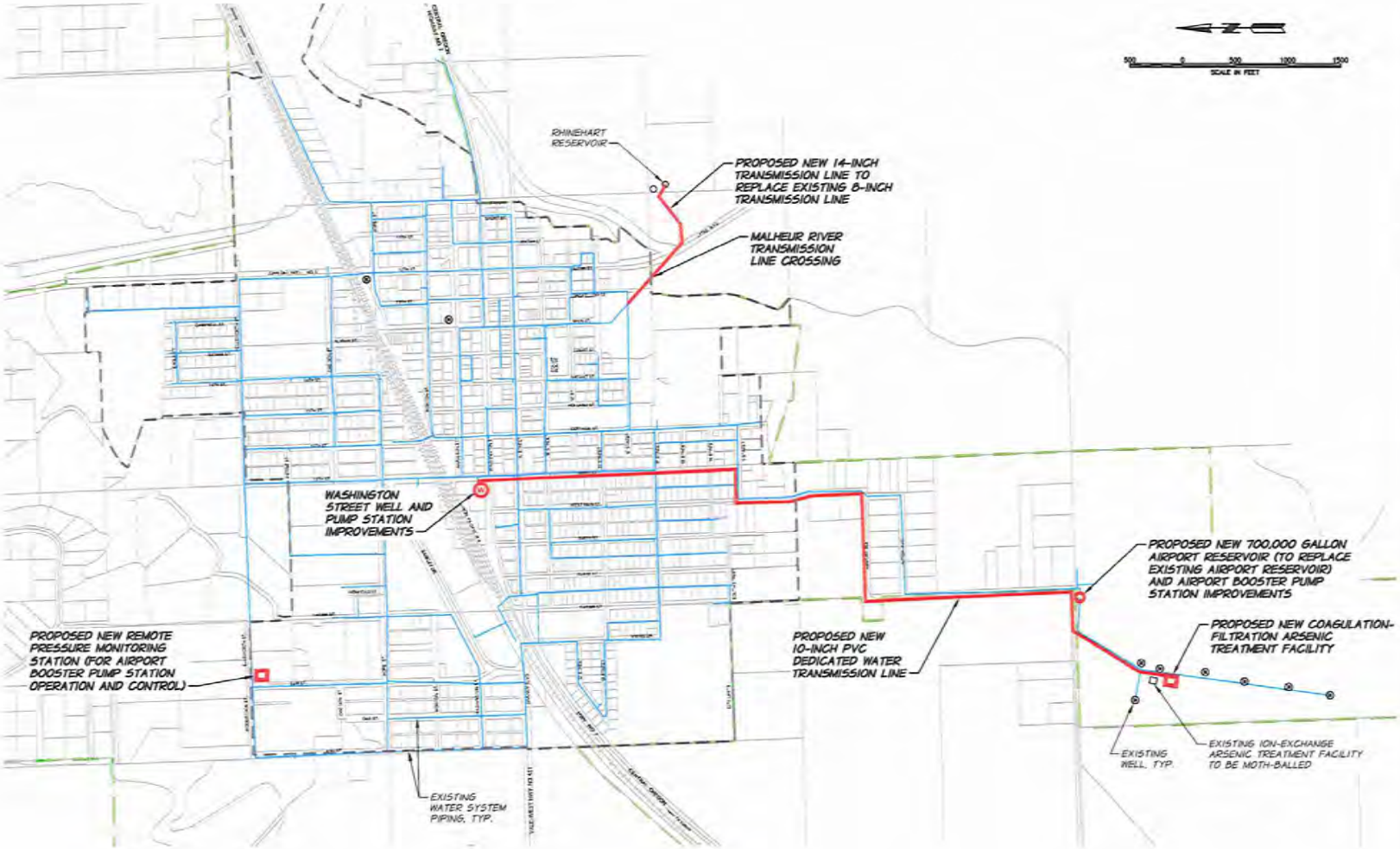
FIGURES



Job# 65-96-030 Sep. 17, 2015 lbauer



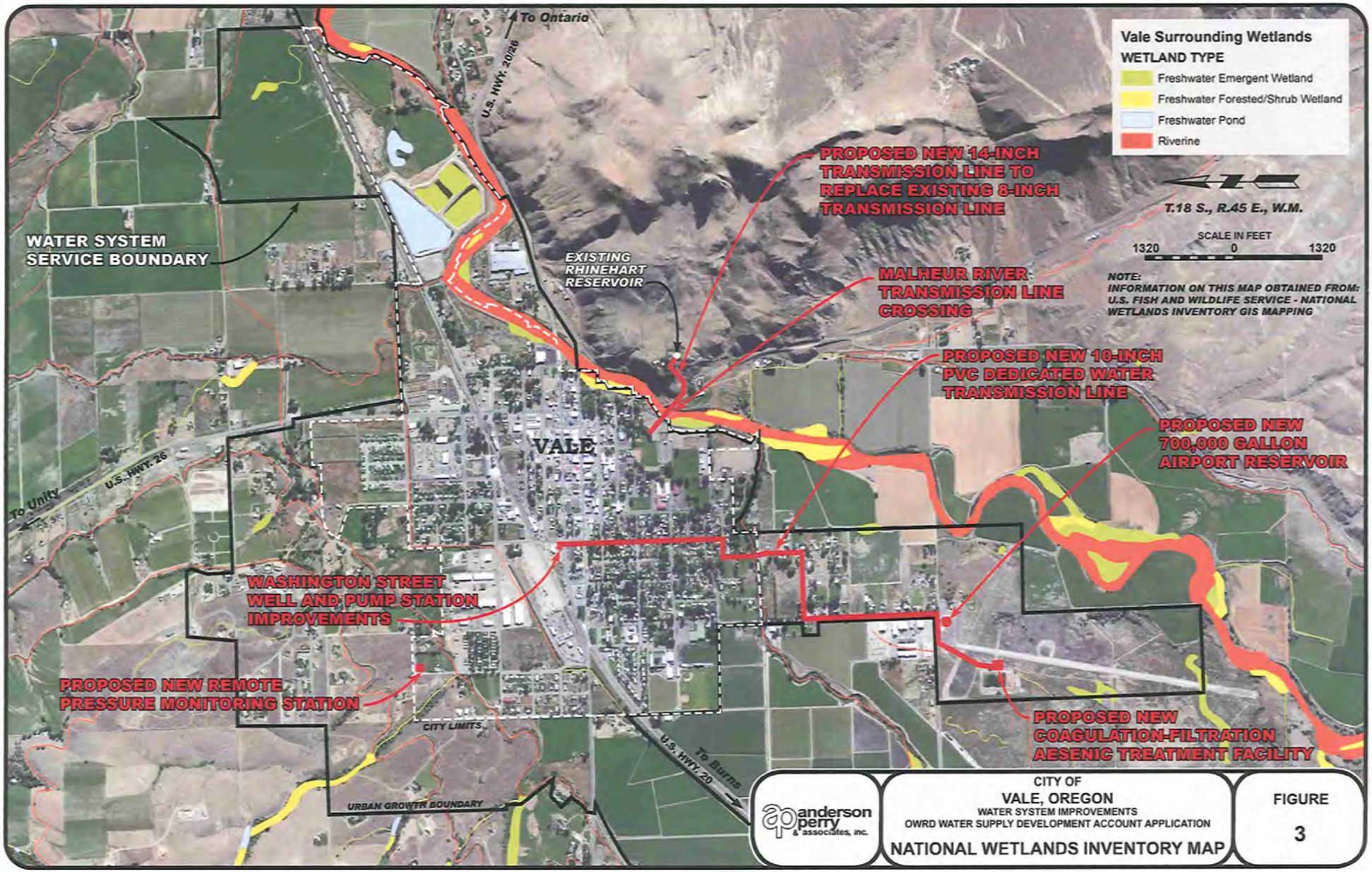
anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION

PROJECT IMPROVEMENTS MAP

FIGURE
2

S:\VALE\65-96 Water System Improvements\Dwg\OWRD W Sup Dev Acc App\OWRD APP FIG 2.dwg, Fig B-2, 12/2/2015 2:38:25 PM, prichardson



anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION

NATIONAL WETLANDS INVENTORY MAP

FIGURE
3

Job# 65-96-030 Nov. 5, 2015 lbauer

CITY OF VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
SECTION B - DETAILED PROJECT BUDGET

BUDGET LINE ITEM	IN-KIND MATCH	CASH MATCH FUND	OWRD FUNDS	TOTAL
1. Design Engineering		$573,000		$573,000
2. Construction Engineering		$641,000		$641,000
3. Construction				
a. Washington Street Well Pump Station and Transmission Main Line Improvements		$826,000	$386,000	$1,212,000
b. New Coagulation Filtration Arsenic Treatment System Improvements			$2,955,000	$2,955,000
c. New Airport Water Storage Reservoir Replacement and Existing Booster Pump Station Modifications			$1,353,000	$1,353,000
4. Construction Contingency			$551,000	$551,000
5. Grant Administration		$25,000		$25,000
6. Labor Standards		$15,000	$15,000	$30,000
7. Environmental Review Report		$15,000	$15,000	$30,000
8. Archaelogical Reporting and Cultural Resources Monitoring		$95,000		$95,000
9. Permitting and Regulatory Fees			$30,000	$30,000
10. Legal		$10,000		$10,000
TOTAL FOR SECTION B		**$2,200,000**	**$5,305,000**	**$7,505,000**
PERCENTAGE FOR SECTION B		**29.3%**	**70.7%**	**100.00%**

OWRD = Oregon Water Resources Department

anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT
ACCOUNT APPLICATION
DETAILED PROJECT BUDGET

FIGURE
4

CITY OF VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
SUMMARY OF ESTIMATED PROJECT COSTS
(2017 DOLLARS)

Estimated Improvements Costs		
Washington Street Well Pump Station and Transmission Main Line Improvements	$	1,600,000
New Coagulation Filtration Arsenic Treatment System Improvements		3,900,000
New Airport Reservoir and Existing Booster Pump Station Modifications		1,785,000
Total Estimated Improvements Costs (2017 Dollars)[1]	**$**	**7,285,000**
Other Estimated Project Costs		
Legal	$	10,000
Grant Administration		25,000
Labor Standards		30,000
Environmental Review Report		30,000
Archaeological Report and Cultural Resource Monitoring		95,000
Permitting and Regulatory Fees		30,000
Subtotal Other Project Costs (2017 Dollars)	**$**	**220,000**
TOTAL ESTIMATED PROJECT COST (2017 DOLLARS)	**$**	**7,505,000**

[1] Total estimated improvement costs include construction contingency, preliminary design, final design, and Construction Engineering costs.

OWRD = Oregon Water Resources Department

anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT
ACCOUNT APPLICATION
SUMMARY OF ESTIMATED
PROJECT COSTS

FIGURE
5

CITY OF VALE, OREGON
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
WATER SYSTEM IMPROVEMENTS
WASHINGTON STREET WELL PUMP STATION AND TRANSMISSION MAIN LINE IMPROVEMENTS
COST ESTIMATE
(Year 2017 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 62,000	All Req'd	$ 62,000
2	Project Safety, Quality Control, and Traffic Control	LS	31,000	All Req'd	31,000
3	Security Fencing and Miscellaneous Site Improvements	LS	26,000	All Req'd	26,000
4	Pump Station and Well Rehabilitation	LS	129,000	All Req'd	129,000
5	Remove Existing Chlorination System, Pumps, Controls, etc.	LS	21,000	All Req'd	21,000
6	10-inch PVC Pipeline to Treatment Facility	LF	47	8,500	399,500
7	Water Line Boring under Highway 20	Each	35,000	2	70,000
8	Piping, Valves, Flowmeter, etc.	LS	80,000	All Req'd	80,000
9	Connection to Existing Main Line	Each	2,000	2	4,000
10	New Submersible Well Pumps	LS	75,000	All Req'd	75,000
11	New Hypochlorination System	LS	15,000	All Req'd	15,000
12	Electrical, Controls, and Instrumentation	LS	80,500	All Req'd	80,500
13	Telemetry and SCADA Development	LS	15,000	All Req'd	15,000
14	Asphalt Surface Restoration	SY	60	3,000	180,000
15	Gravel Surface Restoration	SY	10	400	4,000
16	Painting Work	LS	20,000	All Req'd	20,000
				Subtotal Estimated Construction Cost	**$ 1,212,000**
				Construction Contingency (10%)	121,000
				Total Estimated Construction Cost	**$ 1,333,000**
				Preliminary and Final Design, and Construction Engineering (20%)	267,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)[1]	**$ 1,600,000**

[1] See Figure 5 for a summary of estimated project costs and other project costs for the improvements.

OWRD = Oregon Water Resources Department
WSMP = Water System Master Plan

anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
WASHINGTON STREET WELL PUMP STATION AND TRANSMISSION MAIN LINE IMPROVEMENTS COST ESTIMATE

FIGURE
6

CITY OF VALE, OREGON
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
WATER SYSTEM IMPROVEMENTS
NEW COAGULATION FILTRATION ARSENIC TREATMENT SYSTEM
COST ESTIMATE
(Year 2017 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 150,000	All Req'd	$ 150,000
2	Project Safety and Quality Control	LS	35,000	All Req'd	35,000
3	Site Work	LS	80,000	All Req'd	80,000
4	Security Improvements	LS	25,000	All Req'd	25,000
5	New Treatment Building	LS	310,000	All Req'd	310,000
6	Piping, Valves, and Fittings	LS	215,000	All Req'd	215,000
7	Treatment Feed and Backwash Pumps	LS	110,000	All Req'd	110,000
8	Standby Generator and ATS	LS	70,000	All Req'd	70,000
9	Electrical, Controls, and Instrumentation	LS	350,000	All Req'd	350,000
10	Telemetry and SCADA Development	LS	40,000	All Req'd	40,000
11	Coagulation-Filtration Equipment, including Vessels, Media, etc.	LS	1,325,000	All Req'd	1,325,000
12	Lagoon Piping Modifications	LS	30,000	All Req'd	30,000
13	Backwash Water Recovery Storage Tanks and Appurtenances	LS	175,000	All Req'd	175,000
14	Painting Work	LS	40,000	All Req'd	40,000
				Subtotal Estimated Construction Cost	**$ 2,955,000**
				Construction Contingency (10%)	295,000
				Total Estimated Construction Cost	**$ 3,250,000**
				Preliminary, Design, and Construction Engineering (20%)	650,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)[1]	**$ 3,900,000**

[1] See 5 for a summary of estimated project costs and other project costs for the improvements.

[2] Annual OM&R costs were estimated from City of Vale adopted budgets.

OM&R = Operations, Maintenance, and Replacement
OWRD = Oregon Water Resources Department
WSMP = Water System Master Plan

anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
NEW COAGULATION FILTRATION ARSENIC
TREATMENT SYSTEM IMPROVEMENTS
COST ESTIMATE

FIGURE 7

CITY OF VALE, OREGON
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
WATER SYSTEM IMPROVEMENTS
NEW AIRPORT WATER STORAGE RESERVOIR REPLACEMENT AND EXISTING BOOSTER PUMP STATION MODIFICATIONS
COST ESTIMATE
(Year 2017 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 65,000	All Req'd	$ 65,000
2	Project Safety and Quality Control	LS	15,000	All Req'd	15,000
3	Existing Airport Reservoir Demolition	LS	46,000	All Req'd	46,000
4	Security Fencing and Improvements	LS	30,000	All Req'd	30,000
5	Existing Pump Station Controls and Electrical Modifications	LS	70,000	All Req'd	70,000
6	Telemetry and SCADA Development	LS	40,000	All Req'd	40,000
7	New 700,000-gallon Airport Reservoir and Site Work	LS	800,000	All Req'd	800,000
8	Site Piping, Valves, and Appurtenances	LS	175,000	All Req'd	175,000
9	Remote Pressure Monitoring Station and Connection to Existing Distribution System	Each	30,000	1	30,000
10	Asphalt Surface Restoration	SY	60	1,000	60,000
11	Gravel Surface Restoration	SY	10	200	2,000
12	Painting Work	LS	20,000	All Req'd	20,000
				Subtotal Estimated Construction Cost	**$ 1,353,000**
				Construction Contingency (10%)	135,000
				Total Estimated Construction Cost	**$ 1,488,000**
				Preliminary, Design, and Construction Engineering (20%)	297,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2017 DOLLARS)[1]	**$ 1,785,000**

[1] See Figure 5 for a summary of estimated project costs and other project costs for the improvements.

BPS = Booster Pump Station
OWRD = Oregon Water Resources Department
WSMP = Water System Master Plan

anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT ACCOUNT APPLICATION
NEW AIRPORT WATER STORAGE RESERVOIR REPLACEMENT AND EXISTING BPS IMPROVEMENTS COST ESTIMATE

FIGURE 8

SUPPORT LETTERS

business oregon.
IFA Infrastructure Finance Authority

June 8, 2015

Lynn Findley, City Manager
City of Vale
252 B Street West
Vale, OR 97918

Dear Mr. Findley:

Business Oregon Infrastructure Finance Authority (IFA) has reviewed the June 8, 2015 income survey report provided by Oregon Policy Analysis Laboratory (OPAL) in the School of Public Policy at Oregon State University on behalf of the City of Vale. The survey methodology and survey instrument used were implemented in accordance with the U.S. Department of Housing and Urban Development (HUD) CPD Notice 14-013. The IFA accepts the survey results that the population to be served by this project is reported as 62.45% low-and moderate income (LMI).

We appreciate the time and effort it took to develop and implement a survey consistent with HUD requirements. If you have any questions or need further assistance please contact Tawni Bean, your Regional Coordinator, at (503) 551-0957.

Sincerely,

Edward Tabor
Finance Officer
Business Oregon
Infrastructure Finance Authority

Cc: Tawni Bean, IFA
File

775 Summer St, NE, Suite 200 • Salem, OR 97301-1280
503-986-0123 • fax 503-581-5115 • TTY 800-735-2900 • www.orinfrastructure.org

Malheur County
Economic Development

October 10, 2015

Oregon Water Resources Department
725 Summer St. NE, Ste. A
Salem, OR 97301

RE: Letter of Support for Water Supply Development Account Funding Application

To Whom It May Concern:

Malheur County Economic Development eagerly submits this letter of support for the City of Vale Water Supply Development Account Funding Application.

As you know, the City of Vale is submitting a funding application totaling $8.013 million. The proposal addresses significant issues and barriers the City of Vale is facing as it strives to grow. Below are five primary achievements Malheur County Economic Development believes can be accomplished if funding is granted.

1. **Improved Community Health** – After years of striving to fix the local arsenic problem, a failed, inefficient arsenic treatment facility has left the city out of compliance with state and federal drinking water standards. The proposal will help construct a new coagulation filtration arsenic treatment facility to bring the city into compliance.

2. **Local Economic Development and Job Creation** –This proposal will increase water capacity in several key areas, helping Vale market newly zoned industrial acreage. It is of interest to note that this acreage was recently designated one of Oregon's Regionally Significant Industrial Areas (RSIA) by the Economic Recovery Review Council (ERRC). The ERRC was tasked with identifying and designating up to 15 sites statewide that have a high potential for rapid job creation for Oregon. Why is this relevant? The region's largest industry sector is value-added agriculture, which is heavily dependent upon safe, reliable water. Funding the proposed application will address and improve local water resources for economic development opportunities.

3. **Saves Tax Dollars** – The project includes improvements that have an estimated annual savings to the City of Vale of $150,000, or $3 million over the 20-year design life of the facility. These savings are found mainly through reduced energy consumption.

Malheur County Economic Development
Serving the Communities of Adrian, Jordan Valley, Nyssa, Ontario & Vale
522 S.W. 4th Street, Ontario, Oregon 97914
Phone: (541) 889-6216 | Fax: (541) 889-6398 | Email: malheurcountyedc@gmail.com
www.MalheurCountyEconomicDevelopment.com

4. **Increased Water Conservation** – In recent years, drought conditions have increased throughout the area, and recently Governor Kate Brown has asked all agencies to find ways to reduce their water consumption by 15%. The proposed application will help the City of Vale improve water conservation. The proposed projects will result in significant reductions in the volume of water wasted from the current system. The current average annual water volume demand is about 172 million gallons. With an estimated reduction of 5% of water lost from the treatment process, the associated annual amount of water saved will be about 8.6 million gallons, or equivalent to about 18 days of water supply to the city. This will mean less water pumped from underground aquifers.

5. **Exceptional Municipal Stewardship** – Administrative responsibility is an important aspect of all projects. During our years of working with the City of Vale, we have found the administration to be professional, knowledgeable, and easy to work with. We have the utmost confidence in them. They will make sure awarded dollars are spent according to the terms and requirements of the program and will deliver results.

We know public section investment leads to private sector growth. We encourage your approval of the funding request for Vale's Water Supply Development Account Funding Application.

If you have any questions, or require any additional information, I can be reached at 541-889-6216 or malheurcountyedc@gmail.com.

Best Regards,

Greg Smith, Director
Malheur County Economic Development

MALHEUR COUNTY

COUNTY COURT

251 B Street West, #5 , Vale, Oregon 97918, (541) 473-5124 , Fax (541) 473-5576

October 7, 2015

To Whom It May Concern:

The Malheur County Court fully supports the City of Vale's request for $5 million to fund the treatment and storage component of their Water System Master Plan implementation.

This project will significantly increase Vale's water quality and delivery capacity. Additionally, this project will support future anticipated growth and development in Vale.

Thank you for your consideration of this project. If you have any questions or need further information, please feel free to contact us at your convenience.

Sincerely,

MALHEUR COUNTY COURT

Dan P. Joyce

Judge Dan P. Joyce

Commissioner Don Hodge

Larry Wilson

Commissioner Larry Wilson

EASTERN REGIONAL SOLUTIONS
OFFICE OF GOVERNOR KATE BROWN

October 6, 2015

Dear OWRD Grant Review Team,

On behalf of the Greater Eastern Oregon Regional Solutions Advisory Committee and Eastern Regional Solutions Team I am writing this letter to express support for the City of Vale's request for $5 million to fund the treatment and storage component of their Water System Master Plan implementation.

Infrastructure to support economic and community development has been identified as an economic development priority for the region. This project will significantly increase Vale's water quality and delivery capacity allowing for expanded economic development opportunities. Additionally this project will directly support recently completed efforts by the City of Vale, Malheur County, and the Regional Solutions Team to increase the city's industrial land supply to meet identified economic development opportunities. With increased economic activity expected in Vale as well as the surrounding communities of Ontario and Nyssa, this project is also necessary to support anticipated residential development in Vale.

Vale, in coordination with local and state partners, is and has been engaged in long-term efforts to create economic opportunity and community vitality. Requested funding for the treatment and storage components of Vale's overall water system upgrades is crucial to the success of these efforts.

Thank you for your consideration of this important project.

Scott Fairley

Scott Fairley

Regional Solutions, Eastern Region Coordinator
Office of Governor Kate Brown

EASTERN OREGON REGIONAL SOLUTIONS CENTER
EASTERN OREGON UNIVERSITY
233 BADGLEY HALL, ONE UNIVERSITY BLVD., LA GRANDE, OR 97850

PUBLIC HEALTH DIVISION
Drinking Water Services
Kate Brown, Governor

Oregon Health Authority
800 SE Emigrant Ave., Suite 240
Pendleton, OR 97801
(541) 276-8006
FAX (541) 276-4778
www.healthoregon.org/dwp

October 13, 2015

Lynn Findley
City of Vale
252 'B' Street West
Vale, Oregon 97918

Re: Support for Water System Improvement Project at City of Vale, PWS #4100917

The Oregon Health Authority - Drinking Water Services (DWS) strongly supports the proposed water system improvement project at the City of Vale. The water produced by the city's wells exceeds the drinking water standard for arsenic, is not currently treated, and is not considered safe to drink. The city has entered into a Bilateral Compliance Agreement with DWS to carry out a construction project that will remedy the arsenic issue.

DWS concurs with the recommended improvements listed in the recent Water System Master Plan, which will allow the City to meet future water source, storage, pressure requirements, and quality standards. Priority project elements include constructing a coagulation/filtration treatment plant for arsenic removal, improvements to the existing Washington Street well, a new 500,000 gallon reservoir to replace the existing airport reservoir which is in poor condition, and select distribution piping improvements.

If you have any questions or need this information in an alternate format please call me at 541-966-0900.

Sincerely,

William Goss

William Goss, P.E.
Regional Engineer

c. OHA - Drinking Water Services, Portland

The Honorable Greg Smith
Oregon House of Representatives
District 57

October 25, 2015

Oregon Water Resources Department
725 Summer St. NE, Ste. A
Salem, OR 97301

Re: Vale Water Supply Development Account Application

To Whom It May Concern:

I would like to express my full support for the recent application the City of Vale submitted to the Water Supply Development Account within the Oregon Water Resources Department.

As you know, the City of Vale submitted an application totaling $8.013 million. The proposal, if funded, would:

- improve community health,
- position the city for economic growth,
- save taxpayer dollars, and
- increase water conservation and storage.

I believe these attributes fulfill the intent of the Legislature when they created and funded the Water Supply Development Account.

In addition to the above-mentioned outcomes, I believe the City of Vale would be great stewards of these public resources. During my years of working with Vale's administration, I know they will make sure any and all allocated funds are spent according to the terms and requirements of the program. I have the utmost confidence in them.

I understand the City of Vale is not located within House District 57. However, in Eastern Oregon, when one community prospers, we all do. I encourage your approval of the funding request for Vale's Water Supply Development Account Funding Application.

Please do not hesitate to contact me if you have any questions. I can be reached at rep.gregsmith@state.or.us.

Best Regards,

Representative Greg Smith
District 57

900 Court Street NE, H-482, Salem, OR 97301 – Phone: 503-986-1457
P.O. Box 219, Heppner, OR 97836 – Phone: 541-676-5154
rep.gregsmith@state.or.us

CLIFF BENTZ
STATE REPRESENTATIVE

DISTRICT 60
Baker, Grant, Harney, Malheur
and part of Lake County

HOUSE OF REPRESENTATIVES

Oregon Water Resources Department
C/o Water Supply Development Account Program
725 Summer ST. NE, Suite A
Salem, OR 97301

November 4, 2015

RE: City of Vale Water System Improvements Funding Application

To whom it may concern:

I am the State Representative for District 60 (which includes Malheur, Baker, Grant, Harney, and part of Lake Counties) and I write in support of the City of Vale's grant application to the OWRD Water Supply Development Program for funding for an essential portion of Vale's water system improvement project.

Vale is situated in Malheur County, which as you may know is one of the poorest Counties in Oregon. About 63% of the community is low to moderate income (LMI). The City has struggled with water quality issues for many years. A failed arsenic treatment system has left the City unable to reduce arsenic to acceptable levels, causing the City to be out of compliance with Oregon Health Authority drinking water regulations and the Safe Drinking Water Act.

This grant application, if approved, would enable Vale to construct a new coagulation filtration arsenic treatment facility, upgrade the existing Washington Street Well pump station, install a new and necessary water transmission line from the Washington Street Well pump station to the new arsenic treatment facility, and replace the existing Airport Reservoir with a new 700,000-gallon water storage reservoir. It is estimated that the project will cost $8 million dollars, but this expenditure would bring Vale's drinking water system into compliance and of course make the water safe for the citizens of this small but important town.

I strongly urge your support of the City of Vale's grant application. Thank you for your consideration of this important request.

Very truly yours,

Representative Cliff Bentz
House District 60

Capitol Office: 900 Court St NE H-475, Salem, OR 97301 - Phone: 503-986-1460 - rep.cliffbentz@state.or.us
District Office: PO Box 1027, Ontario, OR 97914 - Phone: 541-889-8866

CORRESPONDENCE WITH COMMISSION ON INDIAN SERVICES AND AFFECTED TRIBES

Troy Baker

From: Stephanie O'Brien
Sent: Thursday, October 29, 2015 3:37 PM
To: Troy Baker
Subject: FW: OWRD Program Funding for Vale Water System Improvements

Here's our documentation of communication with LCIS, I'll get letters/emails sent to the tribes tomorrow.

Stephanie O'Brien
Project Archaeologist
Anderson Perry & Associates, Inc.
1901 N Fir Street/PO Box 1107
La Grande, OR 97850
541-963-8309 office / 541-963-5456 fax
818-634-9432 cell

Web Facebook

From: Quigley Karen M [mailto:karen.m.quigley@state.or.us]
Sent: Thursday, October 29, 2015 3:26 PM
To: Stephanie O'Brien
Subject: RE: OWRD Program Funding for Vale Water System Improvements

Hello, Stephanie,
You have listed the federally recognized tribal governments in Oregon that I would have recommended for consultation on this project. Thank you.
I am not in a position to offer suggestions about additional, out-of-state Tribes.
All the best,
Karen

Karen Quigley, Executive Director
karen.m.quigley@state.or.us
Legislative Commission on Indian Services

Troy Baker

From: Stephanie O'Brien
Sent: Thursday, October 29, 2015 2:57 PM
To: Karen Quigley
Cc: Troy Baker
Subject: OWRD Program Funding for Vale Water System Improvements

Good afternoon Karen,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Supply Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that the Legislative Commission on Indian Services be contacted in order to identify tribes affected by the project.** A copy of the correspondence with LCIS is also required for the project funding application.

The proposed project will occur within the city limits of Vale, in Township 18 South, Range 45 East, Sections 19, 20, 29, and 30. We are contacting you in order to identify appropriate tribal government contacts for project notification purposes. Currently, given the location and the possibility of additional funding provided by the Safe Drinking Water State Revolving Fund and a Community Block Development Grant (funded by HUD and representing a federal nexus), we plan to contact both tribes located in Oregon and other federally-recognized tribes including:

Burns Paiute Tribe
Confederated Tribes of the Umatilla Indian Reservation
Confederated Tribes of the Warm Springs Reservation
Fort McDermitt Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation
Paiute-Shoshone Tribe of the Fallon Reservation and Colony
Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation
Reno-Sparks Indian Colony
Shoshone-Paiute Tribes of the Duck Valley Reservation
Yerington Paiute Tribe of the Yerington Colony and Campbell Ranch

Please advise us of any other tribes we should include in our consultation process. If you have any further questions, please feel free to contact me at 541-963-8309.

Thank you,
Stephanie

Stephanie O'Brien
Project Archaeologist
Anderson Perry & Associates, Inc.
1901 N Fir Street/PO Box 1107
La Grande, OR 97850
541-963-8309 office / 541-963-5456 fax
818-634-9432 cell
Web Facebook

Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:44 AM
To: 'amelendez@rsic.org'
Cc: 'meben@rsic.org'
Subject: City of Vale Water System Improvements

Good morning Chairman Melendez,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

The proposed project will occur within the city limits of Vale, in Township 18 South, Range 45 East, Sections 19, 20, 29, and 30. This communication is tied to OWRD (a state agency) funding requirements, however, additional scoping letters will be sent if additional funding provided by the Safe Drinking Water State Revolving Fund and a Community Block Development Grant (funded by HUD and representing a federal nexus) are approved, both of which the City has applied for. At the moment, no preliminary design or specific locations have been proposed, but fuller details and descriptions will be sent to you once they are finalized. This initial contact is to inform you of the proposed project and to assess potential concerns which may arise as a result of such a project.

If you have any further questions, please feel free to contact me via email or the phone numbers listed below.

Thank you,
Stephanie O'Brien

Stephanie O'Brien
Project Archaeologist
Anderson Perry & Associates, Inc.
1901 N Fir Street/PO Box 1107
La Grande, OR 97850
541-963-8309 office / 541-963-5456 fax
818-634-9432 cell

Web Facebook

Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:43 AM
To: 'vhawley@plpt.nsn.us'
Cc: 'thpo@plpt.nsn.us'
Subject: City of Vale Water System Improvements

Good morning Chairman Hawley ,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Thank you,
Stephanie O'Brien

Stephanie O'Brien
Project Archaeologist
Anderson Perry & Associates, Inc.
1901 N Fir Street/PO Box 1107
La Grande, OR 97850
541-963-8309 office / 541-963-5456 fax
818-634-9432 cell

Web Facebook

Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:41 AM
To: 'chairman@fpst.org'
Subject: City of Vale Water System Improvements

Good morning Chairman George,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:40 AM
To: 'keithb@nezperce.org'
Cc: 'NPTEC@nezperce.org'
Subject: City of Vale Water System Improvements

Good morning Patrick,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:37 AM
To: 'robert.burnoe@ctwsbnr.org'
Cc: 'austin.greene@wstribes.org'
Subject: City of Vale Water System Improvements

Good morning Robert,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:23 AM
To: 'garyburke@ctuir.org'
Cc: 'tearafarrowferman@ctuir.com'; 'catherinedickson@ctuir.org'
Subject: City of Vale Water System Improvements

Good morning Chairman Burke,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:39 AM
To: 'Tildon.smart@fmpst.org'
Subject: City of Vale Water System Improvements Project

Good morning Chairman Smart,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:38 AM
To: 'robert.brunoe@ctwsbnr.org'
Subject: City of Vale Water System Improvements Project

Good morning Robert,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:20 AM
To: 'diane.teeman@burnspaiute-nsn.gov'
Cc: 'ROD049@YAHOO.COM'
Subject: City of Vale Water System Improvements Project

Good morning Diane,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:45 AM
To: 'Lhoward@ypt-nsn.gov'
Subject: City of Vale Water System Improvements Project

Good morning Chairperson Howard,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 9:44 AM
To: 'manning.lindseyw@shopai.org'
Cc: 'thoward4shopai@yahoo.com'
Subject: City of Vale Water System Improvements

Good morning Chairman Manning,

The City of Vale, Oregon is currently in the process of completing a funding application for the Oregon Water Resources Development (OWRD) Program. Funds would be utilized for proposed improvements to the City's water system. **The funding application from OWRD requires that affected Native American tribes be contacted in order to identify potential concerns or comments relevant to a project in this area.** A copy of the correspondence with affected tribes is also required for the project funding application.

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Troy Baker

From: Stephanie O'Brien
Sent: Friday, November 06, 2015 1:34 PM
To: 'Ted Howard'
Cc: 'manning.lindseyw@shopai.org'
Subject: RE: City of Vale Water System Improvements

Thank you for your quick response. The project has not yet been designed, so its location in disturbed or undisturbed soils is unknown. It is likely the project will encompass areas of both. No cultural resource survey has been completed for the project as we are still in the funding application stage. However, federal funds are being applied for, so once the City is approved for these funds we will go through a Section 106 process and send additional scoping letters with more specific locations and plans to affected tribes (including the Shoshone-Paiute Tribes) as well as to Oregon SHPO to identify cultural resource inventory needs. A cultural resource inventory, if requested, will be conducted at that point. The estimated schedule has the Section 106 consultation process happening in Fall 2016. We also plan to verify the presence or absence or sensitive species at that time and will consult the Oregon Biodiversity Information Center for this information.

Stephanie O'Brien
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From: Ted Howard [mailto:thoward4shopai@yahoo.com]
Sent: Friday, November 06, 2015 12:18 PM
To: Stephanie O'Brien; manning.lindseyw@shopai.org
Subject: Re: City of Vale Water System Improvements

Dear Ms. O'Brien,

I this area a predisturbed area? Has there been a cultural survey completed for this project? I would like a copy of the cutlural survey if there is one completed. If there isn't any, when will it be done? Are there any sensitive species in this area? Plants, Burrowing Owls, Pigmy Rabbit's, etc?

Sincerely,
Ted Howard
Shoshone-Paiute Tribes
Cultural Resources Director
P.O. Box 219
Owyhee, Nevada 89832
Wk (208) 759-3100 ext. 1243
Fx (208) 759-3202
Cell (208) 871-7064

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From: Stephanie O'Brien <sobrien@andersonperry.com>
To: "manning.lindseyw@shopai.org" <manning.lindseyw@shopai.org>
Cc: "thoward4shopai@yahoo.com" <thoward4shopai@yahoo.com>
Sent: Friday, November 6, 2015 10:44 AM
Subject: City of Vale Water System Improvements

Good morning Chairman Manning,

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FUNDING AWARD LETTER

business oregon

Infrastructure Finance Authority

December 1, 2015

Honorable Mike McLaughlin
City of Vale
252 B Street West
Vale, OR 97918

RE: Award for Community Development Block Grant, Vale Water System Improvements, P15003

Dear Mayor McLaughlin:

Congratulations on your successful application for the above-referenced project! You will be receiving a grant for $2,200,000 from the Oregon Community Development Block Grant program. This program, administered by Business Oregon Infrastructure Finance Authority, provides grant funds to cities and counties to upgrade public infrastructure, develop community facilities and provide essential services to the workforce and your citizens.

Please note that the legal obligations for funding and for reimbursement of project expenses are subject to execution of a contract between your jurisdiction and the state acting by and through Oregon Business Development Department.

Contract documents will be sent to you shortly for your review and signature. For your convenience, we have enclosed the Grant Management Handbook, explaining how to manage the project in accordance with the requirements of the Oregon Community Development Block Grant Program.

Funds cannot be obligated or spent for any activity until the environmental review process described in Chapter 3 of the Grant Management Handbook has been completed for each activity. Grant administration and engineering are exempt from environmental review and can be started as soon as your Certifying Officer completes a Finding of Exemption for those two activities.

We encourage you to expand public awareness of your project's purposes and benefits through events and the media. Please notify us of any event celebrating your project.

We look forward to working as a partner with you to complete this important project. If you need assistance, please contact me at 503-551-0957 or email: Tawni.Bean@Oregon.gov.

Sincerely,

Alma Rutmstrew

for Tawni Bean, Regional Coordinator
Infrastructure Finance Authority

Enclosure(s)

c: Lynn Findley
File

CITY OF VALE DEMOGRAPHIC INFORMATION

City of Vale, Oregon
Demographic Information

Demographics	
EDUs	868
Connections	721
Population	1,875
Unemployment Rate	8.70%
Community MHI	$27,656
Statewide MHI	$50,229
Percentage of Statewide MHI	55.06%
LMI	62.45%
Distressed Index	Distressed
County	Malheur County
Affordability Rate (EDU/Month)	$28.81

Term Key	
EDU	Equivalent Dwelling Unit
MHI	Median Household Income
LMI	Low/Moderate Income

anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM IMPROVEMENTS
OWRD WATER SUPPLY DEVELOPMENT
ACCOUNT APPLICATION
DEMOGRAPHIC INFORMATION

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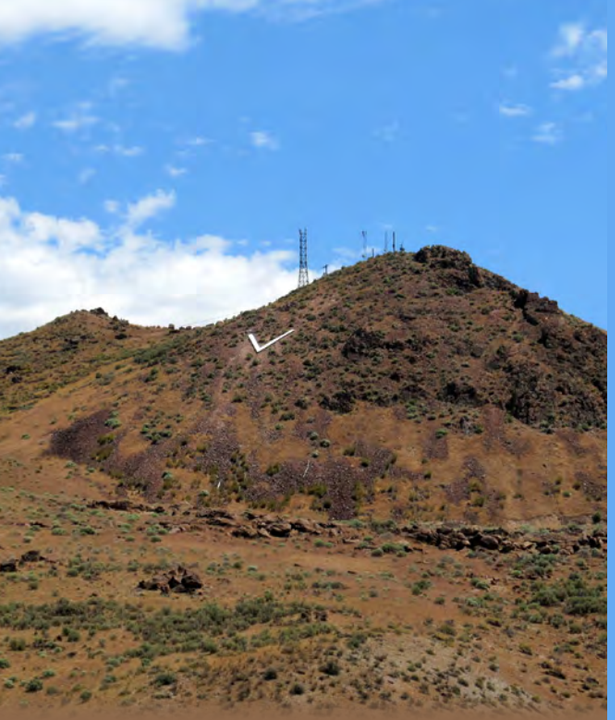

City of Vale, Oregon

Water System Master Plan

2015

anderson perry & associates, inc.
engineering · surveying · natural resources

1901 N. Fir Street
La Grande, Oregon 97850
(541) 963-8309
www.andersonperry.com

WATER SYSTEM MASTER PLAN

FOR

CITY OF VALE, OREGON

2015

REGISTERED PROFESSIONAL ENGINEER
65318PE
Troy L. Baker
OREGON
MAR. 12, 2002
TROY L. BAKER
06-16-15
RENEWS 12-31-15

CITY OF VALE
STATE OF OREGON

The City of Vale, Oregon, has reviewed this Water System Master Plan and adopted it.

City Manager 6/16/15

Signature and Title Date

The preparation of this Water System Master Plan (WSMP) was funded in its entirety with federal funds from the Oregon Community Development Block Grant Program. This WSMP is not subject to state or federal copyright law. As such, any part of the WSMP may be reprinted, copied, or duplicated without the permission of the State of Oregon or the grant recipient.

ANDERSON PERRY & ASSOCIATES, INC.

La Grande, Oregon
Walla Walla, Washington

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Job No. 65-95

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Executive Summary

Introduction

This Executive Summary briefly summarizes the results of the Water System Master Plan (WSMP) prepared by Anderson Perry & Associates, Inc., for the City of Vale. The recommendations outlined hereafter have been developed in cooperation with the Vale City Council, Public Works Committee, and City staff. The focus of this WSMP has been on the overall water system, including the water supply, treatment, storage, and distribution systems. This WSMP includes an analysis of the existing system and its performance, evaluation of system needs, evaluation of improvement alternatives, and development of a financial plan and project implementation plan. Included in this Executive Summary is a brief discussion of the existing water system, the water system improvements selected by the City Council, the current financial status of the Water Department, and a preliminary project implementation plan. For a more detailed discussion of the information presented in this Executive Summary, please refer to the individual chapters of this WSMP.

Present Water Supply, Treatment, and Water Rights

Water Supply Source

The City of Vale has two water supply sources. The first source is a group of shallow wells located at the Miller Memorial Airpark (the airport) south of Vale. These wells, referred to as the Airport Well Field, are located on City-owned property, adjacent to the arsenic treatment facility. The second source, the Washington Street Well, is a shallow well dug in 1912, located near the intersection of Washington and 17th Streets. This well is utilized for emergency purposes and is currently being used to supply water to the community. Water testing during the summer of 2014 indicated that the levels of arsenic in the Washington Street Well were lower than Wells No. 6 and 7 at the Airport Well Field. In order to minimize the levels of arsenic in the system, Wells No. 6 and 7 were shut down and the Washington Street Well was reactivated. The locations of the wells are shown on Figure 1-2, Existing Wells and Reservoirs, in Chapter 1.

Water Treatment

As part of the Environmental Protection Agency (EPA) Arsenic Removal Technology Demonstration Program, a 540 gallons per minute (gpm) ion exchange (IX) system manufactured by Kinetico was installed in 2006 to remove arsenic and nitrate from the City's groundwater wells. The treatment system has been operated since that time. Recent testing has shown that the existing system is not adequately removing arsenic from the source water.

Water Rights

The City of Vale holds several water rights issued by the State of Oregon for its groundwater and surface water sources. Copies of the City's water right certificates are presented in Appendix I. The City's municipal water sources with water rights include the Airport Well Field, Willow Springs, and the Washington Street Well.

The Airport Well Field is permitted for an instantaneous flow of 2,244 gpm (5 cubic feet per second [cfs]), further restricted to 225 acre-feet monthly and 1,076 acre-feet annually. Willow Springs are located approximately 11 miles southwest of Vale. The City used to obtain water from this spring source through a pipeline routed to the City. The City is permitted to withdraw 112 gpm (0.25 cfs) from the springs. The Washington Street Well has a permitted flow of 337 gpm (0.75 cfs) and is capable of producing that amount of water. The water rights from the Harrison Street and Railroad Wells were transferred to the Washington Street Well in 2003.

Existing Water Storage

The City of Vale's existing municipal water storage consists of an approximately 750,000-gallon ground-level concrete (Rhinehart) reservoir and an approximately 200,000-gallon bolted steel (Airport) reservoir.

Rhinehart Reservoir

The Rhinehart Reservoir was constructed in 1977 and serves all of Vale through a gravity-fed system. The tank has a base elevation of approximately 2,384 feet above mean sea level (MSL) and is located on Rhinehart Butte, south of Vale. The reservoir is 20 feet tall with a diameter of approximately 80 feet and holds approximately 37,600 gallons per foot of depth. Water from the Airport Booster Pump Station discharges directly into the distribution system, and any water provided by the booster pump station that is not used in the distribution system flows into the reservoir.

Airport Reservoir

The Airport Reservoir was constructed in 2002 as part of the Water System Improvements project. The Airport Reservoir is used to supply water to the Airport Booster Pump Station, which provides water to the distribution system and the Rhinehart Reservoir. The depth of water in the Airport Reservoir is also used to control the Airport Well Field. When the water level in the Airport Reservoir reaches a depth of 28 feet, the Airport Well Field is activated. The Airport Reservoir has a base elevation of 2,253 feet above MSL. The reservoir is 33 feet tall with a diameter of 33 feet and holds approximately 6,400 gallons per foot of depth.

Existing Distribution System

The City's distribution system main lines are primarily asbestos cement and polyvinyl chloride. The City's first water main lines were installed with development of the water system in 1912 and most likely consisted of mainly steel pipe. However, distribution system improvements have been made in recent years to improve flow and pressure in the system and to replace the original steel pipe.

Approximately 79 percent of the distribution system piping is composed of 6-inch or larger diameter main lines with the majority (approximately 39 percent) being 8-inch pipe. The remaining 21 percent of the distribution mains consist of pipe ranging in size from 1-inch to 4-inch. Most of these small-diameter mains serve multiple users and are too small to support fire hydrants.

In general, the distribution system is fairly well looped. There are some areas with dead-end and/or undersized main lines. This can limit capacity and water circulation in the system. The City has indicated that water main lines in the distribution system are generally in good condition.

Service Population and Planning Period

A population forecast was completed in 2006 by ECONorthwest for Malheur County. The population forecast estimated an average annual growth rate in the City of Vale of 1.48 percent between the period of 2005 and 2026. This population forecast was adopted by Malheur County by Ordinance No. 166, which is included in Appendix A. This population forecast will result in an increase from the certified 2013 population of 1,890 to a population of 2,536 in the projected 20-year planning horizon (i.e., year 2034) covered in this WSMP.

Summary of Supply, Treatment, and Storage Needs

Supply

Presented in Chapter 2 is a summary of the design criteria utilized for preparation of this WSMP. The required water supply to properly meet current demands should be 820 gpm for the present peak daily demands and 1,100 gpm in order to meet year 2034 peak daily demands.

Treatment

The City of Vale has been unable to meet water quality parameters set by the State or Oregon for arsenic levels in drinking water. It is clear that the existing arsenic treatment system is not adequately removing arsenic from the City's source water. The City must be able to reliably and consistently remove arsenic to concentration below 10 parts per billion to meet EPA standards.

Storage

As presented with the design criteria in Chapter 2, the City's storage needs by the year 2034 will be approximately 1,432,500 gallons. Currently, the City has a storage capacity of 950,000 gallons. Additional storage capacity is needed.

Further discussion on the City's existing water supply, treatment, and storage systems and the evaluation of these systems can be found in Chapters 3 and 4 of this WSMP.

Selected Water System Improvements

The selected water system improvements discussed in this WSMP are briefly summarized hereafter. Work sessions were held with the City Public Works Committee, City Council, and City staff to discuss improvement alternatives, potential impacts to future user rates, and possible funding opportunities. The proposed project improvements summarized below address the City's needs for improved supply system capacity and reliability, improved treatment capabilities, additional storage capacity, improved distribution system reliability, increased fire flows, and other miscellaneous water system improvements.

Water Treatment System Improvements

The City of Vale currently utilizes an ion exchange treatment facility in order to remove arsenic from drinking water. Tests have shown that the facility is not effectively removing arsenic from the City's drinking water and that the system has failed. It has been shown that the IX technology is not well suited for the water quality parameters that are exhibited by the City of Vale's water supply sources.

This treatment requires frequent maintenance and does not effectively remove arsenic to below the maximum contaminant level (MCL). In order for the City to provide water that meets the arsenic MCL, several improvements have been recommended and selected by the City.

1. A recognized and efficient technology for removing arsenic in drinking water is through coagulation filtration. This technology is not susceptible to many of the water quality characteristics that inhibit the use of the IX technology. The operation and maintenance cost of this technology is estimated to be approximately 25 percent lower than the operation and maintenance cost of the IX technology. For this reason, the City selected to construct a separate facility to house the new coagulation filtration technology.

2. While the City is seeking funding for a potential improvements project, pilot testing should be performed in order to ensure that the selected technology will work efficiently and be cost-effective in removing arsenic below the MCL. This small investment by the City would ensure that the full scale treatment plant will perform to the desired level.

3. While the existing treatment facility and technology are not adequate for removing arsenic levels to below the MCL, they do effectively remove levels of nitrates and sulfate. This is not currently a requirement of the City, since nitrate levels are not currently above the MCL in Vale's supply sources and sulfate is not regulated by the State or Oregon. However, it is recommended that this treatment facility be prepared to be used in conjunction with the new coagulation filtration treatment facility in the event that nitrate levels rise or the MCL is lowered in the future. Since the existing media in the IX treatment facility is fouled and not operating, it will need to be replaced. It is recommended that the City complete this work at a later time if the need for the facility arises. It is recommended that as part of an improvements project, piping and building modifications be completed to ensure that the facility can easily be brought on line, if needed.

Water Supply Improvements

The City of Vale is currently relying on the Airport Well Field to meet system demands. The Airport Well Field does not meet the City's peak daily water supply demand. To help ensure continued water system performance, several recommendations have been made that would reduce potential weaknesses. Recommended and City-selected water supply improvements include the following:

1. It is recommended that additional source capacity be developed in order to provide sufficient flow during peak demands, as well as provide redundancy in the water system. The Washington Street Well is currently able to produce roughly 650 gpm. This additional capacity would be sufficient to meet the estimated 20-year peak demands for the City of Vale. The well will require improvements in order to be fully functional for the City, including new well pumps, hypochlorination system, and other miscellaneous improvements. The City selected to improve the Washington Street Well to provide additional source capacity to the system.

2. While the Washington Street Well has plenty of capacity to meet the City's future needs, the water quality from this well does not meet current state regulations. The water from the Washington Street Well has arsenic levels that are above the current MCL set by the State of Oregon. In order to utilize the capacity of the Washington Street Well, the water will need to

be treated for arsenic before entering the distribution system. In order to accomplish this, the City selected to construct a designated pipeline to provide water directly from the Washington Street Well to the arsenic treatment facility located at the airport. This will allow the City to treat and utilize the full amount of water provided from both the Airport Well Field and the Washington Street Well.

Water Storage Improvements

The City's existing water storage reservoirs do not meet the City's immediate operational, equalization, fire reserve, and emergency reserve storage needs, as presented in Chapter 4. The City has also determined that the existing Airport Reservoir will need to be replaced in the near future due to corrosion and leakage issues. The 750,000-gallon Rhinehart Reservoir is still in good condition, and the 105,000-gallon reservoir has been valved off from the system and is not currently being used. It is not recommended that the City pursue rehabilitation of the 105,000-gallon reservoir due to the high cost of rehabilitation associated with minimal storage capacity.

1. The existing Airport Reservoir is in poor condition and was recommended to be replaced or maintained as soon as possible in a report completed by Clear Water Robotics, LLC, in 2011. Maintenance of the bolted steel reservoir would be difficult and would still leave the City with a storage deficit. The City decided to remove the existing 200,000-gallon bolted steel Airport Reservoir.

2. A reservoir is required at the airport location to serve the Airport Booster Pump Station. Since the City decided to remove the existing Airport Reservoir, it would be most cost-effective to replace the existing reservoir as well as account for the additional required storage to serve the City with one 700,000-gallon reservoir located at the airport site. This site is beneficial in that it provides storage to serve the Airport Booster Pump Station, and the City of Vale already owns the land that the new reservoir would be sited on.

Water Distribution System Improvements

In general, the City's distribution piping system is in relatively good condition, although there are currently low pressure areas in the distribution system. Having only one pressure zone over the varying elevations served within the City leads to low pressures and low fire flow capacity at higher elevations. However, the area that is affected by these low pressures is not large enough to warrant the creation of additional pressure zones at this time. There are some areas in the distribution system with undersized main lines and dead-end lines. The most notable deficiency in the distribution system is the transmission main line from the Rhinehart Reservoir to the distribution system. Recommended and selected water distribution system improvements include the following:

1. Replacing the old, undersized transmission main line from the Rhinehart Reservoir to the distribution system with a 14-inch transmission main line. This improvement is anticipated to increase pressures and fire flows throughout the distribution system. Removing the 8-inch ductile iron transmission main line would remove a "bottleneck" in the system and would decrease dependence on the Airport Booster Pump Station to provide fire flows to the City.

Summary of Estimated Costs for Selected Improvements

The year 2016 estimated costs for the selected water system improvements are outlined below. The total estimated project cost includes construction, administrative, legal, engineering, and contingencies together with other project costs.

Estimated Improvement Costs		
Washington Street Well, Pump Station, and Transmission Main Line Improvements	$	1,546,000
New Coagulation Filtration Treatment System Improvements		3,730,000
New Airport Reservoir and Existing Booster Pump Station Modifications		1,726,000
Rhinehart Transmission Main Line Improvements		450,000
Total Estimated Improvements Costs (2016 Dollars)[1]	**$**	**7,452,000**
Other Estimated Project Costs		
Legal	$	50,000
Administration		50,000
Easements		10,000
Environmental Review Report		30,000
Archaeological Report		15,000
Cultural Resource Monitoring		70,000
Oregon Department of Transportation Permit(s)		5,000
U.S. Army Corps of Engineers/Oregon Department of State Lands Permit		15,000
Regulatory Agency Reporting and Review Fees		3,000
Subtotal Other Project Costs (2016 Dollars)	**$**	**148,000**
Total Estimated Project Cost (2016 Dollars)	**$**	**7,600,000**

[1] *Total estimated improvements costs include construction contingency, preliminary and final design, and construction engineering costs.*

Current Financial Status

The annual cost of operating and maintaining the Vale water system is summarized on Figure 7-1 in Chapter 7. A graphical plot of the City of Vale's water system budget for the Water Department funds, showing total revenue and total expenditures, is provided on Chart 7-1. The trend of total expenditures over time shown on Chart 7-1 indicates that expenditures will likely increase to $250,000 in the budget year 2016-17. This trend in expenditure increase will likely continue and will need to be reflected in future budgeting. It is recommended that the City continue to allocate funds to the Water Reserve Fund to cover future maintenance and replacement costs of equipment and facilities. Pump replacement, water meter repairs, reservoir repairs, etc., are all items that require funds from time to time in order to maintain a healthy water system.

A major financial commitment will be required on the part of the City to implement part or all of the selected water system improvements outlined in this WSMP. An increase in water rates will be required to fund part or all of the selected system improvements. Based on the anticipated future Water Department operation, maintenance, and replacement (OM&R) cost and debt capacity presented in Chapter 7, the City should anticipate an average monthly water rate increase per connection of $20 to $40 per month, depending on available funding options to complete all of the selected system improvements.

Proposed Improvement Implementation Plan

Should the City wish to proceed with the identified water system improvements, the following implementation plan outlines the key steps the City would need to undertake. It is important to note that it usually takes approximately two to three years, at a minimum, from the date a city decides to proceed with an improvements project until the project is completed and serving the community. The following Implementation Plan uses spring 2015 as a starting date and assumes a three-year implementation schedule. It should be noted that, based on the requirement of the Bilateral Compliance Agreement, the City must provide a draft set of construction Drawings to DWS by March 2016. As it stands, submittal of draft Drawings to the DWS by March 2016 is not realistic. DWS staff have indicated that an extension to that deadline could be granted if the March 2016 deadline is not attainable. It should also be noted that these implementation steps, as presented hereafter, may be different if the City elects to delay the project and pursue improvements in the future.

	Item	Completion Date
1.	Finalize a Community Income Survey. Complete a Letter of Interest for the Safe Drinking Water Revolving Loan Fund project priority list.	Spring 2015
2.	Initiate funding discussions with Infrastructure Finance Authority (IFA) and Rural Development. Hold a One Stop meeting with agencies.	Summer 2015
3.	Complete a Water Rate Study.	Summer/Fall 2015
4.	Public outreach and education program.	Summer 2015
5.	Work with IFA to submit a Project Notification and Intake Form (if IFA funding is identified as a potential source of funds).	Summer 2015
6.	Submit funding application(s) to agencies.	Summer 2015
7.	Finalize project funding.	Fall 2015 to Winter 2016
8.	Design system improvements.	Winter/Spring 2017
9.	Complete Environmental and Cultural Resources Reports and Permitting.	Winter/Spring 2017
10.	Bid and award construction contract.	Spring 2017
11.	Construct system improvements.	Summer 2017 to Fall 2018
12.	Close out project.	Winter 2018

The key to implementing the City of Vale's water system improvements is the ability of the City to acquire funding that will allow water rates to remain as low as possible. The City should work closely with its citizens through public meetings to inform them of the system needs and the necessity for

increased water user costs. Overall, the proposed water system improvements will provide a much improved and more reliable water system that should serve the City of Vale for many years.

Chapter 1 - Introduction

Purpose of Study

This study presents the results of a Water System Master Plan (WSMP) intended to provide current information on which future operations of the City of Vale's municipal water system can be based. This WSMP is also intended to satisfy the criteria of the Oregon Health Authority - Drinking Water Services (DWS) and Oregon Administrative Rule 333-061-0060. DWS requires communities maintain a current master plan that evaluates the water system needs for at least a 20-year period. The City of Vale's last WSMP was prepared in 1996; therefore, this WSMP is intended to fulfill DWS' requirements for a current master plan for the next 20 years. The City of Vale has also entered into a Bilateral Compliance Agreement (BCA) with DWS, acknowledging the presence of arsenic in the City's drinking water. The BCA specified that the City must take steps to resolve the arsenic issue. This WSMP identifies treatment solutions that the City can implement to address the presence of arsenic in the water. Preparation of this WSMP was authorized by an agreement between the City and Anderson Perry & Associates, Inc. (AP), dated May 13, 2014. The primary purposes for developing this WSMP have been to establish water system design criteria for a 20-year planning period; evaluate the adequacy of the existing water supply, treatment, storage, and distribution systems; evaluate alternatives for improving the City's water system; and identify a financial plan for implementing the recommended improvements.

Organization of Study

This WSMP is divided into seven main chapters with an Executive Summary. Specifically, the WSMP includes the following:

A. The Executive Summary of the overall study describes water quality and service goals (design criteria), present and future water system deficiencies, the City's selected improvements for achieving the goals and correcting the deficiencies, and the recommended implementation schedule and financing program for constructing improvements.

B. Chapter 1, "Introduction," discusses the objectives of the WSMP, describes the community and environment, and provides a brief history of the past development and operation of the City of Vale's water system.

C. Chapter 2, "Water System Requirements," develops the data upon which recommended improvements to the water system are based. Data relating to elements such as service area, population, land use, water use, fire flows, state and federal regulations, and the design criteria developed for this WSMP are presented. A description of the water quality and level of service goals (design criteria) for the water system considering existing and anticipated future regulatory requirements, non-regulatory water quality needs of water users, flow and pressure requirements, capacity needs related to water use, and fire flow needs is also provided.

D. Chapter 3, "Water Supply and Treatment," discusses the operation, capacity, and quality of the existing water supply and treatment systems with respect to existing and future system demands and regulations. Information concerning water rights and permits for the appropriation of water from various sources is presented. An evaluation of the existing water

treatment system is also included as well as alternatives to address current treatment system deficiencies. A comparison of alternatives to obtain additional water supply sources is also provided.

E. Chapter 4, "Water Storage," discusses the existing storage reservoirs, presents the four primary components of water storage relative to the City's design criteria, evaluates alternative storage facilities, and provides recommendations for storage improvements.

F. Chapter 5, "Distribution System," presents information related to the existing distribution system facilities, water quality test results, and fire protection information. Existing deficiencies and deficiencies likely to develop during the planning period are identified. Improvements including specific areas of piping, a water meter replacement program, and water conservation efforts are recommended.

G. Chapter 6, "Selected Water System Improvements and Operational Recommendations," presents information related to water supply, treatment, storage, and distribution system improvements developed through the analysis of the system. Cost estimates are developed for each of the recommended water system improvements.

H. Chapter 7, "Project Financing and Implementation," provides a description of alternatives to finance water system improvements including local financing such as user rates, taxes, and financing assistance programs. Operation, maintenance, and replacement costs are projected for both the existing system and future system improvements. The number of residential, commercial, and industrial equivalent dwelling units is provided. Potential water rate needs are developed and rate implementation procedures are identified. A recommended water system improvement implementation process, including an evaluation of financing alternatives and identification of key implementation steps, is also provided.

I. The "Appendices" contain key materials referenced in this WSMP, which are provided for future reference by City staff. This information includes well log and water rights information, testing results, applicable ordinances, and other applicable water system information.

Sources of Information

The conclusions and recommendations outlined in this WSMP are based on data, information, and records provided by the City. This information includes, in part, past flow records (supply and usage); financial data (operational cost, revenues, and cost distribution); descriptions of system operation, condition of system components, and identification of problem areas; water quality data; and system layout and sizing. The recommendations and conclusions are, therefore, dependent on the completeness and accuracy of the base information provided.

Review and Updating of Study

This WSMP should be periodically reviewed and updated in order to stay current with population growth, water system demands, and changing state and federal regulations. It is recommended that this WSMP be reviewed at 5-year intervals and be updated at 10-year intervals, or as growth dictates.

Objectives of Study

The primary objectives of this WSMP are to provide the following information:

1. Establish planning criteria including service area boundaries; population growth projections; past, present, and future water usage patterns; fire flow requirements; federal and state standards; system pressures; and service goals.

2. Analyze the individual components of the existing water supply system considering capacity, compliance with current water quality standards, water rights, condition of components, operational dependability, and cost of operation. Develop the water supply needs for the planning period and identify cost-effective alternatives for meeting long-term water supply and treatment needs including alternatives for correcting existing system deficiencies. Outline general operation and maintenance requirements for the water supply system.

3. Analyze the existing water storage facilities considering capacity, condition of the reservoirs, and distribution system pressures. Assess the City's storage capacity considering emergency storage, operational storage, equalization storage, and fire flow storage. Identify the storage requirements of the water system for the planning period.

4. Develop a Geographic Information System (GIS)-based map of the distribution system including line sizes, line types, valve and hydrant locations, etc., when known.

5. Utilizing existing distribution system maps and City records, review the condition and adequacy of the distribution system piping. Identify system deficiencies and alternatives for meeting current and future system needs. Provide estimated costs for implementation of recommended improvements. Outline general operation and maintenance requirements of the distribution system as well.

6. Analyze the hydraulic capacity and system pressures in the existing water distribution system under average daily and peak daily demand conditions using a computer model. Identify distribution system deficiencies such as low system pressures, low fire flow capacities, dead-end or undersized lines, etc. Identify opportunities for distribution system improvements to address any noted deficiencies.

7. Review the status of the existing Water Department financial condition considering historical water system revenues, operational and maintenance costs, and debt service including the adequacy of existing water user fees. Project the future cost of operation and maintenance, capital improvement investments, and debt service for the water system. Develop a financing plan for meeting the long-term system needs including general user rate charges and outside financial assistance.

8. Provide information on potential state and federal grant and loan programs that may be available to assist the City in implementing any needed system improvements.

9. Prepare a summary identifying current and future water system needs with their associated estimated cost. Make recommendations for meeting the water system needs for the planning period.

10. Provide an implementation schedule for recommended water system improvements outlining the key steps the City would need to undertake to implement the improvements.

Regional Setting

The City of Vale is located in and functions as the county seat of Malheur County. Malheur County is bordered on the north by Baker County, the east by the Snake River and the State of Idaho, the west by Harney and Grant Counties, and the south by the State of Nevada.

Vale is located on the western edge of the Treasure Valley at the confluence of the Malheur River and Bully Creek. Full food, lodging, and automotive services are available in Vale. The surrounding valley's fertile soil and the natural resources of adjacent rangeland support a variety of agricultural and ranching operations. The area's principal economic base is centered on these industries.

The climate in the summer is typically dry with clear days. Winter brings rain, snow, and frozen soils. Temperatures vary from extremes of -6°F in the winter to 112°F in the summer. These extreme temperatures are usually not prolonged. According to the Western Regional Climate Center, the average annual temperature of Vale is approximately 52°F and the annual average precipitation is about 8.9 inches.

Transportation is provided to the City of Vale by State Highways 20 and 26. Vale is positioned at the intersection of these two highways. It is located approximately 16 miles west of Interstate 84, which is a major east-west highway for the northwestern United States. Transportation is also provided to Vale by the Miller Memorial Airpark (airport) located south of the City.

Soils

The soils throughout the City of Vale are generally designated silt loams or sandy loams. The major types are Umapine silt loam, Powder silt loam, Frohman silt loam, and Stanfield silt loam. These soils are generally nearly level, well drained to moderately well drained, cool, very deep soils that formed in mixed alluvium or lacustrine deposits. Soils in the area are high in naturally occurring salts and minerals.

For a more detailed description of soil groups and types in and around the City of Vale, refer to the "Soil Survey of Malheur County, Oregon" completed by the Soil Conservation Service.

Location

The City of Vale is located in eastern Oregon at the intersection of State Highways 20 and 26, adjacent to the Malheur River in Malheur County. The general location of the community is shown on Figure 1-1, Location and Vicinity Maps.

The area of analysis provided in this WSMP encompasses the entire area within the City limits and Urban Growth Boundary of Vale, as shown on Figure 1-1.

Water System History

General

The majority of the historical information for the water system was obtained from City records, conversations with Mr. Terry Harris, Water/Wastewater Specialist, the City's Water Management and Conservation Plans prepared in 1999 and 2002 by Auyer Consulting, and the 1996 WSMP completed by AP.

Previous Studies

The 1996 WSMP's primary recommendations were to construct a shallow well field to increase supply, construct chlorination facilities at all supply sources, construct a new 150,000-gallon reservoir with a booster pump station and associated controls, and replace all old and undersized water mains in the distribution system. The City implemented almost all of the recommendations presented in that study; however, some of the recommended improvements have not been made, mainly replacing all of the old and undersized water mains in the distribution system.

Water Supply Sources

Vale has a long history of poor water quality and contaminated wells. This has forced the City to continue to explore new areas for water sources and to abandon several wells that have contamination levels higher than those allowed by the Safe Drinking Water Act and the DWS. These include the Emeri, Rossi, and Harrison Street Wells.

The current water supply for the City of Vale consists of two sources. The first source, the Airport Well Field, is a group of seven wells located about one mile south of Vale, at the airport. The wells are located on City-owned property. The collected water is sent through the arsenic treatment facility, chlorinated, and then routed into the adjacent Airport Reservoir. A booster pump station located at the Airport Reservoir is used to serve the City, as well as fill the Rhinehart Reservoir when demand increases. Flow data are sent by telemetry to the City's supervisory control and data acquisition system.

The second source, referred to as the Washington Street Well, is a 30-foot deep well, hand-dug in 1912, located within the City limits in the northwest part of the City. The Washington Street Well had not been used from 2003 to 2014 and was designated as an emergency backup supply source. However, the well was brought back on line in July 2014 to help mitigate water quality concerns. The locations of all wells are shown on Figures 1-2 and 1-3. A more detailed discussion of water supply sources is presented in Chapter 3.

Water Treatment System

In 2006, as part of the Environmental Protection Agency's Arsenic Removal Technology Demonstration Program, an ion exchange arsenic treatment facility was constructed adjacent to the Airport Well Field. The system consists of sediment filters, pressure vessels, brine tanks, controls, and other appurtenances located inside a steel building. Adjacent to the building is a 2-acre evaporative lagoon for disposal of salt brine used in the backwash process during treatment. The arsenic treatment system is described in Chapter 3.

Water Storage Reservoirs

The City of Vale has three water storage reservoirs. The City's main water storage reservoir, Rhinehart Reservoir, is located southeast of the City, on Rhinehart Butte. The Rhinehart Reservoir has a 750,000-gallon capacity, is constructed of concrete, and has a base elevation of approximately 2,387 feet above Mean Sea Level. The reservoir is 20 feet deep and has a diameter of 80 feet. The Rhinehart Reservoir serves all of Vale through a gravity-fed distribution system.

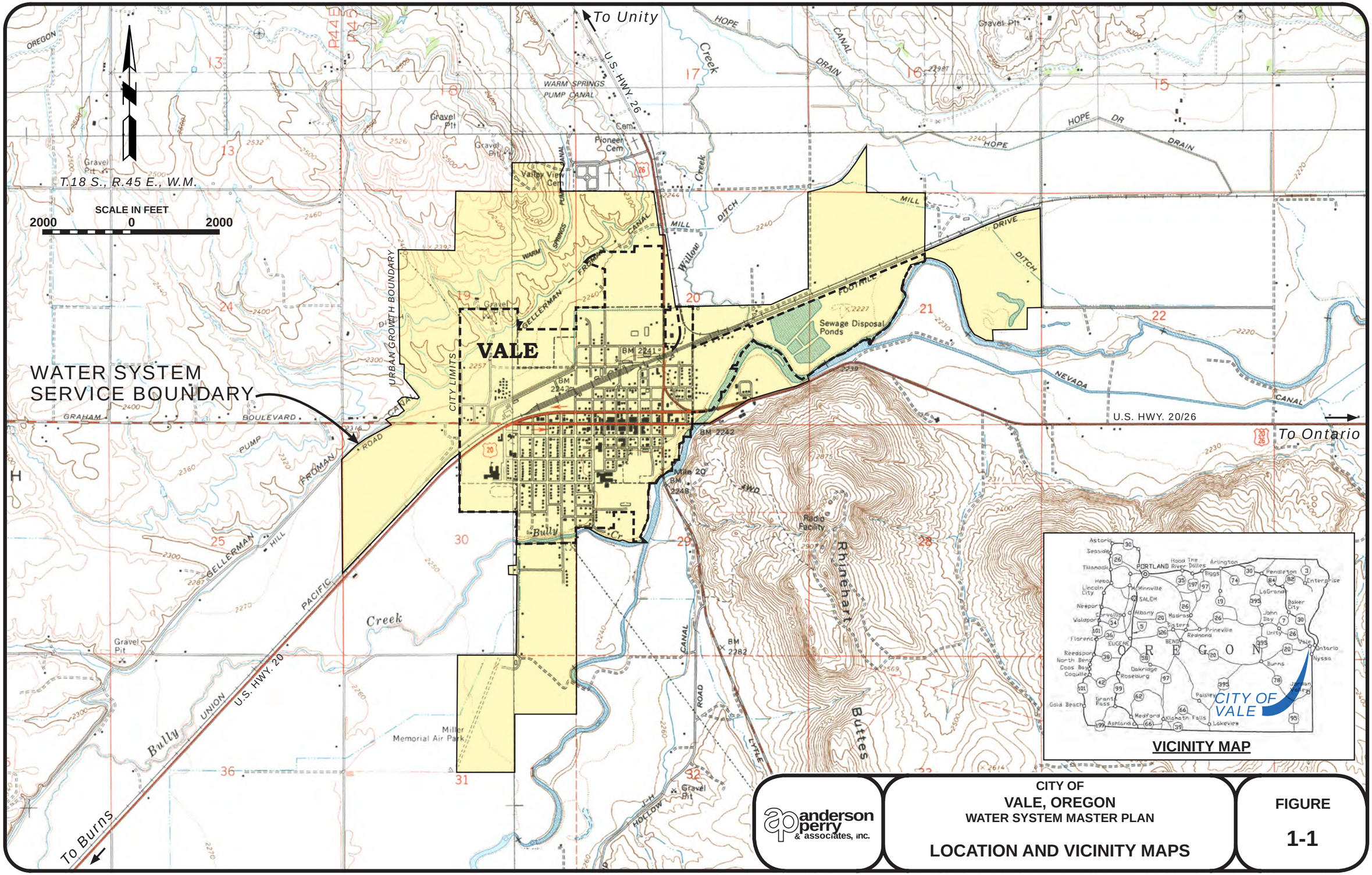
The bolted steel reservoir (Airport Reservoir), located adjacent to the Airport Well Field, was constructed in 2002 as part of a water system improvements project. The Airport Reservoir has a capacity of 200,000 gallons, is approximately 33 feet high, with a diameter of 33 feet, and a base elevation of approximately 2.252 feet above MSL. This reservoir is supplied by the Airport Well Field and provides water to the distribution system and Rhinehart Reservoir through a booster pump when the Rhinehart Reservoir calls for water. Water from the Airport Reservoir enters the distribution system at the intersection of Main and I Streets via an 8-inch transmission line.

The third reservoir is an underground concrete reservoir that was constructed in 1912. The reservoir has a capacity of 105,000 gallons but is in poor condition. The reservoir has been taken off line due to cracks in the concrete walls, causing a concern for potential water contamination. The locations of the City's existing reservoirs are shown on Figure 1-2. A more detailed discussion of the City's reservoirs is presented in Chapter 4.

Distribution System

The City's distribution system main lines are primarily 8- to 12-inch diameter polyvinyl chloride, transite (asbestos cement), and ductile iron, although there are also areas with smaller lines. The majority of the City's water main lines were installed with development of the water system in 1912. However, distribution system improvements have been made in recent years to improve flow and pressure in the system. The distribution system is generally laid out with looped piping to assist with water circulation through the system. The City has indicated that water main lines in the distribution system are generally in fair condition. Service lines were generally installed during system development in 1912. The service lines are primarily galvanized and copper pipe.

A layout of the distribution system is shown on the Existing Water System Map at the end of this WSMP. The distribution system is discussed in more detail in Chapter 5.



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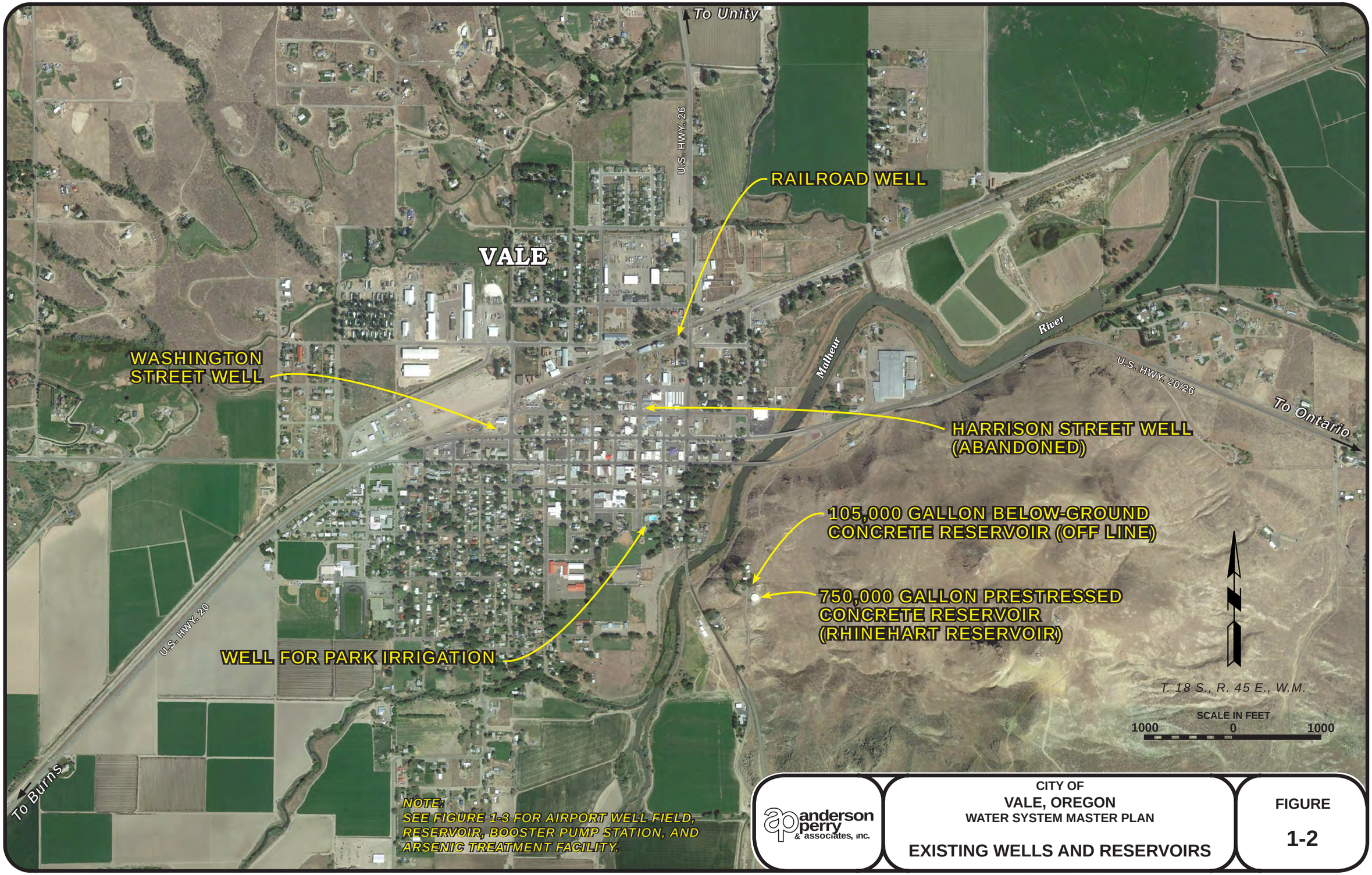
CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

LOCATION AND VICINITY MAPS

FIGURE
1-1

Job# 65-95-020 Mar. 13, 2015 lbauer



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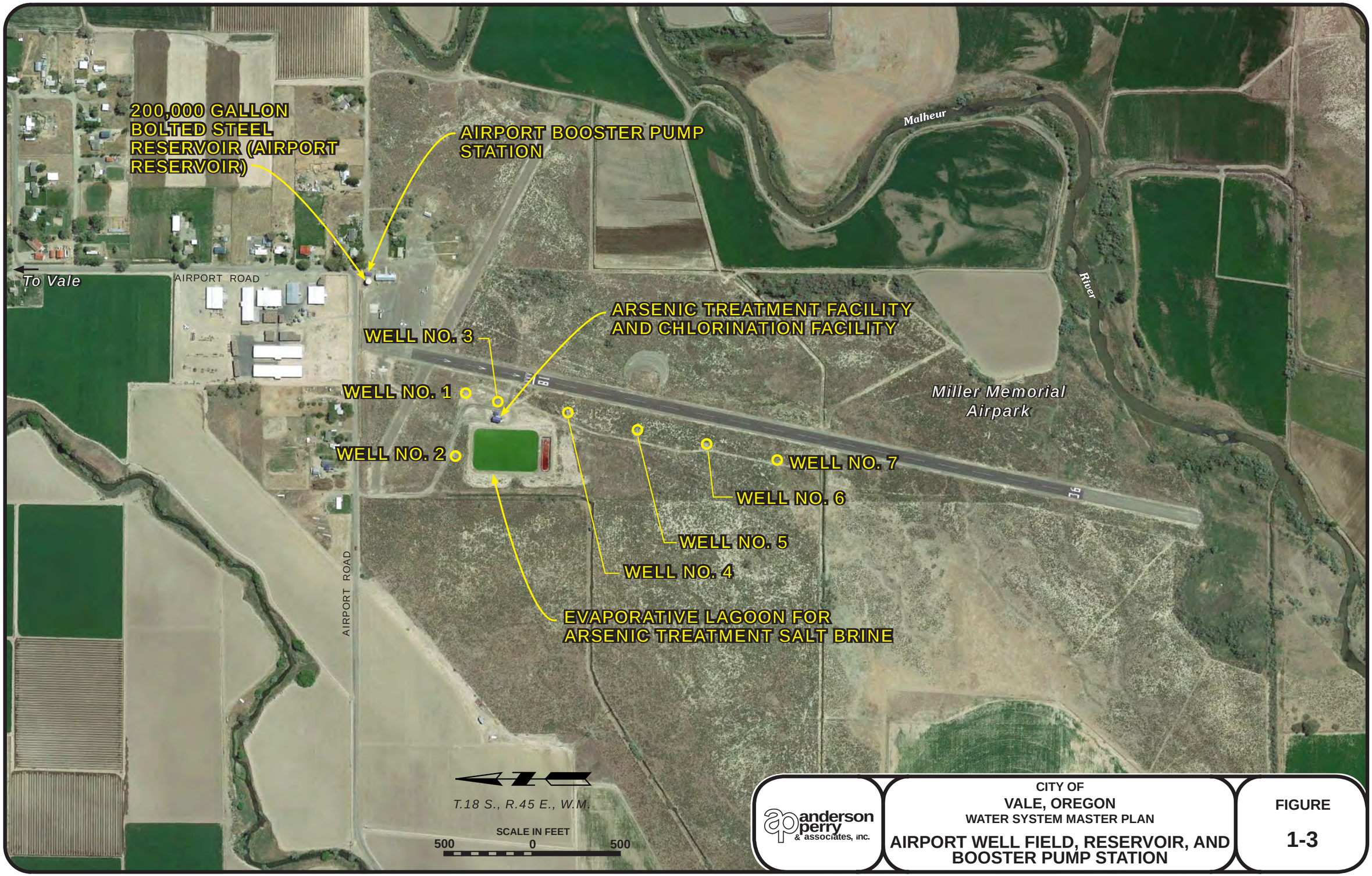
CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

EXISTING WELLS AND RESERVOIRS

FIGURE
1-2

Job# 65-95-020 Feb. 27, 2015 lbauer



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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

AIRPORT WELL FIELD, RESERVOIR, AND BOOSTER PUMP STATION

FIGURE
1-3

Job# 65-95-020 Feb. 27, 2015 lbauer

Chapter 2 - Water System Requirements

Introduction

This chapter presents basic information from which criteria have been developed for evaluating the City's existing water system and for defining and sizing the required components of the system for the 20-year planning period. Information concerning the service area, population projections, water use, and state and federal requirements is presented.

Service Area

The term "service area" refers to the area being served with water from the City's water system. Both the present and future service areas are considered in this Water System Master Plan (WSMP). The present service area primarily consists of the developed lands within the boundaries of the City limits; however, there are several services located outside of the City limits. Most are located on Lytle Boulevard, outside of the City limits yet inside of the Urban Growth Boundary (UGB). For the purpose of this WSMP, the future service area will consist of the present service area plus all areas within the current UGB. The City's zoning map is shown on Figure 2-1.

Many areas with large tracts of undeveloped land currently exist within the City limits (see Figures 1-1 and 1-2 in Chapter 1). With a significant area of open, undeveloped land available, the City of Vale has the potential for residential, commercial, and industrial growth. The elevations of these areas are similar to surrounding areas already served by the water system, with the exception of the area located in the northern part of the UGB. This area is on a hill that rises approximately 200 feet above the surrounding areas. Low pressure in this area due to higher elevations can be anticipated and will need to be accounted for in the design of future water main lines. Issues related to the service area and service limits of the existing water system are discussed in more detail in Chapter 4.

Service Population and Planning Period

In order to estimate the demands that may be placed upon a municipal water system, a determination of the population to be served must be made. Population estimates must be made with reference to time. Projections are usually made on the basis of an annual percentage increase estimated from past growth rates, tempered by future expectations. It is very difficult to accurately predict the population of a small community over an extended period of time. Significant population fluctuations are typical in small communities as demonstrated by the historical population variations in Vale. The addition or deletion of a major business, industry, or recreation use in the area could significantly affect the population and the overall water system needs.

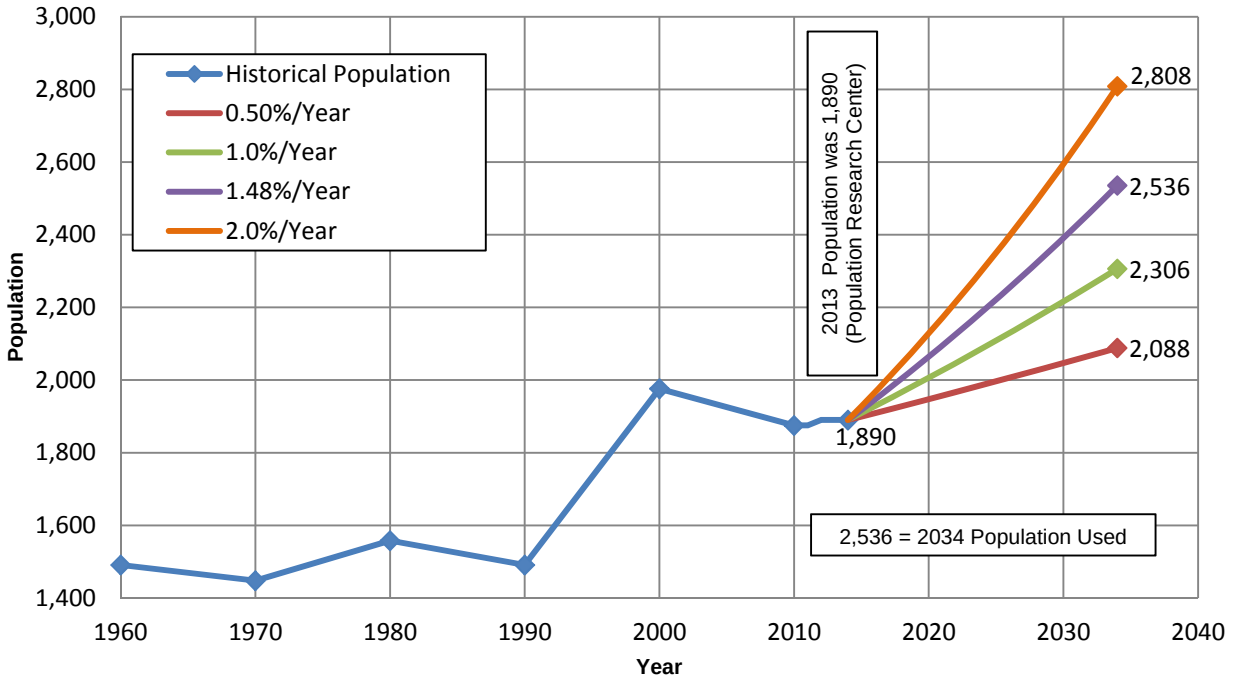
The period of time over which the population is to be projected usually depends on the type of improvements to be considered. Improvements that will require long-term financing should be designed for no less than the term of the financing. Facilities that are readily expanded or modified are normally designed for a period of 10 to 20 years. Facilities that are not easily modified or expanded, such as buried pipelines and storage reservoirs, may be designed for their expected life, which is usually 40 to 50 years or more.

The certified 2013 population of the City of Vale was 1,890 according to Portland State University's Population Research Center (PRC). This agency is the official source of population data available in Oregon between the official Census data generated at the beginning of each decade. For the purpose of this WSMP, the current population will be estimated as 1,890. Historical trends for the City, comparing official Census data from 1960 through the present, have varied from a low of 1,448 in 1970 to a high of 1,976 in 2000 and are discussed hereafter. The historical population data shown on Chart 2-1 were provided by the PRC. The PRC does not currently provide population projections for individual cities.

In accordance with Oregon Revised Statutes 195.025 and 195.036, Malheur County is responsible for establishing and maintaining population forecasts for cities within its jurisdiction. A population forecast was completed in 2006 by ECONorthwest for Malheur County. The population forecast estimated an average annual growth rate in the City of Vale of 1.48 percent between the period of 2005 and 2026. This population forecast was adopted by Malheur County by Ordinance No. 166, which is included in Appendix A. For comparison purposes, four population projection rates through the year 2034 are shown on Chart 2-1. These projection rates range from 0.5 percent to 2.0 percent per year. During development of this WSMP, a growth rate of 1.48 percent, as determined by the County adopted population forecast, was used for planning purposes. Demand for housing, including vacant properties, has recently been strong. Assuming this housing demand will continue, it would be wise to accommodate for future population growth into any needed improvements that the City elects to pursue.

The assumed 1.48 percent annual growth rate results in a design population in the year 2034 of 2,536. It should be recognized, however, that over the planning period of this WSMP, actual growth could exceed or fall well below the figures presented on Chart 2-1.

CHART 2-1
HISTORICAL AND PROJECTED POPULATION



Land Use

The current zoning in the City of Vale is shown on Figure 2-1. As designated in the City's Land Use Plan and Public Facilities Plan, five land use classifications have been identified within the City limits: Neighborhood Commercial (V-C), Light Industrial (V-I), Residential (V-R), Single Family Residential (V-R1), and Duplex and Residential (V-R2). The Land Use Plan also identifies four classifications outside of the City limits, but inside of the UGB: Industrial, Airport (V-AP), Neighborhood Commercial (V-C), Light Industrial (V-I), and Residential (V-R). Commercial areas are primarily located in the City's core and in the downtown area along Highway 20. Residential areas surround the core commercial area and exist both on the north and south sides of the City. The City's industrial area is located along the Wyoming Colorado Railroad corridor.

Vale has a significant amount of undeveloped land with residential zoning within the City limits. Considerable residential development potential also exists just outside the City limits and inside the UGB. These areas provide expansion possibilities for residential construction in the City of Vale. An expansion of the existing Cottonwood Subdivision is expected to bring in 30 or more homes in the near future.

The City has recently expanded the UGB to incorporate additional industrial area. The expansion includes land east and west of the City. The City plans to extend utility services to these areas in hopes of attracting industry to Vale. The conceptual utilities extension plans are provided in the City's Public Facility Plan, which was completed in 2014 as a supporting document to the Comprehensive Land Use Plan.

In general, the City of Vale has significant area available for residential expansion, inside both the City limits and the UGB. There are also areas available for commercial and industrial expansion. Land use areas, potential demands on a water system, and areas where growth is anticipated to occur are important factors to consider when analyzing the City's water system capability to meet current and future needs. Any future distribution system improvements should also consider these potential areas of expansion when considering pipe size and location.

Regulatory Requirements

The City of Vale water system comes under the jurisdiction of the Oregon Health Authority - Drinking Water Services (DWS). The DWS assumed primacy (responsibility) from the U.S. Environmental Protection Agency (EPA) in February 1986 for enforcement of the federal Safe Drinking Water Act (SDWA). Therefore, the City of Vale is currently, and will principally be, working with the DWS as the regulating agency with regard to their water system. The City is required to publish annual Consumer Confidence Reports; a copy of the 2013 report is located in Appendix B.

Regulatory Background

The SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources -- rivers, lakes, reservoirs, springs, and groundwater wells. The primary regulations associated with the SDWA address requirements concerning trace minerals, compounds, and microorganisms that may affect the health of water consumers. The

SDWA provides for monitoring, testing requirements, reporting, record keeping, and public notification procedures in the event of non-compliance.

The 1986 amendments to the SDWA included provisions for wellhead protection, new monitoring for certain substances, filtration for certain surface water systems, disinfection for certain groundwater systems, and restrictions on lead content in pipe solder and plumbing.

The 1996 amendments to the SDWA included provisions for consumer confidence reporting, stronger protection for microbial contaminants and disinfection byproducts, operator certification, lowering maximum contaminant levels (MCLs), and source water assessments.

Enacted in 1981, the Oregon Drinking Water Quality Act established periodically amended statutes and subsequent administrative rules to enforce, at a minimum, the federal SDWA requirements. The DWS administers and enforces drinking water quality standards for public water systems in the State of Oregon. The agency focuses resources in the areas of highest public health benefit and promotes voluntary compliance with state and federal drinking water standards. The DWS also emphasizes prevention of contamination through source water protection, provides technical assistance to water system owners, and provides water system operator training. They also work closely with public water systems to make sure public notification is made in accordance with regulatory guidelines when required. If the City is unaware of their compliance status or in need of regulatory guidance, it is recommended that the regional DWS office be contacted.

The Arsenic Rule, which became effective in February 2002, lowered the MCL for arsenic allowed in a community water system from 50 parts per billion (ppb) to 10 ppb. The City of Vale has had numerous violations of this rule. The City has recently entered into a Bilateral Compliance Agreement (BCA) with the DWS, identifying their arsenic issue and outlining a plan to find solutions. The BCA is included in Appendix C.

Recent Regulatory History (Last Five Years)

Following is a list of regulations that have been enacted in the past five years:

1. **Reduction of Lead in Drinking Water Act**, which requires any new installation or purchase of materials used in potable locations to be "lead-free." Lead-free has been redefined as "(A) not containing more than 0.2 percent lead when used with respect to solder and flux; and (B) not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures." This law was enacted on January 4, 2014. Oregon requires drinking water components to be National Sanitation Foundation/American National Standards Institute Standard 61 compliant in order to meet the intent of this law.

2. **Stage 2 Disinfectants and Disinfection Byproduct Rule (D/DBPR)**, which focuses on public health protection by limiting exposure to disinfection byproducts. The D/DBPR specifically targets total trihalomethanes and five haloacetic acids, which can form in water through disinfectants used to control microbial pathogens. This rule applies to all community water systems (CWSs) and non-transient non-community (NTNC) water systems that add a primary or residual disinfectant other than ultraviolet light. Stage 2 of the D/DBPR was enacted in 2012 for large CWSs and NTNCs and in October 2013 for all CWSs and NTNC water systems.

3. **Unregulated Contaminant Monitoring Rule (UCMR) 3.** The EPA uses the UCMR program to collect data for contaminants suspected to be present in drinking water, but that do not have health-based standards set under the SDWA. Every five years, the EPA develops a new list of UCMR contaminants, largely based on the Contaminant Candidate List. Oregon Administrative Rule 333-061-0043 requires CWSs to report detection of unregulated contaminants in their annual Consumer Confidence Report.

Upcoming Regulatory Changes

The following rule will be enacted in the near future:

1. **Revised Total Coliform Rule**, which requires that total coliform samples be collected by public water systems at sites that are representative of water quality throughout the distribution system according to a written sample site identification plan subject to state review and revision. The rule goes into effect on April 1, 2016. The City should work with the DWS to develop the required sampling plan prior to April 1, 2016.

Potential Regulatory Changes

Following is a list of regulations that may be enacted in the future:

1. **Radon in Drinking Water Rule**, which would attempt to reduce airborne and waterborne radon concentrations to limit exposure levels. This rule would apply to CWSs that use groundwater or mixed groundwater and surface water.

2. **Third Contaminant Candidate List (CCL3) Regulatory Determinations.** The EPA has made a preliminary determination to regulate strontium. After public comment, the EPA is expected to release a final determination in 2015. The Fourth Contaminant Candidate List is currently in draft form and is expected to be published in 2015.

3. **Carcinogenic Volatile Organic Chemicals (cVOC) Rule.** The EPA is developing a proposed national primary drinking water regulation for a group of 16 known cancer-causing compounds, including eight currently regulated cVOCs and up to eight from the CCL3.

4. **Perchlorate Rule.** The EPA is developing a proposed national primary drinking water regulation for perchlorate. Perchlorate may cause adverse health effects. Scientific research indicates that this contaminant can disrupt the thyroid's ability to produce hormones needed for normal growth and development.

5. **Hexavalent Chromium.** The EPA currently regulates hexavalent chromium as part of the total chromium drinking water standard. New information on health effects has become available since the original standard was set, and the EPA is reviewing this information to determine whether new health risks need to be addressed. The State of California has already implemented a hexavalent chromium specific MCL.

6. **Fluoridation.** Fluoride MCLs may be lowered in the future as the health impacts of fluoride are fully realized. The current MCL of 4 parts per million could be reduced to 1 or less. This lower MCL could require systems with naturally occurring fluoride above the MCL to treat to

reduce levels. The City of Vale appears to consistently have fluoride levels around 0.5 parts per million.

7. **Cybersecurity.** Executive Order 13636: Improving Critical Infrastructure Cybersecurity, was established in February 2013. The order calls for the development of a voluntary, risk-based cybersecurity framework. The EPA will make an evaluation as to whether any additional authority and/or regulations to address cybersecurity in the water sector are needed.

Regulatory Violations

The water withdrawn from the City of Vale's wells has a long history of arsenic and nitrate contamination. DWS has issued 17 violations against the City over the period from January 2011 through July 2014. A one-page summary of these violations, as displayed on the DWS' website, is presented in Appendix D. Ten of these violations were due to arsenic levels being higher than the MCL required by the DWS. The other violations were related to late submission, or no submission, of water quality related data. These late submission violations have been resolved by completing and/or turning in the requested information. However, the last seven violations of high levels of arsenic are covered under the BCA between the City and DWS. In the agreement, the City has agreed to seek funding, update its WSMP, and complete improvements to its water system in order to lower the level of arsenic to below the MCL. During this time, the City is required to take quarterly arsenic samples and provide public notice of the arsenic levels in the drinking water; however, the DWS has agreed that no formal enforcement action will be taken against the City regarding the high levels of arsenic.

Regulatory Requirements Summary

In summary, many regulations affect operation of the City of Vale's water system. The information presented herein is intended to provide the City with a brief summary of the regulations and possible future regulations that will likely affect operation of the City's water system. These regulations continue to expand and will require careful attention to maintain compliance. It is recommended that the City of Vale consults periodically with the DWS in Pendleton to ensure compliance with current regulatory requirements and to address any regulatory questions or issues.

Water System Sanitary Survey

DWS conducts sanitary surveys of water systems for communities to assist in identifying potential contamination sources that may impact water quality. These surveys are generally scheduled to occur every five years.

The City of Vale's latest water system survey was conducted on June 19, 2013. The water system sanitary survey found the following items to be addressed:

- A flap valve, screen, or equivalent is required on the drain of the Rhinehart Reservoir.
- Monitoring is not current.
- The City currently has MCL violations for arsenic.

Some of these items have been addressed since the survey was completed. The City will need to address the deficiencies listed above that have not been previously addressed. A copy of the full 2013 Water System Sanitary Survey is included in Appendix E. Included in the survey is a checklist of sanitary survey items used in the inspection of the water system. City staff should periodically review the checklist; this will help the City to take a proactive approach to these surveys and also help to avoid potential future violations.

Water Demand

Future water demands, for the purpose of identifying needed future water system improvements, can be estimated from past water use data and population projections. Water use data are usually expressed in terms of various rates of water used for various periods of time. This allows components of the water system to be sized for the maximum demands that will be placed on them. The rates of water use that are important in evaluation of a water supply system are the average daily demand, which is the total amount of water used during a one-year period divided by 365 days, the peak daily demand, which is the maximum total amount of water used during any 24-hour period, and the peak hour or peak instantaneous demand, which is a measure of the maximum flow of water at any given time.

Water supply facilities are normally designed for peak daily demands. As a rule, a well would be sized for supplying the needed water during the peak daily demand without continuous 24-hour operation. For example, if the water usage during high demand summer months required a well pump to operate 18 hours or more per day to keep up with the peak daily demand, the situation may warrant the addition of another well or other water supply source in order to provide some backup capability and to not over-stress the well pumping equipment. Booster pumps and distribution pipelines are generally sized to deliver peak instantaneous demands because they must be capable of meeting the highest demand. Storage reservoirs are sized to make up the difference between water supply capacity and peak water use rates, at a minimum. Additional capacity (reserve) is usually provided in water storage reservoirs for both emergencies and fire suppression.

Per Capita Water Use

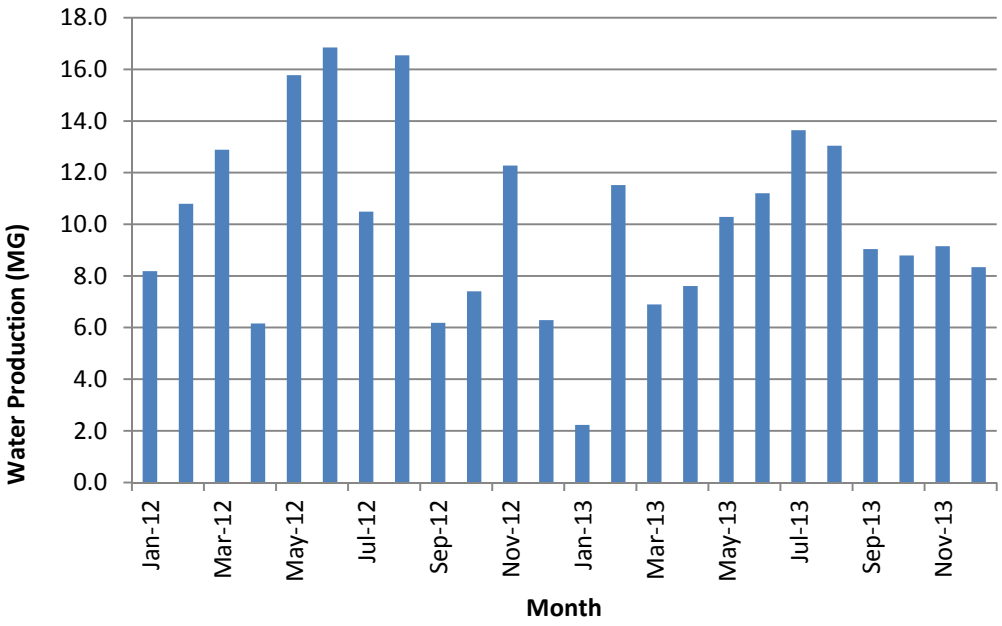
In order to be utilized for projecting future water demands, past water use data must be converted to a per capita (per person) rate of use. This is done by dividing the average day, peak day, and peak instantaneous water use rates by the number of people being served by the water system. These water demand rates would then be expressed as gallons per capita day (gpcd). These values multiplied by a population projected for some future year would then give estimated total demand rates for that year.

Historical Average Water Use

To determine current water demands, customer billing and production records for the City's water supply system were reviewed from 2012 and 2013. Population data for the same time frame were also utilized. Water production data from 2009 through 2011 were not used due to inconsistencies in the data from a faulty well flowmeter. To supplement these data, water production data from the neighboring communities of Ontario and Nyssa were also analyzed.

Monthly well production for the City of Vale for 2012 and 2013 is shown on Chart 2-2. The chart represents flow from the Airport Well Field only, as the Washington Street Well was not operated during this time.

CHART 2-2
WATER PRODUCTION 2012-13



Due to apparent inaccurate flowmeter readings prior to 2012, the amount of reliable data from the City of Vale is limited. Data from neighboring communities of similar demographics and climate were analyzed in order to make a planning-level decision for required water system demands. Table 2-1 is a summary of water demands from the Cities of Vale, Nyssa, and Ontario.

TABLE 2-1
WATER DEMAND COMPARISON

City	Year	Population	Average Daily Demand (gpd)	Peak Daily Demand (gpd)	Average Gallons (gpcd)	Peak Gallons (gpcd)
Vale	2012	1,890	355,900	560,000	190	300
Vale	2013	1,890	306,000	453,300	162	240
Nyssa	2008	3,000	448,700	763,800	150	255
Ontario	2010	12,000	3,432,000	6,036,000	286	503

gpd = gallons per day

Average Daily Demands

For this WSMP, due to the limited amount of reliable flow data and to reflect typical values seen in other communities similar to Vale, an average daily flow of 250 gpcd was selected for planning purposes to project future demand needs. The City of Vale's 250 gpcd average water

demand is in the middle range of typical demands when compared to other cities with water meters in eastern Oregon and Washington, as shown on Table 2-2.

TABLE 2-2
COMPARATIVE WATER USAGE
TYPICAL FOR SMALL CITIES IN EASTERN OREGON AND EASTERN WASHINGTON
METERED SYSTEMS

City	Average Daily Demand (gpcd)	Peak Daily Demand (gpcd)	Peak Factor (peak daily)	Population
Lostine, Oregon	170	544	3.2	250
Adams, Oregon	195	625	3.2	265
Cove, Oregon	215	628	2.9	594
Prairie City, Oregon	234	549	2.3	1,195
Pilot Rock, Oregon	240	810	3.4	1,675
Prescott, Washington	240	1,032	4.3	300
Mt. Vernon, Oregon	240	585	2.4	617
Umatilla, Oregon	245	565	2.3	4,281
Athena, Oregon	250	810	3.2	1,120
Vale, Oregon*	**250**	**625**	**2.5**	**1,890**
Island City, Oregon	260	810	3.0	1,030
John Day, Oregon	270	865	3.2	2,010
Stanfield, Oregon	280	660	3.2	1,620
Irrigon, Oregon	290	800	2.8	1,790
Echo, Oregon	294	1,010	3.4	700
Boardman, Oregon	320	730	2.3	3,220
Helix, Oregon	323	1,130	3.5	155
Condon, Oregon	345	835	2.4	759
Arlington, Oregon	360	1,200	3.3	500
Joseph, Oregon	375	1,100	2.9	1,060
Ione, Oregon	461	1,865	4.0	250
Dayton, Washington	425 (est.)	1,100	2.6	2,700

**Assumed demands and peaking factor for planning purposes.*

Peak Daily Demands

Peak daily demands usually occur during a particular day between June through September, which is when water use is normally at its greatest due to irrigation and other summer uses. Peak daily demands can occur in other months, but normally occur during the hottest period of the year. During peak daily demands, the City's wells operate continuously and equalization storage is required to meet demands. Typically, the peak daily demand could be found in daily flow records during this time period. However, due to potentially faulty flowmeter readings, these data were not relied upon. For planning purposes, a peaking factor is assumed in order to estimate a peak daily demand. Peaking factors (a ratio of average day to peak day demands) typically range anywhere from 2.0 to 3.5. For the purpose of this WSMP, a peaking factor of 2.5 is assumed. This value provides a corresponding peak daily demand value of 625. This estimated value is comparable to other eastern Oregon cities, as shown on Table 2-2.

The average and peak daily demands assumed for planning purposes are summarized in the following table. These demands have also been summarized as a flow rate to provide the basis for comparison to water supply capacity. The assumed population for determining the actual daily demand rates is 1,890, as discussed earlier in this chapter.

TABLE 2-3
YEAR 2014 TOTAL AVERAGE AND PEAK DAY DEMAND DATA

Parameter	System Demand (gpcd)	Total Demand (gpm)	Percentage of System Capacity (Assumed Total Capacity of 550 gpm)
Average Daily Demand	250	328	60
Peak Daily Demand	625	820	149

gpm = gallons per minute

Water supply facilities (well pumps) are normally designed to meet peak daily demands without providing 24-hour service. It is preferable that well pumps operate a maximum of 18 hours per day, if possible. Without considering the Washington Street Well as a supply source (due to water quality and other issues), the current total production capability of the Airport Well Field is approximately 550 gpm. This capacity can meet the current average daily demand, but cannot provide enough water to meet the estimated peak daily demand. The 2014 peak daily flow for the City is estimated to be 1,181,250 gallons. All seven airport wells would need to operate 24 hours per day to meet this estimated demand. This peak daily demand would also impact available fire and emergency reserves in the system. This suggests changes to existing system storage, improved well capacity, or both will be needed in the near future.

Description of Customers Served

The City of Vale's water service accounts, as of June 2014, are summarized on Table 2-4. In the last year, the City of Vale has begun tracking water use by account type. This percentage breakdown is also provided on Table 2-4.

TABLE 2-4
WATER ACCOUNT INFORMATION

Account Type	Number of Accounts	Percent of Total Accounts	Percent of Water Use in 2014
Residential	581	81	67.0
Commercial	131	18	32.8
Industrial	9	1	0.2
TOTAL	**721**	**100**	**100**

On the table above, the commercial users consist of schools, churches, City property, and businesses. As shown on the table, residential water users account for approximately 81 percent of the total water users in the City of Vale, while commercial and industrial users account for approximately 19 percent. It can be seen, however, that residential water use only accounts for approximately 67 percent of water use, while commercial and industrial account for the remaining 33 percent.

Fire Demand

Fire Protection Ratings

Flow rates for fire suppression in residential, commercial, and industrial areas within developed communities are usually determined from the size, density, and occupancy of buildings, type of construction materials, and desired fire insurance rating. Incorporated cities and some rural areas are given a fire suppression rating by Insurance Services Office, Inc. (ISO). The rating is used by insurance companies to determine the cost for providing fire insurance to home and business owners. ISO's fire suppression rating schedule is used to review those features of available public fire protection that have a significant influence on minimizing damage once a fire has begun. These features include the receiving and handling of fire alarms; the fire district's manpower, equipment and training; and the capability of the water system to provide the needed fire flows.

ISO periodically evaluates fire suppression capabilities of incorporated cities and rural fire districts. The numerical ratings range from Class 1 down to Class 10, with Class 1 indicating the highest fire suppression capability and Class 10 the lowest. A Class 10 rating is reserved for unprotected areas that have no fire department and no water supply system. Most protected areas outside of cities have a Class 9 rating, and most small rural cities with municipal water systems are rated Class 8, 7, or 6, depending on the strength of their water system and fire department. The ISO rating for Vale, based on the 1999 evaluation, is Class 6. The ISO rating information is presented in Appendix F.

ISO's fire suppression rating schedule evaluates the City's fire department capabilities and the domestic water supply capacity on an approximate equal basis (50 percent and 40 percent of the rating schedule, respectively). In order to reduce the cost of fire insurance in a community, improvements usually must be made to the fire department, the water system, or both, depending on their present condition. It is difficult to determine possible fire insurance savings on commercial buildings because the insurance costs are determined by many other factors related to the type of occupancy and the type of building construction. The City of Vale has an average rating for typical rural communities of similar size. Improving the rating as a result of water system improvements may be possible.

Recommended Fire Flows

ISO also recommends fire flows for various conditions in both residential and commercial settings. Recommended fire flows for residential areas are set forth in the 2012 ISO Schedule as shown below.

Distance Between Buildings	Required Fire Flows
Over 30 feet	500 gpm
21 to 30 feet	750 gpm
11 to 20 feet	1,000 gpm
10 feet or less	1,500 gpm

Recommended fire flows for commercial buildings are based on many factors including building size, construction materials used, and what is housed in the building.

The International Fire Code (IFC) requires a minimum flow of 1,000 gpm in residential areas and a minimum of 1,500 gpm for a minimum of two hours in all other occupancies. These requirements increase with square footage of the building and can be quite large for commercial and institutional buildings (schools). These fire flows must be maintained with a system-wide minimum of 20 pounds per square inch residual pressure. Attaining the required fire flows for commercial areas may not be realistically achievable. The IFC has an allowance for decreases in fire flows for small communities (if approved by the local fire chief), where development of full fire flows is impractical.

The 2004 ISO Hydrant Flow Data Summary recommends needed fire flow protection rates for both residential and commercial districts to receive full credit ratings. ISO does not consider needed fire flows over 3,500 gpm in determining the Public Protection classification for cities. The fire flow design criterion for this WSMP is based on the typical maximum fire flow recommended by ISO, which is 3,500 gpm for a two-hour duration. This maximum fire flow is typically recommended for school areas and other high-density development.

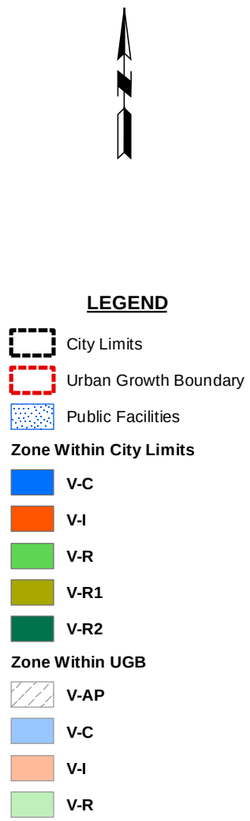
Available Fire Flow

The City routinely tests fire hydrants to help ensure the hydrants remain operable and to estimate available fire flows. Fire hydrant flushing and flow testing data were provided by the City for this WSMP. Based on the test results, the City of Vale's water system is generally able to deliver water flows ranging from approximately 680 to 975 gpm at individual fire hydrants while maintaining working distribution system pressures from 50 to 65 psi. A copy of the fire hydrant flow test results are included in Appendix G. Refer to Chapter 5 for a more detailed discussion of fire flow capacity.

Design Criteria

In establishing design standards for a water system, primary consideration must be given to state and federal rules and regulations governing water quality and construction standards for water systems. These regulations, as previously stated, are set by both the EPA and DWS. In addition to these public health and safety requirements, many other factors control the design parameters for municipal water systems. The City must evaluate factors such as financial feasibility, philosophy and policies of the City Council, past system performance and service, and expectations of the water users. All of these factors are important and can influence the standards by which water system improvements are made.

Figure 2-2 presents a summary of the water system design criteria for evaluating the existing water system and developing improvements to satisfy present and future needs. Application of these criteria is discussed further in the specific chapters that address the water supply and treatment, storage, and distribution system facilities. The figure presents design criteria based on the estimated present service population of 1,890 and present estimated average and peak daily demands. Design criteria are shown for the year 2034 based on a 1.48 percent growth rate per year in the City. Storage volumes are derived from calculations summarized in Chapter 4. The design criteria presented on Figure 2-2 are used as base information in later chapters for evaluating existing and future system needs and capability.



2,000 0 2,000
SCALE IN FEET

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

ZONING MAP

FIGURE
2-1

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SUMMARY OF DESIGN CRITERIA

	Year 2014	Year 2034, 1.48% Per Year Growth Without Improvements	Year 2034, 1.48% Per Year Growth With Improvements
Design Population	1,890	2,536	2,536
Supply			
Average Daily Demand (gpcd)	250	250	250
Average Daily Flow (gpd)	472,500	634,000	634,000
Average Daily Flow (gpm)	330	440	440
Peak Daily Demand[1] (gpcd)	625	625	625
Peak Daily Flow[1] (gpd)	1,181,250	1,585,000	1,585,000
Peak Daily Flow (gpm)	820	1,100	1,100
Peak Hourly Flow[2] (gpm)	2,050	2,750	2,750
Estimated Supply Flow Available[3] (gpm)	550	550	1,500
Estimated Supply Flow Required[4] (gpm)	1,093	1,467	1,467
Fire Demand			
Residential (gpm)	1,000	1,000	1,000
Commercial/Public (gpm)	3,500	3,500	3,500
Duration (hour)	2	2	2
Minimum Residual Line Pressure Under	20	20	20
Storage			
Equalization Storage[5] (gal)	225,000	330,000	187,500
Operating Storage[6] (gal)	150,000	150,000	191,000
Fire Reserve[7] (gal)	420,000	420,000	420,000
Emergency Reserve[8] (gal)	472,500	634,000	634,000
Total Recommended Storage[9] (gal)	1,267,500	1,534,000	1,432,500

gpd = gallons per day
gpcd = gallons per capita per day
gpm = gallons per minute
gal = gallons
psi = pounds per square inch

[1] = 2.5 times average daily demand.
[2] = 2.5 times peak daily flow.
[3] = Well field capacity is 550 gpm; Washington Street Well considered non-operational currently, assumed to provide approximately 1,000 gpm with improvements.
[4] = Total capacity required to operate well pumps a maximum of 18 hours per day and meet peak demands.
[5] = Difference between peak hourly flow and available supply for a 2.5-hour period.
[6] = Assumes that 3.5 feet of operating storage in the Rhinehart Reservoir and 3 feet in the Airport Reservoir is used to control well operation.
[7] = 3,500 gpm flow for two-hour duration, assuming only storage is used.
[8] = One-day supply at average daily demand, assuming only storage is used.
[9] = Available existing storage is approximately 950,000 gallons.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

SUMMARY OF DESIGN CRITERIA

FIGURE
2-2

Chapter 3 - Water Supply and Treatment

Introduction

This chapter includes a description of the City's present water supply and treatment system and a discussion of its capacity to meet present and future needs. The current water supply system consists of alluvial wells. The treatment system is an ion exchange system used to treat the water for arsenic. Needs and concerns associated with the water supply and treatment facilities are discussed. Water rights are also addressed.

Present Water Supply, Treatment, and Controls

General

The City of Vale has two water supply sources. The first source is a group of shallow wells located at the Miller Memorial Airpark (the airport) south of Vale. The wells are located on City-owned property, adjacent to the arsenic treatment facility. The second source is a shallow well, dug in 1912, located near the intersection of Washington and 17th Streets. This well is utilized for emergency purposes and is currently being used to supply water with lower arsenic levels to the community. The locations of the wells are shown on Figure 1-2, Existing Wells and Reservoirs, in Chapter 1. The City of Vale does not have any interconnections with other water systems as no other public water systems are adjacent to Vale.

Critical Groundwater Areas

The City's wells are not located in an area designated by the Oregon Water Resources Department (OWRD) as critical groundwater or groundwater limited.

Airport Well Field Wells

The main water source for the City of Vale is a group of seven shallow wells. The Airport Well Field is located approximately one mile south of Vale, adjacent to the airport. According to well log data, the wells range in depth from approximately 30 to 37 feet and have been the main water source for the City for the past 12 years. The Record Drawings show that the Airport Well Field wells are constructed with 12-inch bore holes and 8-inch welded steel casing. The casings are equipped with 8-inch screens at the bottom of the casings. Wells No. 1 through 4 are sealed with bentonite, and Wells No. 5 through 7 are sealed with both bentonite and silica sand. The wells extend through several layers of alluvial silts, gravels, and clay. Well logs for all seven wells are included in Appendix H. The wells are each equipped with a single submersible pump and a pitless adapter. Table 3-1 provides more operational information for each of the Airport Well Field wells.

During the summer of 2014, water quality testing determined that Airport Wells No. 6 and 7 contained the highest levels of arsenic of the seven wells. These wells were shut down in an attempt to limit the amount of arsenic introduced into the system.

TABLE 3-1
AIRPORT WELL FIELD WELLS INFORMATION

Airport Well Field Well No.	OWRD Well Log No.	Depth (feet)	Static Water Level (feet)	Horsepower of Pump Motor	Estimated Capacity (gpm)
1	MALH 51259	33	8	7.5	75-100
2	MALH 51258	33	9	3	75-100
3	MALH 51257	37	8	5	75-100
4	MALH 51261	33	9.5	3	75-100
5	MALH 51522	30.5	7.5	3	75-100
6*	MALH 51524	35	6.5	5	75-100
7*	MALH 51523	35	7.5	7.5	75-100

**Currently off line*

gpm = gallons per minute

The wells were constructed in 2000 as part of a water system improvements project. Standby electrical power is currently not available for the wells. Water meters have been installed at each of the individual wells, as well as a master meter in the chlorination facility that is located inside the arsenic treatment building. The wells are also equipped with pressure transducers to read the static and drawdown water levels in each well.

Operation of the wells is controlled by a telemetry and supervisory control and data acquisition (SCADA) system. This system is discussed in detail later in this chapter.

Washington Street Well

The Washington Street Well was hand-dug in 1912 when the City water system was originally constructed. The well is roughly 16 feet in diameter and 30 feet deep. The well is constructed of reinforced concrete walls and top slab, and has a gravel bottom. The bottom of the concrete casing is perforated 18 inches from the bottom of the well, for a length of 2 feet. This well utilizes a shallow alluvial aquifer.

Several upgrades have been made to the Washington Street Well including the addition of a chlorination system, a second submersible pump, and well rehabilitation. The Washington Street Well is not typically operated as part of the water supply system; however, due to water quality issues, the well has been placed back into operation for the short term.

Disinfection and Treatment

The City of Vale has had several issues with water quality in the past. Currently, water from the Airport Well Field is sent through an arsenic treatment system, then chlorinated using liquid sodium hypochlorite prior to entering the distribution system. As mentioned previously in this Water System Master Plan (WSMP), the City's arsenic treatment system has been unable to reliably remove arsenic from the Airport Well Field water. Recently, the Washington Street Well was reactivated in order to help mitigate the concentration of arsenic in the City's water supply. Water from the Washington Street Well is chlorinated with liquid hypochlorite, but is not treated for arsenic or nitrate, due to its distance from the arsenic treatment facility. Water from the Washington Street

Well would need to be sent through a dedicated pipeline to the arsenic treatment plant in order to be treated for arsenic.

As part of the Environmental Protection Agency (EPA) Arsenic Removal Technology Demonstration Program, a 540 gpm ion exchange (IX) system manufactured by Kinetico was selected for demonstration at Vale to remove arsenic and nitrate from a groundwater supply to meet their respective maximum contaminant level (MCL) of 10 micrograms per liter as arsenic and 10 milligrams per liter (mg/L) as nitrate. The system was constructed in 2006 and has been operated since that time. The EPA performed a study to evaluate the ability of the system to remove arsenic and nitrates from the source water. A summary of this report is included later in this chapter.

The existing IX system utilizes two pressurized vessels filled with strong-base anion (SBA) resin to remove arsenic from the source water. Water from the Airport Well Field wells is pumped through the resin filled vessels and the treated water then enters the Airport Reservoir. The SBA resin acts similarly to a magnet, in that it attracts negatively charged ions such as sulfate, nitrate, and arsenic. Once the resin has reached its capacity for removing these ions, the system must be regenerated. To regenerate the resin, heavily concentrated saltwater brine is pumped through the vessels to remove the negatively charged sulfate, nitrate, and arsenic ions. This brine water is then sent to a 2-acre evaporative lagoon located adjacent to the arsenic treatment building. The locations of these facilities are shown on Figure 1-3, at the end of Chapter 1.

At this time, the City is bypassing the IX treatment facility. Testing during the summer of 2014 showed that the treatment facility was removing little arsenic from the source water. Drinking Water Services (DWS) approved bypassing the facility until a treatment solution can be found. A detailed evaluation of the existing system is presented later in this chapter.

Control System Equipment

The water supply system is controlled by a telemetry and SCADA system. The master control panel (MCP) is located at the maintenance shop, and remote telemetry units (RTUs) are located at the Rhinehart Reservoir, arsenic treatment facility, Airport Booster Pump Station, and Washington Street Well. The MCP communicates with each of these RTUs individually and relays any information from one RTU to another. The MCP is connected to a SCADA system that allows the operator to control the system from a remote Internet connection. The MCP has no local control functions as all systems are controlled through the SCADA.

The telemetry and control system at the Rhinehart Reservoir consists of an Allen-Bradley MicroLogix™ 1100 programmable logic controller (PLC). This equipment transmits signals to the MCP and indicates the maximum, minimum, average, and current water levels in the reservoir. The equipment also transmits a high and low alarm when the water level reaches the respective setpoints. Alarms are sent to the MCP and are then displayed to the operator via the SCADA system.

The telemetry equipment at the arsenic treatment facility also consists of an Alley-Bradley MicroLogix™ 1100 PLC. This PLC receives a water level signal from the Airport Reservoir. The PLC compares the level to the setpoint and activates the Airport Well Field to maintain levels in the Airport Reservoir.

The telemetry equipment at the Airport Booster Pump Station consists of an Allen-Bradley PLC, radio transceiver, and other associated items. The equipment receives signals from the MCP, indicating the level in the Rhinehart Reservoir. Once the level in the Rhinehart Reservoir reaches the booster pump activation setpoint, one of the two booster pumps is activated. If the reservoir reaches a low low setpoint, both booster pumps are activated.

The telemetry equipment at the Washington Street Well consists of a radio transceiver, Allen-Bradley PLC, and other related items. The equipment transmits signals to the MCP for on/off status, flowmeter reading, power failure, and communication failure.

System Operational Controls

The water system operates based on the water level in the storage reservoirs. When the water level in the Rhinehart Reservoir drops to a depth of 15.5 feet, a low reservoir signal is sent to the MCP, which then sends a signal to the Airport Booster Pump Station. The booster pump is activated and water is pumped from the Airport Reservoir into the distribution system and the Rhinehart Reservoir. When the Airport Reservoir drops to a depth of 28 feet, a signal is sent to the PLC located at the arsenic treatment building, which activates the Airport Well Field in order to maintain the level in the Airport Reservoir. All seven wells are run simultaneously when the Airport Reservoir calls for water.

Well Maintenance

Well Capacity

Wells require periodic maintenance to keep them functioning properly and working efficiently. Many wells, particularly wells sourcing their water from an alluvial aquifer, have a tendency to lose efficiency over time. The result of lost efficiency is either decreased yield (gpm) or greater pumping drawdown. This results in higher pumping costs and loss of production.

Specific capacity (production in gpm per foot of drawdown) is a measure of the well's ability to yield water. Wells can lose efficiency and capacity for a variety of reasons, including mechanical clogging, bacterial clogging, and loss of pump efficiency. Observing changes in a well's specific capacity over time will alert a well owner of developing well efficiency problems.

It is recommended that the City perform simple specific capacity pumping tests either annually or biannually on each well. The results should be recorded and plotted on a graph over time. A specific capacity test is easily performed by pumping the well using the existing well pump and documenting the static water levels, drawdown, and pumping rate of the well. This is best done during a period when the well has been sitting idle for a few weeks. The idle time is needed to normalize the well's static water level. Noting a reduction in specific capacity will indicate problems with the well and the need to take corrective action before the problem becomes irreversible. It should also be noted that the City of Vale has noticed an increase in sand particles in the water produced by the Airport Well Field. This is requiring the operators to replace the bag filters frequently. The source of this sand pumping from the existing Airport Well Field wells should be investigated.

Rehabilitation work may include a variety of approaches depending on the nature of lost efficiency. Rehabilitation work may be accomplished using mechanical cleaning or non-mechanical methods

such as shocking with percussion apparatuses, chemical addition, or chlorination. In some cases, it may be necessary to use a combination of mechanical and non-mechanical methods. Generally, the longer rehabilitation work is delayed, the greater the risk that the lost capacity can be recovered. Tracking well production over time by performing this relatively easy specific capacity test provides good information to project forward and budget for a maintenance activity that may be required on the well. If specific capacity has not decreased but pumping rates have decreased, this may indicate a problem with the pump rather than the well.

Static Water Level Trends

The static water level is the depth to water in a well when the well has not been pumped for a period of time. Over time, static water levels of a well can be the best indicator of the status and condition of the underlying aquifer. According to well logs, the static water level in the Airport Well Field ranged between 6.9 and 9 feet below ground surface. A reduction in static water levels could indicate the aquifer is being depleted faster than it can be recharged. It is very important to observe any trends in static and pumping water levels in the City's wells. Data collected can then be plotted over time (several years) to observe any trends. The City's SCADA observes and records these values; however, the water level data were not available at the time of the WSMP development. Well water level data should be periodically downloaded, saved, and plotted to observe trends over time.

Water Rights

The City of Vale holds several water rights issued by the State of Oregon for its groundwater, and surface water sources. Copies of the City's water right certificates are presented in Appendix I. A summary of the water right information follows:

TABLE 3-2
WATER RIGHTS

Water Source	Application Number	Permit Number	Water Right Certificate	Transfer Number	Allowed Flow Volume (cfs/gpm)	Priority Date	Allowed Use
Airport Well Field	---	---	---	T-8166	5.0/2,250	1897	Municipal
Oregon Trail Mushroom	S-73411	S-52623	---	---	0.0891/40	1993	Heating/Air Conditioning
Willow Springs	S-6278	S-3916	2376	---	0.25/112	1918	Municipal
Well No. 4	G-4679	G-4406	41133	---	0.07/31.4	1968	Irrigation
Malheur River	S-50354	S-38013	61405	---	0.53/238	1973	Irrigation
Washington Street Well	G-4678	G-4405	87397	T-8339	0.75/337	1968	Municipal

cfs = cubic feet per second

Municipal Water Rights

The Airport Well Field is permitted for an instantaneous flow of 2,244 gpm (5 cfs), further restricted to 225 acre-feet monthly and 1,076 acre-feet annually. The City can currently use approximately 25 percent of this water right with the existing Airport Well Field pumping capacity. This right was transferred from the Malheur River to the Airport Well Field in 1999.

Willow Springs are located approximately 11 miles southwest of Vale. The City used to obtain water from this spring source through a pipeline routed to the City. The City is permitted to withdraw 112 gpm (0.25 cfs) from the springs.

The Washington Street Well has a permitted flow of 337 gpm (0.75 cfs) and is capable of producing that amount of water. The water rights from the Harrison Street Well and the Railroad Well were transferred to the Washington Street Well in 2003.

Water Supply Analytical Testing

General Supply Well Testing Data

Summaries of analytical data related to the City's water quality testing were obtained from the Oregon Health Authority - Drinking Water Services' (DWS) website. The City's wells have been sampled for the constituents required by DWS, including total and fecal coliforms, volatile organic compounds, synthetic organic compounds, inorganic compounds, radiological agents, pesticides, fluoride, nitrates, nitrites, arsenic, asbestos, and several metals.

As shown in the City's testing data, most constituents were either not detected or levels were below the corresponding EPA primary drinking water MCLs. However, it is clear that the City's sources have had arsenic levels above the MCL for some time. The results also show elevated amounts of nitrate near the MCL. At this time, the City has joined into a Bilateral Compliance Agreement with the DWS, as discussed in Chapter 2, acknowledging the elevated amounts of arsenic in the City's water.

It should be noted that during the summer of 2014 it was found that Airport Well Field Wells No. 6 and 7 produced water with the highest levels of arsenic compared to the other sources. Since the IX treatment system was not functioning and has been bypassed, these wells were turned off and the Washington Street Well was put back into operation in order to minimize the amount of arsenic put into the drinking water system.

Distribution System Water Quality Testing

Although the distribution system is discussed in greater detail in Chapter 5, a brief discussion of distribution system sample analytical testing is presented herein for completeness. The City routinely obtains samples from the distribution system for analysis of total coliforms and *E. coli.* In general, coliforms are not present in routine distribution system samples, although the water has tested positive for coliforms four times in the past six years. Samples were taken on August 13, 2008, March 10, 2010, and July 20 and 27, 2011. After each of these positive samples was taken, repeat samples were obtained that did not contain coliforms. The City of Vale has not experienced a positive test result for fecal coliforms. Total coliform bacteria are commonly found in the environment (e.g., soil or vegetation) and are generally harmless. When only total coliform bacteria

are detected in drinking water, the likely source is environmental, and fecal contamination is not likely. However, if environmental contamination can enter the system, that may indicate that there is a way for pathogens to enter the system and, therefore, it is important to find the source and resolve the issue.

The City also obtains samples from the distribution system for chemical analysis of asbestos, lead, copper, and disinfection byproducts (DBP). From 1993 through 2013, all detected concentrations of asbestos, lead, copper, and DBP were less than their corresponding EPA action levels. Results from the City's coliform, lead, copper, and DBP tests are summarized in DWS' water quality testing summaries in Appendix J.

Source Water Assessment Report

The 1996 amendments to the Safe Drinking Water Act required states to provide the information needed by public water systems to develop drinking water protection plans if they chose to do so. The information provided includes the identification of the area most critical to maintaining safe drinking water, i.e., the Drinking Water Protection Area (DWPA), an inventory of potential sources of contamination within the DWPA, and an assessment of the relative threat that these potential sources pose to the water system. In Oregon, the principal agency involved with the source water assessments is DWS. This agency completed a Source Water Assessment Interim Report for the City of Vale's water supply wells in June 2005. A copy of the Source Water Assessment interim Report is included in Appendix K.

The Source Water Assessment Interim Report includes information related to the City's water sources, including delineation of the source water protection area, a sensitivity analysis, an inventory of potential contamination sources, the susceptibility of the drinking water sources, and recommended uses of the Source Water Assessment Interim Report. It is recommended the reader of this WSMP refer to Appendix K for information relative to the City's water supply well source aquifers present beneath the Vale area. The DWPA delineation is intended to identify the area that supplies the system's drinking water. The DWPA is designated for projected 1-, 2-, and 5-year time of travel periods for water from the aquifer to enter Vale's water supply sources. Figures showing the DWPA, the times of travel for groundwater to the wells, and potential contamination sources are included in the Source Water Assessment Interim Report.

The Source Water Assessment Interim Report indicates that the groundwater source for the wells is considered highly sensitive to contamination, based on the shallow unconfined character of the aquifer supplying the wells and the high permeability of the soils within the DWPA. Potential contaminant sources for the wells were identified and labeled on Figures 2-A and 2-B of the report. Potential contaminant sources identified by the report include high density housing areas, sewer lines, railroads, and agricultural facilities. The full list of potential contaminant sources can be found in Table 2 of the report.

The report concludes that the City of Vale's water system obtains water from one aquifer, and the water system would be moderately to highly susceptible to a contamination event inside the identified DWPA. Several high to moderate risk potential contaminant sources were identified within the protection area, with the report concluding that the water system would be highly susceptible to several of the potential contaminant sources.

Water Supply Design Criteria

As presented in Chapter 2, the planning period for this WSMP extends to the year 2034. The 2013 certified population of Vale is 1,890. This population has been assumed as the current population for planning purposes. With the assumed 1.48 percent per year population growth, the projected population for the year 2034 is 2,536. Based on this population data and the City's current water use characteristics, the average daily and peak daily demands are as follows:

TABLE 3-3
PROJECTED CITY OF VALE WATER DEMANDS

Year	Population	Average Daily Flow (gpm)	Peak Daily Flow (gpm)
2014	1,890	328	820
2034	2,536	440	1,100

Water supply facilities are normally designed to meet peak daily demands without having to provide 24-hour service. The current total production capability of the City's water system is in the range of 1,200 gpm. The capacity of the Washington Street Well is approximately 650 gpm, but the Washington Street Well is currently used only as an emergency supply source due to the inability to treat water from the well for arsenic. Several system modifications would need to be made before this water is readily available as part of the water supply system. The capacity of the Airport Well Field is approximately 550 gpm. The Airport Well Field is not able to meet the current peak daily demand during summer months, as discussed in Chapter 2. During the summer of 2014, the Airport Well Field ran for several days straight to try to meet demands. The existing system does not currently provide adequate supply flow and will not meet projected future demands.

It should be noted that future changes in the City's projected population, water use characteristics, and/or available supply could affect these assumptions. The City should periodically review this information to ensure additional water supply beyond that recommended herein is not needed sooner than anticipated to meet City demands.

Water Supply Reliability

The reliability of the water supply is one of the most important components of any water system. Because the health and safety of the community depends on a reliable water source, high priority should be given to help ensure a municipal water system always has the ability to meet the water needs of its customers. A number of factors, such as mechanical failures, water quality concerns, power outages, primary water transmission line failures, etc., can affect the reliability of a water supply. It is nearly impossible to ensure 100 percent reliability of any system. However, having proper system components can reduce the risk of a water supply failure.

The City of Vale uses shallow wells for their water supply. In general, a groundwater well source is less susceptible to seasonal fluctuations in weather patterns, drought, or contamination than a surface water source. The water levels in the City's wells do have some seasonal fluctuations; however, over time, the static water levels have remained fairly constant. Although the City's water sources have been reliable, certain events could affect Vale's water supply. When evaluating the system's performance, several potential weaknesses were identified as follows:

1. Transmission line failure
2. Source contamination
3. Power failure
4. Equipment failure at the Airport Well Field
5. Arsenic treatment facility failure
6. Contamination in reservoirs
7. High demand and low storage volume

During the warm summer months, the supply has not been able to meet system demands. Should either the Airport Well Field or one of the reservoirs be out of service during peak days in the summer, water restrictions would be necessary. Even losing one well from the Airport Well Field could cause water shortage issues in the City.

Currently, the existing water system components do not provide the City with a good degree of redundancy. In the event of a power outage, the City will be totally reliant on their storage reserves to supply water. Treatment is currently provided for arsenic and nitrates to help ensure high quality water is delivered to customers. In the event of a power outage or other problem with the water supply, water treatment would not be available. The City currently does not have a backup power system at the Airport Well Field or the arsenic treatment facility.

There is also limited redundancy provided in the water supply system since the Airport Well Field is the only source that is able to be treated for arsenic and nitrates. A generator would be needed at the Airport Well Field to help ensure that the well water is available in the event of a power outage.

Contamination in the reservoir, reservoir security, and low storage volume are discussed in more detail in Chapter 4.

Water Supply Alternatives

At this time, the City does not have enough source capacity to meet current and future demands. As discussed earlier, it is desirable to design a system with enough source capacity to provide for peak daily demands without requiring the well pumps to operate for 24 hours a day. As shown on Figure 2-2 the 2034 peak daily flow requirement is estimated to be 1,100 gallons per minute (gpm). The current capacity from the Airport Well Field is 550 gpm. It is recommended the City increase its supply capacity in order to provide for demands without continual well operation. The following alternatives were evaluated to meet this objective:

Airport Well Field Expansion Alternative

The Airport Well Field currently consists of seven shallow wells as discussed earlier in this chapter. Expanding the existing Airport Well Field was considered for the purpose of providing additional source capacity for the system. A schematic drawing and cost estimate for this alternative are included as Figures 3-1 and 3-2, respectively. The current wells at the Airport Well Field can produce

between 75 to 100 gpm each. In order to provide enough source capacity to meet the 2034 peak daily demand, approximately five additional wells would need to be constructed at the Airport Well Field.

Washington Street Well Improvements Alternative

As discussed earlier, the Washington Street Well is currently used as an emergency supply source. The well is not currently able to be treated for arsenic, and would require a dedicated pipeline from the well to the arsenic treatment facility or its own arsenic treatment system in order to be utilized as a permanent supply source. Treatment of the Washington Street Well water with its own treatment system is not considered viable or cost-effective, due to the fact that the City would be required to construct, operate, and maintain two separate treatment plants. The existing well pumps will likely need to be replaced in order to match the different head conditions of the upgraded system. Currently, the Washington Street Well has a certificated water right for 337 gpm. Additional rights, or a water right transfer, would need to be completed to provide additional water rights to the Washington Street Well.

Water Treatment Evaluation

As discussed earlier in this WSMP, the City of Vale has been unable to meet water quality parameters set by the State or Oregon for arsenic levels in drinking water. It is clear that the existing arsenic treatment system is not adequately removing arsenic from the City's source water. The following evaluation uses water quality information and past studies completed on the existing IX treatment system to identify deficiencies. Recommended alternatives to address these deficiencies are presented at the end of this chapter.

Water Quality Parameters

The following is a non-inclusive list of constituents found in the City of Vale's source water. All of these items either need to be treated for in order to meet state drinking water standards, or they affect the ability to treat for certain constituents.

Arsenic

Arsenic is a semi-metal element that is odorless and tasteless. It enters drinking water supplies from natural deposits in the earth or from agricultural and industrial practices. Arsenic is found naturally in the geological formations around Vale and much of southeastern Oregon. Levels of arsenic in Vale's source water historically ranged from approximately 10 to 30 parts per billion (ppb) before treatment was in place. The current MCL set by the State of Oregon is 10 ppb. In order to consistently meet this MCL the City of Vale is required to treat its source water for arsenic. Since the arsenic treatment facility was constructed in 2006, the City has had difficulties consistently meeting the MCL for arsenic.

Nitrates

Nitrates are nitrogen-oxygen chemical units that combine with various organic and inorganic compounds. The major sources of nitrates in drinking water are runoff from fertilizer use, leaking from septic tanks, sewage, and erosion of natural deposits. Since 2002, the City has

experienced an average nitrate level of approximately 6.7 parts per million (ppm) with a low of 1 and a high of 18. The current MCL is 10 ppm. While the City's water has tested above the MCL for nitrates in the past, it is typically below the MCL. Recent studies completed in the Northern Malheur County Groundwater Management Area have shown a trend of decreasing nitrate levels throughout the region.

Sulfate

Sulfate occurs naturally in numerous minerals, including barite, epsomite, and gypsum. These dissolved minerals contribute to the mineral content of many drinking waters. There is a secondary MCL of 250 ppm, set by the State of Oregon. A secondary MCL provides limits on certain constituents that may affect water aesthetics such as taste and odor. The City of Vale currently experiences levels of sulfate between 50 and 200 ppm.

Total Organic Carbon (TOC)

TOC is a term used to describe the measurement of organic (carbon-based) contaminants in a water system. Organic contamination can come from a variety of sources, since "organics" are compounds such as sugar, sucrose, alcohol, petroleum, and other organic matter. The City of Vale experiences TOC levels of 1.6 to 4.8 ppm, which is a substantial amount of TOC.

Ion Exchange Treatment System Study

After completion of the IX arsenic treatment facility in 2006, the EPA monitored and studied the system for a total of approximately three years. The study comprised two study periods. The following is a summary of the final EPA report.

Study Period I

The IX treatment system consisted of two banks of sediment filters, two 63-inch × 86-inch pressure vessels configured in parallel, two 11-ton salt saturators, two 1,050-gallon day tanks, two brine transfer pumps, one automatic system control panel, and associated valves, pressure gauges, flow totalizers, and sample ports. By design, each vessel was to be loaded with 110 cubic feet of resin, treating 270 gpm of flow.

During installation, the amount of resin in each vessel was found to be less than the design value of 110 cubic feet (CF). During resin replacement in February 2009, it was discovered that the maximum amount of resin that could be loaded into each vessel was 98.5 CF, which was 90 percent of the design value. The smaller resin bed resulted in a shorter duration of treatment time.

The IX system was regenerated in a downflow, co-current mode using brine. Triggered automatically by a volume setpoint in a PLC, the two IX vessels were regenerated sequentially, each cycling through the steps of spent brine draw, fresh brine draw, slow rinse, and fast rinse before returning to service. The spent brine draw step was designed to minimize wastewater production, but was discontinued in December 2007 due to concerns over possible resin fouling caused by dissolved organic matter (DOM) accumulating in the spent brine solution. The

regeneration waste stream was discharged to an evaporation pond outside of the treatment facility.

The initial resin achieved a run length of 562,000 gallons before the effluent water showed levels of arsenic about the 10 ppb MCL, which was 59 percent of the vendor-projected run length of 950,000 gallons. Since then, the system performance has continued to deteriorate, as evidenced by more frequent exceedance of the arsenic MCL in system effluent and increasingly shortened useful run lengths (e.g., to 450,000 gallons and then to 376,900 gallons after 4 and 7 months of operation, respectively). Analysis of a resin core sample revealed that the resin was severely fouled by organic matter. A cleaning procedure using a mixture of caustic/brine was developed in the laboratory by Purolite and implemented in the field in October 2007. Although the cleaning was able to restore some of the resin's capacities, such as volumetric capacity and strong base capacity, to 93 percent and 79 percent of the virgin resin level, respectively, the total organic content of the resin was reduced only by 24 percent, and the useful run length improved only by 20 percent, to 445,700 gallons. While organic matter continued to build up on the resin, the useful run length was shortened again to 323,500 gallons about 10 months after the cleaning.

Study Period II

Shorter run lengths (i.e., only 34 to 47 percent of the vendor projection) would require more frequent resin regeneration and produce more wastewater, which potentially could overflow the evaporation pond. In seeking an alternative approach to address DOM in source water, the City of Vale expressed its desire to continue with the IX technology in case nitrate became an issue in the future, and to achieve a volume throughput of 600,000 gallons to prevent the pond from overflowing. Thus, the option of replacing the initial resin with other resin types was explored. Purolite proposed a dual-resin approach, i.e., PFA300E top dressed with A850END, which had been successfully implemented at the McCook Water Treatment Plant in McCook, Nebraska, for the removal of arsenic, nitrate, and uranium from water containing greater than 3 mg/L of TOC. Following a site visit to McCook and a run length study, it was confirmed that the dual resin approach could be an effective remedy to treat waters containing high levels of TOC.

After the IX system was rebedded with PFA300E/A850END in February 2009, weekly sampling data and run length study results revealed that the system could achieve a useful run length of approximately 454,400 gallons. This run length was calculated based on the actual PFA300E resin volume of 163.3 CF. For a system containing 220 CF of resin, it would treat 612,174 gallons of water. This showed that the smaller resin bed was the key reason for not meeting the treatment target of 600,000 gallons desired by the City. TOC concentrations in treated water were consistently removed below the reporting limit of 1 mg/L, confirming the usefulness of the dual-resin approach to address DOM issues throughout the desired service cycle.

Because the IX system was set to regenerate at 600,000 gallons during most of the study, it was not surprising to detect high arsenic concentrations in system effluent when samples were collected past the resin's useful run lengths. Effluent concentrations periodically exceeded raw water concentrations, a phenomenon referred to as arsenic dumping. Arsenic dumping is caused by displacement of arsenic by more preferred anions such as sulfate, which often has a concentration three orders of magnitude higher than that of arsenic. Arsenic dumping is a major

drawback of the IX technology and can be mitigated by properly controlling system run lengths and regeneration frequencies.

Conclusion

It can be seen from the EPA's summary report that the IX demonstration project at the City of Vale is unable to remove arsenic to levels below the 10 ppb MCL with the current system design. More recent water testing has shown that the existing system has failed. As discussed in the summary, there are two phenomena that limit the system's ability to treat for arsenic. The first, known as organic fouling, is a process in which the resin loses capacity over time due to high levels of TOC in the source water. Since the City of Vale has a high level of TOC in its source water, the IX resin will need to be replaced often. The second phenomenon, known as arsenic dumping, is caused when arsenic ions are "pushed off" of the resin by other, more preferable ions such as sulfate and nitrates, significantly reducing the system's capacity to remove the arsenic. Since the City's source water has high levels of sulfate, this requires frequent system regeneration. Resin regeneration requires large amounts of water and salt. Also, when regeneration occurs at a higher frequency the existing evaporative pond will overflow. This occurred during the EPA study period, and a waiver from the DEQ was obtained to allow the City to irrigate with the salt brine to reduce the chances of overtopping the ponds. This suggests that the existing system will need to be modified, or an alternative technology will need to be implemented, in order for the City to cost-effectively and consistently remove arsenic to levels below the current MCL from its drinking water.

Alternatives

Currently several technologies can be used to remove arsenic from water. However, several of these technologies are not cost-effective or are vulnerable to fouling by other constituents in the water. The following is a brief description of several alternatives that could be pursued by the City of Vale to treat for arsenic.

Expand Existing IX System

IX technology has been shown to effectively remove arsenic from drinking water in many applications. The issues with the existing system at Vale are that the system is undersized for the design flow required and is susceptible to fouling by other constituents in the source water, one of which is TOC. In order to combat these issues, the City would need to increase the capacity of the existing system by adding additional pressure vessels and expanding the existing evaporative lagoon, at a minimum. The resin would still be vulnerable to fouling and would need to be monitored, cleaned with a caustic wash, and replaced regularly. The City would also need to address salt storage issues. The cost of the salt alone is estimated to be approximately $12,000 per month for this expanded system.

Adsorption Technology

Another technology that is commonly used to remove arsenic from drinking water is adsorption. The process is similar to ion exchange in that the positively charged media is used to remove the negatively charged arsenic ions. However, this technology is susceptible to phosphates and silica. Both of these constituents are present in Vale's source water. Pretreatment for these

constituents would be required in order to use adsorption technology to effectively remove arsenic.

Coagulation Technology

Coagulation is a phenomenon in which a chemical additive is used to create precipitates in water. For example, arsenic naturally occurs as a fine particle that floats in water. However, when a coagulant such as ferric chloride is added to the water, the arsenic bonds with the ferric chloride creating larger, heavier particles that can either be settled out by gravity or filtered. The efficiency of this technology to remove arsenic can be highly affected by the pH of the water as well as the molecular form of arsenic that is present in the water. Inorganic arsenic (As(V)) is readily adsorbed by most coagulants. However organic arsenic (As(III)) is not, and pre-oxidation must be utilized to convert As(III) to As(V). Based on past sampling and testing results, the arsenic in the City of Vale's water is almost entirely in the As(V) form.

Recommendations

Water Supply Recommendations

In order to obtain additional water supply capacity and provide further redundancy for the City's water supply, the City should develop more sources. This could be done by making improvements to the Washington Street Well or by drilling more wells at the Airport Well Field as previously discussed. These potential improvements are represented on Figures 3-1 and 3-3, respectively. Accompanying cost estimates are included as Figures 3-2 and 3-4.

It is recommended that additional capacity be acquired from the existing Washington Street Well. This well is currently in place, operational, and known to be able to produce a large amount of water. The option of expanding the Airport Well Field could prove to be costly and may or may not be able to produce the water needed to meet the City's demands. The City also expressed concern with all of the City's supply coming from one source.

Water from the Washington Street Well will need to be treated for arsenic prior to entering the distribution system. It is recommended that a dedicated pipeline be constructed from the Washington Street Well to the arsenic treatment facility. The existing pumps in the Washington Street Well can currently produce approximately 650 gpm if both pumps are running. To provide an equal amount of water in the modified system, it is recommended that the existing well pumps be replaced in order to produce approximately 650 gpm. The pumps could be replaced with larger pumps to produce more water from the Washington Street Well if the City elects to do so.

In order to provide increased reliability of the Airport Well Field water source, it is recommended that the City install a generator at the Airport Well Field to serve the wells and treatment facility. The existing generator can serve only the Airport Booster Pump Station in the event of a power outage.

Water Rights Recommendations

As mentioned previously in this chapter, the Washington Street Well is permitted to withdraw only 337 gpm under existing water rights. In order to provide additional source from the Washington Street Well, additional water rights or the transfer of existing water rights will need to be pursued.

Also, the City is not currently using Willow Springs as a supply source. The City has a certificated right to this source of 112 gpm (0.25 cfs). Since it is not anticipated that this source will be utilized by the City in the future due to its distance from the City, it is recommended that this right be transferred to a different point of appropriation where the City can utilize the flow. OWRD staff have indicated that a transfer to either the Airport Well Field or the Washington Street Well could be completed.

Water Treatment Recommendations

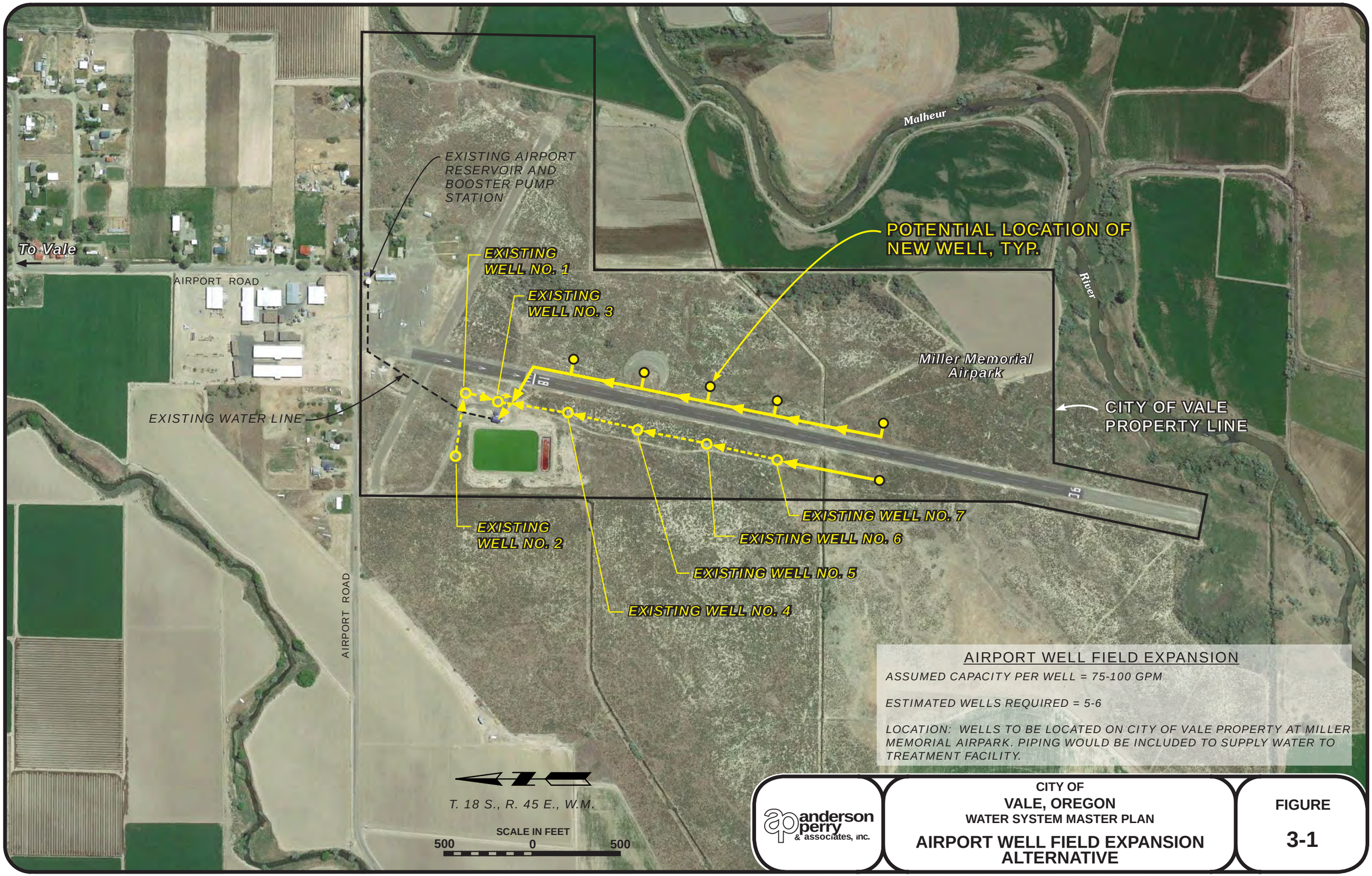
Due to the high operation and maintenance cost and the susceptibility to other constituents in the City of Vale's source water, IX technology is not cost-effective at removing arsenic from the City's water. A schematic of the improvements required and a cost estimate of this alternative are included as Figure 3-6 and 3-6, respectively. It is recommended that a new facility be constructed that utilizes coagulation filtration technology. Based on evaluation of the treatment process options, this technology is the most cost-effective and efficient at removing arsenic from the City's water. Figures 3-7 and 3-8 provide a schematic of the proposed new facility as well as a cost estimate for this alternative. The existing IX treatment system should remain in place in case nitrate levels in the City's source water increase. Coagulation filtration technology is not able to treat for nitrates. If nitrate levels were to increase, a side-stream could be sent to the IX treatment system in order to lower the nitrate levels.

To ensure that this technology is compatible with the raw source water from the City's wells, it is recommended that the City complete pilot testing as soon as possible. This is a wise step to complete prior to designing and constructing a full scale treatment system.

Summary

The City of Vale is currently relying on both the Airport Well Field and the Washington Street Well to meet system demands. The Airport Well Field cannot meet the City's demands during peak flow periods, and the Washington Street Well is currently not able to be treated. In order to improve system performance, several recommendations have been made that would reduce potential weaknesses. These include increasing source capacity, resolving treatment facility failures, installing a generator at the Airport Well Field, and modifying control operations to maximize the efficiency of the water system.

It is also clear that the existing arsenic treatment system has failed. It is recommended the City construct a new coagulation filtration system for arsenic removal. Coagulation filtration is a proven technology for removing arsenic and is not as susceptible to failure as ion exchange. The operation and maintenance cost of the coagulation filtration system is also much lower. As shown on Figures 3-6 and 3-8, it is estimated that the present worth of the proposed coagulation filtration system is approximately $900,000 less than the IX system due to the significantly lower operation and maintenance cost.



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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

AIRPORT WELL FIELD EXPANSION ALTERNATIVE

FIGURE
3-1

Job# 65-95-020 Feb. 27, 2015 lbauer

CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
AIRPORT WELL FIELD EXPANSION ALTERNATIVE
PRELIMINARY COST ESTIMATE
(Year 2016 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Well Driller Mobilization/ Demobilization	LS	$ 25,000	All Req'd	$ 25,000
2	Site Preparation and Access	LS	5,000	All Req'd	5,000
3	Drill Hole for 16-inch Casing	LF	400	40	16,000
4	Furnish/Install 16-inch Casing	LF	150	40	6,000
5	Gravel Pack for Screen	LS	2,000	All Req'd	2,000
6	Grout Seal for 16-inch Casing	LF	200	20	4,000
7	Furnish/Install 16-inch Screen	LF	250	5	1,250
8	Television Inspection	LS	5,000	All Req'd	5,000
9	Develop Well	HR	300	16	4,800
10	Test Pump Installation	LS	5,000	All Req'd	5,000
11	Pump Test	HR	250	32	8,000
12	Standby Time	HR	250	24	6,000
13	Furnish/Install Pitless Adapter, Piping, Valves, etc.	LS	50,000	All Req'd	50,000
14	6-inch PVC Pipe	LF	50	300	15,000
15	Electrical, Controls, and Instrumentation	LS	50,000	All Req'd	50,000
16	Well Pump	LS	50,000	All Req'd	50,000
17	Telemetry	LS	20,000	All Req'd	20,000
				Subtotal Estimated Construction Cost	**$ 273,000**
				Construction Contingency (10%)	27,000
				Total Estimated Construction Cost	**$ 300,000**
				Preliminary, Design, and Construction Engineering (20%)	60,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1, 2]	**$ 360,000**

[1] This estimated cost is per 16-inch well, approximately 40 feet deep. It will likely be necessary to drill more than one well in order to develop enough source capacity.

[2] See Figure 6-1 for a Summary of Preliminary Estimated Project Costs and other project costs for the selected improvements.

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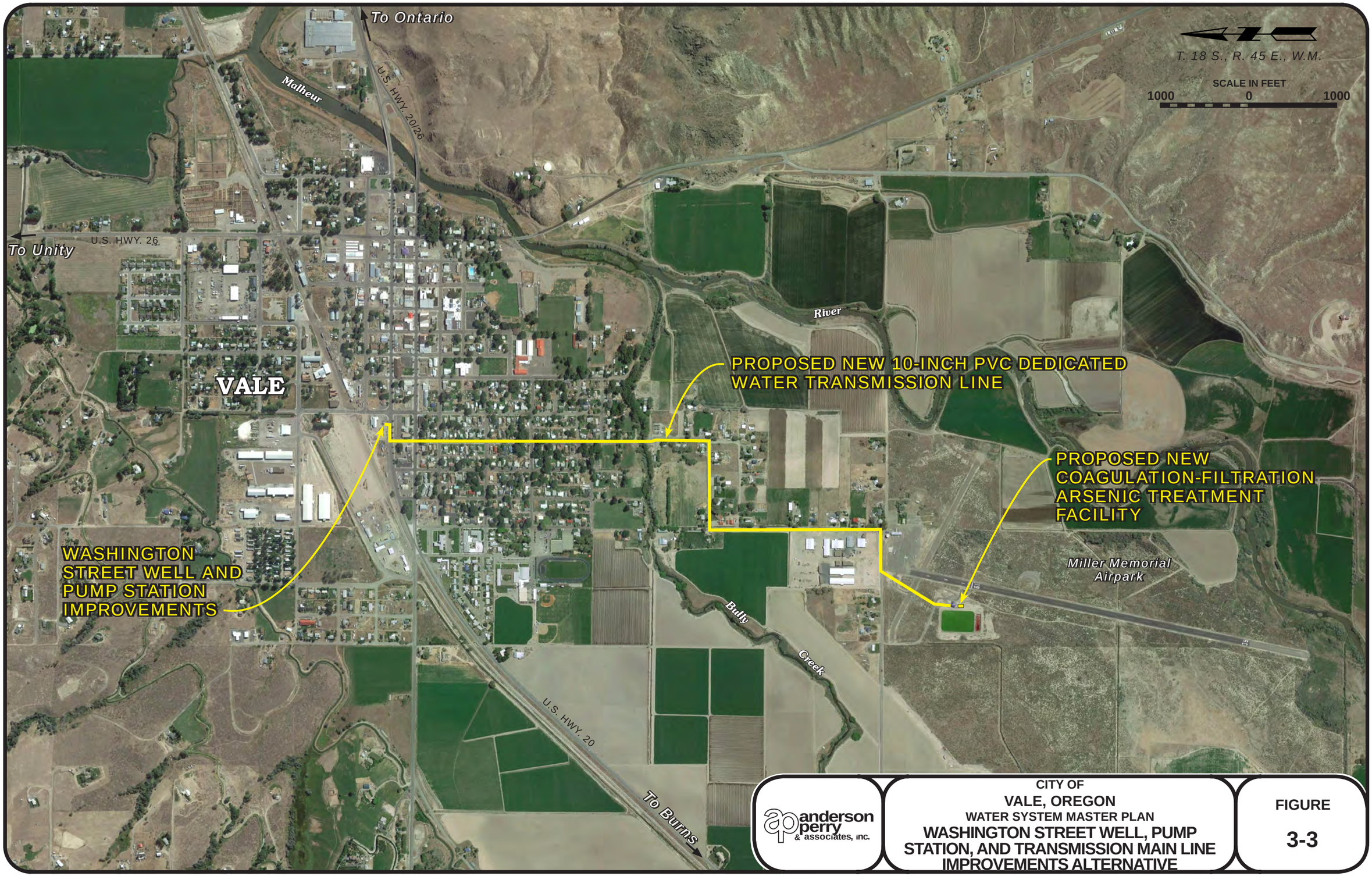
CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
AIRPORT WELL FIELD
EXPANSION ALTERNATIVE
PRELIMINARY COST ESTIMATE

FIGURE
3-2



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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
WASHINGTON STREET WELL, PUMP STATION, AND TRANSMISSION MAIN LINE IMPROVEMENTS ALTERNATIVE

FIGURE
3-3

Job# 65-95-020 Mar. 13, 2015 lbauer

CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
WASHINGTON STREET WELL, PUMP STATION, AND TRANSMISSION MAIN LINE IMPROVEMENTS ALTERNATIVE
PRELIMINARY COST ESTIMATE
(Year 2016 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 60,000	All Req'd	$ 60,000
2	Project Safety, Quality Control, and Traffic Control	LS	30,000	All Req'd	30,000
3	Security Fencing and Miscellaneous Site Improvements	LS	25,000	All Req'd	25,000
4	Pump Station and Well Rehabilitation	LS	125,000	All Req'd	125,000
5	Remove Existing Chlorination System, Pumps, Controls, etc.	LS	20,000	All Req'd	20,000
6	10-inch PVC Pipeline to Treatment Facility	LF	45	8,500	382,500
7	Water Line Boring under Highway 20	Each	35,000	2	70,000
8	Piping, Valves, Flowmeter, etc.	LS	75,000	All Req'd	75,000
9	Connection to Existing Main Line	Each	2,000	2	4,000
10	New Submersible Well Pumps	LS	70,000	All Req'd	70,000
11	New Hypochlorination System	LS	15,000	All Req'd	15,000
12	Electrical, Controls, and Instrumentation	LS	75,000	All Req'd	75,000
13	Telemetry and SCADA Development	LS	15,000	All Req'd	15,000
14	Asphalt Surface Restoration	SY	60	3,000	180,000
15	Gravel Surface Restoration	SY	10	400	4,000
16	Painting Work	LS	20,000	All Req'd	20,000
				Subtotal Estimated Construction Cost	**$ 1,171,000**
				Construction Contingency (10%)	117,000
				Total Estimated Construction Cost	**$ 1,288,000**
				Preliminary and Final Design, and Construction Engineering (20%)	258,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1]	**$ 1,546,000**

[1] See Figure 6-2 for a Summary of Preliminary Estimated Project Costs and other project costs for the selected improvements.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
WASHINGTON STREET WELL, PUMP STATION, AND TRANSMISSION MAIN LINE IMPROVEMENTS ALTERNATIVE
PRELIMINARY COST ESTIMATE

FIGURE
3-4

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

ION EXCHANGE TREATMENT SYSTEM IMPROVEMENTS ALTERNATIVE

FIGURE
3-5

Job# 65-95-020 Feb. 26, 2015 lbauer

CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
ION EXCHANGE TREATMENT SYSTEM IMPROVEMENTS ALTERNATIVE
PRELIMINARY COST ESTIMATE
(Year 2016 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 90,000	All Req'd	$ 90,000
2	Project Safety and Quality Control	LS	30,000	All Req'd	30,000
3	Site Work	LS	40,000	All Req'd	40,000
4	Security Improvements	LS	20,000	All Req'd	20,000
5	Existing Treatment Building Expansion and Improvements	LS	150,000	All Req'd	150,000
6	Salt Storage Building, Tanks, and Appurtenances	LS	375,000	All Req'd	375,000
7	Piping, Valves, and Fittings	LS	175,000	All Req'd	175,000
8	Standby Generator and ATS	LS	65,000	All Req'd	65,000
9	Electrical, Controls, and Instrumentation	LS	225,000	All Req'd	225,000
10	Telemetry and SCADA Development	LS	40,000	All Req'd	40,000
11	Ion Exchange Equipment, including Vessels, Media, etc.	LS	360,000	All Req'd	360,000
12	Lagoon Expansion, including Excavation and HDPE Liner	LS	200,000	All Req'd	200,000
13	Painting Work	LS	35,000	All Req'd	35,000
				Subtotal Estimated Construction Cost	**$ 1,805,000**
				Construction Contingency (10%)	181,000
				Total Estimated Construction Cost	**$ 1,986,000**
				Preliminary, Design, and Construction Engineering (20%)	397,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1]	**$ 2,383,000**

PRESENT WORTH ANALYSIS (2016 DOLLARS)

Item	Description	Annual Cost[2]
ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)		
1	Labor, Including Benefits	$ 40,000
2	Utilities	20,000
3	Supplies, Parts, Chemicals, Maintenance, and Repair	150,000
4	Media Replacement	65,000
5	Sampling, Testing, Permits	3,000
6	Operator Training and Certification	2,000
7	Capital Outlay	10,000
8	Replacement	30,000
	Total OM&R	$ 320,000
	Present Worth OM&R (4%, 20 years)	4,349,000
	Subtotal Present Worth	**$ 6,732,000**
SALVAGE		
	Estimated Water Treatment Facility Salvage Value, Including Property	$ 2,000,000
	Present Worth of Salvage Value (4%, 20 years)	913,000
	PRESENT WORTH (2016 DOLLARS)	**$ 5,819,000**

[1] See Figure 6-2 for a summary of preliminary estimated project costs and other project costs for the selected improvements.

[2] Annual OM&R costs were estimated from City of Vale adopted budgets.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
ION EXCHANGE TREATMENT SYSTEM IMPROVEMENTS ALTERNATIVE PRELIMINARY COST ESTIMATE

FIGURE 3-6

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

NEW COAGULATION FILTRATION TREATMENT SYSTEM IMPROVEMENTS ALTERNATIVE

FIGURE
3-7

Job# 65-95-020 Feb. 27, 2015 lbauer

CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
NEW COAGULATION FILTRATION TREATMENT SYSTEM
IMPROVEMENTS ALTERNATIVE
PRELIMINARY COST ESTIMATE
(Year 2016 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 140,000	All Req'd	$ 140,000
2	Project Safety and Quality Control	LS	30,000	All Req'd	30,000
3	Site Work	LS	75,000	All Req'd	75,000
4	Security Improvements	LS	20,000	All Req'd	20,000
5	New Treatment Building	LS	300,000	All Req'd	300,000
6	Piping, Valves, and Fittings	LS	200,000	All Req'd	200,000
7	Treatment Feed and Backwash Pumps	LS	90,000	All Req'd	90,000
8	Standby Generator and ATS	LS	65,000	All Req'd	65,000
9	Electrical, Controls, and Instrumentation	LS	325,000	All Req'd	325,000
10	Telemetry and SCADA Development	LS	40,000	All Req'd	40,000
11	Coagulation-Filtration Equipment, including Vessels, Media, etc.	LS	1,300,000	All Req'd	1,300,000
12	Lagoon Piping Modifications	LS	25,000	All Req'd	25,000
13	Backwash Water Recovery Storage Tanks and Appurtenances	LS	175,000	All Req'd	175,000
14	Painting Work	LS	40,000	All Req'd	40,000
				Subtotal Estimated Construction Cost	**$ 2,825,000**
				Construction Contingency (10%)	283,000
				Total Estimated Construction Cost	**$ 3,108,000**
				Preliminary, Design, and Construction Engineering (20%)	622,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1]	**$ 3,730,000**

PRESENT WORTH ANALYSIS (2016 DOLLARS)

Item	Description	Annual Cost[2]
ANNUAL OPERATION, MAINTENANCE, AND REPLACEMENT (OM&R)		
1	Labor, Including Benefits	$ 40,000
2	Utilities	20,000
3	Supplies, Parts, Chemicals, Maintenance, and Repair	60,000
4	Media Replacement	5,000
5	Sampling, Testing, Permits	3,000
6	Operator Training and Certification	2,000
7	Capital Outlay	10,000
8	Replacement	30,000
	Total OM&R	$ 170,000
	Present Worth OM&R (4%, 20 years)	2,310,000
	Subtotal Present Worth	**$ 6,040,000**
SALVAGE		
	Estimated Water Treatment Facility Salvage Value, Including Property	$ 2,500,000
	Present Worth of Salvage Value (4%, 20 years)	1,141,000
	PRESENT WORTH (2016 DOLLARS)	**$ 4,899,000**

[1] See Figure 6-2 for a summary of preliminary estimated project costs and other project costs for the selected improvements.

[2] Annual OM&R costs were estimated from City of Vale adopted budgets.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
NEW COAGULATION FILTRATION TREATMENT SYSTEM IMPROVEMENTS ALTERNATIVE
PRELIMINARY COST ESTIMATE

FIGURE
3-8

Chapter 4 - Water Storage

Introduction

This chapter presents information on the City's water storage facilities. The purpose for storage in municipal water systems is discussed. The condition and needs of the City's existing storage reservoirs are outlined and recommended storage requirements to meet 2034 design criteria are presented. The types of storage facilities generally available are outlined. Cost estimates for storage reservoir improvement alternatives are presented at the end of this chapter.

General

Water storage facilities are constructed to serve several purposes. First, storage reservoirs are often used to provide control for well or booster pump system operation. When a reservoir drops a few feet or more from the full level, the water level can be used as a control for well pump or booster pump activation. The amount of storage required for this type of control is called "operating storage." Second, stored water must be available to supply water during periods in which the demand for water exceeds the available water supply. This reserve is called "equalization storage." Third, reserve storage is usually provided to supply unusually high, short duration demands, such as fire flows. This is referred to as "fire reserve." Finally, reserve storage is also often provided for emergencies that may arise and interfere with production from water supply sources. Such emergencies could be created by power outages, mechanical equipment failure, or sudden water contamination. The amount of storage to be provided for an emergency depends on the likelihood and the impact of such an occurrence. The amount of emergency storage provided usually becomes a balance between what is needed and what can be afforded. This storage allowance is usually called "emergency reserve."

Storage facilities can be located at approximately the same elevation as the water distribution system. Storage facilities of this type require continuous operation of a booster pump system to maintain distribution system pressure. Storage facilities can also be elevated, in which case the water is stored at an elevation considerably above the distribution system in order to generate adequate system pressure. For example, a water elevation of 120 feet above a distribution system would be required to generate a distribution system static pressure of approximately 50 pounds per square inch (psi). Reservoirs may be elevated by locating them on natural ground high enough above the service area, or by construction on top of a steel support frame.

Storage reservoirs are generally constructed of either steel or reinforced or prestressed concrete. The choice is usually based on an economic analysis made for the particular installation. Reservoirs may be constructed either aboveground or buried, with the choice made on cost, location, and community acceptance. The remainder of this chapter reviews the City's existing storage facilities, presents a discussion of future storage needs, and provides alternatives for satisfying those needs.

Existing Facilities

The City of Vale's existing municipal water storage consists of an approximately 750,000-gallon ground-level concrete (Rhinehart) reservoir, an approximately 200,000-gallon bolted steel (Airport) reservoir, and a 105,000-gallon below-ground concrete reservoir.

Rhinehart Reservoir

The Rhinehart Reservoir was constructed in 1977 and serves all of Vale through a gravity-fed system. The tank has a base elevation of approximately 2,384 feet above mean sea level (MSL) and is located on Rhinehart Butte, south of Vale. The reservoir is 20 feet tall with a diameter of approximately 80 feet and holds approximately 37,600 gallons per foot of depth. Water from the Airport Booster Pump Station discharges directly into the distribution system, and any water provided by the booster pump station that is not used in the distribution system flows into the reservoir.

A detailed inspection of the Rhinehart Reservoir was completed on October 11, 2011, by Clear Water Robotics, LLC, of Nampa, Idaho. A copy of the Inspection Report for the Rhinehart Reservoir is included in Appendix L. According to the Inspection Report, the tank floor was covered in rubble and chlorine deposits. The Inspection Report also noted cracks in the walls and severe rusting of metal parts.

The exterior inspection showed that there was good access to the tank, the vents were in good condition with screens in place, and the hatch was locked.

The inspecting company recommended the following improvements:

1. Recoating the outside of the reservoir.

2. Cleaning the interior of the reservoir.

3. Replacing metal piping inside the reservoir.

Airport Reservoir

The Airport Reservoir was constructed in 2002 as part of a water system improvements project. The Airport Reservoir is used to supply water to the Airport Booster Pump Station, which provides water to the distribution system and the Rhinehart Reservoir. The depth of water in the Airport Reservoir is also used to control the Airport Well Field and the arsenic treatment facility. When the water level in the Airport Reservoir reaches a depth of 28 feet, the Airport Well Field and arsenic treatment facility are activated. The Airport Reservoir has a base elevation of 2,253 feet above MSL. The reservoir is 33 feet tall with a diameter of 33 feet and holds approximately 6,400 gallons per foot of depth.

Inspection of the Airport Reservoir was also completed on October 11, 2011, by Clear Water Robotics, LLC. A copy of the Inspection Report for the Airport Reservoir is located in Appendix M. According to the Inspection Report, the Airport Reservoir is in poor condition due to rust on the interior and exterior of the reservoir. The seams in the bolted steel reservoir are beginning to rust. This could be an indication of leaking, or poorly coated seams. The roof was also noted to have a significant amount of corrosion, causing concern related to the structural integrity of the roof. The Inspection Report suggests that the Airport Reservoir should be repaired as soon as possible, as there are several places where failure could occur. A visual inspection of the exterior of the reservoir was completed as part of this WSMP. It is clear that the seams are continuing to corrode, potentially due to leaking.

Distribution System Pressure

The City of Vale has one pressure zone serving the distribution system, with the system pressure provided by the elevation of the Rhinehart Reservoir or the Airport Booster Pump Station. Although the distribution system is discussed in greater detail in Chapter 5, distribution system pressures are discussed briefly hereafter as they relate to the existing and proposed storage reservoirs. Fire flow capabilities, as well as other distribution system issues, are discussed in Chapter 5. Ground elevations in the current City limits of Vale range from a low of approximately 2,230 feet above MSL to as high as 2,320 feet above MSL, which is a difference of 90 feet. The difference in elevation results in a static water pressure range from the existing low to high elevation users of approximately 40 psi. Currently, the lowest elevation users in the City have static water pressures up to 70 psi, and the highest users have static water pressures as low as 30 psi. Static water pressure is the pressure in the system when no water is flowing, which is nearly the case during low demand periods. As water demands increase, the velocity of the water in the distribution system pipes increases. This increase in velocity results in pressure losses in the system. These higher velocity scenarios typically occur during fire flow demands. The water model (refer to Chapter 5 for a comprehensive discussion of the water modeling performed as part of this WSMP) shows that during fire flow demands, the highest elevation areas of the City have pressures below 20 psi, even as low as 5 psi. The Oregon Health Authority - Drinking Water Services (DWS) has a minimum residual pressure requirement of 20 psi in the distribution system under all demand conditions, including fire flows. In order to be compliant with DWS regulations, the pressure in the higher elevation areas of Vale will need to be increased. This low pressure issue could be resolved by constructing a new reservoir at a higher elevation than the existing Rhinehart Reservoir.

Storage Requirements

Water storage is usually provided for several purposes. Various methods are used to calculate the volumes of each type of storage component required. Most involve a rational approach to estimating the volume of each storage component consisting of equalization, operational, fire reserve, and emergency. The decision can then be made as to which component controls and which storage volumes will actually be necessary. For example, the decision may be made to provide storage for equalization, operational, and fire reserve only, assuming any emergency storage would be available from the fire reserve. If this option were selected, there may not be adequate fire storage available if there is a sustained power outage or if a well pump is out of service for some reason. For this reason, it is recommended that all four of the storage components listed below be considered when evaluating the City's potential storage needs.

Equalization Storage

Equalization storage must be provided to balance out the difference between peak hour demand and water supply capacity during a peak day demand period. An empirical method for estimating the required equalization storage uses the difference between the peak hour flow and the peak water supply availability for a specific number of peak hours per day. Based on providing the current estimated peak hourly flow of 2,050 gpm for 2.5 hours and using the current supply available, equalization storage of 225,000 gallons is currently required. For the year 2034 design criteria, it was assumed the available water supply would be 1,500 gallons per minute (gpm) from the Airport Well Field and Washington Street Well. Based on the year 2034 estimated peak hourly flow of approximately 2,750 gpm for 2.5 hours, the City's year 2034 equalization storage needs to be approximately 187,500 gallons.

Operating Storage

Operating storage is generally provided to facilitate operation of wells or booster pumps in a water system. For example, when water system demands result in the water level lowering in a reservoir, the water level will reach a certain point that can be used to trigger activation of well pumps to refill the reservoir. The storage needed to activate water supply sources is typically referred to as operating storage. This zone of operation can be set as desired, but is often set to help ensure circulation occurs during each pump run cycle, allowing water to cycle through the reservoir to help maintain water quality while keeping the reservoir as full as possible.

As previously discussed, the Rhinehart Reservoir holds approximately 37,600 gallons per foot of depth. The Airport Booster Pump Station is currently set to begin operation when the level of the Rhinehart Reservoir reaches 15.5 feet and cease operation when the reservoir water level reaches 19 feet. A drop of 3.5 feet in the Rhinehart Reservoir level to allow for control of the water sources would result in an existing operating storage of about 131,600 gallons. During operation of the Airport Booster Pump Station, the Airport Reservoir is operating between 31 feet and 28 feet. This results in another 19,200 gallons of operating storage, for a total of approximately 150,800 gallons.

If a new reservoir is constructed with adequate storage to supply demand, it is estimated that the future operating storage will be approximately 191,000 gallons. This assumes similar water levels will be used to operate the wells and booster pump station.

Fire Reserve

Reserve storage for fire suppression is usually determined from either Insurance Services Office, Inc. (ISO) recommended fire flow or the fire flow recommended by the City's fire chief. Based on the typical maximum fire flow recommended by ISO, a 3,500 gpm fire flow with a two-hour duration has been set as the design fire flow for Vale. A total of 420,000 gallons of fire reserve storage is needed to sustain a fire flow of 3,500 gpm for a two-hour duration.

Emergency Reserve

Emergency storage is usually provided for a minimum of one to three days' supply in the event of a power outage, mechanical problems, or other problems that would interrupt the reliable supply of water. In most cases this would be the minimum amount of time to repair or replace a well pump or other equipment. The City of Vale does not have an emergency power supply to operate the Airport Well Field in the event of a power outage and would be completely reliant on storage reserves. In order to serve the City for a full day at the average daily demand, 472,500 gallons would be needed for existing emergency reserve and 634,000 gallons would be needed for the year 2034.

Storage Requirements Summary

Totaling all four storage components indicates that a total of 1,267,500 gallons of storage is needed to meet current demands, and 1,432,500 gallons of storage is needed to meet the year 2034 design criteria, assuming that source capacity is increased to 1,500 gpm. Currently the City's 950,000-gallon storage capacity does not meet the total recommended current required storage for equalization storage, operating storage, fire reserve, and emergency reserve of 1,267,500 gallons. Additional storage capacity is needed to meet both current and future storage needs for the City.

Storage Reservoir Alternatives

For the purposes of this Water System Master Plan, several options for meeting the storage capacity needs of the City were considered including rehabilitation of the existing 105,000-gallon reservoir, building a new Airport Reservoir to replace the existing Airport Reservoir, and construction of a new reservoir on the north side of the City. A brief description of each of these options is included herein.

Rehabilitation of Existing 105,000-gallon Reservoir

The existing 105,000-gallon reservoir located near the existing Rhinehart Reservoir is in poor condition and the reservoir has been abandoned due to inflow potential. The underground reservoir was constructed in 1912 as part of the City's original water system. Rehabilitation of such an old underground reservoir would be costly, and the reservoir would likely require continual maintenance. Rehabilitation of this existing reservoir would not provide enough additional storage to meet the City's current and future storage requirements. This alternative is not considered feasible for the City to implement.

New Northside Reservoir

The option of constructing a new 500,000-gallon reservoir on the north side of the City was considered. Since 200,000 gallons of storage would be maintained at the Airport Reservoir under this option, 500,000 gallons would be needed to account for the total 700,000 gallons of additional storage required. The new reservoir would be located at an elevation higher than the existing Rhinehart Reservoir. Water from this reservoir would gravity feed into the distribution system. This option would also require a booster pump station; however, for this alternative, only a single, smaller pump would be required to fill the reservoir and it would run only when the reservoir reached a low setpoint. The advantages of this alternative include being able to meet the City's storage requirements, being able to create an additional pressure zone, and increasing the pressure for higher elevation water users utilizing gravity pressure. The disadvantage of this alternative would be a higher cost due to distribution system piping, the new booster pump station construction, and land acquisition. This alternative is shown schematically on Figure 4-1. A cost estimate is also included as Figure 4-2.

Replace Airport Reservoir

As previously discussed, the existing Airport Reservoir is in poor condition and is in need of repair or replacement. An alternative for additional storage would be to replace the existing Airport Reservoir with a larger reservoir in the same location. The benefits of this alternative would be that the existing Airport Reservoir would no longer need to be maintained, the additional storage that the City needs could be obtained, and the City already owns the land where the reservoir would be located. This would be more cost-effective than disassembling, repairing, and reassembling the existing Airport Reservoir and would result in needed additional storage.

This alternative would utilize the existing Airport Booster Pump Station with improvements to increase the pressures on the north side of the City. For enhanced pressure control, the Airport Booster Pump Station would be equipped with a remote pressure monitoring station, located in the north part of the City. These improvements are shown on Figure 4-3 and a cost estimate for this alternative is included as Figure 4-4.

Existing Reservoir Maintenance

Periodic maintenance is required on existing storage reservoirs in order to continue to provide reliable service. Based on the Inspection Reports provided by Clear Water Robotics, LLC, the existing reservoirs have several areas of concern. The cracking in the Rhinehart Reservoir's concrete roof, floor, and walls and the corrosion of all metal items in the Airport Reservoir should be further inspected and rehabilitation methods evaluated. To preserve the City's investment in the existing Rhinehart Reservoir, it is anticipated that some pressure grouting of cracks, hand troweling of adhesive grout to spalled and exposed aggregate areas, and coating of the reservoir interior and exterior may be required to prolong the service life of the reservoir. There are also no security measures in place at the Rhinehart Reservoir. At a minimum it is recommended that a chain-link fence be constructed around the reservoir site.

The Airport Reservoir is in very poor condition and apparently will require extensive maintenance, and its remaining useful life is questionable. The bolted steel tank would need to be completely disassembled, recoated, and reassembled in order to address the deterioration issues. If the City intends to construct a new storage reservoir to account for the water storage deficit, it would not be wise to invest money in rehabilitation the existing Airport Reservoir.

From an operational standpoint, it is recommended that the City periodically check the chlorine levels in Rhinehart Reservoir to verify adequate chlorine residual in the water. The water level should also be periodically drawn down and allowed to refill in order to fully circulate the water in Rhinehart Reservoir and prevent stagnation.

Recommended Improvement

While both alternatives discussed provide the necessary pressure and storage requirements, the North Reservoir alternative, although considered the best long-term option, is cost prohibitive due to land acquisition, the need to construct a new booster pump station, and new transmission line costs. It is recommended that the City replace the existing Airport Reservoir in order to provide adequate storage to serve both existing and future customers.

The existing Airport Reservoir is in poor condition and would need to be maintained or replaced in the near future, regardless of improvements. It is recommended that the existing reservoir be removed and a new 700,000-gallon reservoir be constructed in the same vicinity, on City-owned property. The new reservoir would replace the storage of the 200,000-gallon Airport Reservoir as well as provide the additional 500,000 gallons of storage identified for the 2034 design population. The new Airport Reservoir would operate the same as the existing, providing water to the Airport Booster Pump Station to serve the distribution system and the Rhinehart Reservoir.

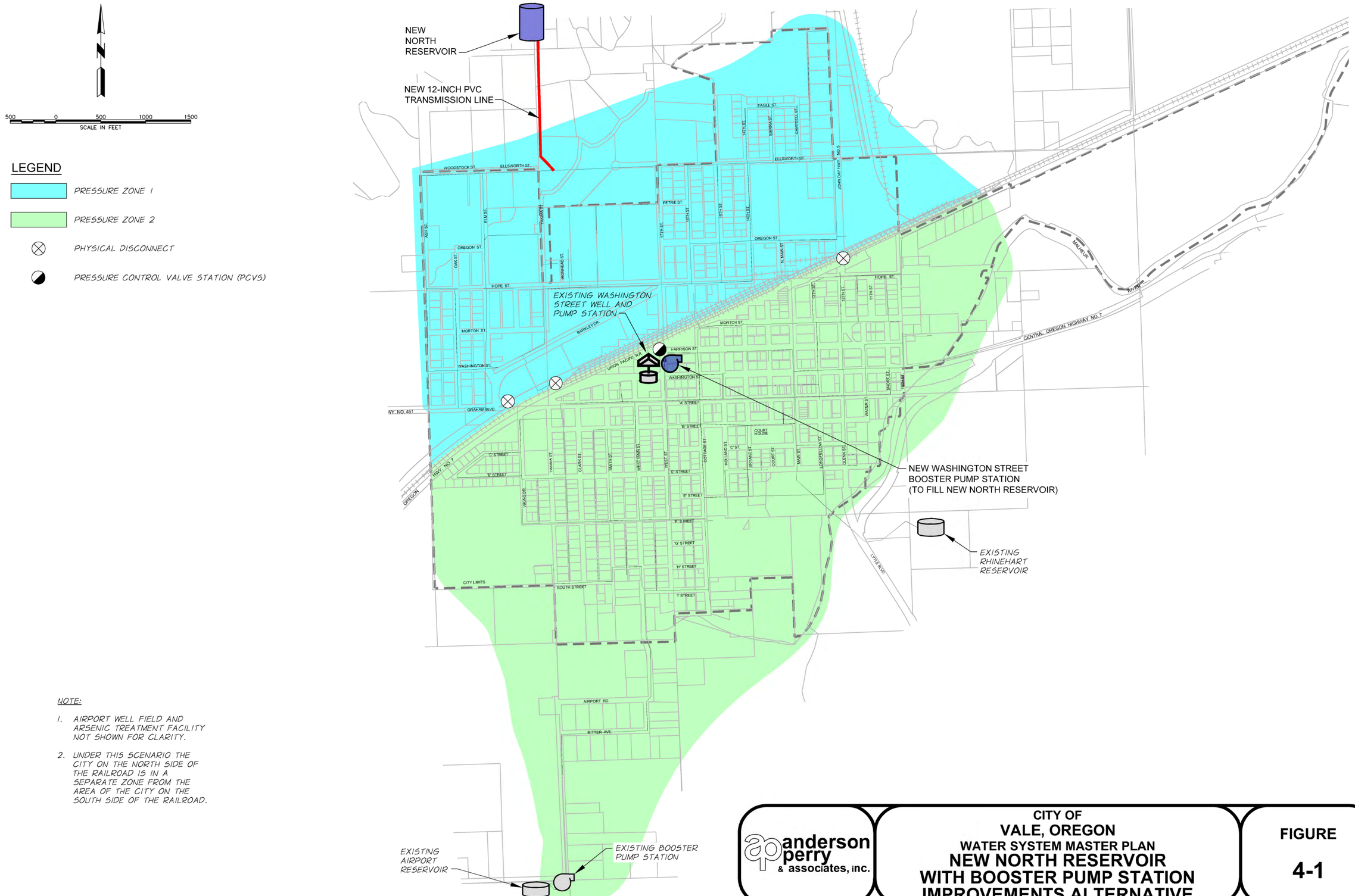
To alleviate the low pressure issue, the Airport Booster Pump Station would be modified and equipped with a remote pressure monitoring station, located on the north side of the City, at the lowest pressure area. The Airport Booster Pump Station would operate based on the pressure indicated by this pressure monitoring station. The pressure setpoint would be above the DWS required 20 psi. If a large demand occurred that began to drop the pressure at the remote station, the Airport Booster Pump Station would be controlled to maintain the setpoint pressure.

Summary

The City of Vale currently has two operating storage reservoirs, the 750,000-gallon Rhinehart Reservoir and the 200,000-gallon Airport Reservoir. The needed storage for the 2034 design population is approximately 1,432,500 gallons. This is approximately 500,000 gallons more than the existing available storage.

System pressure is provided by the elevation of the Rhinehart Reservoir and the Airport Booster Pump Station. Water system users in higher elevation areas of the City experience low water pressures. These low pressures occur primarily because of the higher elevation of these areas in relation to the existing Rhinehart Reservoir.

The Rhinehart Reservoir is in need of some repairs and security improvements to continue to provide reliable service to the City. It is recommended that the Airport Reservoir be replaced with a larger 700,000-gallon reservoir in the same location, due to the poor condition of the existing Airport Reservoir.



NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. UNDER THIS SCENARIO THE CITY ON THE NORTH SIDE OF THE RAILROAD IS IN A SEPARATE ZONE FROM THE AREA OF THE CITY ON THE SOUTH SIDE OF THE RAILROAD.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
NEW NORTH RESERVOIR
WITH BOOSTER PUMP STATION
IMPROVEMENTS ALTERNATIVE

FIGURE
4-1

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CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
NEW NORTH RESERVOIR WITH BOOSTER PUMP STATION IMPROVEMENTS ALTERNATIVE PRELIMINARY COST ESTIMATE
(Year 2016 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 110,000	All Req'd	$ 110,000
2	Temporary Protection and Direction of Traffic/Project Safety and Quality Control	LS	30,000	All Req'd	30,000
3	Booster Pump Station Site Work, including Security Fencing	LS	30,000	All Req'd	30,000
4	Booster Pump Station Building (approximately 400 square foot Block with Metal Roofing)	LS	80,000	All Req'd	80,000
5	Pump Station Piping, Valves, and Fittings	LS	125,000	All Req'd	125,000
6	Pump Station Electrical, Controls, and Instrumentation	LS	290,000	All Req'd	290,000
7	Telemetry and SCADA Development	LS	30,000	All Req'd	30,000
8	Booster Pump	Each	20,000	2	40,000
9	Generator and ATS	LS	60,000	All Req'd	60,000
10	Connection to Existing Main Line	Each	2,000	2	4,000
11	Distribution Improvements for Zone Isolation	LS	50,000	All Req'd	50,000
12	Pressure Control Valve Station	Each	25,000	1	25,000
13	500,000-gallon Reservoir, Access Road, Site Work, and Security	LS	950,000	All Req'd	950,000
14	12-inch PVC Pipe, including Valves	LF	65	2,700	175,500
15	Asphalt Surface Restoration	SY	60	500	30,000
16	Gravel Surface Restoration	SY	10	400	4,000
17	Rock Excavation	CY	150	800	120,000
				Subtotal Estimated Construction Cost	**$ 2,154,000**
				Construction Contingency (10%)	215,000
				Total Estimated Construction Cost	**$ 2,369,000**
				Preliminary, Design, and Construction Engineering (20%)	474,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1]	**$ 2,843,000**

[1] See Figure 6-2 for a Summary of Preliminary Estimated Project Costs and other project costs for the selected improvements.

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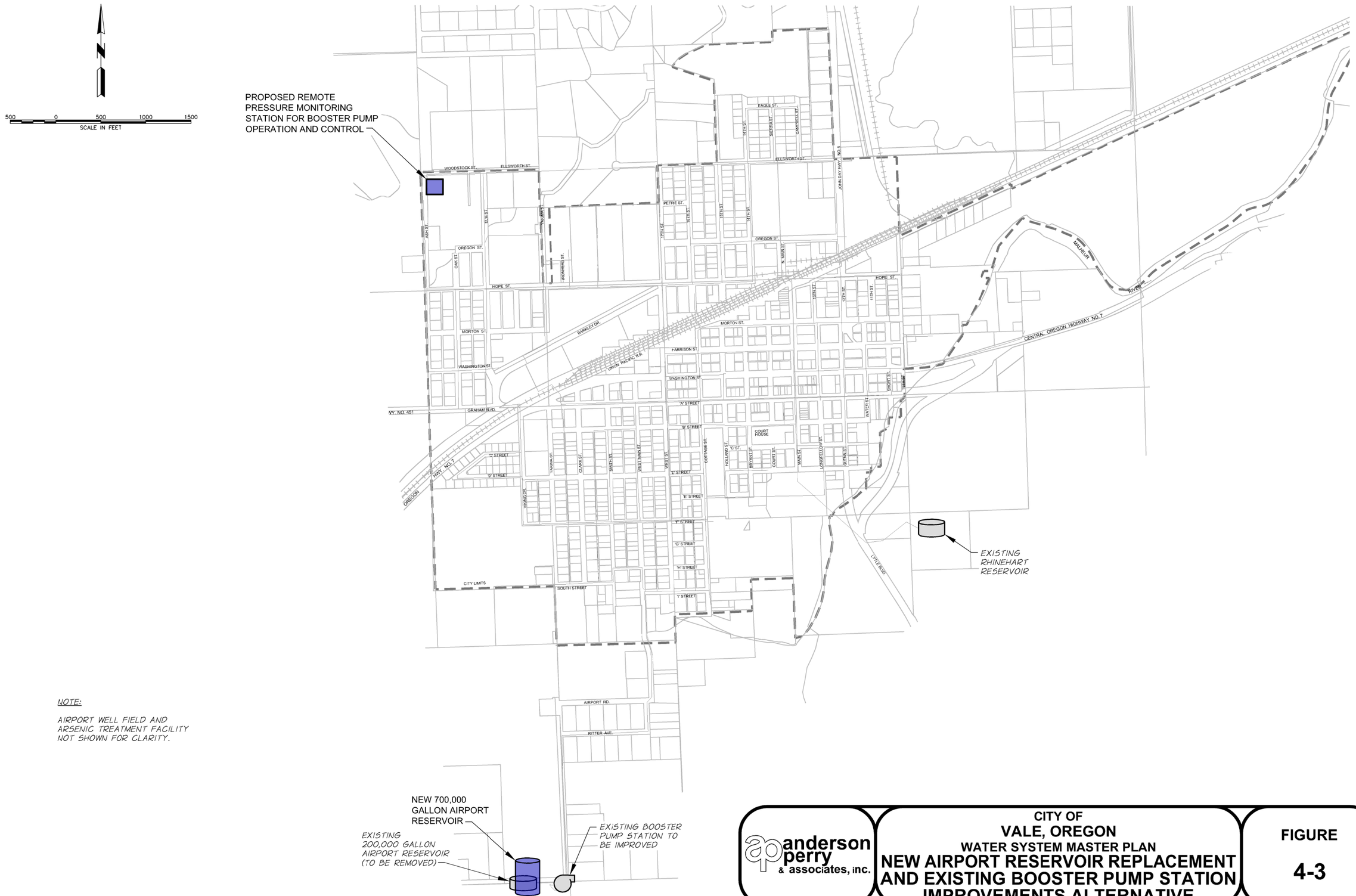
CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

NEW NORTH RESERVOIR/BOOSTER PUMP STATION IMPROVEMENTS ALTERNATIVE PRELIMINARY COST ESTIMATE

FIGURE
4-2



NOTE:

AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
NEW AIRPORT RESERVOIR REPLACEMENT AND EXISTING BOOSTER PUMP STATION IMPROVEMENTS ALTERNATIVE

FIGURE
4-3

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CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
NEW AIRPORT RESERVOIR REPLACEMENT AND
EXISTING BOOSTER PUMP STATION MODIFICATIONS ALTERNATIVE
PRELIMINARY COST ESTIMATE
(Year 2016 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
1	Mobilization/Demobilization	LS	$ 65,000	All Req'd	$ 65,000
2	Project Safety and Quality Control	LS	15,000	All Req'd	15,000
3	Existing Airport Reservoir Demolition	LS	40,000	All Req'd	40,000
4	Security Fencing and Improvements	LS	30,000	All Req'd	30,000
5	Existing Pump Station Controls and Electrical Modifications	LS	65,000	All Req'd	65,000
6	Telemetry and SCADA Development	LS	35,000	All Req'd	35,000
7	New 700,000-gallon Airport Reservoir and Site Work	LS	800,000	All Req'd	800,000
8	Site Piping, Valves, and Appurtenances	LS	150,000	All Req'd	150,000
9	Remote Pressure Monitoring Station and Connection to Existing Distribution System	Each	25,000	1	25,000
10	Asphalt Surface Restoration	SY	60	1,000	60,000
11	Gravel Surface Restoration	SY	10	200	2,000
12	Painting Work	LS	20,000	All Req'd	20,000
				Subtotal Estimated Construction Cost	**$ 1,307,000**
				Construction Contingency (10%)	131,000
				Total Estimated Construction Cost	**$ 1,438,000**
				Preliminary, Design, and Construction Engineering (20%)	288,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1]	**$ 1,726,000**

[1] See Figure 6-2 for a Summary of Preliminary Estimated Project Costs and other project costs for the selected improvements.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

NEW AIRPORT RESERVOIR REPLACEMENT/
EXISTING BPS IMPROVEMENTS ALTERNATIVE
PRELIMINARY COST ESTIMATE

FIGURE
4-4

Chapter 5 - Distribution System

Introduction

This chapter discusses the City's existing water distribution system that delivers water to residential, commercial, and other users. Components of the distribution system include pipelines, valves, water meters, water service lines, and fire hydrants. The distribution system has been evaluated for both present and future City needs. Alternatives have been developed to address existing identified deficiencies and provide future service to help meet both requirements of the Oregon Health Authority - Drinking Water Services (DWS) and fire flow requirements of the Insurance Services Office, Inc. (ISO). Cost estimates for the recommended distribution system improvements are presented at the end of this chapter.

Existing System

Historical information for the City of Vale's water distribution system was obtained from the Water Management and Conservation Plan prepared in 2014 by Anderson Perry & Associates, Inc. (AP), a Water System Master Plan (WSMP) prepared in 1996 by AP, and from City water system maps provided by the Malheur County GIS Department.

The City's distribution system main lines are primarily asbestos cement and polyvinyl chloride. The City's first water main lines were installed with development of the water system in 1912 and most likely consisted of mainly steel pipe. However, distribution system improvements have been made in recent years to improve flow and pressure in the system and to replace the original steel pipe.

Approximately 79 percent of the distribution system piping is composed of 6-inch or larger diameter main lines with the majority (approximately 39 percent) being 8-inch pipe. The remaining 21 percent of the distribution mains consist of pipe ranging in size from 1-inch to 4-inch. Most of these small-diameter mains serve multiple users and are too small to support fire hydrants.

In general, the distribution system is fairly well looped. There are some areas with dead-end and/or undersized main lines. This can limit capacity and water circulation in the system. These areas are discussed in more detail later in this chapter. The City has indicated that water main lines in the distribution system are generally in good condition.

The existing distribution system layout, including fire hydrant and valve locations and pipe size and locations, is shown on the Existing Water System Map contained in a pocket at the end of this WSMP. The Existing Water System Map was prepared using a base map from the City of Vale and Malheur County GIS Department. Available resources were utilized to make the map as accurate as possible. There may be inaccuracies in the depiction of the water distribution system layout and the possibility exists that water distribution system lines and other features are present at locations not shown on the map or are not positioned as shown. The Existing Water System Map has been prepared electronically. If distribution system main lines or other system features are added in the future, the map can easily be updated as the improvements occur so the City always has the most accurate map available for City staff use.

Distribution System Pressure

As discussed in Chapter 4, the City of Vale has one pressure zone serving the distribution system with system pressures provided by the elevation of the existing Rhinehart Reservoir and/or the Airport Booster Pump Station. The Rhinehart Reservoir provides distribution system static (i.e., no demand) pressures from approximately 30 to 70 pounds per square inch (psi). Higher elevation users within the City experience the lower water pressures of 30 to 35 psi, while the lower elevation users experience 65 to 70 psi. Low pressure situations in the City's distribution system also occur due to pressure losses resulting from high flows in undersized main lines. System pressures are further discussed in more detail, with system improvement alternatives, later in this chapter.

Distribution System Water Quality

Coliform Bacteria

As discussed in Chapter 3, the City typically obtains one routine sample per month from the distribution system for analysis of total and fecal coliforms. Routine sample results on file with DWS were reviewed for the period from January 2002 through September 2014. For this period, four samples tested positive for total coliforms. These samples took place on July 20 and 27, 2011; March 10, 2010; and August 13, 2008. No samples over this period were positive for fecal coliforms or *E. coli* bacteria. Based on these test results, it does not appear that the City has any regularly occurring issues with coliform bacteria in the distribution system.

Lead and Copper

The City has also obtained samples from the distribution system to satisfy chemical analysis requirements for total lead and copper. Tests were conducted in 1993, 1995, 1996, 1997, 1999, 2002, 2007, 2010, and 2013. Initially 20 samples were obtained for the 1993 and 1995 tests. Ten samples were obtained for subsequent test events after 1995. DWS' database lists the highest lead concentrations detected for these sampling events, which ranged from 0.0000 to 0.0080 milligrams per liter (mg/L). The Environmental Protection Agency (EPA) action limit for total lead in municipal water systems is 0.0155 mg/L. Copper was also detected in the samples at maximum concentrations ranging from 0.0490 to 1.1700 mg/L. The EPA action level for copper is 1.35 mg/L. Based on the lead and copper analytical results for sampling from 1993 to 2013 (the next sampling is scheduled for 2016), all detected concentrations of lead and copper were less than their corresponding EPA action levels. A copy of the lead and copper analytical result summary sheet from DWS' database is included in Appendix J.

Fire Protection

General

The City's existing water supply, storage, and distribution system provides adequate fire protection to the majority of the system, although there are certain areas of the City that do not have adequate fire protection and some areas that experience low pressures during fire flow events. DWS' regulations and the 2010 Oregon Fire Code require the entire water system remain above 20 psi residual pressure while fire flow demands are placed on the system. A computer model of system

fire flows, along with improvement alternatives to address the deficiencies in fire flows, is discussed in more detail later in this chapter.

Fire Hydrant Flow Tests

For this WSMP, the City completed flow tests on several fire hydrants in the distribution system. These test results are included in Appendix G for reference. Based on the individual hydrant flow test results done by the City, the City of Vale's water system is able to deliver fire flows ranging from approximately 680 to 975 gallons per minute (gpm) at working pressures from 50 to 65 psi. These flows are the measured flows observed during flow tests. Higher fire flows may be available if more than one hydrant were tested at a time and system pressures were allowed to drop further.

Theoretical Fire Flows

In some cases, such as in ISO fire hydrant flow capacity reporting, the available flow from a fire hydrant is calculated using a theoretical formula. The formula assumes the water supply "feeding" the tested area is generally not limited and the 20 psi residual pressure resulting from the fire flow occurs where the hydrants are being tested. In reality, there are likely other connections in the distribution system, such as users in the City on small-diameter main lines or at higher elevation areas, that would fall below 20 psi sooner than the formula predicts. Considering this, the theoretical formula can overestimate available fire flows. According to the ISO Rating Report completed in 1999, the City of Vale hydrant flow tests produced between 395 and 737 gpm of fire flow; however, the available flows according to the computer modeling ranged from 750 to 4,000 gpm.

Fire Hydrant Limitations

The fire flow tests completed by the City are generally conducted by opening one fire hydrant at a time, while ISO fire flow tests are conducted by opening multiple fire hydrants at one time. If large enough main lines are present, individual fire hydrants can typically provide flows in the range of 800 to 1,200 gpm from a small port and nearly 2,000 gpm from both small ports and the larger "pumper" port, assuming the hydrant has a large port. For the Vale system, the system residual pressures, main line sizes, and looping likely dictate what fire flows are available as opposed to the physical limitations of the fire hydrants. During a fire there will be some water use from others on the system, so the actual available flow out in the distribution system will be less due to other uses and pipeline pressure losses resulting from higher flows.

Generally, the City's water system is in need of improvement to provide adequate fire flows to several areas. The discussion presented herein is intended to provide caution concerning the actual available fire flows from the City's distribution system and fire hydrants. Considering the limitations previously discussed, the City's water system appears limited in its capacity to meet a fire flow of 1,500 to 2,500 gpm in all areas of the City. Several areas of the City have fire flows less than 500 gpm. These areas are out of compliance with DWS' regulations and Oregon Fire Code requirements for fire flows. All of the aforementioned flows are less than the maximum recommended ISO fire flow of 3,500 gpm for commercial areas and 4,000 gpm for schools while maintaining 20 psi in the system.

Fire Hydrant Coverage

Oregon Fire Code outlines maximum recommended fire hydrant spacing depending on several factors, such as fire flow requirements of the area, the number of fire hydrants in the area, if the area is on a dead-end street or has limited access, etc. As required by the 2010 Oregon Fire Code, the maximum spacing between any two hydrants for a fire flow requirement of 1,750 gpm or less is 500 feet, and as little as 350 feet for a fire flow requirement of 3,500 to 4,000 gpm. Per the Oregon Fire Code, fire flow requirements are based on building area and type of construction. The minimum required fire flow is 1,500 gpm. The maximum required distance from any point of a street or road frontage to a hydrant is 250 feet for 1,750 gpm or less and 210 feet for 3,500 to 4,000 gpm.

The spacing of the City of Vale's existing hydrants was analyzed to identify areas that are not covered in accordance with the maximum spacing and frontage distance to a fire hydrant as recommended in the Oregon Fire Code. The City of Vale's existing fire hydrants, as identified on the Existing Water System Map, are typically spaced about 500 feet apart, although there are some areas of the City where the fire hydrants are spaced much farther than 500 feet apart.

To assist with the fire hydrant spacing analysis, a Fire Hydrant Coverage Map showing existing and proposed fire hydrants was prepared. This map is contained in a pocket at the end of this WSMP. In preparing the Fire Hydrant Coverage Map, the Existing Water System Map was utilized by placing 500-foot diameter circles around each existing hydrant, then adding the proposed hydrants, also with 500-foot diameter circles around each. On the map, existing fire hydrant coverage areas are shown in blue and proposed fire hydrant coverage areas are shown in purple.

There are approximately 93 existing fire hydrants in the City of Vale. Thirty-two hydrants are proposed to be added to the distribution system. Nine proposed hydrants that would be located on small-diameter main lines are colored yellow. If these hydrants are to be installed, it is recommended that the main line be upgraded as well in order to provide sufficient fire flow to the new hydrants. Areas with limited fire hydrant coverage become readily apparent on the map. Undeveloped areas were not included in this analysis, as it is assumed that hydrants would be installed along with other required utilities when these areas are developed. The primary areas of inadequate fire hydrant coverage are as follows:

- Morton and Elm Streets - There is a lack of adequate hydrant spacing along and between the aforementioned streets.
- Morton and Main Streets - There is a lack of adequate hydrant spacing in the area surrounding the intersection of Morton and Main Streets.
- John Day Highway - There is a lack of adequate hydrant spacing along the north end of the John Day Highway.
- Saddlehorn Lane - There is a lack of adequate hydrant spacing along Saddlehorn Lane.
- Highway 20/26 - There is a lack of adequate hydrant spacing along Highway 20/26, east of the Malheur River.
- W. Main Street - There is a lack of adequate hydrant spacing in the area along W. Main Street from B Street to Airport Road.

- Residential Areas - There is a lack of adequate hydrant spacing along West Street, Clark Street, G Street, I Street, and Airport Road on the southwest side of Vale.

It should be recognized that this analysis was completed for general compliance to the maximum recommended spacing and frontage distance to a hydrant. The City may wish to modify these requirements, depending on the fire flow demands of a particular area, to the more stringent requirements of the Oregon Fire Code or as recommended by the City's fire chief. This analysis is intended to provide the City a basic idea of areas lacking fire coverage. It is recommended that the City install fire hydrants in the areas needing improved coverage as funds allow. All fire hydrant installations should be reviewed and approved by the City's fire chief.

Computer Model of Water System

As part of this WSMP, a detailed water model of the City's water system was developed to analyze system pressures, hydraulic capacity, and available fire flows from the City's fire hydrants. A general description and the results of each computer run performed for both the existing and improved water systems are described in the Water Distribution System Computer Model Summary, which is bound separately from this WSMP.

In order to develop the model, the Existing Water System Map (included at the end of this WSMP) was first produced showing all pipes (location and size), pipe interconnections, and hydrant locations. On the water model maps, each pipe is assigned a number for reference (e.g., P-45). Junctions at pipeline intersections and at key locations, such as hydrants, are assigned junction numbers (e.g., J-50). The label given to the junctions and pipelines allows the model to sort the system elements into groups for easier identification of element location within the system. The pipe and junction distribution system labels are shown on the map in the Water Distribution System Computer Model Summary.

Elevations at the locations of water system features such as reservoirs, pipe connections, wells, hydrants, etc., were obtained from a digital elevation model obtained from the U.S. Geological Survey. Where additional elevations were required for the model, Google Earth elevations were used.

The computer model evaluates pressure and flows in the distribution system pipes during a simulated water use demand. Available fire flows are then determined under different demand conditions. Typical water system demands used for the computer model include the following:

- Average Daily Demand (ADD) - This is the typical average demand the water system experiences, which represents the average demand over a one-year period. Winter demands are typically less than the ADD, and summer demands are typically higher than the ADD.
- Peak Daily Demand (PDD) - This is the peak demand the water system experiences, which is intended to represent the highest demand day of the year, not considering fire flow demands. The PDD usually occurs during a summer period when irrigation and other summer-related water uses are highest.

Junctions are identified in the water model, which allows the model to know where and at what elevation pipe intersections occur. Water demands can then be placed on the distribution system at each junction (node) to simulate ADD or PDD use demands.

The model was configured to determine system pressures and fire flow capacity of the distribution system during the peak day flow condition to represent available fire flows under the highest demand scenario. Once the model was set up, it was used to evaluate existing system conditions such as fire flows and pressure and to evaluate the proposed improvement alternatives. The model results showed that, during peak daily demands, water system pressures are near 30 psi in the higher elevations along the north side of the City, as shown on Figure 5-1. However, during a fire flow event, pressures in this area drop below 10 psi. This pressure is out of compliance with DWS regulations; it is preferable to have system pressures closer to 40 psi, at a minimum. Water model results are depicted for the existing system for both current and 2034 flows, as shown on Figures 5-1 through 5-4.

Currently one pressure zone serves the entire City, which is a contributing factor why the water system does not achieve the required pressure throughout the City. In order to determine the improvements required to bring the City's water system into compliance and to address the deficiencies identified by the water modeling, two alternatives for improvements were developed. These include:

Alternative 1

Provide for the 2034 conditions by utilizing a remote pressure monitoring station at the higher elevations along the north side of the City to provide better control of the pump operation of the Airport Booster Pump Station.

Alternative 2

Provide for the 2034 conditions with distribution system improvements and a new north side 500,000-gallon reservoir isolated from the lower elevation areas of the City. This would require installation of a small booster pump to fill the new reservoir and would also create an additional pressure zone.

Model Results

Alternative 1

Alternative 1 would consist of installing a remote pressure monitoring station along the north side of the City that would be used to control the pump operation of the existing Airport Booster Pump Station, along with other distribution system improvements. These improvements include eliminating undersized main lines in several areas and installing new main lines on several dead-end lines to create a loop connected to the rest of the system. These proposed distribution system improvements are shown on Figure 5-5, and associated costs are shown on Figure 5-6. Modeled available system pressures and fire flows for this alternative can be seen on Figures 5-7 and 5-8 and have been shaded using colors to graphically depict bands of the fire flow capacity based on model results. This figure shows that the fire flows improve significantly in the areas of the City previously inadequately served. Available fire flows would generally be above 2,000 gpm throughout the vast majority of the City. The Alternative 1 improvements would help to substantially increase calculated system fire flows throughout the distribution system and bring the distribution system into compliance with DWS regulations and Oregon Fire Code.

Alternative 2

The option of a new north-side reservoir instead of modification to the Airport Booster Pump Station was also considered, since a reservoir would require less ongoing maintenance and provide additional fire and emergency reserve storage. This was developed as Alternative 2, which would also create a new pressure zone from the current single pressure zone. Estimated system pressures for the proposed reservoir and distribution system improvements are shown on Figure 5-9. Other improvements would include installation of a pressure control valve station and isolation valves, a new booster station to supply the necessary pressure to fill the new reservoir, and distribution system improvements to improve flow and pressure. Fire flows for Alternative 2 are shown on Figure 5-10. The majority of the City would have fire flows above 2,500 gpm, with only very small areas having fire flows from 1,000 gpm to 2,000 gpm, and a few areas having less than 1,000 gpm. The water model for Alternative 2 confirmed that the City's existing distribution system is capable of delivering required fire flows after the improvements are completed. The Alternative 2 improvements would help to substantially increase calculated system fire flows throughout the distribution system and bring the distribution system into compliance with DWS regulations and Oregon Fire Code.

Limitations of Water Model Results

It is important to note that reported fire flows from the water model analysis indicate theoretical distribution system piping capacity. Actual field conditions and headloss in fire hydrants may reduce fire flows beyond what is indicated. Individual fire hydrants generally also have a maximum capacity of 1,000 to 1,500 gpm, so multiple hydrants may need to be operated to attain the flows indicated in the model.

Undersized Main Lines

Many cities have adopted minimum water main line size standards of at least 6-inch diameter and, often, 8-inch diameter. The significant capacity advantages of an 8-inch diameter main line compared to a 6-inch line normally outweigh the small additional cost to install an 8-inch line.

For the purpose of this WSMP, undersized mains have been identified as those mains that do not allow the fire demand and minimum pressure criteria shown on Figure 2-2 in Chapter 2 to be met. There are several areas within the City's distribution system with undersized main lines. Upgrading several smaller diameter main lines in the system will substantially increase available fire flows. These small diameter lines are summarized hereafter.

- Rhinehart Reservoir Transmission Line - An 8-inch diameter line extends from the Rhinehart Reservoir, under the Malheur River, and to the distribution system. This line is one of the main supply feeds for the City. The replacement of this 8-inch line is considered to be a high priority, as it severely limits available fire flow capacity and creates lower system pressures.
- D Street West - A 4-inch diameter line that runs approximately 200 feet east of the intersection with Viking Drive. This line serves a hydrant at the aforementioned intersection.
- Cottage Street South - A 4-inch diameter line that runs approximately 250 feet north of the intersection with D Street. This line serves multiple users and a hydrant.

Dead-End Main Lines

The City of Vale's distribution system is fairly well looped. There are, however, several areas in the distribution system with dead-end main lines. It is difficult to eliminate all dead-end water mains from a system. Physical limitations, such as stream crossings, undeveloped land, or other limitations, such as no customers in the area, can result in dead-end lines. Often these lines are eventually looped as expansion occurs. The areas where new mains are proposed are as follows:

- Yakima Street - A 6-inch diameter line dead-ends approximately 600 feet north of the intersection with Hope Street. This line can be looped north and west to the existing 8-inch line in Elm Street. This is an important improvement since it will improve fire capacity to multiple existing fire hydrants and to potential areas of new development.
- D Street West - A 4-inch diameter line creates a small loop between Viking Drive and Yakima Street. A portion of this line is proposed to be upgraded to an 8-inch line. This line can be extended 350 feet east to the existing 4-inch line that extends from B Street to F Street. This line would serve multiple users and existing fire hydrants.
- South Street West - A 4-inch diameter line dead-ends approximately 200 feet east of the intersection with Yakima Street. This line can be looped to the east approximately 45 feet to the intersection of Smith Street, then north 200 feet to H Street, then from H Street east to Main Street and, finally, south on Main Street to the existing 12-inch line in I Street. This loop would eliminate several dead-end lines and serve multiple users as well as new and existing hydrants.

Water Meters

City water services currently have various types of meters. The City has a program to replace old meters as City budget and staff time allow. During the 2002 improvements, all City meters were replaced with touch read meters. The City has replaced a significant number of these meters with Sensus iPERL meters. It is the City's goal to update all City meters to Sensus iPERL meters by the year 2020.

Water Loss

One important monitoring activity that should be performed by the City is to conduct a periodic audit of the volume of water supplied to the system versus the volume of water that is being metered and used by customers. In order to complete an accurate water audit, the City would need to compare master meter readings from each water supply source with meter readings to all users. The City now has the means in place to complete a water audit.

Implementation of a good method of water auditing would help ensure that water is being adequately accounted for in the City's distribution system and would help determine if leaks are present. Monitoring water loss in the system can reduce the cost of operating and maintaining the system, whether it is through decreased power costs to operate pumps or the amount of maintenance performed in the field by the City. Leaking service lines can be identified prior to failure, areas of system leakage can be isolated, and many other operational advantages can be realized. The details of conducting a water audit can be provided to the City through multiple resources, including the American Water Works Association. As of the writing of this WSMP, City staff have now implemented the measures necessary to complete a detailed water audit.

Maintenance Records

One of the important operational functions for the City's distribution system is to keep accurate records of various system components. These records become valuable as time passes in terms of planning future improvements and replacing old or deteriorated components. It is recommended that the City keep accurate records on all water meters installed so, in the future, these meters can be periodically pulled, checked for accuracy, and replaced as needed. The distribution system evaluation in this WSMP did not include determining existing fire hydrant, valve, and water meter condition. It would be wise for the City to keep accurate records on all hydrants, valves, water meters, and other distribution system components. Hydrants should be checked, at least annually, for proper operation, and all water valves should be exercised, at least annually, with records kept on their operating condition, location, etc.

Recommended Distribution System Improvements

In general, the City's distribution system is well looped and has only a few undersized main lines and dead-end lines. Based on the water system model, there are several undersized and dead-end main lines that result in fire flow capacity limitations and water circulation issues in the system. Some of these lines have been recommended for upgrading where improved fire flow capacities are needed. It is recommended the City complete improvements to the distribution system to eliminate as many undersized main lines as possible, loop the dead-end main lines, and provide improved system pressures and fire flow capacities in areas lacking adequate fire flows. Key main line improvements have been identified to meet the following objectives:

1. Replace the existing transmission main line from Rhinehart Reservoir to the distribution system.

2. Increase fire flow capacities in the system to agency-recommended levels as identified by the water system computer model.

3. Eliminate critical dead-end conditions and improve water main flow and circulation capacities.

4. Provide fire hydrants at key locations to improve flow coverage and replace associated undersized water main lines.

The recommended distribution system improvements are shown on Figure 5-5. The following table summarizes the recommended distribution system improvements and outlines the purpose of the improvements.

TABLE 5-1
RECOMMENDED DISTRIBUTION SYSTEM IMPROVEMENTS

No.	Existing Description and Location	Proposed Improvements
1	Rhinehart Reservoir 8-inch Transmission Main Line	Replace old, undersized transmission line with a 14-inch transmission line to improve fire flows and system pressures.
2	D Street West 4-inch Main	Replace undersized main with an 8-inch main to improve fire flows and system pressures.
3	Cottage Street South 4-inch Main	Replace undersized main with an 8-inch main for improved fire flows and system pressures.
4	Yakima Street 6-inch Main	Provide looping of dead-end main with an 8-inch main to improve fire flows and system pressures.

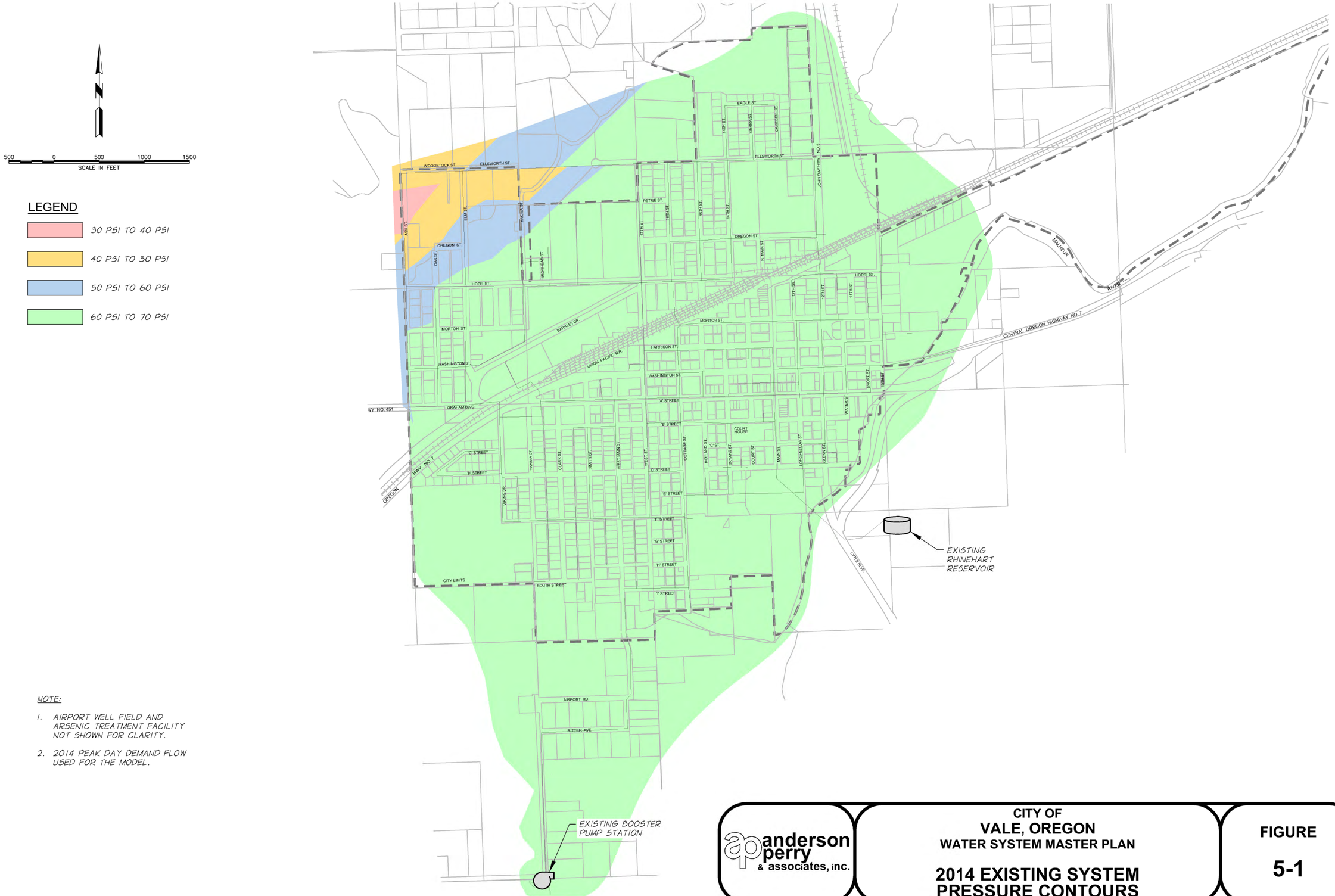
No.	Existing Description and Location	Proposed Improvements
5	D Street West 4-inch Main	Provide looping of dead-end main with an 8-inch main to improve fire flows and system pressures.
6	South Street West 4-inch Main	Provide looping of dead-end main with an 8-inch main to improve fire flows and water quality.
7	New Fire Hydrants throughout Various Locations in the City and Replace Undersized Water Main Lines	Provide improved fire protection and fire flows.

As previously discussed, the Fire Hydrant Coverage Map shows the recommended fire hydrant locations with a purple 500-foot diameter circle around each hydrant. This map is contained in a pocket at the end of this WSMP. All fire hydrant installations should be reviewed and approved by the City's fire chief.

Summary

In general, the City's distribution piping system is in relatively good condition, although there is currently only one pressure zone in the distribution system. Having only one pressure zone over the varying elevations served within the City leads to very low pressures and fire flow capacity at higher elevations; therefore, some areas need improvement, namely areas with undersized main lines and dead-end lines. Improvements outlined in this chapter include installing water main lines to replace undersized lines and improve looping, circulation, and fire flow capacities; installing a remote pressure monitoring station and completing modifications to the existing Airport Booster Pump Station to better serve the City; and installing fire hydrants to improve hydrant coverage. These improvements were selected to address key areas of concern to improve fire flow capacity and pressures in the system.

In summary, the Rhinehart transmission main line improvements are a high priority and should be completed as part of an improvements project. This improvement alone will significantly increase fire flows and system pressures. The remaining improvements should be completed as funds become available.



NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. 2014 PEAK DAY DEMAND FLOW USED FOR THE MODEL.

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CITY OF
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WATER SYSTEM MASTER PLAN

2014 EXISTING SYSTEM PRESSURE CONTOURS

FIGURE
5-1

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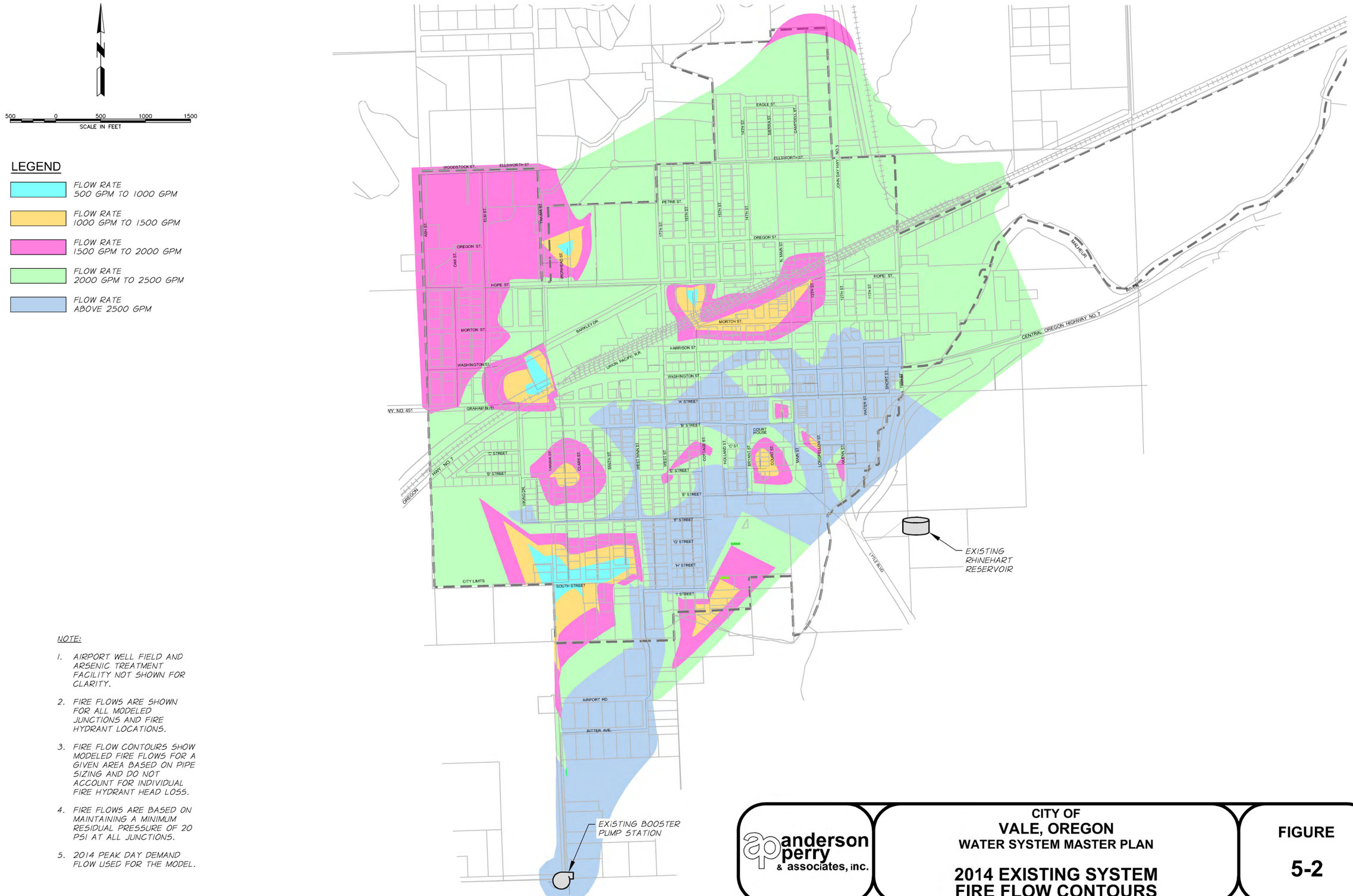

NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. FIRE FLOWS ARE SHOWN FOR ALL MODELED JUNCTIONS AND FIRE HYDRANT LOCATIONS.
3. FIRE FLOW CONTOURS SHOW MODELED FIRE FLOWS FOR A GIVEN AREA BASED ON PIPE SIZING AND DO NOT ACCOUNT FOR INDIVIDUAL FIRE HYDRANT HEAD LOSS.
4. FIRE FLOWS ARE BASED ON MAINTAINING A MINIMUM RESIDUAL PRESSURE OF 20 PSI AT ALL JUNCTIONS.
5. 2014 PEAK DAY DEMAND FLOW USED FOR THE MODEL.

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WATER SYSTEM MASTER PLAN

2014 EXISTING SYSTEM
FIRE FLOW CONTOURS

FIGURE
5-2

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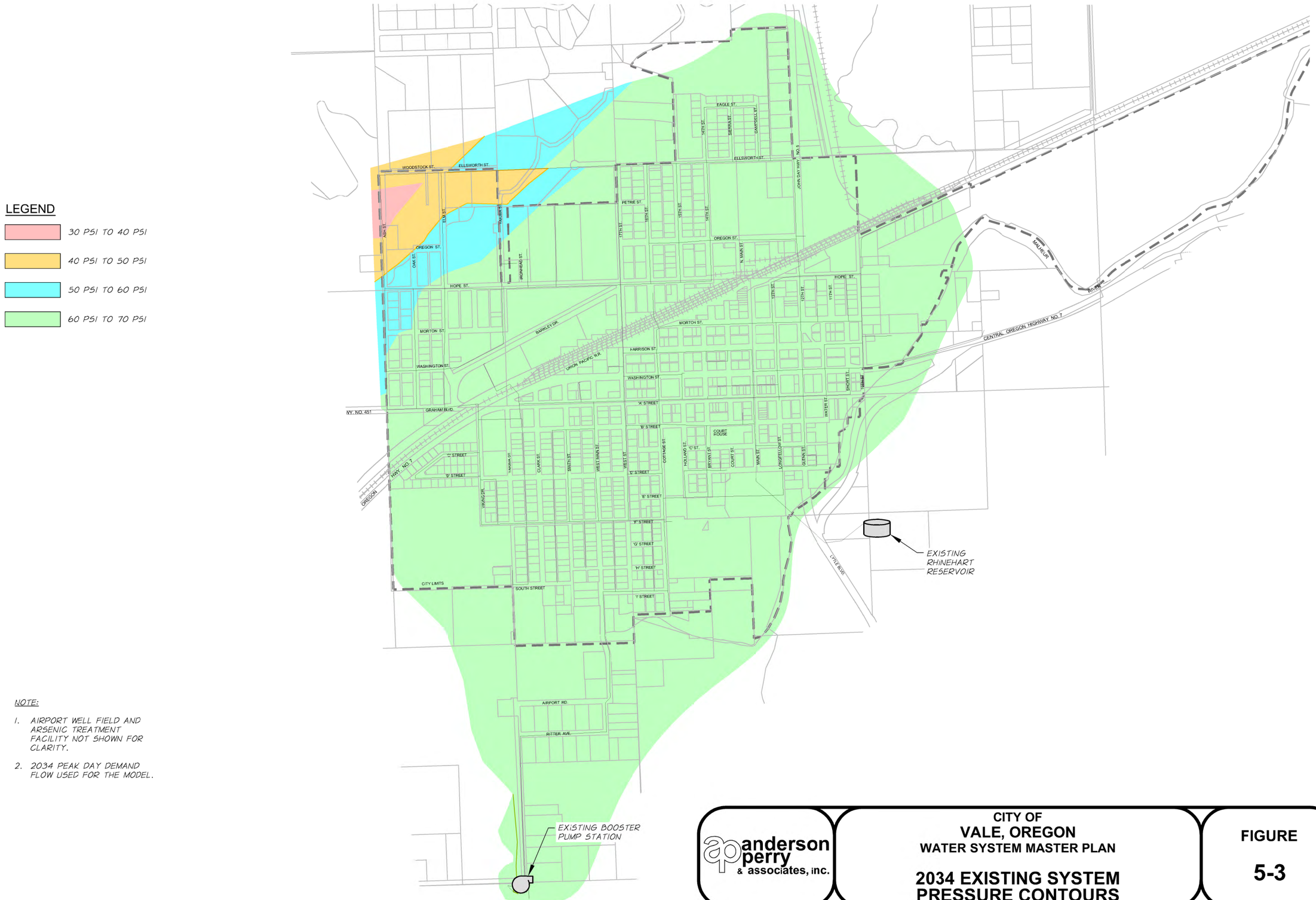

NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. 2034 PEAK DAY DEMAND FLOW USED FOR THE MODEL.

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WATER SYSTEM MASTER PLAN

2034 EXISTING SYSTEM PRESSURE CONTOURS

FIGURE
5-3

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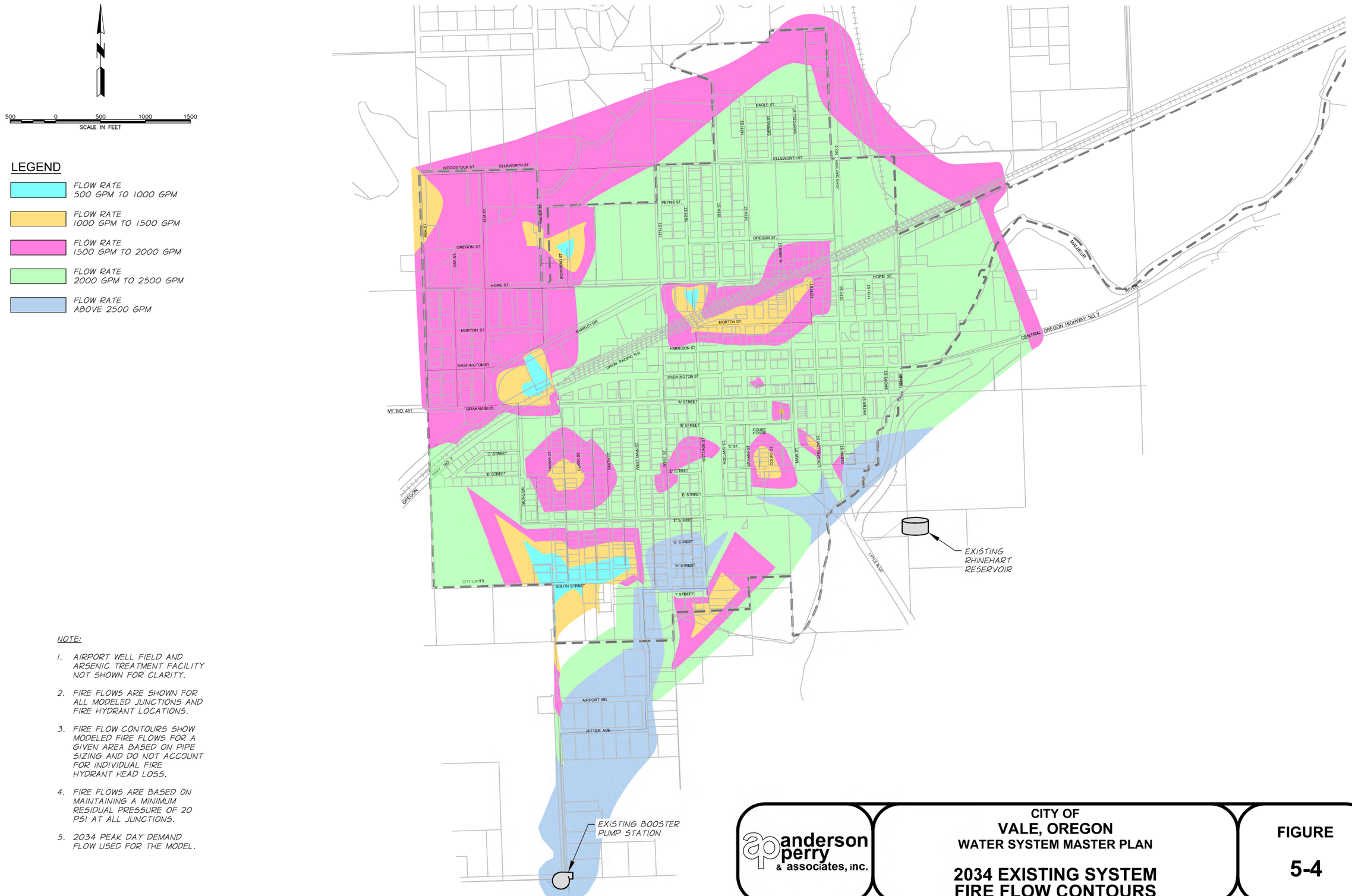

NOTE:

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4. FIRE FLOWS ARE BASED ON MAINTAINING A MINIMUM RESIDUAL PRESSURE OF 20 PSI AT ALL JUNCTIONS.
5. 2034 PEAK DAY DEMAND FLOW USED FOR THE MODEL.

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CITY OF
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WATER SYSTEM MASTER PLAN

2034 EXISTING SYSTEM
FIRE FLOW CONTOURS

FIGURE
5-4

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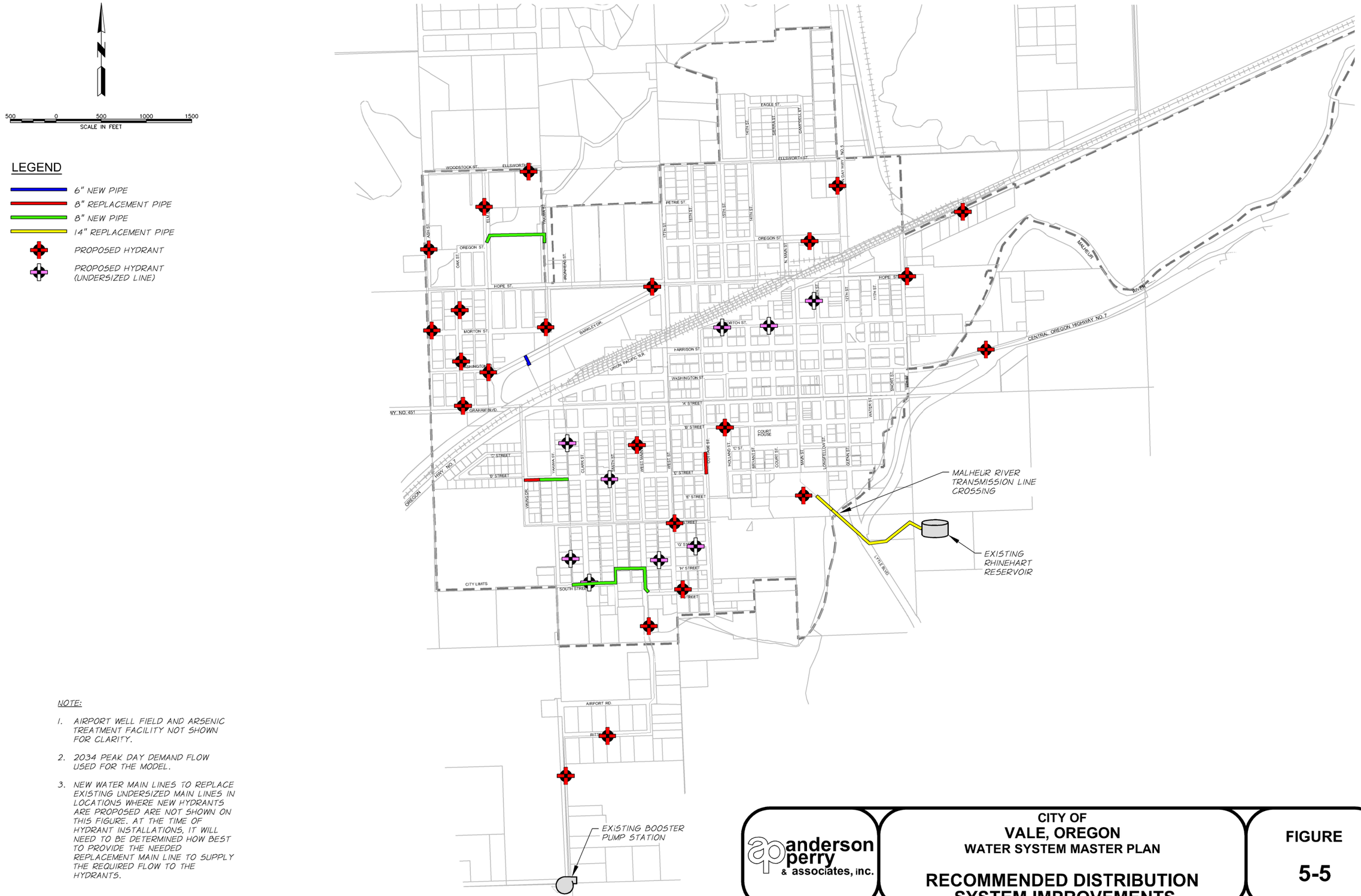

NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. 2034 PEAK DAY DEMAND FLOW USED FOR THE MODEL.
3. NEW WATER MAIN LINES TO REPLACE EXISTING UNDERSIZED MAIN LINES IN LOCATIONS WHERE NEW HYDRANTS ARE PROPOSED ARE NOT SHOWN ON THIS FIGURE. AT THE TIME OF HYDRANT INSTALLATIONS, IT WILL NEED TO BE DETERMINED HOW BEST TO PROVIDE THE NEEDED REPLACEMENT MAIN LINE TO SUPPLY THE REQUIRED FLOW TO THE HYDRANTS.

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CITY OF
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WATER SYSTEM MASTER PLAN

RECOMMENDED DISTRIBUTION SYSTEM IMPROVEMENTS

FIGURE
5-5

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CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
RECOMMENDED DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY COST ESTIMATE
(Year 2016 Costs)

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Distribution System Improvements					
1	Mobilization/Demobilization	LS	$ 30,000	All Req'd	$ 30,000
2	Temporary Protection and Direction of Traffic/Project Safety and Quality Control	LS	50,000	All Req'd	50,000
3	6-inch PVC Water Line, including Valves	LF	40	350	14,000
4	8-inch PVC Water Line, including Valves	LF	55	3,000	165,000
5	8-inch Replacement PVC Water Line, including Valves	LF	60	200	12,000
6	Connection to Existing Main Line	Each	1,500	14	21,000
7	Existing Fire Hydrant Connection to New Main Line	Each	750	4	3,000
8	Fire Hydrant and Auxiliary Valve	Each	4,000	32	128,000
9	Existing Water Service Connection to New Main Line	Each	350	25	8,750
10	Asphalt Surface Restoration	SY	60	2,200	132,000
11	Gravel Surface Restoration	SY	10	300	3,000
				Subtotal Estimated Construction Cost	**$ 567,000**
				Construction Contingency (10%)	57,000
				Total Estimated Construction Cost	**$ 624,000**
				Preliminary, Design, and Construction Engineering (20%)	125,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1]	**$ 749,000**

[1] See Figure 6-2 for a Summary of Preliminary Estimated Project Costs and other project costs for the selected improvements.

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CITY OF
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WATER SYSTEM MASTER PLAN
RECOMMENDED DISTRIBUTION SYSTEM IMPROVEMENTS
PRELIMINARY COST ESTIMATE

FIGURE
5-6

NO.	DESCRIPTION	UNIT	UNIT PRICE	ESTIMATED QUANTITY	TOTAL PRICE
Rhinehart Transmission Main Line Improvements					
1	Mobilization/Demobilization	LS	$ 20,000	All Req'd	$ 20,000
2	Project Safety and Quality Control	LS	40,000	All Req'd	40,000
3	14-inch Replacement RJDI Water Line, including Valves	LF	125	1,300	162,500
4	Connection to Existing Main Line	Each	2,500	2	5,000
5	Asphalt Surface Restoration	SY	60	200	12,000
6	Gravel Surface Restoration	SY	10	150	1,500
7	Malheur River Crossing	LS	100,000	All Req'd	100,000
8	Rock Excavation	CY	150	600	90,000
				Subtotal Estimated Construction Cost	**$ 341,000**
				Construction Contingency (10%)	34,000
				Total Estimated Construction Cost	**$ 375,000**
				Preliminary, Design, and Construction Engineering (20%)	75,000
				TOTAL ESTIMATED IMPROVEMENTS COST (2016 DOLLARS)[1]	**$ 450,000**

[1]See Figure 6-2 for a Summary of Preliminary Estimated Project Costs and other project costs for the selected improvements.

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CITY OF
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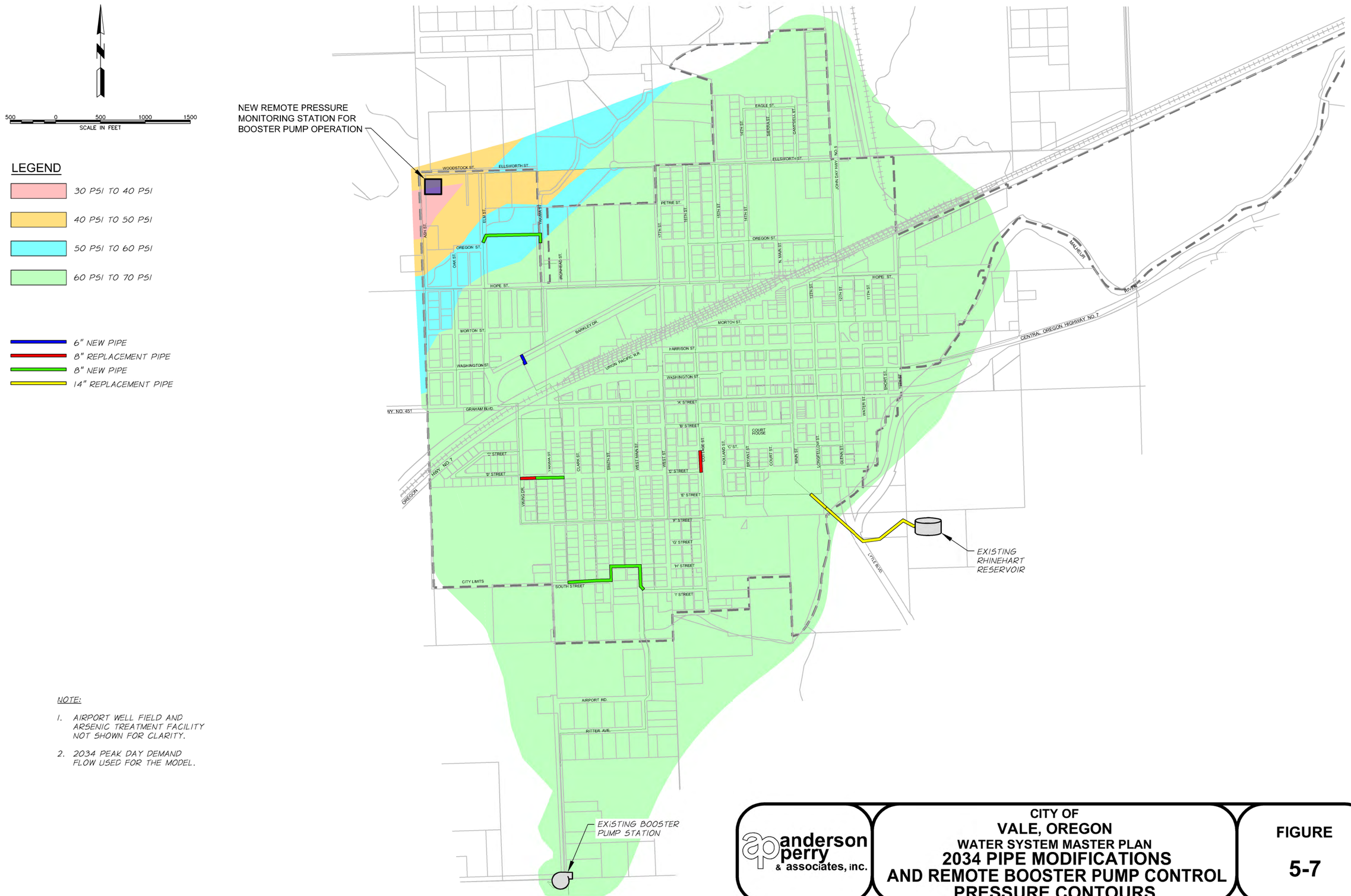
WATER SYSTEM MASTER PLAN
RECOMMENDED DISTRIBUTION SYSTEM IMPROVEMENTS PRELIMINARY COST ESTIMATE

FIGURE 5-6 CONT'D



NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. 2034 PEAK DAY DEMAND FLOW USED FOR THE MODEL.

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CITY OF
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WATER SYSTEM MASTER PLAN
2034 PIPE MODIFICATIONS
AND REMOTE BOOSTER PUMP CONTROL
PRESSURE CONTOURS

FIGURE
5-7

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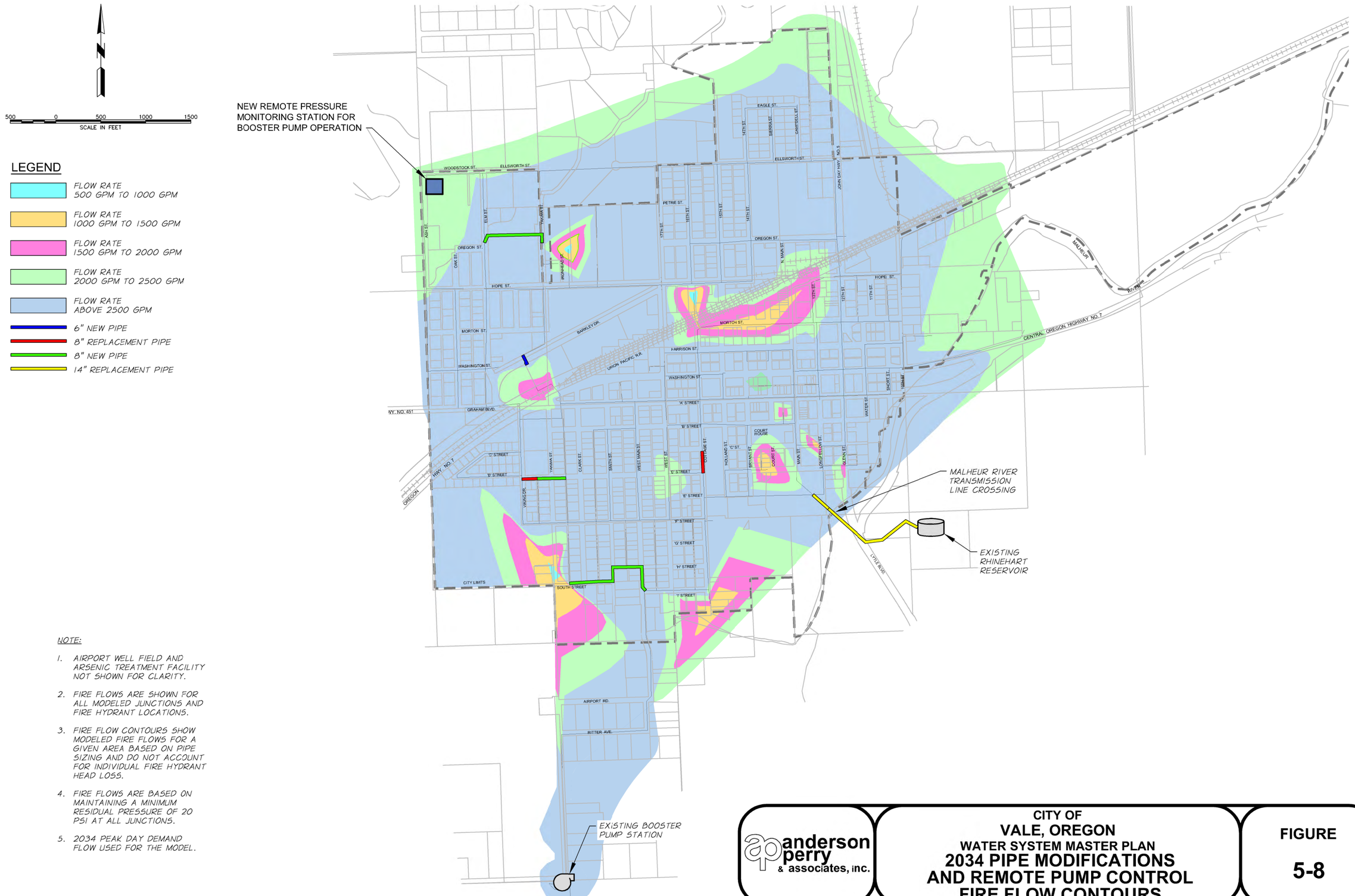

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4. FIRE FLOWS ARE BASED ON MAINTAINING A MINIMUM RESIDUAL PRESSURE OF 20 PSI AT ALL JUNCTIONS.
5. 2034 PEAK DAY DEMAND FLOW USED FOR THE MODEL.

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CITY OF
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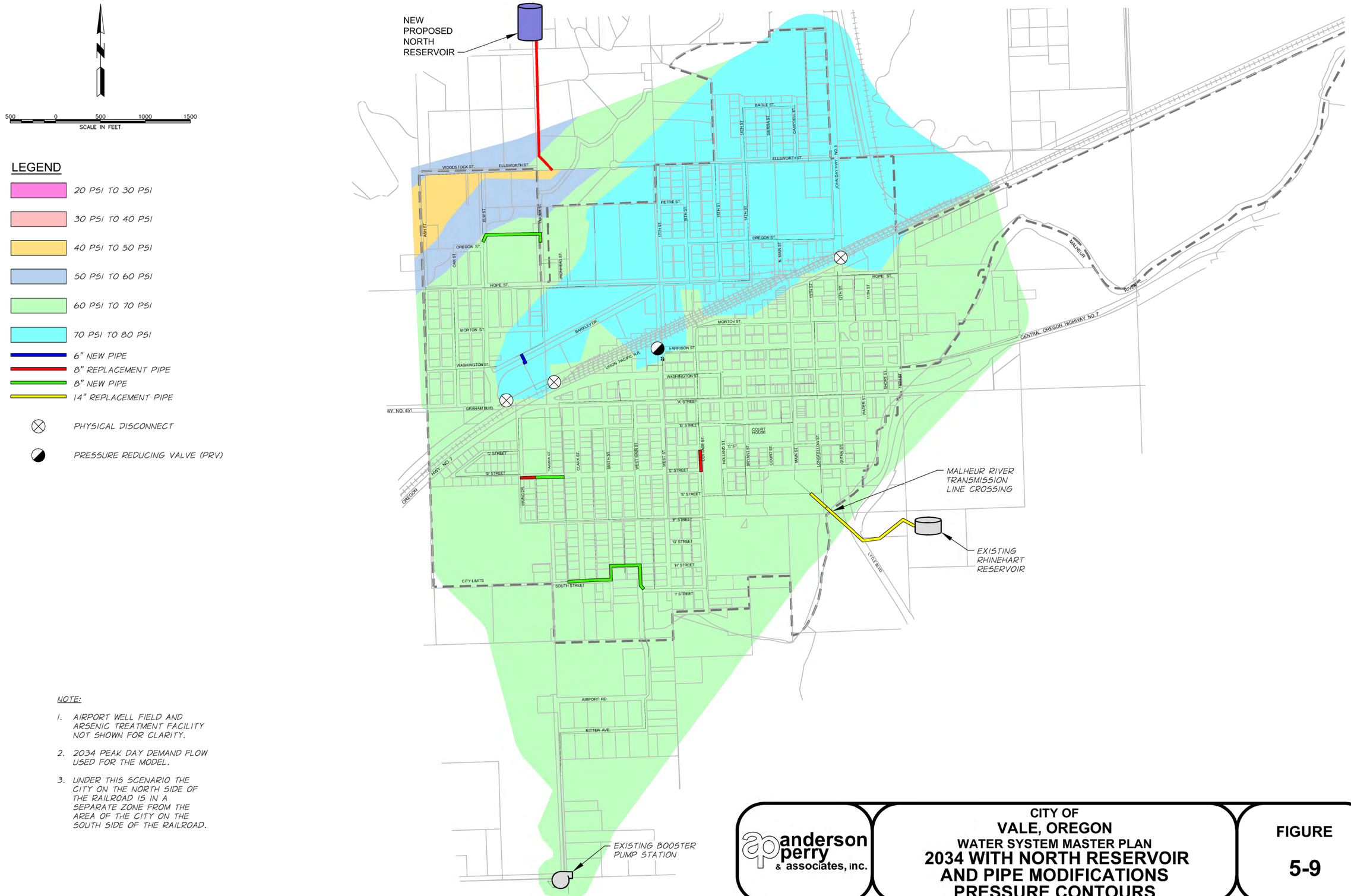
WATER SYSTEM MASTER PLAN
2034 PIPE MODIFICATIONS AND REMOTE PUMP CONTROL FIRE FLOW CONTOURS

FIGURE
5-8

S:\VALE\65-95 CDBG APPLICATION\dwg\WSMP\FIG 5-8.dwg, fig 5-8, 6/26/2015 9:42:14 AM, rrasmussen



NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. 2034 PEAK DAY DEMAND FLOW USED FOR THE MODEL.
3. UNDER THIS SCENARIO THE CITY ON THE NORTH SIDE OF THE RAILROAD IS IN A SEPARATE ZONE FROM THE AREA OF THE CITY ON THE SOUTH SIDE OF THE RAILROAD.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
2034 WITH NORTH RESERVOIR AND PIPE MODIFICATIONS PRESSURE CONTOURS

FIGURE
5-9

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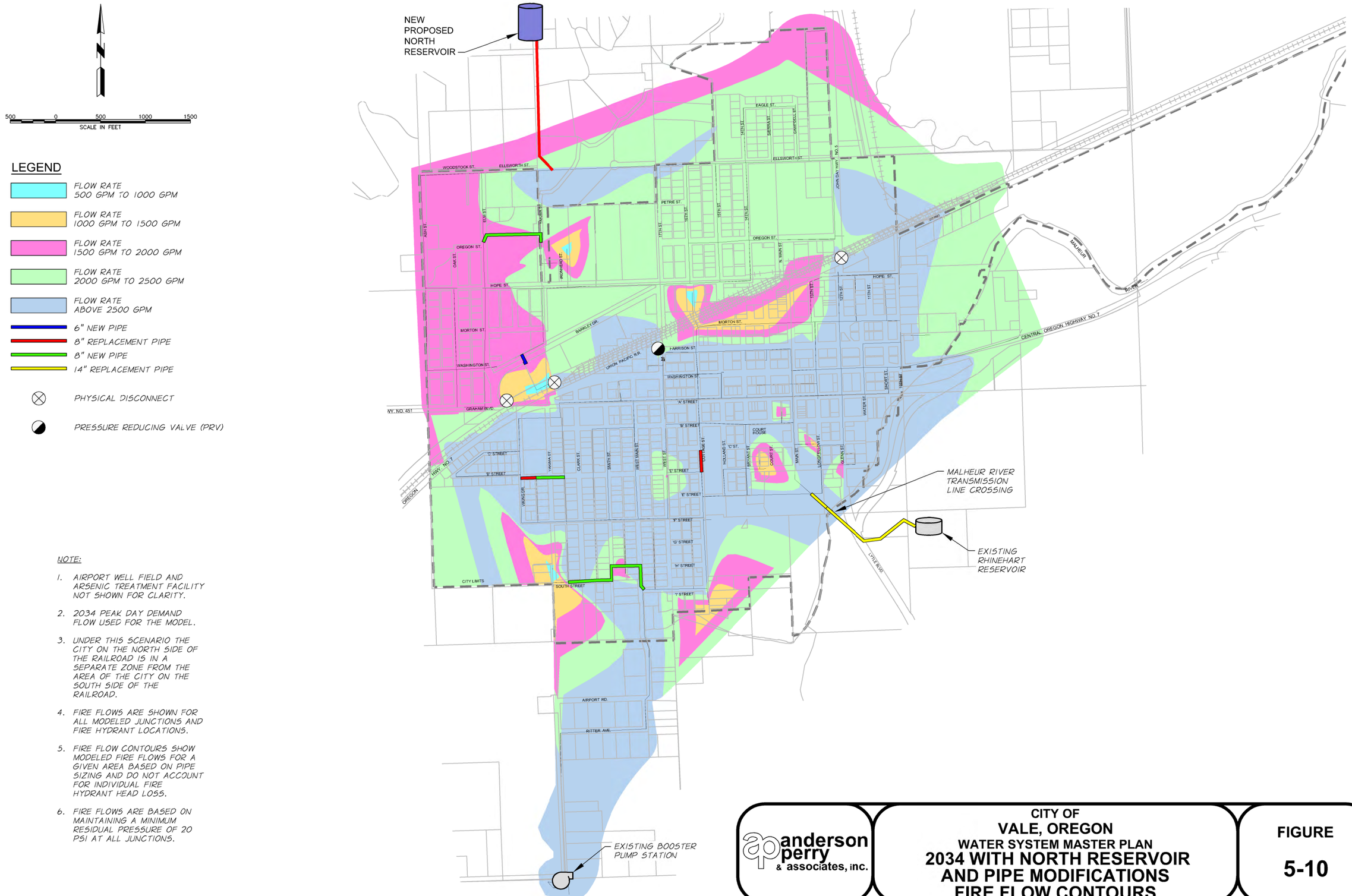

NOTE:

1. AIRPORT WELL FIELD AND ARSENIC TREATMENT FACILITY NOT SHOWN FOR CLARITY.
2. 2034 PEAK DAY DEMAND FLOW USED FOR THE MODEL.
3. UNDER THIS SCENARIO THE CITY ON THE NORTH SIDE OF THE RAILROAD IS IN A SEPARATE ZONE FROM THE AREA OF THE CITY ON THE SOUTH SIDE OF THE RAILROAD.
4. FIRE FLOWS ARE SHOWN FOR ALL MODELED JUNCTIONS AND FIRE HYDRANT LOCATIONS.
5. FIRE FLOW CONTOURS SHOW MODELED FIRE FLOWS FOR A GIVEN AREA BASED ON PIPE SIZING AND DO NOT ACCOUNT FOR INDIVIDUAL FIRE HYDRANT HEAD LOSS.
6. FIRE FLOWS ARE BASED ON MAINTAINING A MINIMUM RESIDUAL PRESSURE OF 20 PSI AT ALL JUNCTIONS.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
2034 WITH NORTH RESERVOIR AND PIPE MODIFICATIONS FIRE FLOW CONTOURS

FIGURE
5-10

S:\VALE\65-95 CDBG APPLICATION\dwg\WSMP\FIG 5-10.dwg, fig 5-10, 6/26/2015 9:47:38 AM, rrasmussen

Chapter 6 - Selected Water System Improvements and Operational Recommendations

Introduction

This chapter summarizes the water system improvements selected by the City of Vale and outlines the estimated costs of the improvements. The City has indicated that improvements summarized in this chapter will be pursued for implementation. Detailed descriptions of the selected improvements for the water supply and treatment system, storage system, and distribution system are summarized in Chapters 3, 4, and 5, respectively. Figure 6-1 shows the selected water system improvements; these improvements are also shown on the Selected Improvements Map at the end of this Water System Master Plan (WSMP).

During development of this WSMP, consultation with the City was emphasized. Various aspects of the City's existing water system and potential improvement options were discussed at City Council work sessions and presentations. As a result of these discussions, this chapter of the WSMP was developed.

Summary of Selected System Improvements

As outlined in previous chapters, a number of system improvements are identified to bring the City of Vale's water system into compliance with current drinking water standards and regulations, and to enhance system reliability. The City-selected improvements are summarized hereafter.

Water Supply Improvements

The City of Vale is currently relying on the Airport Well Field to meet system demands. The Washington Street Well is also connected to the system to be used in the case of an emergency. To help ensure continued water system performance, several recommendations have been made that would address existing water quality issues and reduce potential system weaknesses. Recommended and selected water supply improvements include the following:

Improve Washington Street Well

The Airport Well Field is currently capable of providing 550 gallons per minute (gpm) to the system. This source alone is not adequate to serve the City of Vale during peak water demands. It is recommended that additional source capacity be developed in order to provide sufficient flow during peak demands, as well as provide redundancy in the water system. The Washington Street Well is currently able to produce roughly 650 gpm. This additional capacity would be sufficient to meet the estimated 20-year peak demands for the City of Vale. The well will require improvements in order to be fully functional for the City. It is recommended that the City improve the Washington Street Well, including new pumps, chlorination system, and other improvements, to provide additional source capacity to the system.

Pipe Washington Street Well Water to Arsenic Treatment Facility

While the Washington Street Well has plenty of capacity to meet the City's future needs, the water quality from this well does not meet current state regulations. The water from the Washington Street Well has arsenic levels that are above the current maximum contaminant level (MCL) set by the State of Oregon. In order to utilize the flow from the Washington Street Well, the water will need to be treated for arsenic before entering the distribution system. In order to accomplish this, it is recommended that a designated pipeline be constructed to provide water from the Washington Street Well to the arsenic treatment facility located at the airport. This will allow the City to treat and utilize the full amount of water provided from both the Airport Well Field and the Washington Street Well.

Water Treatment Improvements

As discussed in Chapter 3 of this WSMP, the City of Vale currently utilizes an ion exchange treatment facility in order to remove arsenic from the drinking water. Tests have shown that the facility is not effectively removing arsenic from the City's drinking water. The ion exchange technology is not well suited for the water quality available from the City of Vale's water supply sources. The existing treatment system requires frequent maintenance, resulting in high annual operation and maintenance costs for the City. In order to provide water that meets the arsenic MCL, several improvements have been selected by the City:

New Coagulation Filtration Treatment Facility

A recognized and efficient technology for removing arsenic in drinking water is through coagulation filtration. This technology is not susceptible to many of the water quality characteristics that inhibit the use of the ion exchange technology. The operation and maintenance cost of this technology is estimated to be approximately 25 percent of the operation and maintenance cost of the ion exchange technology. The ion exchange technology also adds the benefit of removing other unwanted constituents from the drinking water, including nitrates and sulfate. For this reason it is recommended that the City construct a separate facility to house the new coagulation filtration technology.

Perform Pilot Testing

While the City is seeking funding for a potential improvements project, pilot testing should be performed in order to ensure that the selected technology will work efficiently and be cost-effective in removing arsenic below the MCL. This small investment by the City would be wise to ensure that the full scale treatment facility will perform to the desired level.

Prepare and Preserve Existing Arsenic Treatment Facility

While the existing treatment facility and technology are not adequate for removing arsenic levels to below the MCL, it does effectively remove levels of nitrates and sulfate. This is not currently a requirement of the City, since nitrate levels are not currently above the MCL in Vale's supply sources and sulfates are not regulated by the State or Oregon. However, it is recommended that the existing treatment facility be prepared to be used in conjunction with the new coagulation filtration treatment facility in the event that nitrate levels rise or the MCL is

lowered in the future. Since the existing media in the ion exchange treatment facility is fouled and not operating, it will need to be replaced. It is recommended that the City replace the media at a later time if the need for the facility arises. It is recommended that as part of an improvements project, piping and building modifications be completed to ensure that the facility can easily be brought on line, if needed.

Water Storage Improvements

The City's existing water storage reservoirs do not meet the City's immediate operational, equalization, fire reserve, and emergency reserve storage needs, as presented in Chapter 4. The City has also determined that the existing Airport Reservoir will need to be replaced in the near future due to corrosion and leakage issues. The 750,000-gallon Rhinehart Reservoir is still in good condition, and the 105,000-gallon reservoir has been valved off from the system and is not currently being used. It is not recommended that the City pursue rehabilitation of the 105,000-gallon reservoir due to the high cost of rehabilitation for limited storage capacity. As resources permit, to maintain the good condition of Rhinehart Reservoir the City will need to make the required repairs to the concrete and provide necessary protective coatings.

Remove Existing Airport Reservoir

The existing Airport Reservoir is in poor condition and was recommended to be replaced or maintained as soon as possible in a report completed by Clear Water Robotics, LLC, in 2011. Maintenance of the bolted steel reservoir would be difficult and would still leave the City with a storage deficit. It is recommended that the existing 200,000-gallon bolted steel Airport Reservoir be removed.

Construct New 700,000-gallon Reservoir at Airport

A reservoir is required at the airport location to serve the Airport Booster Pump Station. It is this booster pump station that is used both to serve the distribution system and to fill the Rhinehart Reservoir. Since it has been recommended that the City remove the existing Airport Reservoir, it would be most cost-effective to replace the existing reservoir as well as account for the additional required storage to serve the City's projected growth with one 700,000-gallon reservoir located at the airport site. This site is beneficial in that it provides storage to serve the Airport Booster Pump Station, and the City of Vale already owns the land that the new reservoir would be sited on.

Water Distribution System Improvements

In general, the City's distribution piping system is in relatively good condition, although there are currently low pressure areas in the distribution system. Having only one pressure zone over the varying elevations served within the City leads to low pressures and low fire flow capacity at higher elevations. However, the area that is affected by these low pressures is not large enough to warrant the creation of additional pressure zones at this time. There are some areas in the distribution system with undersized main lines and dead-end lines, as well as new lines needed to provide enhanced looping and circulation capabilities. The most notable deficiency in the distribution system is the transmission main line from the Rhinehart Reservoir to the distribution system. Recommended and selected water distribution system improvements include the following. These

undersized main lines and dead-end lines are recommended to be replaced and the new looping installed during the time period covered by this WSMP, but they have not been included in the selected improvements to be completed at this time.

Replace Transmission Line from Rhinehart Reservoir

Replacing the old, undersized transmission main line from the Rhinehart Reservoir to the distribution system with a 14-inch ductile iron transmission main line will increase fire flows and pressures throughout the distribution system. Removing the 8-inch ductile iron transmission main line would remove a "bottleneck" in the system and would decrease dependence on the Airport Booster Pump Station to provide fire flows to the City.

Cost Summary

The year 2016 estimated costs for the selected water system improvements are summarized on Figure 6-2. Detailed cost estimates for each component of the system (i.e., water supply, storage, etc.,) are included at the end of Chapters 3, 4, and 5. The total project cost includes construction, administrative, legal, engineering, and contingencies. If the City does not complete the proposed improvements in 2016, it is recommended the estimated costs be increased by an annual inflation rate to account for potential increases in project costs.

General Operation and Maintenance Recommendations

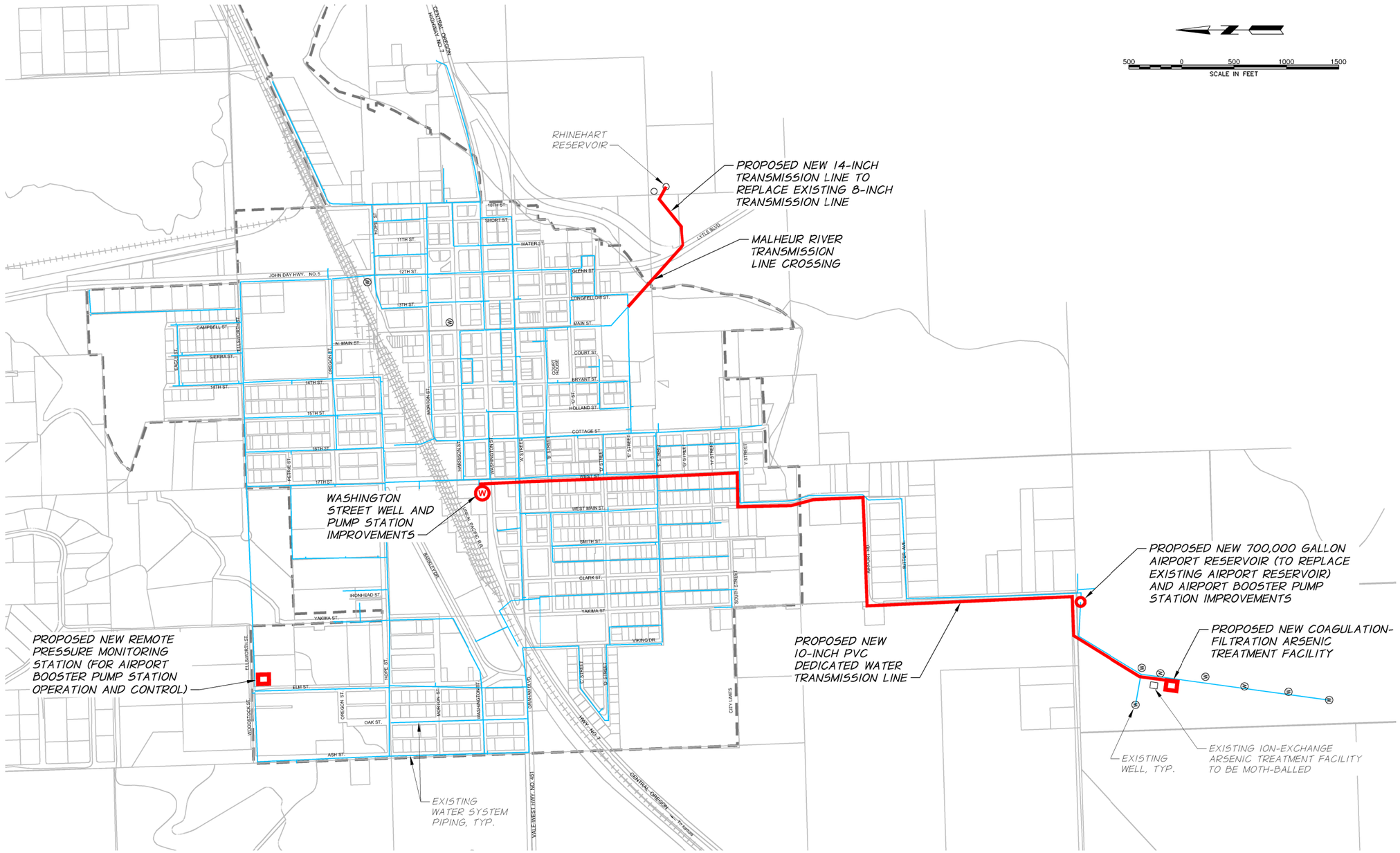
As the City of Vale continues to develop and expand its water system, diligent operation and maintenance activities for the various system components will be critical to providing a reliable water system that is operated efficiently. One of the most valuable tools in analyzing present trends and projecting future needs of a water system and for general equipment upkeep is to have accurate and complete records. Data should be kept by the City on such items as daily flows from master meters, water quality tests, as-built records on all underground piping, service line and tap locations, etc. Methodically kept records will be a tremendous asset to the City in operating and maintaining the water system.

The following recommendations are intended to provide general guidance to the City and are not intended to provide a comprehensive list of operation and maintenance activities related to the City's water system. Several of the recommendations are related to the recommended improvements previously discussed in this chapter. The recommended operation and maintenance activities and suggested recurrence intervals are listed below.

- Obtain water quality tests as required by regulations and submit results to the Oregon Health Authority - Drinking Water Services.
- Frequently monitor chlorine residuals in the reservoirs until a consistent residual can be confirmed throughout the year. Circulate water in and/or drain and fill the reservoirs as needed.
- Record daily water meter readings at every supply source. Try to record the readings at the same time of day so the data from each source are comparable over equal time periods.
- Record static and pumping water levels at the wells monthly, at a minimum.
- Record daily chemical consumption to track chemical use relative to water flow data.

- Keep maintenance cards on all valves, fire hydrants, and miscellaneous system components in the City.
- Exercise fire hydrants once per year and record information on their condition.
- Exercise valves once per year and record operational data and any problems experienced.
- Develop an annual replacement schedule for individual service meters in the system.
- Exercise pumps per the manufacturer's recommendations.
- Clean and inspect the reservoirs every three to five years, or as often as required.
- Annually review water loss to identify potential leaks or improperly operating water meters.

Implementation and continued practice of these measures, many of which the City of Vale already completes, should help the City's water system to continue to serve the community for many years to come.



anderson perry & associates, inc.

CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

SELECTED IMPROVEMENTS MAP

FIGURE
6-1

S:\VALE\65-95 CDBG APPLICATION\dwg\WSMP\FIG 6-1.dwg, Fig 6-1, 6/26/2015 9:48:40 AM, rrasmussen

CITY OF VALE, OREGON
WATER SYSTEM MASTER PLAN
SELECTED WATER SYSTEM IMPROVEMENTS
SUMMARY OF PRELIMINARY ESTIMATED PROJECT COSTS

Estimated Improvements Costs		
Washington Street Well, Pump Station, and Transmission Main Line Improvements	$	1,546,000
New Coagulation Filtration Treatment System Improvements		3,730,000
New Airport Reservoir and Existing Booster Pump Station Modifications		1,726,000
Rhinehart Transmission Main Line Improvements		450,000
Total Estimated Improvements Costs (2016 Dollars)[1]	**$**	**7,452,000**
Other Estimated Project Costs		
Legal	$	50,000
Administration		50,000
Easements		10,000
Environmental Review Report		30,000
Archaeological Report		15,000
Cultural Resource Monitoring		70,000
Oregon Department of Transportation Permit(s)		5,000
U.S. Army Corps of Engineers/Oregon Department of State Lands Permit		15,000
Regulatory Agency Reporting and Review Fees		3,000
Subtotal Other Project Costs (2016 Dollars)	**$**	**148,000**
TOTAL ESTIMATED PROJECT COST (2016 DOLLARS)	**$**	**7,600,000**

[1] Total estimated improvements costs include construction contingency and preliminary design, final design, and construction engineering costs.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN

SUMMARY OF PRELIMINARY ESTIMATED PROJECT COSTS

FIGURE 6-2

Chapter 7 - Project Financing and Implementation

Introduction

This chapter evaluates the financial status of the City's Water Department and outlines alternatives for financing Vale's water system improvements, should the City elect to pursue system improvements. A summary of state and federal funding programs is presented, including a review of funding options potentially available to the City for the water system improvements. In order to construct some or all of the proposed improvements, a financing plan that is acceptable to the City of Vale must be developed to complete the improvements. Because of the estimated cost of the improvements, financing resources will need to include a low interest loan coupled with grant funds, if available.

Although a detailed analysis of Vale's current water rate structure is beyond the scope of this Water System Master Plan (WSMP), some discussion of the existing rate structure and current and future water system budgets is included. As a general rule, most utility rate structures include funding for periodic minor system improvements and maintenance, staff payroll costs, and a set-aside for future improvements. The set-aside is typically for smaller items, such as a new well pump, new meters, etc. The City has also hired Anderson Perry & Associates, Inc., to complete a water rate study that will present water rate options to fund the selected water system improvements while maintaining adequate revenue to support operation and maintenance and other system expenditures.

Current Water Use Rates and Revenue

Operation and maintenance of the existing water system is financed through the City's annual budget. Revenue is obtained from water user and connection fees.

Water Use Rates

The current base water rate for residential and commercial services inside the City limits is $28.64 per month. This base charge includes 3,000 gallons of water consumption for residential users and 7,000 gallons for commercial users. Once this base use is reached, all users are charged a consumptive charge per 1,000 gallons used. Water rates, effective May 2014, are presented on Table 7-1. The City's Resolution No. 14.04, approving the May 2014 rate structure, can be found in Appendix N.

TABLE 7-1
WATER RATE INFORMATION

	Base Monthly Charge	Consumptive Monthly Charge (per 1,000 gallons)			
	Includes 3,000 Gallons - Residential 7,000 Gallons - Commercial	Base Charge to 10,000 (Gallons)	10,000 to 30,000 (Gallons)	30,000 to 50,000 (Gallons)	Greater than 50,000 (Gallons)
Cost per EDU/CBU	$28.64	$1.02	$1.27	$1.52	$2.03

EDU = Equivalent Dwelling Unit (to be discussed later in this chapter)

CBU = Commercial-Business Unit (to be discussed later in this chapter)

In the last year, the City of Vale has begun tracking the water use by account type. This percentage breakdown is provided on Table 7-2.

TABLE 7-2
WATER ACCOUNT INFORMATION

Account Type	Number of Accounts	Percent of Total Accounts	Percent of Water Use in 2014
Residential	581	81	67.0
Commercial	131	18	32.8
Industrial	9	1	0.2
TOTAL	**721**	**100**	**100**

On the table above, the commercial users consist of schools, churches, the Malheur County Correctional Facility, City property, and businesses. As shown on the table, residential water users account for approximately 81 percent of the total water system accounts in the City of Vale, while commercial and industrial accounts represent approximately 19 percent. It can be seen, however, that residential water use accounts for only approximately 67 percent of water use, while commercial and industrial water use accounts for the remaining 33 percent.

The revenue generated from the City's water rates, interest income, connection fees, turn-on fees, and franchise fees is presented on Table 7-3. Water rate revenue generated in fiscal year 2012-13 was $375,643. Using an annual user fee revenue amount of $375,643, and assuming 721 billed accounts, the City currently has an average monthly water user fee of approximately $43.42 per account.

TABLE 7-3
WATER DEPARTMENT REVENUE[1]

Fiscal Year	Water User Fee Revenue	Total Revenue[2]
2006-07	$388,902	$400,405
2007-08	$386,987	$389,556
2008-09	$378,497	$380,362
2009-10	$371,894	$372,014
2010-11	$365,441	$366,418
2011-12	$370,129	$387,339
2012-13	$375,643	$391,059

[1]*Information obtained from adopted budget reports for the City of Vale.*
[2]*Total revenue calculated by adding domestic water sales, water connection/extension fees, and other miscellaneous income.*

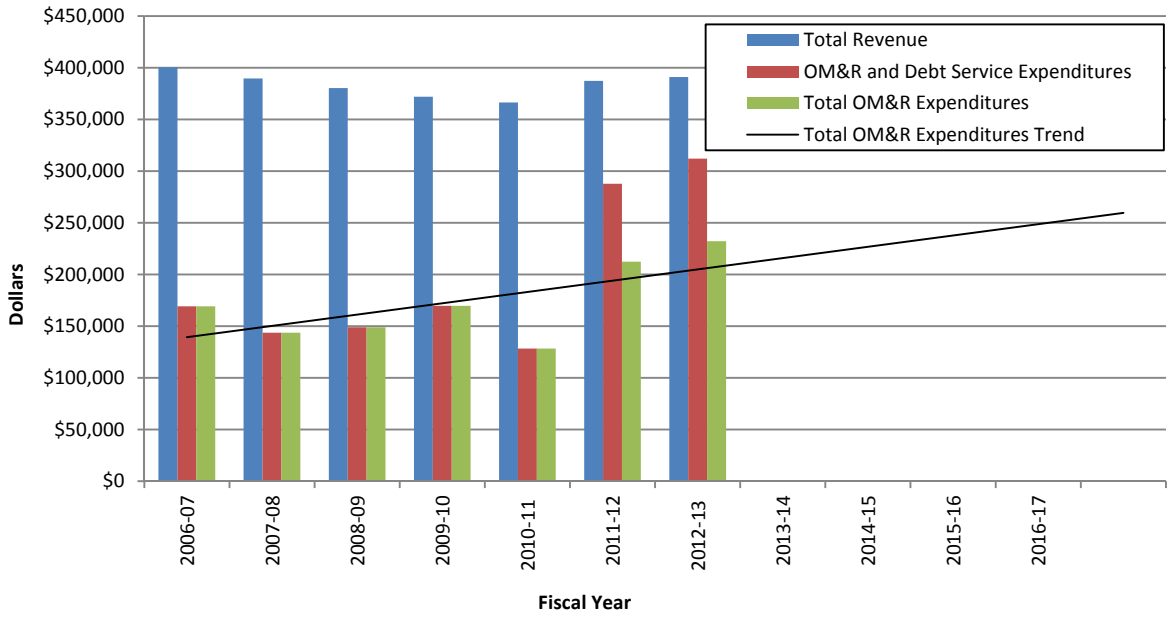
Current Financial Status

The annual cost of operating and maintaining the Vale water system is summarized on Figure 7-1. The costs presented were obtained from the City's adopted budget reports and include all costs for the water system, such as operation, maintenance, and equipment replacement (OM&R) and staff payroll.

Historical and Projected Budget Trends

The City's Water Department revenues have exceeded annual OM&R and debt service expenditures for all seven years for which data were available. A graphical plot of the City of Vale's water system budget for the Water Department funds, showing total revenue and total expenditures, is shown on Chart 7-1. It is worth noting that the total OM&R expenditures shown do not include the interdepartmental and interfund transfers that occur every year.

CHART 7-1
HISTORICAL AND PROJECTED CITY WATER BUDGET



By plotting a "trend" line for the total expenditures, the total expenditures in a future year can be estimated, assuming no changes to the water system occur. The trend for the City of Vale indicates that OM&R expenditures will reach $250,000 by budget year 2016-17.

Transfers to Other Funds

In the past, the City has transferred funds from the Water Department Fund to several other funds, including the General Fund, Street Fund, Public Works Reserve Fund, and Payroll Service Fund. Transfers from the Water Department Fund to these other funds are included as expenditures on Figure 7-1.

Existing Debt

There are currently three loans being paid by the Water Department Fund. Figure 7-2 describes each loan in detail.

Water System Improvements Funding

In order to pursue the selected water system improvements discussed in Chapter 6, the City will need to obtain outside funding assistance. A number of state and federal grant and loan programs can provide assistance on municipal improvement projects to utility districts, cities, and counties. These programs offer various levels of funding aimed at different types of projects. These include programs administered by Rural Development (RD) under the U.S. Department of Agriculture (USDA), the U.S. Economic Development Administration (EDA), the Oregon Business Development Department - Infrastructure Finance Authority (IFA), and others.

These agencies can provide low interest loan funding and possibly grant funding for assisting rural communities on public works projects. Most of these agencies require increases in existing water rates to support loans for system improvements both as a condition of receiving monies and prior to being considered eligible for grant funds. Some of the funding programs provide funding only if the improvements address documented water quality compliance issues. A summary of potential funding programs follows.

Summary of Potential Funding Programs

The following section briefly summarizes the primary funding programs available to assist the City with a water system improvements project. Most of these agencies will require an increase in water rates to support a loan for water system improvements both as a condition of receiving monies and prior to being considered for grant funds. It should be noted that the monthly user rates discussed in this section can represent a combination of monthly usage fees and taxes.

Federal Grant and Loan Programs

USDA Rural Development

This agency can provide financial assistance to communities with a population under 10,000 through both loans and direct grants. Under the loan program, the agency purchases local bonds. The interest rate for these bonds is dependent on the median household income (MHI) of the community and other factors and varies from year to year based on other economic factors nationally. The interest rate varies, but is generally about 4.0 percent with a repayment period of up to 40 years. Applying for this type of funding is a fairly lengthy process involving development of an environmental report and a detailed funding application.

The agency presently requires communities to establish average residential user costs in the range of similar systems with similar demographics. According to RD staff, the most recent water user cost requirements have been around $40 per month before a community qualifies for grant funds. It should be noted that loans without grant funds may be acquired from RD that may not require rates to reach this level, depending on the results of an RD funding analysis. The user costs must provide sufficient revenue to pay for all system OM&R costs and pay for the local debt service incurred as a result of the project. All project costs above this level may be paid for by grant funds, up to given limits, which are usually not more than 45 percent of the total project cost. The objective of the RD loan/grant program is to keep the cost for utilities in small, rural communities at a level that is similar to what other communities are paying.

Another of the agency's requirements is that loan recipients establish a reserve fund of 10 percent of the bond repayment during the first 10 years of the project, which can make the net interest rate higher. The RD program requires either revenue or general obligation bonds to be established through the agency for the project (refer to the Local Financing Options section of this chapter for further discussion). These bonds can usually be purchased for a period of 40 years if grant funding is also received. A combination loan and grant from RD may be an option for the City to implement water system improvements.

Economic Development Administration

The EDA has grant and loan funds similar to those available through the IFA's Special Public Works Fund (SPWF) program. Monies are available to public agencies to fund projects that stimulate the economy of an area, and the overall goal of the program is to create or retain jobs. The EDA has invested a great deal of money in Oregon to fund public works improvement projects in areas where new industries were locating or planned to locate in the future. In addition, the agency has a program known as the Public Works Impact Program to fund projects in areas with extremely high rates of unemployment. This program is targeted toward creating additional jobs and reducing the unemployment rate in the area. Unless the City's water system improvements can be linked directly to industrial expansion or job retention, the City will not be in a competitive position to receive funding under these EDA programs.

State Grant and Loan Programs - Oregon Business Development Department - Infrastructure Finance Authority

Safe Drinking Water Revolving Loan Fund (SDWRLF)

This is primarily a loan program for the construction and/or improvement of public and private water systems to address regulatory compliance issues. This is accomplished through two separate programs: the SDWRLF for collection, treatment, distribution, and related infrastructure, and the Drinking Water Protection Loan Fund (DWPLF) for protection of sources of drinking water prior to system intake. The SDWRLF program normally lends up to $6 million per project. Loan amounts greater than $6 million may be approved by the IFA Board. The standard SDWRLF loan term is 20 years or the useful life of project assets, whichever is less. Loan terms up to 30 years may be available for "disadvantaged communities." This program offers subsidized interest rates for all successful projects. Interest rates for a standard loan start at 80 percent of the state/local bond rate. Interest rates for loans to disadvantaged communities are based on a sliding scale between the interest rate for a standard loan and 1 percent. Communities may be eligible for some of the principal on their SDWRLF loan to be "forgiven." This forgivable loan feature is similar to a grant and is offered to disadvantaged communities. Special consideration, including partial principal forgiveness, is provided to projects qualifying or having Green Project Reserve components.

The DWPLF program normally lends up to $100,000 per project. Loan amounts greater than $100,000 may be available. A grant may be available from the DWPLF depending on available funds.

Water/Wastewater Financing Program

This is a loan and grant program that provides for the design and construction of public infrastructure when needed to ensure compliance with the Safe Drinking Water Act or the Clean Water Act. To be eligible, a system must have received, or is likely to soon receive, a notice of non-compliance by the appropriate regulatory agency associated with the Safe Drinking Water Act or the Clean Water Act.

While primarily a loan program, grants are available for municipalities that meet the eligibility criteria. The loan/grant amounts are determined by financial analysis of the applicant's ability to afford a loan (debt capacity, repayment sources, current and projected utility rates, and other factors). The maximum loan term is 25 years or the useful life of the infrastructure financed, whichever is less. Loan amounts are determined by financial review and may be offered through a combination of direct and/or bond-funded loans. Loans are generally repaid with utility revenues or voter-approved bond issues. A limited tax general obligation pledge may also be required. Creditworthy borrowers may be funded through sale of state revenue bonds. The maximum grant is $750,000 per project based on a financial analysis. An applicant is not eligible for grant funds if the applicant's annual MHI is equal to or greater than 100 percent of the state average MHI for the same year. *The City of Vale's annual MHI in 2014 was 63.8 percent of the statewide MHI and the City is currently out of compliance with the Safe Drinking Water Act, due to high levels of arsenic, so a combination of loan and grant funding from this program may be possible.*

Community Development Block Grant (CDBG) Program

The primary objective of the CDBG program is the development of viable (livable) urban communities by expanding economic opportunities and providing decent housing and a suitable living environment principally for persons of low and moderate incomes.

This is a grant program. The state receives an annual allocation from Housing and Urban Development for the CDBG program. Grant funding is subject to applicant need, availability of funds, and any other restrictions in the state's Method of Distribution (program guidelines). It is not possible to determine if any grant funds may be awarded prior to an analysis of the application and financial information.

Eligibility for the CDBG program requires that greater than 51 percent of persons within the community fall into the low to moderate income (LMI) category. *A recently completed IFA-accepted community income survey indicated that the City of Vale has a 62.45 percent LMI population, which makes the City CDBG eligible.*

Special Public Works Fund (SPWF)

The SPWF program was established by the Oregon Legislature in 1985 to provide primarily loan funding for municipally-owned infrastructure and other facilities that support economic and community development in Oregon. Loans and grants are available to municipalities for planning, designing, purchasing, improving, and constructing municipally-owned facilities.

For design and construction projects, loans are primarily available; however, grants are available for and limited to projects that will create and/or retain traded-sector jobs. A traded-sector industry sells its goods or services into nationally or internationally competitive markets. The maximum grant award is $500,000 or 85 percent of the project cost, whichever is less. The grant amount per project is based on up to $5,000 per eligible job created or retained. Loans range in size from less than $100,000 to $10 million. The SPWF is able to offer very attractive interest rates that reflect tax-exempt market rates for very good quality creditors. Loan terms can be up to 25 years or the useful life of the project, whichever is less.

For IFA Programs - Contact Regional Coordinator

Since program eligibility and funds availability may change from year to year, potential applicants are encouraged to contact their respective Regional Coordinator to obtain the most accurate and up-to-date information for each program.

Preliminary Equivalent Dwelling Units

When projecting future revenue for a water system, an EDU analysis is usually completed. One EDU is intended to represent the average residential water use for a given city. As an example, a residential account in Vale would represent one EDU.

The City of Vale has defined water billing units in Resolutions No. 99-13 and 14.04 (see Appendix N). The City calculates an EDU as the average residential consumption during the months of May through September. The City recalculates this value annually. A customer's average water consumption is then divided by this number to determine the number of EDUs that customer will be billed for. All residential accounts are billed one EDU. A larger consumer, such as the school or prison, is charged multiple EDUs.

The City recently changed how this calculation is performed for commercial users in the City by developing a Commercial-Business Unit (CBU). This new billing unit was created to provide more stability in water billing for commercial users and is defined in City Ordinance No. 14.04. A commercial user's CBUs are calculated by taking the user's average consumption during the winter months and dividing that value by 7,000 gallons. The base rate and consumptive charges are the same for both residential and commercial users. For that reason, for the purpose of this analysis, the City's total EDUs include both EDUs and CBUs.

A list of total accounts and associated EDUs during 2014 was provided by the City. This shows 749 residential billing units, 246 commercial billing units, 11 industrial billing units, and 5 out-of-town billing units, for a total of 1,011 EDUs.

Most funding agencies will use EDUs as a basis for estimating future annual revenue and debt capacity for a city. The EDU determination is intended to equitably distribute water costs among all users. The EDU determination helps funding agencies determine the maximum loan (debt) amount a city can incur prior to being considered for grant funds for their water system improvements project. The analysis presented hereafter for the City's future water rate revenue and estimated debt capacity is based on the preliminary determination of 1,011 EDUs.

Debt Capacity

In order to determine the City's ability to fund a water system improvements project, Figures 7-3 and 7-4 were prepared. Several assumptions were made, as follows:

1. For Figure 7-3, water user fee revenue is based on the preliminary determination of 1,011 EDUs.

2. For Figure 7-3, OM&R costs for the budget year 2016-17 were set at $275,000 per year. The budget year 2016-17 was used, as this would be the time period in which a project could begin. The OM&R costs were estimated using the historical total expenditures trend line shown on Chart 7-1. The projected annual OM&R costs, not including existing debt service, for the existing water system are estimated to be approximately $250,000 by the budget year 2016-17, and an additional $25,000 for annual OM&R of the selected improvements is also included to account for new reservoir maintenance, Washington Street Well pump station maintenance, etc.

3. For Figures 7-3 and 7-4, future debt service was calculated based on RD financing (at 4.0 percent interest for a 40-year repayment period), the typical IFA-based loan program (at 4.0 percent interest for a 20-year period), and the SDWRLF disadvantaged community allowance (at 1.0 percent interest for 30 years), depending on which financing program is able to assist the City.

The data shown on Figure 7-3 provide a general idea of the amount of debt the City could afford to service with various average monthly user rates. The impact of various loan terms established by funding agencies on average monthly user rates is also shown on Figure 7-3. Figure 7-4 provides a general idea of the impact to property taxes for varying interest rates and loan amounts if the debt payment is supported only by property taxes.

It is important to note that the estimated debt service capacities shown on Figure 7-3 are based on the current estimate of 1,011 EDUs. The EDU figures should be updated if project funding proceeds. It should be recognized that this is only a preliminary analysis, and the financial assumptions and figures presented in this WSMP should be refined as project implementation proceeds in the future and in the event agreements are worked out with funding agencies. If the City incurs further debt prior to obtaining loan or grant funds, these figures will need to be adjusted accordingly to reflect the debt payment requirements for the overall City budget.

Potential Rate Requirements to Fund System Improvements

Average water costs of approximately $40 per month are now required by RD to provide a combination of grant and loan monies for projects of this type. This indicates the City may be in a position to receive grant funds from this program if average water user rates are increased by roughly $12.

In 2015, IFA is using 1.25 percent of a community's five-year MHI as the basis for residential monthly water user cost requirements to be eligible for grant funding. In the City of Vale's case, the five-year MHI is $31,923. This MHI results in a required monthly residential water user cost of $33.25 to qualify for low interest loan or grant funding. IFA's residential rate requirement is also based on an assumed residential use of 7,500 gallons per month. With the City's current rates (see Table 7-1), $28.64 is charged for 3,000 gallons of water use. If a residential water user consumed 7,500 gallons, the associated cost would be $33.23. Therefore, to reach the 1.25 percent MHI threshold, the City would only need to increase water

rates slightly to obtain low interest loans and/or grant funds through IFA. However, additional rate increases may be required to fund the full scope of the selected water system improvements.

Potential Project Funding Scenario

If an improvements project is pursued, it is recommended that the City thoroughly investigate potential funding sources available through IFA and the federal government to ensure the best funding package is obtained for the project.

Of the various funding programs, the most likely sources of funding for the project would be CDBG, SDWRLF for Disadvantaged Communities, and/or the Water/Wastewater Financing Program. RD is also a potential source of funding. In order to complete all of the selected improvements, grant funds coupled with low interest loan funds will need to be acquired. Summarized hereafter are possible funding breakdowns from the SDWRLF. Actual funding amounts and breakdowns will be based on a financial review completed by the agencies and could vary from estimated amounts shown here.

SDWRLF Funding Option

A standard SDWRLF loan for the entire improvements project of $7,600,000 would require IFA Board approval. If granted, this could result in an increase in user rates to approximately $75 per month, or $32 per month more than the current average water user fee of $43 per month. The $75 per month residential rate would also be well above the City's threshold rate of $33.25 to qualify for low interest loan or grant funding. This might qualify the City for a Disadvantaged Community loan (at 1 percent interest for a 30-year loan) and potentially up to $750,000 of loan forgiveness. If loan forgiveness (essentially a grant) was determined by agency staff to be available to the City, a possible project funding scenario is as follows:

SDWRLF Disadvantaged Community Loan	$6,850,000
SDWRLF Disadvantaged Community Loan Forgiveness	750,000
Total Year 2016 Estimated Cost	$7,600,000

The resulting $6,850,000 SDWRLF loan (with the Disadvantaged Community loan terms) would require residential user rates to be increased to approximately $51 per month, as shown on Figure 7-3.

Based on this information, it appears available funding programs may have the potential to provide funding for the majority, if not all, of the selected water system improvements. The average monthly cost per residential connection could be as much as $75 for the current average user per month if only standard loan funding is available to the City. However, with low interest loans and potential loan forgiveness, monthly water rates required to fund system improvements could be reduced to $51 per month, depending on the results of funding agency analyses.

One Stop Meeting and Project Intake Form

To evaluate all potential project funding options, a One Stop meeting is generally requested by the City. One Stop meetings are typically scheduled in Salem where representatives of IFA and other funding agencies meet with the City to discuss the project and funding needs and identify the funding program best suited for the project. To avoid requiring City representatives to travel to

Salem, IFA has recently been holding these meetings locally. IFA utilizes a Project Intake Form to outline a city's project, including the needs, project requirements, affected area, estimated project cost, time frame, schedule, etc. IFA evaluates the project based on information presented on the Intake Form to determine the best funding program suited to the project. The City is usually invited to submit a funding application to the best funding program(s) identified in the One Stop meeting.

Local Financing Options

Regardless of the ultimate project scope and agency from which funds are obtained, the City may need to develop authorization to incur debt (i.e., bonding) for the selected project improvements. The need to develop authorization to incur debt depends on funding agency requirements and provisions in the City Charter. The need for bonding by the City has been eliminated by most state funding programs. However, if a bond election is required, there are generally two options the City may use for its bonding authority: general obligation bonds and revenue bonds. General obligation bonds require a vote of the people to give the City the authority to repay the debt service through tax assessments, water revenues, or a combination of both. The taxing authority of the City provides the guarantee for the debt. Revenue bonds are financed through revenues of the water system. Authority to issue revenue bonds can come in two forms. One would be through a local bond election similar to that needed to sell a general obligation bond, and the second would be through Council action authorizing the sale of revenue bonds, if the City Charter allows. If citizens do not object to the bonding authority resolution during a 60-day remonstrance period, the City would have authority to sell these revenue bonds.

It should be noted that Oregon law currently requires a 50 percent voter turnout to pass a bonded debt tax measure, unless the election is held in November of an even numbered year. These November elections in even-numbered years require only a majority of those who voted to pass a bonded debt tax measure. Due to current tax measure limitations in the State of Oregon, careful consultation with experienced, licensed bonding attorneys should be made if the City begins the process of obtaining bonding authority for the proposed water system improvements.

Project Development Action Items

The following action items will need to be made by the City of Vale to implement the desired water system improvements project. The steps outlined are general in nature and include the major steps that need to be undertaken.

The City will need to undertake the following project development action items to pursue improvements in the future.

1. The City will need to finalize and adopt this WSMP and selected improvements once agencies review the draft WSMP.

2. The City needs to submit a Letter of Interest to the Oregon Health Authority - Drinking Water Services (DWS) for the SDWRLF project priority list.

3. The City needs to contact the IFA regional coordinator to initiate funding discussions.

4. The City will need to complete the Community Income Survey to determine if they will be CDBG eligible.

5. The City will need to schedule a One Stop meeting with IFA to discuss potential funding options for the proposed improvements.

6. If IFA funding is identified as a potential source in the One Stop meeting, the City and IFA will draft a Project Notification and Intake Form.

7. Once potential funding packages are developed, Anderson Perry & Associates, Inc. (AP) will complete a Water Rate Study to determine required rate increases.

8. The City will need to hold public information meetings to inform its citizens of the need for and the scope of the project, to answer questions, and to explain the need for increases in user fees. Some funding programs (such as CDBG) have specific requirements that need to be addressed in public meetings.

9. Working with the various funding agencies, the City will need to develop a funding plan for the desired improvements.

10. The City will need to prepare funding applications for the water system improvements project and submit them to the appropriate funding agencies. The City will need to budget appropriate up-front funds to go through the funding application process.

Proposed Improvement Implementation Plan

Should the City wish to proceed with the identified water system improvements, the following implementation plan outlines the key steps the City would need to undertake. It is important to note that it usually takes approximately two to three years, at a minimum, from the date a city decides to proceed with an improvements project until the project is completed and serving the community. The following Implementation Plan uses spring 2015 as a starting date and assumes a three-year implementation schedule. It should be noted that this is based on the requirement of the Bilateral Compliance Agreement that the City must provide a draft set of construction Drawings to DWS by March 2016. As it stands, submittal of draft Drawings to the DWS by March 2016 is not realistic. DWS staff have indicated that an extension to that deadline could be granted if the March 2016 deadline is not attainable. It should also be noted that these implementation steps, as presented hereafter, may be different if the City elects to delay the project and pursue improvements in the future.

	Item	Completion Date
1.	Finalize a Community Income Survey. Complete a Letter of Interest for the Safe Drinking Water Revolving Loan Fund project priority list.	Spring 2015
2.	Initiate funding discussions with Infrastructure Finance Authority (IFA) and Rural Development. Hold a One Stop meeting with agencies.	Summer 2015
3.	Complete a Water Rate Study.	Summer/Fall 2015
4.	Public outreach and education program.	Summer 2015
5.	Work with IFA to submit a Project Notification and Intake Form (if IFA funding is identified as a potential source of funds).	Summer 2015

6.	Submit funding application(s) to agencies.	Summer 2015
7.	Finalize project funding.	Fall 2015 to Winter 2016
8.	Design system improvements.	Winter/Spring 2017
9.	Complete Environmental and Cultural Resources Reports and Permitting.	Winter/Spring 2017
10.	Bid and award construction contract.	Spring 2017
11.	Construct system improvements.	Summer 2017 to Fall 2018
12.	Close out project.	Winter 2018

The key to implementing the City of Vale's water system improvements is the ability of the City to acquire funding that will allow water rates to remain as low as possible. The City should work closely with its citizens through public meetings to inform them of the system needs and the necessity for increased water user costs. If a project in the range of $7,600,000 is pursued, the City may need to plan on raising average (in-town) residential water costs to the range of $75 per month if only conventional loan funds are available to help fund the proposed improvements. To reduce the financial impact to rate payers, it will be vital that the City seek low interest loans coupled with grant funds. It is also good practice to increase rates, as required, in order to adequately fund operation and maintenance of the existing and improved water system and to keep up with inflation.

The water system improvements outlined herein are anticipated to provide Vale with a higher quality water system with significantly improved reliability, while bringing the City into compliance with current regulations and codes. The proposed water system improvements will provide the City a proven, efficient arsenic treatment facility that will require less maintenance and lower operational costs while delivering safe, clean, potable water to the citizens of Vale. The identified distribution system improvements will help improve water circulation, improve distribution system water quality and pressure, and significantly improve fire flow capacities in several key areas of the City. Overall, the proposed water system improvements will provide a much improved and more reliable water system that should serve the City of Vale for many years.

CITY OF VALE, OREGON
HISTORICAL WATER DEPARTMENT FUNDS

	Revenue			Expenditures								
Fiscal Year	Water Sales Revenue	Other Income[1]	Total Revenue	Personnel Services	Materials and Services	Capital Outlay	Total OM&R Expenditures[2]	Debt Service[3]	Interdepartmental Transfers	Interfund Transfers	Total Expenditures	Net Operating Income (Loss)[4]
2006-07	$ 388,902	$ 11,503	$ 400,405	$ 48,677	$ 59,653	$ 60,862	$ 169,192	$ -	$ 14,941	$ 228,146	$ 412,279	$ (11,874)
2007-08	386,987	2,569	389,556	51,240	65,863	26,586	143,689	-	11,366	228,146	$ 383,201	6,355
2008-09	378,497	1,865	380,362	53,379	84,407	11,131	148,917	-	11,366	248,146	$ 408,429	(28,067)
2009-10	371,894	120	372,014	53,888	101,341	14,517	169,746	-	11,366	193,692	$ 374,804	(2,790)
2010-11	365,441	977	366,418	27,535	92,113	8,792	128,440	-	11,366	206,819	$ 346,625	19,793
2011-12	370,129	17,210	387,339	100,136	112,237	-	212,373	75,341	9,560	73,000	$ 370,274	17,065
2012-13	375,643	15,416	391,059	106,770	105,938	19,546	232,254	79,791	9,560	84,913	$ 406,518	(15,459)

Notes:

[1] Other Income is from connection/extension charges, interfund transfers, and other miscellaneous income.

[2] Refers to operation, maintenance, and replacement. Does not include transfers to other funds or Debt Service.

[3] Includes Debt Service principal and interest.

[4] Indicates a net operating loss for several years. These net losses are a result of transfers to other funds. For all seven years shown, Total Revenue exceeds Total OM&R Expenditures and Debt Service.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
HISTORICAL WATER
DEPARTMENT FUNDS

FIGURE
7-1

CITY OF VALE, OREGON
WATER DEPARTMENT FUND EXISTING DEBT

Financer	Project	Interest Rate	Maturity Date	2012-13 Principal	2012-13 Interest	2012-13 Balance
Infrastructure Finance Authority SDWRLF	Water System Improvement Project (2002)	1.0%	12/1/2031	$ 9,446	$ 1,966	$ 196,570
Infrastructure Finance Authority SDWRLF	North End Industrial Area Access Project	1.0%	12/1/2031	28,215	5,872	587,182
Infrastructure Finance Authority SPWF	North End Industrial Area Access Project	5.559%	12/31/2024	18,802	15,491	278,681
			Totals	**$ 56,463**	**$ 23,329**	**$ 1,062,433**

SDWRLF - Safe Drinking Water Revolving Loan Fund
SPWF - Special Public Works Fund

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
WATER DEPARTMENT FUND
EXISTING DEBT

FIGURE
7-2

CITY OF VALE, OREGON
PRELIMINARY WATER RATE ANALYSIS FOR LOAN CAPACITY
2016-17 BUDGET YEAR

RATES[1,2]		REVENUE	EXPENDITURES				FINANCING OPTIONS		
In-Town Base Rate	Out-of-Town Base Rate	User Fee Revenue[3]	Estimated OM&R Costs[4]	Existing Debt Service Principal[5]	Existing Debt Service Interest[5]	Revenue Available for Future Debt Service[6]	RD Loan Capacity[7]	Typical IFA Loan Capacity[8]	SDWRLF Disadvantaged Community Capacity[9]
$ 28.64	$ 43	$ 348,320	$ 275,000	$ 60,917	$ 18,874	-	-	-	-
30	45	364,860	275,000	60,917	18,874	$ 10,069	$ 179,000	$ 137,000	$ 260,000
32	48	389,184	275,000	60,917	18,874	34,393	613,000	467,000	888,000
34	51	413,508	275,000	60,917	18,874	58,717	1,046,000	798,000	1,515,000
36	54	437,832	275,000	60,917	18,874	83,041	1,479,000	1,129,000	2,143,000
38	57	462,156	275,000	60,917	18,874	107,365	1,913,000	1,459,000	2,771,000
40	60	486,480	275,000	60,917	18,874	131,689	2,346,000	1,790,000	3,399,000
42	63	510,804	275,000	60,917	18,874	156,013	2,779,000	2,120,000	4,026,000
44	66	535,128	275,000	60,917	18,874	180,337	3,212,000	2,451,000	4,654,000
46	69	559,452	275,000	60,917	18,874	204,661	3,646,000	2,781,000	5,282,000
48	72	583,776	275,000	60,917	18,874	228,985	4,079,000	3,112,000	5,910,000
50	75	608,100	275,000	60,917	18,874	253,309	4,512,000	3,443,000	6,537,000
52	78	632,424	275,000	60,917	18,874	277,633	4,946,000	3,773,000	7,165,000
54	81	656,748	275,000	60,917	18,874	301,957	5,379,000	4,104,000	7,793,000
56	84	681,072	275,000	60,917	18,874	326,281	5,812,000	4,434,000	8,421,000
58	87	705,396	275,000	60,917	18,874	350,605	6,246,000	4,765,000	9,048,000
60	90	729,720	275,000	60,917	18,874	374,929	6,679,000	5,095,000	9,676,000
62	93	754,044	275,000	60,917	18,874	399,253	7,112,000	5,426,000	10,304,000
64	96	778,368	275,000	60,917	18,874	423,577	7,545,000	5,757,000	10,932,000
66	99	802,692	275,000	60,917	18,874	447,901	7,979,000	6,087,000	11,559,000
68	102	827,016	275,000	60,917	18,874	472,225	8,412,000	6,418,000	12,187,000
70	105	851,340	275,000	60,917	18,874	496,549	8,845,000	6,748,000	12,815,000
72	108	875,664	275,000	60,917	18,874	520,873	9,279,000	7,079,000	13,443,000
74	111	899,988	275,000	60,917	18,874	545,197	9,712,000	7,409,000	14,070,000
76	114	924,312	275,000	60,917	18,874	569,521	10,145,000	7,740,000	14,698,000
78	117	948,636	275,000	60,917	18,874	593,845	10,578,000	8,071,000	15,326,000
80	120	972,960	275,000	60,917	18,874	618,169	11,012,000	8,401,000	15,954,000
82	123	997,284	275,000	60,917	18,874	642,493	11,445,000	8,732,000	16,581,000

IFA = Infrastructure Finance Authority
OM&R = Operation, Maintenance, and Replacement
RD = Rural Development
SDWRLF = Safe Drinking Water Revolving Loan Fund

Notes:
[1] The current base water rate is $28.64 for up to 3,000 gallons. Information based on fiscal year 2012-13.
[2] Base rates for out-of-town users were increased by 50 percent from the in-town rate.
[3] Revenue is based on the fiscal year 2012-13 number of water billing units and consumption and assuming 1,011 Equivalent Dwelling Units (EDUs). Revenue is calculated as the product of the in-town base rate times the number of in-town EDUs added to the product of the out-of-town base rate times the number of out-of-town EDUs.
[4] Projected OM&R cost for budget year 2016-17. See Chart 7-1 for projection.
[5] Existing debt service principal and interest is from the City of Vale's Audit Report for fiscal year 2012-13, prepared by Guyer & Associates.
[6] Revenue available for future debt service = revenue - estimated OM&R costs - existing debt service principal and interest.
[7] Assumes loan funding at 4.0 percent for 40 years (loan capacity determined after 10 percent reserve payment removed from revenue available for debt service). Values rounded to nearest $1,000.
[8] Assumes loan funding at 4.0 percent for 20 years. Values rounded to the nearest $1,000.
[9] Assumes loan funding at 1.0 percent for 30 years. Values rounded to the nearest $1,000.

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
PRELIMINARY WATER RATE ANALYSIS
FOR LOAN CAPACITY

FIGURE
7-3

CITY OF VALE, OREGON
PRELIMINARY PROPERTY TAX ANALYSIS FOR
WATER SYSTEM BONDING CAPACITY
2016-17 BUDGET YEAR

Typical Rural Development Loan

Loan Amount	Interest Rate[1]	Loan Period	Estimated Annual Payment	Estimated Annual Tax Rate Increase per $1,000[2]	Estimated Annual Tax Increase for a $100,000 Home	
					Monthly	Annual
$ 1,000,000	4.0%	40 Years	$ 50,500	$ 0.83	$ 6.92	$ 83
2,000,000	4.0%	40 Years	101,000	$ 1.66	13.83	166
3,000,000	4.0%	40 Years	151,500	$ 2.48	20.67	248
4,000,000	4.0%	40 Years	202,000	$ 3.31	27.58	331
5,000,000	4.0%	40 Years	252,500	$ 4.14	34.50	414
6,000,000	4.0%	40 Years	303,000	$ 4.97	41.42	497
7,000,000	4.0%	40 Years	353,500	$ 5.80	48.33	580
8,000,000	4.0%	40 Years	404,000	$ 6.62	55.17	662

Typical SDWRLF Loan

Loan Amount	Interest Rate[1]	Loan Period	Estimated Annual Payment	Estimated Annual Tax Rate Increase per $1,000[2]	Estimated Annual Tax Increase for a $100,000 Home	
					Monthly	Annual
$ 1,000,000	4.0%	20 Years	$ 73,600	$ 1.21	$ 10.08	$ 121
2,000,000	4.0%	20 Years	147,200	$ 2.41	20.08	241
3,000,000	4.0%	20 Years	220,800	$ 3.62	30.17	362
4,000,000	4.0%	20 Years	294,400	$ 4.83	40.25	483
5,000,000	4.0%	20 Years	368,000	$ 6.03	50.25	603
6,000,000	4.0%	20 Years	441,600	$ 7.24	60.33	724
7,000,000	4.0%	20 Years	515,200	$ 8.45	70.42	845
8,000,000	4.0%	20 Years	588,800	$ 9.65	80.42	965

SDWRLF for Disadvantaged Community Loan

Loan Amount	Interest Rate[1]	Loan Period	Estimated Annual Payment	Estimated Annual Tax Rate Increase per $1,000[2]	Estimated Annual Tax Increase for a $100,000 Home	
					Monthly	Annual
$ 1,000,000	1.0%	30 Years	$ 38,700	$ 0.63	$ 5.25	$ 63
2,000,000	1.0%	30 Years	77,400	$ 1.27	10.58	127
3,000,000	1.0%	30 Years	116,100	$ 1.90	15.83	190
4,000,000	1.0%	30 Years	154,800	$ 2.54	21.17	254
5,000,000	1.0%	30 Years	193,500	$ 3.17	26.42	317
6,000,000	1.0%	30 Years	232,200	$ 3.81	31.75	381
7,000,000	1.0%	30 Years	270,900	$ 4.44	37.00	444
8,000,000	1.0%	30 Years	309,600	$ 5.08	42.33	508

[1] Actual loan interest rates could vary.

[2] The annual tax rate increase is based on the City of Vale's 2013-14 assessed valuation of 60,971,744. It was also assumed that 100 percent of taxes would be collected. Typically, a small percentage of taxes are not paid, which would require the estimated tax rate to be increased slightly from what is shown here.

SDWRLF = Safe Drinking Water Revolving Loan Fund

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CITY OF
VALE, OREGON
WATER SYSTEM MASTER PLAN
PRELIMINARY PROPERTY TAX ANALYSIS
FOR BONDING CAPACITY

FIGURE
7-4

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APPENDIX A
Malheur County Ordinance No. 166

INSTRUMENT NO. 2007 - 4104
Page 1 of 40 Pages

FILED
4:01 p M
MAY 3 1 2007
DEBORAH R. DE LONG County Clerk
By Sherri Childs Deputy

ORDINANCE NUMBER 166

AN ORDINANCE AMENDING MALHEUR COUNTY'S COMPREHENSIVE PLAN TO ADOPT A COORDINATED POPULATION FORECAST FOR THE ENTIRE AREA OF MALHEUR COUNTY FOR THE YEARS 2006 THROUGH 2060; AND DECLARING AN EMERGENCY

WHEREAS, pursuant to ORS 195.036, Malheur County, acting as the coordinating body under ORS 192.025, is required to establish and maintain a population forecast for the County, including the cities of Ontario, Nyssa, Jordan Valley, Vale and Adrian; and

WHEREAS, the County first adopted a coordinated population forecast in 1997 by Ordinance Number 111, which was recorded with the Malheur County Clerk as instrument number 97-6960, after coordinating with the cities of Ontario, Nyssa, Jordan Valley, Vale and Adrian to develop and come to an agreement on the forecast; and

WHEREAS, this ordinance supercedes and replaces Ordinance Number 111; and

WHEREAS, after the 2000 decennial Census, and subsequent population estimates of the Population Research Center of the State of Oregon, as well as recent population trends in Malheur County and the greater Treasure Valley (Boise- Nampa), the County found that population was occurring faster than originally contemplated in the 1997 forecast; and

WHEREAS, the County has coordinated with the cities of Ontario, Nyssa, Jordan Valley, Vale and Adrian, as well as the Oregon Department of Land Conservation and Development, to develop a new population forecast from the year 2006 to 2060; and

WHEREAS, the County recognizes the value of adopting a coordinated population forecast for guiding the long range efforts of the county and each city; and

WHEREAS, the Malheur County Planning Commission and Malheur County Court have considered the coordinated population forecast after public hearings on May 22 and May 30, 2007;

NOW, THEREFORE, THE MALHEUR COUNTY COURT ORDAINS AS FOLLOWS:

1. Adoption of Population Forecast. The population forecast set forth in Exhibit "A" attached hereto and incorporated herein by reference is adopted as the coordinated population forecast for the entire area of Malheur County for the years 2006 to 2060. The forecast is summarized as follows:

Total

Period	Population
2006 – 2016	36,259
2017 – 2026	41,667
2027 – 2036	46,946
2037 – 2046	51,857
2047 – 2060	59,609

By Entity

	2026 Year	2060 Year
Ontario	15,692	25,167
Nyssa	4,121	5,812
Vale	2,708	4,232
Jordan Valley	292	381
Adrian	163	200
Unincorp.	18,692	23,817

2. Amendment to Comprehensive Plan. The population element of the Malheur County Comprehensive Plan shall be amended to reflect the population forecasts contained in Exhibit " A", attached hereto and incorporated herein by reference.

3. Findings. The Malheur County Court adopts as findings in support of the amendments and coordinated population forecast adopted herein the report titled "Malheur County Coordinated Population Forecast ", dated May 2007 and prepared by ECONorthwest attached hereto as Exhibit "B" and by this reference incorporated herein.

4 Emergency. This Ordinance being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist and this ordinance takes effect on its passage.

Dated this 30th day of May 2007.

MALHEUR COUNTY COURT:

Dan P Joyce
Judge Dan P. Joyce

Louis M Wettstein
County Commissioner Louis M. Wettstein

Jim Nakano
County Commissioner Jim Nakano

ATTEST:

Kim Mason
Kim Mason
Recording Secretary

Appendix B
Consumer Confidence Report - 2013

The City of Vale, Oregon

252 B Street West • Vale, OR 97918

Phone: (541) 473-3133 • FAX: (541) 473-3895

Malheur County Seat

ANNUAL DRINKING WATER QUALITY REPORT
For the Year 2013

For Spanish Speaking Customers in need of Assistance, please contact Vale City Hall

We're pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality of water and services we supply to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is ***the Airport Well Field and the Washington Street Well. Our wells draw from Alluvium or Valley Bottom of the Malheur River.*** Our main water supply is located at the Airport. Washington Street Well is used for emergency and backup supply. This report contains the results of testing and monitoring your water supply during the past year.

The City of Vale Water System routinely monitors for constituents present in your drinking water as required by both Federal and State laws. This report shows the results of our monitoring for the period of January 1st to December 31, 2013. As water travels over the land or underground, it can pick up substances or contaminants such as microbes, inorganic and organic chemicals, and radioactive substances. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It's important to remember that the presence of these constituents does not necessarily pose a health risk. Information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Bottled water does not have to meet the EPA standards but is required to meet standards set by the Food and Drug Administration which considers bottled water a food product.

If you have any questions about this report or concerning your water utility, please contact **Terry Harris 541-216-0671.** For after hours emergencies, contact dispatch at 541-473-5125. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled Public Works Committee meetings. Our Public Works Committee Meetings are held on the first and third Mondays of each month, beginning at 5:00PM at Vale City Hall.

If you notice a large increase in water consumption on your utility bill (10,000 gallons or more) you may request the City to check your water meter to see if you have a water leak. The City will consider adjustment if there is a significant water leak and you can verify that the leak has been fixed in a timely manner.

In this report you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.
Parts per million (ppm) or Milligrams per liter (mg/l) -one part per million corresponds to one minute in two years or a single penny in $10,000.
Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.
Action Level (AL) - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Maximum Contaminant Level - The "Maximum Allowed" (MCL) is 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.
Maximum Contaminant Level Goal - The "Goal" (MCLG) is 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.
Not Tested (NT)* - Certain contaminants are tested for on some other cycle other than annually (such as biannually).

The City of Vale tests periodically for various chemicals in our drinking water. This is to insure that we provide you the safest drinking water at or above state standards. Tests conducted in early 2006 and previous years showed problems with arsenic and nitrate. A project to build an arsenic-nitrate removal plant at our Airport Well Field was built by the City of Vale with major funding provided by the EPA. This was operational in July of 2006. The arsenic-nitrate removal plant has not met our expectations so we are looking at alternate methods to treat the arsenic issue.

During 2013 we experienced four violations of the state drinking water standards due to high arsenic. Some people who drink water containing arsenic in excess of the maximum contaminant level over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer. In order to monitor the arsenic level we conducted additional testing and in order to lower the arsenic level we performed a series of caustic wash treatments to the media that filters the water system.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

Total Coliform: The Total Coliform Rule requires water systems to meet a stricter limit for coliform bacteria. Coliform bacteria are usually harmless, but their presence in water can be an indication of disease-causing bacteria. When coliform bacteria are found, special follow-up tests are done to determine if harmful bacteria are present in the water supply. If this limit is exceeded, the water supplier must notify the public by newspaper, television or radio. The City takes tests monthly for any possible coliform bacteria that may be found in our system.

Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advise from your health care provider.

Additional information can be found on the internet at ***http://yourwater.oregon.gov/inventory.php?pw5no=00917***

REGULATED CONTAMINANTS									
DISINFECTANTS AND DISINFECTION BYPRODUCTS		COLLECTION DATE	HIGHEST LEVEL DETECTED	RANGE OF DETECTED	MCLG	MCL	UNITS	VIOLATION	LIKELY SOURCE OF CONTAMINATION
	TOTAL				No Goal				By-product of drinking
	TRIHALOMETHANES	10.09.13.	21.8	13.5 21.8	for Total	80	ppb	N	water chlorination
	HALOACETIC ACID		6.4	4.7 6.4		60	ppb	N	Some people drinking in excess of MCL over many
									years may have increase risk of getting cancer

Not all sample results may been used for calculating the Highest Level Detected because some results may be part of an evaluation to determine where compliance sampling should occur in the future

INORGANIC CONTAMINANTS		COLLECTION DATE	HIGHEST LEVEL DETECTED	RANGE OF DETECTED	MCLG	MCL	UNITS	VIOLATION	LIKELY SOURCE OF CONTAMINATION
	ARSENIC	02.20.13	17.1	0 24	0	10	ppb	y	
		06.19.13.	12.6					Y	Erosion of natureall deposits; runoff from
		09.11.13.	2					N	orchards; runoff from glass and electronics
		12.11.13.	17.1					Y	productin wastes.
	BARIUM	05.19.08.	0.456.	0.297 0.456	2	2	ppm	N	Discharge of drilling wastes, discharge from
									metal refineries;; erosion of natural deposits
	CHROMIUM	05.19.08.	5.29	3.09 5.29	100	100	ppb	N	Discharge from steel and pulp mills; erosion
									of natural deposits.
	Fluoride	05.19.08.	.0.623.	0.617 .623	4	4	ppm	N	Erosion of natural deposits; water additive
									which promotes strong teeth; discharge
									from fertilizer and aluminum factories
	Nitrate (measured as	02.25.13.	6.77	2.33 7.25.	10	10	ppm	N	Runoff from fertilizer use; leaching from
	Nitrogen)								septic tanks, sewage; erosion of natural
									deposits
	Selenium	05.19.08.	3.21	1.79 3.21	50	50	ppb	N	Discharge from petroleum and metal refineries;
									erosion of natural deposits; ;discharge from
									mines
	Copper	09.13.08.	0.547	0.63 0.547					Some people who drink water containing copper
									in excess of action level over many years could
									suffer liver or kidney damage. Those with Wilson's
									Disease should consult thier doctor.
RADIOACTIVE CONTAMINANTS		COLLECTION DATE	HIGHEST LEVEL DETECTED	RANGE OF DETECTED	MCLG	MCL	UNITS	VIOLATION	LIKELY SOURCE OF CONTAMINATION
	Combined Radium	05.19.08	.0.65..	0.27 0.65	0	5	pCi/L	N	Erosion of natural deposits
	226 228								
	Gross alpha excluding	05.19.08.	.10.18.	0.45 10.18	0	15	pCi/L	N	Erosion of natural deposits
	radon and uranium								
	uranium	05.19.08.	.8.1.	0 8.1	0	30	ug/1	N	Erosion of natural deposits

CITY WELLS HARDNESS IS 150 MGL OR 10 GRAINS

FOR THE YEAR 2013 THE CITY OF VALE RECEIVED 4 VIOLATIONS FOR HIGH ARSENIC LEVELS

NON REGULATED CONSTITUENT SODIUM AT LEVEL OF 176 MG PER LITER

THE STATE ALLOWS US TO MONITOR FOR SOME CONTAMINANTS LESS THAN ONCE PER YEAR BECAUSE THE CONCENTRATIONS OF THESE CONTAMINANTS DO NOT CHANGE FREQUENTLY. SOME OF OUR DATA, THOUGH REPRESENTATIVE, ARE MORE THAN ONE YEAR OLD.

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 Vale is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

The City of Vale strives to offer the best service possible to our citizens. Your water service and a quality water source is one of our major concerns. Water resources and delivery is monitored on a daily basis in order to provide consistent service.

Water consumption is individually monitored on a monthly basis and reported as a part of the billing process. Areas that can often cause an increase in consumption are water softeners, running toilets, leaky faucets or outside hoses that are left running. If you experience an actual water leak please contact the city to perform the shut off service.

Please keep in mind that meters are read using a touch read system. Keeping access to the area around your water meter clear and open helps to ensure that meters are read properly and access is available for maintenance and repair.

Thank you for your attention to our water resource and service delivery. If you have additional questions, please contact City Hall at 541-473-3133.

The Water Source Assessment Report is available to review at the Vale City Hall.

Appendix C
Bilateral Compliance Agreement

PUBLIC HEALTH DIVISION
Center for Health Protection, Drinking Water Services
John A. Kitzhaber, MD, Governor

Oregon Health Authority
800 NE Oregon St.
Portland, Oregon 97232-2162
Voice (971) 673-0405
FAX (971) 673-0694
TTY (971) 673-0372

BEFORE THE STATE OF OREGON
OREGON HEALTH AUTHORITY
CENTER FOR HEALTH PROTECTION

In the Matter of The City of Vale, PWS OR4100917	BILATERAL COMPLIANCE AGREEMENT

The City of Vale (the City) is a water supplier as defined in Oregon Revised Statute (ORS) 448.115(12) and Oregon Administrative Rule (OAR) 333-061-0020(211), and as a water supplier, has specific responsibilities that are identified in OAR 333-061-0025.

The City has at all times mentioned herein owned and operated, and continues to own and operate, the public water system serving the City of Vale located in Malheur County, Oregon. The Vale water system is a community water system serving approximately 2,000 people and is subject to regulation under ORS 448.115 to 448.290 and OAR 333-061-0005 to 333-061-0290.

Pursuant to its authority under ORS 448.150, the Oregon Health Authority, Public Health Division, Center for Health Protection, Drinking Water Services (DWS) has reviewed the operation of the Vale water system.

This agreement is entered into between DWS and the City for the purpose of acknowledging that levels of arsenic in drinking water produced by the Vale water system exceed the maximum contaminant level (MCL) as specified in OAR 333-061-0030(1). The further purpose of this agreement is to establish a commitment by the City to reduce levels of arsenic in drinking water produced by the Vale water system to below the MCL.

FINDINGS OF FACT

- The MCL for arsenic is 0.010 mg/L as specified in OAR 333-061-0030(1).

- Sampling results for arsenic in drinking water, submitted to DWS by the City, first exceeded the MCL in a sample collected on July 12, 2006. Since that date, inclusive, the arsenic concentration in drinking water samples reported by the City has averaged 0.0139 mg/L.

- The City has issued public notice for exceeding the MCL for arsenic as required by OAR 333-061-0042.

- The Vale water system currently utilizes an arsenic treatment system, but the treatment isn't effective consistently and sample results continue to exceed the MCL for arsenic.

- The City has employed Anderson Perry & Associates to provide engineering consultation related to the arsenic treatment system at the Vale water system.

AGREEMENT

Upon completion of the activities described below, by the deadlines specified herein, The City will have satisfied the terms of this agreement and will be considered to be in compliance with the rule(s) mentioned hereto.

- Agreement Activity No. 1: The City will submit documents verifying funding for its creation of an updated water system master plan (WSMP) and verifying that it established a contract for completion of the WSMP.

    - The verification documents will be submitted to DWS no later than June 30, 2014.

- Agreement Activity No. 2: The City will submit a copy for review of its updated WSMP to DWS no later than March 31, 2015.

- Agreement Activity No. 3: The City will submit complete construction plans to DWS identifying how the City will ensure compliance with the MCL for arsenic at the Vale water system no later than March 30, 2016.

- The construction plans will meet all the applicable requirements of OAR 333-061-0060 and have sufficient detail to completely and clearly illustrate what will be constructed.

- Agreement Activity No. 4: The City will complete construction and installation of the project at the Vale water system within sixteen months of the construction plans specified in Agreement Activity No. 3 being conditionally approved by DWS.

  - Construction will be completed in accordance with the plans approved by DWS and submitted as specified in Agreement Activity No. 3.

  - Construction of all improvements at the Vale water system will comply with the applicable construction standards specified in OAR 333-061-0050.

- Agreement Activity No. 5: The City will submit sampling results to DWS that demonstrate all users served by the Vale water system receive drinking water with concentrations of arsenic below the MCL as specified in OAR 333-061-0030(1).

  - Sample results will be reported within ninety (90) days of completing construction as specified in Agreement Activity No. 4.

- Agreement Activity No. 6: The City will continue to publish public notice every calendar quarter that water delivered to customers exceeds the MCL for arsenic as specified in OAR 333-061-0030(1), determined as prescribed by OAR 333-061-0036(2)(i). The notice will meet all of the applicable requirements of OAR 333-061-0042(4), and include changes or additional information regarding arsenic in the drinking water produced by the Vale water system. The City will continue to publish the notice until all corrections are made and all system users receive drinking water that meets all applicable state and federal drinking water laws and rules (OAR 333-061-025 and OAR 333-061-0042(3)(b)(C)). The City will submit a copy of the notice and certification of the method of distribution to DWS no later than 10 days after completing the public notification per OAR 333-061-0040(1)(i).

  - Copies of the public notice will be submitted to: Bill Goss, OHA Drinking Water Services, 800 SE Emigrant Ave., Rm. 240, Pendleton, OR 97801.

GENERAL PROVISIONS

This Agreement does not constitute a waiver, suspension or modification of the requirements of the Oregon Drinking Water Quality Act; ORS 448.115 to 448.285 and administrative rules OAR 333-061-0005 to 333-061-0290, which remain in full force and effect.

This Agreement does not relieve the City of any responsibilities or liabilities established pursuant to any applicable federal, state, or local law or regulation.

DWS has determined that additional enforcement action is not warranted at this time, and so long as The City meets all of the requirements and deadlines specified in this Agreement, DWS will forgo additional enforcement action which could include the assessment of civil penalties as prescribed by OAR 333-061-0090.

Dated this 15 day of January, 2014

Mike McLaughlin
Mayor
City of Vale

Dated this 22nd day of Jan, 2014

Kari Salis, P.E.
Interim Section Manager
Oregon Health Authority, Drinking Water Services

cc: Lynn Findley, City of Vale
Craig Geddes, Malheur County Environmental Health
Bill Goss, Oregon Health Authority, Drinking Water Services

Appendix D
DWS Violation Summary

Oregon Public Health
Drinking Water Data Online

Oregon Health Authority

PWS ID: 00917 --- VALE, CITY OF

For questions regarding these violations contact: REGION 1 --- Bill Goss/Amy Word --- (541) 276-8006

Violations are displayed for the last 5 years only.
Group Abbreviations: ARS = Arsenic, DBP = Disinfection Byproducts, NO2 = Nitrite, TCR = Total Coliform Rule
Purple shading indicates formal enforcement. **Gray shading** indicates return to compliance.

Hide Auto-RTC | Show Determination Dates

Click here to see public notices.

Violation History

Violation Number	Auto-RTC?	Monitoring Period Begin	Monitoring Period End	Facility ID	Analyte Group	Violation Type - Analyte Count *Show analytes for all violations*	Enforcement Action - Date *Show history*	Points
902597056	N	Apr 01, 2014	Jun 30, 2014	EP-B	ARS	Chemical MCL based on Average of Samples - 1		5
902597054	N	Jan 01, 2014	Mar 31, 2014	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Bilateral Compliance Agreement Signed - Jan 22, 2014	5
902597053	N	Oct 01, 2013	Dec 31, 2013	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Bilateral Compliance Agreement Signed - Jan 22, 2014	5
902597052	N	Jul 01, 2013	Sep 30, 2013	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Bilateral Compliance Agreement Signed - Jan 22, 2014	5
902597051	N	Apr 01, 2013	Jun 30, 2013	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Bilateral Compliance Agreement Signed - Jan 22, 2014	5
902597050	N	Jan 01, 2013	Mar 31, 2013	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Bilateral Compliance Agreement Signed - Jan 22, 2014	5
902597049	N	Oct 01, 2012	Dec 31, 2012	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Bilateral Compliance Agreement Signed - Jan 22, 2014	5
902597043	N	Apr 01, 2012	Jun 30, 2012	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Bilateral Compliance Agreement Signed - Jan 22, 2014	5
902597055	N	Jan 01, 2014	Mar 31, 2014		ARS	Public Notice Late/Nonreporting (Viol # 902597054) - 1	Returned To Compliance - May 20, 2014	1
902597042	N	Oct 01, 2011	Dec 31, 2011		ARS	Public Notice Late/Nonreporting (Viol # 902597031) - 1	Returned To Compliance - Mar 15, 2012	1
902597031	N	Oct 01, 2011	Dec 31, 2011	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Returned To Compliance - Apr 04, 2012	5
902597030	N	Jul 01, 2011	Sep 30, 2011		ARS	Public Notice Late/Nonreporting (Viol # 902597028) - 1	Returned To Compliance - Apr 04, 2012	1
902597029	Y	Jul 01, 2011	Sep 30, 2011	EP-B	ARS	Chemical Late/Nonreporting - 1	Returned To Compliance - Nov 07, 2011	1
902597028	N	Jul 01, 2011	Sep 30, 2011	EP-B	ARS	Chemical MCL based on 1 Sample - 1	Returned To Compliance - Apr 04, 2012	5
902597025	Y	Jul 01, 2011	Jul 31, 2011		TCR	Total Coliform MCL - 1	Returned To Compliance - Aug 15, 2011	5
902597027	N	Apr 01, 2011	Jun 30, 2011		ARS	Public Notice Late/Nonreporting (Viol # 902597024) - 1	Returned To Compliance - Apr 04, 2012	1
902597024	N	Apr 01, 2011	Jun 30, 2011	EP-B	ARS	Chemical MCL based on Average of Samples - 1	Returned To Compliance - Apr 04, 2012	5
902597023	Y	Jan 01, 2011	Mar 31, 2011	EP-B	ARS	Chemical Late/Nonreporting - 1	Returned To Compliance - Jul 05, 2011	1
902597022	Y	Jan 01, 2008	Dec 31, 2010	EP-B	NO2	Chemical Late/Nonreporting - 1	Returned To Compliance - Nov 07, 2011	1
902597021	Y	Jan 01, 2010	Dec 31, 2010	DIST-A	DBP	DBP Late/Nonreporting - 2 Show analytes	Returned To Compliance - Aug 31, 2011	1
902597019	Y	Oct 01, 2010	Dec 31, 2010	EP-B	ARS	Chemical Late/Nonreporting - 1	Returned To Compliance - Jul 05, 2011	1
2597020	Y	Jul 01, 2010	Sep 30, 2010	EP-B	ARS	Chemical Late/Nonreporting - 1	Returned To Compliance - Jul 05, 2011	1
2597019	Y	Jul 01, 2010	Jul 31, 2010		TCR	Routine Coliform - Did Not Report Enough - 1	Returned To Compliance - Aug 18, 2010	1
2597018	Y	May 01, 2010	May 31, 2010		TCR	Routine Coliform - Did Not Report ANY - 1	Returned To Compliance - Jun 14, 2010	1

SYSTEM SCORE SUMMARY

Unaddressed Points:	5
Number of years the oldest violation has been unaddressed (*n*):	0
System Score:	**5**
Points under formal enforcement:	35
Points RTC'd:	32

For all compliance errors, please contact Chuck Michael, DWS Compliance Specialist, at 971-673-0420.

Click here for more information on system scores and how they are calculated, including the point values of specific violations.

Violation history last updated 09/29/2014, 11 hours ago.

For further information on this public water system, click on the area of interest below:

System Info :: Report for Lenders :: Alerts :: Violations :: Enforcements :: Contacts :: Site Visits :: Public Notice :: Plan Review
Coliform Summary :: Coliform Results :: Sampling Schedule for Coliform :: Groundwater/GWUDI Source Details
Chemical Group Summary :: Latest Chemical Results :: Entry Point Detects :: Single Analyte Results
Chemical Schedule Summary :: Chemical Schedule Details
Lead & Copper :: Corrosion Control (LCR) :: Nitrate :: Arsenic :: Radionuclides :: GWR 4-Log
DBPs :: TOC & Alkalinity :: DBP Sample Sites :: FANLs :: MRDL :: Turbidity :: SWTR :: RAA :: LRAA

Appendix E
Water System Sanitary Survey

PUBLIC HEALTH DIVISION
Drinking Water Program

John A. Kitzhaber, MD, Governor

Oregon Health Authority

700 SE Emigrant Avenue, Suite 240
Pendleton, OR 97801
Phone: 541-276-8006
FAX: 541-276-4778
http://healthoregon.org/dwp

January 27, 2014

Terry Harris
City of Vale
252 B Street West
Vale, Oregon 97901

Re: Water System Survey at City of Vale, PWS #4100917

Dear Terry:

Thank you for your time and assistance in conducting a **Water System Survey** at the **City of Vale** on **June 19, 2013.** The main purpose of the survey is to evaluate the entire water system in terms of supplying safe drinking water to the public. I have enclosed a copy of the report for your records. Please let me know if any corrections need to be made.

The first page of the report lists significant deficiencies in the system that will have to be corrected as soon as possible. You must contact me within 30 days and correct the deficiencies by **June 2, 2014,** or be on an approved schedule for correction. Once the deficiencies are corrected, you will need to send written verification of the corrections and the dates of correction.

If the water system fails to provide documentation of corrective action within the required time frame above, notification must be provided to all persons served by the water system. A repeat public notice will be required every three months until the deficiencies are corrected or the water system is in compliance with an approved corrective action plan.

The significant deficiencies are as follows:

1. **The arsenic Maximum Contaminant Level (MCL) is not being met.** The recently signed Bilateral Compliance Agreement includes a schedule for correcting the arsenic issue.
2. **No flap valve or screen on Rhinehart reservoir drain/overflow outlet.** It is my understanding that a flap valve has been installed.

3. **No asbestos sample on record.** Public water systems that have asbestos-cement (AC) pipe are required to collect one asbestos sample every nine years during the month of warmest water temperature from a location in the distribution system served by the AC pipe. Please collect an asbestos sample this coming summer.

In addition, I have the following comments and recommendations:

1. Drinking Water Services has established criteria for determining whether a system should be considered to have "outstanding performance." Systems that are designated outstanding performers may have their water system survey frequency reduced from every 3 years to every 5 years. Although your water system did not meet the established criteria, please review the enclosed handout to see what steps you can take in the future towards receiving this designation.
2. I recommend the written coliform sampling plan be revised to include a sample site in the southwest area of the distribution system. I have enclosed an example sampling procedure for coliform to be included with the plan.
3. City staff should continue to work toward becoming certified at the required distribution/treatment levels, and also as a cross-connection specialist.
4. It is my understanding the older 105,000 gallon Rhinehart reservoir has been valved off to isolate it from the water system and drained. I recommend the reservoir be professionally inspected to determine what maintenance and repair work is needed, and that potential future use of the reservoir be addressed in the upcoming Water System Master Plan.

If you have questions, please contact me at (541) 966-0900 or by email at william.h.goss@state.or.us. Your cooperation is appreciated.

Sincerely,

William Goss

William Goss, P.E.
Regional Engineer

c. Drinking Water Services, Portland

enclosures

Deficiency Summary

Surveyor: Bill Goss

Date Corrective Action Plan is due: 6/2/14 **County:** Malheur

Yes	No	Significant Deficiencies and Rule Violations:	Date to be corrected	Date corrected
☐	☒	**Source:**		
		Well construction:		
		Spring/other source:		
☐	☒	**Treatment:**		
		Surface water treatment:		
		Disinfection:		
		Other treatment:		
☒	☐	**Finished Water Storage:**		
		No flap valve or screen on reservoir drain/overflow		7/13
☐	☒	**Distribution:**		
☒	☐	**Monitoring:**		
		arsenic levels do not meet standard	8/31/17	
		no asbestos sample on record	9/30/14	
☐	☒	**Management & Operations:**		
☐	☒	**Operator Certification:**		
☐	☒	**Other Rule Violations:**		

Comments:
Bilateral Complaince Agreement is in place to address the arsenic MCL violations.

☐ **Source Deficiencies:**

Well Construction Deficiencies (OAR 333-061-0076):

- ☐⊕ Sanitary seal and casing not watertight
- ☐⊕ Does not meet setbacks from hazards
- ☐⊕ Wellhead not protected from flooding
- ☐⊕ No raw water sample tap
- ☐⊕ No treated sample tap (if applicable)
- ☐⊕ No screen on existing well vent

Spring Source Deficiencies (OAR 333-061-0076):

- ☐⊕ Springbox not impervious durable material
- ☐⊕ No watertight access hatch/entry
- ☐⊕ No screened overflow
- ☐⊕ Does not meet setbacks from hazards
- ☐⊕ No raw water sample tap
- ☐⊕ No treated sample tap (if applicable)

☐ **Treatment Deficiencies/Violations:**

Surface Water Treatment Deficiencies:

- ☐+ Turbidity standards not met-0030(3)
- ☐+ Turbidimeters not calibrated per manufacturer or at least quarterly-0036(5)(b)(A)
- ☐⊕ Incorrect location for compliance turbidity monitoring
- ☐⊕ If serving > 3,300 people no alarm or auto plant shut off for low chlorine residual
- ☐⊕ For conventional or direct filtration: No alarm or plant shut off for high turbidity
- ☐⊕ For conventional filtration: Settled water not measured daily
- ☐⊕ For conventional or direct filtration: Turbidity profile not conducted on individual filters at least quarterly
- ☐⊕ For cartridge filtration: No pressure gauges before and after cartridge filter
- ☐⊕ For diatomaceous earth filtration: Body feed not added with influent flow
- ☐+ For membrane filtration: Turbidimeter not present on each unit-0050(4)(c)(G)
- ☐+ For membrane filtration: Direct integrity testing not done at least daily-0036(5)(b)(F)

Disinfection Deficiencies/Violations:

- ☐+ DPD or EPA approved method not used-0036(9).
- ☐+ Free chlorine residual not maintained-0032(3/5)
- ☐+ Chlorine not measured & recorded as required-0036(9)
- ☐+ Minimum CT requirement not met all times-0032(3/5)
- ☐⊕ No means to adequately determine flow rate on contact chamber effluent line
- ☐+ pH, Temperature, and chlorine residual not measured daily at first user-0036(5)(a/b)
- ☐⊕ Failure to calculate CT values correctly
- ☐⊕ No means to adequately determine disinfection contact time under peak flow and minimum storage conditions
- ☐+ Annual raw water sampling past due-0036(6)(w)

UV Disinfection Violations (OAR 333-0050(5)(k)):

- ☐+ Bypass around UV system
- ☐+ Lamp sleeve not cleaned
- ☐+ Lamp not replaced per manufacturer
- ☐+ No intensity sensor with alarm or shut-off
- ☐+ Annual raw water sampling past due-0036(6)(w)

Other Treatment Violations:

- ☐+ Non-NSF approved chemicals-0087(6)
- ☐+ Corrosion control parameters not met-0034

☐ **Distribution System Violations:**

- ☐+ System pressure < 20 psi. -0025(7)

Cross Connection (OAR 333-061-0070):

- ☐+ No ordinance or enabling authority (CWS)
- ☐+ Annual Summary Report not issued (CWS)
- ☐+ Testing records not current (CWS, NTNC, TNC)
- ☐+ No Cross Connection Control Specialist (CWS ≥ 300 connections)

☒ **Finished Water Storage Deficiencies:**

- ☐⊕ Hatch not locked or adequately secured
- ☐⊕ Roof and access hatch not watertight
- ☒⊕ No flap valve, screen, or equivalent on drain.
- ☐⊕ No screened vent

☒ **Monitoring Violations:**

- ☒+ Monitoring not current-0025(1)
- ☒+ MCL violations-0030
- ☐+ No Coliform Sampling Plan-0036(6)(b)(G)

☐ **Management & Operations Violations:**

- ☐+ No operations and maintenance manual. -0065(4)
- ☐+ Emergency response plan not completed. -0064(1)
- ☐+ Major modifications not approved (plan review). -0050
- ☐+ Master plan not current (≥ 300 con.)-0060(5)
- ☐+ Annual CCR not submitted (CWS)-0043(1)(a)
- ☐+ PNC or out of compliance with AO
- ☐+ Public notice not issued as required-0042

☐ **Operator Certification Violations:**

- ☐+ No certified operator at required level-0065(2).
- ☐+ No protocol for under certified operator-0225(5).

☐ **Other Rule Violations:** _____

⊕ Significant deficiency per OAR 333-061-0076
+ Significant rule violation per OAR 333-061-XXX

Inventory and Narrative

☐ **Outstanding Performer**

County: Malheur

Type	Status	Size	Season
☒ Community (C)	Population:	1890	☒ All year ☐ Seasonal
☐ Non Transient Non-Community (NTNC)	Connections:	720	Begins: (mm/dd) /
	Service Chars:	MU	Ends: (mm/dd) /
☐ Transient Non-Community (TNC)	Ownership:	4	**Coliform Sampling**
☐ State Reg/Non EPA (NP)	**License**		**Period:** ☒ Monthly ☐ Quarterly
	☒ Not Lic ☐ HD ☐ Ag		Samples Required: 2
Operator Certification Required			**Responsible Agency**
WD 2 WT 1	FE ☐ Small WS ☐		☒ State ☐ County ☐ Dept of Agriculture

Primary Administrative Contact (Mailing Address):

Contact Name: Terry Harris
Phone: (541) 473-3133
Title: Operator
Cell: (541) 216-0671
Street Address: 252 B Street West
Emergency #: (541) 216-0671
City/State/Zip: Vale OR 97918
Email: valepublicworks@gmail.com

Legal/Owner Address:

Contact Name: Lynn Findley
Phone: (541) 473-3133
Title: City Manager
Cell: ( )
Street Address: 252 B Street West
Emergency #: ( )
City/State/Zip: Vale OR 97918
Email: valecitymanager@fmtc.com

System Physical Address:

Contact Name: same as above
Phone: ( )
Title:
Cell: ( )
Street Address:
Emergency #: ( )
City/State/Zip:
Email:

Emergency Systems Available:

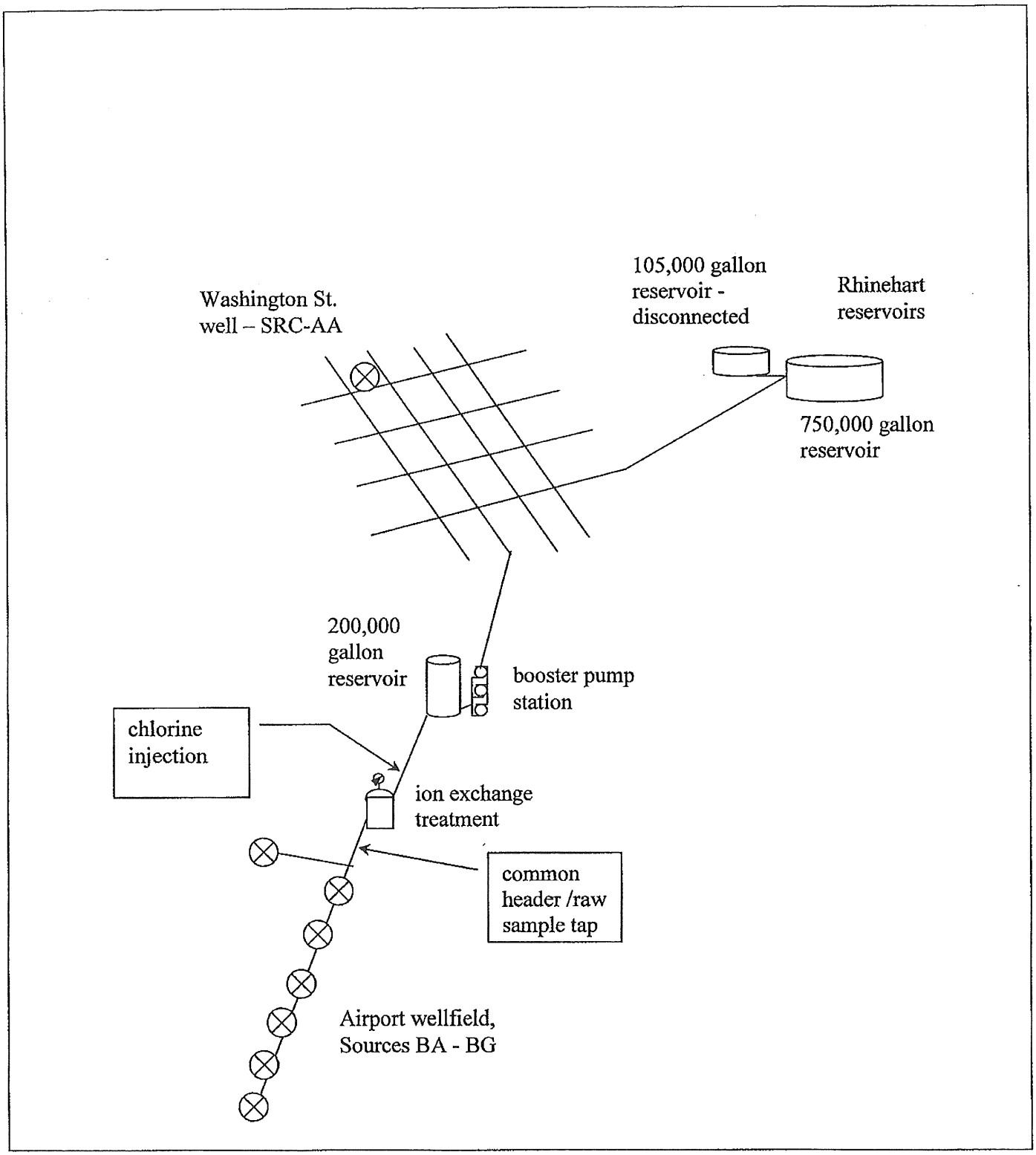
Name: N/A

PWS ID#: 41

Narrative:

The water supply improvement project was completed in May 2001, and includes the Airport Well Field, chlorination facility, 200,000 gallon reservoir, upgrade of the existing Washington Street well, and distribution piping improvements. The Airport Well Field (EP-B) is the primary water supply source. The Washington Street Well (EP-A) is an emergency source and has not been used in several years. An ion-exchange treatment system was completed at the Airport Well Field in 2006 to remove arsenic and nitrate. The treatment system has not been able to reliably remove the arsenic. The chlorination systems were changed in 2009 from on-site generation to 12.5 % commercial sodium hypochlorite.

Water System Schematic



Source Information

ID	Entry Points	Source Type					Availability					Treatment	
ID	(Location where water enters distribution and is sampled) Name	Ground	Surface	GWUDI	Pur. ground	Pur. surface	Permanent	Seasonal	Begins	Ends	Emergency	None	Treatment Codes**
A	EP for Washington St. Well	☒	☐	☐	☐	☐	☐	☐			☒	☐	X421
B	EP for Airport Wellfield	☒	☐	☐	☐	☐	☒	☐			☐	☐	X421, A460, I460

ID	Individual Sources			Source Type					Availability					Treatment	
ID	(Contributing to Entry Point) Name	*Land Use	Capacity (GPM)	Ground	Surface	GWUDI	Pur. ground	Pur. surface	Permanent	Seasonal	Emergency	Abandoned	Disconnected	None	Treatment Codes**
AA	Washington St. Well	E G	200	☒	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	X421
BA	Airport Well 1	BCJ	100	☒	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	X421, A460, I460
BB	Airport Well 2	BCJ	100	☒	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	X421, A460, I460
BC	Airport Well 3	BCJ	75	☒	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	X421, A460, I460
BD	Airport Well 4	BCJ	75	☒	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	X421, A460, I460
BE	Airport Well 5	BCJ	75	☒	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	X421, A460, I460
BF	Airport Well 6	BCJ	75	☒	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	X421, A460, I460
BG	Airport Well 7	BCJ	100	☒	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	X421, A460, I460

*Land Use Codes: (A) Pristine Forest (B) Irrigated Crops (C) Non-Irrigated Crops (D) Pasture (E) Light Industry (F) Heavy Industry (G) Urban-Sewered Area (H) Rural On-Site Sewage Disposal (I) Urban On-Site Sewage Disposal (J) Rangeland (K) Managed Forest (L) Commercial (M) Recreational Use
**See "Treatment" page for treatment code descriptions.

List current operational patterns for all sources (e.g., Well 1 used continuously @ 100 gpm. Be as specific as possible)
Airport Wellfield is primary source. All airport wells turn on/off at the same time and run at a combined max. of 530-540 gpm. Demand was 12-13 MG for May, peak use is ~21 MG/month. Ion exchnage treatment removes both arsenic and nitrate. Washington St. well is used for only emergencies.

Yes No

☒ ☐ Does the water system have water rights for all sources? ☐ Not Transfer T8166 for wellfield, Cert 87397 for SRC-AA

☐ ☒ For GW systems, have there been any modifications to the existing well(s) or spring(s) (e.g. deepened, change in screened interval, springbox reconstruction, etc.)? Describe below:

☒ ☐ Has a Source Water Assessment been completed by ☒ DWS or ☐ DEQ? If yes, attach delineation map and review boundaries with operator.

☐ ☒ Has system implemented source water protection strategies? If yes, describe below:

☐ ☒ Is the water system interested in source water protection? If yes, contact regional geologist at 541-726-2587.

Comments:
Interim Source Water Assessment completed in June 2005. Arsenic levels are >10 ppb at both Entry Points but the Airport Wellfield has treatment. Airport Wellfield also has nitrate levels between 5-10 mg/l but now has treatment.

Well Information

	Source ID#:	AA	BA	BB	BC	BD	BE
	Source Name:	Wash. St	Well 1	Well 2	Well 3	Well 4	Well 5
	Well Tag ID (e.g. L12345): L	N/A	14931	14933	14932	14936	23044
	(if no well tag ID, enter WRD Well Log ID below)	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
	Well Log on File:	☐ ☒	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	WRD Well Log ID (e.g. COLU123):	N/A	MALH 51259	MALH51258	MALH51257	MALH51260	MALH51522
Wellhead Construction	Well still active	☐ ☒	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Depth of well (ft.)	30	36	33	36	38	31.5
	Depth of grout seal (ft.)	n/a	18	18	18	18	12
	Year of installation (yr.)	1922	1997	1997	1997	1997	2000
	Casing diameter (in.)	16 ft	8	8	8	8	8
	• Sanitary seal & casing watertight	☐ ☒	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	• If vented, properly screened	☐ ☒	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	• Wellhead protected from flooding	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	• Well meets setbacks from hazards	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Nearest hazard (ft)						
	Water level device	☐ ☒	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Concrete slab around casing	☒ ☐	☐ ☒	☐ ☒	☐ ☒	☐ ☒	☐ ☒
	Casing height ≥ 12-in. above	n/a	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Pitless adapter	☐ ☒	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Constructed properly per SWA report	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
Control Building	Protective housing	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Flowmeter	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Pressure gauge	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Pump to waste piping	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	• Raw sample tap	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	• Treated sample tap ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Heated	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Lighted	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Floor drain	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
	Well pump removal provision	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐	☒ ☐
Pump	Pump type*	SUx2	SU	SU	SU	SU	SU
	Bearing lubrication (FG oil/water)	W	W	W	W	W	W
	Pumping capacity (gpm)	480	100	100	75	75	75
	Amount of water pumped per year	0					
	Percent of total well supply provided	0					
	Static water level (ft below ground	6	8	9	8.5	9	7.5
	Static water level date	2006	2006	2006	2006	2006	2006

* **Pump Types:** (VT) Vertical Turbine (SU) Submersible (CE) Centrifugal (SJ) Shallow Jet (DJ) Deep Jet (OT) Other

** The sum of the % for all the wells should equal 100% (e.g. for 2 wells, if well #1 provides 80%, then well #2 must provide 20%).

Comments:

Well AA Washington Street well is a dug well, was used seasonally July-August, but is now emergency only. SWA indicates construction inadequate due to lack of log, casing & seal.

Entry Point B is Airport Wellfield. All wells use Baker Pitless Adaptor and pump to control building so flow meter and pressure guage are on common line. Well 5 has OWRD special standard for grout seal.

Well Information

	Source ID#:	BF	BG				
	Source Name:	Well 6	Well 7				
	Well Tag ID (e.g. L12345): L	42111	42112				
	(if no well tag ID, enter WRD Well Log ID below)	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
	Well Log on File:	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	WRD Well Log ID (e.g. COLU123):	MALH51524	MALH51523				
Wellhead Construction	Well still active	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Depth of well (ft.)	35	35				
	Depth of grout seal (ft.)	16	13.5				
	Year of installation (yr.)	2000	2000				
	Casing diameter (in.)	8	8				
	• Sanitary seal & casing watertight	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	• If vented, properly screened	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	• Wellhead protected from flooding	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	• Well meets setbacks from hazards	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Nearest hazard (ft)						
	Water level device	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Concrete slab around casing	☐ ☒	☐ ☒	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Casing height > 12-in. above slab/grade	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Pitless adapter	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Constructed properly per SWA report	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Control Building	Protective housing	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Flowmeter	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Pressure gauge	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Pump to waste piping	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	• Raw sample tap	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	• Treated sample tap ☐N/A	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Heated	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Lighted	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Floor drain	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
	Well pump removal provision	☒ ☐	☒ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
Pump	Pump type*	SU	SU				
	Bearing lubrication (FG oil/water)	W	W				
	Pumping capacity (gpm)	75	100				
	Amount of water pumped per year (gallons)	Unk	Unk				
	Percent of total well supply provided (%)**						
	Static water level (ft below ground surface)	6.5	7.5				
	Static water level date	2006	2006				

* **Pump Types:** (VT) Vertical Turbine (SU) Submersible (CE) Centrifugal (SJ) Shallow Jet (DJ) Deep Jet (OT) Other

** The sum of the % for all the wells should equal 100% (e.g. for 2 wells, if well #1 provides 80%, then well #2 must provide 20%).

Comments:

Entry Point B is Airport Well Field. All wells use Baker Pitless Adaptor and pump to control building so flow meter and pressure guage are on common line. Wells 6 and 7 have OWRD special standard for grout seal.

Spring/Other Source

Source ID: AA **Source Name:** Washington Street Well

Type: ☐ Spring ☐ Infiltration Gallery ☐ Ranney Well ☒ Dug Well ☐ Other: _____

Spring Data

	Yes	No	
• Meets setback from hazards	☒	☐	
• Raw water sample tap	☒	☐	
• Treated water sample tap (if treating)	☒	☐	☐ N/A
Fencing around spring area	☐	☐	
Springbox	☐	☐	
Springbox Type:			
• Impervious durable material	☐	☐	
Hatch	☐	☐	
Locked	☐	☐	
Overlapping lid	☐	☐	
• Watertight access	☐	☐	
Intercepting ditch	☐	☐	
• Screened overflow	☐	☐	
Bottom drain & shutoff valve	☐	☐	

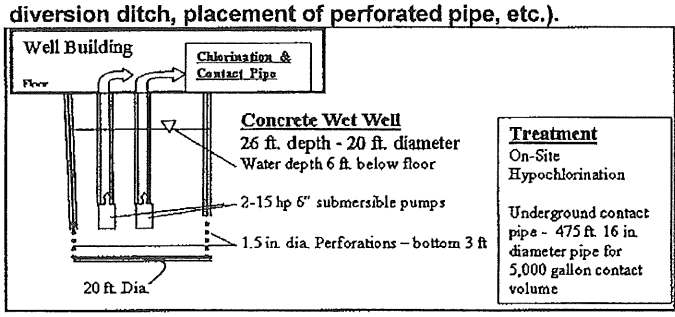
Infiltration Gallery

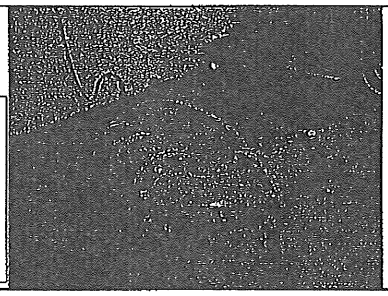
Number of laterals: _____
Average depth (ft.): _____

Dug Well

Depth of well: 30 ft
Construction material: Concrete

Drawing of source construction: (include details of access hatch, drain, overflow, description of collection piping, if known, diversion ditch, placement of perforated pipe, etc.). ---insert photo if possible---





Does surrounding area have:

Yes	No		Distance away:	
☒	☐	Septic tanks/gravity sewer	Gravity sewer > 200 ft.	(☒ ≥ 50 feet)
☐	☒	Drainfield/pressure sewer		(☐ ≥ 100 feet)
☐	☒	Grazing		
☒	☐	Surface water body (name)	Irrigation canal (seasonal)	
☐	☒	Other sanitary hazards		
☐	☒	Is there evidence of Infiltration of surface water run off?		
☒	☐	Has source been evaluated by DWS for direct influence of surface water?		
☐	☒	Does water quality vary seasonally?	Explain:	

G Is source considered: groundwater (G), surface water (S), or groundwater under the direct influence (I)?

Comments:
Source was evaluated for GWUDI and determined to be GW in 1996 based on low MPA scores. Source Assessment indicates well construction is inadequate due to no log, no casing, & no seal.Chlorination was changed from on-site generation to 12.5 % commercial bleach in 2009. Piping for contact time is present.

Disinfection

No #	Disinfection Method*	Location	Disinfection Source Water	Residual Maintenance	Other Purpose	Proportional to Flow	Dosage Recorded
1	Sodium Hypochlorite	Airport Well Field	☐	☒		☒	☒
2	Sodium Hypochlorite	Washington Street Well	☐	☒		☒	☒
			☐	☐		☐	☐

*Chlorine Gas, Sodium Hypochlorite, On-site Generated Sodium Hypochlorite, Calcium Hypochlorite, Chloramines, Ozone, UV, Mixed-Oxidants, Other

Yes No
☒ ☐ • Is a DPD or other EPA approved method used?
☒ ☐ • Are residuals recorded as required?

Yes No
☒ ☐ • NSF 60/61 certified (or equivalent)?

Distribution: ☒ ≥ 2x weekly # samples: 21 ☒ w/Coliform Other: daily at 3 sites
EP (SWTR & GWR Comp. Mon.): ☐ ≥ 1x Daily # samples: _____ ☐ Continuous if > 3300 pop ☒ N/A

Range of chlorine residuals at first user: mg/l = 0.4 - 0.9

☒ ☐ • Are raw water samples taken as required (GWR assessment monitoring, etc.)? ☐ N/A
How often? combined sample once per year for airport wells

Chlorine gas ☒ N/A

Yes No
☐ ☐ Separate room for gas storage and feeder
☐ ☐ Fan with on/off switch outside
☐ ☐ Vent located next to the floor
☐ ☐ Door with a window

Yes No
☐ ☐ Gas cylinders properly secured
☐ ☐ Door that opens out
☐ ☐ Self-contained breathing apparatus
☐ ☐ Air scrubber system

UV: ☐ 4.0-log virus ☐ Total coliform + ☐ Other: _____

Yes No
☐ ☐ • Plan Review approval
☐ ☐ • Does all water contact UV (no bypass)
☐ ☐ • Annual raw water sampling up to date ☐ N/A

Yes No
☐ ☐ • Is lamp sleeve cleaned
☐ ☐ • Is lamp replaced per manufacturer
☐ ☐ • Intensity sensor with alarm or shut-off

CT evaluation for disinfection ☒ N/A

Disinfection Requirement:
☐ (sw) 0.5 log inactivation Giardia
☐ (gw) 4.0 log inactivation viruses
☐ (gw) Minimum chlorine residual: _____ mg/l
☐ (sw) 1.0 log inactivation Giardia
☐ (sw) log inactivation Crypto: _____

Yes No
☐ ☐ • Does the contact chamber have effluent flow meter or adequate alternative?
If no, how is peak flow determined for CT calculations? _____
☐ ☐ • Has a tracer study been conducted or adequate alternative? Tracer Study Date: _____
Demand flow (gpm): _____ Baffling factor (%): _____
Volume used (gal): _____ Results (min): _____
☐ ☐ Adequate alternate method for contact time? Describe: _____

Peak hour demand flow over the past 12 months: gpm = _____
Lowest operating volume over the past 12 months: gallons = _____

Yes No
☐ ☐ Are on-line chlorine analyzers verified weekly with DPD type or EPA approved test kit?
☐ ☐ • (SW only) Are pH, temp, and chlorine residual measured daily before or at the first user?
☐ ☐ • Are CT values being calculated correctly?
☐ ☐ • Are CT values met at all times?

Comments:
Chlorination is for residual maintenance but contact time available. Airport Well Field - contact volume in pipe is 16,700 gal plus 50% of 200,000 gal reservoir volume for 116,000 gal @ 600 gpm yields 190 min.
Washington Street contact volume is 5,000 gal @ 200 gpm yelds 25 minute contact time.

Treatment

Process Used*	Chemical Added**	Purpose	Location in System	Code***
Ion Exchange	N/A	Arsenic Removal	Airport Wells	A460
Ion Exchange	N/A	Nitrate Removal	Airport Wells	I460
Chlorination	sodium hypochlorite	Residual Maint.	Airport & Wash Wells	X421

*See "Treatment Plant Inspection" page for details on filtration. **See "Disinfection" page for details on disinfection equipment. ***See Treatment Codes on back.

Yes No
☒ ☐ Is equipment maintained properly? _____
☒ ☐ Is redundant equipment available? _____

What lab equipment is available and used? (jar testing, turbidimeter, pH meter, etc.):

☒ ☐ • Are chemicals NSF Standard 60 certified or equivalent? (☐N/A - no chemicals are used)

Comments:

Yes / No
☐ ☒ Does system practice corrosion control?
☐ ☐ • Is corrosion control operated within parameters set by DWS? ☒N/A

Comments:

Records Kept:

Yes	No		Yes	No	
☒	☐	Dosages	☐	☐	Flowrate
☐	☐	Raw pH	☐	☐	Treated pH
☐	☐	Raw temperature	☐	☐	Treated temperature
☐	☐	Raw turbidity and/or particle counts	☐	☐	Treated turbidity

Comments:
The ion exchange treatment is a dual resin system using both PFA300E & A850END and has proved to be only marginally effective in removing arsenic and nitrate. The system can produce 600,000 gallon water before it requires regeneration. The resin beds are cleaned approximately once every 4 months with caustic solution to reduce fouling. High salt use for regeneration costs from $2500/mo up to $5000/mo. Looking into replacing ion exchange with greensand filtration.

Storage and Pressure Tanks

Number	Name	Tank Type*	Tank Material	Year Built	Volume (gal.)
1	Rhinehart (old) - valved off	G	Concrete	1904	(105,000)
2	Rhinehart (new)	G	Concrete	1970	750,000
3	Airport	G	Steel	2001	200,000
			Total Volume:		950,000

* (G) Ground (E) Elevated (P) Pressure

Reservoir Features — Reservoir Number:	1 Yes	1 No	2 Yes	2 No	3 Yes	3 No	Yes	No	Yes	No
Hatch										
● Secured (e.g. locked, bolted, etc)	☐	☒	☒	☐	☒	☐	☐	☐	☐	☐
● Watertight	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Curbed lid (shoe box style)	☐	☒	☒	☐	☒	☐	☐	☐	☐	☐
Features										
Drain to daylight	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Overflow	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
● Overflow/drain protected (screen/flap/valve)	☒	☐	☐	☒	☒	☐	☐	☐	☐	☐
● Screened vent	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Water level gauge	☐	☒	☐	☒	☐	☒	☐	☐	☐	☐
Bypass piping	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Fence/gate	☒	☐	☐	☒	☒	☐	☐	☐	☐	☐
Cathodic plates watertight ☒ N/A	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alarm for high or low levels	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Maintenance										
Exterior in good condition	☐	☒	☒	☐	☒	☐	☐	☐	☐	☐
Interior in good condition	☐	☐	☒	☐	☒	☐	☐	☐	☐	☐
Approved interior coating	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Inspection schedule	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Cleaning schedule	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Continuously disinfected (● post '81 redwood)	☒	☐	☒	☐	☒	☐	☐	☐	☐	☐
Plumbing Config.										
Separate inlet/outlet	☐	☒	☐	☒	☒	☐	☐	☐	☐	☐
Baffling	☐	☒	☐	☒	☐	☒	☐	☐	☐	☐
Used for contact time	☐	☒	☐	☒	☐	☒	☐	☐	☐	☐
Pressure Tanks — Number:										
Pressure Tanks										
Used for contact time	☐	☐	☐	☐						
Accessible for maintenance	☐	☐	☐	☐						
Separate inlet/outlet	☐	☐	☐	☐						
Bypass piping	☐	☐	☐	☐						
Access port ☐ N/A	☐	☐	☐	☐						
Drain	☐	☐	☐	☐						
Pressure relief device	☐	☐	☐	☐						
Air bladder/diaphragm	☐	☐	☐	☐						
Valve for adding air	☐	☐	☐	☐						
Water level sight glass ☐ N/A	☐	☐	☐	☐						

Comments

At time of survey, the altitude valve between the 750k and 105k reservoirs was allowing water to overflow out of the 105k reservoir. The 105k reservoir was valved off to isolate it shortly after the survey. Recommend the 105k reservoir be professionally inspected to determine what work is needed before using.

Distribution System Information

Service Area and Facility Map

Yes ☒ No ☐ Does the system have a service area and facility map (indicate features on map):

- ☒ Booster pumps
- ☒ Pressure regulating valves
- ☒ Pressure zones
- ☒ Sampling points
- ☒ Sources-wells & withdrawal points
- ☒ Storage facilities (reservoirs)
- ☒ Treatment facilities
- ☒ Water lines (including size and material)

Distribution Data

Yes	No		Comments
☒	☐	System pressure >20 psi	60-62 psi
☒	☐	Are service connections metered? (what %)	100%
☒	☐	Water system leakage <10%	
☒	☐	Waterline depth >30"	most at 40" or deeper
☒	☐	Piping looped	
☒	☐	Hydrants or blowoffs on all dead ends	6-7 dead ends
☒	☐	Routine flushing (How often)	twice per year by fire dept.
☒	☐	Adequate valving	
☒	☐	Routine valve turning (How often)	
☐	☒	Asbestos cement (AC) pipe absent from system	AC pipe about 1/4 of system

Comments:
PVC pipe in 1/2 system installed 1990s, Ductile Iron 1/4 system, AC 1/4 system

Cross Connection Control (CWS, NTNC, and TNC)

Yes	No	N/A		Comments
☒	☐	☐	Ordinance or enabling authority (CWS)	
☒	☐	☐	List of installed devices (CWS, NTNC, TNC)	School, mortuary, etc., between 50 and 55 devices
☒	☐	☐	Devices tested annually (CWS, NTNC, TNC)	
☒	☐	☐	Annual Summary Report submitted (CWS)	
☒	☐	☐	Certified Cross Connection Control Specialist (CWS ≥ 300 connections)	Jason Green on contract

Comments:
Improve cross connection program implementation

Booster Pumps

Number	Name (location)	Deficiencies or Comments	HP	GPM	Aux. Power Yes	Aux. Power No
1	Airport Reservoir		75	300	☒	☐
2	Airport Reservoir		75	300	☒	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐

Comments:
Emergency generator exercised weekly.

Water Quality Monitoring

Contaminant	N/A	Frequency	Next Tests Due
Entry Point Sampling:			
Nitrate	☐	Annual	2014
Arsenic	☐	Quarterly	ongoing
Inorganic Chemicals (Including Nitrite) (sw)	☒		
Inorganic Chemicals (Including Nitrite) (gw)	☐	Every 9 years	2017
SOCs	☐	Every 3 years	2014
VOCs (sw)	☒		
VOCs (gw)	☐	Every 3 years	2014
Radionuclides (Community Water Systems Only):			
Gross Alpha	☐	Every 6 years	2014
Radium 226/228	☐	Every 6 years	2017
Uranium	☐	Every 6 years	2014
Distribution System Sampling:			
Coliform Bacteria	☐	Two per month	ongoing
Asbestos (for AC pipe/asbestos geologic areas)	☐	Every 9 years	summer 2014
TTHMs and HAA5s	☐	Two samples annually in Oct.	October 2014
Lead and Copper, # sites: 10	☐	Every 3 years	summer 2016
Other Sampling:			
TOC	☒		
Turbidity	☒		
Source Water Coliform	☐	Annual	2014
Other (specify) _____	☐		

Yes No
☒ ☐ • Is all required monitoring current?

Comments:
Stage 2 DBP rule requires 2 samples each October starting in 2014.

Yes No
☒ ☐ Has the system experienced chemical (last 5 years) or bacteriological (last 2 years) detections?
If yes, list what contaminant and when?

arsenic, nitrate

☒ ☐ • Have all MCL violations been addressed? ☐ N/A Bilateral Compliance Agreement for arsenic
☒ ☐ Does the system have any monitoring reductions granted? Explain:

lead & copper

☒ ☐ • Does the system have a written coliform sampling plan?
Does the plan include:

Yes	No		Yes	No	
☒	☐	Brief narrative	☒	☐	Rotation schedule
☒	☐	Distribution map	☒	☐	Repeat locations
☒	☐	Sample site locations	☒	☐	Source(s) ☐ N/A

☒ ☐ Are TTHM and HAA5 samples taken at correct location(s)? (☐ Not required)
Where in the system are the monitoring sites for TTHM and HAA5?

Rhinehart reservoirs and Ellsworth & Elm Streets

Comments:
Update coliform sampling plan to include sample site in SW area of distribution system, sampling procedure.

Management & Operations

O&M Manual and Emergency Response Plan

Yes No

☒ ☐ • Does system have an operation and maintenance manual?
☒ ☐ • Does system have an emergency response plan?

Operator Certification

Requirements for system: WD: 2 WT: 1 ☐ FE required Small System: ☐

Name	Certification Number	WT Level	WD Level	FE	Small System
DRC:*Jason Green - on contract	D/T5186	1	3	☐	☐
Terry Harris	D08607		1	☐	☐
Clint Lawson	D08883		1	☐	☐
				☐	☐

*DRC= direct responsible charge. Attach additional sheets if necessary to list all certified personnel.

Yes No

☒ ☐ Is DRC identified?
☒ ☐ • Is DRC certified at appropriate level?
☒ ☐ • Does system have written protocols for under-certified operators? ☐ N/A

If DRC is a Contract Operator:

Yes No

☒ ☐ Does DWS have contract on file? ☐ N/A
How does contract operator work with system? ☐ N/A
Available by phone as needed.

Plan Review/Master Plan

Yes No

☒ ☐ • Have all major modifications (since 8/21/81) been approved by DWS?
☐ ☒ Does system have a current plan review exemption for water main extensions?
☒ ☐ • Does the system have a current (<20 yr. old) master plan? (☐ Not required if < 300 connections)
What year was the plan completed? 1996
☐ ☐ Does the master plan include a water conservation plan?

Compliance Status

Yes No

☒ ☐ • Is water system in compliance (all orders resolved and not a priority non-complier)?
How many violations has the system had in the past two years? 6
☒ ☐ • Does the system issue Public Notice for Violations as required? ☐ No violations requiring public notice

Other

☒ ☐ Has a capacity assessment been completed by DWS? If yes, list deficiencies noted:

☒ ☐ • Are consumer confidence reports sent to users each year and certified?

Comments:
A Water Management Plan was completed by Auyer Consultants in 2002, and a Nitrate Summary Report was completed by Holladay Engineering in 2002.

Appendix F
ISO Rating Report (1999)

INSURANCE SERVICES OFFICE, INC.

111 N. CANAL STREET SUITE 950 CHICAGO, ILLINOIS 60606-7270 (312) 930-0070 (800) 444-4554 FAX: (312) 930-0017

CLASSIFICATION DETAILS

Municipality:	City of Vale	State:	OR	Population:	1,605
Date Surveyed:	October 23, 1999	Total Credit:	46.42	Class:	6

RECEIVING AND HANDLING FIRE ALARMS

This section of the Fire Suppression Rating Schedule reviews the facilities provided for the general public to report fires, and for the operator on duty at the communication center to dispatch fire department companies to the fires.

	Credit	
	Actual	Maximum
1. Credit for Telephone Service (Item 414) This item reviews the facilities provided for the public to report fires, including the listing of fire and business numbers in the telephone directory.	2.00	2.00
2. Credit for Operators (Item 422) This item reviews the number of operators on-duty at the communication center to handle fire calls.	3.00	3.00
3. Credit for Dispatch Circuits (Item 432) This item reviews the dispatch circuit facilities used to transmit alarms to fire department members.	3.50	5.00
4. Total Credit for Receiving and Handling Fire Alarms:	8.50	10.00

COPY

CLASSIFICATION DETAILS

Municipality:	City of Vale	State:	OR	Population:	1,605
Date Surveyed:	October 23, 1999	Total Credit:	46.42	Class:	6

FIRE DEPARTMENT

This section of the Fire Suppression Rating Schedule reviews the engine and ladder-service companies, equipment carried, response to fires, training and available fire fighters.

	Credit	
	Actual	Maximum
1. Credit for Engine Companies (Item 513)		
This item reviews the number of engine companies and the hose equipment carried.	4.88	10.00
2. Credit for Reserve Pumpers (Item 523)		
This item reviews the number of reserve pumpers, their pump capacity and the hose equipment carried	0.24	1.00
3. Credit for Pump Capacity (Item 532)		
This item reviews the total available pump capacity.	5.00	5.00
4. Credit for Ladder-Service Companies (Item 549)		
This item reviews the number of ladder and service companies and the equipment carried.	2.46	5.00
5. Credit for Reserve Ladder-Service Companies (Item 553)		
This item reviews the number of reserve ladder and service trucks, and the equipment carried.	0.00	1.00

COPY

CLASSIFICATION DETAILS

Municipality:	City of Vale	State:	OR	Population:	1,605
Date Surveyed:	October 23, 1999	Total Credit:	46.42	Class:	6

FIRE DEPARTMENT
(continued

	Credit	
	Actual	Maximum
6. Credit for Distribution (Item 561)		
This item reviews the percent of the built-upon area of the city which has an adequately-equipped, responding first-due engine company within 1.5 miles and an adequately-equipped, responding ladder-service company within 2.5 miles.	1.96	4.00
7. Credit for Company Personnel (Item 571)		
This item reviews the average number of equivalent fire fighters and company officers on duty with existing companies.	2.50	15.00+
8. Credit for Training (Item 581)		
This item reviews the training facilities and their use.	2.16	9.00
9. Total Credit for Fire Department:	19.20	50.00+

+ This indicates that credit for manning is open-ended, with no maximum credit for this item.

COPY

CLASSIFICATION DETAILS

Municipality:	City of Vale	State:	OR	Population:	1,605
Date Surveyed:	October 23, 1999	Total Credit:	46.42	Class:	6

WATER SUPPLY

This section of the Fire Suppression Rating Schedule reviews the water supply system that is available for fire suppression in the city.

	Credit	
	Actual	Maximum
1. Credit for the Water System (Item 616)		
This item reviews the supply works, the main capacity and hydrant distribution.	19.01	35.00
2. Credit for Hydrants (Item 621)		
This item reviews the type of hydrants, and method of installation.	1.28	2.00
3. Credit for Inspection and Condition of Hydrants (Item 631)		
This item reviews the frequency of inspections of hydrants and their condition	1.80	3.00
4. Total Credit for Water Supply:	22.09	40.00

COPY

Grading Sheet For: City of Vale, OR

Public Protection Class: 6 Surveyed: October 23, 1999

Feature		Credit Assigned	Maximum Credit
Receiving and Handling Fire Alarms		8.50%	10.00%
Fire Department		19.20%	50.00%
Water Supply		22.09%	40.00%
*Divergence		3.37%	
	Total Credit	46.42%	100.00%

The Public Protection Class is based on the total percentage credit as follows:

Class	%
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	0 to 9.99

*Divergence is a reduction in credit to reflect a difference in the relative credits for Fire Department and Water Supply.

*The above Classification has been developed for fire insurance rating purposes only.

COPY

INSURANCE SERVICES OFFICE, INC.

HYDRANT FLOW DATA SUMMARY

City VALE State OR Zip 97918 Witnessed by Insurance Services Office, Inc. Date 9/14/94

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW-GPM				PRESSURE PSI		FLOW AT 20 PSI		REMARKS
					INDIVIDUAL HYDRANTS		TOTAL	STATIC	RESID.	NEEDED **	AVAIL	
1	INS	D ST. & HOLLAND	SYSTEM	506			506	62	35	AS	650	NURSING HOME
2	INS	F ST. & NACHEZ	SYSTEM	737			737	59	54	4000	2200	HIGH SCHOOL
3	COMM	B ST. & MAIN	SYSTEM	720			720	64	59	2500	2300	NEW JAILSITE
4	RES	ASH & PETRIE	SYSTEM	457			457	36	29	750	700	NWC OF TOWN
5	RES	I ST. BTWN WEST & COTTAGE	SYSTEM	457			457	64	29	3000	500	BUS STGE
6	COMM	MORTON & SHORT	SYSTEM	646			646	61	37	2000	850	CITY GARAGE
7	COMM	LAGOON DRIVE	SYSTEM	395			395	63	50	3000	750	SIMPLOT
8	RES	15TH & OREGON	SYSTEM	646			646	68	51	1000	1100	RESIDENTIAL

FIRE FLOWS FROM CITY OF VALE RECORDS OF ENGINEERING STUDY DONE IN 1992.

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THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE NOT INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

* Comm = Commercial; Res = Residential S=Single Service + Limited by available hydrants. ++ Limited by supply works.

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule

PUBLIC PROTECTION CLASSIFICATIONS

IMPROVEMENT STATEMENTS
FOR
CITY OF VALE
MALHEUR COUNTY, OR

Prepared by

INSURANCE SERVICES OFFICE, INC.
111 North Canal St., Ste 950, Chicago, IL 60606
312-930-0070 FAX 800-711-6431

The following statements are based upon the criteria contained in our Fire Suppression Rating Schedule and upon conditions in the City of Vale in October, 1999. They indicate the performance needed to receive full credit for the specific item in the Schedule, and the quantity you have provided. Partial improvement will result in receiving a partial increase in the credit. These statements relate only to the fire insurance classification of your city. They are not for property loss prevention or life safety purposes and no life safety or property loss prevention recommendations are made.

RECEIVING AND HANDLING FIRE ALARMS

Credit For Telephone Service (Item 414).

Actual = 2.00%; Maximum = 2.00%

Credit For Operators (Item 422).

Actual = 3.00%; Maximum = 3.00%

Credit For Dispatch Circuits (Item 432).

Actual = 3.50%; Maximum = 5.00%

For maximum credit in the Schedule, the radio alarm dispatch circuit should be supervised in accordance with National Fire Protection Association Standard, 1221.

Total credit for Receiving and Handling Fire Alarms (Item 440)

Actual = 8.50%; Maximum = 10.00%

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FIRE DEPARTMENT

Credit For Engine Companies (Item 513).

Actual = 4.88%; Maximum = 10.00%

For maximum credit in the Schedule, 2 engine companies are needed in your city.
These are calculated as follows:

2 for the Basic Fire Flow of 2000 gpm.

You have 2 engine companies in service.
These are calculated as follows:

82 percent for Engine 210 because of insufficient equipment.

16 percent for Engine 220 because of insufficient equipment, there should be a minimum of 500 gpm in tested pumping capacity, there should be at least 1200 feet of 2 1/2 inch or larger hose, lack of pump test program.

Credit For Reserve Pumpers (Item 523).

Actual = 0.24%; Maximum = 1.00%

For maximum credit in the Schedule, 1 fully-equipped reserve pumper is needed. You have 1 reserve pumper.
This is calculated as follows:

32 percent for Engine 250 because of insufficient equipment, there should be a minimum of 1200 feet of 2 1/2 inch or larger hose.

Credit For Pump Capacity (Item 532).

Actual = 5.00%; Maximum = 5.00%

Credit For Ladder Service (Item 549).

Actual = 2.46%; Maximum = 5.00%

For maximum credit in the Schedule, 1 service company is needed in your city.
This is calculated as follows:

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1 service company due to method of operation.

You have 1 service company.
This is calculated as follows:

50 percent for Service 230 because of insufficient equipment.

Credit For Reserve Ladder Service (Item 553).

Actual = 0.00%; Maximum = 1.00%

For maximum credit in the Schedule, 1 fully-equipped reserve service truck is needed. You have 0 reserve ladder truck.

Credit For Distribution (Item 561).

Actual = 1.96%; Maximum = 4.00%

For maximum credit in the Schedule, all sections of the city with hydrant protection should be within 1½ miles of an adequately-equipped engine company and 2½ miles of an adequately-equipped ladder, service, engine-ladder or engine-service company. The distance to be measured along all-weather roads.

Credit For Company Personnel (Item 571).

Actual = 2.50%; Maximum = 15.00%

An increase in the response of fire department members by one person will increase the fire department credit by .13%.

Credit For Training (Item 581).

Actual = 2.16%; Maximum = 9.00%

For maximum credit in the Schedule, the training program should be improved. You received 24 percent credit for the current training program and the use of facilities.

Complete facilities for training include a drill tower; structural burn building, combustible liquid pit, library and training manuals, slide/movie projectors, pump/hydrant cutaways and a training area.

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A complete training program should include the following for all fire fighters:

- 8 half-day (3 hours) drills
- 4 multiple company drills (may be credited as part of half-day drill)
- 2 night drills (may be credited as part of half-day drill)
- 20 hours per member per month company training
- 2 days per year of officers training
- 4 half-day driver and operator training
- 40 hours for new driver and operator training
- 1 half-day radioactive materials training
- 240 hours recruit training in the first year

For maximum credit in the Schedule, pre-fire planning inspections of each commercial, industrial institutional and other similar-type building should be made twice a year by company members. Records of the inspections should include complete and up-to-date notes and sketches.

For maximum credit in the Schedule, records should be kept of all training.

Total credit for Fire Department (Item 590)

Actual = 19.20%; Maximum = 50.00%

WATER SUPPLY

Credit For the Water Supply (Item 616).

Actual = 19.01%; Maximum = 35.00%

For maximum credit in the Schedule, the needed fire flows should be available at each location in the city. Needed fire flows of 2500 gpm and less should be available for 2 hours, 3000 and 3500 gpm for 3 hours and all others for 4 hours. See the attached table for an evaluation of fire flow tests made at representative locations in your city.

All AWWA standard hydrants within 1000 feet of a building, measured as hose can be laid by apparatus, are credited; 1000 gpm for hydrants within 300 feet; 670 gpm for 301 to 600 feet; and 250 gpm for 601 to 1000 feet. Credit is reduced when hydrants lack a pumper outlet, and is further reduced when they only have only a single 2½-inch outlet.

Credit For Hydrants (Item 621).

Actual = 1.28%; Maximum = 2.00%

For maximum credit in the Schedule, all hydrants should have a pumper outlet, 6-inch or larger branch connection, uniform size operating nut and should operate in a uniform direction.

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Credit For Inspection and Condition of Hydrants (Item 631).

Actual = 1.80%; Maximum = 3.00%

For maximum credit in the Schedule, all hydrants should be inspected twice a year, the inspection should include operation and a test at domestic pressure. Records should be kept of the inspections. Hydrants should be conspicuous, well located for use by a pumper, and in good condition.

Total credit for Water Supply (Item 640)

Actual = 22.09%; Maximum = 40.00%

FIRE FLOW TESTS

City of Vale, OR

Tests Made in 1999

Test No.	Needed Fire Flow* gpm	Limited By Supply Works	Limited By Distribution Mains	Limited By Hydrant Spacing
3	2500	x		
4	750	x		
5	3000	x	x	x
6	2000	x		
7	3000	x	x	x

*Needed fire flows exceeding 3500 gpm are not considered in determining the classification of the municipality

COPY

Appendix G
City of Vale, Oregon - Fire Hydrant Flow Test

City of Vale, Oregon
Fire Hydrant Flow Test

8-15. Date of Run	Hydrant Flow Data							
	Location	Hydrant Number	Service	Hyd. Flow (gpm)	Static Pressure (psi)	Residual Pressure (psi)	Hydrant #	Notes/Comments
	D St W between Yakima St S and Clark St S	1-14	Main	678	61	60	1-26	Viking + D st
	C St S and D St W	1-30	Main	975	63	60	1-26	Viking + D st
	A St and W Main St N	2-20	Main	855	62	61	4-50	Washington St W - Between W Main + Smith
	C St W and Longfellow St S	3-7	Main	882	66	64	3-8	Glenn St + C st E
	Hope St E between 12th St N and 11th St N	4-18	Main	907	64	62	4-20	12 st N + Hope St E
	Harrison St N and Bryant St N	4-32	Main	828	64	62	4-36	Holland St N + Washington St W.
	Oregon St W and 17th St N	5-26	Main	828	65	64	5-25	17 st N. + Petrie St.
	Ellsworth St and Elm St N	5-44	Main	742	53	51	5-45	Elm St.
	Washington St and Ash St N	5-50	Main	907	54	51	5-48	Ash St. N.
	Ellsworth St and 14th St N	6-21	Main	975	64	62	5-19	Ellsworth St + 15 st. N.

Appendix H
Well Logs

WELL #1

MALH 51259

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

(START CARD) # 63826

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L14931

Name City of Vale

Address 252 B Street West

City Vale State Oregon Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger

☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☐ No Depth of Completed Well 33 ft.

Explosives used ☐ Yes ☐ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12"	0	36	Bentonite	1	18	850 #

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☒ Other pour

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18	.250	☒	☐	☒	☐
	6	28	33	.250	☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____

☒ Screens Type Johnson Material S.S

From	To	Slot size	Number	Diameter	Size/pipe size	Casing	Liner
18	28	.100			PIPE	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75 TO 100	—	28	1 hr.

Temperature of water _____ Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County Malheur Latitude _____ Longitude _____

Township 18 N or (S) Range 45 (E) or W. WM.

Section 31 NW 1/4 NW 1/4

Tax Lot 7100 Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon

(10) STATIC WATER LEVEL:

8 ft. below land surface. Date 8.27.97

Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 8'

From	To	Estimated Flow Rate	SWL
8	26	75 TO 100	8

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
top soil	0	2	
hard pan	2	4	
Silty clay	4	8	
gravel & Sand	8	26	
Blue clay	26	36	

RECEIVED
JUN 0 9 1999
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 8.27.97 Completed 8.28.97

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1500

Signed Dave Eglanson Date 6.7.99

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number _____

Signed _____ Date _____

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

WELL #2

MALH 51258

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

(START CARD) # W 63824

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L14933

Name City of Vale
Address 252 B Street West
City Vale State Oregon Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 33 ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
~~12~~"	~~0~~	~~28~~	~~Bentonite~~			~~1100~~ #
12"	0	33	BENTONITE	0	18	1100 LBS

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other pour
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18	~~[illegible]~~	☒	.322 ☐	☒	☐
	8"	28	33	~~[illegible]~~	☒	.322 ☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☐ Perforations Method
☒ Screens Type Johnson Material S.S.

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.100		8"	pipe	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75	—	30	1 hr.

Temperature of water Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:

County Malheur Latitude Longitude
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 NW 1/4 NW 1/4
Tax Lot 7100 Lot Block Subdivision
Street Address of Well (or nearest address) 3800 Airport Rd Vale

(10) STATIC WATER LEVEL:

9 FT ft. below land surface. Date 8.29.97
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 16'

From	To	Estimated Flow Rate	SWL
16	26	75	9

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Top soil	1	2	
hard pan	2	3	
Silty clay	3	16	
Gravel	16	26	
BLUE CLAY	26	33	

RECEIVED
JUN 09 1999
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 8.29.97 Completed 8.29.97

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1500
Signed Dave Eckenson Date 6.7.99

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number
Signed Date

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

WELL #3

MALH
51257

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

(START CARD) # 63825

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L14932

Name City of Vale
Address 252 B Street West
City Vale State Oregon Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 37 ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12"	0	[illegible]	Bentonite			750 #
12"	0	37	BENTONITE	1	18	750 LBS

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other pour
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18	[illegible]	☒	.324	☒	☐
		28	33	[illegible]	☒	.324	☐	☐
Liner:								

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☐ Perforations Method
☒ Screens Type Johnson Material S.S

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.100		8"	pipe	☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75		30	1 hr.

Temperature of water Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:

County Malheur Latitude Longitude
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 NW 1/4 NW 1/4
Tax Lot 7100 Lot Block Subdivision
Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon

(10) STATIC WATER LEVEL:

8.5 ft. below land surface. Date 8.29.97
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 15

From	To	Estimated Flow Rate	SWL
15	25	75 TO 100	8.5

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Top Soil & silty clay	0	15	
Gravel & Sand	15	25	
Blue Clay	25	36	

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WATER RESOURCES DEPT.
SALEM, OREGON

Date started 8.29.97 Completed 8.29.97

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1500
Signed Dave Edamson Date 6.7.99

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number
Signed Date

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

WELL #4

MALH
51261

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

WELL I.D. # L 14935
START CARD # 63802

(1) OWNER: Well Number 14935
Name City of Vale
Address 252 B Street West
City Vale State Oregon Zip 97918

(2) TYPE OF WORK
[X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD:
[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger
[ ] Other

(4) PROPOSED USE:
[ ] Domestic [ ] Community [ ] Industrial [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Livestock [X] Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:
Special Construction approval [ ] Yes [X] No Depth of Completed Well 33 ft.
Explosives used [ ] Yes [X] No Type ____ Amount ____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12	0	38	Bentonite	1	18	900#

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E
[X] Other pour
Backfill placed from ____ ft. to ____ ft. Material ____
Gravel placed from ____ ft. to ____ ft. Size of gravel ____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8	+2	18	.322	[X]	[ ]	[X]	[ ]
	8	28	33	.322	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
Liner:					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Final location of shoe(s) ____

(7) PERFORATIONS/SCREENS:
[ ] Perforations Method ____
[X] Screens Type Johnson Material S.S.

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.100		8"	pipe	[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

(8) WELL TESTS: Minimum testing time is 1 hour
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75-100	—	28	1 hr.

Temperature of water ____ Depth Artesian Flow Found ____
Was a water analysis done? [ ] Yes By whom ____
Did any strata contain water not suitable for intended use? [ ] Too little
[ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other ____
Depth of strata: ____

(9) LOCATION OF WELL by legal description:
County Malheur Latitude ____ Longitude ____
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 SW 1/4 NE 1/4
Tax Lot 7100 Lot ____ Block ____ Subdivision ____
Street Address of Well (or nearest address) 3800 Airport Rd Vale Oregon

(10) STATIC WATER LEVEL:
9'2" ft. below land surface. Date 11-25-97
Artesian pressure ____ lb. per square inch. Date ____

(11) WATER BEARING ZONES:
Depth at which water was first found 16'

From	To	Estimated Flow Rate	SWL
16	25	75-100	9'2"

(12) WELL LOG:
Ground Elevation ____

Material	From	To	SWL
Silty soil w/some small gravel rocks	0	2	
hard silty clay	2	4	
soft silty clay	4	16	
gravel & sand	16	25	9'2"
Blue clay	25	38	

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WATER RESOURCES DEPT.
SALEM, OREGON

Date started 11-24-97 Completed 11-25-97

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number 1500
Signed Dave Adamson Date 6-7-99

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number ____
Signed ____ Date ____

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

malh
51522

MALH 51522

MALH 51522

WELL #5

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

WELL I.D. # L 23044
START CARD # W113190

(1) OWNER: Well Number _____
Name City of Vale
Address 252 B Street W
City Vale State Oregon Zip 97918

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other _____

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☒ Yes ☐ No Depth of Completed Well 31.5 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12	0	31.5	Bentonite	0	12	550 #
			Silica Sand 6-9	12	28.5	1150 #

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other over bore / pour
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	13.5	322	☒	☐	☒	☐
	8"	23.5	28.5	322	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) none

(7) PERFORATIONS/SCREENS:
☐ Perforations Method _____
☒ Screens Type Nagaoka Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
13.5	23.5	.040		8"	pipe	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75			1 hr.

Temperature of water _____ Depth Artesian Flow Found _____
Was a water analysis done? ☐ Yes By whom _____
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:
County Malheur Latitude _____ Longitude _____
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 _____ 1/4 _____ 1/4
Tax Lot SW Lot NE Block _____ Subdivision _____
Street Address of Well (or nearest address) 3800 Airport Rd
Vale, Oregon 97918

(10) STATIC WATER LEVEL:
6' 7½" ft. below land surface. Date 6-21-00
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found 12'

From	To	Estimated Flow Rate	SWL
12	22	75	7½ FT

(12) WELL LOG:
Ground Elevation _____

Material	From	To	SWL
brown clay silt	0	12	
clay & gravel	12	22	
blue clay & gravel	22	31.5	

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WATER RESOURCES DEPT.
SALEM, OREGON

Date started 6-21-00 Completed 6-21-00

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number _____
Signed _____ Date _____

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 1714
Signed Dave Adamson Date 7-10-00

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

MALH 51522

Oregon

John A. Kitzhaber, M.D., Governor

Water Resources Department
Commerce Building
158 12th Street NE
Salem, OR 97301-4172
(503) 378-3739
FAX (503) 378-8130

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review of this order must be filed within the time specified by ORS 183.484 (2).

July 19, 2000

Dave Adamson
Adamson Pump and Drilling
1320 Smith Ave.
Nampa, ID 83651

Dear Dave:

Please find enclosed copies of the following approved special standards:

1. City of Vale (start card numbers 113190, 113191, and 113192)

If you have any questions concerning this letter, please contact me at the address or phone number listed above, or by e-mail at michael.l.mccord@wrd.state.or.us.

Sincerely,

Michael L. McCord
Well Construction Specialist

c: Ron Jacobs, Dist. 9 Watermaster
Eastern Region Well Inspector

MALH 51522

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before request can be considered, the following must be answered. Requests shall be submitted to the Well Construction Specialist, Water Resources Department. Requests may also be considered by the appropriate Regional Manager.

Carrie Jones

Date of request: 6.21.00 **Oral approval date (if applicable):** 6.21.00

Bonded Well Constructor (name, license #, and mailing address): Adamsen Pump & Drilling #1714 1320 Smith Ave Nampa, Id 83651 208.466.6439

(1) Location of Well: SW 1/4 NE 1/4 of Section 31,

Township 18 N/(S) Range 45 (E)/W, Malheur County.

Address at well site: 3800 Airport Rd Vale, Oregon

(2) Start Card Number(s): W113190, L23044

(3) Name and Address of Land Owner: City of Vale 252 B Street W. Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested well seal shorten to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

W-55

MALH 51522

(7) Diagram showing the pertinent features of the proposed well design and construction (attach additional pages if needed):

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JUL 1 7 2000

WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE NOTE:

(1) If approved, all other phases of well construction must comply with the appropriate standards described in OAR 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing groundwater contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Adamson

Baker City
Faxed 6-23-2000

For Water Resources Department Use Only

Date:

Approved by: Denied by:

Remarks:

revised: 6-99

MALH 51522

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before request can be considered, the following must be answered. Requests shall be submitted to the Well Construction Specialist, Water Resources Department. Requests may also be considered by the appropriate Regional Manager.

Carrie Jones

Date of request: 6-22-00 **Oral approval date (if applicable):** 6-22-00

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump & 1320 Smith Ave
Drilling 1714 Nampa, Id 83651

(1) Location of Well: SW 1/4 NE 1/4 of Section 31

Township 18 N/(S) Range 45 (E)/W. Malheur County.

Address at well site: 3800 Airport Rd
Vale, Oregon

(2) Start Card Number(s): W 113192, L 42412

(3) Name and Address of Land Owner: City of Vale 252 B Street
W. Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested well seal shortened to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

W-55

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JUL 17 2000

WATER RESOURCES DEPT.
SALEM, OREGON

MALH 51522

(7) Diagram showing the pertinent features of the proposed well design and construction (attach additional pages if needed):

RECEIVED

JUL 1 7 2000

WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE NOTE:

(1) If approved, all other phases of well construction must comply with the appropriate standards described in OAR 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing groundwater contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Adamson

For Water Resources Department Use Only

Date:

Approved by: Denied by:

Remarks:

revised: 6-99

MALH 51522

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before request can be considered, the following must be answered. Requests shall be submitted to the Well Construction Specialist, Water Resources Department. Requests may also be considered by the appropriate Regional Manager.

Carrie Jones

Date of request: 6-22-00 **Oral approval date (if applicable):** 6-22-00

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump
1320 Smith Ave
Drilling #1714 Nampa, Id 83651

(1) Location of Well: SW 1/4 NE 1/4 of Section 31

Township 18 N/(S) Range 45 (E)/W. Malheur County.

Address at well site: 3800 Airport Rd
Vale, Oregon

(2) Start Card Number(s): W113191, L42111

(3) Name and Address of Land Owner: City of Vale 252 B Street W Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested Well Seal shortened to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

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JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

W-55

MALH 51522

(7) Diagram showing the pertinent features of the proposed well design and construction (attach additional pages if needed):

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE NOTE:

(1) If approved, all other phases of well construction must comply with the appropriate standards described in OAR 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing groundwater contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Eglanson

For Water Resources Department Use Only

Date: _____

Approved by: _____ Denied by: _____

Remarks: _____

revised: 6-99

malh 51524

MALH 51524

MALH 51524

WELL #6

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

WELL I.D. # L 42111
START CARD # W113191

(1) OWNER: Well Number L42111
Name City of Vale
Address 252 B. Street W
City Vale State Oregon Zip 97918

(2) TYPE OF WORK
[X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD:
[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger
[ ] Other

(4) PROPOSED USE:
[ ] Domestic [ ] Community [ ] Industrial [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Livestock [X] Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:
Special Construction approval [X] Yes [ ] No Depth of Completed Well 35 ft.
Explosives used [ ] Yes [X] No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12"	0	35	Bentonite	0	16	750 #
			Silica Sand	16	35	1200 #

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E
[X] Other overbore / poured
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18	.322	[X]	[ ]	[X]	[ ]
	8"	28	35	.322	[X]	[ ]	[X]	[ ]
Liner:					[ ]	[ ]	[ ]	[ ]

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
[ ] Perforations Method
[ ] Screens Type Wagoka Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.040		8"	pipe	[ ]	[ ]

(8) WELL TESTS: Minimum testing time is 1 hour
[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75		24 ft	1 hr.

Temperature of water Depth Artesian Flow Found
Was a water analysis done? [ ] Yes By whom
Did any strata contain water not suitable for intended use? [ ] Too little
[ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Malheur Latitude Longitude
Township 18 N or (S) Range 45 E or (W) WM.
Section 31 SW 1/4 NE 1/4
Tax Lot 7100 Lot Block Subdivision
Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon 97918

(10) STATIC WATER LEVEL:
6'6" ft. below land surface. Date 6-22-00
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 18'

From	To	Estimated Flow Rate	SWL
18	24½	75 GPM	6½'

(12) WELL LOG:
Ground Elevation

Material	From	To	SWL
Clay silt	0	10	
Clay silt	10	18	
black & brown gravel & sand	18	24.5	6½'
blue clay	24.5	35	

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 6-22-00 Completed 6-22-00

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 1714
Signed Dave Adamson Date 7-10-00

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

MALH 51524

Oregon

John A. Kitzhaber, M.D., Governor

Water Resources Department
Commerce Building
158 12th Street NE
Salem, OR 97301-4172
(503) 378-3739
FAX (503) 378-8130

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review of this order must be filed within the time specified by ORS 183.484 (2).

July 19, 2000

Dave Adamson
Adamson Pump and Drilling
1320 Smith Ave.
Nampa, ID 83651

Dear Dave:

Please find enclosed copies of the following approved special standards:

1. City of Vale (start card numbers 113190, 113191, and 113192)

If you have any questions concerning this letter, please contact me at the address or phone number listed above, or by e-mail at michael.l.mccord@wrd.state.or.us.

Sincerely,

Michael L. McCord
Well Construction Specialist

c: Ron Jacobs, Dist. 9 Watermaster
Eastern Region Well Inspector

MALH 51524

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before request can be considered, the following must be answered. Requests shall be submitted to the Well Construction Specialist, Water Resources Department. Requests may also be considered by the appropriate Regional Manager.

Date of request: 6.21.00 Oral approval date (if applicable): 6.21.00 Carrie Jones

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump & Drilling #1714 1320 Smith Ave Nampa, Id 83651 208.466.6439

(1) Location of Well: SW 1/4 NE 1/4 of Section 31,

Township 18 N/(S) Range 45 (E)/W, Malheur County.

Address at well site: 3800 Airport Rd Vale, Oregon

(2) Start Card Number(s): W113190, L23044

(3) Name and Address of Land Owner: City of Vale 252 B Street W. Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested well seal shorten to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

W-55

MALH 51524

(7) Diagram showing the pertinent features of the proposed well design and construction (attach additional pages if needed):

RECEIVED

JUL 1 7 2000

WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE NOTE:

(1) If approved, all other phases of well construction must comply with the appropriate standards described in OAR 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing groundwater contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Adamson

Baker City
Faxed 6-27
9:00a.

For Water Resources Department Use Only

Date:

Approved by: Denied by:

Remarks:

revised: 6-99

MALH 51524

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before request can be considered, the following must be answered. Requests shall be submitted to the Well Construction Specialist, Water Resources Department. Requests may also be considered by the appropriate Regional Manager.

Carrie Jones

Date of request: 6-22-00 **Oral approval date (if applicable):** 6-22-00

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump & Drilling 1714 1320 Smith Ave Nampa, Id 83651

(1) Location of Well: SW 1/4 NE 1/4 of Section 31

Township 18 N/(S) Range 45 (E)/W. Malheur County.

Address at well site: 3800 Airport Rd Vale, Oregon

(2) Start Card Number(s): W 113192, L 42112

(3) Name and Address of Land Owner: City of Vale 252 B Street W. Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested well seal shortened to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

W-55

RECEIVED

JUL 17 2000

WATER RESOURCES DEPT.
SALEM, OREGON

MALH 51524

(7) Diagram showing the pertinent features of the proposed well design and construction (attach additional pages if needed):

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE NOTE:

(1) If approved, all other phases of well construction must comply with the appropriate standards described in OAR 690-200 through 690-240.

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I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Adamson

For Water Resources Department Use Only

Date: _____

Approved by: _____ Denied by: _____

Remarks: _____

revised: 6-99

MALH 51524

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before request can be considered, the following must be answered. Requests shall be submitted to the Well Construction Specialist, Water Resources Department. Requests may also be considered by the appropriate Regional Manager.

Carrie Jones

Date of request: 6-22-00 **Oral approval date (if applicable):** 6-22-00

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump
1320 Smith Ave
Drilling # 1714 Nampa, Id 83651

(1) Location of Well: SW 1/4 NE 1/4 of Section 31

Township 18 N/(S) Range 45 (E)/W. Malheur County.

Address at well site: 3800 Airport Rd
Vale, Oregon

(2) Start Card Number(s): W113191, L42111

(3) Name and Address of Land Owner: City of Vale 252 B
Street W Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested Well Seal shortened to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

W-55

MALH 51524

(7) Diagram showing the pertinent features of the proposed well design and construction (attach additional pages if needed):

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE NOTE:

(1) If approved, all other phases of well construction must comply with the appropriate standards described in OAR 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing groundwater contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Edamson

For Water Resources Department Use Only

Date: _____

Approved by: _____ Denied by: _____

Remarks: _____

revised: 6-99

MALH 51523

MALH 51523

malh 51523

WELL #7

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

WELL I.D. # L 42112
START CARD # W 113192

(1) OWNER: Well Number L 42112

Name City of Vale
Address 252 B Street W
City Vale State Or Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☒ Yes ☐ No Depth of Completed Well 35 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12	0	35	Bentonite	0	13.5	800 #
			Silica Sand	13.5	35	900 #

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other overbore / poured
Backfill placed from ____ ft. to ____ ft. Material _____
Gravel placed from ____ ft. to ____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	13.5	322	☒	☐	☒	☐
	8"	23.5	35	322	☒	☐	☒	☐
Liner:					☐	☐	☐	☐

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____
☒ Screens Type Johnson Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
13.5	23.5	.040		8"	pipe	☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
100		24	1 hr.

Temperature of water _____ Depth Artesian Flow Found _____
Was a water analysis done? ☐ Yes By whom _____
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County Malheur Latitude _____ Longitude _____
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 SW 1/4 NE 1/4
Tax Lot 7100 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 3800 Airport Rd
Vale, Oregon 97918

(10) STATIC WATER LEVEL:

7.5 ft. below land surface. Date 6.23.00
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 13'

From	To	Estimated Flow Rate	SWL
13	23	100	7½'

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
Clay silt	0	10	
Clay silt	10	13	
Gravel & dark color sand	13	23	7½
Blue clay	23	35	

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JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

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NOV 06 2001
WATER RESOURCES DEPT
SALEM, OREGON

Date started 6.23.00 Completed 6.23.00

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number _____
Signed _____ Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1714
Signed Dave Adamson Date 7.10.00

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

MALH 51523

Oregon

John A. Kitzhaber, M.D., Governor

Water Resources Department
Commerce Building
158 12th Street NE
Salem, OR 97301-4172
(503) 378-3739
FAX (503) 378-8130

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review of this order must be filed within the time specified by ORS 183.484 (2).

July 19, 2000

Dave Adamson
Adamson Pump and Drilling
1320 Smith Ave.
Nampa, ID 83651

Dear Dave:

Please find enclosed copies of the following approved special standards:

1. City of Vale (start card numbers 113190, 113191, and 113192)

If you have any questions concerning this letter, please contact me at the address or phone number listed above, or by e-mail at michael.l.mccord@wrd.state.or.us.

Sincerely,

Michael L. McCord
Well Construction Specialist

c: Ron Jacobs, Dist. 9 Watermaster
Eastern Region Well Inspector

MALH 51523

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before request can be considered, the following must be answered. Requests shall be submitted to the Well Construction Specialist, Water Resources Department. Requests may also be considered by the appropriate Regional Manager.

Carrie Jones

Date of request: 6.21.00 **Oral approval date (if applicable):** 6.21.00

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump & Drilling #1714 1320 Smith Ave Nampa, Id 83651 208.466.6439

(1) Location of Well: SW 1/4 NE 1/4 of Section 31,

Township 18 N/(S) Range 45 (E)/W, Malheur County.

Address at well site: 3800 Airport Rd Vale, Oregon

(2) Start Card Number(s): W113190, L23044

(3) Name and Address of Land Owner: City of Vale 252 B Street W. Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested well seal shorten to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

W-55

MALH 51523

(7) Diagram showing the pertinent features of the proposed well design and construction (attach additional pages if needed):

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JUL 1 7 2000

WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE NOTE:

(1) If approved, all other phases of well construction must comply with the appropriate standards described in OAR 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing groundwater contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Adamson

Baker City
Faxed 6-27
2000

For Water Resources Department Use Only

Date: _____

Approved by: _____ Denied by: _____

Remarks: _____

revised: 6-99

MALH 51523

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

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Date of request: 6-22-00 Oral approval date (if applicable): 6-22-00 Carrie Jones

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump & Drilling 1714 1320 Smith Ave Nampa, Id 83651

(1) Location of Well: SW 1/4 NE 1/4 of Section 31

Township 18 N/(S) Range 45 (E)/W. Malheur County.

Address at well site: 3800 Airport Rd Vale, Oregon

(2) Start Card Number(s): W 113192, L 42412

(3) Name and Address of Land Owner: City of Vale 252 B Street W. Vale Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

(5) The unusual conditions which necessitate this request: Requested well seal shortened to 12' instead of 18' due to water supply & depth of screen

(6) The proposed construction methods that the well constructor believes will be adequate for this well (attach additional pages if needed)

W-55

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SALEM, OREGON

MALH 51523

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JUL 17 2000

WATER RESOURCES DEPT.
SALEM, OREGON

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I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Adamson

For Water Resources Department Use Only

Date: _____

Approved by: _____ Denied by: _____

Remarks: _____

revised: 6-99

MALH 51523

FINAL ORDER
Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

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Carrie Jones

Date of request: 6-22-00 Oral approval date (if applicable): 6-22-00

Bonded Well Constructor (name, license #, and mailing address): Adamson Pump
1320 Smith Ave
Drilling #1714 Nampa, Id 83651

(1) Location of Well: SW 1/4 NE 1/4 of Section 31

Township 18 N/(S) Range 45 (E)/W. Malheur County.

Address at well site: 3800 Airport Rd
Vale, Oregon

(2) Start Card Number(s): W113191, L42111

(3) Name and Address of Land Owner: City of Vale 252 B Street W Vale, Oregon 97918

(4) Distance to the nearest well, septic tank or drainfield (if water supply well):

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SALEM, OREGON

W-55

MALH 51523

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SALEM, OREGON

PLEASE NOTE:

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I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: Dave Edamson

For Water Resources Department Use Only

Date: _____

Approved by: _____ Denied by: _____

Remarks: _____

revised: 6-99

Appendix I
Water Rights Information

Water Rights Information Query Results

Records/Page: 10

	Contacts	Application	Permit	Certificate	Claim	Decree	Transfers	Status
Select	APPLICANT: CITY OF VALE 252 B ST WEST VALE, OR 97918					MALHEUR RIVER	T8166 (Confirming)	NC
Select	OWNER: CITY OF VALE 252 B ST VALE, OR 97918	S73411	S52623					NC
Select	OWNER: CITY OF VALE VALE, OR 97918	S6278	S3916	2376				NC
Select	OWNER: CITY OF VALE 252 B ST W VALE, OR 97918	G4679	G4406	41133				NC
Select	OWNER: CITY OF VALE 252 "B" ST VALE, OR 97918	S50354	S38013	61405				NC
Select	OWNER: CITY OF VALE 252 B ST VALE, OR 97918	G4678	G4405	87397			T8339	NC

Download: Point of diversion data, Place of use data, Stakeholder data

Return to WRIS Query

Water Right Information Query Results

Contact Information

Current contact information

APPLICANT:
CITY OF VALE
252 B ST WEST
VALE, OR 97918

Water Right Information

Status: Non-Cancelled
County: Malheur
File Folder Location: Salem
Watermaster District: 9

Documents

View all scanned documents

Decree: MALHEUR RIVER document

- Volume-Page: 8-228
- Signature: n/a

Order(s)

Order Origin	Volume-Page	Signature	Description
Special	53-1179	8/30/1999	APPROVES T-8166
Special	53-1324	10/5/1999	APPROVES T-8166

Transfer(s)

Transfer	Transfer type	Status
T8166 (Confirming)	Regular	Approved

- View right with Web Mapping
- View Places of Use from Water Rights in the Same Area
- View Reported Water Use

Point(s) of Diversion

POD 1 - MALHEUR RIVER > SNAKE RIVER

Description

- T-R-S-QQ: 19.00S-44.00E-8-NE SW
- Location Description: GELLERMAN FROMAN CANAL 2740 FT SOUTH & 3200 FT WEST FROM NE CORNER, SECTION 8

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0	5.0		

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	5.0					1/1	12/31	DIV LMTD TO QUANTITY AVLBL AT OR POD; TO DISCHARGE MITIGATION WATE

POD 2 - WELL 2 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-31-NW NE
- Location Description: 750 FEET SOUTH & 1875 FEET WEST FROM NE CORNER, SECTION 31

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0			

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	0.0(est)					1/1	12/31	DIVERSION LIMITED TO QUANTITY AVAILABLE AT ORIGINAL POD

POD 3 - WELL 3 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-31-NW NE
- Location Description: 900 FEET SOUTH & 1950 FEET WEST FROM NE CORNER, SECTION 31

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0			

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	0.0(est)					1/1	12/31	DIVERSION LIMITED TO QUANTITY AVAILABLE AT ORIGINAL POD

POD 4 - WELL 4 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-31-NW NE
- Location Description: 675 FEET SOUTH & 2225 FEET WEST FROM NE CORNER, SECTION 31

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0			

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	0.0(est)					1/1	12/31	DIVERSION LIMITED TO QUANTITY AVAILABLE AT ORIGINAL POD

POD 5 - WELL 5 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-31-SW NE
- Location Description: 1350 FEET SOUTH & 1975 FEET WEST FROM NE CORNER, SECTION 31

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0			

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	0.0(est)					1/1	12/31	DIVERSION LIMITED TO QUANTITY AVAILABLE AT ORIGINAL POD

POD 6 - WELL F1 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-31-NW NE
- Location Description: 310 FEET SOUTH & 2015 FEET WEST FROM NE CORNER, SECTION 31

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0			

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	0.0(est)					1/1	12/31	DIVERSION LIMITED TO QUANTITY AVAILABLE AT ORIGINAL POD

POD 7 - WELL F2 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-31-NW NE
- Location Description: 1025 FEET SOUTH & 2235 FEET WEST FROM NE CORNER, SECTION 31

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0			

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	0.0(est)					1/1	12/31	DIVERSION LIMITED TO QUANTITY AVAILABLE AT ORIGINAL POD

POD 8 - WELL F3 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-31-SW NE
- Location Description: 1720 FEET SOUTH & 2085 FEET WEST FROM NE CORNER, SECTION 31

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
5.0			

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/24/1897	5.0	0.0(est)					1/1	12/31	DIVERSION LIMITED TO QUANTITY AVAILABLE AT ORIGINAL POD

Place(s) of Use

Add TRS grouping

Use - MUNICIPAL USES (Primary); Priority Date: 9/24/1897

T-R-S	QQ	DLC	Gov't Lot	Taxlot	Acres	Status	Linked PODs	Inchoate Info	Remarks
18.00S-45.00E-19	NE SE					NC			
18.00S-45.00E-19	NW SE					NC			
18.00S-45.00E-19	SW SE					NC			
18.00S-45.00E-19	SE SE					NC			
18.00S-45.00E-20	SW NW					NC			
18.00S-45.00E-20	SE NW					NC			
18.00S-45.00E-20	NE SW					NC			
18.00S-45.00E-20	NW SW					NC			
18.00S-45.00E-20	SW SW					NC			
18.00S-45.00E-20	SE SW					NC			
18.00S-45.00E-20	NE SE					NC			
18.00S-45.00E-20	NW SE					NC			
18.00S-45.00E-20	SW SE					NC			
18.00S-45.00E-20	SE SE					NC			
18.00S-45.00E-21	SW NW					NC			
18.00S-45.00E-21	SE NW					NC			
18.00S-45.00E-21	NE SW					NC			
18.00S-45.00E-21	NW SW					NC			
18.00S-45.00E-29	NE NW					NC			
18.00S-45.00E-29	NW NW					NC			
18.00S-45.00E-29	SW NW					NC			
18.00S-45.00E-29	SE NW					NC			
18.00S-45.00E-30	NE NE					NC			
18.00S-45.00E-30	NW NE					NC			
18.00S-45.00E-30	SW NE					NC			
18.00S-45.00E-30	SE NE					NC			
Sum of Acres: 0.0									

Water Right Genealogy

—No genealogy records available for this water right, try the family link below instead.

View Water Rights in same Family

Help understanding and working with the Water Rights Information System

Report Errors with Water Right Data

Return to WRIS Query

STATE OF OREGON

COUNTY OF MALHEUR

ORDER APPROVING CHANGES IN PLACE OF USE AND POINTS OF DIVERSION

Pursuant to ORS 540.510 to 540.531, after notice was given and no objections were filed, and finding that no injury to existing water rights would result, this order approves, as conditioned or limited herein, TRANSFER 8166 submitted by

CITY OF VALE
252 B STREET WEST
VALE, OREGON 97918.

The right to be modified was confirmed by decree of the Circuit Court of the State of Oregon for MALHEUR County as evidenced by Certificate 6878. The decree is recorded in the Order Record of the Water Resources Director in Volume 8, at Page 228. The date of priority is SEPTEMBER 24, 1897.

The right allows the use of the MALHEUR RIVER, a tributary of the SNAKE RIVER, for IRRIGATION, STREET AND MUNICIPAL USES. The amount of water to which this right is entitled is limited to an amount actually beneficially used and shall not exceed 1½ ACRE FEET PER ACRE IN ANY 30 DAY PERIOD PRIOR TO JUNE 1, 1 ACRE FOOT PER ACRE IN ANY 30 DAY PERIOD AFTER JUNE 1, OF EACH YEAR, OR 3 ACRE FEET PER ACRE DURING ANY SEASON, DIVERTED AT A RATE NOT TO EXCEED ONE-TWENTIETH OF A CUBIC FOOT PER SECOND PER ACRE, AND A HEAD OF 5 CUBIC FEET PER SECOND FOR 1 DAY EACH WEEK FOR SPRINKLING AND FLUSHING STREETS AND SEWERS, if available at the authorized point of diversion: MILL DITCH, or its equivalent in case of rotation, measured at the point of diversion from the source.

NOTICE: Under the provisions of OAR 137-004-0080, the applicant may petition for reconsideration of this order. The petition shall set forth specific grounds for reconsideration. the petition for reconsideration must be filed within 60 days after the date this order is served.

The authorized place of use is located as follows:

NE¼ NW¼	10.0 ACRES	NE¼ NW¼	15.0 ACRES
NW¼ SW¼	40.0 ACRES	NW¼ NW¼	30.0 ACRES
SW¼ SW¼	40.0 ACRES	SW¼ NW¼	10.0 ACRES
SE¼ SW¼	40.0 ACRES	SECTION 29	
SECTION 20			

TOWNSHIP 18 SOUTH, RANGE 45 EAST, W.M.

The right to use water for the above purpose is restricted to beneficial use on the lands or place of use described and is subject to all other conditions and limitations contained in the decree.

The applicant proposes to change the place of use:

SE¼	S½ NW¼
SECTION 19	N½ SW¼
	SECTION 21
S½ NW¼	
S½	NW¼
SECTION 20	SECTION 29
	NE¼
	SECTION 30

TOWNSHIP 18 SOUTH, RANGE 45 EAST, W.M.

The applicant proposes to change the points of diversion to 7 shallow, hydraulically connected, wells locate as follows:

NW¼ NE¼, SW¼ NE¼, SECTION 31, T 18 S, R 45 E, WM; 2 - 750 FEET SOUTH AND 1875 FEET WEST; 3 - 900 FEET SOUTH AND 1950 FEET WEST; 4 - 675 FEET SOUTH AND 2225 FEET WEST; 5 - 1350 FEET SOUTH AND 1975 FEET WEST; F1 - 310 FEET SOUTH AND 2015 FEET WEST; F2 - 1025 FEET SOUTH AND 2235 FEET WEST; F3 - 1720 FEET SOUTH AND 2085 FEET WEST; ALL FROM THE NE CORNER, SECTION 31.

The applicant proposes to add an additional point of diversion for diverting of water to mitigate potential hydraulic interference with Bully Creek. The additional point of diversion is located as follows:

NE¼ SW¼, SECTION 8, T 19 S, R 44 E, WM; GELLERMAN-FROMAN CANAL - 2740 FEET SOUTH AND 3200 FEET WEST FROM THE NE CORNER, SECTION 8.

The applicant proposes to discharge the mitigation water into Bully Creek at a point located as follows:

SE¼ SE¼, SECTION 3, T 19 S, R 44 E, WM; 690 FEET NORTH AND 650 FEET WEST FROM THE SE CORNER, SECTION 3.

The applicant, in consultation with Water Resources Department staff, have requested the quantity of water be limited to a rate not to exceed 5.00 cubic feet per second, a volume not to exceed 225 acre feet per month, with the total volume not to exceed 1070.6 acre feet per year. These limits do not exceed the limits set in the water right.

The Department's legal counsel has advised that the water right evidenced by Certificate 6878 is a municipal water right, subject to all the provisions of Oregon water law concerning municipal water rights.

The applicant requested reconsideration of the Order of the Water Resources Director, entered August 30, 1999, at Special Order Volume 53, Page 1179, approving Transfer 8166. The applicant stated that through an over sight the application listed only four of the seven wells which are the proposed points of diversion. The applicant requested the other three wells be included in the approval order.

The application and additional information were reviewed. It appears that the application should have included seven wells for the well field. The Geologist report was based on the seven wells in the well field. The original order should be rescinded and this order entered in it place.

THESE CHANGES TO AN EXISTING WATER RIGHT MAY BE MADE PROVIDED THE FOLLOWING CONDITIONS ARE MET BY THE WATER USER:

1. The proposed changes shall be completed on or before October 1, 2004.

2. The amount of water used for municipal use is limited to 5.00 cubic feet per second, or its equivalent in case of rotation; and shall be further limited to a diversion of not to exceed 225 acre-feet in any 30 day period, provided further that the total diverted shall not exceed 1070.6 acre-feet during the calender year.

3. The water user shall divert from the Malheur River, through the Gellerman-Froman Canal, and discharge into Bully Creek, a quantity of water equal to 20 percent of the quantity of water being diverted from the wells under this water right.

4. The water user shall install and maintain headgates, in-line flow meters, weirs, or other suitable devices for measuring and recording the quantity of water diverted from the wells.

5. The water user or irrigation district shall install and maintain a headgate, in-line flow meter, weir, or other suitable device for measuring and recording the quantity of water diverted into the irrigation canal.

6. The water user shall install and maintain a headgate, in-line flow meter, weir, or other suitable device for measuring and recording the quantity of water discharged into Bully Creek.

7. When required by the Department, the water user shall install and maintain a suitable measuring device for measuring and recording the quantity of water available at the original point of diversion, Mill Ditch.

8. The type and plans of the headgates and measuring devices must be approved by the Department prior to beginning construction and shall be installed under the general supervision of the Department.

9. The water user or irrigation district shall operate and maintain the headgates and measuring devices, as needed. The water user or irrigation district shall report total flow figures when requested by the Watermaster. The Watermaster may operate the headgates and monitor the accuracy of the measuring devices, as needed.

The Order of the Water Resources Director, entered August 30, 1999, at Special Order Volume 53, Page 1179, approving Transfer 8166, is rescinded, and this amended order entered in its place.

Certificate 6878 is canceled. When satisfactory proof of the completed changes is received, a new certificate confirming this water right will be issued.

WITNESS the signature of the Water Resources Director,

affixed OCT 05 1999.

For Martha O. Pagel, Director

Water Right Information Query Results

Contact Information

Current contact information

OWNER:
CITY OF VALE
252 B ST
VALE, OR 97918

Documents

View all scanned documents

Application: S 73411

Permit: S 52623 document

Signature: 8/14/1996

Permit Workflow			
Action	Date	Result	Completed By
Permit Issued	8/14/1996		
Completion Date [C Date]	10/1/1999		
CBU Received	7/1/2011		MICHAEL ELDON HOLLADAY

View right with Web Mapping

View Places of Use from Water Rights in the Same Area

View Reported Water Use

Water Right Information

Status: Non-Cancelled

County: Malheur

File Folder Location: Salem

Watermaster District: 9

Point(s) of Diversion

POD 1 - WASTEWATER > OR TRAIL MUSH PLANT

Description

T-R-S-QQ: 18.00S-45.00E-20-SW SE

Location Description: 720 FEET SOUTH & 60 FEET WEST FROM SE1/16 CORNER, SECTION 29

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
0.0891	0.0891		

AIR CONDITIONING OR HEATING (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
5/21/1993	0.0891	0.0891					1/1	12/31	

Place(s) of Use

Add TRS grouping

Use - AIR CONDITIONING OR HEATING (Primary); Priority Date: 5/21/1993

T-R-S	QQ	DLC	Gov't Lot	Taxlot	Acres	Status	Linked PODs	Inchoate Info	Remarks
18.00S-45.00E-29	NE NW					NC			
Sum of Acres: 0.0									

Water Right Genealogy

—No genealogy records available for this water right, try the family link below instead.

View Water Rights in same Family

Help understanding and working with the Water Rights Information System

Report Errors with Water Right Data

Return to WRIS Query

STATE OF OREGON

COUNTY OF MALHEUR

PERMIT TO APPROPRIATE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF VALE
252 B ST
VALE, OREGON 97918
541-473-3133

The specific limits for the use are listed below along with conditions of use.

APPLICATION FILE NUMBER: S-73411

SOURCE OF WATER: WASTEWATER FROM THE OREGON TRAIL MUSHROOM PLANT

PURPOSE OR USE: HEATING OF WATER FOR THE CITY'S SWIMMING POOL AND RADIANT FLOOR SPACE HEATING FOR THE CITY'S FIRE HALL

RATE OF USE: 40.0 GALLONS PER MINUTE

PERIOD OF ALLOWED USE: YEAR-ROUND

DATE OF PRIORITY: MAY 21, 1993

POINT OF DIVERSION LOCATION: SW 1/4 SE 1/4, SECTION 20, T18S, R45W, W.M.; 720 FEET SOUTH & 60 FEET WEST FROM THE SE 1/16 CORNER OF SECTION 29

THE PLACE OF USE IS LOCATED WITHIN THE NE 1/4 NW 1/4, SECTION 29, TOWNSHIP 18 SOUTH, RANGE 45 EAST, W.M.

Measurement, recording and reporting conditions:

A. The Director may require the permittee to install a meter or other suitable measuring device as approved by the Director. If the Director notifies the permittee to install a meter or other measuring device, the permittee shall install such device within the period stated in the notice. Such installation period shall not be less than 90 days unless special circumstances warrant a shorter installation period. Once installed, the permittee shall maintain the meter or measuring device in good working order and shall allow the watermaster access to the meter or measuring device. The Director may provide an opportunity for the permittee to submit alternative measuring procedures for review and approval.

B. The Director may require the permittee to keep and maintain a record of the amount (volume) of water used and may require the permittee to report water use on a periodic schedule as

established by the Director. In addition, the Director may require the permittee to report general water use information, the periods of water use and the place and nature of use of water under the permit. The Director may provide an opportunity for the permittee to submit alternative reporting procedures for review and approval.

Water use authorized under this permit shall be subject to all federal, state, and local regulations related to water quality.

The use is limited to the water available at the proposed point of diversion and shall not carry with it the right to compel the continuance of the wastewater.

STANDARD CONDITIONS

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water allowed herein may be made only at times when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.

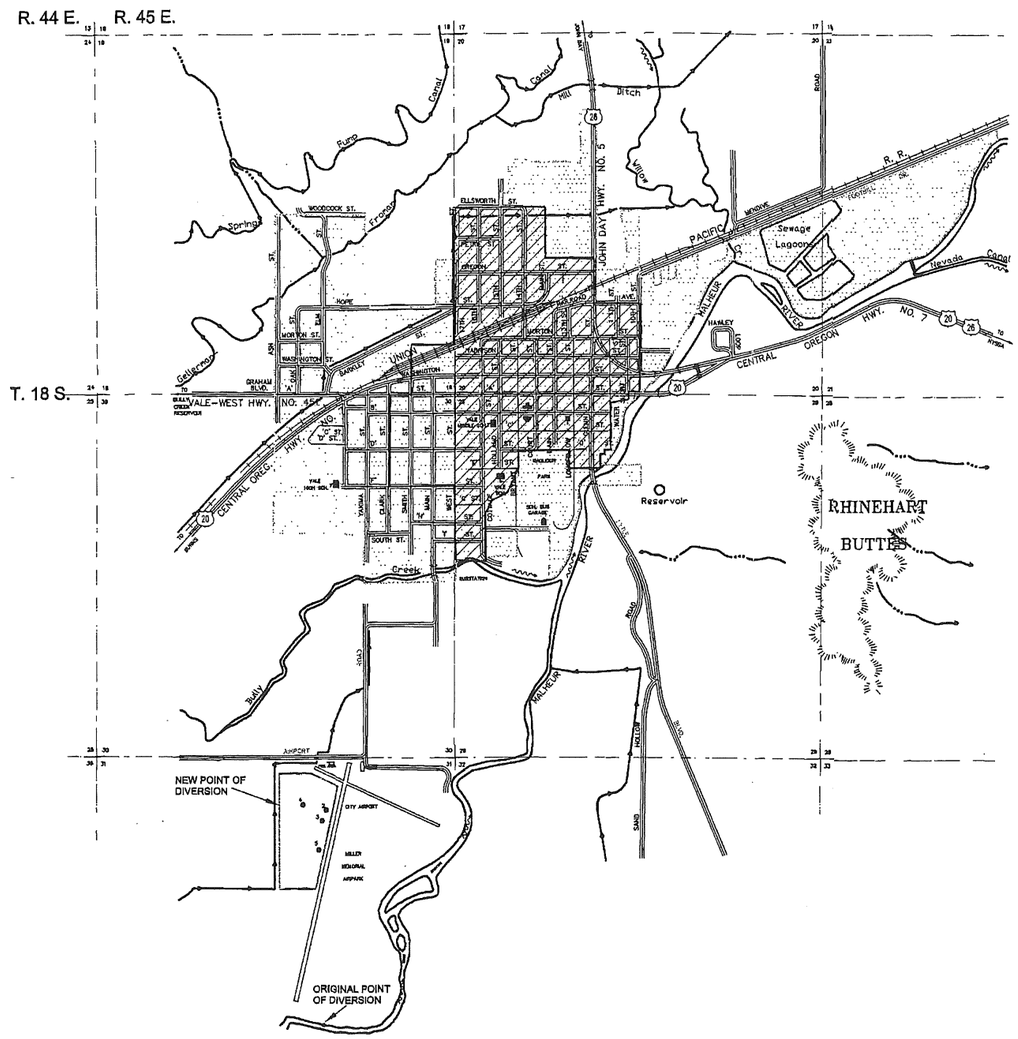
The Director finds that the proposed use(s) of water described by this permit, as conditioned, will not impair or be detrimental to the public interest.

Actual construction work shall begin within one year from permit issuance and shall be completed on or before October 1, 1998. Complete application of the water to the use shall be made on or before October 1, 1999.

Issued August 14, 1996

for Steven Pfeiffer
Water Resources Department
Director

RECEIVED
JAN 20 1999
WATER RESOURCES DEPT.
SALEM, OREGON



Certified Water Right Examiner
#069
Michael E. Holladay
Michael E. Holladay
Nov. 19, 1987
STATE OF OREGON

T-3166

SCALE 1" = 1320'

CITY OF VALE

LEGEND:

- 1897 WATER RIGHT USE AREA
- NEW WATER RIGHT USE AREA
- CURRENT CITY LIMITS
- CITY BOUNDARY DURING 1927 ADJUDICATION
- RIVER FLOW DIRECTION
- IRRIGATION DITCH FLOW DIRECTION

NOTE: ORIGINAL WATER USE AREA WAS 185 ACRES.
THE CURRENT CITY OF VALE BOUNDARY INCLUDES APPROXIMATELY 695 ACRES.

HOLLADAY ENGINEERING CO.
ENGINEERS · CONSULTANTS
32 N. MAIN P.O. BOX 235 PAYETTE, ID 83661
(208) 642-3304 · FAX# (208) 642-2159
EMAIL: holladay@micron.net

VALE WATER RIGHTS
VALE, OREGON

REUSE OF DOCUMENTS

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JOB NO: VL 091796-D	
CADD FILE: 091796P TILE	
DATE: 1/11/99	
REVISED:	
PLOTTED: 1/11/99	
DRAWN BY: RB	SHEET
CHECKED BY: JB	

Water Right Information Query Results

Contact Information

Current contact information

OWNER:
CITY OF VALE
VALE, OR 97918

Water Right Information

Status: Non-Cancelled
County: Malheur
File Folder Location: Salem
Watermaster District: 9

Documents

View all scanned documents

Application: S 6278

Permit: S 3916 document , paper map

Certificate: 2376 document , paper map

- Signature: 8/1/1919
- Type: Original

View right with Web Mapping
View Places of Use from Water Rights in the Same Area
View Reported Water Use

Point(s) of Diversion

POD 1 - WILLOW SPRINGS > NEGRO ROCK CANYON

Description

T-R-S-QQ: 20.00S-44.00E-7-SE NE
Location Description:

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
0.25	0.25		

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
9/16/1918	0.25	0.25					1/1	12/31	

Place(s) of Use

Add TRS grouping

Use - MUNICIPAL USES (Primary); Priority Date: 9/16/1918

T-R-S	QQ	DLC	Gov't Lot	Taxlot	Acres	Status	Linked PODs	Inchoate Info	Remarks
18.00S-45.00E-19	SW NE					NC			CITY OF VALE
18.00S-45.00E-19	SE NE					NC			CITY OF VALE
18.00S-45.00E-19	SE NW					NC			CITY OF VALE
18.00S-45.00E-19	NE SW					NC			CITY OF VALE
18.00S-45.00E-19	SE SW					NC			CITY OF VALE
18.00S-45.00E-19	NE SE					NC			CITY OF VALE
18.00S-45.00E-19	NW SE					NC			CITY OF VALE
18.00S-45.00E-19	SW SE					NC			CITY OF VALE
18.00S-45.00E-19	SE SE					NC			CITY OF VALE
18.00S-45.00E-20	SW NE					NC			CITY OF VALE
18.00S-45.00E-20	SE NE					NC			CITY OF VALE
18.00S-45.00E-20	NE NW					NC			CITY OF VALE
18.00S-45.00E-20	NW NW					NC			CITY OF VALE
18.00S-45.00E-20	SW NW					NC			CITY OF VALE
18.00S-45.00E-20	SE NW					NC			CITY OF VALE
18.00S-45.00E-20	NE SW					NC			CITY OF VALE
18.00S-45.00E-20	NW SW					NC			CITY OF VALE
18.00S-45.00E-20	SW SW					NC			CITY OF VALE
18.00S-45.00E-20	SE SW					NC			CITY OF VALE
18.00S-45.00E-20	NE SE					NC			CITY OF VALE
18.00S-45.00E-20	NW SE					NC			CITY OF VALE
18.00S-45.00E-20	SW SE					NC			CITY OF VALE
18.00S-45.00E-20	SE SE					NC			CITY OF VALE
18.00S-45.00E-21	NE NW					NC			CITY OF VALE
18.00S-45.00E-21	NW NW					NC			CITY OF VALE
18.00S-45.00E-21	SW NW					NC			CITY OF VALE
18.00S-45.00E-21	SE NW					NC			CITY OF VALE
18.00S-45.00E-21	NE SW					NC			CITY OF VALE

18.00S-45.00E-21	NW SW					NC			CITY OF VALE
18.00S-45.00E-29	NE NW					NC			CITY OF VALE
18.00S-45.00E-29	NW NW					NC			CITY OF VALE
18.00S-45.00E-29	SW NW					NC			CITY OF VALE
18.00S-45.00E-29	SE NW					NC			CITY OF VALE
18.00S-45.00E-30	NE NE					NC			CITY OF VALE
18.00S-45.00E-30	NW NE					NC			CITY OF VALE
18.00S-45.00E-30	SW NE					NC			CITY OF VALE
18.00S-45.00E-30	SE NE					NC			CITY OF VALE
18.00S-45.00E-30	NE NW					NC			CITY OF VALE
18.00S-45.00E-30	SE NW					NC			CITY OF VALE
18.00S-45.00E-30	NE SE					NC			CITY OF VALE
18.00S-45.00E-30	NW SE					NC			CITY OF VALE
18.00S-45.00E-30	SW SE					NC			CITY OF VALE
18.00S-45.00E-30	SE SE					NC			CITY OF VALE
Sum of Acres: 0.0									

Water Right Genealogy

—No genealogy records available for this water right, try the family link below instead.

View Water Rights in same Family

Help understanding and working with the Water Rights Information System

Report Errors with Water Right Data

Return to WRIS Query

STATE OF OREGON

WATER DIVISION NO. 2 COUNTY OF MALHEUR

CERTIFICATE OF WATER RIGHT

(For rights perfected under original, enlargement or secondary permits)

This is to Certify, *That* the CITY OF VALE, a municipal corporation

of Vale, *State of* Oregon, *has made proof to the satisfaction of the STATE WATER BOARD of Oregon, of a right to the use of the waters of* Willow Springs, a tributary of Malheur River, *a tributary of* Snake River

, *for the purpose of* municipal supply

under Permit No. 3916 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon and duly confirmed by order of the STATE WATER BOARD of Oregon, made and entered of record in the Record of Proceedings of said Board, at Salem, in Volume* 1, *at page* 329, *on the* 28th *day of* July, 1919; *that the priority of the right hereby confirmed dates from* September 16, 1918; *that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 0.25 *cubic feet per second.*

A description of the lands under such right, and to which the water hereby confirmed is appurtenant, or, if for other purposes, the place where such water is put to beneficial use, is as follows: The City of Vale, in Malheur County, Oregon.

~~The right to the use of the water aforesaid hereby confirmed is for the use of the dam or place and as herein described.~~

Rights to the use of water for power purposes are limited to a period of forty years from the date of priority of the right, as herein set forth, subject to a preference right of renewal under the laws existing at the date of the expiration of the right for power purposes, as hereby confirmed and limited.

Witness *the seal and signature of the STATE WATER BOARD affixed this* 1st *day of* August, *19*19.

STATE WATER BOARD

(SEAL OF THE STATE WATER BOARD)

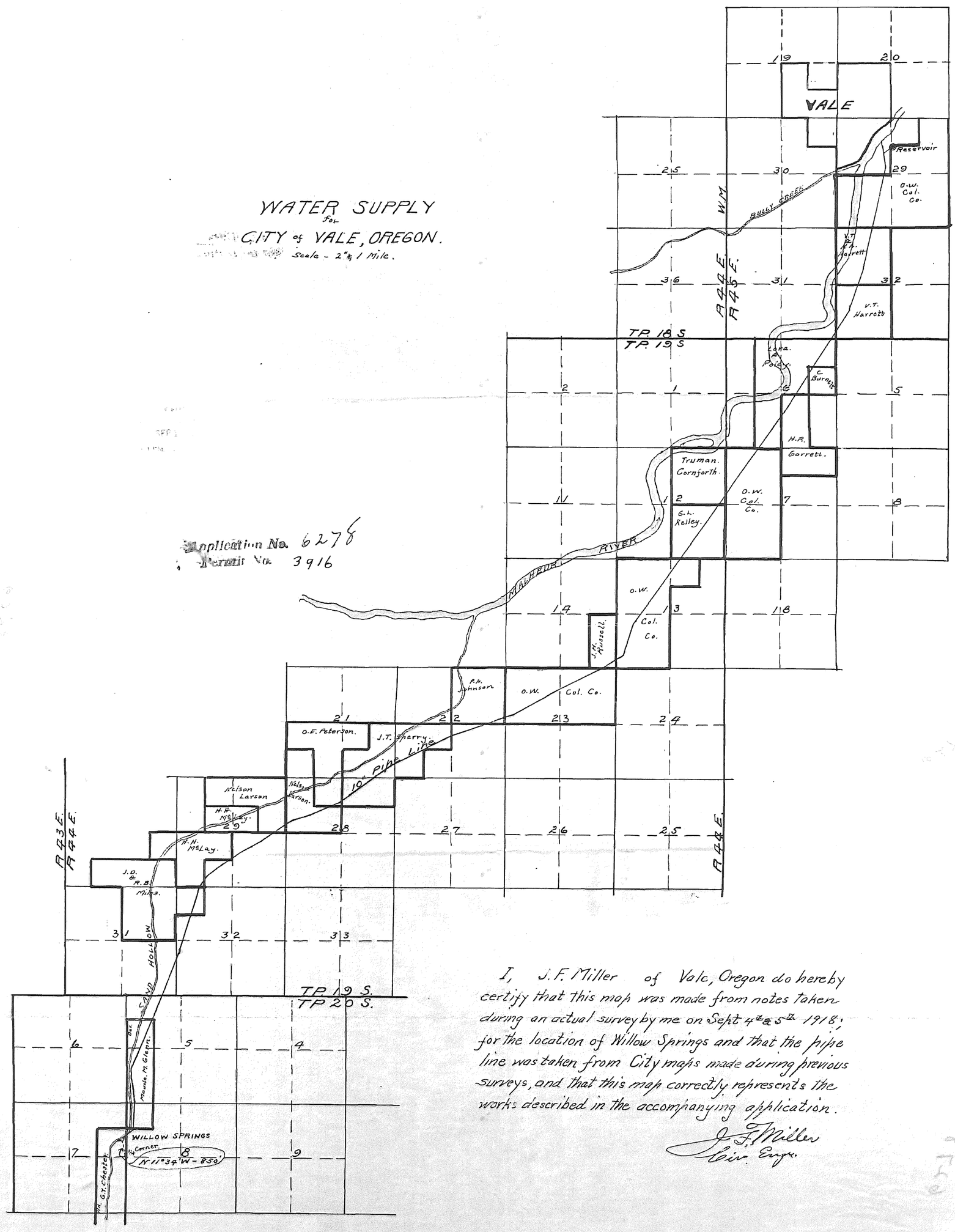
By PERCY A. CUPPER
State Engineer, President

Attest: R. W. POTTER
Secretary

Recorded in State Record of Water Right Certificates, Volume 3, *Page* 2376

WATER SUPPLY
for
CITY of VALE, OREGON.
Scale - 2" = 1 Mile.

Application No. 6278
Permit No. 3916



I, J.F. Miller of Vale, Oregon do hereby certify that this map was made from notes taken during an actual survey by me on Sept 4th & 5th 1918; for the location of Willow Springs and that the pipe line was taken from City maps made during previous surveys, and that this map correctly represents the works described in the accompanying application.

J.F. Miller
Civ. Engr.

Water Right Information Query Results

Contact Information

Current contact information

OWNER:
CITY OF VALE
252 B ST W
VALE, OR 97918

Documents

View all scanned documents

Application: G 4679

Permit: G 4406 document

Certificate: 41133 document , paper map

- Signature: 11/21/1974
- Type: Original

View right with Web Mapping

View Places of Use from Water Rights in the Same Area

View Reported Water Use

Water Right Information

Status: Non-Cancelled

County: Malheur

File Folder Location: Salem

Watermaster District: 9

Point(s) of Diversion

POD 1 - WELL 4 > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-29-NE NW
- Location Description: 580 FT S & 1480 FT E FM NW COR S29

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
0.07	0.07		

IRRIGATION (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
11/12/1968	0.07	0.07			1/80	3.00000	3/1	10/31	

Place(s) of Use

Add TRS grouping

Use - IRRIGATION (Primary) - 5.9 acres; Priority Date: 11/12/1968

T-R-S	QQ	DLC	Gov't Lot	Taxlot	Acres	Status	Linked PODs	Inchoate Info	Remarks
18.00S-45.00E-29	NE NW				3.9	NC			
18.00S-45.00E-29	NW NW				2.0	NC			
Sum of Acres: 5.9									

Water Right Genealogy

—No genealogy records available for this water right, try the family link below instead.

View Water Rights in same Family

Help understanding and working with the Water Rights Information System

Report Errors with Water Right Data

Return to WRIS Query

STATE OF OREGON

COUNTY OF MALHEUR

CERTIFICATE OF WATER RIGHT

This Is to Certify, *That* CITY OF VALE

of 252 "B" Street West, Vale, *State of* Oregon 97918, *has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* Well No. 4

a tributary of Malheur River *for the purpose of* irrigation of 5.9 acres

under Permit No. G-4506 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* November 12, 1968

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.07 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the NE¼ NW¼, Section 29, T. 18 S., R. 45 E., W. M., 580 feet South and 1480 feet East from NW Corner, Section 29.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth *of one cubic foot per second per acre,* or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3 acre feet per acre for each acre irrigated during the irrigation season of each year;

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

3.9 acres NE¼ NW¼
2.0 acres NW¼ NW¼
Section 29
T. 18 S., R. 45 E., W. M.

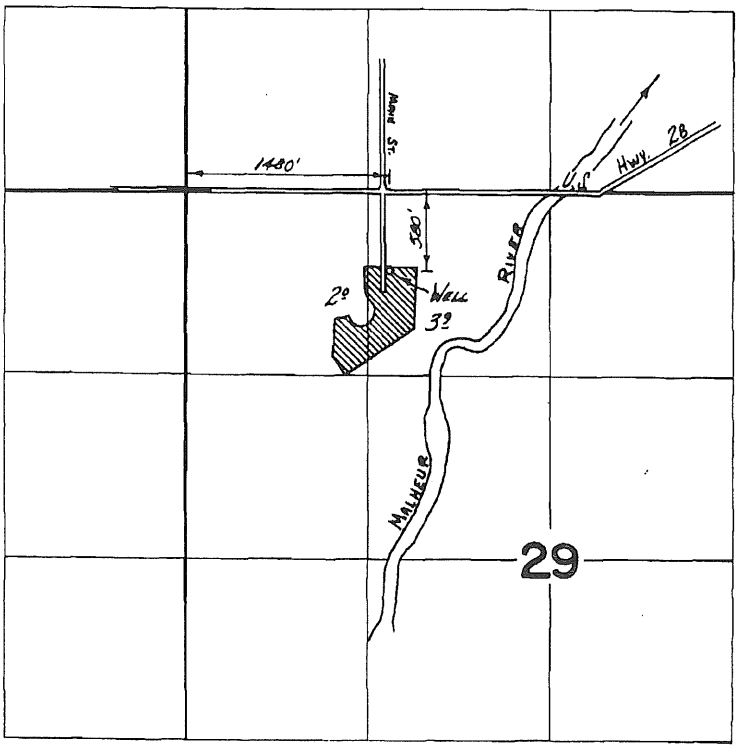
The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. November 21, 1974

Chris L. Wheeler
State Engineer

Recorded in State Record of Water Right Certificates, Volume 33 *, page* 41133

T.18S., R.45E., W.M.



FINAL PROOF SURVEY
UNDER

Application No. G-4679 Permit No. G-4406
IN NAME OF

CITY OF VALE

Surveyed May 22 19 73, by D. Noray

BBC-5N-04

Water Right Information Query Results

Contact Information

Current contact information

OWNER:
CITY OF VALE
252 "B" ST
VALE, OR 97918

Documents

View all scanned documents

Application: S 50354

Permit: S 38013 document

Certificate: 61405 document , paper map

- Signature: 6/6/1989
- Type: Original

View right with Web Mapping

View Places of Use from Water Rights in the Same Area

View Reported Water Use

Water Right Information

Status: Non-Cancelled

County: Malheur

File Folder Location: Salem

Watermaster District: 9

Point(s) of Diversion

POD 1 - MALHEUR RIVER > SNAKE RIVER

Description

T-R-S-QQ: 18.00S-45.00E-21-NW SW

Location Description: 1650 FEET NORTH & 700 FEET EAST FROM SW CORNER, SECTION 21

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
0.53	0.53		

IRRIGATION (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
4/25/1973	0.53	0.53			1/40	3.00000	1/1	12/31	

Place(s) of Use

Add TRS grouping

Use - IRRIGATION (Primary) - 21.0 acres; Priority Date: 4/25/1973

T-R-S	QQ	DLC	Gov't Lot	Taxlot	Acres	Status	Linked PODs	Inchoate Info	Remarks
18.00S-45.00E-21	SE NW				10.0	NC			
18.00S-45.00E-21	NE SW				0.3	NC			
18.00S-45.00E-21	NW SW				10.7	NC			
Sum of Acres: 21.0									

Water Right Genealogy

—No genealogy records available for this water right, try the family link below instead.

View Water Rights in same Family

Help understanding and working with the Water Rights Information System

Report Errors with Water Right Data

Return to WRIS Query

STATE OF OREGON

COUNTY OF MALHEUR

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

CITY OF VALE
252 "B" STREET
VALE, OREGON 97918

confirms the right to use the waters of MALHEUR RIVER, a tributary of SNAKE RIVER, for the purpose of IRRIGATING 21.0 ACRES.

The right has been perfected under Permit 38013. The date of priority is APRIL 25, 1973. The right is limited to not more than 0.53 CUBIC FOOT PER SECOND or its equivalent in case of rotation, measured at the point of diversion from the source.

The point of diversion is located as follows:

NW 1/4 SW 1/4, SECTION 21, T 18 S, R 45 E, W.M.; 1650 FEET NORTH AND 700 FEET EAST FROM SW CORNER SECTION 21.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to ONE-FORTIETH of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 3.0 acre-feet per acre for each acre irrigated during the irrigation season of each year.

The right shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right, and to which such right is appurtenant, is as follows:

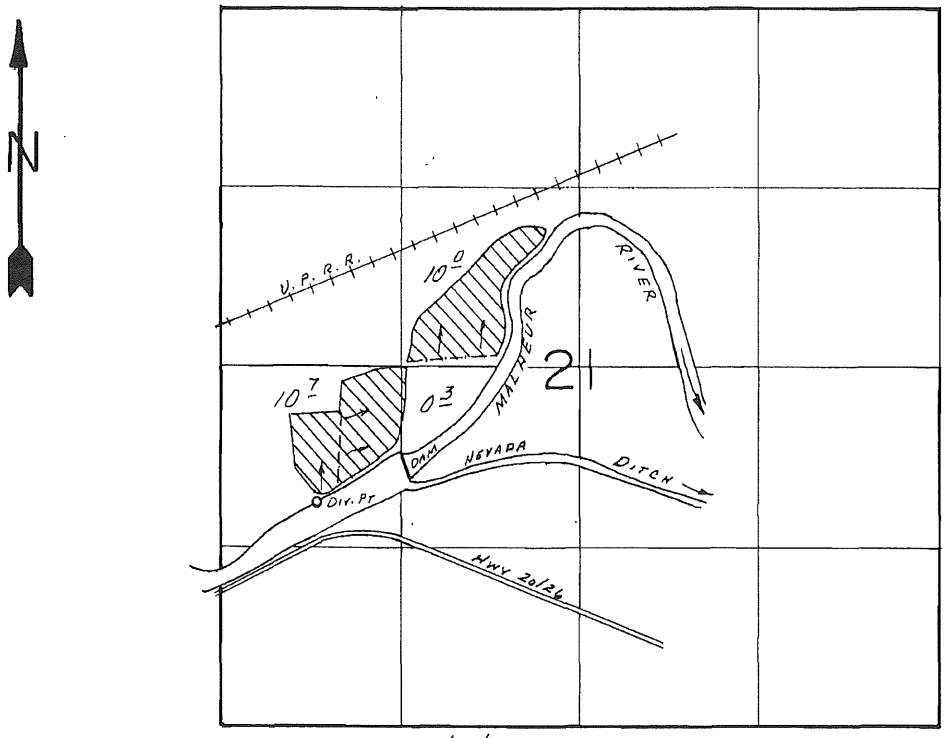
SE 1/4 NW 1/4	10.0 ACRES
NE 1/4 SW 1/4	0.3 ACRE
NW 1/4 SW 1/4	10.7 ACRES

SECTION 21
TOWNSHIP 18 SOUTH, RANGE 45 EAST, W.M.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described. The right is subject to minimum flows established by the Water Resources Commission with an effective date prior to this right.

90684

T.18S., R. 45E., W.M.



DIV. PT. LOC.: 1650' N. & 700' E. FROM SW COR. SEC. 21.

SCALE: 1" = 1320'

FINAL PROOF SURVEY
UNDER

Application No. 50354 Permit No. 38013
IN NAME OF

CITY OF VALE

Surveyed Apr. 15 19 86, by L. M. TOLL

3/9/87 BWB
41045-478-94L

Water Right Information Query Results

Contact Information

Current contact information

OWNER:
CITY OF VALE
252 B ST
VALE, OR 97918

Documents

View all scanned documents

Application: G 4678

Permit: G 4405 document

Certificate: 87397 document , paper map

- Signature: 1/31/2012
- Type: Confirming

Transfer(s)

- View right with Web Mapping
- View Places of Use from Water Rights in the Same Area
- View Reported Water Use

Water Right Information

Status: Non-Cancelled

County: Malheur

File Folder Location: Salem

Watermaster District: 9

Point(s) of Diversion

POD 1 - A WELL > MALHEUR RIVER

Description

- T-R-S-QQ: 18.00S-45.00E-19-SE SE
- Location Description: NORTH 23 DEGREES 5 MINUTES 59 SECONDS WEST, 382.6 FEET FROM SE CORNER, SECTION 19

POD Rate

Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)
0.75	0.75		

MUNICIPAL USES (Primary)

Priority Date	Max Rate (cfs)	Rate (cfs)	Max Volume (af)	Volume (af)	Rate/Acre	Duty	Start Date	End Date	Remarks
11/12/1968	0.75	0.75					1/1	12/31	

Place(s) of Use

Add TRS grouping

Use - MUNICIPAL USES (Primary); Priority Date: 11/12/1968

T-R-S	QQ	DLC	Gov't Lot	Taxlot	Acres	Status	Linked PODs	Inchoate Info	Remarks
18.00S-45.00E-19	NE SE					NC			
18.00S-45.00E-19	NW SE					NC			
18.00S-45.00E-19	SW SE					NC			
18.00S-45.00E-19	SE SE					NC			
18.00S-45.00E-20	NE SW					NC			
18.00S-45.00E-20	NW SW					NC			
18.00S-45.00E-20	SW SW					NC			
18.00S-45.00E-20	SE SW					NC			
18.00S-45.00E-29	NE NW					NC			
18.00S-45.00E-29	NW NW					NC			
18.00S-45.00E-29	SW NW					NC			
18.00S-45.00E-30	NE NE					NC			
18.00S-45.00E-30	NW NE					NC			
18.00S-45.00E-30	SE NE					NC			
Sum of Acres: 0.0									

Water Right Genealogy

- Cert:41132 OR CN
  - Inchoate: T 8339 CF (REG)
    - Cert:87397 CF *

View Water Rights in same Family

Help understanding and working with the Water Rights Information System

Report Errors with Water Right Data

STATE OF OREGON

COUNTY OF MALHEUR

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

CITY OF VALE
252 B ST
VALE OR 97918

confirms the right to use the waters of A WELL, in the MALHEUR RIVER BASIN for MUNICIPAL USE.

This right was perfected under Permit G-4405. The date of priority is NOVEMBER 12, 1968. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.75 CUBIC FOOT PER SECOND, measured at the well.

The well is located as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
18 S	45 E	WM	19	SE SE	NORTH 23 DEGREES 5 MINUTES 59 SECONDS WEST & 382.6 FEET FROM SE CORNER, SECTION 19

A description of the place of use is as follows:

Twp	Rng	Mer	Sec	Q-Q
18 S	45 E	WM	19	NE SE
18 S	45 E	WM	19	NW SE
18 S	45 E	WM	19	SW SE
18 S	45 E	WM	19	SE SE
18 S	45 E	WM	20	NE SW
18 S	45 E	WM	20	NW SW
18 S	45 E	WM	20	SW SW
18 S	45 E	WM	20	SE SW
18 S	45 E	WM	29	NE NW
18 S	45 E	WM	29	NW NW
18 S	45 E	WM	29	SW NW
18 S	45 E	WM	30	NE NE
18 S	45 E	WM	30	NW NE
18 S	45 E	WM	30	SE NE

NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482. Pursuant to ORS 183.482, ORS 536.075 and OAR 137-003-0675, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

The quantity of water diverted at the new point of appropriation (well) shall not exceed the quantity of water lawfully available at the original points of appropriation described as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
18 S	45 E	WM	19	SE SE	WELL #1 - 324 FEET NORTH & 129 FEET WEST FROM SW CORNER, SECTION 20
18S	45E	WM	20	SE SW	WELL #2 - 614 FEET NORTH AND 1451 FEET EAST FROM SW CORNER, SECTION 20
18S	45E	WM	20	NE SW	WELL #3 – 1,416 FEET NORTH AND 1,823 FEET EAST FROM SW CORNER, SECTION 20

The water user shall maintain the in-line flow meter or other suitable device in good working order for measuring and recording the quantity of water used.

This certificate is issued to confirm a change in point of appropriation approved by an order of the Water Resources Director entered July 17, 2003, at Special Order Volume 57, Page 1070, approving Transfer Application 8339, and supersedes Certificate 41132, State record of Water Right Certificates.

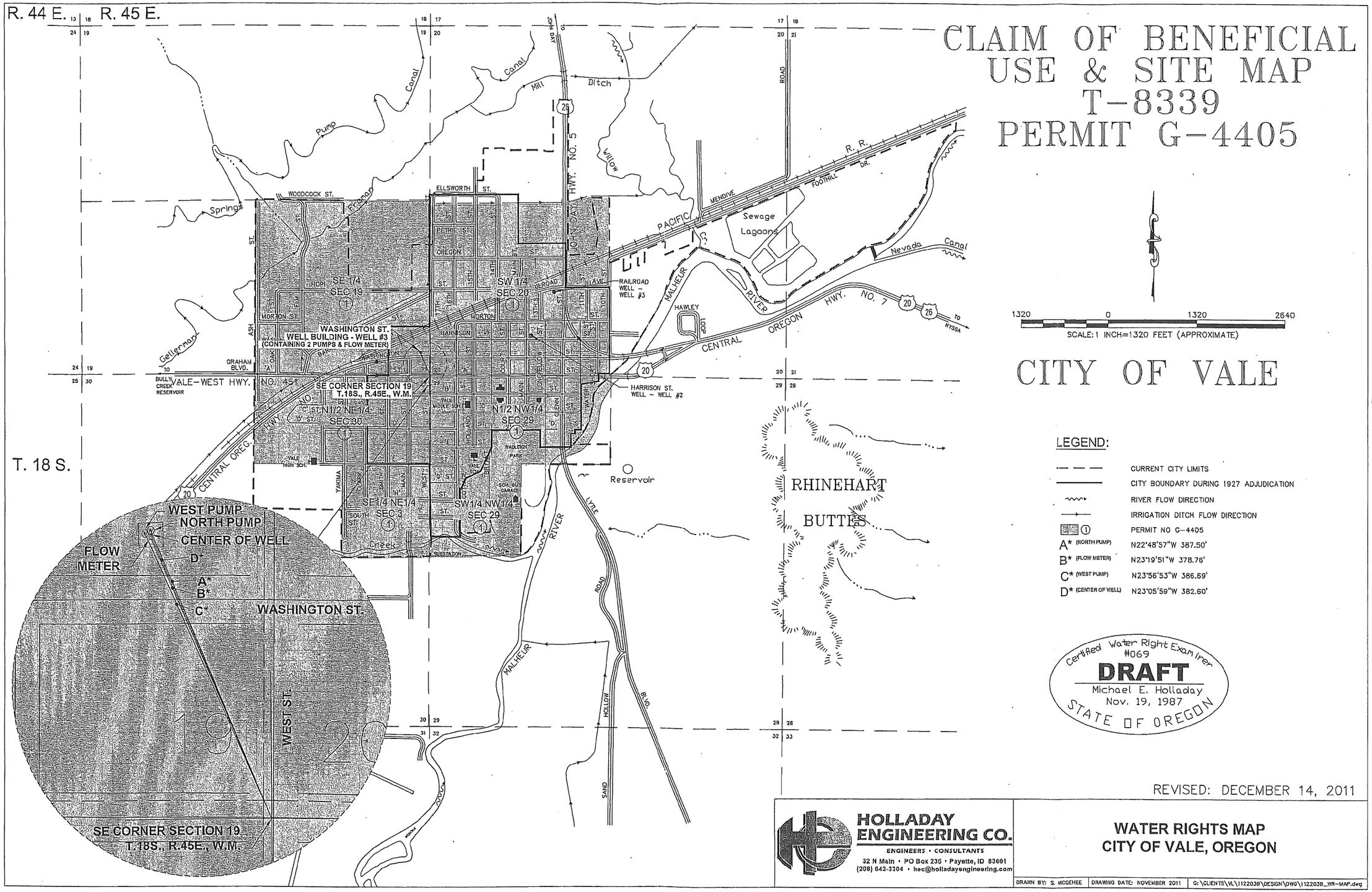
The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described.

Issued JAN 31 2012.

Dwight W. French
Water Right Services Administrator, for
Phillip C. Ward, Director

 Recorded in State Record of Water Right Certificates numbered 87397.

CLAIM OF BENEFICIAL USE & SITE MAP
T-8339
PERMIT G-4405



Certified Water Right Examiner #069
DRAFT
Michael E. Holladay
Nov. 19, 1987
STATE OF OREGON

REVISED: DECEMBER 14, 2011

HOLLADAY ENGINEERING CO.
ENGINEERS • CONSULTANTS
32 N Main • PO Box 236 • Payette, ID 83661
(208) 642-3304 • heo@holladayengineering.com

WATER RIGHTS MAP
CITY OF VALE, OREGON

DRAWN BY: S. MCGEHEE | DRAWING DATE: NOVEMBER 2011 | G:\CLIENTS\VL\112203B\DESIGN\DWG\112203B_WR-MAP.dwg

Copy map 0602

Appendix J
DHS Water Quality Testing Summaries

Oregon Health Authority
Center for Health Protection
Drinking Water Services

800 NE Oregon St. Suite 640
Portland, OR 97232-2162
(971)673-0405
FAX: (971)673-0694
TTY-Nonvoice: (971)673-0372

Public Water System Compliance Information

September 29, 2014

The VALE, CITY OF in Malheur County is classified as a "community" water supply and is identified on the Oregon Health Authority Drinking Water Services public water system inventory by **Public Water System (PWS) Identification Number OR4100917.** This classification is based on the system serving 720 residential connections and a population of 1,890 people.

Public water systems are subject to the requirements of Oregon Administrative Rules, Chapter 333 as administered by the Oregon Health Authority. The state rules are established as required by the federal Safe Drinking Water Act and Environmental Protection Agency.

For specific information regarding this water system, check Data Online at https://yourwater.oregon.gov/inventory.php?pwsno=00917 or contact:

TERRY HARRIS
VALE, CITY OF OR4100917
541-473-3133

Oregon Public Health
Drinking Water Data Online

Oregon Health Authority

OR41 00917 **VALE, CITY OF** **Classification**: COMMUNITY

Contact: TERRY HARRIS
252 B ST WEST
VALE, OR 97918

Phone: 541-473-3133
County: MALHEUR
Activity Status: ACTIVE – **History**

Population: 1,890
Operating Period: January 1 to December 31
Certified Operator(s)
Required: Y
Distribution class: 2
Treatment class: 1
Filtration Endorsement Required: No

Number of Connections: 720
Regulating Agency: REGION 1
Owner Type: LOCAL GOVERNMENT
Licensed By: N/A
Approved Drinking Water Protection Plan: No
Source Water Assessment: Yes
Last Survey Date: Jun 19, 2013

Sources

Facility ID	Facility Name - Well Logs	Activity Status	Availability	Source Type
EP-A	**EP FOR WASHINGTON ST WELL**	**A**		**GW**
SRC-AA	WASHINGTON ST WELL	A	Permanent	**GW**
EP-B	**EP FOR AIRPORT WELLFIELD**	**A**		**GW**
SRC-BA	WELL #1 - L14931	A	Permanent	**GW**
SRC-BB	WELL #2 - L14933	A	Permanent	**GW**
SRC-BC	WELL #3 - L14932	A	Permanent	**GW**
SRC-BD	WELL #4 - L14936	A	Permanent	**GW**
SRC-BE	WELL #5 - L23044	A	Permanent	**GW**
SRC-BF	WELL #6 - L42111	I	Emergency	**GW**
SRC-BG	WELL #7 - L42112	I	Emergency	**GW**

Treatment

State ID	Facility Name	Treatment Process	Treatment Objective	Filter Type
WTP-A	TP FOR WASHINGTON ST WELL	RESID. MAINT. HYPOCHLORINATION	OTHER	
WTP-B	TP FOR AIRPORT WELLFIELD	RESID. MAINT. HYPOCHLORINATION	OTHER	
WTP-B	TP FOR AIRPORT WELLFIELD	ION EXCHANGE	INORGANICS REMOVAL	
WTP-B	TP FOR AIRPORT WELLFIELD	ION EXCHANGE - ARSENIC	INORGANICS REMOVAL	

Consumer Confidence Reports (Last 5 Years)

For Year	Date Received	Date Certified
2013	May 08, 2014	May 08, 2014
2012	Feb 15, 2013	Feb 15, 2013
2011	*Not received*	
2010	*Not received*	
2009	Mar 09, 2011	Mar 09, 2011

Cross Connection/Backflow Prevention Information (Last 3 Records)

Ordinance Received	Annual Summary Report Received	Fee Invoice Paid
Yes	2013	2014
	2012	2013
	2011	2012

Oregon Public Health
Drinking Water Data Online

Oregon Health Authority

Introduction :: Data Search Options :: WS Name Look Up :: WS ID Look Up :: DWS Home :: Quick Data Links

PWS ID: 00917 ---- VALE, CITY OF

Alerts indicate water quality tests with analytical results greater than the detection limit or one-half of the maximum allowable contaminant level which may require some follow-up actions by the Drinking Water Services. See the Contacts link for reports on follow-up actions. Alerts are not water quality violations. Violations for this water system can be found here.

Current Alerts (SDWIS database)

Alert ID	Date Generated	Sample Source	Alert Type	Contaminant	Group	Result	Alert Level	MCL
CHEM6414	08/29/2014	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	5.5600	5.0000	10.0000
CHEM6418	08/29/2014	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0210	0.0105	0.0100
CHEM6418	08/29/2014	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0140	0.0105	0.0100
CHEM6381	07/29/2014	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0160	0.0105	0.0100
CHEM6368	07/17/2014	SRC-BA WELL #1	CHEM	NITRATE (AS N)	IOC	6.4100	5.0000	10.0000
CHEM6368	07/17/2014	SRC-BC WELL #3	CHEM	NITRATE (AS N)	IOC	6.3000	5.0000	10.0000
CHEM6368	07/17/2014	SRC-BD WELL #4	CHEM	NITRATE (AS N)	IOC	7.5100	5.0000	10.0000
CHEM6368	07/17/2014	SRC-BE WELL #5	CHEM	NITRATE (AS N)	IOC	6.7900	5.0000	10.0000
CHEM6368	07/17/2014	SRC-BF WELL #6	CHEM	NITRATE (AS N)	IOC	9.4200	5.0000	10.0000
CHEM6368	07/17/2014	SRC-BG WELL #7	CHEM	NITRATE (AS N)	IOC	9.8700	5.0000	10.0000
CHEM6328	06/19/2014	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0160	0.0105	0.0100
CHEM6218	02/28/2014	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0134	0.0105	0.0100
CHEM6163	01/14/2014	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0171	0.0105	0.0100
CHEM6134	01/08/2014	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0171	0.0105	0.0100
CHEM5839	07/09/2013	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0126	0.0105	0.0100
CHEM5722	03/14/2013	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0171	0.0105	0.0100
CHEM5705	02/25/2013	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	6.7700	5.0000	10.0000
CHEM5381	05/31/2012	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0241	0.0105	0.0100
CHEM5342	04/23/2012	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0224	0.0105	0.0100
CHEM5137	11/10/2011	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	5.1600	5.0000	10.0000
CHEM5012	08/31/2011	EP-A EP FOR WASHINGTON ST WELL	CHEM	NITRATE (AS N)	IOC	7.2500	5.0000	10.0000
COLI9443	07/29/2011	DIST-A 251 b st hose bib	COLI	COLIFORM, TOTAL (TCR)	MOR	Present	Present	Present
COLI9443	07/29/2011	DIST-A 151 b st hose bib	COLI	COLIFORM, TOTAL (TCR)	MOR	Present	Present	Present
COLI9443	07/29/2011	DIST-A sink	COLI	COLIFORM, TOTAL (TCR)	MOR	Present	Present	Present
COLI9417	07/22/2011	DIST-A sink	COLI	COLIFORM, TOTAL (TCR)	MOR	Present	Present	Present
CHEM4939	07/08/2011	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0124	0.0105	0.0100
CHEM4502	11/01/2010	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0105	0.0105	0.0100
COLI7430	03/12/2010	DIST-A Lagoon	COLI	COLIFORM, TOTAL (TCR)	MOR	Present	Present	Present
CHEM3777	10/14/2009	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0170	0.0105	0.0100
CHEM3707	09/21/2009	EP-A EP FOR WASHINGTON ST WELL	CHEM	GROSS ALPHA, EXCLUDING RA & U	RA	10.1800	15.0000	15.0000
CHEM3701	09/17/2009	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0170	0.0105	0.0100
CHEM3265	12/17/2008	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0160	0.0105	0.0100
CHEM3265	12/17/2008	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0180	0.0105	0.0100
CHEM3203	10/20/2008	EP-B EP FOR AIRPORT WELLFIELD	CHEM	SODIUM	IOC	116.000	20.0000	
CHEM3203	10/20/2008	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0303	0.0105	0.0100
CHEM3203	10/20/2008	EP-A EP FOR WASHINGTON ST WELL	CHEM	SODIUM	IOC	176.000	20.0000	
CHEM3203	10/20/2008	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0202	0.0105	0.0100
COLI5509	08/15/2008	DIST-A Distribution System	COLI	COLIFORM, TOTAL (TCR)	MOR	Present	Present	Present
CHEM3002	06/27/2008	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	6.5700	5.0000	10.0000
CHEM2890	03/31/2008	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0178	0.0105	0.0100
CHEM2890	03/31/2008	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0197	0.0105	0.0100
CHEM2745	01/03/2008	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0190	0.0105	0.0100
CHEM2411	03/30/2007	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0174	0.0105	0.0100

CHEM2172	09/21/2006	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0105	0.0105	0.0100
CHEM1977	04/27/2006	EP-A EP FOR WASHINGTON ST WELL	CHEM	NITRATE (AS N)	IOC	5.6000	5.0000	10.0000
CHEM1747	09/29/2005	EP-A EP FOR WASHINGTON ST WELL	CHEM	PICLORAM	OC	0.0005	0.0001	0.5000
CHEM1747	09/29/2005	EP-B EP FOR AIRPORT WELLFIELD	CHEM	SODIUM	IOC	103.000	20.0000	
CHEM1747	09/29/2005	EP-A EP FOR WASHINGTON ST WELL	CHEM	SODIUM	IOC	186.000	20.0000	
CHEM1747	09/29/2005	EP-A EP FOR WASHINGTON ST WELL	CHEM	DI(2-ETHYLHEXYL) - PHTHALATE	OC	0.0007	0.0006	0.0060
CHEM1747	09/29/2005	EP-B EP FOR AIRPORT WELLFIELD	CHEM	PICLORAM	OC	0.0005	0.0001	0.5000
CHEM1747	09/29/2005	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0190	0.0105	0.0100
CHEM1747	09/29/2005	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ARSENIC	IOC	0.0160	0.0105	0.0100
CHEM1687	07/29/2005	EP-A EP FOR WASHINGTON ST WELL	CHEM	NITRATE (AS N)	IOC	6.4800	5.0000	10.0000
CHEM778	06/11/2004	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	8.1000	5.0000	10.0000
CHEM778	06/11/2004	EP-A EP FOR WASHINGTON ST WELL	CHEM	ARSENIC	IOC	0.0180	0.0105	0.0100
CHEM700	03/09/2004	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	6.7600	5.0000	10.0000
CHEM700	03/09/2004	SRC-BE WELL #5	CHEM	NITRATE (AS N)	IOC	7.4300	5.0000	10.0000
CHEM700	03/09/2004	SRC-BF WELL #6	CHEM	NITRATE (AS N)	IOC	12.7000	5.0000	10.0000
CHEM700	03/09/2004	SRC-BG WELL #7	CHEM	NITRATE (AS N)	IOC	13.7000	5.0000	10.0000
CHEM578	12/03/2003	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	6.3100	5.0000	10.0000
CHEM535	10/10/2003	SRC-BD WELL #4	CHEM	NITRATE (AS N)	IOC	9.5700	5.0000	10.0000
CHEM535	10/10/2003	SRC-BE WELL #5	CHEM	NITRATE (AS N)	IOC	7.4800	5.0000	10.0000
CHEM535	10/10/2003	SRC-BF WELL #6	CHEM	NITRATE (AS N)	IOC	10.5000	5.0000	10.0000
CHEM535	10/10/2003	SRC-BG WELL #7	CHEM	NITRATE (AS N)	IOC	10.8000	5.0000	10.0000
CHEM477	08/14/2003	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	6.4500	5.0000	10.0000
CHEM464	08/04/2003	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	6.3900	5.0000	10.0000
CHEM350	03/26/2003	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	8.5400	5.0000	10.0000
CHEM301	01/31/2003	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	7.4400	5.0000	10.0000
CHEM249	12/31/2002	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	5.9800	5.0000	10.0000
CHEM249	12/31/2002	EP-B EP FOR AIRPORT WELLFIELD	CHEM	ATRAZINE	OC	0.0003	0.0001	0.0030
CHEM249	12/31/2002	EP-A EP for WELL #1 (WASHINGTON & WEST ST)	CHEM	ARSENIC	IOC	0.0210	0.0105	0.0100
CHEM249	12/31/2002	EP-A EP for WELL #1 (WASHINGTON & WEST ST)	CHEM	SODIUM	IOC	116.000	20.0000	
CHEM249	12/31/2002	EP-B EP FOR AIRPORT WELLFIELD	CHEM	SODIUM	IOC	164.000	20.0000	
CHEM219	11/25/2002	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	9.7500	5.0000	10.0000
CHEM10	07/10/2002	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	7.5300	5.0000	10.0000
CHEM10	07/10/2002	SRC-BA WELL #1	CHEM	NITRATE (AS N)	IOC	7.1200	5.0000	10.0000
CHEM10	07/10/2002	SRC-BB WELL #2	CHEM	NITRATE (AS N)	IOC	5.6000	5.0000	10.0000
CHEM10	07/10/2002	EP-B EP FOR AIRPORT WELLFIELD	CHEM	NITRATE (AS N)	IOC	8.8600	5.0000	10.0000
CHEM10	07/10/2002	SRC-BC WELL #3	CHEM	NITRATE (AS N)	IOC	10.7000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BD WELL #4	CHEM	NITRATE (AS N)	IOC	14.3000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BE WELL #5	CHEM	NITRATE (AS N)	IOC	13.8000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BF WELL #6	CHEM	NITRATE (AS N)	IOC	14.5000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BG WELL #7	CHEM	NITRATE (AS N)	IOC	18.0000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BE WELL #5	CHEM	NITRATE (AS N)	IOC	13.6000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BG WELL #7	CHEM	NITRATE (AS N)	IOC	16.9000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BF WELL #6	CHEM	NITRATE (AS N)	IOC	11.3000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BA WELL #1	CHEM	NITRATE (AS N)	IOC	6.2400	5.0000	10.0000
CHEM10	07/10/2002	SRC-BD WELL #4	CHEM	NITRATE (AS N)	IOC	13.7000	5.0000	10.0000
CHEM10	07/10/2002	SRC-BC WELL #3	CHEM	NITRATE (AS N)	IOC	6.2600	5.0000	10.0000
CHEM10	07/10/2002	SRC-BB WELL #2	CHEM	NITRATE (AS N)	IOC	5.3900	5.0000	10.0000

Archived Alerts (SWS database)

Date	Source	Chemical	Results mg/l	MCL mg/l
02/01/1999	A--EP for WELL #1 (WASHINGTON & WEST ST)	Arsenic	0.028	0.05
09/13/2000		Coliform		
10/12/1998		Coliform		
07/29/1997		Coliform		

02/01/1999	AA--WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	9.68	15
01/22/1996	A--EP for WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	9.18	15
01/15/1992	A--WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	9	15
10/09/1991	A--WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	6.6	15
11/14/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	7.09	10
10/09/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	6.57	10
09/11/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	5.75	10
08/21/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	6.64	10
08/21/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	6.65	10
08/21/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	6.71	10
08/21/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	6.76	10
08/14/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	7.19	10
08/14/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	7.38	10
08/14/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	7.48	10
08/14/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	7.59	10
07/02/2001	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	8.05	10
07/02/2001	BA--WELL #1	Nitrate	5.78	10
07/02/2001	BC--WELL #3	Nitrate	6.03	10
07/02/2001	BD--WELL #4	Nitrate	11.7	10
07/02/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	8.13	10
07/02/2001	BE--WELL #5	Nitrate	13.7	10
07/02/2001	BF--WELL #6	Nitrate	12.2	10
07/02/2001	BG--WELL #7	Nitrate	10.6	10
06/26/2001	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	8.17	10
06/26/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	7.7	10
05/23/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	11	10
05/09/2001	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.23	10
05/09/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	9.57	10
02/28/2001	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.46	10
02/28/2001	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.11	10
02/28/2001	B--EP FOR AIRPORT WELLFIELD	Nitrate	7.69	10
02/01/1999	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.77	10
09/21/1998	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.2	10
09/15/1997	AA--WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.13	10
11/18/1996	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.21	10
07/22/1996	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.89	10
05/28/1996	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.81	10
05/13/1996	A--EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.82	10
09/05/1995	AA--WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.04	10
02/19/1991	A--WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.07	10
03/12/2001	BB--WELL #2	Phthalates (Di(2-Ethylhexyl))	0.0027	0.006
03/12/2001	BA--WELL #1	Sodium	170	
03/12/2001	BB--WELL #2	Sodium	87.6	
02/01/1999	A--EP for WELL #1 (WASHINGTON & WEST ST)	Sodium	232	
05/28/1996	A--EP for WELL #1 (WASHINGTON & WEST ST)	Sodium	234	
09/05/1995	AA--WELL #1 (WASHINGTON & WEST ST)	Sodium	219	
02/19/1991	A--WELL #1 (WASHINGTON & WEST ST)	Sodium	209	
05/28/1996	A--EP for WELL #1 (WASHINGTON & WEST ST)	Sulfate	206	

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Current Enforcement Data

Type of Action	Date Issued	Due Date	Date of Compliance
Bilateral Compliance Agreement	**Jan 22, 2014**		**Open**
SUBMIT DOCUMENTS		Jun 30, 2014	Jul 07, 2014 - Late
ISSUE PUBLIC NOTICE		Jul 10, 2014	May 09, 2014
ISSUE PUBLIC NOTICE		Jan 10, 2015	
SUBMIT PLAN		Mar 31, 2015	
ISSUE PUBLIC NOTICE		Jul 10, 2015	
ISSUE PUBLIC NOTICE		Jan 10, 2016	
SUBMIT CONSTRUCTION PLAN		Mar 30, 2016	
ISSUE PUBLIC NOTICE		Jul 10, 2016	
ISSUE PUBLIC NOTICE		Jan 10, 2017	
ISSUE PUBLIC NOTICE		Jul 10, 2017	
COMPLETE CONSTRUCTION		Aug 31, 2017	
CORRECT WATER QUALITY DEFICIENCIES		Nov 30, 2017	
ISSUE PUBLIC NOTICE		Jan 10, 2018	

Archived Enforcement Data

Date	Type of Action	Reason For Action	Comply By	Extended to	Compliance Achieved
Sep 24, 2001	Return to Compliance	Env. Partnership w/DEQ	12/31/2000		09/21/2001
Sep 02, 1997	Administrative Order	Env. Partnership w/DEQ	09/30/1999	12/31/2000	09/21/2001
Aug 28, 1995	Return to Compliance	Lead and Copper M/R	01/01/1996		05/31/1996

For all compliance errors please phone Brad Daniels, DWS Compliance Specialist, at 971-673-0405.

Oregon Public Health
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*The list of water system surveys due each year is available online here.

Water System Site Visit History

Reason	Visit Date	Frequency	Next Due	Notification Date	Responsible Agency	Comments and Deficiencies
Sanitary Survey, Finished (SNSV)	06/19/2013	3 YR	*		DWP	Comments
Sanitary Survey, Finished (SNSV)	05/26/2010	3 YR	*	06/17/2010	DWP	Comments
Sanitary Survey, Finished (SNSV)	10/17/2006	5 YR	*		DWP	*No comments*
Sanitary Survey, Finished (SNSV)	06/26/2001	5 YR	*		DWP	Comments

Survey Follow-up

No survey follow-up actions were found for this water system.

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Public notices are displayed for the last 5 years only.

Group Abbreviations: ARS = Arsenic, TCR = Total Coliform Rule

Public Notices

Violation Number	Group	Reason for Public Notice	Monitoring Period Begin	Monitoring Period End	Date Distributed	Date Received	Date Due
902597056	ARS	Chemical MCL based on Average of Samples	Apr 01, 2014	Jun 30, 2014	Jul 29, 2014	Jul 25, 2014	Sep 03, 2014
902597054	ARS	Chemical MCL based on Average of Samples	Jan 01, 2014	Mar 31, 2014	May 20, 2014	May 09, 2014	May 27, 2014
902597053	ARS	Chemical MCL based on Average of Samples	Oct 01, 2013	Dec 31, 2013	Jan 27, 2014	Jan 21, 2014	Mar 08, 2014
902597051	ARS	Chemical MCL based on Average of Samples	Apr 01, 2013	Jun 30, 2013	Aug 05, 2013	Jul 31, 2013	Aug 27, 2013
902597050	ARS	Chemical MCL based on Average of Samples	Jan 01, 2013	Mar 31, 2013	May 02, 2013	Apr 26, 2013	May 27, 2013
902597049	ARS	Chemical MCL based on Average of Samples	Oct 01, 2012	Dec 31, 2012	Feb 14, 2013	Feb 15, 2013	Mar 06, 2013
902597043	ARS	Chemical MCL based on Average of Samples	Apr 01, 2012	Jun 30, 2012	Aug 29, 2012	Aug 29, 2012	Aug 29, 2012
902597031	ARS	Chemical MCL based on Average of Samples	Oct 01, 2011	Dec 31, 2011	Mar 15, 2012	Mar 14, 2012	Mar 21, 2012
902597028	ARS	Chemical MCL based on 1 Sample	Jul 01, 2011	Sep 30, 2011		*Not Received*	Dec 03, 2011
902597024	ARS	Chemical MCL based on Average of Samples	Apr 01, 2011	Jun 30, 2011		*Not Received*	Sep 05, 2011
902597025	TCR	Total Coliform MCL	Jul 01, 2011	Jul 31, 2011	Aug 05, 2011	Aug 05, 2011	Sep 26, 2011

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Plan Review Records

Plan ID	Project Name	Date All Received	Request for Additional Info	Conditional Approval	Preliminary Approval	Date Abandoned	Final Approval	Reviewer
232-2007	Watermain extension	11/01/2007		11/05/2007			10/29/2009	BG
195-2005	Arsenic Treatment	08/10/2005		08/10/2005			10/20/2006	BG
52-1998	1998 System Improvements	03/06/1998		04/05/2002			12/23/2004	GB
56-1996	Master Plan	03/14/1996					03/08/1998	GB

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Coliform fact sheet

PWS ID: 00917 ---- VALE, CITY OF

Current Coliform Summary History

Samples Required	Sample Type	Sampling Period Type
1	RT	YEAR
1	RT	YEAR
2	RT	MONTH

Spreadsheet

Number of Samples Reported

Period End Date	Routines Reported	Routine TC+	Routine FC+	Repeats Reported	Repeat TC+	Repeat FC+	Period Type
Dec 31, 2014	0	0	0	0	0	0	YR
Sep 30, 2014	2	0	0	0	0	0	MN
Sep 30, 2014	0	0	0	0	0	0	QT
Aug 31, 2014	2	0	0	0	0	0	MN
Jul 31, 2014	2	0	0	0	0	0	MN
Jun 30, 2014	2	0	0	0	0	0	MN
Jun 30, 2014	0	0	0	0	0	0	QT
May 31, 2014	2	0	0	0	0	0	MN
Apr 30, 2014	2	0	0	0	0	0	MN
Mar 31, 2014	2	0	0	0	0	0	MN
Mar 31, 2014	0	0	0	0	0	0	QT
Feb 28, 2014	2	0	0	0	0	0	MN
Jan 31, 2014	2	0	0	0	0	0	MN
Dec 31, 2013	0	0	0	0	0	0	3Y
Dec 31, 2013	0	0	0	0	0	0	6Y
Dec 31, 2013	2	0	0	0	0	0	MN
Dec 31, 2013	0	0	0	0	0	0	QT
Dec 31, 2013	0	0	0	0	0	0	YR
Nov 30, 2013	2	0	0	0	0	0	MN
Oct 31, 2013	2	0	0	0	0	0	MN
Sep 30, 2013	2	0	0	0	0	0	MN
Sep 30, 2013	0	0	0	0	0	0	QT
Aug 31, 2013	2	0	0	0	0	0	MN
Jul 31, 2013	2	0	0	0	0	0	MN
Jun 30, 2013	2	0	0	0	0	0	MN
Jun 30, 2013	0	0	0	0	0	0	QT
May 31, 2013	2	0	0	0	0	0	MN
Apr 30, 2013	2	0	0	0	0	0	MN
Mar 31, 2013	2	0	0	0	0	0	MN
Mar 31, 2013	0	0	0	0	0	0	QT
Feb 28, 2013	2	0	0	0	0	0	MN
Jan 31, 2013	2	0	0	0	0	0	MN
Dec 31, 2012	2	0	0	0	0	0	MN
Dec 31, 2012	0	0	0	0	0	0	QT
Dec 31, 2012	0	0	0	0	0	0	YR
Nov 30, 2012	2	0	0	0	0	0	MN
Oct 31, 2012	2	0	0	0	0	0	MN
Sep 30, 2012	2	0	0	0	0	0	MN
Sep 30, 2012	0	0	0	0	0	0	QT
Aug 31, 2012	2	0	0	0	0	0	MN
Jul 31, 2012	2	0	0	0	0	0	MN
Jun 30, 2012	2	0	0	0	0	0	MN
Jun 30, 2012	0	0	0	0	0	0	QT
May 31, 2012	2	0	0	0	0	0	MN
Apr 30, 2012	2	0	0	0	0	0	MN
Mar 31, 2012	2	0	0	0	0	0	MN
Mar 31, 2012	0	0	0	0	0	0	QT
Feb 29, 2012	2	0	0	0	0	0	MN
Jan 31, 2012	2	0	0	0	0	0	MN
Dec 31, 2011	2	0	0	0	0	0	MN
Dec 31, 2011	0	0	0	0	0	0	QT
Dec 31, 2011	0	0	0	0	0	0	YR

Nov 30, 2011	2	0	0	0	0	0	MN
Oct 31, 2011	2	0	0	0	0	0	MN
Sep 30, 2011	2	0	0	0	0	0	MN
Aug 31, 2011	5	0	0	0	0	0	MN
Jul 31, 2011	2	**1**	0	**3**	**3**	0	MN
Jun 30, 2011	2	0	0	0	0	0	MN
Jun 30, 2011	0	0	0	0	0	0	QT
May 31, 2011	2	0	0	0	0	0	MN
Apr 30, 2011	2	0	0	0	0	0	MN
Mar 31, 2011	2	0	0	0	0	0	MN
Feb 28, 2011	2	0	0	0	0	0	MN
Jan 31, 2011	2	0	0	0	0	0	MN
Dec 31, 2010	0	0	0	0	0	0	3Y
Dec 31, 2010	0	0	0	0	0	0	9Y
Dec 31, 2010	2	0	0	0	0	0	MN
Dec 31, 2010	0	0	0	0	0	0	YR
Nov 30, 2010	2	0	0	0	0	0	MN
Oct 31, 2010	2	0	0	0	0	0	MN
Sep 30, 2010	2	0	0	0	0	0	MN
Sep 30, 2010	0	0	0	0	0	0	QT
Aug 31, 2010	2	0	0	0	0	0	MN
Jul 31, 2010	1	0	0	0	0	0	MN
Jun 30, 2010	2	0	0	0	0	0	MN
Jun 30, 2010	0	0	0	0	0	0	QT
May 31, 2010	2	0	0	0	0	0	MN
Apr 30, 2010	5	0	0	0	0	0	MN
Mar 31, 2010	2	**1**	0	**3**	0	0	MN
Mar 31, 2010	0	0	0	0	0	0	QT
Feb 28, 2010	2	0	0	0	0	0	MN
Jan 31, 2010	2	0	0	0	0	0	MN
Dec 31, 2009	2	0	0	0	0	0	MN
Dec 31, 2009	0	0	0	0	0	0	YR
Nov 30, 2009	2	0	0	0	0	0	MN
Oct 31, 2009	2	0	0	0	0	0	MN
Sep 30, 2009	2	0	0	0	0	0	MN
Aug 31, 2009	2	0	0	0	0	0	MN
Jul 31, 2009	2	0	0	0	0	0	MN
Jun 30, 2009	2	0	0	0	0	0	MN
May 31, 2009	2	0	0	0	0	0	MN
Apr 30, 2009	2	0	0	0	0	0	MN
Mar 31, 2009	2	0	0	0	0	0	MN
Feb 28, 2009	2	0	0	0	0	0	MN
Jan 31, 2009	2	0	0	0	0	0	MN
Dec 31, 2008	2	0	0	0	0	0	MN
Dec 31, 2008	0	0	0	0	0	0	YR
Nov 30, 2008	2	0	0	0	0	0	MN
Oct 31, 2008	2	0	0	0	0	0	MN
Sep 30, 2008	2	0	0	0	0	0	MN
Aug 31, 2008	2	**1**	0	**3**	0	0	MN
Jul 31, 2008	2	0	0	0	0	0	MN
Jun 30, 2008	2	0	0	0	0	0	MN
May 31, 2008	2	0	0	0	0	0	MN
Apr 30, 2008	2	0	0	0	0	0	MN
Mar 31, 2008	2	0	0	0	0	0	MN
Feb 29, 2008	2	0	0	0	0	0	MN
Jan 31, 2008	2	0	0	0	0	0	MN
Dec 31, 2007	0	0	0	0	0	0	3Y
Dec 31, 2007	2	0	0	0	0	0	MN
Dec 31, 2007	0	0	0	0	0	0	YR
Nov 30, 2007	2	0	0	0	0	0	MN
Oct 31, 2007	2	0	0	0	0	0	MN
Sep 30, 2007	2	0	0	0	0	0	MN
Aug 31, 2007	2	0	0	0	0	0	MN
Jul 31, 2007	2	0	0	0	0	0	MN
Jun 30, 2007	2	0	0	0	0	0	MN
May 31, 2007	2	0	0	0	0	0	MN
Apr 30, 2007	2	0	0	0	0	0	MN
Mar 31, 2007	2	0	0	0	0	0	MN
Feb 28, 2007	2	0	0	0	0	0	MN
Jan 31, 2007	2	0	0	0	0	0	MN

Dec 31, 2006	2	0	0	0	0	0	MN
Dec 31, 2006	0	0	0	0	0	0	YR
Nov 30, 2006	2	0	0	0	0	0	MN
Oct 31, 2006	2	0	0	0	0	0	MN
Sep 30, 2006	2	0	0	0	0	0	MN
Aug 31, 2006	2	0	0	0	0	0	MN
Jul 31, 2006	2	0	0	0	0	0	MN
Jun 30, 2006	2	0	0	0	0	0	MN
May 31, 2006	2	0	0	0	0	0	MN
Apr 30, 2006	2	0	0	0	0	0	MN
Mar 31, 2006	2	0	0	0	0	0	MN
Feb 28, 2006	2	0	0	0	0	0	MN
Jan 31, 2006	2	0	0	0	0	0	MN
Dec 31, 2005	2	0	0	0	0	0	MN
Dec 31, 2005	0	0	0	0	0	0	YR
Nov 30, 2005	2	0	0	0	0	0	MN
Oct 31, 2005	2	0	0	0	0	0	MN
Sep 30, 2005	2	0	0	0	0	0	MN
Aug 31, 2005	2	0	0	0	0	0	MN
Jul 31, 2005	2	0	0	0	0	0	MN
Jun 30, 2005	2	0	0	0	0	0	MN
May 31, 2005	2	0	0	0	0	0	MN
Apr 30, 2005	2	0	0	0	0	0	MN
Mar 31, 2005	2	0	0	0	0	0	MN
Feb 28, 2005	2	0	0	0	0	0	MN
Jan 31, 2005	2	0	0	0	0	0	MN
Dec 31, 2004	0	0	0	0	0	0	3Y
Dec 31, 2004	2	0	0	0	0	0	MN
Dec 31, 2004	0	0	0	0	0	0	QT
Dec 31, 2004	0	0	0	0	0	0	YR
Nov 30, 2004	2	0	0	0	0	0	MN
Oct 31, 2004	2	0	0	0	0	0	MN
Sep 30, 2004	2	0	0	0	0	0	MN
Aug 31, 2004	2	0	0	0	0	0	MN
Jul 31, 2004	2	0	0	0	0	0	MN
Jun 30, 2004	3	0	0	0	0	0	MN
Jun 30, 2004	0	0	0	0	0	0	QT
May 31, 2004	2	0	0	0	0	0	MN
Apr 30, 2004	2	0	0	0	0	0	MN
Mar 31, 2004	2	0	0	0	0	0	MN
Mar 31, 2004	0	0	0	0	0	0	QT
Feb 29, 2004	2	0	0	0	0	0	MN
Jan 31, 2004	2	0	0	0	0	0	MN
Dec 31, 2003	2	0	0	0	0	0	MN
Dec 31, 2003	0	0	0	0	0	0	QT
Dec 31, 2003	0	0	0	0	0	0	YR
Nov 30, 2003	2	0	0	0	0	0	MN
Oct 31, 2003	2	0	0	0	0	0	MN
Sep 30, 2003	2	0	0	0	0	0	MN
Sep 30, 2003	0	0	0	0	0	0	QT
Aug 31, 2003	2	0	0	0	0	0	MN
Jul 31, 2003	2	0	0	0	0	0	MN
Jun 30, 2003	2	0	0	0	0	0	MN
Jun 30, 2003	0	0	0	0	0	0	QT
May 31, 2003	3	0	0	0	0	0	MN
Apr 30, 2003	2	0	0	0	0	0	MN
Mar 31, 2003	2	0	0	0	0	0	MN
Mar 31, 2003	0	0	0	0	0	0	QT
Feb 28, 2003	2	0	0	0	0	0	MN
Jan 31, 2003	2	0	0	0	0	0	MN
Dec 31, 2002	2	0	0	0	0	0	MN
Dec 31, 2002	0	0	0	0	0	0	QT
Nov 30, 2002	2	0	0	0	0	0	MN
Oct 31, 2002	2	0	0	0	0	0	MN
Sep 30, 2002	2	0	0	0	0	0	MN
Sep 30, 2002	1	0	0	0	0	0	QT
Aug 31, 2002	2	0	0	0	0	0	MN
Jul 31, 2002	1	0	0	0	0	0	MN
Jun 30, 2002	2	0	0	0	0	0	MN
Jun 30, 2002	0	0	0	0	0	0	QT

May 31, 2002	2	0	0	0	0	0	MN
Apr 30, 2002	2	0	0	0	0	0	MN
Mar 31, 2002	2	0	0	0	0	0	MN
Mar 31, 2002	0	0	0	0	0	0	QT
Feb 28, 2002	2	0	0	0	0	0	MN
Jan 31, 2002	2	0	0	0	0	0	MN

Show results prior to 01/01/2002

Oregon Public Health
Drinking Water Data Online

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Coliform Fact Sheet :: Spreadsheet :: MRDL Summary
Sample Types: AS=Assessment, CO=Confirmation, RP=Repeat, RT=Routine, SP=Special, TG=Triggered, Show special samples

Recent Coliform Test Results - PWS ID: 00917 ---- VALE, CITY OF

Sample Date	# Samples	Sample Type	Coliform Type	Results ID	Repeat of Sample ID	Sample Site	Facility	Cl Residual	Receive Date
Sep 10, 2014	1	RT	Total	Absent--3011273631			DIST-A	0.05	Sep 15, 2014
Sep 10, 2014	1	RT	Total	Absent--3011273641			DIST-A	0.60	Sep 15, 2014
Aug 13, 2014	1	RT	Total	Absent--3011265591			DIST-A	0.26	Aug 18, 2014
Aug 13, 2014	1	RT	Total	Absent--3011265581			DIST-A	0.32	Aug 18, 2014
Jul 09, 2014	1	RT	Total	Absent--3011256761			DIST-A	0.38	Jul 14, 2014
Jul 09, 2014	1	RT	Total	Absent--3011256751			DIST-A	0.48	Jul 14, 2014
Jun 11, 2014	1	RT	Total	Absent--3011249241			DIST-A	0.60	Jun 16, 2014
Jun 11, 2014	1	RT	Total	Absent--3011249231			DIST-A	0.52	Jun 16, 2014
May 14, 2014	1	RT	Total	Absent--3011241671			DIST-A	0.56	May 19, 2014
May 14, 2014	1	RT	Total	Absent--3011241661			DIST-A	0.48	May 19, 2014
Apr 09, 2014	1	RT	Total	Absent--3011234701			DIST-A	2.00	Apr 14, 2014
Apr 09, 2014	1	RT	Total	Absent--3011234691			DIST-A	1.06	Apr 14, 2014
Mar 12, 2014	1	RT	Total	Absent--3011228681			DIST-A	1.49	Mar 17, 2014
Mar 12, 2014	1	RT	Total	Absent--3011228671			DIST-A	2.00	Mar 17, 2014
Feb 12, 2014	1	RT	Total	Absent--3011223131			DIST-A	1.26	Feb 18, 2014
Feb 12, 2014	1	RT	Total	Absent--3011223121			DIST-A	1.16	Feb 18, 2014
Jan 08, 2014	1	RT	Total	Absent--3011215101			DIST-A	0.56	Jan 13, 2014
Jan 08, 2014	1	RT	Total	Absent--3011215091			DIST-A	0.47	Jan 13, 2014
Dec 18, 2013	1	AS	Total	Absent--3011211661		COMMON HEADER B	CH-B		Dec 23, 2013
Dec 11, 2013	1	RT	Total	Absent--3011209801			DIST-A	0.75	Dec 16, 2013
Sample Date	**# Samples**	**Sample Type**	**Coliform Type**	**Results--ID**	**Repeat of Sample ID**	**Sample Site**	**Facility**	**Cl Residual**	**Receive Date**
Dec 11, 2013	1	RT	Total	Absent--3011209791			DIST-A	0.85	Dec 16, 2013
Nov 13, 2013	1	RT	Total	Absent--3011204631			DIST-A	0.59	Nov 18, 2013
Nov 13, 2013	1	RT	Total	Absent--3011204621			DIST-A	0.59	Nov 18, 2013
Oct 09, 2013	1	RT	Total	Absent--3011197861			DIST-A	0.69	Oct 15, 2013
Oct 09, 2013	1	RT	Total	Absent--3011197851			DIST-A	0.40	Oct 15, 2013
Sep 11, 2013	1	RT	Total	Absent--3011190351			DIST-A	0.54	Sep 16, 2013
Sep 11, 2013	1	RT	Total	Absent--3011190341			DIST-A	1.07	Sep 16, 2013
Aug 14, 2013	1	RT	Total	Absent--3011183201			DIST-A	1.01	Aug 19, 2013
Aug 14, 2013	1	RT	Total	Absent--3011183191			DIST-A	0.66	Aug 19, 2013
Jul 10, 2013	1	RT	Total	Absent--3011174881		N/A	DIST-A	0.81	Jul 15, 2013
Jul 10, 2013	1	RT	Total	Absent--3011174871		N/A	DIST-A	0.71	Jul 15, 2013
Jun 12, 2013	1	RT	Total	Absent--3011167451		N/A	DIST-A	0.63	Jun 17, 2013
Jun 12, 2013	1	RT	Total	Absent--3011167441		N/A	DIST-A	0.55	Jun 17, 2013
May 08, 2013	1	RT	Total	Absent--3011160401-2		N/A	DIST-A	0.92	May 13, 2013
May 08, 2013	1	RT	Total	Absent--3011160401-1		N/A	DIST-A	0.92	May 13, 2013
Apr 10, 2013	1	RT	Total	Absent--3011155111		N/A	DIST-A	0.89	Apr 15, 2013
Apr 10, 2013	1	RT	Total	Absent--3011155101		N/A	DIST-A	0.57	Apr 15, 2013
Mar 06, 2013	1	RT	Total	Absent--3011148141		N/A	DIST-A	0.68	Mar 11, 2013

Mar 06, 2013	1	RT	Total	Absent--3011148131		N/A	DIST-A	0.77	Mar 11, 2013
Feb 13, 2013	1	RT	Total	Absent--3011143451		N/A	DIST-A	0.84	Feb 19, 2013
Sample Date	**# Samples**	**Sample Type**	**Coliform Type**	**Results--ID**	**Repeat of Sample ID**	**Sample Site**	**Facility**	**Cl Residual**	**Receive Date**
Feb 13, 2013	1	RT	Total	Absent--3011143441		N/A	DIST-A	0.86	Feb 19, 2013
Jan 09, 2013	1	RT	Total	Absent--3011134661		N/A	DIST-A	0.56	Jan 14, 2013
Jan 09, 2013	1	RT	Total	Absent--3011134651		N/A	DIST-A	0.77	Jan 14, 2013
Dec 12, 2012	1	RT	Total	Absent--3011129511		N/A	DIST-A	0.46	Dec 17, 2012
Dec 12, 2012	1	RT	Total	Absent--3011129501		N/A	DIST-A	0.60	Dec 17, 2012
Nov 14, 2012	1	RT	Total	Absent--3011124141		N/A	DIST-A	0.73	Nov 19, 2012
Nov 14, 2012	1	RT	Total	Absent--3011124131		N/A	DIST-A	0.52	Nov 19, 2012
Oct 10, 2012	1	RT	Total	Absent--3011117251			DIST-A	0.24	Oct 16, 2012
Oct 10, 2012	1	RT	Total	Absent--3011117241			DIST-A	0.22	Oct 16, 2012
Sep 12, 2012	1	RT	Total	Absent--3011109501			DIST-A	0.31	Sep 17, 2012
Sep 12, 2012	1	RT	Total	Absent--3011109491			DIST-A	0.56	Sep 17, 2012
Aug 08, 2012	1	RT	Total	Absent--3011100801			DIST-A	0.46	Aug 13, 2012
Aug 08, 2012	1	RT	Total	Absent--3011100791			DIST-A	0.58	Aug 13, 2012
Jul 11, 2012	1	AS	Total	Absent--3011094651		well #5	SRC-BE		Jul 16, 2012
Jul 11, 2012	1	AS	Total	Absent--3011094641		well #4	SRC-BD		Jul 16, 2012
Jul 11, 2012	1	AS	Total	Absent--3011094631		well #3	SRC-BC		Jul 16, 2012
Jul 11, 2012	1	AS	Total	Absent--3011094621		well #2	SRC-BB		Jul 16, 2012
Jul 11, 2012	1	AS	Total	Absent--3011094611		well #1	SRC-BA		Jul 16, 2012
Jul 11, 2012	1	RT	Total	Absent--3011094421			DIST-A	0.88	Jul 16, 2012
Jul 11, 2012	1	RT	Total	Absent--3011094411			DIST-A	0.39	Jul 16, 2012
Sample Date	**# Samples**	**Sample Type**	**Coliform Type**	**Results--ID**	**Repeat of Sample ID**	**Sample Site**	**Facility**	**Cl Residual**	**Receive Date**
Jun 13, 2012	1	AS	Total	Absent--3011087961		WELL #5	SRC-BE		Jun 19, 2012
Jun 13, 2012	1	AS	Total	Absent--3011087951		well #4	SRC-BD		Jun 19, 2012
Jun 13, 2012	1	AS	Total	Absent--3011087941		well #3	SRC-BC		Jun 19, 2012
Jun 13, 2012	1	AS	Total	Absent--3011087931		well #2	SRC-BB		Jun 19, 2012
Jun 13, 2012	1	AS	Total	Absent--3011087921		well #1	SRC-BA		Jun 19, 2012
Jun 13, 2012	1	RT	Total	Absent--3011087861			DIST-A	0.44	Jun 19, 2012
Jun 13, 2012	1	RT	Total	Absent--3011087851			DIST-A	0.52	Jun 19, 2012
May 09, 2012	1	RT	Total	Absent--3011080391			DIST-A	0.41	May 14, 2012
May 09, 2012	1	RT	Total	Absent--3011080381			DIST-A	1.19	May 14, 2012
Apr 11, 2012	1	RT	Total	Absent--3011074361			DIST-A	1.09	Apr 16, 2012
Apr 11, 2012	1	RT	Total	Absent--3011074351			DIST-A	1.27	Apr 16, 2012
Mar 14, 2012	1	RT	Total	Absent--3011068991			DIST-A	1.42	Mar 19, 2012
Mar 14, 2012	1	RT	Total	Absent--3011068981			DIST-A	0.27	Mar 19, 2012
Feb 08, 2012	1	RT	Total	Absent--3011061811			DIST-A	1.00	Feb 13, 2012
Feb 08, 2012	1	RT	Total	Absent--3011061801			DIST-A	0.82	Feb 13, 2012
Jan 11, 2012	1	RT	Total	Absent--3011055791			DIST-A	0.68	Jan 17, 2012
Jan 11, 2012	1	RT	Total	Absent--3011055781			DIST-A	0.68	Jan 17, 2012
Dec 14, 2011	1	RT	Total	Absent--3011049861			DIST-A	0.78	Dec 20, 2011
Dec 14, 2011	1	RT	Total	Absent--3011049851			DIST-A	0.40	Dec 20, 2011
Nov 09, 2011	1	RT	Total	Absent--3011043071			DIST-A	0.08	Nov 14, 2011
Sample Date	**# Samples**	**Sample Type**	**Coliform Type**	**Results--ID**	**Repeat of Sample ID**	**Sample Site**	**Facility**	**Cl Residual**	**Receive Date**
Nov 09, 2011	1	RT	Total	Absent--3011043051			DIST-A	0.57	Nov 14, 2011

Oct 12, 2011	1	RT	Total	Absent--3011037271			DIST-A	1.80	Oct 17, 2011
Oct 12, 2011	1	RT	Total	Absent--3011037261			DIST-A	0.25	Oct 17, 2011
Sep 14, 2011	1	RT	Total	Absent--3011029961			DIST-A	0.63	Sep 19, 2011
Sep 14, 2011	1	RT	Total	Absent--3011029951			DIST-A	0.95	Sep 19, 2011
Aug 10, 2011	1	RT	Total	Absent--3011022091			DIST-A	1.45	Aug 15, 2011
Aug 10, 2011	1	RT	Total	Absent--3011022081			DIST-A	1.00	Aug 15, 2011
Aug 10, 2011	1	RT	Total	Absent--3011022071			DIST-A	1.29	Aug 15, 2011
Aug 10, 2011	1	RT	Total	Absent--3011022061			DIST-A	0.56	Aug 15, 2011
Aug 10, 2011	1	RT	Total	Absent--3011022051			DIST-A	0.45	Aug 15, 2011
Jul 27, 2011	1	TG	Total	Absent--3011018941	3011017451	WTP-B	CH-B	**0.00**	Aug 01, 2011
Jul 27, 2011	1	RP	Total	POSITIVE--3011018971	3011017451	251 b st hose bib	DIST-A	0.22	Jul 29, 2011
		RP	E.coli	Absent--3011018971	3011017451	251 b st hose bib	DIST-A	0.22	
Jul 27, 2011	1	RP	Total	POSITIVE--3011018961	3011017451	151 b st hose bib	DIST-A	0.23	Jul 29, 2011
		RP	E.coli	Absent--3011018961	3011017451	151 b st hose bib	DIST-A	0.23	
Jul 27, 2011	1	RP	Total	POSITIVE--3011018951	3011017451	sink	DIST-A	0.26	Jul 29, 2011
		RP	E.coli	Absent--3011018951	3011017451	sink	DIST-A	0.26	
Jul 20, 2011	1	RT	Total	POSITIVE--3011017451		sink	DIST-A	0.06	Jul 22, 2011
		RT	E.coli	Absent--3011017451		sink	DIST-A	0.06	
Jul 20, 2011	1	RT	Total	Absent--3011017461			DIST-A	0.21	Jul 25, 2011

Sample Date	# Samples	Sample Type	Coliform Type	Results--ID	Repeat of Sample ID	Sample Site	Facility	Cl Residual	Receive Date
Jun 08, 2011	1	RT	Total	Absent--3011007121			DIST-A	0.04	Jun 13, 2011
Jun 08, 2011	1	RT	Total	Absent--3011007111			DIST-A	0.06	Jun 13, 2011
May 18, 2011	1	RT	Total	Absent--3011002891			DIST-A	0.08	May 23, 2011
May 18, 2011	1	RT	Total	Absent--3011002881			DIST-A	0.30	May 23, 2011
Apr 13, 2011	1	RT	Total	Absent--301995901			DIST-A	0.49	Apr 18, 2011
Apr 13, 2011	1	RT	Total	Absent--301995891			DIST-A	0.26	Apr 18, 2011
Mar 09, 2011	1	RT	Total	Absent--301989461			DIST-A	0.60	Mar 14, 2011
Mar 09, 2011	1	RT	Total	Absent--301989451			DIST-A	0.62	Mar 14, 2011
Feb 09, 2011	1	RT	Total	Absent--301983951			DIST-A	1.00	Feb 14, 2011
Feb 09, 2011	1	RT	Total	Absent--301983941			DIST-A	0.18	Feb 14, 2011
Jan 12, 2011	1	RT	Total	Absent--301978121			DIST-A	0.24	Jan 19, 2011
Jan 12, 2011	1	RT	Total	Absent--301978111			DIST-A	2.20	Jan 19, 2011
Dec 15, 2010	1	RT	Total	Absent--312972111			DIST-A	0.84	Dec 20, 2010
Dec 15, 2010	1	RT	Total	Absent--312972101			DIST-A	0.47	Dec 20, 2010
Nov 17, 2010	1	RT	Total	Absent--311967601			DIST-A	0.60	Nov 22, 2010
Nov 17, 2010	1	RT	Total	Absent--311967591			DIST-A	0.02	Nov 22, 2010
Oct 20, 2010	1	RT	Total	Absent--310961841			DIST-A	0.19	Oct 25, 2010
Oct 20, 2010	1	RT	Total	Absent--310961831			DIST-A	0.13	Oct 25, 2010
Sep 08, 2010	1	RT	Total	Absent--309950421			DIST-A	0.16	Sep 13, 2010
Sep 08, 2010	1	RT	Total	Absent--309950411			DIST-A	0.12	Sep 13, 2010

Sample Date	# Samples	Sample Type	Coliform Type	Results--ID	Repeat of Sample ID	Sample Site	Facility	Cl Residual	Receive Date
Aug 11, 2010	1	RT	Total	Absent--308943941			DIST-A	1.00	Aug 18, 2010
Aug 11, 2010	1	RT	Total	Absent--308943931			DIST-A	0.10	Aug 18, 2010
Jul 14, 2010	1	RT	Total	Absent--307937361			DIST-A	0.21	Jul 19, 2010
Jun 09, 2010	1	RT	Total	Absent--306928641			DIST-A	0.46	Jun 14, 2010
Jun 09, 2010	1	RT	Total	Absent--306928631			DIST-A	0.03	Jun 14, 2010
May 12, 2010	1	RT	Total	Absent--305922741			DIST-A	0.60	Jul 02, 2010

May 12, 2010	1	RT	Total	Absent--305922731			DIST-A	0.60	Jul 01, 2010
Apr 21, 2010	1	RT	Total	Absent--304918291			DIST-A	0.03	Apr 26, 2010
Apr 21, 2010	1	RT	Total	Absent--304918281			DIST-A	1.18	Apr 26, 2010
Apr 14, 2010	1	RT	Total	Absent--304916921-3			DIST-A	0.14	Apr 19, 2010
Apr 14, 2010	1	RT	Total	Absent--304916921-2			DIST-A	0.14	Apr 19, 2010
Apr 14, 2010	1	RT	Total	Absent--304916921-1			DIST-A	0.14	Apr 19, 2010
Mar 17, 2010	1	RP	Total	Absent--303911881	303910801	511 11th st	DIST-A	0.09	Mar 22, 2010
Mar 17, 2010	1	RP	Total	Absent--303911901	303910801	market 10th st	DIST-A	0.03	Mar 22, 2010
Mar 17, 2010	1	RP	Total	Absent--303911891	303910801	gol lagoon	DIST-A	0.16	Mar 22, 2010
Mar 10, 2010	1	RT	Total	Absent--303910811			DIST-A	0.23	Mar 16, 2010
Mar 10, 2010	1	RT	Total	POSITIVE--303910801		Lagoon	DIST-A	0.13	Mar 12, 2010
		RT	E.coli	Absent--303910801		Lagoon	DIST-A	0.13	
Feb 10, 2010	1	RT	Total	Absent--302903671			DIST-A	0.07	Feb 19, 2010
Feb 10, 2010	1	RT	Total	Absent--302903661			DIST-A	0.04	Feb 19, 2010

Sample Date	# Samples	Sample Type	Coliform Type	Results--ID	Repeat of Sample ID	Sample Site	Facility	Cl Residual	Receive Date
Jan 13, 2010	1	RT	Total	Absent--301896251-2			DIST-A	0.26	Jan 19, 2010
Jan 13, 2010	1	RT	Total	Absent--301896251-1			DIST-A	0.26	Jan 19, 2010
Dec 09, 2009	1	RT	Total	Absent--312890011-2			DIST-A	0.06	Dec 14, 2009
Dec 09, 2009	1	RT	Total	Absent--312890011-1			DIST-A	0.06	Dec 14, 2009
Nov 10, 2009	1	RT	Total	Absent--311884241			DIST-A	0.06	Nov 16, 2009
Nov 10, 2009	1	RT	Total	Absent--311884231			DIST-A	0.08	Nov 16, 2009
Oct 14, 2009	1	RT	Total	Absent--310878511			DIST-A	0.22	Oct 19, 2009
Oct 13, 2009	1	RT	Total	Absent--310878521			DIST-A	0.29	Oct 19, 2009
Sep 09, 2009	1	RT	Total	Absent--309870071-1			DIST-A	0.30	Sep 14, 2009
Sep 09, 2009	1	RT	Total	Absent--309870071-2			DIST-A	0.30	Sep 14, 2009
Aug 12, 2009	1	RT	Total	Absent--308862311-1			DIST-A	0.30	Aug 17, 2009
Aug 12, 2009	1	RT	Total	Absent--308862311-2			DIST-A	0.30	Aug 17, 2009
Jul 08, 2009	1	RT	Total	Absent--307853361			DIST-A	0.32	Jul 13, 2009
Jul 08, 2009	1	RT	Total	Absent--307853371			DIST-A	0.36	Jul 13, 2009
Jun 17, 2009	1	RT	Total	Absent--306848791-1			DIST-A	0.69	Jun 22, 2009
Jun 17, 2009	1	RT	Total	Absent--306848791-2			DIST-A	0.69	Jun 22, 2009
May 13, 2009	1	RT	Total	Absent--305840131-1			DIST-A	0.75	May 18, 2009
May 13, 2009	1	RT	Total	Absent--305840131-2			DIST-A	0.75	May 18, 2009
Apr 08, 2009	1	RT	Total	Absent--304833021			DIST-A	0.34	Apr 13, 2009
Apr 08, 2009	1	RT	Total	Absent--304833011			DIST-A	0.61	Apr 13, 2009

Sample Date	# Samples	Sample Type	Coliform Type	Results--ID	Repeat of Sample ID	Sample Site	Facility	Cl Residual	Receive Date
Mar 11, 2009	1	RT	Total	Absent--303827331			DIST-A	0.23	Mar 16, 2009
Mar 11, 2009	1	RT	Total	Absent--303827341			DIST-A	0.60	Mar 16, 2009
Feb 11, 2009	1	RT	Total	Absent--302821531			DIST-A	0.29	Feb 17, 2009
Feb 11, 2009	1	RT	Total	Absent--302821541			DIST-A	0.14	Feb 17, 2009
Jan 14, 2009	1	RT	Total	Absent--301815611			DIST-A	0.20	Jan 20, 2009
Jan 14, 2009	1	RT	Total	Absent--301815621			DIST-A	0.84	Jan 20, 2009
Dec 10, 2008	1	RT	Total	Absent--312809551			DIST-A	0.34	Dec 16, 2008
Dec 10, 2008	1	RT	Total	Absent--312809541			DIST-A	0.41	Dec 16, 2008
Nov 12, 2008	1	RT	Total	Absent--311803801			DIST-A	0.38	Nov 17, 2008
Nov 12, 2008	1	RT	Total	Absent--311803811			DIST-A	0.37	Nov 17, 2008

Oct 08, 2008	1	RT	Total	Absent--310796951			DIST-A	0.28	Oct 14, 2008
Oct 08, 2008	1	RT	Total	Absent--310796961			DIST-A	0.20	Oct 14, 2008
Sep 10, 2008	1	RT	Total	Absent--309789651			DIST-A	0.50	Sep 15, 2008
Sep 10, 2008	1	RT	Total	Absent--309789641			DIST-A	0.18	Sep 15, 2008
Aug 20, 2008	1	RP	Total	Absent--308784741	308782891	177 B ST POST OFFICE	DIST-A	0.29	Aug 25, 2008
Aug 20, 2008	1	RP	Total	Absent--308784751	308782891	252 B STREET	DIST-A	**0.00**	Aug 25, 2008
Aug 20, 2008	1	RP	Total	Absent--308784761	308782891	251 B STREET	DIST-A	0.20	Aug 25, 2008
Aug 13, 2008	1	RT	Total	Absent--308782881			DIST-A	0.14	Aug 18, 2008
Aug 13, 2008	1	RT	Total	POSITIVE--308782891		252 B. STREET	DIST-A	0.11	Aug 15, 2008
		RT	E.coli	Absent--308782891		252 B. STREET	DIST-A	0.11	

Sample Date	# Samples	Sample Type	Coliform Type	Results--ID	Repeat of Sample ID	Sample Site	Facility	Cl Residual	Receive Date
Jul 16, 2008	1	RT	Total	Absent--307776381			DIST-A	0.09	Jul 21, 2008
Jul 16, 2008	1	RT	Total	Absent--307776391			DIST-A	0.01	Jul 21, 2008
Jun 11, 2008	1	RT	Total	Absent--306768541			DIST-A	0.05	Jun 16, 2008
Jun 11, 2008	1	RT	Total	Absent--306768551			DIST-A	0.45	Jun 16, 2008
May 14, 2008	1	RT	Total	Absent--305762491			DIST-A		May 19, 2008
May 14, 2008	1	RT	Total	Absent--305762501			DIST-A	0.15	May 19, 2008
Apr 09, 2008	1	RT	Total	Absent--304755791			DIST-A	0.20	Apr 14, 2008
Apr 09, 2008	1	RT	Total	Absent--304755801			DIST-A	0.69	Apr 14, 2008
Mar 12, 2008	1	RT	Total	Absent--303749621			DIST-A	0.34	Mar 17, 2008
Mar 12, 2008	1	RT	Total	Absent--303749631			DIST-A	0.29	Mar 17, 2008
Feb 13, 2008	1	RT	Total	Absent--302743551			DIST-A	0.29	Feb 19, 2008
Feb 13, 2008	1	RT	Total	Absent--302743561			DIST-A	0.68	Feb 19, 2008
Jan 09, 2008	1	RT	Total	Absent--301735791			DIST-A	0.21	Jan 14, 2008
Jan 09, 2008	1	RT	Total	Absent--301735781			DIST-A	0.24	Jan 14, 2008

Recent Batch Numbers

Click here to show results prior to 2008
Click here to show results prior to 2002 (opens a different page)

Sample Types: AS=Assessment, CO=Confirmation, RP=Repeat, RT=Routine, SP=Special, TG=Triggered, Show special samples

Oregon Public Health
Drinking Water Data Online

Oregon Health Authority

VALE, CITY OF

PWS #: 00917 ---- *System Status:* Active *System Type:* C *Population:* 1,890

Current Open Coliform Sample Schedule

(subject to change based upon future test results)

GWR: SRC-AA: 1 Assessment sample(s) per Year to be taken beginning 01/01/2014 -
GWR: CH-B: 1 Assessment sample(s) per Year to be taken beginning 01/01/2012 -
DIST-A: 2 Routine sample(s) per Month to be taken beginning 09/01/2011 -

(A begin date of 01/01/1991 indicates the year the Total Coliform Rule was established)

Community and Non-transient Non-community water systems that use chlorine or chloramines must measure the residual disinfectant level at the same points in the distribution system and at the same time when total coliforms are sampled.

Repeat, Temporary Routine, and Prior Coliform Sample Schedules

*(Schedules in **bold** reflect current schedules.)*

TCR: 5 Temporary Routine sample(s) per Month to be taken 08/01/2011 - 08/31/2011 at DIST-A

TCR: 3 Repeat sample(s) within 24 hours of a TC+ Routine Sample to be reported 07/21/2011 - 08/04/2011 at DIST-A

GWR: 1 Routine sample(s) to be taken and reported 07/20/2011 - 08/04/2011 at CH-B COMMON HEADER FOR WTP-B

TCR: 2 Routine sample(s) per Month to be taken 05/01/2010 - 07/31/2011 at DIST-A

TCR: 5 Temporary Routine sample(s) per Month to be taken 04/01/2010 - 04/30/2010 at DIST-A

TCR: 2 Routine sample(s) per Month to be taken 10/01/2008 - 03/31/2010 at DIST-A

TCR: 3 Repeat sample(s) within 24 hours of a TC+ Routine Sample to be reported 03/11/2010 - 03/25/2010 at DIST-A

GWR: 1 Routine sample(s) to be taken and reported 03/10/2010 - 03/24/2010 at SRC-BA WELL #1

GWR: 1 Routine sample(s) to be taken and reported 03/10/2010 - 03/24/2010 at SRC-BB WELL #2

GWR: 1 Routine sample(s) to be taken and reported 03/10/2010 - 03/24/2010 at SRC-BC WELL #3

GWR: 1 Routine sample(s) to be taken and reported 03/10/2010 - 03/24/2010 at SRC-BD WELL #4

GWR: 1 Routine sample(s) to be taken and reported 03/10/2010 - 03/24/2010 at SRC-BE WELL #5

GWR: 1 Routine sample(s) to be taken and reported 03/10/2010 - 03/24/2010 at SRC-BF WELL #6

GWR: 1 Routine sample(s) to be taken and reported 03/10/2010 - 03/24/2010 at SRC-BG WELL #7

TCR: 5 Temporary Routine sample(s) per Month to be taken 09/01/2008 - 09/30/2008 at DIST-A

TCR: 2 Routine sample(s) per Month to be taken 06/01/2003 - 08/31/2008 at DIST-A

TCR: 3 Repeat sample(s) within 24 hours of a TC+ Routine Sample to be reported 08/14/2008 - 08/28/2008 at DIST-A

TCR: 2 Routine sample(s) per Month to be taken 01/01/1991 - 05/31/2003 at DIST-A

Instructions and Notes

1) If no prior sample schedules appear, then no prior schedules exist within the database.

2) Schedules for water systems that are classified as "NP" (State Regulated) may not appear. If the system is active, the system must sample and test for the presence of coliform bacteria with a frequency of 1 sample per quarter (1 sample per month for those systems with a surface water source or a groundwater source determined to be under the influence of surface water). If the sample tests positive for the presence of total or fecal coliform or E-Coli, a minimum of 4 repeat samples must be taken. 5 routine samples must then be taken the following month. If these 5 samples test negative for the presence of coliform bacteria, the system may return to a quarterly sample schedule beginning with the next quarter (e.g. a routine quarterly sample tests positive in January, 4 repeats need to be taken within 24 hours following the positive sample, 5 routine samples need to be taken in February and if none of these samples tests positive, the system can go back on a quarterly schedule beginning April 1st).

In any case, as soon as a sample tests positive for the presense of coliform bacteria, the system should contact the Department of Human Services at 971-673-0405 and ask to speak with the person handling phone duty for the Drinking Water Services.

Groundwater/GWUDI Source Detail for PWS 00917 ---- VALE, CITY OF

Non-purchased Groundwater/GWUDI Sources:

- SRC-AA - WASHINGTON ST WELL
- SRC-BA - WELL #1
- SRC-BB - WELL #2
- SRC-BC - WELL #3
- SRC-BD - WELL #4
- SRC-BE - WELL #5
- SRC-BF - WELL #6 (Inactive)
- SRC-BG - WELL #7 (Inactive)

Related Pages:

- Coliform Sampling Schedules
- Coliform Results

Contact Us:

- Email us with questions, comments, or suggestions about this page.

SRC-AA: WASHINGTON ST WELL

GW, Active, Permanent ---- Operating Period: Jan 1 - Dec 31
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Construction adequate?:	No - Seal Missing or Unknown	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	06/23/2010

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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SRC-BA: WELL #1

GW, Active, Permanent ---- Operating Period: Jan 1 - Dec 31
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Construction adequate?:	Yes	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	07/23/2013

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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SRC-BB: WELL #2

GW, Active, Permanent ---- Operating Period: Jan 1 - Dec 31
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Construction adequate?:	Yes	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	07/23/2013

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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SRC-BC: WELL #3

GW, Active, Permanent ---- Operating Period: Jan 1 - Dec 31
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Construction adequate?:	Yes	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	07/23/2013

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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SRC-BD: WELL #4

GW, Active, Permanent ---- Operating Period: Jan 1 - Dec 31
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Construction adequate?:	Yes	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	07/23/2013

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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SRC-BE: WELL #5

GW, Active, Permanent ---- Operating Period: Jan 1 - Dec 31
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	Yes
Construction adequate?:	Yes - Other	Surface water type:	Stream
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	07/23/2013

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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SRC-BF: WELL #6

GW, Inactive, Emergency ---- *Operating Period Unknown*
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	No
Construction adequate?:	Yes - Other	Surface water type:	Unknown
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	01/31/2011

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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SRC-BG: WELL #7

GW, Inactive, Emergency ---- *Operating Period Unknown*
Disinfection: RESID. MAINT. HYPOCHLORINATION

Sensitivity Analysis Data

Aquifer sensitivity:	High	Surface water within 500 feet:	No
Construction adequate?:	Yes - Other	Surface water type:	Unknown
E. coli sources within 2-year time-of-travel:	Yes	Data last updated:	01/31/2011

Monthly Assessment Monitoring Data

Monthly Assessment Monitoring Required? Pending
No monthly assessment monitoring schedule found.
No historic GWUDI data were found.

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For further information on this public water system, click on the area of interest below:

System Info :: Report for Lenders :: Alerts :: Violations :: Enforcements :: Contacts :: Site Visits :: Public Notice :: Plan Review

Coliform Summary :: Coliform Results :: Sampling Schedule for Coliform :: Groundwater/GWUDI Source Details

Chemical Group Summary :: Latest Chemical Results :: Entry Point Detects :: Single Analyte Results

Chemical Schedule Summary :: Chemical Schedule Details

Lead & Copper :: Corrosion Control (LCR) :: Nitrate :: Arsenic :: Radionuclides :: GWR 4-Log

DBPs :: TOC & Alkalinity :: DBP Sample Sites :: FANLs :: MRDL :: Turbidity :: SWTR :: RAA :: LRAA

Inventory List for all Oregon Drinking Water Systems in Excel or printable screen format

Tools for Laboratories

Introduction :: Data Search Options :: WS Name Look Up :: WS ID Look Up :: DWS Home

Oregon Public Health
Drinking Water Data Online

Oregon Health Authority

ND = Not Detected at the Minimum Reporting Level
Spreadsheet

Latest Chemical Results - PWS ID: 00917 --- VALE, CITY OF

Sample ID	Sample Date	Receive Date	Chemical	Source ID	Results	Current MCL	UOM
1425461-I	08/13/2014	08/28/2014	ARSENIC	EP-A	**0.0210000**	0.0100000	MG/L
1425471-I	08/13/2014	08/28/2014	ARSENIC	EP-B	**0.0140000**	0.0100000	MG/L
1425481-I	08/13/2014	08/21/2014	NITRATE	EP-B	5.5600000	10.000000	MG/L
1415681-I	07/09/2014	07/24/2014	ARSENIC	EP-A	**0.0160000**	0.0100000	MG/L
1415682-I	07/09/2014	07/24/2014	NITRATE	EP-A	4.1600000	10.000000	MG/L
1409361-I	06/11/2014	07/08/2014	NITRATE	SRC-BA	6.4100000	10.000000	MG/L
1409371-I	06/11/2014	07/08/2014	NITRATE	SRC-BB	3.1700000	10.000000	MG/L
1409381-I	06/11/2014	07/08/2014	NITRATE	SRC-BC	6.3000000	10.000000	MG/L
1409391-I	06/11/2014	07/08/2014	NITRATE	SRC-BD	7.5100000	10.000000	MG/L
1409401-I	06/11/2014	07/08/2014	NITRATE	SRC-BE	6.7900000	10.000000	MG/L
1409411-I	06/11/2014	07/08/2014	NITRATE	SRC-BF	9.4200000	10.000000	MG/L
1409421-I	06/11/2014	07/08/2014	NITRATE	SRC-BG	9.8700000	10.000000	MG/L
1407471-I	06/04/2014	06/19/2014	ARSENIC	EP-B	**0.0160000**	0.0100000	MG/L
1375901-I	02/12/2014	02/27/2014	ARSENIC	EP-B	**0.0134000**	0.0100000	MG/L
1362171-I	12/11/2013	01/09/2014	ARSENIC	EP-A	**0.0171000**	0.0100000	MG/L
1362171	12/11/2013	01/07/2014	ARSENIC	EP-B	**0.0171000**	0.0100000	MG/L
1345321-D	10/09/2013	10/28/2013	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0063000	0.0600000	MG/L
1345321-D	10/09/2013	10/28/2013	TTHM	DIST-A	0.0186000	0.0800000	MG/L
1345331-D	10/09/2013	10/28/2013	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0064000	0.0600000	MG/L
1345331-D	10/09/2013	10/28/2013	TTHM	DIST-A	0.0218000	0.0800000	MG/L
1339581	09/18/2013	10/07/2013	COPPER	DIST-A	0.5470000	1.3000000	MG/L
1339581	09/18/2013	10/07/2013	LEAD	DIST-A	0.0015500	0.0150000	MG/L
1339582	09/18/2013	10/07/2013	COPPER	DIST-A	0.0630000	1.3000000	MG/L
1339582	09/18/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1338131	09/11/2013	10/07/2013	COPPER	DIST-A	0.1580000	1.3000000	MG/L
1338131	09/11/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1338132	09/11/2013	10/07/2013	COPPER	DIST-A	0.1630000	1.3000000	MG/L
1338132	09/11/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1338134	09/11/2013	10/07/2013	COPPER	DIST-A	0.1820000	1.3000000	MG/L
1338134	09/11/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1338135	09/11/2013	10/07/2013	COPPER	DIST-A	0.1750000	1.3000000	MG/L
1338135	09/11/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1338136	09/11/2013	10/07/2013	COPPER	DIST-A	0.2420000	1.3000000	MG/L
1338136	09/11/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1338137	09/11/2013	10/07/2013	COPPER	DIST-A	0.2000000	1.3000000	MG/L
1338137	09/11/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1338138	09/11/2013	10/07/2013	COPPER	DIST-A	0.1060000	1.3000000	MG/L
1338138	09/11/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1337291-I	09/11/2013	10/07/2013	ARSENIC	EP-B	0.0027700	0.0100000	MG/L
1338133	09/10/2013	10/07/2013	COPPER	DIST-A	0.4090000	1.3000000	MG/L

1338133	09/10/2013	10/07/2013	LEAD	DIST-A	ND	0.0150000	MG/L
1318801-D	07/10/2013	08/08/2013	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0047000	0.0600000	MG/L
1318801-D	07/10/2013	08/08/2013	TTHM	DIST-A	0.0135000	0.0800000	MG/L
1313811-I	06/19/2013	07/09/2013	ARSENIC	EP-B	**0.0126000**	0.0100000	MG/L
1281611-I	02/20/2013	02/25/2013	NITRATE	EP-B	6.7700000	10.000000	MG/L
1281621-I	02/20/2013	03/14/2013	ARSENIC	EP-B	**0.0171000**	0.0100000	MG/L
1259641-I	11/14/2012	12/10/2012	ARSENIC	EP-B	**0.0102000**	0.0100000	MG/L
1259651-I	11/14/2012	11/28/2012	NITRATE	EP-B	3.7200000	10.000000	MG/L
1241541-I	09/12/2012	10/05/2012	ARSENIC	EP-B	0.0026900	0.0100000	MG/L
1224441-D	07/11/2012	09/07/2012	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0055000	0.0600000	MG/L
1224441-D	07/11/2012	09/07/2012	TTHM	DIST-A	0.0210000	0.0800000	MG/L
1208401-I	05/09/2012	05/31/2012	ARSENIC	EP-B	**0.0241000**	0.0100000	MG/L
1200851-I	04/11/2012	04/23/2012	ARSENIC	EP-B	**0.0224000**	0.0100000	MG/L
1186111-I	02/08/2012	03/12/2012	ARSENIC	EP-B	ND	0.0100000	MG/L
1172841-I	12/14/2011	01/13/2012	ARSENIC	EP-B	0.0096400	0.0100000	MG/L
1157521-S	10/12/2011	12/12/2011	1,2-DIBROMO-3-CHLOROPROPANE	EP-B	ND	0.0002000	MG/L
1157521-S	10/12/2011	12/12/2011	2,4,5-TP	EP-B	ND	0.0500000	MG/L
1157521-S	10/12/2011	12/12/2011	2,4-D	EP-B	ND	0.0700000	MG/L
1157521-S	10/12/2011	12/12/2011	ATRAZINE	EP-B	ND	0.0030000	MG/L
1157521-S	10/12/2011	12/12/2011	BENZO(A)PYRENE	EP-B	ND	0.0002000	MG/L
1157521-S	10/12/2011	12/12/2011	BHC-GAMMA	EP-B	ND	0.0002000	MG/L
1157521-S	10/12/2011	12/12/2011	CARBOFURAN	EP-B	ND	0.0400000	MG/L
1157521-S	10/12/2011	12/12/2011	CHLORDANE	EP-B	ND	0.0020000	MG/L
1157521-S	10/12/2011	12/12/2011	DALAPON	EP-B	ND	0.2000000	MG/L
1157521-S	10/12/2011	12/12/2011	DI(2-ETHYLHEXYL) ADIPATE	EP-B	ND	0.4000000	MG/L
1157521-S	10/12/2011	12/12/2011	DI(2-ETHYLHEXYL) PHTHALATE	EP-B	ND	0.0060000	MG/L
1157521-S	10/12/2011	12/12/2011	DINOSEB	EP-B	ND	0.0070000	MG/L
1157521-S	10/12/2011	12/12/2011	DIQUAT	EP-B	ND	0.0200000	MG/L
1157521-S	10/12/2011	12/12/2011	ENDOTHALL	EP-B	ND	0.1000000	MG/L
1157521-S	10/12/2011	12/12/2011	ENDRIN	EP-B	ND	0.0020000	MG/L
1157521-S	10/12/2011	12/12/2011	ETHYLENE DIBROMIDE	EP-B	ND	0.0000500	MG/L
1157521-S	10/12/2011	12/12/2011	GLYPHOSATE	EP-B	ND	0.7000000	MG/L
1157521-S	10/12/2011	12/12/2011	HEPTACHLOR	EP-B	ND	0.0004000	MG/L
1157521-S	10/12/2011	12/12/2011	HEPTACHLOR EPOXIDE	EP-B	ND	0.0002000	MG/L
1157521-S	10/12/2011	12/12/2011	HEXACHLOROBENZENE	EP-B	ND	0.0010000	MG/L
1157521-S	10/12/2011	12/12/2011	HEXACHLOROCYCLOPENTADIENE	EP-B	ND	0.0500000	MG/L
1157521-S	10/12/2011	12/12/2011	LASSO	EP-B	ND	0.0020000	MG/L
1157521-S	10/12/2011	12/12/2011	METHOXYCHLOR	EP-B	ND	0.0400000	MG/L
1157521-S	10/12/2011	12/12/2011	OXAMYL	EP-B	ND	0.2000000	MG/L
1157521-S	10/12/2011	12/12/2011	PENTACHLOROPHENOL	EP-B	ND	0.0010000	MG/L
1157521-S	10/12/2011	12/12/2011	PICLORAM	EP-B	ND	0.5000000	MG/L
1157521-S	10/12/2011	12/12/2011	SIMAZINE	EP-B	ND	0.0040000	MG/L
1157521-S	10/12/2011	12/12/2011	TOTAL POLYCHLORINATED BIPHENYLS (PCB)	EP-B	ND	0.0005000	MG/L
1157521-S	10/12/2011	12/12/2011	TOXAPHENE	EP-B	ND	0.0030000	MG/L
1157531-I	10/12/2011	11/07/2011	NITRATE	EP-B	3.1900000	10.000000	MG/L
1157531-I	10/12/2011	11/07/2011	NITRATE-NITRITE	EP-B	3.1900000	10.000000	MG/L
1157531-I	10/12/2011		NITRITE	EP-B	ND	1.0000000	MG/L

1157541-I	10/12/2011	11/07/2011	ARSENIC	EP-B	0.0089800	0.0100000	MG/L
1157861-V	10/12/2011	12/12/2011	1,1,1-TRICHLOROETHANE	EP-B	ND	0.2000000	MG/L
1157861-V	10/12/2011	12/12/2011	1,1,2-TRICHLOROETHANE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	1,1-DICHLOROETHYLENE	EP-B	ND	0.0070000	MG/L
1157861-V	10/12/2011	12/12/2011	1,2,4-TRICHLOROBENZENE	EP-B	ND	0.0700000	MG/L
1157861-V	10/12/2011	12/12/2011	1,2-DICHLOROETHANE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	1,2-DICHLOROPROPANE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	BENZENE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	CARBON TETRACHLORIDE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	CHLOROBENZENE	EP-B	ND	0.1000000	MG/L
1157861-V	10/12/2011	12/12/2011	CIS-1,2-DICHLOROETHYLENE	EP-B	ND	0.0700000	MG/L
1157861-V	10/12/2011	12/12/2011	DICHLOROMETHANE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	ETHYLBENZENE	EP-B	ND	0.7000000	MG/L
1157861-V	10/12/2011	12/12/2011	O-DICHLOROBENZENE	EP-B	ND	0.6000000	MG/L
1157861-V	10/12/2011	12/12/2011	P-DICHLOROBENZENE	EP-B	ND	0.0750000	MG/L
1157861-V	10/12/2011	12/12/2011	STYRENE	EP-B	ND	0.1000000	MG/L
1157861-V	10/12/2011	12/12/2011	TETRACHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	TOLUENE	EP-B	ND	1.0000000	MG/L
1157861-V	10/12/2011	12/12/2011	TRANS-1,2-DICHLOROETHYLENE	EP-B	ND	0.1000000	MG/L
1157861-V	10/12/2011	12/12/2011	TRICHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
1157861-V	10/12/2011	12/12/2011	VINYL CHLORIDE	EP-B	ND	0.0020000	MG/L
1157861-V	10/12/2011	12/12/2011	XYLENES, TOTAL	EP-B	ND	10.000000	MG/L
1134051-D	07/20/2011	08/31/2011	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	ND	0.0600000	MG/L
1134051-D	07/20/2011	08/31/2011	TTHM	DIST-A	ND	0.0800000	MG/L
1134071-I	07/20/2011	08/29/2011	NITRATE	EP-A	7.2500000	10.000000	MG/L
1122621-I	06/08/2011	11/07/2011	NITRATE	EP-B	5.1600000	10.000000	MG/L
1122631-I	06/08/2011	07/05/2011	ARSENIC	EP-B	**0.0124000**	0.0100000	MG/L
1044291-I	08/11/2010	10/25/2010	NITRATE	EP-B	3.7400000	10.000000	MG/L
1044301-I	08/11/2010	10/25/2010	ARSENIC	EP-B	**0.0105000**	0.0100000	MG/L
1018271-I	05/12/2010	06/09/2010	ARSENIC	EP-B	0.0082800	0.0100000	MG/L
999931-I	03/09/2010	03/29/2010	NITRATE	EP-B	0.9150000	10.000000	MG/L
999941-I	03/09/2010	03/29/2010	ARSENIC	EP-B	ND	0.0100000	MG/L
956411	09/16/2009	12/18/2009	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	ND	0.0600000	MG/L
956411	09/16/2009	12/18/2009	TTHM	DIST-A	0.0049700	0.0800000	MG/L
945711-I	08/12/2009	09/17/2009	ARSENIC	EP-A	**0.0170000**	0.0100000	MG/L
945671-I	08/12/2009	09/21/2009	NITRATE	EP-B	2.3600000	10.000000	MG/L
945681-I	08/12/2009	09/21/2009	NITRATE	EP-B	3.6600000	10.000000	MG/L
945691-I	08/12/2009	09/21/2009	NITRATE	EP-B	2.3300000	10.000000	MG/L
945701-I	08/12/2009	09/21/2009	ARSENIC	EP-B	0.0063100	0.0100000	MG/L
945721-I	08/12/2009	09/21/2009	ARSENIC	EP-B	0.0043400	0.0100000	MG/L
878911-I	11/12/2008	12/17/2008	ARSENIC	EP-A	**0.0160000**	0.0100000	MG/L
878891-I	11/12/2008	12/17/2008	ARSENIC	EP-B	**0.0180000**	0.0100000	MG/L
871751-I	10/15/2008	11/06/2008	NITRATE	EP-A	2.8800000	10.000000	MG/L
871761-I	10/15/2008	11/06/2008	NITRATE	EP-B	0.9490000	10.000000	MG/L
865961	09/24/2008	11/06/2008	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0059200	0.0600000	MG/L
865961	09/24/2008	11/06/2008	TTHM	DIST-A	0.0259000	0.0800000	MG/L
829191-I	05/19/2008	06/23/2008	ANTIMONY, TOTAL	EP-A	ND	0.0060000	MG/L
829191-I	05/19/2008	06/23/2008	ARSENIC	EP-A	**0.0202000**	0.0100000	MG/L

829191-I	05/19/2008	06/23/2008	BARIUM	EP-A	0.4560000	2.0000000	MG/L
829191-I	05/19/2008	06/23/2008	BERYLLIUM, TOTAL	EP-A	ND	0.0040000	MG/L
829191-I	05/19/2008	06/23/2008	CADMIUM	EP-A	ND	0.0050000	MG/L
829191-I	05/19/2008	06/23/2008	CHROMIUM	EP-A	0.0052900	0.1000000	MG/L
829191-I	05/19/2008	06/23/2008	CYANIDE	EP-A	ND	0.2000000	MG/L
829191-I	05/19/2008	06/23/2008	FLUORIDE	EP-A	0.6230000	4.0000000	MG/L
829191-I	05/19/2008	06/23/2008	MERCURY	EP-A	ND	0.0020000	MG/L
829191-I	05/19/2008	06/23/2008	NICKEL	EP-A	ND	0.1000000	MG/L
829191-I	05/19/2008	06/23/2008	SELENIUM	EP-A	0.0032100	0.0500000	MG/L
829191-I	05/19/2008	06/23/2008	SODIUM	EP-A	176.00000		MG/L
829191-I	05/19/2008	06/23/2008	THALLIUM, TOTAL	EP-A	ND	0.0020000	MG/L
829201-S	05/19/2008	06/23/2008	1,2-DIBROMO-3-CHLOROPROPANE	EP-A	ND	0.0002000	MG/L
829201-S	05/19/2008	06/23/2008	2,4,5-TP	EP-A	ND	0.0500000	MG/L
829201-S	05/19/2008	06/23/2008	2,4-D	EP-A	ND	0.0700000	MG/L
829201-S	05/19/2008	06/23/2008	ATRAZINE	EP-A	ND	0.0030000	MG/L
829201-S	05/19/2008	06/23/2008	BENZO(A)PYRENE	EP-A	ND	0.0002000	MG/L
829201-S	05/19/2008	06/23/2008	BHC-GAMMA	EP-A	ND	0.0002000	MG/L
829201-S	05/19/2008	06/23/2008	CARBOFURAN	EP-A	ND	0.0400000	MG/L
829201-S	05/19/2008	06/23/2008	CHLORDANE	EP-A	ND	0.0020000	MG/L
829201-S	05/19/2008	06/23/2008	DALAPON	EP-A	ND	0.2000000	MG/L
829201-S	05/19/2008	06/23/2008	DI(2-ETHYLHEXYL) ADIPATE	EP-A	ND	0.4000000	MG/L
829201-S	05/19/2008	06/23/2008	DI(2-ETHYLHEXYL) PHTHALATE	EP-A	ND	0.0060000	MG/L
829201-S	05/19/2008	06/23/2008	DINOSEB	EP-A	ND	0.0070000	MG/L
829201-S	05/19/2008	06/23/2008	DIQUAT	EP-A	ND	0.0200000	MG/L
829201-S	05/19/2008	06/23/2008	ENDOTHALL	EP-A	ND	0.1000000	MG/L
829201-S	05/19/2008	06/23/2008	ENDRIN	EP-A	ND	0.0020000	MG/L
829201-S	05/19/2008	06/23/2008	ETHYLENE DIBROMIDE	EP-A	ND	0.0000500	MG/L
829201-S	05/19/2008	06/23/2008	GLYPHOSATE	EP-A	ND	0.7000000	MG/L
829201-S	05/19/2008	06/23/2008	HEPTACHLOR	EP-A	ND	0.0004000	MG/L
829201-S	05/19/2008	06/23/2008	HEPTACHLOR EPOXIDE	EP-A	ND	0.0002000	MG/L
829201-S	05/19/2008	06/23/2008	HEXACHLOROBENZENE	EP-A	ND	0.0010000	MG/L
829201-S	05/19/2008	06/23/2008	HEXACHLOROCYCLOPENTADIENE	EP-A	ND	0.0500000	MG/L
829201-S	05/19/2008	06/23/2008	LASSO	EP-A	ND	0.0020000	MG/L
829201-S	05/19/2008	06/23/2008	METHOXYCHLOR	EP-A	ND	0.0400000	MG/L
829201-S	05/19/2008	06/23/2008	OXAMYL	EP-A	ND	0.2000000	MG/L
829201-S	05/19/2008	06/23/2008	PENTACHLOROPHENOL	EP-A	ND	0.0010000	MG/L
829201-S	05/19/2008	06/23/2008	PICLORAM	EP-A	ND	0.5000000	MG/L
829201-S	05/19/2008	06/23/2008	SIMAZINE	EP-A	ND	0.0040000	MG/L
829201-S	05/19/2008	06/23/2008	TOTAL POLYCHLORINATED BIPHENYLS (PCB)	EP-A	ND	0.0005000	MG/L
829201-S	05/19/2008	06/23/2008	TOXAPHENE	EP-A	ND	0.0030000	MG/L
829211-V	05/19/2008	06/23/2008	1,1,1-TRICHLOROETHANE	EP-A	ND	0.2000000	MG/L
829211-V	05/19/2008	06/23/2008	1,1,2-TRICHLOROETHANE	EP-A	ND	0.0050000	MG/L
829211-V	05/19/2008	06/23/2008	1,1-DICHLOROETHYLENE	EP-A	ND	0.0070000	MG/L
829211-V	05/19/2008	06/23/2008	1,2,4-TRICHLOROBENZENE	EP-A	ND	0.0700000	MG/L
829211-V	05/19/2008	06/23/2008	1,2-DICHLOROETHANE	EP-A	ND	0.0050000	MG/L
829211-V	05/19/2008	06/23/2008	1,2-DICHLOROPROPANE	EP-A	ND	0.0050000	MG/L
829211-V	05/19/2008	06/23/2008	BENZENE	EP-A	ND	0.0050000	MG/L

829211-V	05/19/2008	06/23/2008	CARBON TETRACHLORIDE	EP-A	ND	0.0050000	MG/L
829211-V	05/19/2008	06/23/2008	CHLOROBENZENE	EP-A	ND	0.1000000	MG/L
829211-V	05/19/2008	06/23/2008	CIS-1,2-DICHLOROETHYLENE	EP-A	ND	0.0700000	MG/L
829211-V	05/19/2008	06/23/2008	DICHLOROMETHANE	EP-A	ND	0.0050000	MG/L
829211-V	05/19/2008	06/23/2008	ETHYLBENZENE	EP-A	ND	0.7000000	MG/L
829211-V	05/19/2008	06/23/2008	O-DICHLOROBENZENE	EP-A	ND	0.6000000	MG/L
829211-V	05/19/2008	06/23/2008	P-DICHLOROBENZENE	EP-A	ND	0.0750000	MG/L
829211-V	05/19/2008	06/23/2008	STYRENE	EP-A	ND	0.1000000	MG/L
829211-V	05/19/2008	06/23/2008	TETRACHLOROETHYLENE	EP-A	ND	0.0050000	MG/L
829211-V	05/19/2008	06/23/2008	TOLUENE	EP-A	ND	1.0000000	MG/L
829211-V	05/19/2008	06/23/2008	TRANS-1,2-DICHLOROETHYLENE	EP-A	ND	0.1000000	MG/L
829211-V	05/19/2008	06/23/2008	TRICHLOROETHYLENE	EP-A	ND	0.0050000	MG/L
829211-V	05/19/2008	06/23/2008	VINYL CHLORIDE	EP-A	ND	0.0020000	MG/L
829211-V	05/19/2008	06/23/2008	XYLENES, TOTAL	EP-A	ND	10.000000	MG/L
829231	05/19/2008	08/04/2008	COMBINED RADIUM (-226 & -228)	EP-A	0.6500000	5.0000000	PCI/L
829231	05/19/2008	08/04/2008	GROSS ALPHA, EXCL. RADON & U	EP-A	10.180000	15.000000	PCI/L
829231-R	05/19/2008	08/04/2008	COMBINED URANIUM	EP-A	ND	0.0300000	MG/L
829241-I	05/19/2008	06/23/2008	ANTIMONY, TOTAL	EP-B	ND	0.0060000	MG/L
829241-I	05/19/2008	06/23/2008	ARSENIC	EP-B	**0.0303000**	0.0100000	MG/L
829241-I	05/19/2008	08/23/2008	BARIUM	EP-B	0.0297000	2.0000000	MG/L
829241-I	05/19/2008	06/23/2008	BERYLLIUM, TOTAL	EP-B	ND	0.0040000	MG/L
829241-I	05/19/2008	06/23/2008	CADMIUM	EP-B	ND	0.0050000	MG/L
829241-I	05/19/2008	06/23/2008	CHROMIUM	EP-B	0.0030900	0.1000000	MG/L
829241-I	05/19/2008	06/23/2008	CYANIDE	EP-B	ND	0.2000000	MG/L
829241-I	05/19/2008	06/23/2008	FLUORIDE	EP-B	0.6170000	4.0000000	MG/L
829241-I	05/19/2008	06/23/2008	MERCURY	EP-B	ND	0.0020000	MG/L
829241-I	05/19/2008	06/23/2008	NICKEL	EP-B	0.0014200	0.1000000	MG/L
829241-I	05/19/2008	06/23/2008	SELENIUM	EP-B	0.0017900	0.0500000	MG/L
829241-I	05/19/2008	06/23/2008	SODIUM	EP-B	116.00000		MG/L
829241-I	05/19/2008	06/23/2008	THALLIUM, TOTAL	EP-B	ND	0.0020000	MG/L
829251-S	05/19/2008	06/23/2008	1,2-DIBROMO-3-CHLOROPROPANE	EP-B	ND	0.0002000	MG/L
829251-S	05/19/2008	06/23/2008	2,4,5-TP	EP-B	ND	0.0500000	MG/L
829251-S	05/19/2008	06/23/2008	2,4-D	EP-B	ND	0.0700000	MG/L
829251-S	05/19/2008	06/23/2008	ATRAZINE	EP-B	ND	0.0030000	MG/L
829251-S	05/19/2008	06/23/2008	BENZO(A)PYRENE	EP-B	ND	0.0002000	MG/L
829251-S	05/19/2008	06/23/2008	BHC-GAMMA	EP-B	ND	0.0002000	MG/L
829251-S	05/19/2008	06/23/2008	CARBOFURAN	EP-B	ND	0.0400000	MG/L
829251-S	05/19/2008	06/23/2008	CHLORDANE	EP-B	ND	0.0020000	MG/L
829251-S	05/19/2008	06/23/2008	DALAPON	EP-B	ND	0.2000000	MG/L
829251-S	05/19/2008	06/23/2008	DI(2-ETHYLHEXYL) ADIPATE	EP-B	ND	0.4000000	MG/L
829251-S	05/19/2008	06/23/2008	DI(2-ETHYLHEXYL) PHTHALATE	EP-B	ND	0.0060000	MG/L
829251-S	05/19/2008	06/23/2008	DINOSEB	EP-B	ND	0.0070000	MG/L
829251-S	05/19/2008	06/23/2008	DIQUAT	EP-B	ND	0.0200000	MG/L
829251-S	05/19/2008	06/23/2008	ENDOTHALL	EP-B	ND	0.1000000	MG/L
829251-S	05/19/2008	06/23/2008	ENDRIN	EP-B	ND	0.0020000	MG/L
829251-S	05/19/2008	06/23/2008	ETHYLENE DIBROMIDE	EP-B	ND	0.0000500	MG/L
829251-S	05/19/2008	06/23/2008	GLYPHOSATE	EP-B	ND	0.7000000	MG/L
829251-S	05/19/2008	06/23/2008	HEPTACHLOR	EP-B	ND	0.0004000	MG/L

829251-S	05/19/2008	06/23/2008	HEPTACHLOR EPOXIDE	EP-B	ND	0.0002000	MG/L
829251-S	05/19/2008	06/23/2008	HEXACHLOROBENZENE	EP-B	ND	0.0010000	MG/L
829251-S	05/19/2008	06/23/2008	HEXACHLOROCYCLOPENTADIENE	EP-B	ND	0.0500000	MG/L
829251-S	05/19/2008	06/23/2008	LASSO	EP-B	ND	0.0020000	MG/L
829251-S	05/19/2008	06/23/2008	METHOXYCHLOR	EP-B	ND	0.0400000	MG/L
829251-S	05/19/2008	06/23/2008	OXAMYL	EP-B	ND	0.2000000	MG/L
829251-S	05/19/2008	06/23/2008	PENTACHLOROPHENOL	EP-B	ND	0.0010000	MG/L
829251-S	05/19/2008	06/23/2008	PICLORAM	EP-B	ND	0.5000000	MG/L
829251-S	05/19/2008	06/23/2008	SIMAZINE	EP-B	ND	0.0040000	MG/L
829251-S	05/19/2008	06/23/2008	TOTAL POLYCHLORINATED BIPHENYLS (PCB)	EP-B	ND	0.0005000	MG/L
829251-S	05/19/2008	06/23/2008	TOXAPHENE	EP-B	ND	0.0030000	MG/L
829261-V	05/19/2008	06/23/2008	1,1,1-TRICHLOROETHANE	EP-B	ND	0.2000000	MG/L
829261-V	05/19/2008	06/23/2008	1,1,2-TRICHLOROETHANE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	1,1-DICHLOROETHYLENE	EP-B	ND	0.0070000	MG/L
829261-V	05/19/2008	06/23/2008	1,2,4-TRICHLOROBENZENE	EP-B	ND	0.0700000	MG/L
829261-V	05/19/2008	06/23/2008	1,2-DICHLOROETHANE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	1,2-DICHLOROPROPANE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	BENZENE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	CARBON TETRACHLORIDE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	CHLOROBENZENE	EP-B	ND	0.1000000	MG/L
829261-V	05/19/2008	06/23/2008	CIS-1,2-DICHLOROETHYLENE	EP-B	ND	0.0700000	MG/L
829261-V	05/19/2008	06/23/2008	DICHLOROMETHANE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	ETHYLBENZENE	EP-B	ND	0.7000000	MG/L
829261-V	05/19/2008	06/23/2008	O-DICHLOROBENZENE	EP-B	ND	0.6000000	MG/L
829261-V	05/19/2008	06/23/2008	P-DICHLOROBENZENE	EP-B	ND	0.0750000	MG/L
829261-V	05/19/2008	06/23/2008	STYRENE	EP-B	ND	0.1000000	MG/L
829261-V	05/19/2008	06/23/2008	TETRACHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	TOLUENE	EP-B	ND	1.0000000	MG/L
829261-V	05/19/2008	06/23/2008	TRANS-1,2-DICHLOROETHYLENE	EP-B	ND	0.1000000	MG/L
829261-V	05/19/2008	06/23/2008	TRICHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
829261-V	05/19/2008	06/23/2008	VINYL CHLORIDE	EP-B	ND	0.0020000	MG/L
829261-V	05/19/2008	06/23/2008	XYLENES, TOTAL	EP-B	ND	10.000000	MG/L
829271-I	05/19/2008	06/23/2008	NITRATE	EP-B	6.5700000	10.000000	MG/L
829281	05/19/2008	08/04/2008	COMBINED RADIUM (-226 & -228)	EP-B	0.2700000	5.0000000	PCI/L
829281	05/19/2008	08/04/2008	GROSS ALPHA, EXCL. RADON & U	EP-B	0.4500000	15.000000	PCI/L
829281-R	05/19/2008	08/04/2008	COMBINED URANIUM	EP-B	0.0081000	0.0300000	MG/L
802591-A	02/13/2008	03/21/2008	ARSENIC	EP-B	**0.0197000**	0.0100000	MG/L
802601-I	02/13/2008	03/21/2008	NITRATE-NITRITE	EP-B	4.7900000	10.000000	MG/L
794481-A	01/09/2008	02/11/2008	ARSENIC	EP-B	**0.0178000**	0.0100000	MG/L
794491	01/09/2008	02/11/2008	NITRATE-NITRITE	EP-B	4.3200000	10.000000	MG/L
787711	12/12/2007	05/20/2008	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0048000	0.0600000	MG/L
764281	09/19/2007	05/20/2008	TTHM	DIST-A	0.0450000	0.0800000	MG/L
764291	09/19/2007	12/31/2007	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0045000	0.0600000	MG/L
764291	09/19/2007	12/31/2007	TTHM	DIST-A	0.0442000	0.0800000	MG/L
764261	09/19/2007	12/31/2007	ARSENIC	EP-A	**0.0190000**	0.0100000	MG/L
764261	09/19/2007	12/31/2007	NITRATE	EP-A	3.7600000	10.000000	MG/L
764251	09/19/2007	12/31/2007	ARSENIC	EP-B	ND	0.0100000	MG/L

764252	09/19/2007	12/31/2007	NITRATE	EP-B	0.8600000	10.000000	MG/L
686811	01/10/2007	02/27/2007	ARSENIC	EP-A	**0.0174000**	0.0100000	MG/L
686821	01/10/2007	01/31/2007	NITRATE	EP-A	2.9800000	10.000000	MG/L
686791	01/10/2007	03/02/2007	ARSENIC	EP-B	0.0091000	0.0100000	MG/L
686801	01/10/2007	01/31/2007	NITRATE	EP-B	4.3700000	10.000000	MG/L
634191	07/12/2006	07/31/2006	NITRATE	EP-A	5.4700000	10.000000	MG/L
634201	07/12/2006	09/12/2006	ARSENIC	EP-A	**0.0105000**	0.0100000	MG/L
634211	07/12/2006	07/31/2006	NITRATE	EP-B	3.4100000	10.000000	MG/L
634221	07/12/2006	09/18/2006	ARSENIC	EP-B	0.0063000	0.0100000	MG/L
597421	03/14/2006	03/23/2006	NITRATE	EP-A	5.6000000	10.000000	MG/L
597431	03/14/2006	03/23/2006	NITRATE	EP-B	3.9300000	10.000000	MG/L
527921I	07/11/2005	08/15/2005	ANTIMONY, TOTAL	EP-A	ND	0.0060000	MG/L
527921I	07/11/2005	08/15/2005	ARSENIC	EP-A	**0.0190000**	0.0100000	MG/L
527921I	07/11/2005	08/15/2005	BARIUM	EP-A	ND	2.0000000	MG/L
527921I	07/11/2005	08/15/2005	BERYLLIUM, TOTAL	EP-A	ND	0.0040000	MG/L
527921I	07/11/2005	08/15/2005	CADMIUM	EP-A	ND	0.0050000	MG/L
527921I	07/11/2005	08/15/2005	CHROMIUM	EP-A	ND	0.1000000	MG/L
527921I	07/11/2005	08/15/2005	CYANIDE	EP-A	ND	0.2000000	MG/L
527921I	07/11/2005	08/15/2005	FLUORIDE	EP-A	0.5300000	4.0000000	MG/L
527921I	07/11/2005	08/15/2005	LEAD	EP-A	ND	0.0150000	MG/L
527921I	07/11/2005	08/15/2005	MERCURY	EP-A	ND	0.0020000	MG/L
527921I	07/11/2005	08/15/2005	NICKEL	EP-A	ND	0.1000000	MG/L
527921I	07/11/2005	08/15/2005	NITRATE	EP-A	ND	10.000000	MG/L
527921I	07/11/2005	08/15/2005	NITRATE-NITRITE	EP-A	ND	10.000000	MG/L
527921I	07/11/2005		NITRITE	EP-A	ND	1.0000000	MG/L
527921I	07/11/2005	08/15/2005	SELENIUM	EP-A	ND	0.0500000	MG/L
527921I	07/11/2005	08/15/2005	SODIUM	EP-A	186.00000		MG/L
527921I	07/11/2005	08/15/2005	THALLIUM, TOTAL	EP-A	ND	0.0020000	MG/L
527931	07/11/2005	07/29/2005	NITRATE	EP-A	4.2500000	10.000000	MG/L
52794S	07/11/2005	08/24/2005	1,2-DIBROMO-3-CHLOROPROPANE	EP-A	ND	0.0002000	MG/L
52794S	07/11/2005	08/24/2005	2,4,5-TP	EP-A	ND	0.0500000	MG/L
52794S	07/11/2005	08/24/2005	2,4-D	EP-A	ND	0.0700000	MG/L
52794S	07/11/2005	08/24/2005	ATRAZINE	EP-A	ND	0.0030000	MG/L
52794S	07/11/2005	08/24/2005	BENZO(A)PYRENE	EP-A	ND	0.0002000	MG/L
52794S	07/11/2005	08/24/2005	BHC-GAMMA	EP-A	ND	0.0002000	MG/L
52794S	07/11/2005	08/24/2005	CARBOFURAN	EP-A	ND	0.0400000	MG/L
52794S	07/11/2005	08/24/2005	CHLORDANE	EP-A	ND	0.0020000	MG/L
52794S	07/11/2005	08/24/2005	DALAPON	EP-A	ND	0.2000000	MG/L
52794S	07/11/2005	08/24/2005	DI(2-ETHYLHEXYL) ADIPATE	EP-A	ND	0.4000000	MG/L
52794S	07/11/2005	08/24/2005	DI(2-ETHYLHEXYL) PHTHALATE	EP-A	0.0007000	0.0060000	MG/L
52794S	07/11/2005	08/24/2005	DINOSEB	EP-A	ND	0.0070000	MG/L
52794S	07/11/2005	08/24/2005	DIQUAT	EP-A	ND	0.0200000	MG/L
52794S	07/11/2005	08/24/2005	ENDOTHALL	EP-A	ND	0.1000000	MG/L
52794S	07/11/2005	08/24/2005	ENDRIN	EP-A	ND	0.0020000	MG/L
52794S	07/11/2005	08/24/2005	ETHYLENE DIBROMIDE	EP-A	ND	0.0000500	MG/L
52794S	07/11/2005	08/24/2005	GLYPHOSATE	EP-A	ND	0.7000000	MG/L
52794S	07/11/2005	08/24/2005	HEPTACHLOR	EP-A	ND	0.0004000	MG/L
52794S	07/11/2005	08/24/2005	HEPTACHLOR EPOXIDE	EP-A	ND	0.0002000	MG/L

52794S	07/11/2005	08/24/2005	HEXACHLOROBENZENE	EP-A	ND	0.0010000	MG/L
52794S	07/11/2005	08/24/2005	HEXACHLOROCYCLOPENTADIENE	EP-A	ND	0.0500000	MG/L
52794S	07/11/2005	08/24/2005	LASSO	EP-A	ND	0.0020000	MG/L
52794S	07/11/2005	08/24/2005	METHOXYCHLOR	EP-A	ND	0.0400000	MG/L
52794S	07/11/2005	08/24/2005	OXAMYL	EP-A	ND	0.2000000	MG/L
52794S	07/11/2005	08/24/2005	PENTACHLOROPHENOL	EP-A	ND	0.0010000	MG/L
52794S	07/11/2005	08/24/2005	PICLORAM	EP-A	0.0005000	0.5000000	MG/L
52794S	07/11/2005	08/24/2005	SIMAZINE	EP-A	ND	0.0040000	MG/L
52794S	07/11/2005	08/24/2005	TOTAL POLYCHLORINATED BIPHENYLS (PCB)	EP-A	ND	0.0005000	MG/L
52794S	07/11/2005	08/24/2005	TOXAPHENE	EP-A	ND	0.0030000	MG/L
52795V	07/11/2005	08/24/2005	1,1,1-TRICHLOROETHANE	EP-A	ND	0.2000000	MG/L
52795V	07/11/2005	08/24/2005	1,1,2-TRICHLOROETHANE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	1,1-DICHLOROETHYLENE	EP-A	ND	0.0070000	MG/L
52795V	07/11/2005	08/24/2005	1,2,4-TRICHLOROBENZENE	EP-A	ND	0.0700000	MG/L
52795V	07/11/2005	08/24/2005	1,2-DICHLOROETHANE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	1,2-DICHLOROPROPANE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	BENZENE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	CARBON TETRACHLORIDE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	CHLOROBENZENE	EP-A	ND	0.1000000	MG/L
52795V	07/11/2005	08/24/2005	CIS-1,2-DICHLOROETHYLENE	EP-A	ND	0.0700000	MG/L
52795V	07/11/2005	08/24/2005	DICHLOROMETHANE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	ETHYLBENZENE	EP-A	ND	0.7000000	MG/L
52795V	07/11/2005	08/24/2005	O-DICHLOROBENZENE	EP-A	ND	0.6000000	MG/L
52795V	07/11/2005	08/24/2005	P-DICHLOROBENZENE	EP-A	ND	0.0750000	MG/L
52795V	07/11/2005	08/24/2005	STYRENE	EP-A	ND	0.1000000	MG/L
52795V	07/11/2005	08/24/2005	TETRACHLOROETHYLENE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	TOLUENE	EP-A	ND	1.0000000	MG/L
52795V	07/11/2005	08/24/2005	TRANS-1,2-DICHLOROETHYLENE	EP-A	ND	0.1000000	MG/L
52795V	07/11/2005	08/24/2005	TRICHLOROETHYLENE	EP-A	ND	0.0050000	MG/L
52795V	07/11/2005	08/24/2005	VINYL CHLORIDE	EP-A	ND	0.0020000	MG/L
52795V	07/11/2005	08/24/2005	XYLENES, TOTAL	EP-A	ND	10.000000	MG/L
527961	07/11/2005	12/12/2005	COMBINED RADIUM (-226 & -228)	EP-A	ND	5.0000000	PCI/L
527961	07/11/2005	12/12/2005	COMBINED URANIUM	EP-A	0.0070000	0.0300000	MG/L
527961	07/11/2005	12/12/2005	GROSS ALPHA, EXCL. RADON & U	EP-A	1.5100000	15.000000	PCI/L
527971I	07/11/2005	08/15/2005	ANTIMONY, TOTAL	EP-B	ND	0.0060000	MG/L
527971I	07/11/2005	08/15/2005	ARSENIC	EP-B	**0.0160000**	0.0100000	MG/L
527971I	07/11/2005	08/15/2005	BARIUM	EP-B	ND	2.0000000	MG/L
527971I	07/11/2005	08/15/2005	BERYLLIUM, TOTAL	EP-B	ND	0.0040000	MG/L
527971I	07/11/2005	08/15/2005	CADMIUM	EP-B	ND	0.0050000	MG/L
527971I	07/11/2005	08/15/2005	CHROMIUM	EP-B	ND	0.1000000	MG/L
527971I	07/11/2005	08/15/2005	CYANIDE	EP-B	ND	0.2000000	MG/L
527971I	07/11/2005	08/15/2005	FLUORIDE	EP-B	0.5200000	4.0000000	MG/L
527971I	07/11/2005	08/15/2005	LEAD	EP-B	ND	0.0150000	MG/L
527971I	07/11/2005	08/15/2005	MERCURY	EP-B	ND	0.0020000	MG/L
527971I	07/11/2005	08/15/2005	NICKEL	EP-B	ND	0.1000000	MG/L
527971I	07/11/2005	08/15/2005	NITRATE	EP-B	ND	10.000000	MG/L
527971I	07/11/2005	08/15/2005	NITRATE-NITRITE	EP-B	ND	10.000000	MG/L

527971I	07/11/2005		NITRITE	EP-B	ND	1.0000000	MG/L
527971I	07/11/2005	08/15/2005	SELENIUM	EP-B	ND	0.0500000	MG/L
527971I	07/11/2005	08/15/2005	SODIUM	EP-B	103.00000		MG/L
527971I	07/11/2005	08/15/2005	THALLIUM, TOTAL	EP-B	ND	0.0020000	MG/L
52799S	07/11/2005	08/24/2005	1,2-DIBROMO-3-CHLOROPROPANE	EP-B	ND	0.0002000	MG/L
52799S	07/11/2005	08/24/2005	2,4,5-TP	EP-B	ND	0.0500000	MG/L
52799S	07/11/2005	08/24/2005	2,4-D	EP-B	ND	0.0700000	MG/L
52799S	07/11/2005	08/24/2005	ATRAZINE	EP-B	ND	0.0030000	MG/L
52799S	07/11/2005	08/24/2005	BENZO(A)PYRENE	EP-B	ND	0.0002000	MG/L
52799S	07/11/2005	08/24/2005	BHC-GAMMA	EP-B	ND	0.0002000	MG/L
52799S	07/11/2005	08/24/2005	CARBOFURAN	EP-B	ND	0.0400000	MG/L
52799S	07/11/2005	08/24/2005	CHLORDANE	EP-B	ND	0.0020000	MG/L
52799S	07/11/2005	08/24/2005	DALAPON	EP-B	ND	0.2000000	MG/L
52799S	07/11/2005	08/24/2005	DI(2-ETHYLHEXYL) ADIPATE	EP-B	ND	0.4000000	MG/L
52799S	07/11/2005	08/24/2005	DI(2-ETHYLHEXYL) PHTHALATE	EP-B	ND	0.0060000	MG/L
52799S	07/11/2005	08/24/2005	DINOSEB	EP-B	ND	0.0070000	MG/L
52799S	07/11/2005	08/24/2005	DIQUAT	EP-B	ND	0.0200000	MG/L
52799S	07/11/2005	08/24/2005	ENDOTHALL	EP-B	ND	0.1000000	MG/L
52799S	07/11/2005	08/24/2005	ENDRIN	EP-B	ND	0.0020000	MG/L
52799S	07/11/2005	08/24/2005	ETHYLENE DIBROMIDE	EP-B	ND	0.0000500	MG/L
52799S	07/11/2005	08/24/2005	GLYPHOSATE	EP-B	ND	0.7000000	MG/L
52799S	07/11/2005	08/24/2005	HEPTACHLOR	EP-B	ND	0.0004000	MG/L
52799S	07/11/2005	08/24/2005	HEPTACHLOR EPOXIDE	EP-B	ND	0.0002000	MG/L
52799S	07/11/2005	08/24/2005	HEXACHLOROBENZENE	EP-B	ND	0.0010000	MG/L
52799S	07/11/2005	08/24/2005	HEXACHLOROCYCLOPENTADIENE	EP-B	ND	0.0500000	MG/L
52799S	07/11/2005	08/24/2005	LASSO	EP-B	ND	0.0020000	MG/L
52799S	07/11/2005	08/24/2005	METHOXYCHLOR	EP-B	ND	0.0400000	MG/L
52799S	07/11/2005	08/24/2005	OXAMYL	EP-B	ND	0.2000000	MG/L
52799S	07/11/2005	08/24/2005	PENTACHLOROPHENOL	EP-B	ND	0.0010000	MG/L
52799S	07/11/2005	08/24/2005	PICLORAM	EP-B	0.0005000	0.5000000	MG/L
52799S	07/11/2005	08/24/2005	SIMAZINE	EP-B	ND	0.0040000	MG/L
52799S	07/11/2005	08/24/2005	TOTAL POLYCHLORINATED BIPHENYLS (PCB)	EP-B	ND	0.0005000	MG/L
52799S	07/11/2005	08/24/2005	TOXAPHENE	EP-B	ND	0.0030000	MG/L
52800V	07/11/2005	08/24/2005	1,1,1-TRICHLOROETHANE	EP-B	ND	0.2000000	MG/L
52800V	07/11/2005	08/24/2005	1,1,2-TRICHLOROETHANE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	1,1-DICHLOROETHYLENE	EP-B	ND	0.0070000	MG/L
52800V	07/11/2005	08/24/2005	1,2,4-TRICHLOROBENZENE	EP-B	ND	0.0700000	MG/L
52800V	07/11/2005	08/24/2005	1,2-DICHLOROETHANE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	1,2-DICHLOROPROPANE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	BENZENE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	CARBON TETRACHLORIDE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	CHLOROBENZENE	EP-B	ND	0.1000000	MG/L
52800V	07/11/2005	08/24/2005	CIS-1,2-DICHLOROETHYLENE	EP-B	ND	0.0700000	MG/L
52800V	07/11/2005	08/24/2005	DICHLOROMETHANE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	ETHYLBENZENE	EP-B	ND	0.7000000	MG/L
52800V	07/11/2005	08/24/2005	O-DICHLOROBENZENE	EP-B	ND	0.6000000	MG/L
52800V	07/11/2005	08/24/2005	P-DICHLOROBENZENE	EP-B	ND	0.0750000	MG/L

52800V	07/11/2005	08/24/2005	STYRENE	EP-B	ND	0.1000000	MG/L
52800V	07/11/2005	08/24/2005	TETRACHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	TOLUENE	EP-B	ND	1.0000000	MG/L
52800V	07/11/2005	08/24/2005	TRANS-1,2-DICHLOROETHYLENE	EP-B	ND	0.1000000	MG/L
52800V	07/11/2005	08/24/2005	TRICHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
52800V	07/11/2005	08/24/2005	VINYL CHLORIDE	EP-B	ND	0.0020000	MG/L
52800V	07/11/2005	08/24/2005	XYLENES, TOTAL	EP-B	ND	10.000000	MG/L
528011	07/11/2005	12/12/2005	COMBINED RADIUM (-226 & -228)	EP-B	ND	5.0000000	PCI/L
528011	07/11/2005	12/12/2005	COMBINED URANIUM	EP-B	0.0060000	0.0300000	MG/L
528011	07/11/2005	12/12/2005	GROSS ALPHA, EXCL. RADON & U	EP-B	ND	15.000000	PCI/L
521211	06/14/2005	07/05/2005	NITRATE	EP-A	6.4800000	10.000000	MG/L
521211	06/14/2005	07/05/2005	NITRATE-NITRITE	EP-A	6.4800000	10.000000	MG/L
521211	06/14/2005		NITRITE	EP-A	ND	1.0000000	MG/L
521201	06/14/2005	07/05/2005	NITRATE	EP-B	4.3000000	10.000000	MG/L
521201	06/14/2005	07/05/2005	NITRATE-NITRITE	EP-B	4.3000000	10.000000	MG/L
521201	06/14/2005		NITRITE	EP-B	ND	1.0000000	MG/L
462461	10/12/2004	10/27/2004	NITRATE	EP-B	3.2300000	10.000000	MG/L
436681	07/14/2004	10/20/2004	TOTAL HALOACETIC ACIDS (HAA5)	DIST-A	0.0091000	0.0600000	MG/L
436681	07/14/2004	10/20/2004	TTHM	DIST-A	0.0304000	0.0800000	MG/L
426921	06/09/2004	06/21/2004	NITRATE	EP-B	2.4800000	10.000000	MG/L
419841	05/11/2004	06/07/2004	NITRATE	EP-A	3.0100000	10.000000	MG/L
400281	02/10/2004	02/23/2004	NITRATE	EP-B	6.7600000	10.000000	MG/L
400211	02/10/2004	02/23/2004	NITRATE	SRC-BA	4.1000000	10.000000	MG/L
400221	02/10/2004	02/23/2004	NITRATE	SRC-BB	3.0300000	10.000000	MG/L
400231	02/10/2004	02/23/2004	NITRATE	SRC-BC	5.3400000	10.000000	MG/L
400241	02/10/2004	02/23/2004	NITRATE	SRC-BD	5.1700000	10.000000	MG/L
400251	02/10/2004	02/23/2004	NITRATE	SRC-BE	7.4300000	10.000000	MG/L
400261	02/10/2004	02/23/2004	NITRATE	SRC-BF	**12.700000**	10.000000	MG/L
400271	02/10/2004	02/23/2004	NITRATE	SRC-BG	**13.700000**	10.000000	MG/L
377751	11/04/2003	11/28/2003	NITRATE	EP-B	6.3100000	10.000000	MG/L
362081	09/09/2003	09/24/2003	NITRATE	SRC-BA	3.2100000	10.000000	MG/L
362091	09/09/2003	09/24/2003	NITRATE	SRC-BB	2.1400000	10.000000	MG/L
362101	09/09/2003	09/24/2003	NITRATE	SRC-BC	3.0000000	10.000000	MG/L
362111	09/09/2003	09/24/2003	NITRATE	SRC-BD	9.5700000	10.000000	MG/L
362121	09/09/2003	09/24/2003	NITRATE	SRC-BE	7.4800000	10.000000	MG/L
362131	09/09/2003	09/24/2003	NITRATE	SRC-BF	**10.500000**	10.000000	MG/L
362141	09/09/2003	09/24/2003	NITRATE	SRC-BG	**10.800000**	10.000000	MG/L
346591	07/09/2003	08/11/2003	NITRATE	EP-B	6.4500000	10.000000	MG/L
339361	06/11/2003	07/17/2003	NITRATE	EP-B	6.3900000	10.000000	MG/L
333701	05/13/2003	06/04/2004	NITRATE	EP-A	2.9700000	10.000000	MG/L
333702	05/13/2003	06/04/2004	ARSENIC	EP-A	**0.0180000**	0.0100000	MG/L
319101	03/12/2003	03/24/2003	NITRATE	EP-B	8.5400000	10.000000	MG/L
296831	11/13/2002	12/20/2002	NITRATE	EP-B	5.9800000	10.000000	MG/L
29203I	10/21/2002	12/19/2002	ANTIMONY, TOTAL	EP-A	ND	0.0060000	MG/L
29203I	10/21/2002	12/19/2002	ARSENIC	EP-A	**0.0210000**	0.0100000	MG/L
29203I	10/21/2002	12/19/2002	BARIUM	EP-A	ND	2.0000000	MG/L
29203I	10/21/2002	12/19/2002	BERYLLIUM, TOTAL	EP-A	ND	0.0040000	MG/L
29203I	10/21/2002	12/19/2002	CADMIUM	EP-A	ND	0.0050000	MG/L

29203I	10/21/2002	12/19/2002	CHROMIUM	EP-A	ND	0.1000000	MG/L
29203I	10/21/2002	12/19/2002	CYANIDE	EP-A	ND	0.2000000	MG/L
29203I	10/21/2002	12/19/2002	FLUORIDE	EP-A	0.5800000	4.0000000	MG/L
29203I	10/21/2002	12/19/2002	LEAD	EP-A	ND	0.0150000	MG/L
29203I	10/21/2002	12/19/2002	MERCURY	EP-A	ND	0.0020000	MG/L
29203I	10/21/2002	12/19/2002	NICKEL	EP-A	ND	0.1000000	MG/L
29203I	10/21/2002	12/19/2002	SELENIUM	EP-A	ND	0.0500000	MG/L
29203I	10/21/2002	12/19/2002	SODIUM	EP-A	116.00000		MG/L
29203I	10/21/2002	12/19/2002	SULFATE	EP-A	103.00000		MG/L
29203I	10/21/2002	12/19/2002	THALLIUM, TOTAL	EP-A	ND	0.0020000	MG/L
29205S	10/21/2002	12/19/2002	1,2-DIBROMO-3-CHLOROPROPANE	EP-A	ND	0.0002000	MG/L
29205S	10/21/2002	12/19/2002	2,4,5-TP	EP-A	ND	0.0500000	MG/L
29205S	10/21/2002	12/19/2002	2,4-D	EP-A	ND	0.0700000	MG/L
29205S	10/21/2002	12/19/2002	ATRAZINE	EP-A	ND	0.0030000	MG/L
29205S	10/21/2002	12/19/2002	BENZO(A)PYRENE	EP-A	ND	0.0002000	MG/L
29205S	10/21/2002	12/19/2002	BHC-GAMMA	EP-A	ND	0.0002000	MG/L
29205S	10/21/2002	12/19/2002	CARBOFURAN	EP-A	ND	0.0400000	MG/L
29205S	10/21/2002	12/19/2002	CHLORDANE	EP-A	ND	0.0020000	MG/L
29205S	10/21/2002	12/19/2002	DALAPON	EP-A	ND	0.2000000	MG/L
29205S	10/21/2002	12/19/2002	DI(2-ETHYLHEXYL) ADIPATE	EP-A	ND	0.4000000	MG/L
29205S	10/21/2002	12/19/2002	DI(2-ETHYLHEXYL) PHTHALATE	EP-A	ND	0.0060000	MG/L
29205S	10/21/2002	12/19/2002	DINOSEB	EP-A	ND	0.0070000	MG/L
29205S	10/21/2002	12/19/2002	DIQUAT	EP-A	ND	0.0200000	MG/L
29205S	10/21/2002	12/19/2002	ENDOTHALL	EP-A	ND	0.1000000	MG/L
29205S	10/21/2002	12/19/2002	ENDRIN	EP-A	ND	0.0020000	MG/L
29205S	10/21/2002	12/19/2002	ETHYLENE DIBROMIDE	EP-A	ND	0.0000500	MG/L
29205S	10/21/2002	12/19/2002	GLYPHOSATE	EP-A	ND	0.7000000	MG/L
29205S	10/21/2002	12/19/2002	HEPTACHLOR	EP-A	ND	0.0004000	MG/L
29205S	10/21/2002	12/19/2002	HEPTACHLOR EPOXIDE	EP-A	ND	0.0002000	MG/L
29205S	10/21/2002	12/19/2002	HEXACHLOROBENZENE	EP-A	ND	0.0010000	MG/L
29205S	10/21/2002	12/19/2002	HEXACHLOROCYCLOPENTADIENE	EP-A	ND	0.0500000	MG/L
29205S	10/21/2002	12/19/2002	LASSO	EP-A	ND	0.0020000	MG/L
29205S	10/21/2002	12/19/2002	METHOXYCHLOR	EP-A	ND	0.0400000	MG/L
29205S	10/21/2002	12/19/2002	OXAMYL	EP-A	ND	0.2000000	MG/L
29205S	10/21/2002	12/19/2002	PENTACHLOROPHENOL	EP-A	ND	0.0010000	MG/L
29205S	10/21/2002	12/19/2002	PICLORAM	EP-A	ND	0.5000000	MG/L
29205S	10/21/2002	12/19/2002	SIMAZINE	EP-A	ND	0.0040000	MG/L
29205S	10/21/2002	12/19/2002	TOTAL POLYCHLORINATED BIPHENYLS (PCB)	EP-A	ND	0.0005000	MG/L
29205S	10/21/2002	12/19/2002	TOXAPHENE	EP-A	ND	0.0030000	MG/L
29206V	10/21/2002	12/19/2002	1,1,1-TRICHLOROETHANE	EP-A	ND	0.2000000	MG/L
29206V	10/21/2002	12/19/2002	1,1,2-TRICHLOROETHANE	EP-A	ND	0.0050000	MG/L
29206V	10/21/2002	12/19/2002	1,1-DICHLOROETHYLENE	EP-A	ND	0.0070000	MG/L
29206V	10/21/2002	12/19/2002	1,2,4-TRICHLOROBENZENE	EP-A	ND	0.0700000	MG/L
29206V	10/21/2002	12/19/2002	1,2-DICHLOROETHANE	EP-A	ND	0.0050000	MG/L
29206V	10/21/2002	12/19/2002	1,2-DICHLOROPROPANE	EP-A	ND	0.0050000	MG/L
29206V	10/21/2002	12/19/2002	BENZENE	EP-A	ND	0.0050000	MG/L
29206V	10/21/2002	12/19/2002	CARBON TETRACHLORIDE	EP-A	ND	0.0050000	MG/L

29206V	10/21/2002	12/19/2002	CHLOROBENZENE	EP-A	ND	0.1000000	MG/L
29206V	10/21/2002	12/19/2002	CIS-1,2-DICHLOROETHYLENE	EP-A	ND	0.0700000	MG/L
29206V	10/21/2002	12/19/2002	DICHLOROMETHANE	EP-A	ND	0.0050000	MG/L
29206V	10/21/2002	12/19/2002	ETHYLBENZENE	EP-A	ND	0.7000000	MG/L
29206V	10/21/2002	12/19/2002	O-DICHLOROBENZENE	EP-A	ND	0.6000000	MG/L
29206V	10/21/2002	12/19/2002	P-DICHLOROBENZENE	EP-A	ND	0.0750000	MG/L
29206V	10/21/2002	12/19/2002	STYRENE	EP-A	ND	0.1000000	MG/L
29206V	10/21/2002	12/19/2002	TETRACHLOROETHYLENE	EP-A	ND	0.0050000	MG/L
29206V	10/21/2002	12/19/2002	TOLUENE	EP-A	ND	1.0000000	MG/L
29206V	10/21/2002	12/19/2002	TRANS-1,2-DICHLOROETHYLENE	EP-A	ND	0.1000000	MG/L
29206V	10/21/2002	12/19/2002	TRICHLOROETHYLENE	EP-A	ND	0.0050000	MG/L
29206V	10/21/2002	12/19/2002	VINYL CHLORIDE	EP-A	ND	0.0020000	MG/L
29206V	10/21/2002	12/19/2002	XYLENES, TOTAL	EP-A	ND	10.000000	MG/L
292071	10/21/2002	10/08/2003	COMBINED RADIUM (-226 & -228)	EP-A	ND	5.0000000	PCI/L
292071	10/21/2002	10/08/2003	COMBINED URANIUM	EP-A	0.0000113	0.0300000	MG/L
292071	10/21/2002	10/08/2003	GROSS ALPHA, EXCL. RADON & U	EP-A	ND	15.000000	PCI/L
29208I	10/21/2002	12/19/2002	ANTIMONY, TOTAL	EP-B	ND	0.0060000	MG/L
29208I	10/21/2002	12/19/2002	ARSENIC	EP-B	ND	0.0100000	MG/L
29208I	10/21/2002	12/19/2002	BARIUM	EP-B	ND	2.0000000	MG/L
29208I	10/21/2002	12/19/2002	BERYLLIUM, TOTAL	EP-B	ND	0.0040000	MG/L
29208I	10/21/2002	12/19/2002	CADMIUM	EP-B	ND	0.0050000	MG/L
29208I	10/21/2002	12/19/2002	CHROMIUM	EP-B	ND	0.1000000	MG/L
29208I	10/21/2002	12/19/2002	CYANIDE	EP-B	ND	0.2000000	MG/L
29208I	10/21/2002	12/19/2002	FLUORIDE	EP-B	0.5100000	4.0000000	MG/L
29208I	10/21/2002	12/19/2002	LEAD	EP-B	0.0050000	0.0150000	MG/L
29208I	10/21/2002	12/19/2002	MERCURY	EP-B	ND	0.0020000	MG/L
29208I	10/21/2002	12/19/2002	NICKEL	EP-B	ND	0.1000000	MG/L
29208I	10/21/2002	12/19/2002	SELENIUM	EP-B	ND	0.0500000	MG/L
29208I	10/21/2002	12/19/2002	SODIUM	EP-B	164.00000		MG/L
29208I	10/21/2002	12/19/2002	SULFATE	EP-B	136.00000		MG/L
29208I	10/21/2002	12/19/2002	THALLIUM, TOTAL	EP-B	ND	0.0020000	MG/L
29209S	10/21/2002	12/19/2002	1,2-DIBROMO-3-CHLOROPROPANE	EP-B	ND	0.0002000	MG/L
29209S	10/21/2002	12/19/2002	2,4,5-TP	EP-B	ND	0.0500000	MG/L
29209S	10/21/2002	12/19/2002	2,4-D	EP-B	ND	0.0700000	MG/L
29209S	10/21/2002	12/19/2002	ATRAZINE	EP-B	0.0003200	0.0030000	MG/L
29209S	10/21/2002	12/19/2002	BENZO(A)PYRENE	EP-B	ND	0.0002000	MG/L
29209S	10/21/2002	12/19/2002	BHC-GAMMA	EP-B	ND	0.0002000	MG/L
29209S	10/21/2002	12/19/2002	CARBOFURAN	EP-B	ND	0.0400000	MG/L
29209S	10/21/2002	12/19/2002	CHLORDANE	EP-B	ND	0.0020000	MG/L
29209S	10/21/2002	12/19/2002	DALAPON	EP-B	ND	0.2000000	MG/L
29209S	10/21/2002	12/19/2002	DI(2-ETHYLHEXYL) ADIPATE	EP-B	ND	0.4000000	MG/L
29209S	10/21/2002	12/19/2002	DI(2-ETHYLHEXYL) PHTHALATE	EP-B	ND	0.0060000	MG/L
29209S	10/21/2002	12/19/2002	DINOSEB	EP-B	ND	0.0070000	MG/L
29209S	10/21/2002	12/19/2002	DIQUAT	EP-B	ND	0.0200000	MG/L
29209S	10/21/2002	12/19/2002	ENDOTHALL	EP-B	ND	0.1000000	MG/L
29209S	10/21/2002	12/19/2002	ENDRIN	EP-B	ND	0.0020000	MG/L
29209S	10/21/2002	12/19/2002	ETHYLENE DIBROMIDE	EP-B	ND	0.0000500	MG/L
29209S	10/21/2002	12/19/2002	GLYPHOSATE	EP-B	ND	0.7000000	MG/L

29209S	10/21/2002	12/19/2002	HEPTACHLOR	EP-B	ND	0.0004000	MG/L
29209S	10/21/2002	12/19/2002	HEPTACHLOR EPOXIDE	EP-B	ND	0.0002000	MG/L
29209S	10/21/2002	12/19/2002	HEXACHLOROBENZENE	EP-B	ND	0.0010000	MG/L
29209S	10/21/2002	12/19/2002	HEXACHLOROCYCLOPENTADIENE	EP-B	ND	0.0500000	MG/L
29209S	10/21/2002	12/19/2002	LASSO	EP-B	ND	0.0020000	MG/L
29209S	10/21/2002	12/19/2002	METHOXYCHLOR	EP-B	ND	0.0400000	MG/L
29209S	10/21/2002	12/19/2002	OXAMYL	EP-B	ND	0.2000000	MG/L
29209S	10/21/2002	12/19/2002	PENTACHLOROPHENOL	EP-B	ND	0.0010000	MG/L
29209S	10/21/2002	12/19/2002	PICLORAM	EP-B	ND	0.5000000	MG/L
29209S	10/21/2002	12/19/2002	SIMAZINE	EP-B	ND	0.0040000	MG/L
29209S	10/21/2002	12/19/2002	TOTAL POLYCHLORINATED BIPHENYLS (PCB)	EP-B	ND	0.0005000	MG/L
29209S	10/21/2002	12/19/2002	TOXAPHENE	EP-B	ND	0.0030000	MG/L
29210V	10/21/2002	12/19/2002	1,1,1-TRICHLOROETHANE	EP-B	ND	0.2000000	MG/L
29210V	10/21/2002	12/19/2002	1,1,2-TRICHLOROETHANE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	1,1-DICHLOROETHYLENE	EP-B	ND	0.0070000	MG/L
29210V	10/21/2002	12/19/2002	1,2,4-TRICHLOROBENZENE	EP-B	ND	0.0700000	MG/L
29210V	10/21/2002	12/19/2002	1,2-DICHLOROETHANE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	1,2-DICHLOROPROPANE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	BENZENE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	CARBON TETRACHLORIDE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	CHLOROBENZENE	EP-B	ND	0.1000000	MG/L
29210V	10/21/2002	12/19/2002	CIS-1,2-DICHLOROETHYLENE	EP-B	ND	0.0700000	MG/L
29210V	10/21/2002	12/19/2002	DICHLOROMETHANE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	ETHYLBENZENE	EP-B	ND	0.7000000	MG/L
29210V	10/21/2002	12/19/2002	O-DICHLOROBENZENE	EP-B	ND	0.6000000	MG/L
29210V	10/21/2002	12/19/2002	P-DICHLOROBENZENE	EP-B	ND	0.0750000	MG/L
29210V	10/21/2002	12/19/2002	STYRENE	EP-B	ND	0.1000000	MG/L
29210V	10/21/2002	12/19/2002	TETRACHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	TOLUENE	EP-B	ND	1.0000000	MG/L
29210V	10/21/2002	12/19/2002	TRANS-1,2-DICHLOROETHYLENE	EP-B	ND	0.1000000	MG/L
29210V	10/21/2002	12/19/2002	TRICHLOROETHYLENE	EP-B	ND	0.0050000	MG/L
29210V	10/21/2002	12/19/2002	VINYL CHLORIDE	EP-B	ND	0.0020000	MG/L
29210V	10/21/2002	12/19/2002	XYLENES, TOTAL	EP-B	ND	10.000000	MG/L
292111	10/21/2002	05/30/2006	COMBINED RADIUM (-226 & -228)	EP-B	ND	5.0000000	PCI/L
292111	10/21/2002	05/30/2006	COMBINED URANIUM	EP-B	0.0007000	0.0300000	MG/L
292111	10/21/2002	05/30/2006	GROSS ALPHA, EXCL. RADON & U	EP-B	1.9310000	15.000000	PCI/L
288711	10/09/2002	11/18/2002	NITRATE	EP-B	9.7500000	10.000000	MG/L
275221	08/14/2002	04/21/2004	NITRATE	EP-B	8.1000000	10.000000	MG/L
258151	05/08/2002	05/23/2002	NITRATE	EP-B	8.8600000	10.000000	MG/L
258131	05/08/2002	05/23/2002	NITRATE	SRC-BA	7.1200000	10.000000	MG/L
258141	05/08/2002	05/23/2002	NITRATE	SRC-BB	5.6000000	10.000000	MG/L
258161	05/08/2002	05/23/2002	NITRATE	SRC-BC	**10.700000**	10.000000	MG/L
258171	05/08/2002	05/23/2002	NITRATE	SRC-BD	**14.300000**	10.000000	MG/L
258181	05/08/2002	05/23/2002	NITRATE	SRC-BE	**13.800000**	10.000000	MG/L
258191	05/08/2002	05/23/2002	NITRATE	SRC-BF	**14.500000**	10.000000	MG/L
258201	05/08/2002	05/23/2002	NITRATE	SRC-BG	**18.000000**	10.000000	MG/L
244641	02/19/2002	03/04/2002	NITRATE	SRC-BE	**13.600000**	10.000000	MG/L

244651	02/19/2002	03/04/2002	NITRATE	SRC-BF	**11.300000**	10.000000	MG/L
244661	02/19/2002	03/04/2002	NITRATE	SRC-BG	**16.900000**	10.000000	MG/L
243421	02/12/2002	03/04/2002	NITRATE	EP-B	7.5300000	10.000000	MG/L
243351	02/12/2002	03/04/2002	NITRATE	SRC-BA	6.2400000	10.000000	MG/L
243361	02/12/2002	03/04/2002	NITRATE	SRC-BB	5.3900000	10.000000	MG/L
243371	02/12/2002	03/04/2002	NITRATE	SRC-BC	6.2600000	10.000000	MG/L
243381	02/12/2002	03/04/2002	NITRATE	SRC-BD	**13.700000**	10.000000	MG/L
305981	01/08/2002	01/21/2003	NITRATE	EP-B	7.4400000	10.000000	MG/L

Archived Results

Sample Date	Receive Date	Chemical	Source ID	Results	MCL
11/14/2001	11/29/2001	Nitrate	B	7.0900000	10.000000
10/09/2001	12/07/2001	Arsenic	AA	0.0200000	0.0500000
10/09/2001	12/07/2001	Nitrate	AA	3.2300000	10.000000
10/09/2001	12/07/2001	Arsenic	B	0.0210000	0.0500000
10/09/2001	12/07/2001	Nitrate	B	6.5700000	10.000000
09/11/2001	12/07/2001	Nitrate	B	5.7500000	10.000000
08/21/2001	11/19/2001	Nitrate	B	6.6500000	10.000000
08/21/2001	11/19/2001	Nitrate	B	6.7100000	10.000000
08/21/2001	11/19/2001	Nitrate	B	6.7600000	10.000000
08/21/2001	11/19/2001	Nitrate	B	6.6400000	10.000000
08/14/2001	09/04/2001	Nitrate	B	7.1900000	10.000000
08/14/2001	09/04/2001	Nitrate	B	7.5900000	10.000000
08/14/2001	09/04/2001	Nitrate	B	7.4800000	10.000000
08/14/2001	09/04/2001	Nitrate	B	7.3800000	10.000000
07/02/2001	07/12/2001	Nitrate	A	8.0500000	10.000000
07/02/2001	07/12/2001	Nitrate	B	8.1300000	10.000000
07/02/2001	07/12/2001	Nitrate	BA	5.7800000	10.000000
07/02/2001	07/12/2001	Nitrate	BB	2.1400000	10.000000
07/02/2001	07/12/2001	Nitrate	BC	6.0300000	10.000000
07/02/2001	07/12/2001	Nitrate	BD	**11.700000**	10.000000
07/02/2001	07/12/2001	Nitrate	BE	**13.700000**	10.000000
07/02/2001	07/12/2001	Nitrate	BF	**12.200000**	10.000000
07/02/2001	07/12/2001	Nitrate	BG	**10.600000**	10.000000
06/26/2001	07/12/2001	Nitrate	A	8.1700000	10.000000
06/26/2001	07/17/2001	Nitrate	B	7.7000000	10.000000
05/23/2001	06/19/2001	Nitrate	A	4.8400000	10.000000
05/23/2001	06/19/2001	Nitrate	B	**11.000000**	10.000000
05/09/2001	08/07/2001	Nitrate	A	5.2300000	10.000000
05/09/2001	08/07/2001	Nitrate	B	9.5700000	10.000000
03/12/2001	05/22/2001	1,1,1-Trichloroethane	AA	ND	0.2000000
03/12/2001	05/22/2001	1,1,2-Trichloroethane	AA	ND	0.0050000
03/12/2001	05/22/2001	1,1-Dichloroethylene	AA	ND	0.0070000
03/12/2001	05/22/2001	1,2,4-Trichlorobenzene	AA	ND	0.0700000
03/12/2001	05/22/2001	1,2-Dibromo-3-Chloropropane (DBCP)	AA	ND	0.0002000
03/12/2001	05/22/2001	1,2-Dichloroethane	AA	ND	0.0050000
03/12/2001	05/22/2001	1,2-Dichloropropane	AA	ND	0.0050000
03/12/2001	05/22/2001	2,4,5-TP Silvex	AA	ND	0.0500000

03/12/2001	05/22/2001	2,4-D	AA	ND	0.0700000
03/12/2001	05/22/2001	Adipates (Di(2-Ethylhexyl))	AA	ND	0.4000000
03/12/2001	05/22/2001	Alachlor (Lasso)	AA	ND	0.0020000
03/12/2001	05/22/2001	Atrazine	AA	ND	0.0030000
03/12/2001	05/22/2001	Benzene	AA	ND	0.0050000
03/12/2001	05/22/2001	Benzo (A) Pyrene	AA	ND	0.0002000
03/12/2001	05/22/2001	BHC-gamma (Lindane)	AA	ND	0.0002000
03/12/2001	05/22/2001	Carbofuran	AA	ND	0.0400000
03/12/2001	05/22/2001	Carbon Tetrachloride	AA	ND	0.0050000
03/12/2001	05/22/2001	Chlordane	AA	ND	0.0020000
03/12/2001	05/22/2001	Cis-1,2-Dichloroethylene	AA	ND	0.0700000
03/12/2001	05/22/2001	Dalapon	AA	ND	0.2000000
03/12/2001	05/22/2001	Dichloromethane (Methylene Chloride)	AA	ND	0.0050000
03/12/2001	05/22/2001	Dinoseb	AA	ND	0.0070000
03/12/2001	05/22/2001	Diquat	AA	ND	0.0200000
03/12/2001	05/22/2001	Endothall	AA	ND	0.1000000
03/12/2001	05/22/2001	Endrin	AA	ND	0.0020000
03/12/2001	05/22/2001	Ethylbenzene	AA	ND	0.7000000
03/12/2001	05/22/2001	Ethylene Dibromide (EDB)	AA	ND	0.0000500
03/12/2001	05/22/2001	Glyphosate	AA	ND	0.7000000
03/12/2001	05/22/2001	Heptachlor	AA	ND	0.0004000
03/12/2001	05/22/2001	Heptachlor Epoxide	AA	ND	0.0002000
03/12/2001	05/22/2001	Hexachlorobenzene (HCB)	AA	ND	0.0010000
03/12/2001	05/22/2001	Hexachlorocyclopentadiene	AA	ND	0.0500000
03/12/2001	05/22/2001	Methoxychlor	AA	ND	0.0400000
03/12/2001	05/22/2001	Monochlorobenzene (Chlorobenzene)	AA	ND	0.1000000
03/12/2001	05/22/2001	O-Dichlorobenzene	AA	ND	0.6000000
03/12/2001	05/22/2001	P-Dichlorobenzene	AA	ND	0.0750000
03/12/2001	05/22/2001	Pentachlorophenol	AA	ND	0.0010000
03/12/2001	05/22/2001	Phthalates (Di(2-Ethylhexyl))	AA	ND	0.0060000
03/12/2001	05/22/2001	Picloram	AA	ND	0.5000000
03/12/2001	05/22/2001	Simazine	AA	ND	0.0040000
03/12/2001	05/22/2001	Styrene	AA	ND	0.1000000
03/12/2001	05/22/2001	Tetrachloroethylene	AA	ND	0.0050000
03/12/2001	05/22/2001	Toluene	AA	ND	1.0000000
03/12/2001	05/22/2001	Total Polychlorinated Biphenyls (PCB)	AA	ND	0.0005000
03/12/2001	05/22/2001	Total Xylenes	AA	ND	10.000000
03/12/2001	05/22/2001	Toxaphene	AA	ND	0.0030000
03/12/2001	05/22/2001	Trans-1,2-Dichloroethylene	AA	ND	0.1000000
03/12/2001	05/22/2001	Trichloroethylene	AA	ND	0.0050000
03/12/2001	05/22/2001	Vinyl Chloride	AA	ND	0.0020000
03/12/2001	05/22/2001	Vydate (Oxamyl)	AA	ND	0.2000000
03/12/2001	11/05/2001	Antimony Total	BA	ND	0.0060000
03/12/2001	11/05/2001	Arsenic	BA	ND	0.0500000
03/12/2001	11/05/2001	Barium	BA	ND	2.0000000
03/12/2001	11/05/2001	Beryllium Total	BA	ND	0.0040000
03/12/2001	11/05/2001	Cadmium	BA	ND	0.0050000
03/12/2001	11/05/2001	Chromium	BA	ND	0.1000000

03/12/2001	11/05/2001	Cyanide	BA	ND	0.2000000
03/12/2001	11/05/2001	Fluoride	BA	0.3800000	4.0000000
03/12/2001	11/05/2001	Lead	BA	ND	0.0150000
03/12/2001	11/05/2001	Mercury	BA	ND	0.0020000
03/12/2001	11/05/2001	Nickel	BA	ND	0.1000000
03/12/2001	11/05/2001	Selenium	BA	ND	0.0500000
03/12/2001	11/05/2001	Sodium	BA	170.00000	
03/12/2001	11/05/2001	Sulfate	BA	159.00000	
03/12/2001	11/05/2001	Thallium Total	BA	ND	0.0020000
03/12/2001	05/22/2001	1,1,1-Trichloroethane	BB	ND	0.2000000
03/12/2001	05/22/2001	1,1,2-Trichloroethane	BB	ND	0.0050000
03/12/2001	05/22/2001	1,1-Dichloroethylene	BB	ND	0.0070000
03/12/2001	05/22/2001	1,2,4-Trichlorobenzene	BB	ND	0.0700000
03/12/2001	05/22/2001	1,2-Dibromo-3-Chloropropane (DBCP)	BB	ND	0.0002000
03/12/2001	05/22/2001	1,2-Dichloroethane	BB	ND	0.0050000
03/12/2001	05/22/2001	1,2-Dichloropropane	BB	ND	0.0050000
03/12/2001	05/22/2001	2,4,5-TP Silvex	BB	ND	0.0500000
03/12/2001	05/22/2001	2,4-D	BB	ND	0.0700000
03/12/2001	05/22/2001	Adipates (Di(2-Ethylhexyl))	BB	ND	0.4000000
03/12/2001	05/22/2001	Alachlor (Lasso)	BB	ND	0.0020000
03/12/2001	11/05/2001	Antimony Total	BB	ND	0.0060000
03/12/2001	11/05/2001	Arsenic	BB	ND	0.0500000
03/12/2001	05/22/2001	Atrazine	BB	ND	0.0030000
03/12/2001	11/05/2001	Barium	BB	ND	2.0000000
03/12/2001	05/22/2001	Benzene	BB	ND	0.0050000
03/12/2001	05/22/2001	Benzo (A) Pyrene	BB	ND	0.0002000
03/12/2001	11/05/2001	Beryllium Total	BB	ND	0.0040000
03/12/2001	05/22/2001	BHC-gamma (Lindane)	BB	ND	0.0002000
03/12/2001	11/05/2001	Cadmium	BB	ND	0.0050000
03/12/2001	05/22/2001	Carbofuran	BB	ND	0.0400000
03/12/2001	05/22/2001	Carbon Tetrachloride	BB	ND	0.0050000
03/12/2001	05/22/2001	Chlordane	BB	ND	0.0020000
03/12/2001	11/05/2001	Chromium	BB	ND	0.1000000
03/12/2001	05/22/2001	Cis-1,2-Dichloroethylene	BB	ND	0.0700000
03/12/2001	11/05/2001	Cyanide	BB	ND	0.2000000
03/12/2001	05/22/2001	Dalapon	BB	ND	0.2000000
03/12/2001	05/22/2001	Dichloromethane (Methylene Chloride)	BB	ND	0.0050000
03/12/2001	05/22/2001	Dinoseb	BB	ND	0.0070000
03/12/2001	05/22/2001	Diquat	BB	ND	0.0200000
03/12/2001	05/22/2001	Endothall	BB	ND	0.1000000
03/12/2001	05/22/2001	Endrin	BB	ND	0.0020000
03/12/2001	05/22/2001	Ethylbenzene	BB	ND	0.7000000
03/12/2001	05/22/2001	Ethylene Dibromide (EDB)	BB	ND	0.0000500
03/12/2001	11/05/2001	Fluoride	BB	0.4400000	4.0000000
03/12/2001	05/22/2001	Glyphosate	BB	ND	0.7000000
03/12/2001	05/22/2001	Heptachlor	BB	ND	0.0004000
03/12/2001	05/22/2001	Heptachlor Epoxide	BB	ND	0.0002000
03/12/2001	05/22/2001	Hexachlorobenzene (HCB)	BB	ND	0.0010000

03/12/2001	05/22/2001	Hexachlorocyclopentadiene	BB	ND	0.0500000
03/12/2001	11/05/2001	Lead	BB	ND	0.0150000
03/12/2001	11/05/2001	Mercury	BB	ND	0.0020000
03/12/2001	05/22/2001	Methoxychlor	BB	ND	0.0400000
03/12/2001	05/22/2001	Monochlorobenzene (Chlorobenzene)	BB	ND	0.1000000
03/12/2001	11/05/2001	Nickel	BB	ND	0.1000000
03/12/2001	05/22/2001	O-Dichlorobenzene	BB	ND	0.6000000
03/12/2001	05/22/2001	P-Dichlorobenzene	BB	ND	0.0750000
03/12/2001	05/22/2001	Pentachlorophenol	BB	ND	0.0010000
03/12/2001	05/22/2001	Phthalates (Di(2-Ethylhexyl))	BB	0.0027000	0.0060000
03/12/2001	05/22/2001	Picloram	BB	ND	0.5000000
03/12/2001	11/05/2001	Selenium	BB	ND	0.0500000
03/12/2001	05/22/2001	Simazine	BB	ND	0.0040000
03/12/2001	11/05/2001	Sodium	BB	87.600000	
03/12/2001	05/22/2001	Styrene	BB	ND	0.1000000
03/12/2001	11/05/2001	Sulfate	BB	93.900000	
03/12/2001	05/22/2001	Tetrachloroethylene	BB	ND	0.0050000
03/12/2001	11/05/2001	Thallium Total	BB	ND	0.0020000
03/12/2001	05/22/2001	Toluene	BB	ND	1.0000000
03/12/2001	05/22/2001	Total Polychlorinated Biphenyls (PCB)	BB	ND	0.0005000
03/12/2001	05/22/2001	Total Xylenes	BB	ND	10.000000
03/12/2001	05/22/2001	Toxaphene	BB	ND	0.0030000
03/12/2001	05/22/2001	Trans-1,2-Dichloroethylene	BB	ND	0.1000000
03/12/2001	05/22/2001	Trichloroethylene	BB	ND	0.0050000
03/12/2001	05/22/2001	Vinyl Chloride	BB	ND	0.0020000
03/12/2001	05/22/2001	Vydate (Oxamyl)	BB	ND	0.2000000
02/28/2001	03/06/2001	Nitrate	A	6.1100000	10.000000
02/28/2001	03/06/2001	Nitrate	A	5.4600000	10.000000
02/28/2001	11/19/2001	Nitrate	B	7.6900000	10.000000
04/22/1999	06/06/1999	Gross Alpha, Excl. Radon & U	A	1.4100000	15.000000
02/03/1999	02/16/1999	1,1,1,2-Tetrachloroethane	AA	ND	
02/03/1999	02/16/1999	1,1,1-Trichloroethane	AA	ND	0.2000000
02/03/1999	02/16/1999	1,1,2,2,-Tetrachloroethane	AA	ND	
02/03/1999	02/16/1999	1,1,2-Trichloroethane	AA	ND	0.0050000
02/03/1999	02/16/1999	1,1-Dichloroethane	AA	ND	
02/03/1999	02/16/1999	1,1-Dichloroethylene	AA	ND	0.0070000
02/03/1999	02/16/1999	1,1-Dichloropropene	AA	ND	
02/03/1999	02/16/1999	1,2,3-Trichloropropane	AA	ND	
02/03/1999	02/16/1999	1,2,4-Trichlorobenzene	AA	ND	0.0700000
02/03/1999	02/16/1999	1,2-Dichloroethane	AA	ND	0.0050000
02/03/1999	02/16/1999	1,2-Dichloropropane	AA	ND	0.0050000
02/03/1999	02/16/1999	1,3-Dichloropropane	AA	ND	
02/03/1999	02/16/1999	1,3-Dichloropropene	AA	ND	
02/03/1999	02/16/1999	2,2-Dichloropropane	AA	ND	
02/03/1999	02/16/1999	Benzene	AA	ND	0.0050000
02/03/1999	02/16/1999	Bromobenzene	AA	ND	
02/03/1999	02/25/1999	Bromodichloromethane	AA	ND	
02/03/1999	02/16/1999	Bromoform	AA	ND	

02/03/1999	02/16/1999	Bromomethane	AA	ND	
02/03/1999	02/16/1999	Carbon Tetrachloride	AA	ND	0.0050000
02/03/1999	02/16/1999	Chloroethane	AA	ND	
02/03/1999	02/16/1999	Chloroform	AA	ND	
02/03/1999	02/16/1999	Chloromethane	AA	ND	
02/03/1999	02/16/1999	Cis-1,2-Dichloroethylene	AA	ND	0.0700000
02/03/1999	02/16/1999	Dibromochloromethane	AA	ND	
02/03/1999	02/16/1999	Dibromomethane	AA	ND	
02/03/1999	02/16/1999	Dichloromethane (Methylene Chloride)	AA	ND	0.0050000
02/03/1999	02/16/1999	Ethylbenzene	AA	ND	0.7000000
02/03/1999	02/16/1999	M-Dichlorobenzene	AA	ND	
02/03/1999	02/16/1999	Monochlorobenzene (Chlorobenzene)	AA	ND	0.1000000
02/03/1999	02/16/1999	O-Chlorotoluene	AA	ND	
02/03/1999	02/16/1999	O-Dichlorobenzene	AA	ND	0.6000000
02/03/1999	02/16/1999	P-Chlorotoluene	AA	ND	
02/03/1999	02/16/1999	P-Dichlorobenzene	AA	ND	0.0750000
02/03/1999	02/16/1999	Styrene	AA	ND	0.1000000
02/03/1999	02/16/1999	Tetrachloroethylene	AA	ND	0.0050000
02/03/1999	02/16/1999	Toluene	AA	ND	1.0000000
02/03/1999	02/16/1999	Total Xylenes	AA	ND	10.000000
02/03/1999	02/16/1999	Trans-1,2-Dichloroethylene	AA	ND	0.1000000
02/03/1999	02/16/1999	Trichloroethylene	AA	ND	0.0050000
02/03/1999	02/16/1999	Vinyl Chloride	AA	ND	0.0020000
02/01/1999	03/04/1999	Antimony Total	A	ND	0.0060000
02/01/1999	03/04/1999	Arsenic	A	0.0280000	0.0500000
02/01/1999	03/04/1999	Barium	A	ND	2.0000000
02/01/1999	03/04/1999	Beryllium Total	A	ND	0.0040000
02/01/1999	03/04/1999	Cadmium	A	ND	0.0050000
02/01/1999	03/04/1999	Chromium	A	ND	0.1000000
02/01/1999	03/04/1999	Cyanide	A	ND	0.2000000
02/01/1999	03/04/1999	Fluoride	A	ND	4.0000000
02/01/1999	03/04/1999	Mercury	A	ND	0.0020000
02/01/1999	03/04/1999	Nickel	A	ND	0.1000000
02/01/1999	03/04/1999	Nitrate	A	6.7700000	10.000000
02/01/1999	03/04/1999	Nitrite	A	ND	1.0000000
02/01/1999	03/04/1999	Selenium	A	ND	0.0500000
02/01/1999	03/04/1999	Sodium	A	232.00000	
02/01/1999	03/04/1999	Thallium Total	A	ND	0.0020000
02/01/1999	04/06/1999	1,2-Dibromo-3-Chloropropane (DBCP)	AA	ND	0.0002000
02/01/1999	04/06/1999	2,4,5-TP Silvex	AA	ND	0.0500000
02/01/1999	04/06/1999	2,4-D	AA	ND	0.0700000
02/01/1999	04/06/1999	3-Hydroxycarbofuran	AA	ND	
02/01/1999	04/06/1999	Adipates (Di(2-Ethylhexyl))	AA	ND	0.4000000
02/01/1999	04/06/1999	Alachlor (Lasso)	AA	ND	0.0020000
02/01/1999	04/06/1999	Aldicarb	AA	ND	
02/01/1999	04/06/1999	Aldicarb Sulfone	AA	ND	
02/01/1999	04/06/1999	Aldicarb Sulfoxide	AA	ND	
02/01/1999	04/06/1999	Aldrin	AA	ND	

02/01/1999	04/06/1999	Atrazine	AA	ND	0.0030000
02/01/1999	04/06/1999	Benzo (A) Pyrene	AA	ND	0.0002000
02/01/1999	04/06/1999	BHC-gamma (Lindane)	AA	ND	0.0002000
02/01/1999	04/06/1999	Butachlor	AA	ND	
02/01/1999	04/06/1999	Carbaryl	AA	ND	
02/01/1999	04/06/1999	Carbofuran	AA	ND	0.0400000
02/01/1999	04/06/1999	Chlordane	AA	ND	0.0020000
02/01/1999	04/06/1999	Dalapon	AA	ND	0.2000000
02/01/1999	04/06/1999	Dicamba	AA	ND	
02/01/1999	04/06/1999	Dieldrin	AA	ND	
02/01/1999	04/06/1999	Dinoseb	AA	ND	0.0070000
02/01/1999	04/06/1999	Diquat	AA	ND	0.0200000
02/01/1999	04/06/1999	Endothall	AA	ND	0.1000000
02/01/1999	04/06/1999	Endrin	AA	ND	0.0020000
02/01/1999	04/06/1999	Ethylene Dibromide (EDB)	AA	ND	0.0000500
02/01/1999	04/06/1999	Glyphosate	AA	ND	0.7000000
02/01/1999	03/15/1999	Gross Alpha, Excl. Radon & U	AA	9.6800000	15.000000
02/01/1999	04/06/1999	Heptachlor	AA	ND	0.0004000
02/01/1999	04/06/1999	Heptachlor Epoxide	AA	ND	0.0002000
02/01/1999	04/06/1999	Hexachlorobenzene (HCB)	AA	ND	0.0010000
02/01/1999	04/06/1999	Hexachlorocyclopentadiene	AA	ND	0.0500000
02/01/1999	04/06/1999	Methomyl	AA	ND	
02/01/1999	04/06/1999	Methoxychlor	AA	ND	0.0400000
02/01/1999	04/06/1999	Metolachlor	AA	ND	
02/01/1999	04/06/1999	Metribuzin	AA	ND	
02/01/1999	04/06/1999	Pentachlorophenol	AA	ND	0.0010000
02/01/1999	04/06/1999	Phthalates (Di(2-Ethylhexyl))	AA	ND	0.0060000
02/01/1999	04/06/1999	Picloram	AA	ND	0.5000000
02/01/1999	04/06/1999	Propachlor	AA	ND	
02/01/1999	04/06/1999	Simazine	AA	ND	0.0040000
02/01/1999	04/06/1999	Total Polychlorinated Biphenyls (PCB)	AA	ND	0.0005000
02/01/1999	04/06/1999	Toxaphene	AA	ND	0.0030000
02/01/1999	04/06/1999	Vydate (Oxamyl)	AA	ND	0.2000000
09/21/1998	10/08/1998	Nitrate	A	5.2000000	10.000000
09/21/1998	10/13/1998	Nitrate	A	5.2000000	10.000000
09/15/1997	09/29/1997	Nitrate	AA	6.1300000	10.000000
09/15/1997	09/22/1997	Nitrate	AA	6.1300000	10.000000
11/18/1996	11/25/1996	Nitrate	A	5.2100000	10.000000
07/22/1996	07/29/1996	Nitrate	A	6.8900000	10.000000
05/28/1996	08/13/1996	1,2-Dibromo-3-Chloropropane (DBCP)	A	ND	0.0002000
05/28/1996	08/13/1996	2,4,5-TP Silvex	A	ND	0.0500000
05/28/1996	08/13/1996	2,4-D	A	ND	0.0700000
05/28/1996	08/13/1996	3-Hydroxycarbofuran	A	ND	
05/28/1996	08/13/1996	Adipates (Di(2-Ethylhexyl))	A	ND	0.4000000
05/28/1996	08/13/1996	Alachlor (Lasso)	A	ND	0.0020000
05/28/1996	08/13/1996	Aldicarb	A	ND	
05/28/1996	08/13/1996	Aldicarb Sulfone	A	ND	
05/28/1996	08/13/1996	Aldicarb Sulfoxide	A	ND	

05/28/1996	08/13/1996	Aldrin	A	ND	
05/28/1996	06/20/1996	Antimony Total	A	ND	0.0060000
05/28/1996	06/20/1996	Arsenic	A	0.0110000	0.0500000
05/28/1996	08/13/1996	Atrazine	A	ND	0.0030000
05/28/1996	06/20/1996	Barium	A	ND	2.0000000
05/28/1996	08/13/1996	Benzo (A) Pyrene	A	ND	0.0002000
05/28/1996	06/20/1996	Beryllium Total	A	ND	0.0040000
05/28/1996	08/13/1996	BHC-gamma (Lindane)	A	ND	0.0002000
05/28/1996	08/13/1996	Butachlor	A	ND	
05/28/1996	06/20/1996	Cadmium	A	ND	0.0050000
05/28/1996	08/13/1996	Carbaryl	A	ND	
05/28/1996	08/13/1996	Carbofuran	A	ND	0.0400000
05/28/1996	08/13/1996	Chlordane	A	ND	0.0020000
05/28/1996	06/20/1996	Chromium	A	ND	0.1000000
05/28/1996	06/20/1996	Copper	A	ND	1.3000000
05/28/1996	06/20/1996	Cyanide	A	ND	0.2000000
05/28/1996	08/13/1996	Dalapon	A	ND	0.2000000
05/28/1996	08/13/1996	Dicamba	A	ND	
05/28/1996	08/13/1996	Dieldrin	A	ND	
05/28/1996	08/13/1996	Dinoseb	A	ND	0.0070000
05/28/1996	08/13/1996	Diquat	A	ND	0.0200000
05/28/1996	08/13/1996	Endothall	A	ND	0.1000000
05/28/1996	08/13/1996	Endrin	A	ND	0.0020000
05/28/1996	08/13/1996	Ethylene Dibromide (EDB)	A	ND	0.0000500
05/28/1996	06/20/1996	Fluoride	A	0.5000000	4.0000000
05/28/1996	08/13/1996	Glyphosate	A	ND	0.7000000
05/28/1996	08/13/1996	Heptachlor	A	ND	0.0004000
05/28/1996	08/13/1996	Heptachlor Epoxide	A	ND	0.0002000
05/28/1996	08/13/1996	Hexachlorobenzene (HCB)	A	ND	0.0010000
05/28/1996	08/13/1996	Hexachlorocyclopentadiene	A	ND	0.0500000
05/28/1996	06/20/1996	Lead	A	ND	0.0150000
05/28/1996	06/20/1996	Mercury	A	ND	0.0020000
05/28/1996	08/13/1996	Methomyl	A	ND	
05/28/1996	08/13/1996	Methoxychlor	A	ND	0.0400000
05/28/1996	08/13/1996	Metolachlor	A	ND	
05/28/1996	08/13/1996	Metribuzin	A	ND	
05/28/1996	06/20/1996	Nickel	A	ND	0.1000000
05/28/1996	06/20/1996	Nitrate	A	6.8100000	10.000000
05/28/1996	06/20/1996	Nitrite	A	0.0300000	1.0000000
05/28/1996	08/13/1996	Pentachlorophenol	A	ND	0.0010000
05/28/1996	08/13/1996	Phthalates (Di(2-Ethylhexyl))	A	ND	0.0060000
05/28/1996	08/13/1996	Picloram	A	ND	0.5000000
05/28/1996	08/13/1996	Propachlor	A	ND	
05/28/1996	06/20/1996	Selenium	A	ND	0.0500000
05/28/1996	08/13/1996	Simazine	A	ND	0.0040000
05/28/1996	06/20/1996	Sodium	A	234.00000	
05/28/1996	06/20/1996	Sulfate	A	206.00000	
05/28/1996	06/20/1996	Thallium Total	A	ND	0.0020000

05/28/1996	08/13/1996	Total Polychlorinated Biphenyls (PCB)	A	ND	0.0005000
05/28/1996	08/13/1996	Toxaphene	A	ND	0.0030000
05/28/1996	08/13/1996	Vydate (Oxamyl)	A	ND	0.2000000
05/13/1996	05/22/1996	Nitrate	A	6.8200000	10.000000
01/22/1996	02/26/1996	Gross Alpha, Excl. Radon & U	A	9.1800000	15.000000
01/22/1996	02/05/1996	Nitrate	A	2.7400000	10.000000
09/05/1995	09/28/1995	Antimony Total	AA	ND	0.0060000
09/05/1995	09/28/1995	Arsenic	AA	0.0150000	0.0500000
09/05/1995	09/28/1995	Barium	AA	ND	2.0000000
09/05/1995	09/28/1995	Beryllium Total	AA	ND	0.0040000
09/05/1995	09/28/1995	Cadmium	AA	ND	0.0050000
09/05/1995	09/28/1995	Chromium	AA	ND	0.1000000
09/05/1995	09/28/1995	Copper	AA	0.0200000	1.3000000
09/05/1995	09/28/1995	Cyanide	AA	ND	0.2000000
09/05/1995	09/28/1995	Fluoride	AA	0.5600000	4.0000000
09/05/1995	09/28/1995	Lead	AA	ND	0.0150000
09/05/1995	09/28/1995	Mercury	AA	ND	0.0020000
09/05/1995	09/28/1995	Nickel	AA	ND	0.1000000
09/05/1995	09/28/1995	Nitrate	AA	6.0400000	10.000000
09/05/1995	09/28/1995	Nitrite	AA	ND	1.0000000
09/05/1995	09/28/1995	Selenium	AA	ND	0.0500000
09/05/1995	09/28/1995	Sodium	AA	219.00000	
09/05/1995	09/28/1995	Sulfate	AA	172.00000	
09/05/1995	09/28/1995	Thallium Total	AA	ND	0.0020000
12/20/1993	03/03/1994	2,4,5-TP Silvex	A	ND	0.0500000
12/20/1993	03/03/1994	2,4-D	A	ND	0.0700000
12/20/1993	03/03/1994	Adipates (Di(2-Ethylhexyl))	A	ND	0.4000000
12/20/1993	03/03/1994	Alachlor (Lasso)	A	ND	0.0020000
12/20/1993	03/03/1994	Aldrin	A	ND	
12/20/1993	03/03/1994	Atrazine	A	ND	0.0030000
12/20/1993	03/03/1994	Benzo (A) Pyrene	A	ND	0.0002000
12/20/1993	03/03/1994	BHC-gamma (Lindane)	A	ND	0.0002000
12/20/1993	03/03/1994	Butachlor	A	ND	
12/20/1993	03/03/1994	Dalapon	A	ND	0.2000000
12/20/1993	03/03/1994	Dicamba	A	ND	
12/20/1993	03/03/1994	Dinoseb	A	ND	0.0070000
12/20/1993	03/03/1994	Endrin	A	ND	0.0020000
12/20/1993	03/03/1994	Heptachlor	A	ND	0.0004000
12/20/1993	03/03/1994	Heptachlor Epoxide	A	ND	0.0002000
12/20/1993	03/03/1994	Hexachlorobenzene (HCB)	A	ND	0.0010000
12/20/1993	03/03/1994	Hexachlorocyclopentadiene	A	ND	0.0500000
12/20/1993	03/03/1994	Methoxychlor	A	ND	0.0400000
12/20/1993	03/03/1994	Metolachlor	A	ND	
12/20/1993	03/03/1994	Metribuzin	A	ND	
12/20/1993	03/03/1994	Pentachlorophenol	A	ND	0.0010000
12/20/1993	03/03/1994	Phthalates (Di(2-Ethylhexyl))	A	ND	0.0060000
12/20/1993	03/03/1994	Picloram	A	ND	0.5000000
12/20/1993	03/03/1994	Propachlor	A	ND	

12/20/1993	03/03/1994	Simazine	A	ND	0.0040000
11/29/1993	01/19/1994	1,1,1,2-Tetrachloroethane	A	ND	
11/29/1993	01/19/1994	1,1,1-Trichloroethane	A	ND	0.2000000
11/29/1993	01/19/1994	1,1,2,2,-Tetrachloroethane	A	ND	
11/29/1993	01/19/1994	1,1,2-Trichloroethane	A	ND	0.0050000
11/29/1993	01/19/1994	1,1-Dichloroethane	A	ND	
11/29/1993	01/19/1994	1,1-Dichloroethylene	A	ND	0.0070000
11/29/1993	01/19/1994	1,1-Dichloropropene	A	ND	
11/29/1993	01/19/1994	1,2,3-Trichloropropane	A	ND	
11/29/1993	01/19/1994	1,2,4-Trichlorobenzene	A	ND	0.0700000
11/29/1993	01/19/1994	1,2-Dichloroethane	A	ND	0.0050000
11/29/1993	01/19/1994	1,2-Dichloropropane	A	ND	0.0050000
11/29/1993	01/19/1994	1,3-Dichloropropane	A	ND	
11/29/1993	01/19/1994	1,3-Dichloropropene	A	ND	
11/29/1993	01/19/1994	2,2-Dichloropropane	A	ND	
11/29/1993	01/19/1994	Benzene	A	ND	0.0050000
11/29/1993	01/19/1994	Bromobenzene	A	ND	
11/29/1993	01/19/1994	Bromodichloromethane	A	ND	
11/29/1993	01/19/1994	Bromoform	A	0.0187000	
11/29/1993	01/19/1994	Bromomethane	A	ND	
11/29/1993	01/19/1994	Carbon Tetrachloride	A	ND	0.0050000
11/29/1993	01/19/1994	Chloroethane	A	ND	
11/29/1993	01/19/1994	Chloroform	A	ND	
11/29/1993	01/19/1994	Chloromethane	A	ND	
11/29/1993	01/19/1994	Cis-1,2-Dichloroethylene	A	ND	0.0700000
11/29/1993	01/19/1994	Dibromochloromethane	A	0.0012000	
11/29/1993	01/19/1994	Dibromomethane	A	ND	
11/29/1993	01/19/1994	Dichloromethane (Methylene Chloride)	A	ND	0.0050000
11/29/1993	01/19/1994	Ethylbenzene	A	ND	0.7000000
11/29/1993	01/19/1994	M-Dichlorobenzene	A	ND	
11/29/1993	01/19/1994	Monochlorobenzene (Chlorobenzene)	A	ND	0.1000000
11/29/1993	01/19/1994	O-Chlorotoluene	A	ND	
11/29/1993	01/19/1994	O-Dichlorobenzene	A	ND	0.6000000
11/29/1993	01/19/1994	P-Chlorotoluene	A	ND	
11/29/1993	01/19/1994	P-Dichlorobenzene	A	ND	0.0750000
11/29/1993	01/19/1994	Styrene	A	ND	0.1000000
11/29/1993	01/19/1994	Tetrachloroethylene	A	ND	0.0050000
11/29/1993	01/19/1994	Toluene	A	ND	1.0000000
11/29/1993	01/19/1994	Total Xylenes	A	ND	10.000000
11/29/1993	01/19/1994	Trans-1,2-Dichloroethylene	A	ND	0.1000000
11/29/1993	01/19/1994	Trichloroethylene	A	ND	0.0050000
11/29/1993	01/19/1994	Vinyl Chloride	A	ND	0.0020000
11/23/1993	03/03/1994	1,2-Dibromo-3-Chloropropane (DBCP)	A	ND	0.0002000
11/23/1993	03/03/1994	3-Hydroxycarbofuran	A	ND	
11/23/1993	03/03/1994	Aldicarb	A	ND	
11/23/1993	03/03/1994	Aldicarb Sulfone	A	ND	
11/23/1993	03/03/1994	Aldicarb Sulfoxide	A	ND	
11/23/1993	03/03/1994	Carbaryl	A	ND	

11/23/1993	03/03/1994	Carbofuran	A	ND	0.0400000
11/23/1993	03/03/1994	Chlordane	A	ND	0.0020000
11/23/1993	03/03/1994	Dieldrin	A	ND	
11/23/1993	03/03/1994	Diquat	A	ND	0.0200000
11/23/1993	03/03/1994	Endothall	A	ND	0.1000000
11/23/1993	03/03/1994	Ethylene Dibromide (EDB)	A	ND	0.0000500
11/23/1993	03/03/1994	Glyphosate	A	ND	0.7000000
11/23/1993	03/03/1994	Methomyl	A	ND	
11/23/1993	03/03/1994	Total Polychlorinated Biphenyls (PCB)	A	ND	0.0005000
11/23/1993	03/03/1994	Toxaphene	A	ND	0.0030000
11/23/1993	03/03/1994	Vydate (Oxamyl)	A	ND	0.2000000
04/07/1992	05/22/1992	Gross Alpha, Excl. Radon & U	A	ND	15.000000
01/15/1992	03/12/1992	Gross Alpha, Excl. Radon & U	A	9.0000000	15.000000
01/15/1992	03/12/1992	Gross Beta Particle Activity	A	12.000000	50.000000
10/09/1991	01/22/1992	Gross Alpha, Excl. Radon & U	A	6.6000000	15.000000
02/19/1991	03/22/1991	Arsenic	A	0.0180000	0.0500000
02/19/1991	03/22/1991	Barium	A	0.1000000	2.0000000
02/19/1991	03/22/1991	Cadmium	A	0.0010000	0.0050000
02/19/1991	03/22/1991	Chromium	A	0.0050000	0.1000000
02/19/1991	03/22/1991	Fluoride	A	0.5200000	4.0000000
02/19/1991	03/22/1991	Lead	A	0.0050000	0.0150000
02/19/1991	03/22/1991	Mercury	A	0.0005000	0.0020000
02/19/1991	03/22/1991	Nitrate	A	5.0700000	10.000000
02/19/1991	03/22/1991	Ph	A	7.4000000	
02/19/1991	03/22/1991	Selenium	A	0.0050000	0.0500000
02/19/1991	03/22/1991	Silver	A	0.0010000	0.1000000
02/19/1991	03/22/1991	Sodium	A	209.00000	
02/19/1991	03/22/1991	Total Dissolved Solids (TDS)	A	975.00000	
09/11/1990	01/09/1991	1,1,1-Trichloroethane	A	ND	0.2000000
09/11/1990	01/09/1991	1,1-Dichloroethylene	A	ND	0.0070000
09/11/1990	01/09/1991	1,2-Dichloroethane	A	ND	0.0050000
09/11/1990	01/09/1991	Benzene	A	ND	0.0050000
09/11/1990	01/09/1991	Carbon Tetrachloride	A	ND	0.0050000
09/11/1990	01/09/1991	P-Dichlorobenzene	A	ND	0.0750000
09/11/1990	01/09/1991	Trichloroethylene	A	ND	0.0050000
09/11/1990	01/09/1991	Vinyl Chloride	A	ND	0.0020000
09/11/1989	10/13/1989	Sodium	A	182.00000	
12/13/1988	07/30/1990	Sodium	A	161.00000	
11/07/1988	07/30/1990	Sodium	A	152.00000	
02/05/1988	03/17/1988	Arsenic	A	0.0150000	0.0500000
02/05/1988	03/17/1988	Barium	A	ND	2.0000000
02/05/1988	03/17/1988	Cadmium	A	ND	0.0050000
02/05/1988	03/17/1988	Chromium	A	ND	0.1000000
02/05/1988	03/17/1988	Fluoride	A	0.4700000	4.0000000
02/05/1988	03/17/1988	Lead	A	ND	0.0150000
02/05/1988	03/17/1988	Mercury	A	ND	0.0020000
02/05/1988	03/17/1988	Nitrate	A	9.4000000	10.000000
02/05/1988	03/17/1988	Selenium	A	ND	0.0500000

02/05/1988	03/17/1988	Silver	A	ND	0.1000000
10/12/1987	01/13/1988	Gross Alpha, Excl. Radon & U	A	ND	15.000000
11/03/1986	12/12/1986	2,4,5-TP Silvex	A	ND	0.0500000
11/03/1986	12/12/1986	2,4-D	A	ND	0.0700000
11/03/1986	12/12/1986	Arsenic	A	0.0200000	0.0500000
11/03/1986	11/03/1986	Barium	A	0.0700000	2.0000000
11/03/1986	12/12/1986	Barium	A	0.0700000	2.0000000
11/03/1986	12/12/1986	BHC-gamma (Lindane)	A	ND	0.0002000
11/03/1986	11/03/1986	Cadmium	A	ND	0.0050000
11/03/1986	12/12/1986	Cadmium	A	ND	0.0050000
11/03/1986	11/03/1986	Chromium	A	ND	0.1000000
11/03/1986	12/12/1986	Chromium	A	ND	0.1000000
11/03/1986	12/12/1986	Endrin	A	ND	0.0020000
11/03/1986	11/03/1986	Fluoride	A	0.4900000	4.0000000
11/03/1986	12/12/1986	Fluoride	A	0.4900000	4.0000000
11/03/1986	11/03/1986	Lead	A	ND	0.0150000
11/03/1986	12/12/1986	Lead	A	ND	0.0150000
11/03/1986	12/12/1986	Mercury	A	ND	0.0020000
11/03/1986	11/03/1986	Mercury	A	ND	0.0020000
11/03/1986	12/12/1986	Methoxychlor	A	ND	0.0400000
11/03/1986	11/03/1986	Nitrate	A	5.8000000	10.000000
11/03/1986	12/12/1986	Nitrate	A	5.8000000	10.000000
11/03/1986	12/12/1986	Selenium	A	ND	0.0500000
11/03/1986	11/03/1986	Selenium	A	ND	0.0500000
11/03/1986	12/12/1986	Silver	A	ND	0.1000000
11/03/1986	11/03/1986	Silver	A	ND	0.1000000
11/03/1986	12/12/1986	Toxaphene	A	ND	0.0030000
01/31/1984	08/10/1987	Gross Alpha, Excl. Radon & U	A	11.000000	15.000000
04/13/1981	04/13/1981	Iron	A	0.1700000	
04/13/1981	04/13/1981	Manganese	A	0.2600000	

A blank or a 0 in the MCL column indicates that a MCL has not been set for that chemical
*This list represents the latest test results for **all** sources and entry points the system has. For systems with multiple sources the list will probably be a mix of results from all sources. But these are the latest results.*

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Entry Point Chemical Detection Summary PWS ID: 00917 ---- VALE, CITY OF

These entry point concentrations are greater than non-detect and do not necessarily exceed an action level, MCL, or other threshold. Links to sample results for specific contaminants in the distribution system, can be found here.

Sample Date	Receive Date	Sample Point ID	Sample Location	Analyte	Result	UOM	MCL	Sample ID
08/13/2014	08/28/2014	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0210000**	MG/L	0.010000	1425461-I
07/09/2014	07/24/2014	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0160000**	MG/L	0.010000	1415681-I
07/09/2014	07/24/2014	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	4.1600000	MG/L	10.000000	1415682-I
12/11/2013	01/09/2014	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0171000**	MG/L	0.010000	1362171-I
07/20/2011	08/29/2011	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	7.2500000	MG/L	10.000000	1134071-I
08/12/2009	09/17/2009	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0170000**	MG/L	0.010000	945711-I
11/12/2008	12/17/2008	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0160000**	MG/L	0.010000	878911-I
10/15/2008	11/06/2008	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	2.8800000	MG/L	10.000000	871751-I
05/19/2008	06/23/2008	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0202000**	MG/L	0.010000	829191-I
05/19/2008	06/23/2008	EP-A	EP FOR WASHINGTON ST WELL	BARIUM	0.4560000	MG/L	2.000000	829191-I
05/19/2008	06/23/2008	EP-A	EP FOR WASHINGTON ST WELL	CHROMIUM	0.0052900	MG/L	0.100000	829191-I
05/19/2008	08/04/2008	EP-A	EP FOR WASHINGTON ST WELL	COMBINED RADIUM (-226 & -228)	0.6500000	PCI/L	5.000000	829231
05/19/2008	06/23/2008	EP-A	EP FOR WASHINGTON ST WELL	FLUORIDE	0.6230000	MG/L	4.000000	829191-I
05/19/2008	08/04/2008	EP-A	EP FOR WASHINGTON ST WELL	GROSS ALPHA, EXCL. RADON & U	10.1800000	PCI/L	15.000000	829231
05/19/2008	06/23/2008	EP-A	EP FOR WASHINGTON ST WELL	SELENIUM	0.0032100	MG/L	0.050000	829191-I
05/19/2008	06/23/2008	EP-A	EP FOR WASHINGTON ST WELL	SODIUM	176.000000	MG/L		829191-I
09/19/2007	12/31/2007	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0190000**	MG/L	0.010000	764261
09/19/2007	12/31/2007	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	3.7600000	MG/L	10.000000	764261
01/10/2007	02/27/2007	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0174000**	MG/L	0.010000	686811
01/10/2007	01/31/2007	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	2.9800000	MG/L	10.000000	686821
07/12/2006	09/12/2006	EP-A		ARSENIC	**0.0105000**	MG/L	0.010000	634201

			EP FOR WASHINGTON ST WELL					
07/12/2006	07/31/2006	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	5.4700000	MG/L	10.000000	634191
03/14/2006	03/23/2006	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	5.6000000	MG/L	10.000000	597421
07/11/2005	08/15/2005	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0190000**	MG/L	0.010000	527921I
07/11/2005	12/12/2005	EP-A	EP FOR WASHINGTON ST WELL	COMBINED URANIUM	0.0070000	MG/L	0.030000	527961
07/11/2005	08/24/2005	EP-A	EP FOR WASHINGTON ST WELL	DI(2-ETHYLHEXYL) PHTHALATE	0.0007000	MG/L	0.006000	52794S
07/11/2005	08/15/2005	EP-A	EP FOR WASHINGTON ST WELL	FLUORIDE	0.5300000	MG/L	4.000000	527921I
07/11/2005	12/12/2005	EP-A	EP FOR WASHINGTON ST WELL	GROSS ALPHA, EXCL. RADON & U	1.5100000	PCI/L	15.000000	527961
07/11/2005	07/29/2005	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	4.2500000	MG/L	10.000000	527931
07/11/2005	08/24/2005	EP-A	EP FOR WASHINGTON ST WELL	PICLORAM	0.0005000	MG/L	0.500000	52794S
07/11/2005	08/15/2005	EP-A	EP FOR WASHINGTON ST WELL	SODIUM	186.000000	MG/L		527921I
06/14/2005	07/05/2005	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	6.4800000	MG/L	10.000000	521211
06/14/2005		EP-A	EP FOR WASHINGTON ST WELL	NITRATE-NITRITE	6.4800000	MG/L	10.000000	521211
05/11/2004	06/07/2004	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	3.0100000	MG/L	10.000000	419841
05/13/2003	06/04/2004	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0180000**	MG/L	0.010000	333702
05/13/2003	06/04/2004	EP-A	EP FOR WASHINGTON ST WELL	NITRATE	2.9700000	MG/L	10.000000	333701
10/21/2002	12/19/2002	EP-A	EP FOR WASHINGTON ST WELL	ARSENIC	**0.0210000**	MG/L	0.010000	29203I
10/21/2002	10/08/2003	EP-A	EP FOR WASHINGTON ST WELL	COMBINED URANIUM	0.0000113	MG/L	0.030000	292071
10/21/2002	12/19/2002	EP-A	EP FOR WASHINGTON ST WELL	FLUORIDE	0.5800000	MG/L	4.000000	29203I
10/21/2002	12/19/2002	EP-A	EP FOR WASHINGTON ST WELL	SODIUM	116.000000	MG/L		29203I
10/21/2002	12/19/2002	EP-A	EP FOR WASHINGTON ST WELL	SULFATE	103.000000	MG/L		29203I
08/13/2014	08/28/2014	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0140000**	MG/L	0.010000	1425471-I
08/13/2014	08/21/2014	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	5.5600000	MG/L	10.000000	1425481-I
06/04/2014	06/19/2014	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0160000**	MG/L	0.010000	1407471-I
02/12/2014	02/27/2014	EP-B		ARSENIC	**0.0134000**	MG/L	0.010000	1375901-I

			EP FOR AIRPORT WELLFIELD					
12/11/2013	01/07/2014	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0171000**	MG/L	0.010000	1362171
09/11/2013	10/07/2013	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0027700	MG/L	0.010000	1337291-I
06/19/2013	07/09/2013	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0126000**	MG/L	0.010000	1313811-I
02/20/2013	03/14/2013	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0171000**	MG/L	0.010000	1281621-I
02/20/2013	02/25/2013	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	6.7700000	MG/L	10.000000	1281611-I
11/14/2012	12/10/2012	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0102000**	MG/L	0.010000	1259641-I
11/14/2012	11/28/2012	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	3.7200000	MG/L	10.000000	1259651-I
09/12/2012	10/05/2012	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0026900	MG/L	0.010000	1241541-I
05/09/2012	05/31/2012	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0241000**	MG/L	0.010000	1208401-I
04/11/2012	04/23/2012	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0224000**	MG/L	0.010000	1200851-I
12/14/2011	01/13/2012	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0096400	MG/L	0.010000	1172841-I
10/12/2011	11/07/2011	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0089800	MG/L	0.010000	1157541-I
10/12/2011	11/07/2011	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	3.1900000	MG/L	10.000000	1157531-I
10/12/2011		EP-B	EP FOR AIRPORT WELLFIELD	NITRATE-NITRITE	3.1900000	MG/L	10.000000	1157531-I
06/08/2011	07/05/2011	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0124000**	MG/L	0.010000	1122631-I
06/08/2011	11/07/2011	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	5.1600000	MG/L	10.000000	1122621-I
08/11/2010	10/25/2010	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0105000**	MG/L	0.010000	1044301-I
08/11/2010	10/25/2010	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	3.7400000	MG/L	10.000000	1044291-I
05/12/2010	06/09/2010	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0082800	MG/L	0.010000	1018271-I
03/09/2010	03/29/2010	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	0.9150000	MG/L	10.000000	999931-I
08/12/2009	09/21/2009	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0043400	MG/L	0.010000	945721-I
08/12/2009	09/21/2009	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0063100	MG/L	0.010000	945701-I
08/12/2009	09/21/2009	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	2.3300000	MG/L	10.000000	945691-I
08/12/2009	09/21/2009	EP-B		NITRATE	2.3600000	MG/L	10.000000	945671-I

			EP FOR AIRPORT WELLFIELD					
08/12/2009	09/21/2009	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	3.6600000	MG/L	10.000000	945681-I
11/12/2008	12/17/2008	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0180000**	MG/L	0.010000	878891-I
10/15/2008	11/06/2008	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	0.9490000	MG/L	10.000000	871761-I
05/19/2008	08/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0303000**	MG/L	0.010000	829241-I
05/19/2008	06/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	BARIUM	0.0297000	MG/L	2.000000	829241-I
05/19/2008	06/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	CHROMIUM	0.0030900	MG/L	0.100000	829241-I
05/19/2008	08/04/2008	EP-B	EP FOR AIRPORT WELLFIELD	COMBINED RADIUM (-226 & -228)	0.2700000	PCI/L	5.000000	829281
05/19/2008	08/04/2008	EP-B	EP FOR AIRPORT WELLFIELD	COMBINED URANIUM	0.0081000	MG/L	0.030000	829281-R
05/19/2008	06/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	FLUORIDE	0.6170000	MG/L	4.000000	829241-I
05/19/2008	08/04/2008	EP-B	EP FOR AIRPORT WELLFIELD	GROSS ALPHA, EXCL. RADON & U	0.4500000	PCI/L	15.000000	829281
05/19/2008	06/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	NICKEL	0.0014200	MG/L	0.100000	829241-I
05/19/2008	06/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	6.5700000	MG/L	10.000000	829271-I
05/19/2008	06/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	SELENIUM	0.0017900	MG/L	0.050000	829241-I
05/19/2008	06/23/2008	EP-B	EP FOR AIRPORT WELLFIELD	SODIUM	116.000000	MG/L		829241-I
02/13/2008	03/21/2008	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0197000**	MG/L	0.010000	802591-A
02/13/2008	03/21/2008	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE-NITRITE	4.7900000	MG/L	10.000000	802601-I
01/09/2008	02/11/2008	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0178000**	MG/L	0.010000	794481-A
01/09/2008	02/11/2008	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE-NITRITE	4.3200000	MG/L	10.000000	794491
09/19/2007	12/31/2007	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	0.8600000	MG/L	10.000000	764252
01/10/2007	03/02/2007	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0091000	MG/L	0.010000	686791
01/10/2007	01/31/2007	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	4.3700000	MG/L	10.000000	686801
07/12/2006	09/18/2006	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	0.0063000	MG/L	0.010000	634221
07/12/2006	07/31/2006	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	3.4100000	MG/L	10.000000	634211
03/14/2006	03/23/2006	EP-B		NITRATE	3.9300000	MG/L	10.000000	597431

			EP FOR AIRPORT WELLFIELD					
07/11/2005	08/15/2005	EP-B	EP FOR AIRPORT WELLFIELD	ARSENIC	**0.0160000**	MG/L	0.010000	527971I
07/11/2005	12/12/2005	EP-B	EP FOR AIRPORT WELLFIELD	COMBINED URANIUM	0.0060000	MG/L	0.030000	528011
07/11/2005	08/15/2005	EP-B	EP FOR AIRPORT WELLFIELD	FLUORIDE	0.5200000	MG/L	4.000000	527971I
07/11/2005	08/24/2005	EP-B	EP FOR AIRPORT WELLFIELD	PICLORAM	0.0005000	MG/L	0.500000	52799S
07/11/2005	08/15/2005	EP-B	EP FOR AIRPORT WELLFIELD	SODIUM	103.000000	MG/L		527971I
06/14/2005	07/05/2005	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	4.3000000	MG/L	10.000000	521201
06/14/2005		EP-B	EP FOR AIRPORT WELLFIELD	NITRATE-NITRITE	4.3000000	MG/L	10.000000	521201
10/12/2004	10/27/2004	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	3.2300000	MG/L	10.000000	462461
06/09/2004	06/21/2004	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	2.4800000	MG/L	10.000000	426921
02/10/2004	02/23/2004	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	6.7600000	MG/L	10.000000	400281
11/04/2003	11/28/2003	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	6.3100000	MG/L	10.000000	377751
07/09/2003	08/11/2003	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	6.4500000	MG/L	10.000000	346591
06/11/2003	07/17/2003	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	6.3900000	MG/L	10.000000	339361
03/12/2003	03/24/2003	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	8.5400000	MG/L	10.000000	319101
11/13/2002	12/20/2002	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	5.9800000	MG/L	10.000000	296831
10/21/2002	12/19/2002	EP-B	EP FOR AIRPORT WELLFIELD	ATRAZINE	0.0003200	MG/L	0.003000	29209S
10/21/2002	05/30/2006	EP-B	EP FOR AIRPORT WELLFIELD	COMBINED URANIUM	0.0007000	MG/L	0.030000	292111
10/21/2002	12/19/2002	EP-B	EP FOR AIRPORT WELLFIELD	FLUORIDE	0.5100000	MG/L	4.000000	29208I
10/21/2002	05/30/2006	EP-B	EP FOR AIRPORT WELLFIELD	GROSS ALPHA, EXCL. RADON & U	1.9310000	PCI/L	15.000000	292111
10/21/2002	12/19/2002	EP-B	EP FOR AIRPORT WELLFIELD	LEAD	0.0050000	MG/L	0.015000	29208I
10/21/2002	12/19/2002	EP-B	EP FOR AIRPORT WELLFIELD	SODIUM	164.000000	MG/L		29208I
10/21/2002	12/19/2002	EP-B	EP FOR AIRPORT WELLFIELD	SULFATE	136.000000	MG/L		29208I
10/09/2002	11/18/2002	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	9.7500000	MG/L	10.000000	288711
08/14/2002	04/21/2004	EP-B		NITRATE	8.1000000	MG/L	10.000000	275221

			EP FOR AIRPORT WELLFIELD					
05/08/2002	05/23/2002	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	8.8600000	MG/L	10.000000	258151
02/12/2002	03/04/2002	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	7.5300000	MG/L	10.000000	243421
01/08/2002	01/21/2003	EP-B	EP FOR AIRPORT WELLFIELD	NITRATE	7.4400000	MG/L	10.000000	305981

Archived Chemical Detections - PWS ID: 00917

Sample Date	Receive Date	Source ID	Source Name	Analyte Name	Results	MCL
07/02/2001	07/12/2001	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	8.0500000	10.0000
06/26/2001	07/12/2001	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	8.1700000	10.0000
05/23/2001	06/19/2001	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	4.8400000	10.0000
05/09/2001	08/07/2001	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.2300000	10.0000
02/28/2001	03/06/2001	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.1100000	10.0000
02/28/2001	03/06/2001	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.4600000	10.0000
04/22/1999	06/06/1999	A	EP for WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	1.4100000	15.0000
02/01/1999	03/04/1999	A	EP for WELL #1 (WASHINGTON & WEST ST)	Arsenic	0.0280000	0.0500
02/01/1999	03/04/1999	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.7700000	10.0000
02/01/1999	03/04/1999	A	EP for WELL #1 (WASHINGTON & WEST ST)	Sodium	232.0000000	
09/21/1998	10/13/1998	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.2000000	10.0000
09/21/1998	10/08/1998	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.2000000	10.0000
11/18/1996	11/25/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.2100000	10.0000
07/22/1996	07/29/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.8900000	10.0000
05/28/1996	06/20/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Arsenic	0.0110000	0.0500
05/28/1996	06/20/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Fluoride	0.5000000	4.0000
05/28/1996	06/20/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.8100000	10.0000
05/28/1996	06/20/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrite	0.0300000	1.0000
05/28/1996	06/20/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Sodium	234.0000000	
05/28/1996	06/20/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Sulfate	206.0000000	
05/13/1996	05/22/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.8200000	10.0000
01/22/1996	02/26/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	9.1800000	15.0000
01/22/1996	02/05/1996	A	EP for WELL #1 (WASHINGTON & WEST ST)	Nitrate	2.7400000	10.0000
11/29/1993	01/19/1994	A	STANDARD ENTRY POINT	Bromoform	0.0187000	
11/29/1993	01/19/1994	A	STANDARD ENTRY POINT	Dibromochloromethane	0.0012000	
01/15/1992	03/12/1992	A	WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	9.0000000	15.0000
01/15/1992	03/12/1992	A	WELL #1 (WASHINGTON & WEST ST)	Gross Beta Particle Activity	12.0000000	50.0000
10/09/1991	01/22/1992	A	WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	6.6000000	15.0000

02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Arsenic	0.0180000	0.0500
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Barium	0.1000000	2.0000
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Cadmium	0.0010000	0.0050
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Chromium	0.0050000	0.1000
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Fluoride	0.5200000	4.0000
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Lead	0.0050000	0.0150
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Mercury	0.0005000	0.0020
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Nitrate	5.0700000	10.0000
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Ph	7.4000000	
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Selenium	0.0050000	0.0500
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Silver	0.0010000	0.1000
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Sodium	209.0000000	
02/19/1991	03/22/1991	A	WELL #1 (WASHINGTON & WEST ST)	Total Dissolved Solids (TDS)	975.0000000	
10/09/2001	12/07/2001	AA	WELL #1 (WASHINGTON & WEST ST)	Arsenic	0.0200000	0.0500
10/09/2001	12/07/2001	AA	WELL #1 (WASHINGTON & WEST ST)	Nitrate	3.2300000	10.0000
02/01/1999	03/15/1999	AA	WELL #1 (WASHINGTON & WEST ST)	Gross Alpha, Excl. Radon & U	9.6800000	15.0000
09/15/1997	09/29/1997	AA	WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.1300000	10.0000
09/15/1997	09/22/1997	AA	WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.1300000	10.0000
09/05/1995	09/28/1995	AA	WELL #1 (WASHINGTON & WEST ST)	Arsenic	0.0150000	0.0500
09/05/1995	09/28/1995	AA	WELL #1 (WASHINGTON & WEST ST)	Copper	0.0200000	1.3000
09/05/1995	09/28/1995	AA	WELL #1 (WASHINGTON & WEST ST)	Fluoride	0.5600000	4.0000
09/05/1995	09/28/1995	AA	WELL #1 (WASHINGTON & WEST ST)	Nitrate	6.0400000	10.0000
09/05/1995	09/28/1995	AA	WELL #1 (WASHINGTON & WEST ST)	Sodium	219.0000000	
09/05/1995	09/28/1995	AA	WELL #1 (WASHINGTON & WEST ST)	Sulfate	172.0000000	
11/14/2001	11/29/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	7.0900000	10.0000
10/09/2001	12/07/2001	B	EP FOR AIRPORT WELLFIELD	Arsenic	0.0210000	0.0500
10/09/2001	12/07/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	6.5700000	10.0000
09/11/2001	12/07/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	5.7500000	10.0000
08/21/2001	11/19/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	6.6500000	10.0000
08/21/2001	11/19/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	6.7100000	10.0000
08/21/2001	11/19/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	6.7600000	10.0000
08/21/2001	11/19/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	6.6400000	10.0000
08/14/2001	09/04/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	7.1900000	10.0000
08/14/2001	09/04/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	7.5900000	10.0000
08/14/2001	09/04/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	7.4800000	10.0000
08/14/2001	09/04/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	7.3800000	10.0000
07/02/2001	07/12/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	8.1300000	10.0000
06/26/2001	07/17/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	7.7000000	10.0000
05/23/2001	06/19/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	11.0000000	10.0000
05/09/2001	08/07/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	9.5700000	10.0000
02/28/2001	11/19/2001	B	EP FOR AIRPORT WELLFIELD	Nitrate	7.6900000	10.0000
07/02/2001	07/12/2001	BA	WELL #1	Nitrate	5.7800000	10.0000
03/12/2001	11/05/2001	BA	WELL #1	Fluoride	0.3800000	4.0000
03/12/2001	11/05/2001	BA	WELL #1	Sodium	170.0000000	
03/12/2001	11/05/2001	BA	WELL #1	Sulfate	159.0000000	
07/02/2001	07/12/2001	BB	WELL #2	Nitrate	2.1400000	10.0000
03/12/2001	11/05/2001	BB	WELL #2	Fluoride	0.4400000	4.0000
03/12/2001	05/22/2001	BB	WELL #2	Phthalates (Di(2-Ethylhexyl))	0.0027000	0.0060
03/12/2001	11/05/2001	BB	WELL #2	Sodium	87.6000000	
03/12/2001	11/05/2001	BB	WELL #2	Sulfate	93.9000000	
07/02/2001	07/12/2001	BC	WELL #3	Nitrate	6.0300000	10.0000
07/02/2001	07/12/2001	BD	WELL #4	Nitrate	11.7000000	10.0000
07/02/2001	07/12/2001	BE	WELL #5	Nitrate	13.7000000	10.0000
07/02/2001	07/12/2001	BF	WELL #6	Nitrate	12.2000000	10.0000
07/02/2001	07/12/2001	BG	WELL #7	Nitrate	10.6000000	10.0000

Health effects informational fact sheets are available for most chemicals here.

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System Information

Status: Active
Type: C
Population: 1890

Schedule Counts

Active: 22
Inactive: 0
Expired: 12 Show Expired

PWS #: 00917 VALE, CITY OF Routine Sampling Schedules For Chemicals

Facility ID	Name	Status	Test Group	Samples Required	Sampling Interval	Start	End	Notes*
DIST-A	Distribution System	A	ASBESTOS, DIST	1	9 Years	01/01/2014	Open	Schedule Reflects Monitoring Reduction Granted
DIST-A	Distribution System	A	LEAD & COPPER	10	3 Years	01/01/2002	Open	Sample Between June 1st and Sept 30th
DIST-A	Distribution System	A	STAGE 2 DBP	2	Yearly	01/01/2013	Open	Sample during October
EP-A	EP FOR WASHINGTON ST WELL	A	ARSENIC	1	Quarterly	07/01/2014	Open	
EP-A	EP FOR WASHINGTON ST WELL	A	IOC	1	9 Years	01/01/2014	Open	Schedule Reflects Monitoring Reduction Granted
EP-A	EP FOR WASHINGTON ST WELL	A	NITRATE	1	Yearly	01/01/2014	Open	
EP-A	EP FOR WASHINGTON ST WELL	A	NITRITE	1	9 Years	01/01/2014	Open	Schedule Reflects Monitoring Reduction Granted
EP-A	EP FOR WASHINGTON ST WELL	A	RAD - GROSS ALPHA	1	3 Years	01/01/2014	Open	
EP-A	EP FOR WASHINGTON ST WELL	A	RAD - RADIUM 226/228	1	6 Years	01/01/2014	Open	
EP-A	EP FOR WASHINGTON ST WELL	A	RAD - URANIUM	1	9 Years	01/01/2014	Open	Schedule Reflects Monitoring Reduction Granted
EP-A	EP FOR WASHINGTON ST WELL	A	SOC	1	3 Years	01/01/2014	Open	
EP-A	EP FOR WASHINGTON ST WELL	A	VOLATILE ORGANICS	1	3 Years	01/01/2014	Open	
EP-B	EP FOR AIRPORT WELLFIELD	A	ARSENIC	1	Quarterly	01/01/2010	Open	
EP-B	EP FOR AIRPORT WELLFIELD	A	IOC	1	9 Years	01/01/2011	Open	Schedule Reflects Monitoring Reduction Granted
EP-B	EP FOR AIRPORT WELLFIELD	A	NITRATE	1	Quarterly	07/01/2014	Open	
EP-B	EP FOR AIRPORT WELLFIELD	A	NITRITE	1	9 Years	01/01/2011	Open	Schedule Reflects Monitoring Reduction Granted
EP-B	EP FOR AIRPORT WELLFIELD	A	RAD - GROSS ALPHA	1	6 Years	01/01/2008	Open	Schedule based on result of sample collected 5/19/08 - BG
EP-B	EP FOR AIRPORT WELLFIELD	A	RAD - RADIUM 226/228	1	6 Years	01/01/2017	Open	Schedule based on result of sample collected 5/19/08 - BG
EP-B	EP FOR AIRPORT WELLFIELD	A	RAD - RADIUM 226/228	1	9 Years	01/01/2008	12/31/2016	schedule based on grandparented data collected 10/21/02 - BG
EP-B	EP FOR AIRPORT WELLFIELD	A	RAD - URANIUM	1	6 Years	01/01/2008	Open	Schedule based on result of sample collected 5/19/08 - BG
EP-B	EP FOR AIRPORT WELLFIELD	A	SOC	1	3 Years	01/01/2002	Open	
EP-B	EP FOR AIRPORT WELLFIELD	A	VOLATILE ORGANICS	1	3 Years	01/01/2002	Open	

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Drinking Water Data Online

Oregon Health Authority

PWSID: 00917
PWSName: **VALE, CITY OF**
Status: A
System Type: C
Population: 1890

Fact Sheets
Definitions
Public Notice
Alerts
Enforcements
Spreadsheet

Action Levels: Lead = 0.0155 mg/l Copper = 1.35 mg/l

Lead and Copper 90th Percentile Summary Results details for latest summary

Sample Date	Date Received	Sample Count	Duration	Lead (mg/l)	Copper (mg/l)
Sep 10, 2013 - Sep 18, 2013	Oct 07, 2013	10	3Y	0.0000	0.4090
Sep 15, 2010 - Sep 15, 2010	Nov 01, 2010	11	3Y	0.0018	0.6610
Sep 12, 2007 - Sep 12, 2007	Dec 24, 2007	11	3Y	0.0080	0.5140
Dec 04, 2002 - Dec 04, 2002	Apr 02, 2003	10	3Y	0.0040	0.8650
Jan 01, 1999 - Feb 02, 1999	Feb 22, 1999	10	YR	0.0023	0.8400
Jan 01, 1997 - Nov 04, 1997	Nov 17, 1997	10	YR	0.0038	1.1700
Jan 01, 1996 - Nov 18, 1996	Nov 25, 1996	10	YR	0.0035	0.9800
Jul 01, 1995 - Jul 18, 1995	Aug 28, 1995	20	6M	0.0022	0.8800
Jul 01, 1993 - Nov 23, 1993	Oct 03, 1994	20	6M	0.0000	0.6800

More Info

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ND = Not Detected at the Minimum Reporting Level Spreadsheet

Nitrate Samples - PWS ID: 00917 --- VALE, CITY OF

Sample ID	Sample Date	Receive Date	Analyte Name	Source Name	Source ID	Results	MCL	UOM
1425481-I	08/13/2014	08/21/2014	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	5.5600000	10.0000	MG/L
1415682-I	07/09/2014	07/24/2014	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	4.1600000	10.0000	MG/L
1409361-I	06/11/2014	07/08/2014	NITRATE	WELL #1	SRC-BA	6.4100000	10.0000	MG/L
1409371-I	06/11/2014	07/08/2014	NITRATE	WELL #2	SRC-BB	3.1700000	10.0000	MG/L
1409381-I	06/11/2014	07/08/2014	NITRATE	WELL #3	SRC-BC	6.3000000	10.0000	MG/L
1409391-I	06/11/2014	07/08/2014	NITRATE	WELL #4	SRC-BD	7.5100000	10.0000	MG/L
1409401-I	06/11/2014	07/08/2014	NITRATE	WELL #5	SRC-BE	6.7900000	10.0000	MG/L
1409411-I	06/11/2014	07/08/2014	NITRATE	WELL #6	SRC-BF	9.4200000	10.0000	MG/L
1409421-I	06/11/2014	07/08/2014	NITRATE	WELL #7	SRC-BG	9.8700000	10.0000	MG/L
1281611-I	02/20/2013	02/25/2013	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	6.7700000	10.0000	MG/L
1259651-I	11/14/2012	11/28/2012	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	3.7200000	10.0000	MG/L
1157531-I	10/12/2011	11/07/2011	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	3.1900000	10.0000	MG/L
1157531-I	10/12/2011		NITRATE-NITRITE	EP FOR AIRPORT WELLFIELD	EP-B	3.1900000	10.0000	MG/L
1134071-I	07/20/2011	08/29/2011	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	7.2500000	10.0000	MG/L
1122621-I	06/08/2011	11/07/2011	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	5.1600000	10.0000	MG/L
1044291-I	08/11/2010	10/25/2010	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	3.7400000	10.0000	MG/L
999931-I	03/09/2010	03/29/2010	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	0.9150000	10.0000	MG/L
945671-I	08/12/2009	09/21/2009	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	2.3600000	10.0000	MG/L
945681-I	08/12/2009	09/21/2009	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	3.6600000	10.0000	MG/L
945691-I	08/12/2009	09/21/2009	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	2.3300000	10.0000	MG/L
871751-I	10/15/2008	11/06/2008	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	2.8800000	10.0000	MG/L
871761-I	10/15/2008	11/06/2008	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	0.9490000	10.0000	MG/L
829271-I	05/19/2008	06/23/2008	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	6.5700000	10.0000	MG/L
802601-I	02/13/2008	03/21/2008	NITRATE-NITRITE	EP FOR AIRPORT WELLFIELD	EP-B	4.7900000	10.0000	MG/L
794491	01/09/2008	02/11/2008	NITRATE-NITRITE	EP FOR AIRPORT WELLFIELD	EP-B	4.3200000	10.0000	MG/L
764261	09/19/2007	12/31/2007	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	3.7600000	10.0000	MG/L
764252	09/19/2007	12/31/2007	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	0.8600000	10.0000	MG/L
686821	01/10/2007	01/31/2007	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	2.9800000	10.0000	MG/L
686801	01/10/2007	01/31/2007	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	4.3700000	10.0000	MG/L
634191	07/12/2006	07/31/2006	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	5.4700000	10.0000	MG/L
634211	07/12/2006	07/31/2006	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	3.4100000	10.0000	MG/L
597421	03/14/2006	03/23/2006	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	5.6000000	10.0000	MG/L
597431	03/14/2006	03/23/2006	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	3.9300000	10.0000	MG/L
527921I	07/11/2005	08/15/2005	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	ND	10.0000	MG/L
527931	07/11/2005	07/29/2005	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	4.2500000	10.0000	MG/L
527921I	07/11/2005		NITRATE-NITRITE	EP FOR WASHINGTON ST WELL	EP-A	ND	10.0000	MG/L
527971I	07/11/2005	08/15/2005	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	ND	10.0000	MG/L
527971I	07/11/2005			EP FOR AIRPORT WELLFIELD	EP-B	ND	10.0000	MG/L

			NITRATE-NITRITE					
521211	06/14/2005	07/05/2005	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	6.4800000	10.0000	MG/L
521211	06/14/2005		NITRATE-NITRITE	EP FOR WASHINGTON ST WELL	EP-A	6.4800000	10.0000	MG/L
521201	06/14/2005	07/05/2005	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	4.3000000	10.0000	MG/L
521201	06/14/2005		NITRATE-NITRITE	EP FOR AIRPORT WELLFIELD	EP-B	4.3000000	10.0000	MG/L
462461	10/12/2004	10/27/2004	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	3.2300000	10.0000	MG/L
426921	06/09/2004	06/21/2004	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	2.4800000	10.0000	MG/L
419841	05/11/2004	06/07/2004	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	3.0100000	10.0000	MG/L
400281	02/10/2004	02/23/2004	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	6.7600000	10.0000	MG/L
400211	02/10/2004	02/23/2004	NITRATE	WELL #1	SRC-BA	4.1000000	10.0000	MG/L
400221	02/10/2004	02/23/2004	NITRATE	WELL #2	SRC-BB	3.0300000	10.0000	MG/L
400231	02/10/2004	02/23/2004	NITRATE	WELL #3	SRC-BC	5.3400000	10.0000	MG/L
400241	02/10/2004	02/23/2004	NITRATE	WELL #4	SRC-BD	5.1700000	10.0000	MG/L
400251	02/10/2004	02/23/2004	NITRATE	WELL #5	SRC-BE	7.4300000	10.0000	MG/L
400261	02/10/2004	02/23/2004	NITRATE	WELL #6	SRC-BF	**12.700000**	10.0000	MG/L
400271	02/10/2004	02/23/2004	NITRATE	WELL #7	SRC-BG	**13.700000**	10.0000	MG/L
377751	11/04/2003	11/28/2003	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	6.3100000	10.0000	MG/L
362081	09/09/2003	09/24/2003	NITRATE	WELL #1	SRC-BA	3.2100000	10.0000	MG/L
362091	09/09/2003	09/24/2003	NITRATE	WELL #2	SRC-BB	2.1400000	10.0000	MG/L
362101	09/09/2003	09/24/2003	NITRATE	WELL #3	SRC-BC	3.0000000	10.0000	MG/L
362111	09/09/2003	09/24/2003	NITRATE	WELL #4	SRC-BD	9.5700000	10.0000	MG/L
362121	09/09/2003	09/24/2003	NITRATE	WELL #5	SRC-BE	7.4800000	10.0000	MG/L
362131	09/09/2003	09/24/2003	NITRATE	WELL #6	SRC-BF	**10.500000**	10.0000	MG/L
362141	09/09/2003	09/24/2003	NITRATE	WELL #7	SRC-BG	**10.800000**	10.0000	MG/L
346591	07/09/2003	08/11/2003	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	6.4500000	10.0000	MG/L
339361	06/11/2003	07/17/2003	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	6.3900000	10.0000	MG/L
333701	05/13/2003	06/04/2004	NITRATE	EP FOR WASHINGTON ST WELL	EP-A	2.9700000	10.0000	MG/L
319101	03/12/2003	03/24/2003	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	8.5400000	10.0000	MG/L
296831	11/13/2002	12/20/2002	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	5.9800000	10.0000	MG/L
288711	10/09/2002	11/18/2002	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	9.7500000	10.0000	MG/L
275221	08/14/2002	04/21/2004	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	8.1000000	10.0000	MG/L
258151	05/08/2002	05/23/2002	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	8.8600000	10.0000	MG/L
258131	05/08/2002	05/23/2002	NITRATE	WELL #1	SRC-BA	7.1200000	10.0000	MG/L
258141	05/08/2002	05/23/2002	NITRATE	WELL #2	SRC-BB	5.6000000	10.0000	MG/L
258161	05/08/2002	05/23/2002	NITRATE	WELL #3	SRC-BC	**10.700000**	10.0000	MG/L
258171	05/08/2002	05/23/2002	NITRATE	WELL #4	SRC-BD	**14.300000**	10.0000	MG/L
258181	05/08/2002	05/23/2002	NITRATE	WELL #5	SRC-BE	**13.800000**	10.0000	MG/L
258191	05/08/2002	05/23/2002	NITRATE	WELL #6	SRC-BF	**14.500000**	10.0000	MG/L
258201	05/08/2002	05/23/2002	NITRATE	WELL #7	SRC-BG	**18.000000**	10.0000	MG/L
244641	02/19/2002	03/04/2002	NITRATE	WELL #5	SRC-BE	**13.600000**	10.0000	MG/L
244651	02/19/2002	03/04/2002	NITRATE	WELL #6	SRC-BF	**11.300000**	10.0000	MG/L
244661	02/19/2002	03/04/2002	NITRATE	WELL #7	SRC-BG	**16.900000**	10.0000	MG/L
243421	02/12/2002	03/04/2002	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	7.5300000	10.0000	MG/L
243351	02/12/2002	03/04/2002	NITRATE	WELL #1	SRC-BA	6.2400000	10.0000	MG/L
243361	02/12/2002	03/04/2002	NITRATE	WELL #2	SRC-BB	5.3900000	10.0000	MG/L
243371	02/12/2002	03/04/2002	NITRATE	WELL #3	SRC-BC	6.2600000	10.0000	MG/L

243381	02/12/2002	03/04/2002	NITRATE	WELL #4	SRC-BD	13.700000	10.0000	MG/L
305981	01/08/2002	01/21/2003	NITRATE	EP FOR AIRPORT WELLFIELD	EP-B	7.4400000	10.0000	MG/L

Archived Nitrate Samples - PWS ID: 00917

Sample Date	Receive Date	Analyte Name	Source Name	Source ID	Results	MCL
11/14/01	11/29/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	7.0900000	10.0000
10/09/01	12/07/01	Nitrate	WELL #1 (WASHINGTON & WEST ST)	AA	3.2300000	10.0000
10/09/01	12/07/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	6.5700000	10.0000
09/11/01	12/07/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	5.7500000	10.0000
08/21/01	11/19/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	6.6500000	10.0000
08/21/01	11/19/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	6.7100000	10.0000
08/21/01	11/19/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	6.7600000	10.0000
08/21/01	11/19/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	6.6400000	10.0000
08/14/01	09/04/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	7.1900000	10.0000
08/14/01	09/04/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	7.5900000	10.0000
08/14/01	09/04/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	7.4800000	10.0000
08/14/01	09/04/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	7.3800000	10.0000
07/02/01	07/12/01	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	8.0500000	10.0000
07/02/01	07/12/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	8.1300000	10.0000
07/02/01	07/12/01	Nitrate	WELL #1	BA	5.7800000	10.0000
07/02/01	07/12/01	Nitrate	WELL #2	BB	2.1400000	10.0000
07/02/01	07/12/01	Nitrate	WELL #3	BC	6.0300000	10.0000
07/02/01	07/12/01	Nitrate	WELL #4	BD	11.700000	10.0000
07/02/01	07/12/01	Nitrate	WELL #5	BE	13.700000	10.0000
07/02/01	07/12/01	Nitrate	WELL #6	BF	12.200000	10.0000
07/02/01	07/12/01	Nitrate	WELL #7	BG	10.600000	10.0000
06/26/01	07/12/01	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	8.1700000	10.0000
06/26/01	07/17/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	7.7000000	10.0000
05/23/01	06/19/01	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	4.8400000	10.0000
05/23/01	06/19/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	11.000000	10.0000
05/09/01	08/07/01	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	5.2300000	10.0000
05/09/01	08/07/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	9.5700000	10.0000
02/28/01	03/06/01	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	5.4600000	10.0000
02/28/01	03/06/01	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	6.1100000	10.0000
02/28/01	11/19/01	Nitrate	EP FOR AIRPORT WELLFIELD	B	7.6900000	10.0000
02/01/99	03/04/99	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	6.7700000	10.0000
09/21/98	10/08/98	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	5.2000000	10.0000
09/21/98	10/13/98	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	5.2000000	10.0000
09/15/97	09/22/97	Nitrate	WELL #1 (WASHINGTON & WEST ST)	AA	6.1300000	10.0000
09/15/97	09/29/97	Nitrate	WELL #1 (WASHINGTON & WEST ST)	AA	6.1300000	10.0000
11/18/96	11/25/96	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	5.2100000	10.0000

07/22/96	07/29/96	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	6.8900000	10.0000
05/28/96	06/20/96	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	6.8100000	10.0000
05/13/96	05/22/96	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	6.8200000	10.0000
01/22/96	02/05/96	Nitrate	EP for WELL #1 (WASHINGTON & WEST ST)	A	2.7400000	10.0000
09/05/95	09/28/95	Nitrate	WELL #1 (WASHINGTON & WEST ST)	AA	6.0400000	10.0000
02/19/91	03/22/91	Nitrate	WELL #1 (WASHINGTON & WEST ST)	A	5.0700000	10.0000
02/05/88	03/17/88	Nitrate	WELL #1 (WASHINGTON & WEST ST)	A	9.4000000	10.0000
11/03/86	12/12/86	Nitrate	WELL #1 (WASHINGTON & WEST ST)	A	5.8000000	10.0000
11/03/86	11/03/86	Nitrate	WELL #1 (WASHINGTON & WEST ST)	A	5.8000000	10.0000

A blank or a 0 in the MCL column indicates that a MCL has not been set for that chemical.

Oregon Public Health
Drinking Water Data Online

Oregon Health Authority

ND = Not Detected at the Minimum Reporting Level Spreadsheet

Arsenic Samples - PWS ID: 00917 --- VALE, CITY OF

Sample ID	Sample Date	Receive Date	Source Name	Source ID	Results	MCL	UOM	
1425461-I	08/13/14	08/28/14	EP FOR WASHINGTON ST WELL	EP-A	**0.0210000**	0.010	MG/L	
1425471-I	08/13/14	08/28/14	EP FOR AIRPORT WELLFIELD	EP-B	**0.0140000**	0.010	MG/L	
1415681-I	07/09/14	07/24/14	EP FOR WASHINGTON ST WELL	EP-A	**0.0160000**	0.010	MG/L	
1407471-I	06/04/14	06/19/14	EP FOR AIRPORT WELLFIELD	EP-B	**0.0160000**	0.010	MG/L	
1375901-I	02/12/14	02/27/14	EP FOR AIRPORT WELLFIELD	EP-B	**0.0134000**	0.010	MG/L	
1362171-I	12/11/13	01/09/14	EP FOR WASHINGTON ST WELL	EP-A	**0.0171000**	0.010	MG/L	
1362171	12/11/13	01/07/14	EP FOR AIRPORT WELLFIELD	EP-B	**0.0171000**	0.010	MG/L	
1337291-I	09/11/13	10/07/13	EP FOR AIRPORT WELLFIELD	EP-B	0.0027700	0.010	MG/L	
1313811-I	06/19/13	07/09/13	EP FOR AIRPORT WELLFIELD	EP-B	**0.0126000**	0.010	MG/L	
1281621-I	02/20/13	03/14/13	EP FOR AIRPORT WELLFIELD	EP-B	**0.0171000**	0.010	MG/L	
1259641-I	11/14/12	12/10/12	EP FOR AIRPORT WELLFIELD	EP-B	0.0102000	0.010	MG/L	
1241541-I	09/12/12	10/05/12	EP FOR AIRPORT WELLFIELD	EP-B	0.0026900	0.010	MG/L	
1208401-I	05/09/12	05/31/12	EP FOR AIRPORT WELLFIELD	EP-B	**0.0241000**	0.010	MG/L	
1200851-I	04/11/12	04/23/12	EP FOR AIRPORT WELLFIELD	EP-B	**0.0224000**	0.010	MG/L	
1186111-I	02/08/12	03/12/12	EP FOR AIRPORT WELLFIELD	EP-B	ND	0.010	MG/L	
1172841-I	12/14/11	01/13/12	EP FOR AIRPORT WELLFIELD	EP-B	0.0096400	0.010	MG/L	
1157541-I	10/12/11	11/07/11	EP FOR AIRPORT WELLFIELD	EP-B	0.0089800	0.010	MG/L	
1122631-I	06/08/11	07/05/11	EP FOR AIRPORT WELLFIELD	EP-B	**0.0124000**	0.010	MG/L	
1044301-I	08/11/10	10/25/10	EP FOR AIRPORT WELLFIELD	EP-B	**0.0105000**	0.010	MG/L	
1018271-I	05/12/10	06/09/10	EP FOR AIRPORT WELLFIELD	EP-B	0.0082800	0.010	MG/L	1
999941-I	03/09/10	03/29/10	EP FOR AIRPORT WELLFIELD	EP-B	ND	0.010	MG/L	
945711-I	08/12/09	09/17/09	EP FOR WASHINGTON ST WELL	EP-A	**0.0170000**	0.010	MG/L	
945721-I	08/12/09	09/21/09	EP FOR AIRPORT WELLFIELD	EP-B	0.0043400	0.010	MG/L	
945701-I	08/12/09	09/21/09	EP FOR AIRPORT WELLFIELD	EP-B	0.0063100	0.010	MG/L	
878911-I	11/12/08	12/17/08	EP FOR WASHINGTON ST WELL	EP-A	**0.0160000**	0.010	MG/L	
878891-I	11/12/08	12/17/08	EP FOR AIRPORT WELLFIELD	EP-B	**0.0180000**	0.010	MG/L	
829191-I	05/19/08	06/23/08	EP FOR WASHINGTON ST WELL	EP-A	**0.0202000**	0.010	MG/L	
829241-I	05/19/08	08/23/08	EP FOR AIRPORT WELLFIELD	EP-B	**0.0303000**	0.010	MG/L	
802591-A	02/13/08	03/21/08	EP FOR AIRPORT WELLFIELD	EP-B	**0.0197000**	0.010	MG/L	
794481-A	01/09/08	02/11/08	EP FOR AIRPORT WELLFIELD	EP-B	**0.0178000**	0.010	MG/L	
764261	09/19/07	12/31/07	EP FOR WASHINGTON ST WELL	EP-A	**0.0190000**	0.010	MG/L	
764251	09/19/07	12/31/07	EP FOR AIRPORT WELLFIELD	EP-B	ND	0.010	MG/L	
686811	01/10/07	02/27/07	EP FOR WASHINGTON ST WELL	EP-A	**0.0174000**	0.010	MG/L	
686791	01/10/07	03/02/07	EP FOR AIRPORT WELLFIELD	EP-B	0.0091000	0.010	MG/L	
634201	07/12/06	09/12/06	EP FOR WASHINGTON ST WELL	EP-A	**0.0105000**	0.010	MG/L	
634221	07/12/06	09/18/06	EP FOR AIRPORT WELLFIELD	EP-B	0.0063000	0.010	MG/L	
527921I	07/11/05	08/15/05	EP FOR WASHINGTON ST WELL	EP-A	0.0190000	0.050	MG/L	
527971I	07/11/05	08/15/05	EP FOR AIRPORT WELLFIELD	EP-B	0.0160000	0.050	MG/L	
333702	05/13/03	06/04/04	EP FOR WASHINGTON ST WELL	EP-A	0.0180000	0.050	MG/L	
29203I	10/21/02	12/19/02	EP FOR WASHINGTON ST WELL	EP-A	0.0210000	0.050	MG/L	

29208I	10/21/02	12/19/02	EP FOR AIRPORT WELLFIELD	EP-B	ND	0.050	MG/L

Archived Arsenic Samples - PWS ID: 00917

Sample ID	Sample Date	Receive Date	Source Name	Source ID	Results	MCL
22253	10/09/01	12/07/01	WELL #1 (WASHINGTON & WEST ST)	AA	0.0200000	0.050
22254	10/09/01	12/07/01	EP FOR AIRPORT WELLFIELD	B	0.0210000	0.050
18502	03/12/01	11/05/01	WELL #1	BA	ND	0.050
18505	03/12/01	11/05/01	WELL #2	BB	ND	0.050
59290	02/01/99	03/04/99	EP for WELL #1 (WASHINGTON & WEST ST)	A	0.0280000	0.050
7657	05/28/96	06/20/96	EP for WELL #1 (WASHINGTON & WEST ST)	A	0.0110000	0.050
81040	09/05/95	09/28/95	WELL #1 (WASHINGTON & WEST ST)	AA	0.0150000	0.050
-1936220	02/19/91	03/22/91	WELL #1 (WASHINGTON & WEST ST)	A	0.0180000	0.050
-1936221	02/05/88	03/17/88	WELL #1 (WASHINGTON & WEST ST)	A	0.0150000	0.050
-1936222	11/03/86	12/12/86	WELL #1 (WASHINGTON & WEST ST)	A	0.0200000	0.050

A blank or a 0 in the MCL column indicates that a MCL has not been set for that chemical.

Oregon Public Health
Drinking Water Data Online

Oregon Health Authority

ND = Not Detected at the Minimum Reporting Level; - = Not Sampled; View all radionuclides

Radionuclide Monitoring - PWS ID: 00917 = VALE, CITY OF

Sample Date	Receive Date	Source ID	Gross Alpha [pCi/L] (EPA 4002, 4000) MCL = 15	Radium Combined (226,228) [pCi/L] (EPA 4010) MCL = 5	Uranium Combined [mg/L] (EPA 4006) MCL = .03	Gross Beta Particle Activity [pCi/L] (EPA 4100) MCL = 50
05/19/08	08/04/08	EP-A	10.180000	0.6500000	ND	-
07/11/05	12/12/05	EP-A	1.5100000	ND	0.0070000	-
10/21/02	10/08/03	EP-A	ND	ND	0.0000113	-
05/19/08	08/04/08	EP-B	0.4500000	0.2700000	0.0081000	-
07/11/05	12/12/05	EP-B	ND	ND	0.0060000	-
10/21/02	05/30/06	EP-B	1.9310000	ND	0.0007000	-

Archived Results

Sample Date	Receive Date	Chemical	Source ID	Results	MCL
04/22/99	06/06/99	Gross Alpha, Excl. Radon & U	A	1.4100000	15.0000
02/01/99	03/15/99	Gross Alpha, Excl. Radon & U	AA	9.6800000	15.0000
01/22/96	02/26/96	Gross Alpha, Excl. Radon & U	A	9.1800000	15.0000
04/07/92	05/22/92	Gross Alpha, Excl. Radon & U	A	ND	15.0000
01/15/92	03/12/92	Gross Alpha, Excl. Radon & U	A	9.0000000	15.0000
01/15/92	03/12/92	Gross Beta Particle Activity	A	12.000000	50.0000
10/09/91	01/22/92	Gross Alpha, Excl. Radon & U	A	6.6000000	15.0000
10/12/87	01/13/88	Gross Alpha, Excl. Radon & U	A	ND	15.0000
01/31/84	08/10/87	Gross Alpha, Excl. Radon & U	A	11.000000	15.0000

Appendix K
Source Water Assessment Interim Report

SOURCE WATER ASSESSMENT
INTERIM REPORT

CITY OF VALE
PWS ID #4100917
VALE, OREGON
MALHEUR COUNTY

June 2005

Prepared for
City of Vale

by

Department of Human Services
Health Services
Drinking Water Program

Available in Alternate Formats by contacting the DHS DWP at (541) 726-2587

Source Water Assessment Interim Report

City of Vale

1. Introduction

Traditionally, water systems have relied on proper water system management, water quality monitoring and, if necessary, water treatment to ensure that the water they serve meets drinking water standards. In spite of the best of these efforts, however, contamination of drinking water can still occur. The costs, both tangible and intangible, to a water system contending with a contaminated water supply are significant. At minimum, there is the cost of increased monitoring that will be required to make certain that the water does not pose a significant health risk. At contaminant concentrations exceeding a drinking water standard, the system may be dealing with the cost of installing and maintaining treatment, the loss of the drinking water source, i.e., a well, and most assuredly, a concerned and often frightened public.

Beginning with the 1986 Amendments to the Safe Drinking Water Act, an additional "barrier to contamination" was recognized at the federal level. A shift from the "reactive" approach of water treatment to a "proactive" approach of prevention began to take place. Although water treatment may be necessary in some cases, it is much more cost effective to prevent the contamination from happening in the first place. A recent estimate by the Oregon Department of Environmental Quality (DEQ) and the Department of Human Services Drinking Water Program (DHS) compared the estimated cost of prevention (less than $15 per resident) to the actual cost of investigation and treatment (more than $1500 per resident) in a small Oregon community impacted by a volatile organic contaminant that exceeded the drinking water standard.

Oregon has a Drinking Water Protection Program in place for groundwater systems, i.e., wells and springs. In order to protect a drinking water resource, a water system must know where the drinking water comes from, what potential sources of pollution exist and what level of threat each presents to the system's drinking water. Up until recently, the costs associated with acquiring this information were the responsibility of the water system, a financial burden that even the most proactive water systems found hard to meet. The 1996 Amendments to the Safe Drinking Water Act lifted that burden from water systems by requiring that the states conduct Source Water Assessments for the water systems within their respective boundaries. The purpose of the Assessment is to provide both groundwater and surface water systems with the information that they need to develop a strategy to protect their source of drinking water if they choose.

As mandated by the 1996 Amendments, a Source Water Assessment for groundwater systems consists of the following: (1) the identification of the area that directly overlies that part of the aquifer supplying drinking water to the well or spring, (2) an inventory of potential sources of contamination within that area, and (3) the evaluation of the susceptibility of the water system to

contamination from those sources. Funding for assessments was provided to the states through the Act as part of the state's Drinking Water Revolving Loan Fund.

In this interim report, we focus on the first two elements of the Source Water Assessment, identifying the critical area of protection and inventorying potential sources of contaminants within that area. This information provides you with a map of where your drinking water comes from and identifies the potential threats to its quality. The third element, our assessment of the susceptibility of your drinking water to those potential contaminant sources, will be provided to you by the end of 2005, or sooner, if you wish to move forward with developing a drinking water protection plan.

The DEQ and DHS worked with a citizen's advisory committee and with DHS' Drinking Water Advisory Committee to design a program that would meet the needs of Oregon's public water systems. The Environmental Protection Agency (EPA) has certified that Oregon's plan meets the requirements of the Safe Drinking Water Act. Within the program, DHS has the responsibility of working with groundwater systems in general, as well as with transient noncommunity water systems.

We believe public awareness is a powerful tool for protecting drinking water and that the information provided in this report will help you increase local awareness regarding land use activities and local drinking water quality. We have also included a groundwater fact sheet and a list of Oregon specific drinking water protection information and resources in Appendices. Although developing a Drinking Water Protection Plan is voluntary in Oregon, it is hoped that the information provided in the Source Water Assessment Report will be used as a basis for reducing the risk of contamination to your source.

1.1 Groundwater Basics

In order to protect a groundwater source of drinking water, it is important to understand how the groundwater system works, e.g., where groundwater comes from, how it occurs in the subsurface, how it moves, and how it becomes contaminated. Included in the appendix of this report is a Fact Sheet about groundwater that you can use to help increase the awareness of others regarding groundwater and its susceptibility to contamination.

Groundwater is part of the hydrologic cycle which controls the distribution of water on the earth's surface. Groundwater is therefore linked to other water sources, notably surface water such as streams, rivers, and lakes. Virtually without exception, groundwater originates as precipitation at the earth's surface which sinks through the soil and percolates down to the water-table. The fact that groundwater originates at the surface is what makes it vulnerable to contamination. As recharging groundwater moves downward through the soil and vadose zone, it comes in contact not only with the geologic materials present, but also with any contaminants contained within the soil and/or vadose zone. Therefore, recharging groundwater can carry contaminants downward to the aquifer. Likewise liquid chemicals, if present in large enough quantities, can enter the aquifer by following the same path as recharging groundwater.

The direction and speed with which groundwater moves is controlled by the slope of the water-table and aquifer permeability. The slope of the water-table often mimics, in a subdued sense, the earth's surface with groundwater moving from high areas to low areas. Aquifer permeability is a measure of how easy it is for groundwater to move through the geologic material that makes up the aquifer. Geologic materials with greater permeability allow groundwater to move with less restriction. In general, groundwater movement is measured in terms of a few inches to a few feet per day. A pumping well can significantly influence the speed and direction of groundwater movement by drawing the water-table down in its vicinity, creating a depression in the water-table. As the well continues to pump, the depression in the water-table spreads out through the aquifer and leads to the formation of a "capture zone". Groundwater inside the capture zone is eventually pumped to the earth's surface by the well.

When wells are used as a water source, we identify the drinking water protection area for the water system by delineating those portions of the capture zone around the well(s) where, on average, it will take 10 or 15 years (depending on the delineation technique used) for water moving through the aquifer to arrive at the well. We have also identified the 5-, 2-, and 1- year capture zones around the well(s) to enhance the overall usefulness of the drinking water protection area.

When springs are used as a water source, we have attempted to identify the recharge area uphill from the springs based on hydrogeologic mapping. In these cases we have attempted to identify the short-, intermediate-, and long-term groundwater flow regimes that provide water to the springs. Typically, we have labeled these areas as Zone 1 (short-term), Zone 2 (intermediate-term), and Zone 3 (long-term). When appropriate, we will also identify a Zone 4 which represents the watershed above the estimated recharge area which could quickly transport spilled contaminants into the DWPA via surface water runoff.

1.2 Well Construction

When a well is drilled, the drilling equipment first passes through the vadose zone until it encounters the water-table. Within the vadose zone, the open pore spaces between soil and sediment particles and/or the open fractures within the bedrock material are only partially filled with water. Most of the open pore/fracture space is filled with air, therefore, little if any water can be obtained from the vadose zone. The water-table marks the top of the saturated zone, where the open pore/fracture spaces are, for the most part, completely saturated (full) with groundwater. It should be understood that within the saturated zone, groundwater does not occur as underground rivers, lakes, or veins. An aquifer is any geologic material located below the water-table (and is therefore water saturated) that can yield an adequate water supply to a well. Geologic materials that tend to yield large quantities of water to wells include sand and gravel deposits, porous lava flows, and fractured bedrock.

2. Water System Background

The City of Vale water system is located in Malheur County and serves approximately 1,997 people through 708 connections. Drinking water is supplied by eight wells, commonly referred to as the Washington St. Well and Wells #1 through #7 of the Airport Wellfield. According to DHS Drinking Water Program records, Wells #1, #2, #3, and #7 are considered permanent water sources and the Washington St. Well and Wells #4, #5, and #6 serve as seasonal water sources.

2.1 Location of the Drinking Water Sources

We have located your drinking water source using a Trimble GeoExplorer II Global Positioning System (GPS) unit. The data has been differentially corrected to remove some of the common positioning errors. The location of the source(s), with the corresponding Drinking Water Protection Area, has been placed in a Geographic Information System (GIS) layer and projected onto a USGS 7.5 minute topographic map that is included within this report. In order to be consistent with the topographic map, the projection uses the NAD1927 datum. The latitude and longitude values given on the map and below, however, reflect a projection in the more commonly used WGS1984 datum.

Data collection specifics include:

- 150 individual measurements,
- linked to a minimum of four satellites,
- a PDOP of less than 6 (pertains to precision of measurement), and
- a signal to noise ratio of greater than 5.

The raw data was subjected to differential correction using the PATHFINDER software. The location data for your drinking water source(s) using the WGS84 datum is as follows:

Source	Latitude	Longitude
Washington St. Well - Source AA	43° 58' 58.337" N	117° 14' 45.480" W
Airport Well 1 - Source BA	43° 57' 57.079" N	117° 15' 11.876" W
Airport Well 2 - Source BB	43° 57' 55.567" N	117° 15' 12.726" W
Airport Well 3 - Source BC	43° 57' 57.987" N	117° 15' 16.417" W
Airport Well 4 - Source BD	43° 57' 51.443" N	117° 15' 13.560" W
Airport Well 5- Source BE	No Data	No Data
Airport Well 6 - Source BF	No Data	No Data
Airport Well 7 - Source BG	No Data	No Data

2.2 Source Construction

According to the 1990 Sanitary Survey, the 16-inch diameter Washington St. Well was constructed in 1922 to a depth of 30 feet. In addition, there is no casing, casing seal, or sanitary seal and the well is an open hole from the surface to a depth of 30 feet. No additional information on how the well was constructed is available because of a lack of a well report. It should be noted that the lack of a well report provides little option on how to respond in the event that in the future, contaminated water occurs at the wellhead. Under these circumstances, the system will likely be required to evaluate the construction of the current well and bring it to current standards, or, formally abandon the well and drill a new well that is protective of the aquifer. A copy of the well report for a neighboring well (Water Resources Department well report # Malh 50010), which was used as a general hydrogeology guide, is included in the Appendix.

Well #1 of the Airport Wellfield was constructed in August 1997. A 12-inch diameter hole was drilled to 36 feet. Eight-inch diameter casing was installed from two feet above the surface to a depth of 18 feet, and from 28 to 33 feet. Screens were installed from 18 to 28 feet and the well is an open hole from 33 to 36 feet. Bentonite was placed between the casing and the outer wall of the hole from one foot to 18 feet to serve as a casing seal. This casing seal is considered adequate. A copy of the well report for this well is included in the appendix materials.

Well #2 of the Airport Wellfield was constructed in August 1997. A 12-inch diameter hole was drilled to 33 feet. Eight-inch diameter casing was installed from two feet above the surface to a depth of 18 feet, and from 28 to 33 feet. Screens were installed from 18 to 28 feet. Bentonite was placed between the casing and the outer wall of the hole from the surface to a depth of 18 feet to serve as a casing seal. This casing seal is considered adequate. A copy of the well report for this well is included in the appendix materials.

Well #3 of the Airport Wellfield was constructed in August 1997. A 12-inch diameter hole was drilled to 36 feet. Eight-inch diameter casing was installed from two feet above the surface to a depth of 18 feet, and from 28 to 33 feet. Screens were installed from 18 to 28 feet and the well is an open hole from 33 to 36 feet. Bentonite was placed between the casing and the outer wall of the hole from one foot to 18 feet to serve as a casing seal. This casing seal is considered adequate. A copy of the well report for this well is included in the appendix materials.

Well #4 of the Airport Wellfield was constructed in November 1997. A 12-inch diameter hole was drilled to 38 feet. Eight-inch diameter casing was installed from two feet above the surface to a depth of 18 feet, and from 28 to 33 feet. Screens were installed from 18 to 28 feet and the well is an open hole from 33 to 38 feet. Bentonite was placed between the casing and the outer wall of the hole from one foot to 18 feet to serve as a casing seal. This casing seal is considered adequate. A copy of the well report for this well is included in the appendix materials.

Well #5 of the Airport Wellfield was constructed in June 2000. A 12-inch diameter hole was drilled to 31.5 feet. Eight-inch diameter casing was installed from two feet above the surface to a depth of 13.5 feet, and from 23.5 to 28.5 feet. Screens were installed from 13.5 to 23.5 feet

and the well is an open hole from 28.5 to 31.5 feet. Bentonite was placed between the casing and the outer wall of the hole from the surface to a depth of 12 feet to serve as a casing seal, and silica sand was placed from 12 to 28.5 feet. This casing seal received special construction approval; therefore, it is considered adequate. A copy of the well report for this well is included in the appendix materials.

Well #6 of the Airport Wellfield was constructed in June 2000. A 12-inch diameter hole was drilled to 35 feet. Eight-inch diameter casing was installed from two feet above the surface to a depth of 18 feet, and from 28 to 35 feet. Screens were installed from 18 to 28 feet. Bentonite was placed between the casing and the outer wall of the hole from the surface to a depth of 16 feet to serve as a casing seal, and silica sand was placed from 16 to 35 feet. This casing seal received special construction approval; therefore, it is considered adequate. A copy of the well report for this well is included in the appendix materials.

Well #7 of the Airport Wellfield was constructed in June 2000. A 12-inch diameter hole was drilled to 35 feet. Eight-inch diameter casing was installed from two feet above the surface to a depth of 13.5 feet, and from 23.5 to 35 feet. Screens were installed from 13.5 to 23.5 feet. Bentonite was placed between the casing and the outer wall of the hole from the surface to a depth of 13.5 feet to serve as a casing seal, and silica sand was placed from 13.5 to 35 feet. This casing seal received special construction approval; therefore, it is considered adequate. A copy of the well report for this well is included in the appendix materials.

2.3 Nature and Characteristics of the Aquifer

Based on the well logs for the City of Vale wells, the aquifer supplying water to the Washington St. Well and the Airport Wellfield has been identified as sand and gravel deposits associated with the Quaternary Sand and Gravel Aquifer. Gannett (1990b) describes these materials as consisting of a lower layer of unconsolidated sand and gravel 10 to 40 feet thick which is overlain by a silt layer which ranges between 10 to 50 feet in thickness. The Quaternary Sand and Gravel Aquifer is considered a reliable water source, yielding in excess of 400 gpm to wells in many places throughout the Vale Area. Gannett also described this aquifer as being poorly confined to unconfined due to local variations in the nature of the overlying silt.

The City of Vale well logs indicate that the first potential water-bearing zone is encountered between 8 and 18 feet below ground. The aquifer is directly overlain by 6 to 18 feet of silt and small amounts of hardpan and small gravel. The static water-levels (water-level in each well when it is at rest, i.e. not being pumped) in the wells were reported to be between 6.5 and 15 feet below ground. Comparing the depth to the first water-bearing zone to the static water-level in each well indicates the aquifer varies from an unconfined to confined condition near the wells. Therefore, we consider the aquifer penetrated by the City of Vale wells to be a shallow sand and gravel aquifer with a minimum depth of 8 feet.

3. Delineation Results

The purpose of the Drinking Water Protection Area (DWPA) delineation is to identify the area at the surface which overlies the critical portion of the aquifer that's supplying groundwater to the water system's wells. Therefore, DHS Drinking Water Program staff have collected and reviewed data for the purpose of delineating the DWPA for your water system. The area included in the DWPA is designed to approximate the next 10 years of groundwater supply for the water system and is shown in Figure 1 (see appendix materials). We have enhanced the usefulness of the DWPA map by identifying additional five-year, two-year, and one-year "Time-Of-Travel Zones" inside the DWPA.

The scope of work for this portion of the assessment included interviewing the water system operator, researching written reports, reviewing well logs, and establishing a base map of the delineated area. Based on the service population and the complex aquifer boundary conditions associated with the Malheur River and surrounding area, the Analytic Element Model Method was used to delineate the DWPAs (see the appendix materials for an explanation of delineation process). **The delineation of the DWPAs was accomplished using the groundwater modeling software WhAEM2000 (Kraemer et al., 2003).** The resulting DWPAs for the City of Vale wells are shown in Figures 1-A and 1-B of the appendix materials. Wells #5, #6, and #7 of the Airport Wellfield have not been field located with a GPS unit; however, they were included in the DWPA modeling.

WhAEM2000 is a public domain 2-dimentional groundwater flow model that allows for the modeling of capture zones for steady state pumping wells. WhAEM2000 allows for the inclusion of hydrological boundaries, such as rivers, recharge boundaries, no-flow boundaries, and inhomogeneity zones which may have an influence on capture zone size and shape. Model results can be "calibrated" by comparing actual water-levels observed in area wells and then adjusting the model parameters within reasonable limits until the modeled and observed head values agree to within acceptable limits. This "calibration" step allows the modeler to better represent the actual groundwater system. Once calibrated, the model can be used to estimate the impact of changing conditions, i.e., the effect of pumping. WhAEM2000 was specifically developed to facilitate capture zone delineation and protection area mapping in support of the Source Water Assessment Planning process for public water well supplies in the United States (Kraemer et al., 2003).

4. Potential Contaminant Source Inventory

An inventory of potential contamination sources was performed within the Drinking Water Protection Area and the results are shown in Figure 2 in the Appendix. The primary intent of the inventory was to identify and locate significant potential contaminant sources of concern. This inventory was conducted by reviewing applicable state and federal regulatory databases and land use maps, interviewing persons knowledgeable of the area, and conducting a windshield survey by driving through the drinking water protection area to field locate and verify as many of the potential contaminant source activities as possible. It is important to remember the sites and areas identified are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

4.1 Potential Contaminant Sources within the Two-Year Time-of-Travel Zone for the Wells

The delineated two-year time of travel zone for the Washington Street well is primarily dominated by commercial and residential within the City of Vale and the delineated two-year time of travel zone for the Airport Wellfield is primarily dominated by commercial/municipal land uses with some agricultural land use. A total of 27 potential contaminant source locations (Reference Numbers 1-22, 28-32 on Figure 2 and Table 2 in the Appendix materials) were identified in the combined two-year time-of-travel zones for the wells. Potential sources of contamination (PCSs) identified within the 2-year time of travel for each of the wells is detailed below:

Well Number	PCSs within the 2-year Time-of- Travel Zone
Washington Street Well	High density housing areas with sewer lines, rural homes with septic systems, a school, the highway and railroad transportation corridors, a confined animal feeding area (CAFO), non-irrigated crop areas, the a farmers supply store (co-op), the irrigation canal, two gas stations, an auto repair shop, county and state roads maintenance shops, a machine shop, a steel fabrication facility, and several underground and aboveground storage tanks.
Airport Wellfield	The airport maintenance/fueling areas including associated underground and aboveground storage tanks, a crop spraying business, a private salvage yard, a confined animal feeding area (CAFO), and rural homes with septic systems.

The potential contaminant sources within the two-year time-of-travel zones all have relatively higher to moderate risk to the drinking water supply with the exception of the rural homes on septic systems, apartment buildings, the school, upgraded and decommissioned underground storage tanks, and non-irrigated crops which present a lower risk. Several of the potential contaminant sources have a high risk of transmitting micro-organisms to the groundwater including the sewer lines, septic systems, confined animal feeding operations and the irrigation ditch.

4.2 Potential Contaminant Sources within the Five-Year Time-of-Travel Zones for the Wells

The drinking water protection area within the five-year time-of-travel zones for is primarily occupied by rural homes and agricultural land uses. Five additional potential contaminant source locations were identified between and the two and the within the five-year time of travel zones including grazing animal areas , irrigated crop areas, rural residences some with private scrapyard/salvage operations, and two businesses where the practices are unknown. Area-wide potential sources such as the residential areas and transportation corridors extend from the two-year time-of-travel zone into the five-year time-of-travel zone. These land uses occur throughout the drinking water protection area and are shown on Figure 2 in the location nearest to the well. The potential contaminant sources within the five-year time-of-travel all have relatively higher to moderate risk to the drinking water supply.

4.3 Inventory for Surface Water Portion

As discussed above, potential contaminant sources within the watershed for the drainage ditch upstream of the public water system's Washington Street well is outside the scope of this Source Water Assessment. We recommend the water system and community "enhance" the inventory by identifying potential contaminant sources within the drainage ditch watershed upstream of the well. A list of potential contaminant sources to a surface water supply that are most likely to affect groundwater is provided in Table 4 (appendix materials). This short-list of potential contaminant sources includes primarily sources that present a high risk of transmitting toxics and micro-organisms. At a minimum, these sources should be considered for their potential risk to the water supply.

5. Conclusions

The City of Vale water system draws water from poorly confined to unconfined Malheur River Alluvium. The presence of several high- and moderate-risk potential contaminant sources within the protection area was confirmed through a potential contaminant source inventory.

6. Recommended Use of the Source Water Assessment Report

The costs associated with contaminated drinking water are high. Developing an approach to protect that resource, such as a Drinking Water Protection Plan, can reduce the potential for contamination of the local drinking water supply. This report contains a summary of the local geology and well construction issues as they pertain to the quality of your drinking water source. We have identified the area we believe to be most critical to preserving your water quality (the Drinking Water Protection Area) and have identified potential sources of contamination within that area. We believe public awareness is a powerful tool for protecting drinking water and that the information provided in this report will help you increase local awareness regarding the relationship between land use activities and drinking water quality. To that end, the process for developing a Drinking Water Protection Plan can be summarized as follows:

Assessment Phase (Source Water Assessment Provided by DHS and DEQ)

- Delineate the area that serves as the source of the public water supply (Drinking Water Protection Area (DWPA))
- Inventory the potential risks or sources of contamination within the DWPA
- Determine the areas most susceptible to contamination upon system's request

Protection Phase (performed by the water system or community)

- Assemble a local Drinking Water Protection Team
- Enhance the Source Water Assessment if necessary
- Develop a plan to reduce the risk of contamination (protect the resource)
- Develop a contingency plan to address the potential loss of the drinking water supply
- Certify (optional) and implement the Drinking Water Protection Plan

The assessment phase was funded by the federal Safe Drinking Water Act. Its purpose is to supply the water system with the information necessary to develop a Drinking Water Protection Plan. In Oregon, development of a protection plan is voluntary.

Prior to moving into the protection phase, DEQ recommends the inventory presented in this document be reviewed in detail to clarify the presence, location, operational practices, actual risks, etc., of the identified facilities and land use activities. The Source Water Assessment (SWA) inventory should be regarded as a preliminary review of potential sources of contamination within the drinking water protection area. Resources within the community should be used to do an "enhanced inventory" to refine this preliminary list of potential contaminant sources.

It is also important to remember that not all of the inventoried activities will need to be addressed if you choose to develop a Drinking Water Protection Plan. When developing a protection plan, potential contaminant sources which pose little or no threat to your drinking water supply can be screened out. For example, if any of the land use activities are conducted in a manner that already significantly reduces the risk of a contamination release, the facility would not need to re-evaluate their practices based on drinking water protection "management". One of the goals for developing a plan based on the inventory results is to address those land use activities that do pose high or moderate risks to your public water supply. The system should target these facilities with greater levels of education and technical assistance to minimize the risk of contamination.

Limited technical assistance is available through the DEQ and Drinking Water Program at DHS for water systems that choose to move beyond the assessments and voluntarily develop a Drinking Water Protection Plan. By using the results of the assessment, the water system/community can form a Drinking Water Protection Team comprised of individuals that have a stake in the plan's implementation.

Forming a local team to help with the development of a protection plan is very important. Oregon's drinking water protection approach relies upon the concept of "community based protection", as are many other water quality programs. This simply refers to the concept of allowing local control and decision-making to implement the water quality protection effort. Community-based protection is successful only with significant local citizen stakeholder involvement. Community-based protection can draw on the knowledge and successful adaptive practices within the area. Landowners generally know best how to achieve water resource restoration and protection as long as a thorough explanation of the problem is provided, the objectives to solve the problem are clearly defined, and technical assistance is available.

In community-based protection, citizens have more control and are therefore more likely to participate in the program and be more willing to assist with the educational and outreach effort which will make the plan successful. We recommend that the protection plan be developed so as to minimize any burdens on individual property owners, but maximize the equity in responsibility for reducing the risks of future contamination.

Protecting the drinking water supply in a community can also be a very effective way to encourage all citizens to participate in issues which directly affect everyone in that community. This often leads to more public involvement in other significant local decisions concerning future livability issues, e.g., land use planning. In communities already developing and implementing Drinking Water Protection Plans, the process has served to bring many diverse interests together on a common goal and strengthen the local rural and urban relationships through communication and increased understanding. The risks and sources of water quality problems are not only from industries, farmers, and managed forest, but every individual living, commuting, and working in that area.

Communities/water systems interested in developing Drinking Water Protection Plans may contact the Department of Environmental Quality (503-229-5413) or the DHS Drinking Water Program (541-726-2587) for further information.

Appendix

Figure 1. Map of the Drinking water protection area

Figure 2. Map of Potential Contaminant Sources within the Drinking water protection area

Inventory of Potential Contaminant Sources

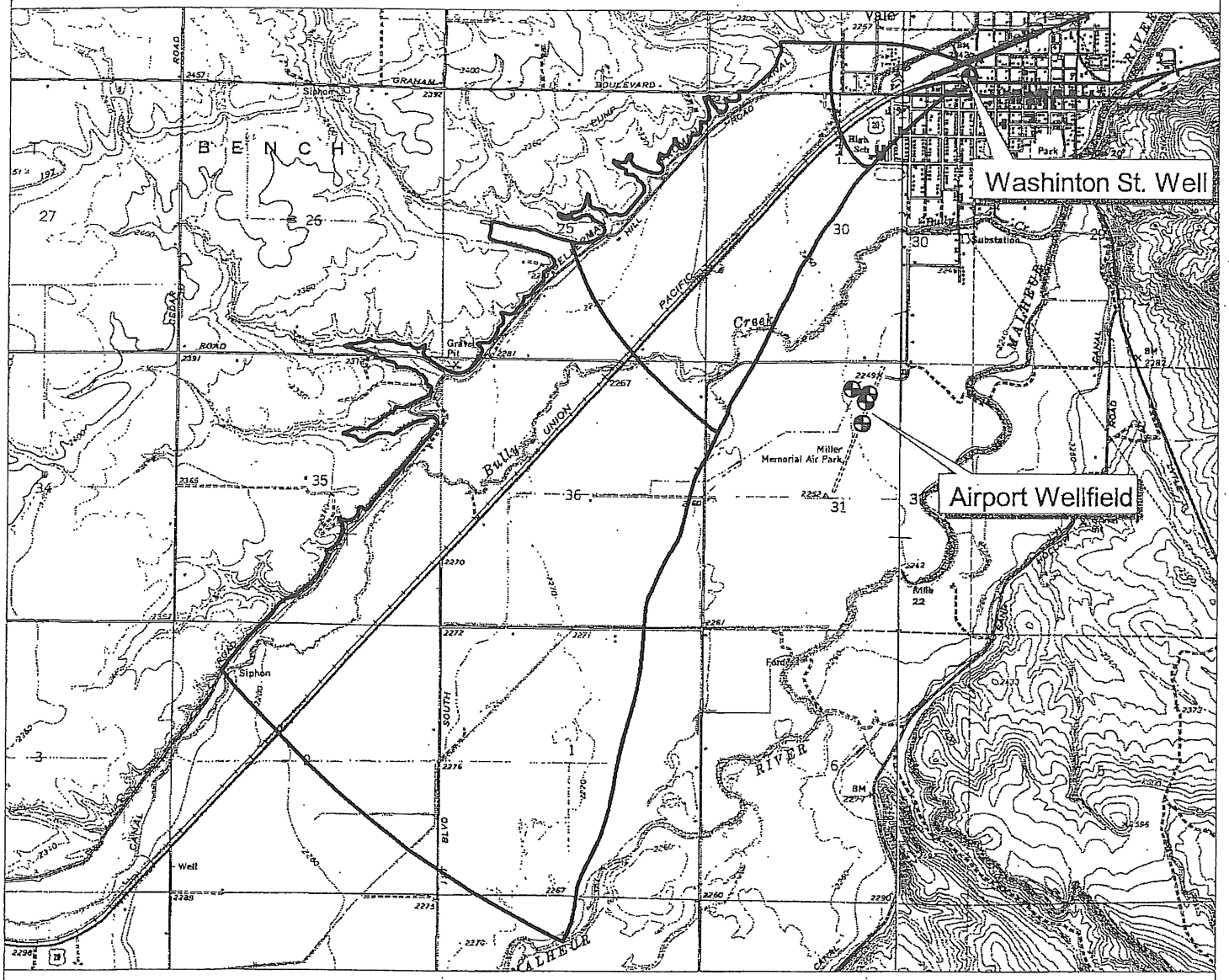
Well Report(s)

Groundwater Information Sheets

Drinking Water Protection In Oregon

NOTE: **Additional copies of the appendix materials are available upon request by calling (541) 726-2587**

Figure 1-A. City of Vale, Washington St. Well Drinking Water Protection Area



2000 0 2000 4000 6000 8000 10000 12000 Feet

Scale 1: 36,000

Drinking Water Protection Area (DWPA)
1, 2, and 5 Year Time of Travel (TOT)
Analytic Element Method

Well Location (WGS84 Datum): Malheur County
T 18 S., R. 45 E., Sec. 19
lat. 43° 58' 58.3369"N,
long. 117° 14' 45.4798"W

Model Parameters
Production Interval (ft): 32
Effective Porosity: 0.25
Hydraulic Conductivity (ft/day): 620
Usage (gal/day): 42,860

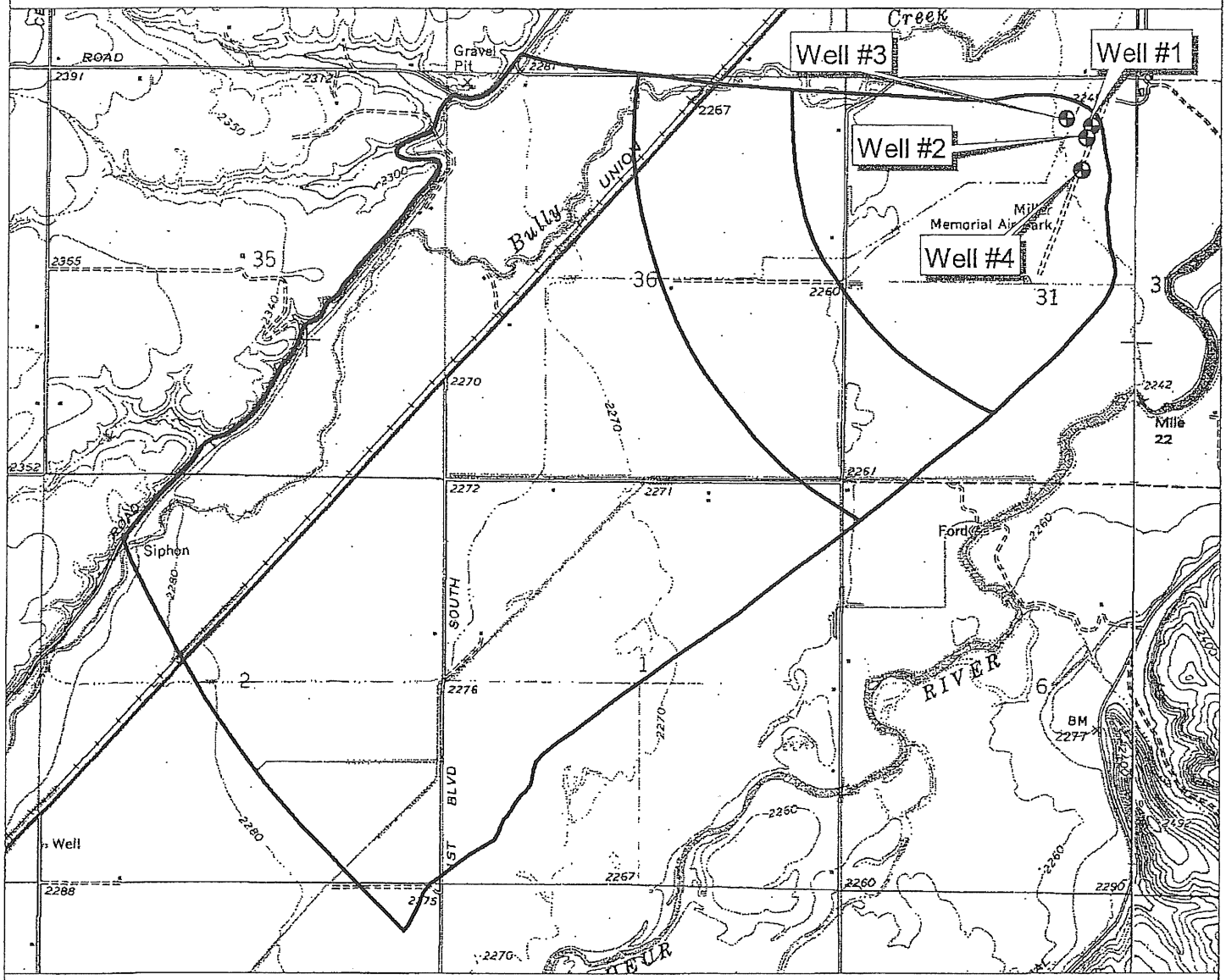
QUADRANGLE LOCATION

N

Prepared by: TP
Project Manager: TP RG# G-1874
PWS#: 4100917 File#: VAL200

USGS Vale East & Vale West, OR Quadrangles (part sections) 7.5' Series (Topographic)

Figure 1-B. City of Vale, Airport Wellfield Drinking Water Protection Area



2000 0 2000 4000 6000 Feet

Scale 1: 24,000

Drinking Water Protection Area (DWPA)
1, 2, and 5 Year Time of Travel (TOT)
Analytic Element Method

Model Parameters
Production Interval (ft): 32
Effective Porosity: 0.25
Hydraulic Conductivity (ft/day): 620
Usage (gal/day): Well #1, #2, #3, & #7 = 85,713 each
Well #4, #5, & #6 = 42,860 each

QUADRANGLE LOCATION

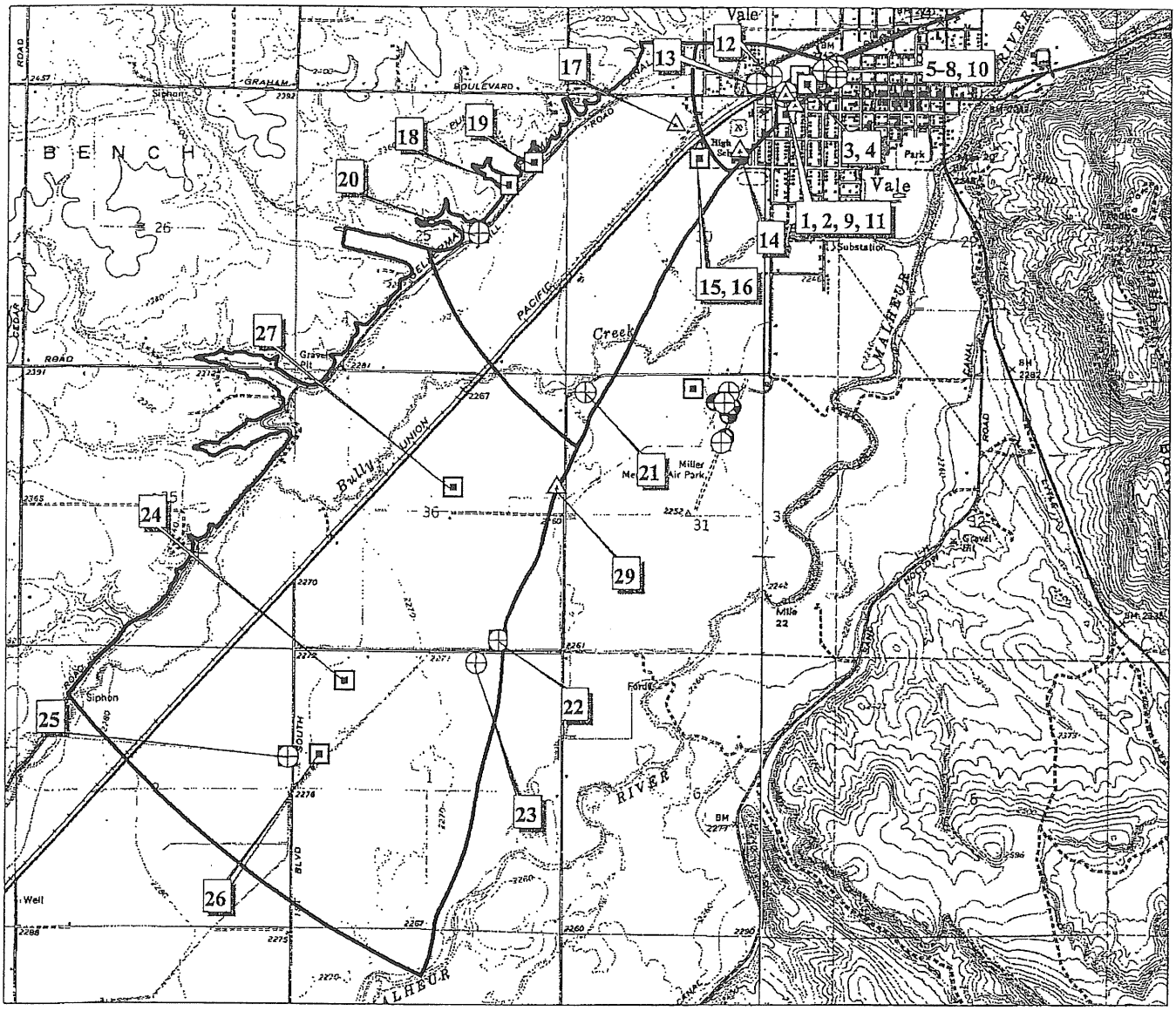
N

Well Location (WGS84 Datum): Malheur County
T 18 S., R. 45 E., Sec. 31
Well #1: Lat. 43° 57' 57.0787"N,
long. 117° 15' 11.8757"W
Well #2: Lat. 43° 57' 55.5669"N,
long. 117° 15' 12.7263"W
Well #3: Lat. 43° 57' 57.9865"N,
long. 117° 15' 16.4171"W
Well #4: Lat. 43° 57' 51.4431"N,
long. 117° 15' 13.5603"W

Prepared by: TP
Project Manager: TP RG# G-1874
PWS#: 4100917 File#: VAL200

USGS Vale East & Vale West, OR Quadrangles (part sections) 7.5' Series (Topographic)

Figure 2-A. City of Vale, Washington St. Well Potential Contaminant Sources



2000 0 2000 4000 6000 8000 10000 12000 Feet

Scale 1: 36,000

USGS Vale East & Vale West, OR
Quadrangles (part sections)
7.5' Series (Topographic)

Drinking Water Protection Area (DWPA)
1, 2, and 5 Year Time of Travel (TOT)
Analytic Element Method
Potential Contaminant Sources

⊕ **Higher Relative Risk**

▣ **Moderate Relative Risk**

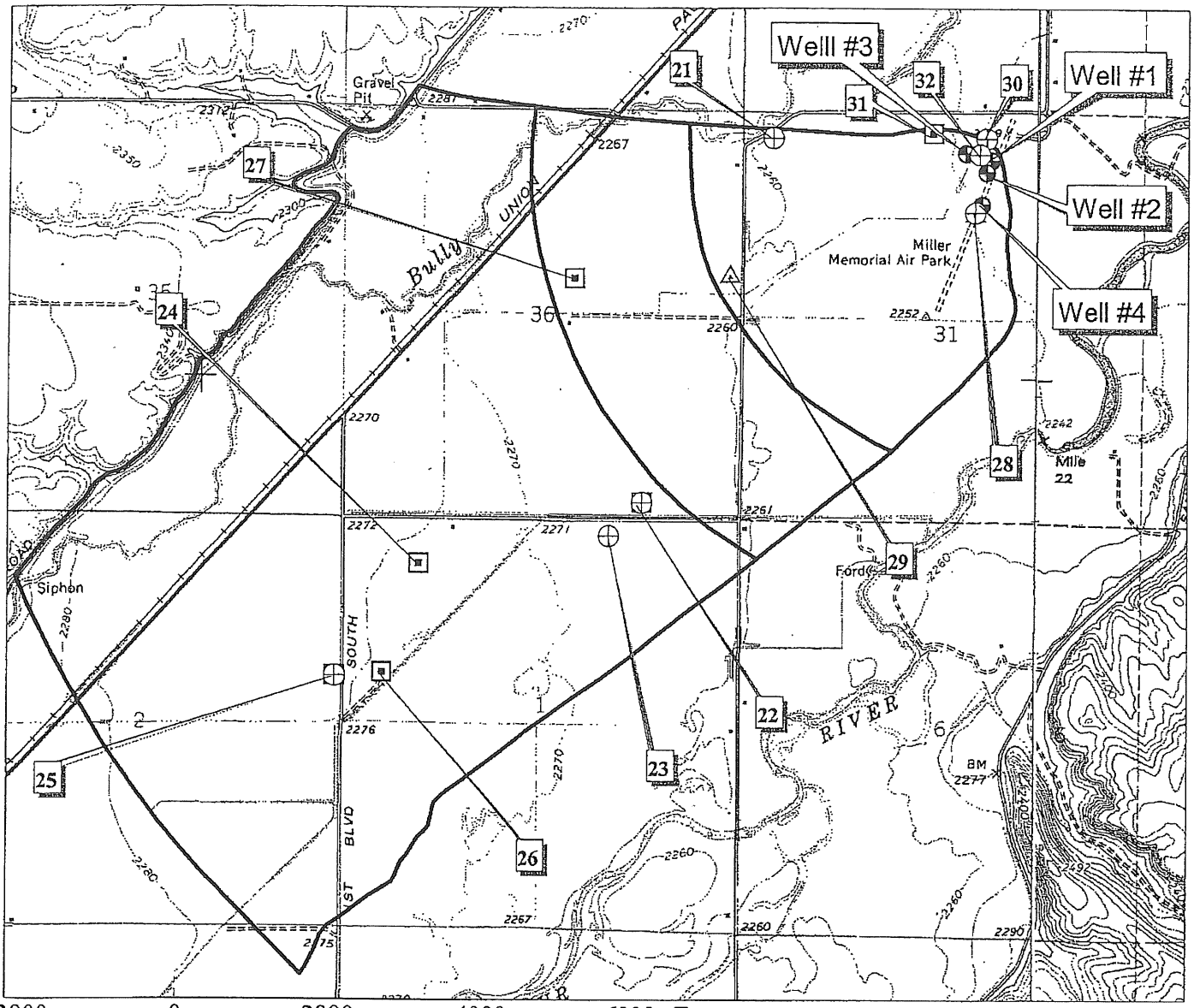
△ **Low Relative Risk**

N

Prepared by: KK 06/20/2005
Project Manager: TP RG# G-1874
PWS#: 4100917

Note: Sites and areas noted in this figure are potential sources of contamination to the drinking water as identified by Oregon Drinking Water Protection Staff. Environmental contamination is not likely to occur when chemicals are used managed properly. Numbers indicate potential contaminant sources outlined in Table 2 in the Appendix.

Figure 2-B. City of Vale, Airport Wellfield Potential Contaminant Sources



2000 0 2000 4000 6000 Feet

Scale 1: 24,000

USGS Vale East & Vale West, OR
Quadrangles (part sections)
7.5' Series (Topographic)

Drinking Water Protection Area (DWPA)
1, 2, and 5 Year Time of Travel (TOT)
Analytic Element Method

Potential Contaminant Sources

⊕ **Higher Relative Risk**

▣ **Moderate Relative Risk**

△ **Low Relative Risk**

N

Prepared by: KK 06/20/2005
Project Manager: TP RG# G-1874
PWS#: 4100917

Note: Sites and areas noted in this figure are potential sources of contamination to the drinking water as identified by Oregon Drinking Water Protection Staff. Environmental contamination is not likely to occur when chemicals are used managed properly. Numbers indicate potential contaminant sources outlined in Table 2 in the Appendix.

APPENDIX C - INVENTORY OF POTENTIAL CONTAMINANT SOURCES
VALE, CITY OF - PWS # 4100917
OREGON SOURCE WATER ASSESSMENT

Inventory Results

Table 1. Summary of Potential Contaminant Sources by Land Use

Table 2. Inventory Results - List of Potential Contaminant Sources

Table 3. Results of Regulatory Database Search

Table 4. Short List of PCSs for Surface Water Component of a GWUDI or HC system

Notes for Tables:

Sites and areas identified in these Tables are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

Total number of sources listed in Table 1 in the DWPA may not add up to the total number of potential contaminants sources in Table 2 because more than one type of potential contaminant source may be present at any given facility.

Data collected by Sue Gries Oregon DEQ on 10/26/2004.

Acronyms:

AST - Aboveground Storage Tank
DC - DEQ's Dry Cleaner database
DEQ - Oregon Department of Environmental Quality
DWPA - Drinking Water Protection Area
ECSI - DEQ's Environmental Cleanup Site Information database
HWIMSY - DEQ's Hazardous Waste Information Management System database
LUST - DEQ's Leaking Underground Storage Tank database
NPDES - National Pollution Discharge Elimination System
PCS - Potential Contaminant Source
PWS - Public Water System
SFM - State Fire Marshall's database of hazardous materials
SIS - DEQ's Source Information System database (includes WPCF & NPDES permits)
SWMS - DEQ's Solid Waste Management System database
UST - DEQ's Underground Storage Tank database or Underground Storage Tank
WPCF - Water Pollution Control Facility
WRD - Oregon Water Resources Division database for water rights information

TABLE 1. SUMMARY OF POTENTIAL CONTAMINANT SOURCES BY LAND USE

PWS # 4100917 VALE, CITY OF

Residential/Municipal Land Uses

Potential Contamination Source	Notes	Relative Risk Level	Total in DWPA
Airport - Maintenance/Fueling Area		Higher	1
Apartments and Condominiums		Lower	1
Campgrounds/RV Parks	(1)	Lower	0
Cemeteries - Pre-1945		Moderate	0
Drinking Water Treatment Plants		Moderate	0
Fire Station		Lower	0
Fire Training Facilities		Moderate	0
Golf Courses		Moderate	0
Housing - High Density (> 1 House/0.5 acres)		Moderate	1
Landfill/Dumps	(1)	Higher	0
Lawn Care - Highly Maintained Areas		Moderate	0
Motor Pools		Moderate	0
Parks		Moderate	0
Railroad Yards/Maintenance/Fueling Areas		Higher	0
Schools		Lower	1
Septic Systems - High Density (> 1 system/acre)	(1)	Higher	0
Sewer Lines - Close Proximity to PWS	(1)	Higher	1
Utility Stations - Maintenance Transformer Storage		Higher	0
Waste Transfer/Recycling Stations	(1)	Moderate	0
Wastewater Treatment Plants/Collection Stations	(1)	Moderate	0
Other			0

NOTES:
Sites and areas identified in this Table are only potential sources of contamination to the drinking water.
Environmental contamination is not likely to occur when contaminants are used and managed properly.
(1) - Potential source of microbial contamination
(2) - Drip irrigated crops, such as vineyards and some vegetables, are considered lower risk than spray irrigation
(3) - For groundwater public water systems, septic systems located within the 2-year time-of-travel (TOT) are considered moderate risks.

TABLE 1. SUMMARY OF POTENTIAL CONTAMINANT SOURCES BY LAND USE

PWS # 4100917 VALE, CITY OF

Commercial/Industrial Land Uses

Potential Contamination Source	Notes	Relative Risk Level	Total in DWPA
Automobiles - Body Shops		Higher	0
Automobiles - Car Washes		Moderate	0
Automobiles - Gas Stations		Higher	2
Automobiles - Repair Shops		Higher	1
Boat Services/Repair/Refinishing		Higher	0
Cement/Concrete Plants		Moderate	0
Chemical/Petroleum Processing/Storage		Higher	0
Dry Cleaners		Higher	0
Electrical/Electronic Manufacturing		Higher	0
Fleet/Trucking/Bus Terminals		Higher	1
Food Processing		Moderate	0
Furniture/Lumber/Parts Stores		Moderate	0
Home Manufacturing		Higher	0
Junk/Scrap/Salvage Yards		Higher	3
Machine Shops		Higher	1
Medical/Vet Offices	(1)	Moderate	0
Metal Plating/Finishing/Fabrication		Higher	1
Mines/Gravel Pits		Higher	0
Office Buildings/Complexes		Lower	0
Parking Lots/Malls (> 50 Spaces)		Higher	0
Photo Processing/Printing		Higher	0
Plastics/Synthetics Producer		Higher	0
Research Laboratories		Higher	0
RV/Mini Storage		Lower	0
Wood Preserving/Treating		Higher	0
Wood/Pulp/Paper Processing and Mills		Higher	0
Other: - Maintenance Shop (County)		Higher	1
Other: - Maintenance Shop (State)		Higher	1
Other: - unknown operation		Moderate	1

NOTES:
Sites and areas identified in this Table are only potential sources of contamination to the drinking water.
Environmental contamination is not likely to occur when contaminants are used and managed properly.
(1) - Potential source of microbial contamination
(2) - Drip irrigated crops, such as vineyards and some vegetables, are considered lower risk than spray irrigation
(3) - For groundwater public water systems, septic systems located within the 2-year time-of-travel (TOT) are considered moderate risks.

TABLE 1. SUMMARY OF POTENTIAL CONTAMINANT SOURCES BY LAND USE

PWS # 4100917 VALE, CITY OF

Miscellaneous Land Uses

Potential Contamination Source	Notes	Relative Risk Level	Total in DWPA
Above Ground Storage Tanks - Excluding Water		Moderate	8
Channel Alterations - Heavy		Lower	0
Combined Sewer Outfalls	(1)	Lower	0
Stormwater Outfalls	(1)	Lower	0
Composting Facilities	(1)	Moderate	0
Historic Gas Stations		Higher	0
Historic Waste Dumps/Landfills	(1)	Higher	0
Homesteads - Rural - Machine Shops/Equipment Maintenance		Higher	0
Homesteads - Rural - Septic Systems (< 1/acre)	(1)(3)	Lower	2
Injection/Dry Wells, Sumps - Class V UICs	(1)	Higher	0
Kennels (> 20 Pens)	(1)	Lower	0
Military Installations		Higher	0
Random Dump Sites		Moderate	0
River Recreation - Heavy Use (inc. campgrounds)	(1)	Lower	0
Sludge Disposal Areas	(1)	Moderate	0
Stormwater Retention Basins	(1)	Moderate	0
Transmission Lines - Right-of-Ways		Lower	0
Transportation - Freeways/State Highways/Other Heavy Use Roads		Moderate	1
Transportation - Railroads		Moderate	1
Transportation - Right-Of-Ways - Herbicide Use Areas		Moderate	0
Transportation - River Traffic - Heavy		Lower	0
Transportation - Stream Crossing - Perennial		Lower	0
UST - Confirmed Leaking Tanks - DEQ List		Higher	0
UST - Decommissioned/Inactive		Lower	1
UST - Nonregulated Tanks (< 1,100 gals or Large Heating Oil Tanks)		Higher	0
UST - Not Upgraded and/or Registered Tanks		Higher	0
UST - Upgraded/Registered - Active		Lower	1
UST - Status Unknown		Higher	2
Upstream Reservoirs/Dams		Lower	0
Wells/Abandoned Wells		Higher	0
Large Capacity Septic Systems (serves > 20 people) - Class V UICs	(1)	Higher	0
Construction/Demolition Areas		Moderate	0
Other: - unknown operation		Moderate	1

NOTES:
Sites and areas identified in this Table are only potential sources of contamination to the drinking water.
Environmental contamination is not likely to occur when contaminants are used and managed properly.
(1) - Potential source of microbial contamination
(2) - Drip irrigated crops, such as vineyards and some vegetables, are considered lower risk than spray irrigation
(3) - For groundwater public water systems, septic systems located within the 2-year time-of-travel (TOT) are considered moderate risks.

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4100917 VALE, CITY OF

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
1	Housing - High Density (> 1 House/0.5 acres)	High-Density Housing	Throughout DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Moderate	Improper use, storage, and disposal of household chemicals may impact the drinking water supply. Stormwater run-off or infiltration may carry contaminants to drinking water supply.	Windshield survey completed only - PWS did not participate in inventory.
2	Sewer Lines - Close Proximity to PWS	Sewer Lines	Throughout DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Higher	If not properly designed, installed, and maintained, sewer lines can impact drinking water, especially adjacent to a waterbody or within the 2-year time-of-travel zone for drinking water wells.	Assumed that sewer lines are present - PWS needs to verify.
3	Transportation - Railroads	Railroad	Runs through DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Moderate	Rail transport elevates the risk for leaks/spills of fuel & other haz. materials. Installation/maintenance of tracks may increase erosion & slope failure causing turbidity. Over-application/improper handling of pesticides may impact the water supply.	
4	Transportation - Freeways/State Highways/Other Heavy Use Roads	Highway 20	Runs through DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Moderate	Vehicle use increases the risk for leaks or spills of fuel & other haz. materials. Road building, maintenance & use can increase erosion/slope failure causing turbidity. Over-application or improper handling of pesticides/fertilizers may impact water.	
5	Pesticide/Fertilizer/Petroleum Storage, Handling, Mixing, & Cleaning Areas	Farmers Supply Co-op	550 W. Harrison	Vale	Database (2) Field-Observation	Within the 2-yr TOT.	Higher	Leaks, spills and improper handling of pesticides, fertilizers and petroleum products may impact drinking water source.	
	Above Ground Storage Tanks - Excluding Water						Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4100917 **VALE, CITY OF**

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
6	Automobiles - Gas Stations	Fueling site	West Harrison	Vale	Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of fuels and other materials during transportation, transfer, and storage may impact the drinking water supply.	
7	Metal Plating/Finishing/Fabrication	Tiffany Steel	251 West Street	Vale	Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of solvents, metals, and other chemicals during transportation, use, storage and disposal may impact the drinking water supply.	
8	Automobiles - Repair Shops	MJC Enterprises	West Main	Vale	Database (2) Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of automotive fluids, solvents, and repair materials during transportation, use, storage and disposal may impact the drinking water supply.	
9	Apartments and Condominiums	Apartments	Within 2-year time-of-travel zone	Vale	Field-Observation	Within the 2-yr TOT.	Lower	Improper use, storage, and disposal of household and facility maintenance chemicals may impact the drinking water supply. Stormwater run-off or infiltration may carry contaminants to water supply.	
10	Machine Shops	MB&L Welding and Machine	A Street	Vale	Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of solvents, metals, and other chemicals or materials during transportation, use, storage and disposal may impact the drinking water supply.	
11	Automobiles - Gas Stations	Chevron	Smith Street N.	Vale	Database (2) Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of fuels and other materials during transportation, transfer, and storage may impact the drinking water supply.	
	UST - Upgraded/Registered - Active						Lower	Spills or improper handling during tank filling or product distribution may impact the drinking water supply.	

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(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4100917 VALE, CITY OF

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
12	Fleet/Trucking/Bus Terminals	Malheur County Road Department	Barkley Street	Vale	Database (2) Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of fuels, grease, solvents, and other materials from vehicle service, fueling, and parking areas may impact the drinking water supply.	
	Other - Maintenance Shop (County)						Higher	Spills, leaks, or improper handling of chemicals and other materials during transportation, use, storage, and disposal may impact the drinking water supply.	
13	Other - Maintenance Shop (State)	Oregon Highway Department Maintenance Shop (5-14 Vale)	Barkley Street	Vale	Database (2) Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of chemicals and other materials during transportation, use, storage, and disposal may impact the drinking water supply.	Leaking UST site listed as no further action required.
	Above Ground Storage Tanks - Excluding Water						Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	Leaking UST site listed as no further action required.
14	Schools	High School	Viking Drive	Vale	Field-Observation	Within the 2-yr TOT.	Lower	Over-application or improper handling of cleaning products, pesticides or fertilizers used on the school grounds may impact drinking water. Vehicle maintenance wastes may contribute contaminants.	
15	Homesteads - Rural - Septic Systems (< 1/acre)	Rural Homes	Throughout DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Lower	If not properly sited, designed, installed, and maintained, septic systems can impact drinking water. Use of drain cleaners and dumping household hazardous wastes can result in groundwater contamination.	

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4100917 VALE, CITY OF

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
16	Above Ground Storage Tanks - Excluding Water	Unknown Operation	Highway 20	Vale	Field-Observation	Within the 2-yr TOT.	Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	Unknown operations - needs verification.
	Other - unknown operation						Moderate	The impacts of this potential contaminant source will be addressed during the enhanced inventory.	Unknown operations - needs verification.
17	Crops - Nonirrigated (inc. Christmas trees, grains, grass seed, pasture)	Non-Irrigated Crops	Throughout DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Lower	Over-application or improper handling of pesticides/fertilizers may impact drinking water. Some agricultural practices may result in excess sediments discharging to surface waters, but non-irrigated crops are generally considered to be a low risk.	Location and type of use based on WRD database - needs verification.
18	Above Ground Storage Tanks - Excluding Water	Above Ground Storage Tanks	Stage Road	Vale	Field-Observation	Within the 2-yr TOT.	Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	
19	Other - Irrigation Canal	Irrigation Canal	Runs through DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Moderate	The impacts of this potential contaminant source will be addressed during the enhanced inventory.	
20	Confined Animal Feeding Operations (CAFOs)	Confined Animal Feeding Area	Stage Road	Vale	Field-Observation	Within the 2-yr TOT.	Higher	Improper storage and management of animal wastes and wastewater in areas of concentrated livestock may impact drinking water.	
	Pesticide/Fertilizer/Petroleum Storage, Handling, Mixing, & Cleaning Areas						Higher	Leaks, spills and improper handling of pesticides, fertilizers and petroleum products may impact drinking water source.	
	Above Ground Storage Tanks - Excluding Water						Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4100917 VALE, CITY OF

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
21	Junk/Scrap/Salvage Yards	Scrapyard/private salvage operation	Airport Road	Vale	Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of automotive chemicals, batteries, and other waste materials during storage and disposal may impact the drinking water supply.	Located at a residence.
22	Confined Animal Feeding Operations (CAFOs)	Confined Animal Feeding Operation	Airport and McClay	Vale	Field-Observation	Between 2-yr and 5-yr TOT	Higher	Improper storage and management of animal wastes and wastewater in areas of concentrated livestock may impact drinking water.	
	Confined Animal Feeding Operations (CAFOs)					Within the 2-yr TOT.	Higher	Improper storage and management of animal wastes and wastewater in areas of concentrated livestock may impact drinking water.	
	Pesticide/Fertilizer/Petroleum Storage, Handling, Mixing, & Cleaning Areas					Between 2-yr and 5-yr TOT	Higher	Leaks, spills and improper handling of pesticides, fertilizers and petroleum products may impact drinking water source.	
	Pesticide/Fertilizer/Petroleum Storage, Handling, Mixing, & Cleaning Areas					Within the 2-yr TOT.	Higher	Leaks, spills and improper handling of pesticides, fertilizers and petroleum products may impact drinking water source.	
	Above Ground Storage Tanks - Excluding Water					Between 2-yr and 5-yr TOT	Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	
	Above Ground Storage Tanks - Excluding Water					Within the 2-yr TOT.	Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	
23	Junk/Scrap/Salvage Yards	Scrapyard/private salvage operation	McClay	Vale	Field-Observation	Between 2-yr and 5-yr TOT	Higher	Spills, leaks, or improper handling of automotive chemicals, batteries, and other waste materials during storage and disposal may impact the drinking water supply.	Located at a residence. Many cars present - may also be an auto repair location

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4100917 **VALE, CITY OF**

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
24	Grazing Animals (> 5 large animals or equivalent/acre)	Grazing Animals	Throughout DWPA	Vale	Field-Observation	Between 2-yr and 5-yr TOT	Moderate	Improper storage and management of animal wastes may impact drinking water supply. Concentrated livestock may contribute to erosion and sedimentation of surface water bodies.	
25	Above Ground Storage Tanks - Excluding Water	Scrapyard/private salvage operation	Fullerton	Vale	Field-Observation	Between 2-yr and 5-yr TOT	Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	Located at a residence. May also be an auto repair location.
	Junk/Scrap/Salvage Yards						Higher	Spills, leaks, or improper handling of automotive chemicals, batteries, and other waste materials during storage and disposal may impact the drinking water supply.	Located at a residence. May also be an auto repair location.
26	Other - unknown operation	Unknown Operation	Fullerton	Vale	Field-Observation	Between 2-yr and 5-yr TOT	Moderate	Spills, leaks, or improper handling of chemicals and other materials during transportation, use, storage, and disposal may impact the drinking water supply.	Unknown operations - needs verification.
27	Crops - Irrigated (inc. orchards, vineyards, nurseries, greenhouses)	Irrigated Crop Areas	Small area between 2 and 5-year time-of-travel	Vale		Between 2-yr and 5-yr TOT	Moderate	Over-application or improper handling of pesticides/fertilizers may impact drinking water. Excessive irrigation may transport contaminants or sediments to groundwater/surface water through runoff. Drip-irrigated crops are considered to be a low risk.	Location and type of use based on WRD database - needs verification.

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(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 2. INVENTORY RESULTS - LIST OF POTENTIAL CONTAMINANT SOURCES

PWS# 4100917 VALE, CITY OF

Reference No. (See Figure)	Potential Contaminant Source Type	Name	Approximate Location	City	Method for Listing	Proximity to Sensitive Areas	Relative Risk Level (1)	Potential Impacts	Comments
28	UST - Decommissioned/Inactive	Miller Memorial Airport	Airport Road	Vale	Field-Observation	Within the 2-yr TOT.	Lower	Historic spills or leaks may impact the drinking water supply.	Chevron facility also on site.
	UST - Status Unknown						Higher	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	Chevron facility also on site.
	Airport - Maintenance/Fueling Area						Higher	Spills, leaks, or improper handling of fuels, de-icers, and other chemicals during transportation, use, storage and disposal may impact the drinking water supply.	Chevron facility also on site.
29	Homesteads - Rural - Septic Systems (< 1/acre)	Rural homes	Throughout DWPA	Vale	Field-Observation	Within the 2-yr TOT.	Lower	If not properly sited, designed, installed, and maintained, septic systems can impact drinking water. Use of drain cleaners and dumping household hazardous wastes can result in groundwater contamination.	
30	UST - Status Unknown	Standage Brothers	Airport Road	Vale	Database (2) Field-Observation	Within the 2-yr TOT.	Higher	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	
31	Above Ground Storage Tanks - Excluding Water	Above Ground Storage Tanks	Airport Road	Vale	Field-Observation	Within the 2-yr TOT.	Moderate	Spills, leaks, or improper handling of stored materials may impact the drinking water supply.	
32	Pesticide/Fertilizer/Petroleum Storage, Handling, Mixing, & Cleaning Areas	Beck's Spray Service	Airport Road	Vale	Field-Observation	Within the 2-yr TOT.	Higher	Leaks, spills and improper handling of pesticides, fertilizers and petroleum products may impact drinking water source.	PCS location based on regulatory database search - needs verification.

Note: Sites and areas identified in this Table are only potential sources of contamination to the drinking water. Environmental contamination is not likely to occur when contaminants are used and managed properly.

(1) Where multiple potential contaminant sources exist at a site, the highest level of risk is used.

(2) See Table 3 for database listings (if necessary).

TABLE 3. RESULTS OF REGULATORY DATABASE SEARCH

PWS# 4100917 **VALE, CITY OF**

Reference No. (1)	Name	Database Listings (2)
5	Farmers Supply Co-op	SFM - No Foam Red Top stored in Plastic Bottle, Jug, Bucket
		SFM - Boron Liquid B Flowable stored in Plastic Bottle, Jug, Bucket
		SFM - Thimet 20g stored in Bag
		SFM - Temik 15g stored in Bag
		SFM - Sulfur Flowable Sulfur stored in Other
		SFM - Sonalan Ec stored in Plastic Bottle, Jug, Bucket
		SFM - Sencor 4 Flowable stored in Plastic Bottle, Jug, Bucket
		SFM - Pena Tron Organic Soil stored in Other
		SFM - Manganese Liquid stored in Aboveground Tank
		SFM - Manex Ii stored in Plastic Bottle, Jug, Bucket
		SFM - Gasoline stored in Aboveground Tank
		SFM - Furadan 4f stored in Plastic Bottle, Jug, Bucket
		SFM - Dithane F-45 stored in Plastic Bottle, Jug, Bucket
		SFM - Diesel Fuel #2 stored in Aboveground Tank
		SFM - Diesel Fuel #1 Low Sulfur stored in Aboveground Tank
		SFM - Counter 20 Cr stored in Bag
		SFM - Bravo 720 stored in Plastic Bottle, Jug, Bucket
		SFM - Potato Seed Treater Ps stored in Bag
8	MJC Enterprises	SFM - Waste Oil stored in Aboveground Tank
		SFM - Antifreeze stored in Can
		SFM - Lead Acid Batteries-wet stored in Other
		SFM - Motor Oil stored in Tank Inside Building

Notes: (1) See Table 2 and Figure. (2) For State Fire Marshals (SFM) list, information on materials in a gaseous-form is not presented since gaseous compounds rarely pose a threat to groundwater or surface water.

TABLE 3. RESULTS OF REGULATORY DATABASE SEARCH

PWS# **4100917** **VALE, CITY OF**

Reference No. (1)	Name	Database Listings (2)
11	Chevron	SFM - Gasoline Unleaded stored in Underground Tank
		UST list with a status of 4 UST(s) upgraded and 0 not upgraded to DEQ 1998 technical standards.
		SFM - Diesel Fuel stored in Underground Tank
12	Malheur County Road Department	UST list-PWS needs to verify tank permit status
		LUST cleanup initiated on 11/16/1998. PWS should verify cleanup progress.
		SFM - Antifreeze stored in Steel Drum
		SFM - Fuel Oil #1 stored in Steel Drum
		SFM - Hydraulic Fluid stored in Steel Drum
		SFM - Krovar 1 Herbicide stored in Bag
		SFM - Motor Oil stored in Steel Drum
		SFM - Waste Motor Oil stored in Steel Drum
		SFM - Windshield Washer Fluid stored in Plastic Or Non-metallic Drum
13	Oregon Highway Department Maintenance Shop (5-14 Vale)	UST list-PWS needs to verify tank permit status
		SFM - Waste Oil stored in Aboveground Tank
		SFM - Motor Oil stored in Steel Drum
		SFM - Krovar stored in Bag
		SFM - Diesel Fuel stored in Aboveground Tank
		LUST list with unknown status
		SFM - Antifreeze stored in Plastic Or Non-metallic Drum
28	Miller Memorial Airport	SFM - Gasoline stored in Aboveground Tank
		SFM - Stove Oil (diesel Fuel) stored in Aboveground Tank

Notes: (1) See Table 2 and Figure. (2) For State Fire Marshals (SFM) list, information on materials in a gaseous-form is not presented since gaseous compounds rarely pose a threat to groundwater or surface water.

TABLE 3. RESULTS OF REGULATORY DATABASE SEARCH

PWS# 4100917 **VALE, CITY OF**

Reference No. (1)	Name	Database Listings (2)
28	Miller Memorial Airport	UST list-PWS needs to verify tank permit status
30	Standage Brothers	UST list-PWS needs to verify tank permit status
32	Beck's Spray Service	ECSI site with a confirmed release.

Notes: (1) See Table 2 and Figure. (2) For State Fire Marshals (SFM) list, information on materials in a gaseous-form is not presented since gaseous compounds rarely pose a threat to groundwater or surface water.

TABLE 4. SHORT LIST OF POTENTIAL CONTAMINANT SOURCES FOR SURFACE WATER COMPONENT OF A GWUDI OR HC SYSTEM

	Potential Contamination Source	Relative Risk Level For Surface Water
Residential/Municipal Land Uses		
	Campgrounds/RV Parks	Moderate
	Landfill/Dumps	Higher
	Septic Systems - High Density - > 1/Acre	Moderate
	Sewer Lines - Close Proximity to PWS	Moderate
	Waste Transfer/Recycling Stations	Higher
	Wastewater Treatment Plants/Collection Stations	Higher
Commercial/Industrial Land Uses		
	Boat Services/Repair/Refinishing	Higher
	Medical/Vet Offices	Lower
Agricultural/Forest Land Uses		
	Auction Lots	Higher
	Boarding Stables	Higher
	Concentrated/Confined Animal Feeding Operations (CAFOs)	Higher
	Grazing Animals - > 5 Large Animals or Equivalent/Acre	Higher
	Lagoons/Liquid Wastes	Higher
	Land Application Sites	Higher
	Others (List)	
	- Irrigation Canal	Higher
Miscellaneous Land Uses		
	Combined Sewer Outfalls	Higher
	Stormwater Outfalls	Higher
	Composting Facilities	Higher
	Historic Waste Dumps/Landfills	Higher
	Homesteads - Rural - Septic Systems < 1/Acre	Lower
	Injection Wells/Drywells/Sumps - Class V UICs	Moderate
	Kennels - > 20 Pens	Moderate
	River Recreation - Heavy Use (inc. Campgrounds)	Moderate
	Sludge Disposal Areas	Higher
	Stormwater Retention Basins	Higher
	Transportation Corridors - Stream Crossing - Perennial	Higher
	Wells/Abandoned Wells	Moderate
	Large Capacity Septic Systems -Class V UIC (serves >20)	Moderate
	Permitted Discharges - NPDES	Higher

Notes:

GWUDI - acronym for groundwater under the direct influence of surface water. Groundwater is recharged in part from a surface water source and where conditions are such that pathogens such as giardia lamblia are proven or likely to travel from nearby surface water into the groundwater source.

HC - acronym for groundwater in hydraulic connection with surface water i.e. is recharged in part from a surface water source

MAIH 50010

Not Washington St Well — Example for Gladys on

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)
Instructions for completing this report are on the last page of this form.

RECEIVED DEC 13 1995 WATER RESOURCES DEPT. SALEM, OREGON

(START CARD) # W66033

(1) OWNER: Well Number
Name Winfield & Loretta Page
Address 590 N 15th St
City Vale State OR Zip 97918

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 26 ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10"	0	18	Bentonite			400 lbs
6"	18	26				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1	26	.250	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) 26'

(7) PERFORATIONS/SCREENS:
☒ Perforations Method Torch
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
21	26	1/8x6	30	6"		☒	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☒ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
15	0		1 hr.

Temperature of water 56° Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Malheur Latitude Longitude
Township 18 N or (S) Range 45 (E) or W. WM.
Section 20 NW 1/4 SW 1/4
Tax Lot 400a Lot 7 Block 10 Subdivision
Street Address of Well (or nearest address) 596 N 15th St Vale OR 97918

(10) STATIC WATER LEVEL:
10 ft. below land surface. Date 11-12-95
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 18'

From	To	Estimated Flow Rate	SWL
12	26	15	10

(12) WELL LOG:
Ground Elevation

Material	From	To	SWL
Top Soil	0	6	
Brown Sandy Clay	6	12	
Gravel	12	26	10

Date started 11-10-95 Completed 11-12-95

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 1470
Signed Dennis Page Date 12-7-95

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

MALH
51259

Vale Well #1

(START CARD) # 63826

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L14931

Name City of Vale
Address 252 B Street West
City Vale State Oregon Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☐ No Depth of Completed Well 33 ft.
Explosives used ☐ Yes ☐ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12"	0	36	Bentonite	1	18	850 #

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other pour
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18	.250	☒	☐	☒	☐
	8	28	33	.250	☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____
☒ Screens Type Johnson Material S.S

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.100			PIPE	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75 TO 100	—	28	1 hr.

Temperature of water _____ Depth Artesian Flow Found _____
Was a water analysis done? ☐ Yes By whom _____
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County Malheur Latitude _____ Longitude _____
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 NW 1/4 NW 1/4
Tax Lot 7100 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon

(10) STATIC WATER LEVEL:

8 ft. below land surface. Date 8.27.97
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 8'

From	To	Estimated Flow Rate	SWL
8	26	75 TO 100	8

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
top soil	0	2	
hard pan	2	4	
silty clay	4	8	
gravel & sand	8	26	
blue clay	26	36	

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JUN 08 1999
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 8.27.97 Completed 8.28.97

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1500

Signed Dave Johnson Date 6.7.99

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number _____

MALH
51258

Vale well #2

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

(START CARD) # W 63824

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L14933

Name City of Vale

Address 252 B Street West

City Vale State Oregon Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger

☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 33 ft.

Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
~~12"~~	~~0~~	~~33~~	~~Bentonite~~			~~1100 lb~~
12"	0	33	BENTONITE	0	18	1100 LBS

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☒ Other pour

Backfill placed from ____ ft. to ____ ft. Material _____

Gravel placed from ____ ft. to ____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18		☒ .322	☐	☒	☐
	8"	28	33		☒ .322	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____

☒ Screens Type Johnson Material S.S.

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.100		8"	pipe	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75	—	30	1 hr.

Temperature of water _____ Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County Malheur Latitude _____ Longitude _____

Township 18 N or (S) Range 45 (E) or W. WM.

Section 31 NW 1/4 NW 1/4

Tax Lot 7100 Lot _____ Block _____ Subdivision _____

Street Address of Well (or nearest address) 3800 Airport Rd Vale

(10) STATIC WATER LEVEL:

9 FT ft. below land surface. Date 8-29-97

Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 16'

From	To	Estimated Flow Rate	SWL
16	26	75	9

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
Top soil	1	2	
hard pan	2	3	
Silty clay	3	16	
Gravel	16	26	
BLUE CLAY	26	33	

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JUN 09 1999
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 8-29-97 Completed 8-29-97

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1500

Signed Dan Ackerson Date 6-7-99

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number _____

MALH
51257

Vale Well # 3

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

(START CARD) # 63825

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L-14932

Name City of Vale
Address 252 B Street West
City Vale State Oregon Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 37 ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12"	0	[illegible]	Bentonite			750 #
12"	0	37	BENTONITE	1	18	750 LBS

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other pour
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	28	[illegible]	☒ .322	☐	☒	☐
		28	33	[illegible]	☒ .322	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☐ Perforations Method
☒ Screens Type Johnson Material S.S

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.100		8"	pipe	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75		30	1 hr.

Temperature of water Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:

County Malheur Latitude Longitude
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 NW 1/4 NW 1/4
Tax Lot 7100 Lot Block Subdivision
Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon

(10) STATIC WATER LEVEL:

8.5 ft. below land surface. Date 8-29-97
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 15

From	To	Estimated Flow Rate	SWL
15	25	75 TO 100	8.5

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Top Soil & silty clay	0	15	
Gravel & Sand	15	25	
Blue Clay	25	36	

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JUN 09 1999
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 8-29-97 Completed 8-29-97

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1500
Signed Dave Adamson Date 6-7-99

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number

MALH
51260

Vale well # 4
WELL I.D. # L 14936
START CARD # 1163803

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)
Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L14936
Name City of Vale
Address 252 B Street West
City Vale State Oregon Zip 97918

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 33 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12	0	33	Bentonite	1	18	1150 #

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other pour
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18	.322	☒	☐	☒	☐
	8"	28	33	.322	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) None

(7) PERFORATIONS/SCREENS:
☐ Perforations Method _____
☒ Screens Type _____ Material _____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.100		8"	PIPE	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump Yield gal/min	☐ Bailer Drawdown	☒ Air Drill stem at	☐ Flowing Artesian Time
100-125		25	1½ hr.

Temperature of water _____ Depth Artesian Flow Found _____
Was a water analysis done? ☐ Yes By whom _____
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:
County Malheur Latitude _____ Longitude _____
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 SW 1/4 NE 1/4
Tax Lot 7100 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon

(10) STATIC WATER LEVEL:
9 ft. below land surface. Date 11.19.97
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found 16'

From	To	Estimated Flow Rate	SWL
16	25	100-125	9

(12) WELL LOG:
Ground Elevation _____

Material	From	To	SWL
Silty clay w/small gravel	0	13	
Silty clay	13	16	
gravel	16	25	9
Blue clay	25	38	

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JUN 09 1999
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 11.19.97 Completed 11.23.97

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number 1500
Signed Dave Ackerson Date 6.7.99

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number _____
Signed _____ Date _____

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

malh
51522

MALH 51522

Vale Well # 5

WELL I.D. # L 23044

START CARD # W113190

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number _____

Name City of Vale

Address 252 B Street W

City Vale State Oregon Zip 97918

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger

☐ Other _____

(4) PROPOSED USE:

☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☒ Yes ☐ No Depth of Completed Well 31.5 ft.

Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12	0	31.5	Bentonite	0	12	550 #
			Silica Sand 6-9	12	28.5	1150 #

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☒ Other over bore / pour

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	13.5	322	☒	☐	☒	☐
	8"	23.5	28.5	322	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) none

(7) PERFORATIONS/SCREENS:

☐ Perforations Method _____

☒ Screens Type Nagaoka Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
13.5	23.5	.040		8"	pipe	☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75			1 hr.

Temperature of water _____ Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County Malheur Latitude _____ Longitude _____

Township 18 N or (S) Range 45 (E) or W. WM.

Section 31 _____ 1/4 _____ 1/4

Tax Lot SW Lot NE Block _____ Subdivision _____

Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon 97918

(10) STATIC WATER LEVEL:

6' 7½" ft. below land surface. Date 6-21-00

Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 12'

From	To	Estimated Flow Rate	SWL
12	22	75	7½ FT

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
Brown clay silt	0	12	
Clay & gravel	12	22	
blue clay & gravel	22	31.5	

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JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 6-21-00 Completed 6-21-00

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number _____

Signed _____ Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1714

Signed Dave Adamson Date 7-12-00

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

malh 51524

MALH 51524

Vale Well #6

WELL I.D. # L 42111

START CARD # W113191

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L42111

Name City of Vale

Address 252 B. Street W

City Vale State Oregon Zip 97918

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD:

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger

[ ] Other

(4) PROPOSED USE:

[ ] Domestic [ ] Community [ ] Industrial [ ] Irrigation

[ ] Thermal [ ] Injection [ ] Livestock [X] Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:

Special Construction approval [X] Yes [ ] No Depth of Completed Well 35 ft.

Explosives used [ ] Yes [X] No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12"	0	35	Bentonite	0	16	750 #
			Silica Sand	16	35	1200 #

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E

[X] Other overbore / poured

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	18	.322	[X]	[ ]	[X]	[ ]
	8"	28	35	.322	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
Liner:					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

[ ] Perforations Method

[ ] Screens Type Wagoka Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
18	28	.040		8"	pipe	[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

(8) WELL TESTS: Minimum testing time is 1 hour

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75		24 ft	1 hr.

Temperature of water Depth Artesian Flow Found

Was a water analysis done? [ ] Yes By whom

Did any strata contain water not suitable for intended use? [ ] Too little

[ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Malheur Latitude Longitude

Township 18 N or (S) Range 45 E or (W) WM.

Section 31 SW 1/4 NE 1/4

Tax Lot 7100 Lot Block Subdivision

Street Address of Well (or nearest address) 3800 Airport Rd Vale, Oregon 97918

(10) STATIC WATER LEVEL:

6' 6" ft. below land surface. Date 6-22-00

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 18'

From	To	Estimated Flow Rate	SWL
18	24½	75 GPM	6½'

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Clay silt	0	10	
clay silt	10	18	
black & brown gravel & sand	18	24.5	6' ½"
blue clay	24.5	35	

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JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

Date started 6-22-00 Completed 6-22-00

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1714

Signed Dave Adamson Date 7-10-00

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

MALH 51523

malh
51523

Vale Well # 7
WELL I.D. # L 42112
START CARD # W113192

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)
Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number L-42112
Name City of Vale
Address 252 B Street W
City Vale State Or Zip 97918

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☒ Other Hydrogeologic

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☒ Yes ☐ No Depth of Completed Well 35 ft.
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
12	0	35	Bentonite	0	13.5	800 #
			Silica Sand	13.5	35	900 #

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other overbore / poured
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	8"	+2	13.5	322	☒	☐	☒	☐
	8"	23.5	35	322	☒	☐	☒	☐
Liner:					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
☐ Perforations Method
☒ Screens Type Wagooka Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
13.5	23.5	.040		8"	pipe	☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
100		24	1 hr.

Temperature of water Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Malheur Latitude Longitude
Township 18 N or (S) Range 45 (E) or W. WM.
Section 31 SW 1/4 NE 1/4
Tax Lot 7100 Lot Block Subdivision
Street Address of Well (or nearest address) 3800 Airport Rd
Vale, Oregon 97918

(10) STATIC WATER LEVEL:
7.5 ft. below land surface. Date 6-23-00
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 13'

From	To	Estimated Flow Rate	SWL
13	23	100	7½'

(12) WELL LOG:
Ground Elevation

Material	From	To	SWL
Clay silt	0	10	
Clay silt	10	13	
Gravel & dark color sand	13	23	7½
Blue clay	23	35	

RECEIVED
JUL 17 2000
WATER RESOURCES DEPT.
SALEM, OREGON

Date started Completed

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 1714
Signed Dave Adamson Date 7-10-00

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

Appendix L
Rhinehart Reservoir Inspection

Clear Water Robotics LLC

P.O. Box 1601
Nampa, Idaho 83653
Email: clearwaterrobotics@gmail.com

Pamela Jenks (208) 866-5186
David Kroon (724) 602-3992

Reinhart Tank
Inspection Report

Prepared for:
Terry Harris
City of Vale Water Dept.
252 B St West
Vale OR 97918

Date of Inspection
Oct. 11, 2011

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Tank Dimensions.....3

Inspection Personnel.....3

Condition Range.....3

Summary.....4

Exterior Tank Inspection.....5

Interior Tank Inspection.....6

Appendix..... 8

Tank Dimensions:

Diameter.....65'
Height.....10'
Top hatch.....24" x 24" square

Inspectors

Inspector #1: David Kroon, Operations Manager
Inspector #2: Brian Jenks

Condition Range	Recommend
Very Poor	Needs to be replaced
Poor	Needs to be repaired or replaced
Acceptable	Monitor regularly
Good	No action needed
Very Good	No maintenance needed
New or Excellent	Nothing needed

Summary: Good

The Reinhart tank is on the side of a hill. The inside floor of the tank is scattered with quite a bit of rubble that our robotic cleaning machine would be unable to pick up. There is a pole close to the overflow pipe that has also crusted over. The man hatch is so corroded it could never be opened. The bracket is almost rusted through. There is a lot of debris floating on top of the water in the tank, as well as piles of chlorine on the floor. A crack shows up on the inside wall and other cracks are showing on the outside walls. Recoating, cleaning, and replacing metal parts should be budgeted in the next year or two.

Exterior Tank Inspection

Tank Foundation: Acceptable

This tank has an acceptable foundation. It's a good idea to place a barrier with weed protection around the perimeter of the tank so bush and weed roots don't infiltrate the tank walls. There's a place on top of the tank that has been repaired adequately.

Perimeter Fence: N/A

Roof Access Hatch: Good (see Appendix: 1)

The access hatch has a 24" x 24" square cover. It is concrete with a locked cover, which prevents access to the water.

Roof Vent: Good (see Appendix: 2)

The vent screen is on and in good condition.

Access Road: Good

The access road was a well maintained dirt road that led up to the tank with a house at the end of it.

Interior Tank Inspection

Fill Pipe/Outlet Pipe: Good (see Appendix: 3)

This pipe is in good condition, showing some rust. I suggest an inspection every 3-5 years to make sure it doesn't get worse.

Floor: Acceptable (see Appendix: 4 and 7)

The floor has a layer of Sediment 1/2" across most of the floor. It also has a lot of debris on the floor that doesn't look like it came from the ceiling. Also amongst the sediment are small piles of chlorine that have solidified.

Walls: Good (see Appendix: 9)

The walls show small cracks in some areas. These cracks aren't very large and neither are they deep. Monitor in the next 3-5 years to see if they have grown.

Ladder: Good (see Appendix: 5)

The ladder is in great condition and adequate for its job.

Ceiling: Good (see Appendix: 6)

No problems visible with the ceiling.

Overflow Pipe: Good (see Appendix: 8)

This pipe is in good condition with minimal amounts of rust.

Man Hatch: Very Poor (see Appendix: 10)

The man hatch is so extremely rusted that it doesn't look like it will open at all anymore. It has no effect on the tank, but you won't be able to access the tank through this anymore.

Appendix

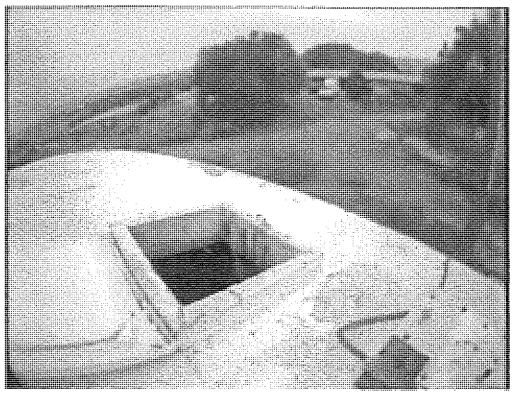
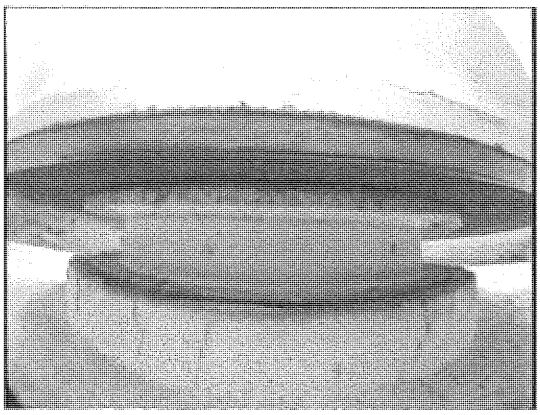


Figure 1



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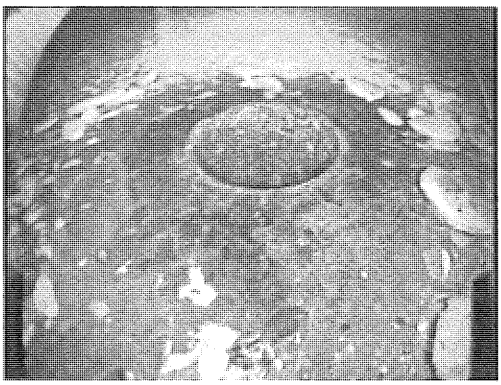

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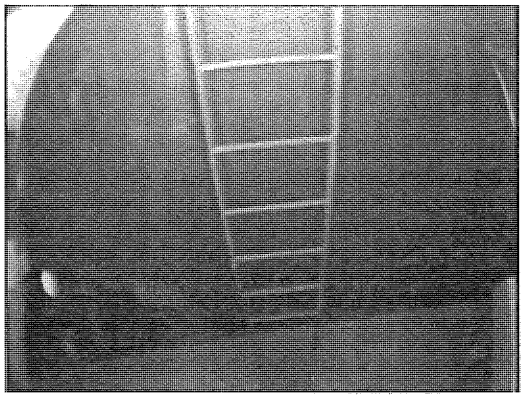

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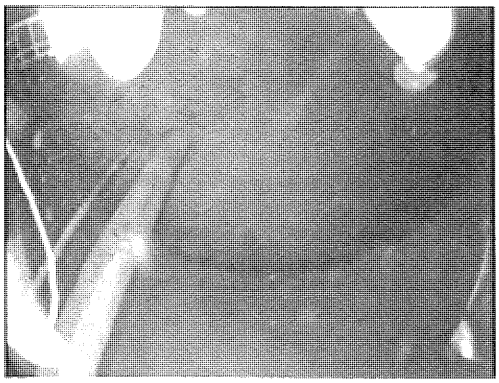

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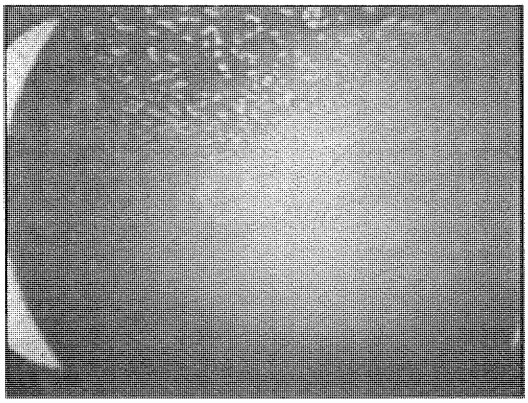


Figure 6

Appendix

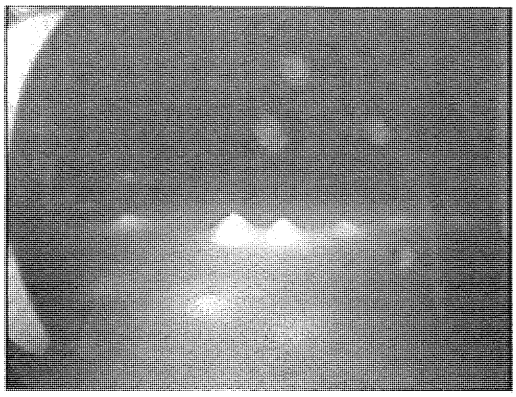


Figure 7

Figure 8

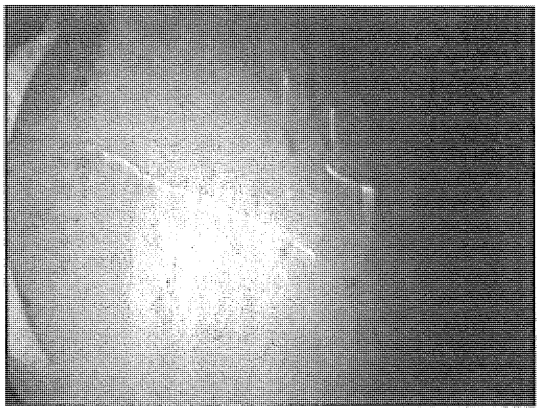


Figure 9

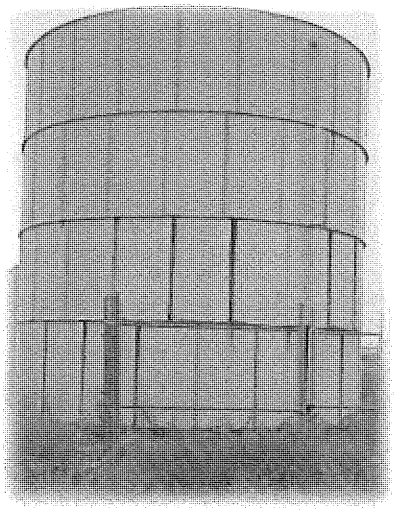
Figure 10

Appendix M
Airport Reservoir Inspection

Clear Water Robotics LLC

P.O. Box 1601
Nampa, Idaho 83653
Email: clearwaterrobotics@gmail.com

Pamela Jenks (208) 866-5186
David Kroon (724) 602-3992



Vale Airport Tank Inspection Report

Prepared for:
Terry Harris
City of Vale Water Dept.
252 B St West
Vale OR 97918

Date of Inspection
Oct. 11, 2011

Table of Contents

Tank Dimensions.....3

Inspection Personnel.....3

Condition Range.....3

Summary.....4

Exterior Tank Inspection.....5

Interior Tank Inspection.....6

Appendix.....8

Tank Dimensions:

Diameter.....25'

Height.....35'

Top hatch.....30" x 30"

Inspectors

Inspector #1: David Kroon, Operations Manager

Inspector #2: Brian Jenks

Condition Range	Recommend
Very Poor	Needs to be replaced
Poor	Needs to be repaired or replaced
Acceptable	Monitor regularly
Good	No action needed
Very Good	No maintenance needed
New or Excellent	Nothing needed

Summary: Poor

This tank is in poor condition due to all the rust that is occurring inside and outside. Outside, most of the seams below the water level are rusting over, indicating leaks coming from the inside. Inside, a lot of the metal is breaking down from being submerged in the water. It might be good to talk to the manufacturer of the tank about the leaks.

The pipes inside are safe, but the flanges are deteriorating. The roof is rusted over pretty heavily, causing concern about the ceiling's strength. This tank needs to be fixed pretty soon, as there are several places it could fail. Recommend budgeting for a work maintenance program for this tank in the coming year.

Exterior Tank Inspection

Tank Foundation: Acceptable (see Appendix: 1)

I suspect that this tank's foundation may not be in the best of conditions. Since the tank is leaking on the outside, the constant dampness may have weakened the foundation.

Perimeter Fence: Good (see Appendix: 2)

A locked chain link 6' perimeter fence with barbed wire on top provides sufficient security for this property.

Roof Access Hatch: Good (see Appendix: 2)

The access hatch has a 30" x 30" square cover. It is in good condition with trace amounts of rust. With the lock on the hatch and the fence, this prevents most unwanted people from accessing the water.

Roof Vent: Good (see Appendix: 3)

The vent is a pipe that is on top of the roof. It is in good condition with slight amounts of rust.

Access Road: Good

The access road to this facility is a small dirt inlet that is just off the road that goes around the airport.

Interior Tank Inspection

Fill Pipe/Outlet Pipe: Poor (see Appendix: 4 and 5)

The fill and outlet pipe are combined into one, and the flange holding it to the floor is heavily rusted over. Needs to be replaced.

Floor: Good (see Appendix: 6 and 7)

The floor has a layer of Sediment 1/4" across most of the floor and a lot of debris from the ceiling.

Walls: Poor (see Appendix: 8)

The walls show discoloration on the seams. On the outside where the seams are, there is a lot of rust indicating that this tank is leaking. Something should be done to fix this before becomes a larger problem.

Ceiling: Poor (see Appendix: 9)

The ceiling is partially rusted over, and it looks like some of it might be pitting. There is some debris on the floor that has fallen from the ceiling. As of right now, the roof's integrity is weakened.

Overflow: Acceptable (see Appendix: 7, 11, and 12)

This pipe goes up and above the water level. The flanges down at the bottom of the pipe are almost as rusted as the ones with the fill pipe. The brackets holding it against the wall are in fairer condition.

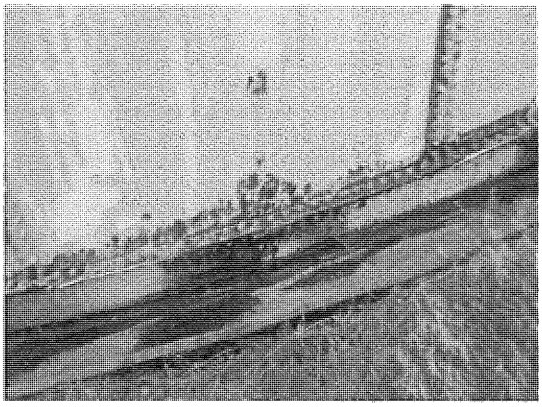
Man Hatch: Good (see Appendix: 13)

The man hatch is in good condition with barely any rust on it.

Center Column: Good (see Appendix: 14)

The center column is in good condition and its connection to the floor is sturdy.

Appendix



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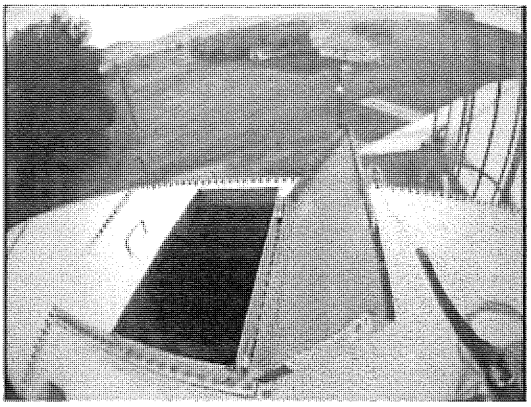

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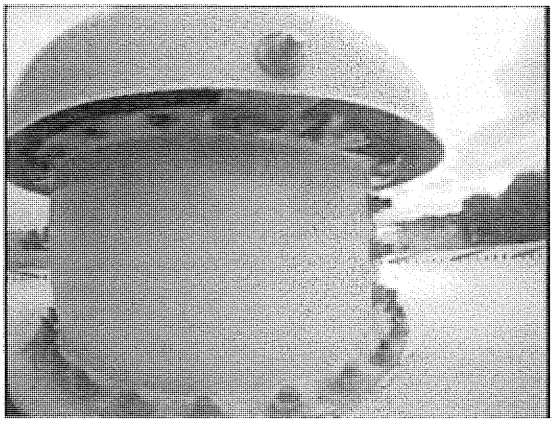

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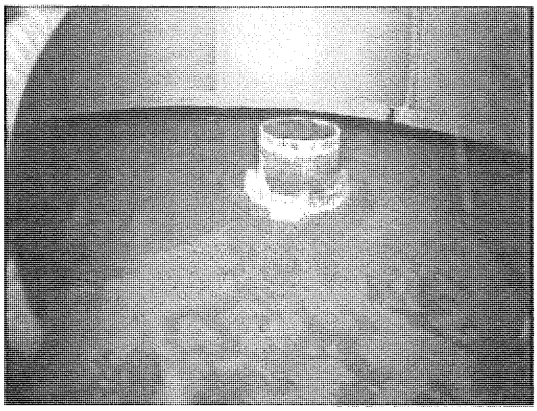

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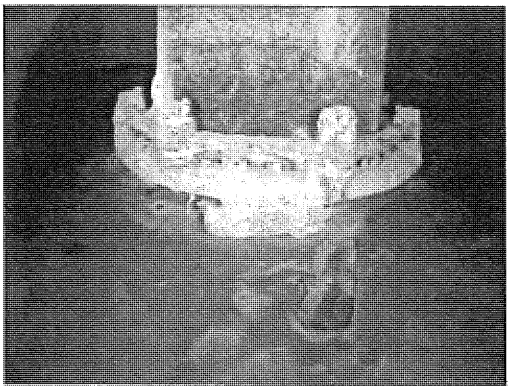

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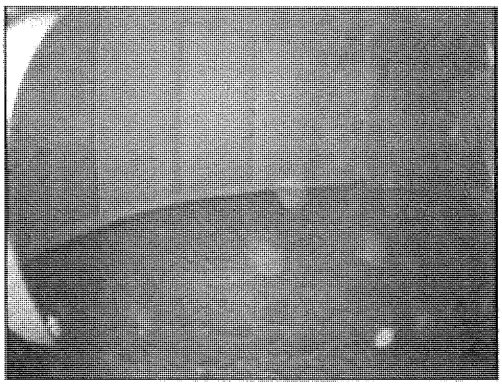

Figure 6

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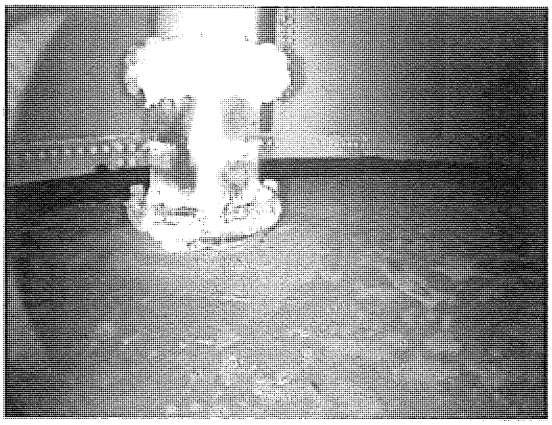

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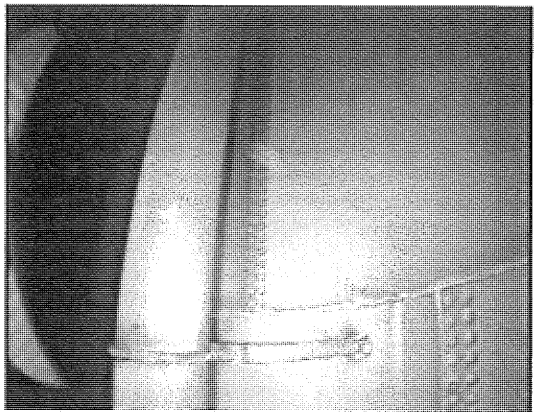

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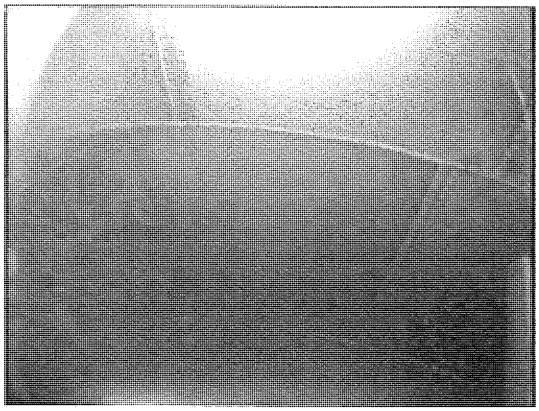

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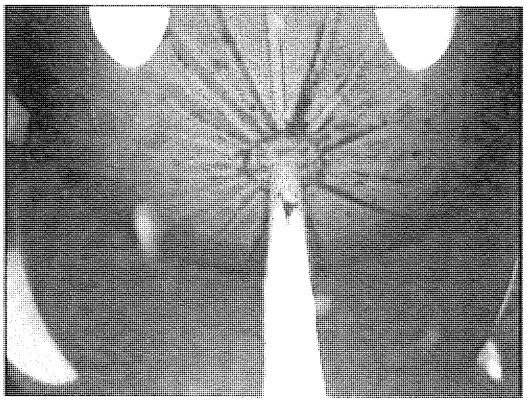

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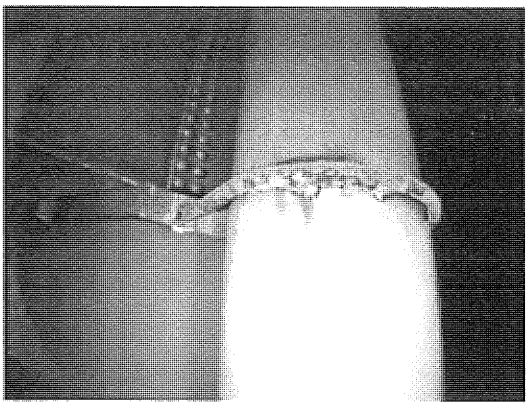

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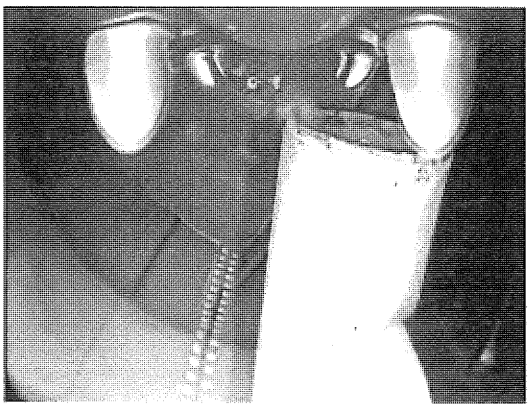

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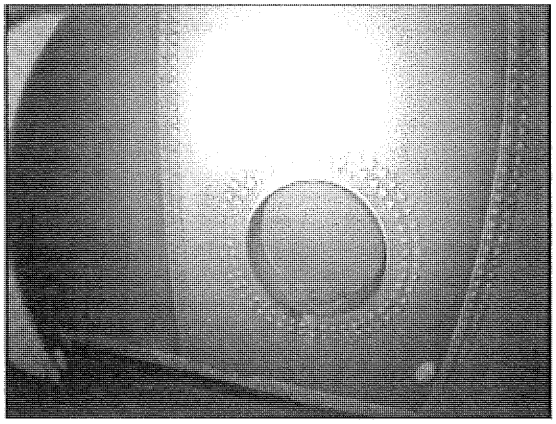

Figure 13

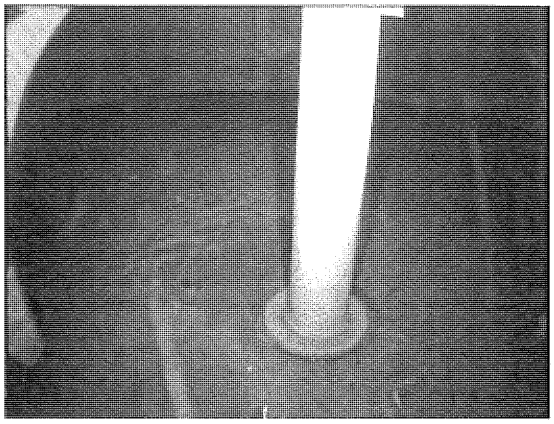

Figure 14

Appendix N
City Resolutions No. 99-13 and 14.04

RESOLUTION NO. 99-13

A RESOLUTION AGREEING TO ADJUST WATER RATES

WHEREAS, Section 4.2.14 of Title IV (Health and Sanitation) of the City Code states that water rates shall be revised by resolution of the City Council; and

WHEREAS, the City of Vale has made application for certain grants and loans administered by the Oregon Economic Development Department to improve the municipal water supply and distribution system and;

WHEREAS, such loans and grants require that the City of Vale adopt a rate structure that eliminates the descending water rate structure to encourage conservation and;

WHEREAS, such loans and grants require that the City of Vale adopt water rates to adequately cover expenses associated with the meter and service line repair/replacement program, including equipment and personnel costs;

WHEREAS, such loans and grants require that the City of Vale adopt water rates to adequately cover operation, maintenance, debt reserve, and equipment replacement of the improved water system,

WHEREAS, the majority of water services on the City water system are for single family residences or dwelling units, and these provide the major portion of the revenue required for operation and maintenance of the water system;

WHEREAS, the Council considers it in the best interest of the City that all water rates be determined on a basis that is relative to the minimum monthly fee assessed to a single family residence or dwelling unit or ERU;

WHEREAS, the Equivalent Residential Unit (ERU) has been calculated using the average residential monthly consumption for the months of November, January and February of the 1998-1999 winter season. That consumption averaged 9,000 gallons;

WHEREAS, the Council considers it in the best interest of the city that the charged rate be related to the volume of water consumed;

WHEREAS, each monthly base rate shall include 3000 gallons of water; and

WHEREAS, the Council considers it in the best interest of the city to permit accounts which will have significant increases in the number of base rates to petition to the City Coordinator to phase in this increase;

NOW AND THEREFORE, BE IT RESOLVED THAT THE COMMON COUNCIL OF THE CITY OF VALE OREGON:

Section 1. Effective 1 January 1, 2000 Vale Municipal consumption will be billed at the following rate:

(A) SINGLE FAMILY UNITS. Each single family unit shall pay a minimum base rate of $28.22. This comprises charges for:

Administration	$3.71
Fire	$2.12
Operations and Maintenance	$12.39
Debt service or loan repayment	$10.00

Each base rate shall include 3,000 gallons of water.

(B) MULTIPLE UNITS. Two or more dwellings, including mobile homes and each unit of an apartment building that is connected to a single meter shall pay for each dwelling unit the monthly minimum base rate. The volume charges for water use shall be apportioned equally to each dwelling unit unless the individual owners of the dwellings file with the City Coordinator a written agreement approved by the City that designates a different method of apportioning the charges.

(C) BUSINESS BUILDINGS. The monthly minimum base rate shall be assessed each business occupant in a building and obtaining water from a common meter. The volume of water shall be charged as provided as with MULTIPLE UNITS. If separate meters exist for each business occupant, the charges will be calculated as a SINGLE FAMILY RESIDENCE.

(D) COMMERCIAL, INDUSTRIAL AND PUBLIC FACILITIES. The ERUs will be calculated using the average consumption of the individual firm for the months of November, January and February divided by 9,000. This calculation will determine the number of base rates to be paid by the firm or public entity.

(E) MIXED USE ACCOUNTS. Any accounts which are a combination of more than one of the above shall be charged a rate reasonably apportioned among the rates identified in sections (A) through (D).

In the case where four or more residences or businesses share a common meter, a single administration fee will be assessed. Accounts which are facing a significant increase in the number base rates as a result of calculating the base rate on the ERU formula may petition the City Coordinator to phase in this increase with the first increase in the number of base rates to be taken with the rate increase, the second increase July 1, 2000, and a third increase, should this be necessary, January 1, 2001.

Section II:

Consumption rates will be billed for each base rate on the following scale:

0-3,000 gallons	Included with base rate
4,000-10,000 gallons	$1 per 1,000 gallons
11,000-30,000 gallons	$1.25 per 1,000 gallons
31,000-50,000 gallons	$1.50 per 1,000 gallons

*All consumption above 50,000 gallons will be charged at a rate of $2.00 per 1,000 gallons

ADOPTED BY THE COMMON COUNCIL OF THE CITY OF VALE, this 14 day of September, 1999 by the following vote:

Voting for the resolution: Winters, Ingram, Tolman, Hawkins
Council Members: _____

Voting against the resolution: _____
Council Members: _____

Absent and not voting: Silence
Council Members: _____

APPROVED by the Mayor September 28, 1999

DUANE McPHEETERS
MAYOR

Attest:

Steven M. Bogart
City Coordinator

RESOLUTION NO. 14.04

A RESOLUTION INCREASING AND RESTRUCTURING UTILITY SYSTEM RATES

WHEREAS, the Vale City Code, section 4.2.14 (a) authorizes the City Council to set utility rates by resolution, and

WHEREAS, it is necessary to increase the fees for City provided utilities to fulfill financial management, Auditor requests and Community Develop Block Grant requirements, and

WHEREAS, it is necessary to designate a Commercial Business Use (CBU) account billing for Commercial Businesses separate from Residential Units, to promote stability in business account management and provide a more stable business billing system, and

NOW AND THEREFORE, BE IT RESOLVED BY THE COMMON COUNCIL OF THE CITY OF VALE OREGON:

The city provided utility base rate and consumptive rates shall be increased annually each year on July 1 an amount equal to the annual Consumer Price Index (CPI) as published on January 1 of each year by the United States Bureau of Labor and Statistics. This rate increase will take effect with the July utility billing.

Commercial Business Account base rates will utilize a newly established Commercial Business Use (CBU) of 7000 gallons of usage as a billing unit to serve as a replacement to the ERU computation. This newly established rate structure will take effect with the July utility billing.

ADDOPTED BY COMMON COUNCIL OF THE CITY OF VALE, this 27 day of May, 2014, by the following vote:

Voting for the resolution: Cm. Johnson moved, Cm Fanotelli seconded
Johnson, Fanotelli, Williams

Voting against the resolution: _____

Absent or Abstaining: Cm Seals, Cm Hratt

Approved by the Mayor May 27, 2014

Attest: _____
Lynn Findley, City Manager

_____
Mike McLaughin, Mayor