CLACKAMAS RIVER WATER
BOARD OF COMMISSIONERS
REGULAR MEETING & EXECUTIVE SESSION
Held at 16770 SE 82nd Dr.
September 8, 2016
AGENDA
6:00 pm Regular Board Meeting

Clackamas River Water

Please sign the attendance sheet. Members of the public are welcome to speak for a maximum of three minutes. Public comment provided at the *beginning* of the agenda will be reserved for comment on agenda items, special presentations, letters and complaints. Public comment as listed at the *end* of the agenda will be for the purpose of "wrapping up" any remaining concerns.

REGULAR MEETING @ 6:00 p.m.

Call to Order, Pledge of Allegiance and Roll Call – *Ken Humberston, Board Secretary*

a. Approval of the Agenda

Public Comment (*see blue box at the top of the agenda)*

Action Item

1. **Riverside Park Restroom Temporary Closure-** *Todd Heidgerken, General Manager*
2. **Declaration of Surplus Property-** *Todd Heidgerken, General Manager*
3. **Intake Repair Project Acceptance-** *Joe Eskew, Engineering Manager*
4. **Approval of Hardship Leak Adjustment Program and Rates-** *Carol Bryck, Chief Financial Officer*

Consent Agenda

CA-1: **Gross Payroll and Accounts Paid:** August 2016- *Carol Bryck, Chief Financial Officer*

CA-2: **Cash Position and Transfers:** August 2016- *Carol Bryck, Chief Financial Officer*

Informational Reports

5. Debt Covenant Compliance Reporting- *Carol Bryck, Chief Financial Officer*
6. Management Report – *Todd Heidgerken, General Manager*
7. Public Comment *(see blue box at the top of the agenda)*

Commissioner Business

8. Commissioner Reports and Reimbursements

Adjourn

Next Page

EXECUTIVE SESSION begins immediately follow the Regular Board meeting

1. Discuss information or records that are exempt by law from public inspection pursuant to ORS 192.660 (2) (f) and 192.502 (9)
2. Consult with counsel concerning the legal rights and duties of a public body with regard to current litigation or litigation likely to be filed pursuant to ORS 192.660 (2) (h)

The meeting location is accessible to persons with disabilities. A request for accommodations for persons with disabilities should be made at least 48 hours before the meeting to Adora Campbell (503) 722-9226.

Agenda Item – 1

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

Approval of the Riverside Park Temporary Closure

DRAFT MOTION	I move the Board to approve the temporary closure of the restrooms at Riverside Park until the facilities can be brought up to ADA compliance.
EFFECTIVE DATE	September 8, 2016

PRINCIPAL STAFF PERSON Todd Heidgerken, General Manager

BOARD ACTION REQUESTED The Board will be asked to approve closing of the Park Restrooms until repairs can be made to bring the facilities into compliance with ADA standards

DOCUMENTS ATTACHED

Agenda Summary

BACKGROUND

CRW owns property along the Clackamas River located below the Water Treatment Plant known as Riverside Park. . This property is used as a park facility that is open to the public. Riverside Park is currently used by the Clackamas Little League for baseball, softball and concession stands through a permit of entry agreement with the District. In addition Riverside Park includes a no charge boat ramp that is used by the public year round and houses a property shed where equipment is housed for the Clackamas County Sheriff River Patrols.
CRW has an obligation to provide safe and sanitary facilities since the property is open to the general public. The current CRW Budget includes $50,000 for improvements to the restroom facilities.

The District and other public entities have had immunity from tort liabilities associated with recreational use of the lands as result of "recreational immunity". A recent Oregon Supreme Court ruling has undermined this immunity and so public entities that provide property for recreational use are being encouraged to review risk management strategies. Based on advice from Special District's Association of Oregon and our insurance carrier recommended risk management strategies include:

- Document your facility inspections and make repairs as noted from the inspections.
- If you cannot fix an issue right away, consider closing or shutting down the area or activity until repairs are made"

A recent inspection of the Riverside Park facility noted issues with the restrooms. It is because of this know deficiency that staff is asking the Board to take action to temporarily close the park restrooms until repairs can be made. In the meantime, temporary facilities will be available for use by park patrons

STAFF RECOMMENDATION

Approve closing the Riverside Park restrooms temporarily until the r repairs can be made to make it operation and bring the facility into compliance.

Agenda Item – 2

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

Declaration of surplus property for Fiscal Year (FY) 2016-17

DRAFT MOTION	I move the Board approve the listing of surplus property for FY 16/17 to be disposed of in accordance with Oregon Statutes and Local Contract Review Board Rules
EFFECTIVE DATE	September 8, 2016

PRINCIPAL STAFF PERSON	Todd Heidgerken, General Manager
BOARD ACTION REQUESTED	The Board will be asked to approve a list of CRW property to be declared surplus
DOCUMENTS ATTACHED	List of surplus property

Agenda Summary

BACKGROUND

CRW Board Policy provides for the disposal of surplus or unusable property in in accordance with Oregon Statutes and Local Contract Review Board Rules (180-011). Annually, staff generates a list of items that are either sold, donated or otherwise disposed of pursuant to Board Policy

ANALYSIS

OPTIONS

STAFF RECOMMENDATION

Approve the list of property to be declared surplus to allow for it to be disposed.

CRW FY 15/16 Surplus list for Board Approval

Rolls of flooring material

Shelf

Cubicle parts

Desk

Metal bench

Doors

Horizontal boring/pushing machine

Shelf parts

Sign

"Redi-Line" electric generator

Scaffold feet & poles, (METAL FRAME FOR 20'X20' EVENT CANOPY, some pieces are bent due to wind damage)

Large blue tarp (TOP COVER FOR ABOVE 20'X20' EVENT CANOPY)

Signs

Cubicle parts

Filing cabinets

Overhead light fixtures

Barriers

Bench grinder

Folding office chairs (2x)

Chemical cabinet

Filing cabinet

4' DI flange

Service truck light-bars (2x)

Plastic sheeting

Controller box for service truck light-bars (2x)

Laptops

CAD software discs

Pallets

Surveyor 600e Scanner with firewire card (2006)

HP Design Jet 1055cm plus Plotter with 4 spindles (2003)

Knap Heide – Knap Kap, approximately 7'x6'x2.5' (fit late model F-250)

Work Master – Gem Top, Approximately 6.5'x5' 8"x 2' 2" (fit late model Toyota T-100)

Knack Mfg. – Weather Guard – 338 Pack Rat, Approximately 4'x3' 3.5"x 1"

Fostoria – 46"-48" Overhead Infrared Heater Model: OCH-46-SS (Not for indoor residential use)

IT Surplus List For 2016

2- Printer

1. HP LaserJet 4050N
2. Super G3

10 monitors

1. I-INC
2. I-INC
3. I-INC
4. Princeton
5. CTX
6. CTX
7. CTL
8. Dell
9. Dell
10. View Sonic

1-box of computer peripherals

Mouse, keyboards, desktop speakers, iPad keyboards, printer heads.

Agenda Item – 3

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

SUBJECT	**Intake repair project acceptance**
DRAFT MOTION	I move that the Board accept the Water Treatment Plant Intake Repair Project, No. CIP 14-5173 and execute the "Notice of Acceptance" establishing the project completion date as September 8, 2016.
EFFECTIVE DATE	September 8, 2016
PRINCIPAL STAFF	Joseph D. Eskew – Engineering Manager
BOARD ACTION	Board to Accept Completed Construction Project
DOCUMENTS ATTACHED	Notice of Acceptance Exhibit A - Project Summary
RELATED STATUTES/RULES	LCRB Rules; ORS 279C.

Agenda Summary

BACKGROUND

The Water Treatment Plant (WTP) Intake Repair Project installed approximately 110 cubic yards of rock armor to repair scour erosion at the easterly intake structure and outlet pipe. A void in the concrete inlet structure was also repaired with grout.

The project work was accomplished by transferring stone from the shore to a barge mounted hopper prior to placing the stone underwater. Underwater grout work was performed by pumping grout into prepositioned grout bags within the void.

PUBLIC INVOLVEMENT

Army Corp of Engineers and Oregon Division of State Lands Permitting process included public notice and opportunity for comments. No comments were received.

ANALYSIS

All work was constructed on time and within budget. The project met permit requirements for in-water work and the contractor complied with CRW contract requirements and standards.

STAFF RECOMMENDATION

Staff recommends the Board review and approve the Notice of Acceptance for the WTP Intake Repair project.

Notice of Acceptance

The Clackamas River Water Board of Commissioners hereby accepts the work constructed in connection with the Water Treatment Plant Intake Repair, Project No. CIP 14-5173, on this 8th day of September, 2016. Acceptance of this project by the Board shall not constitute acceptance of any work not in accordance with the Contract Documents, nor shall it relieve the Contractor of his continuing obligation for work guarantee for one (1) year after the above date.

Clackamas River Water

_____

Ken Humberston
Board Secretary

Clackamas River Water

EXHIBIT A
PROJECT SUMMARY

Project Name:	WTP Intake Repair, CIP 14-5173
Project Location:	Clackamas River Intakes, 9100 SE Mangan Drive, Clackamas, OR
Project Funding Source:	Capital Improvement Funds
Contract Amount:	Design: Budget - $45,500, Final - $36,224.58 Construction (Lump Sum Contract): $118,700.00
Project Type:	River scour repair and rock revetment construction
Project Scope:	a. Repair damaged concrete at upstream intake structure. b. Install rock armor to protect outlet pipe from upstream intake.
Construction Schedule:	Notice to Proceed issued July 25. Project was substantially complete on August 5, 2016
Construction Duration:	Approximately 2 weeks in water beginning July 25
Contractor:	Advanced American Construction, Portland, OR
Permitting Agency(s):	Army Corp of Engineers, Division of State Lands (DSL)
Public Impact Anticipated:	Recreational river users were diverted away from construction activity with signage and temporary fencing and flagging.
Principal Staff:	Joseph D. Eskew PE, Engineering Manager

Agenda Item – 4

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

SUBJECT	Approval of Leak Adjustment Program and Rate
DRAFT MOTION	I move to authorized the General Manager to implement a Leak Adjustment Program and establish a leak adjustment rate of $1.50 per CCF.
EFFECTIVE DATE	September 8, 2016
PRINCIPAL STAFF PERSON	Carol Bryck, CFO
BOARD ACTION REQUESTED	Approve Leak Adjustment Program and Rate
DOCUMENTS ATTACHED	

Agenda Summary

BACKGROUND

Water systems age and with age comes the need for maintenance and repairs. Customers' water lines experience the same need for maintenance and may develop leaks that temporarily go undetected causing large water bills. After the leak is repaired, CRW has offered help to our customers for the temporary water loss through credits on their water bill.

The April 1, 2001 leak relief policy was suspended by Board action during fiscal year 2012-13 as a cost saving measure. Current practice requires customers to pay for every unit of water, with relief provided by using the block 2 rate rather than block 3 or 4, the conservation rates, for the estimated units of water loss due to the leak.

We provided leak relief to 143 accounts during fiscal year 2015-16 for $32,800 reduction in revenue. The average adjustment was $230.

ANALYSIS

Establishing a Leak Adjustment Program and a leak adjustment rate will provide a standard practice to our customers that experience significant water loss due to a leak in their system.

An approach is to create a leak adjustment rate that is applied to water used above the customary usage for that property. Staff is proposing a leak adjustment rate of $1.50 per CCF. The rate is intended to recover CRW's base costs while providing relief to customers from their high water bills.

An additional component of the plan includes a payment plan for customers to help pay off the balance over time. Typically plans are over six months but longer terms may apply depending on the customer's ability to pay and size of the leak. We require customers to remain current on their bi-monthly bill.

This will be effective September 9, 2016 and applied to customers' accounts requesting leak relief.

Future changes to the leak adjustment rate will occur annually and be included in the Fees & Charges ordinance presented for Board consideration.

OPTIONS

1. Authorized the General Manger to implement a Leak Adjustment Program and Rate as presented
2. Authorized the General Manger to implement a Leak Adjustment Program and Rate as amended
3. Do nothing
4. Request additional information

STAFF RECOMMENDATION

Option 1 – authorized the General Manager to implement a Leak Adjustment Program and Rate as presented

CLACKAMAS RIVER WATER

Consent Agenda Item – CA-1

REGULAR BOARD MEETING

September 8, 2016

SUBJECT	**Gross Payroll and Accounts Paid**

DRAFT MOTION	I move to approve the consent agenda as presented.
EFFECTIVE DATE	September 8, 2016

PRINCIPAL STAFF PERSON	
BOARD ACTION REQUESTED	Approve the consent agenda items.
DOCUMENTS ATTACHED	1) Earnings Statements for August 2016 Payrolls – 2 payrolls - $238,846.39 2) Monthly Check History for August 2016 - $571,157.95 (net)

WEEK 31 BATCH 1461 52 PAYS
0 Employees With Overflow Statement
0 Overflow Statement 1 Total Statement
Tot Cks/Vchrs:00000000028 Total Pages:00000000031 - Page count not applicable for iReports

	First No.	Last No.	Total
Checks:	ADPCHECK	ADPCHECK	00000000000
Vouchers:	00000310001	00000310052	00000000028
Sequence #	00000000001	00000000052	

Earnings Statement

SEAT 312 TOTAL DOCUMENT
CLACKAMAS RIVER WATE
LOCATION 0001

CHECK STUFFING, RECONCILIATION

121231.34	GROSS
75951.53	NET PAY (INCLUDING ALL DEPOSITS)
13676.67	FEDERAL TAX
7397.26	SOCIAL SECURITY
1730.02	MEDICARE
.00	MEDICARE SURTAX
.00	SUI TAX
7399.82	STATE TAX
.00	LOCAL TAX
91027.57	DEDUCTIONS
.00	NET CHECK

SEAT COMPANY CODE 312
CLACKAMAS RIVER WATE
TOTAL DOCUMENT
LOCATION 0001

NON-NEGOTIABLE - VOID - NON-NEGOTIABLE
NON-NEGOTIABLE - VOID - NON-NEGOTIABLE
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WEEK 33 BATCH 2780 47 PAYS
0 Employees With Overflow Statement
0 Overflow Statement 1 Total Statement
Tot Cks/Vchrs:00000000027 Total Pages:00000000030 - Page count not applicable for iReports

	First No.	Last No.	Total
Checks:	ADPCHECK	ADPCHECK	00000000001
Vouchers:	00000330001	00000330046	00000000026
Sequence #	00000000001	00000000047	

Earnings Statement

SEAT 312 TOTAL DOCUMENT
CLACKAMAS RIVER WATE
LOCATION 0001

CHECK STUFFING, RECONCILIATION

117615.05	GROSS
72527.53	NET PAY (INCLUDING ALL DEPOSITS)
13170.25	FEDERAL TAX
7168.94	SOCIAL SECURITY
1676.56	MEDICARE
.00	MEDICARE SURTAX
.00	SUI TAX
7124.35	STATE TAX
.00	LOCAL TAX
87735.07	DEDUCTIONS
739.88	NET CHECK

SEAT COMPANY CODE 312
CLACKAMAS RIVER WATE
TOTAL DOCUMENT
LOCATION 0001

NON-NEGOTIABLE - VOID - NON-NEGOTIABLE
NON-NEGOTIABLE - VOID - NON-NEGOTIABLE
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MONTHLY CHECK HISTORY LISTING

CLACKAMAS RIVER WATER

8/1/2016 TO 8/31/2016

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
83933	08/02/2016	02663 ACCENT SIGNS, LLC	EMPLOYEE NAME PLATE W/ MAGNETIC BACK -	16-7-131	13.40	13.40
83934	08/02/2016	00267 ALEXIN ANALYTICAL INC	SUNRISE WATER AUTHORITY - Q2 DBP'S	26557	560.00	560.00
83935	08/02/2016	01639 BENEFIT HELP SOLUTIONS	VOLUNTARY PAYROLL DEDUCTION- 07/08/2016	07/08/2016	629.15	
			VOLUNTARY PAYROLL DEDUCTION- 07/22/2016	07/22/2016	629.15	1,258.30
83936	08/02/2016	00227 CLACKAMAS GARBAGE CO INC	TRASH REMOVAL SERVICE	JULY 2016	309.76	309.76
83937	08/02/2016	00519 COLONIAL LIFE	AUGUST VOLUNTARY PAYROLL DEDUCTION	7793862-0805202	69.76	69.76
83938	08/02/2016	02617 DELUXE FOR BUSINESS	DBA RETAIL DEPOSIT TICKET BOOKS	2037473507	55.55	55.55
83939	08/02/2016	03218 DIRECT TRANSPORT INC	BOARD PACKET MATERIALS	166283	75.77	75.77
83940	08/02/2016	00125 ENCORE GRAPHIC	A/P CHECK STOCK	07/27/2016	310.00	310.00
83941	08/02/2016	03212 EVOQUA WATER TECHNOLOGIES, LLC	ANNUAL DI WATER SYSTEM MAINTENANCE	902713585	367.00	367.00
83942	08/02/2016	01751 FASTRAK SOFTWORKS INC.	PLC WORKSHOP FOR SIEMENS 505	17940	840.00	840.00
83943	08/02/2016	00120 FEDEX	EASEMENT DOCUMENTS -	5-481-12614	41.34	
			EASEMENT DOCUMENTS -	5-488-51158	33.54	74.88
83944	08/02/2016	00284 GREYHOUND LINES INC	SHIPPING OF GIARDIA/CRYPTOSPORIDIUM SAMPLE	5092696	103.45	103.45
83945	08/02/2016	00138 MILWAUKIE, CITY OF	6201 SE LAKE RD - HARMONY SURFACE WATER	24352000 06/20-07/20	136.43	136.43
83946	08/02/2016	00013 NW NATURAL	NATURAL GAS - OYER DRIVE	863832-2 07/26/16	18.75	18.75
83947	08/02/2016	00273 OFFICE MAX INC	OFFICE SUPPLIES FY16-17	597248	44.68	
			OFFICE SUPPLIES FY16-17	574533	39.01	83.69
83948	08/02/2016	00255 OGFOA	FY 2017 - MEMBERSHIP: BRYCK, JAEGER, MATTHEWS, SYPE	59-176,949,292,111	420.00	420.00
83949	08/02/2016	00079 ONE CALL CONCEPTS INC.	UTILITY LOCATE CALLS - JULY 2016	6070525	595.35	595.35
83950	08/02/2016	00048 OREGON CITY, CITY OF	JUNE 2016 STORMWATER MGMT, PAVEMENT MAIN	06/30/2016	16.60	16.60
83951	08/02/2016	00021 PGE	ELECTRICITY - HARMONY RD	346794-5 07/26/16	541.75	541.75
83952	08/02/2016	02833 PROCOM TECHNOLOGIES, LLC	INSTALL ANTENNA AT WTP	22264	299.95	299.95

MONTHLY CHECK HISTORY LISTING

CLACKAMAS RIVER WATER

8/1/2016 TO 8/31/2016

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
83953	08/02/2016	00229 RICOH USA, INC.	COPIER LEASE #3331841 07/25/16-08/24/16	97256993	442.10	
			COPIER LEASE #3208751 07/25/16-08/24/16	97256990	415.85	857.95
83954	08/02/2016	00229 RICOH USA, INC.	ADDITIONAL COPIES 06/27/16-07/26/16	5043529162	182.89	182.89
83955	08/02/2016	02210 SPECIALTY CONTROLS INC	(1) AUMA SAR10.2/GS80.3/AM ELECTRIC	5493	325.00	325.00
83956	08/02/2016	00030 SUNRISE WATER AUTHORITY	CITY RES SURFACE WATER 06/08/16-07/08/16	021695-000 07/26/16	112.00	112.00
83957	08/02/2016	01959 US BANK	JUNE 2016 MERCH FEES	JUNE 2016	2,762.19	2,762.19
83958	08/02/2016	00130 WASTE MANAGEMENT OF OREGON	JULY - TRASH REMOVAL SERVICES	8551632-1574-9	791.38	
			JULY - TRASH REMOVAL SERVICES	8551633-1574-7	415.44	1,206.82
83959	08/02/2016	00110 WATER ENVIRONMENT SERVICES	SURFACE WATER AT 16770 SE 82ND DRIVE	03-05879-01 JUL 2016	194.00	
			SURFACE WATER AT MATHER RD	03-14578-01 JUL 2016	136.50	330.50
83960	08/02/2016	02373 WORLD CUP COFFEE & TEA SERVICE	COFFEE AND TEA SUPPLIES	12505	413.61	413.61
83961	08/02/2016	03106 WRIGHT IMAGING	JULY 2016 PROCESSING & POSTAGE	4188774	390.36	390.36
83962	08/02/2016	00304 CANTEL SWEEPING	REFUND RECEIPT #: 002953	REF000173227	1,177.63	1,177.63
83963	08/02/2016	03105 EASTSIDE PAVING	REFUND RECEIPT #: 003006	REF000173228	1,177.30	1,177.30
83964	08/02/2016	03636 ESI	REFUND RECEIPT #: 002813	REF000173226	1,200.00	1,200.00
83965	08/02/2016	03637 COLLEEN MACKIN	REFUND RECEIPT #: 002956	REF000173229	1,860.58	1,860.58
83966	08/09/2016	03251 AMERCIAN MESSAGING	PAGING SERVICE: AUGUST - OCTOBER 2016	W4102729QH	19.56	19.56
83967	08/09/2016	01639 BENEFIT HELP SOLUTIONS	ADMIN FEES - JULY 2016 - ANNUAL ENROLLMENT	0211040-IN	375.00	375.00
83968	08/09/2016	00336 CITISTREET - STATE OF OREGON	VOLUNTARY PAYROLL DEDUCTION	PR 08/05/2016	1,939.18	1,939.18
83969	08/09/2016	02127 CLACKAMAS RIVER WATERPROVIDERS	PROJECT PARTICIPATION - 1ST QTR FY 2015-16	1ST QTR FY 2016-17	20,814.00	20,814.00
83970	08/09/2016	02774 COMPASS LAND SURVEYORS, INC.	CURTIS COURT WATERLINE REPLACEMENT, CIP	39498	4,285.00	4,285.00
83971	08/09/2016	00008 CONSOLIDATED SUPPLY CO.	CONSOLIDATED SUPPLY	S7845854.001	56.70	56.70
83972	08/09/2016	03495 CROSS CONCRETE	CONCRETE WORK - WO# 16-0054	16-0054	750.00	750.00
83973	08/09/2016	02856 CRYSTAL GREENS LANDSCAPING	LANDSCAPING & MAINTENANCE - JULY 2016	66349	4,524.00	4,524.00

MONTHLY CHECK HISTORY LISTING

CLACKAMAS RIVER WATER

8/1/2016 TO 8/31/2016

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
83974	08/09/2016	03218 DIRECT TRANSPORT INC	BOARD PACKET MATERIALS	167048	94.70	94.70
83975	08/09/2016	01844 FERGUSON ENTERPRISES INC	INVENTORY / REPAIR PARTS	526930	308.73	308.73
83976	08/09/2016	00073 FIRST RESPONSE INC.	AUGUST 2016 MO. MONITORING/PATROL SVCS	144539	2,919.32	2,919.32
83977	08/09/2016	00017 H D SUPPLY WATERWORKS LTD	FIRE HYDRANT - 5500-06 AND 5500-42	F892612	4,797.52	
			1.5 CORP. - CC X CU	F845182	142.68	4,940.20
83978	08/09/2016	00127 ICMA RETIREMENT TRUST- 457	VOLUNTARY PAYROLL DEDUCTION	PR 08/05/2016	100.00	100.00
83979	08/09/2016	00095 ING	VOLUNTARY PAYROLL DEDUCTION	PR 08/05/2016	2,104.86	2,104.86
83980	08/09/2016	02284 K & D SERVICES OF OREGON INC	FLAGGING SERVICES	0000535	490.38	490.38
83981	08/09/2016	02181 KONECRANES KCI INC	ANNUAL HOIST INSPECTION AND REPAIR	POR01118095	1,270.65	1,270.65
83982	08/09/2016	00239 NATIONWIDE RETIRE. SOLUTION	VOLUNTARY PAYROLL DEDUCTION	PR 08/05/2016	300.00	300.00
83983	08/09/2016	00373 OREGON AFSCME	UNION DUES	PR 08/05/2016	881.54	881.54
83984	08/09/2016	00029 OREGON PERS	PERS PMT: #976708, 976945, 978143, 97840	02761 07/22-08/01/16	60,392.11	60,392.11
83985	08/09/2016	00021 PGE	ELECTRICITY - MANGAN WAY & WATER AVE	264573-1 08/05/16	128.98	128.98
83986	08/09/2016	00071 PUBLIC WORKS SUPPLY INC.	SAFETY SUPPLIES AND EQUIPMENT	76877	58.47	58.47
83987	08/09/2016	02534 RAPID-TEK	AVG CLOUDCARE SUBSCRIPTION LICENSE	CRW00077	6,000.00	6,000.00
83988	08/09/2016	00229 RICOH USA, INC.	COPIER LEASE #2997657 08/27/16-09/26/16	97283418	432.00	432.00
83989	08/09/2016	00023 STEIN OIL CO INC	FUEL	CL16758	808.55	808.55
83990	08/09/2016	03638 KIRK STOTT	REFUND RECEIPT #: 003003	REF000173300	532.68	532.68
83991	08/09/2016	03394 TEAM ELECTRIC COMPANY	INSTALLATION OF TANK OVERFLOW	16802	510.00	510.00
83992	08/09/2016	00107 UNITED SITE SERVICES INC	PORT-A-POTTY SERVICE AND RENTAL	114-4256771	30.00	
			PORT-A-POTTY SERVICE AND RENTAL	114-4256768	30.00	
			PORT-A-POTTY SERVICE AND RENTAL	114-4256767	30.00	
			PORT-A-POTTY SERVICE AND RENTAL	114-4256766	30.00	120.00
83993	08/09/2016	01959 US BANK	JULY 2016 MERCH FEES	JULY 2016	2,838.74	
			VISA	07/25/16 - VOYLES	1,073.28	

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
			VISA	07/25/2016 -KOEBOUNN	838.83	
			VISA	07/25/16 - HOLZGANG	252.36	
			VISA	07/25/15 - CUMMINGS	58.33	
			VISA	07/25/16 - HEIDGERKE	23.27	5,084.81
83994	08/09/2016	03146 WE CLEAN EVERYTHING INC	JULY 2016 CLEANING	22060	2,628.50	2,628.50
83995	08/16/2016	01681 ADVANCED AMERICAN CONSTRUCTION	WTP INTAKE REPAIR	7405	56,382.50	56,382.50
83996	08/16/2016	00092 AIRGAS USA INC	UNIFORM CLOTHING	9053928005	204.55	204.55
83997	08/16/2016	00164 CENTURYLINK	PHONE SERVICES (AUGUST 05 - SEPT. 5, 2016	503Z050025 8/5/2016	2,258.06	2,258.06
83998	08/16/2016	00164 CENTURYLINK	PHONE SERVICES #77563747	1383739702	16.63	16.63
83999	08/16/2016	00200 CLACKAMAS COUNTY	TWO WORK CREWS - JULY 2 AND 16, 2016	44366	800.00	800.00
84000	08/16/2016	00188 CLARK'S LAWN & GARDEN EQ., LLC	EQUIPMENT MAINTENANCE & PURCHASES	217245	89.67	
			EQUIPMENT MAINTENANCE & PURCHASES	217243	89.01	
			EQUIPMENT MAINTENANCE & PURCHASES	217244	54.01	232.69
84001	08/16/2016	02555 COMCAST	MONTHLY CABLE INTERNET 08/14-09/14/16	2099723 08/14-09/13	199.85	199.85
84002	08/16/2016	02774 COMPASS LAND SURVEYORS, INC.	DESIGN SURVEY: BUTTERFIELD LN TRANSMISSION	39493	745.00	745.00
84003	08/16/2016	03504 ENTERPRISE FLEET MANAGEMENT	CUST#488054 TRUCK LEASE 08/01/16-08/31/16	FBFN3071166	1,945.72	1,945.72
84004	08/16/2016	00073 FIRST RESPONSE INC.	RESPONSE TIME OVERAGE	144673	36.00	36.00
84005	08/16/2016	00011 HACH COMPANY	TUBING TBG .193OD .063ID +/-.002	9909791	336.94	336.94
84006	08/16/2016	03473 HASA INC	SODIUM HYPOCHLORITE - HIGH PURITY FILTER	498182	4,059.60	4,059.60
84007	08/16/2016	02284 K & D SERVICES OF OREGON INC	K&D SERVICES	766	715.26	715.26
84008	08/16/2016	03568 LEGGETT ASPHALT INC	LEAK REPAIR #2204-0256	16-159	2,490.00	
			INSTALL PAVING #16-0054	16-163	1,180.00	
			INSTALL PAVING #16-0080	16-161	965.00	
			LEAK REPAIR #2214-0236	16-162	962.50	
			INSTALL PAVING #16-0078	16-160	627.50	6,225.00
84009	08/16/2016	00133 LES SCHWAB TIRE CENTERS INC	BRAKE ROTORS - #15-200	22700354097	77.95	77.95
84010	08/16/2016	02776 LORD & ASSOCIATES, INC.	LEAK REPAIR #2204-0256	30647	536.50	

MONTHLY CHECK HISTORY LISTING

CLACKAMAS RIVER WATER

8/1/2016 TO 8/31/2016

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
			SERVICE REPLACEMENT 2214-0256	30648	388.50	
			VALVE MAINTENANCE #2204-0236	30635	314.00	
			INSTALL 17-0002	30634	222.00	1,461.00
84011	08/16/2016	00012 METEREADERS LLC	METER READING SERVICE IN AUGUST	7605	4,860.00	4,860.00
84012	08/16/2016	01196 METRO	HAZARDOUS WASTE DISPOSAL	2496	99.00	99.00
84013	08/16/2016	00138 MILWAUKIE, CITY OF	EQUIPMENT & VEHICLE MAINT.	201607286519	3,811.47	3,811.47
84014	08/16/2016	03283 MINUTEMAN PRESS TEAM	"INFO REQUESTED" DOOR HANGERS	81074	330.17	330.17
84015	08/16/2016	00273 OFFICE MAX INC	OFFICE SUPPLIES FY16-17	643821	167.33	
			OFFICE SUPPLIES FY16-17	724037	127.26	294.59
84016	08/16/2016	00048 OREGON CITY, CITY OF	PUMPING CHARGES	JULY 2016	2,874.10	2,874.10
84017	08/16/2016	00021 PGE	ELECTRICITY - YEOMAN RD	363246-9 08/04/16	304.71	304.71
84018	08/16/2016	02534 RAPID-TEK	CONTRACT WORK	CRW00076	3,740.00	
			AVG ANTIVIRUS SOFTWARE LICENSE FOR SCADA	CRW100001	800.00	
			COMPUTER PERIPHERALS	CRW100002	678.85	5,218.85
84019	08/16/2016	03548 RIVER CITY ENVIRONMENTAL INC	INSTALL #16-0084	182240	877.50	
			VALVE MAIN. #2204-0236	182957	877.25	
			LEAK #2204-0256	182930	852.50	
			LEAK #2204-0256	183442	596.75	3,204.00
84020	08/16/2016	03593 SHANNON & WILSON INC	SUBTASK 3: SPRINGWATER RD. SOIL CHARACTE	19113	727.50	
			SUBTASK 2: S. POTTER RD. & BUTTERFIELD L	19113	639.00	
			SUBTASK 1: REDLAND RESERVOIR SOIL CHARAC	19113	232.50	1,599.00
84021	08/16/2016	00024 SOUTH FORK WATER BOARD	WATER PURCHASED	JULY 2016	94,374.71	94,374.71
84022	08/16/2016	00023 STEIN OIL CO INC	FUEL	CL17030	724.32	724.32
84023	08/16/2016	00282 TERMINIX INTERNATIONAL INC	PEST CONTROL SERVICES - CUST#1703011 -	357189119	87.00	
			PEST CONTROL SERVICES - CUST#1703007 -	357187979	75.00	162.00
84024	08/16/2016	01959 US BANK	JULY 2016 - CUSTOMER ANALYSIS	JULY 2016 - BANK FEE	2,989.26	
			VISA	07/25/16 - DELORENZO	380.70	3,369.96
84025	08/16/2016	02247 WHA INSURANCE AGENCY INC	SAFETY CONSULTING SERVICES APRIL-MAY-JUN	WHA-08092016	770.83	770.83

MONTHLY CHECK HISTORY LISTING

CLACKAMAS RIVER WATER

8/1/2016 TO 8/31/2016

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
84026	08/23/2016	00092 AIRGAS USA INC	BOTTLE RENTAL	9938291767	66.52	
			SMALL TOOLS	9054065202	40.69	107.21
84027	08/23/2016	00092 AIRGAS USA INC	WELDING EQUIPMENT	9054151571	66.13	66.13
84028	08/23/2016	00267 ALEXIN ANALYTICAL INC	WATER SAMPLE TESTING	27169	3,110.00	
			WATER SAMPLE TESTING	26456	2,335.00	5,445.00
84029	08/23/2016	00002 AMERICAN FAMILY LIFE ASSURANCE	VOLUNTARY PAYROLL DEDUCTION. - AUGUST 2016	593901	1,518.54	1,518.54
84030	08/23/2016	01639 BENEFIT HELP SOLUTIONS	VOLUNTARY PAYROLL DEDUCTION. - 08/19/2016	08/19/2016	629.15	
			VOLUNTARY PAYROLL DEDUCTION - 08/05/2016	08/05/2016	629.15	
			ADMIN FEES - MAY 2016	0209882-IN	100.00	1,358.30
84031	08/23/2016	01546 CASCADE COLUMBIA DIST CO INC	ALUMINUM CHLORHYDRATE	673910	8,412.50	8,412.50
84032	08/23/2016	03639 CHRISTINE RAINS GRAPHIC DESIGN	SUMMER WATER BROCHURE DESIGN - CONSERVAT	2016-36	360.00	360.00
84033	08/23/2016	00336 CITISTREET - STATE OF OREGON	VOLUNTARY PAYROLL DEDUCTION	PR 08/19/2016	1,939.18	1,939.18
84034	08/23/2016	03472 CREATIVE FINANCIAL STAFFING	HR CONTRACT TEMP – L WILLIS - WEEK	11629529	1,408.29	
			HR CONTRACT TEMP – L WILLIS - WEEK	11630527	1,345.50	2,753.79
84035	08/23/2016	03218 DIRECT TRANSPORT INC	BOARD PACKET MATERIALS	1670836	41.80	41.80
84036	08/23/2016	01844 FERGUSON ENTERPRISES INC	INVENTORY / REPAIR PARTS - WATEROUS	532226	1,525.53	1,525.53
84037	08/23/2016	00123 GRANTS PASS WATER LAB INC	G/ CRYPTO RAW	301041	450.00	
			G/ CRYPTO FINISHED	301040	450.00	900.00
84038	08/23/2016	00017 H D SUPPLY WATERWORKS LTD	INVENTORY - 3 PCS. 6870-15	F910861	1,672.83	1,672.83
84039	08/23/2016	00127 ICMA RETIREMENT TRUST- 457	VOLUNTARY PAYROLL DEDUCTION	PR 08/19/2016	100.00	100.00
84040	08/23/2016	00095 ING	VOLUNTARY PAYROLL DEDUCTION	PR 08/19/2016	3,057.81	3,057.81
84041	08/23/2016	03591 LITHTEX PRINTING SOLUTIONS	CONSERVATION PAMPHLETS	161447	559.17	559.17
84042	08/23/2016	00353 METRO OVERHEAD DOOR INC	GATE AND GARAGE DOOR MAINT. - GATES 1, 2	136014	804.05	804.05
84043	08/23/2016	02929 DBA IRON HORSE GROUP MOORE EXCAVATING	CHANGE ORDER #1 - HWY. 213 WATERLINE REP	CHANGE ORDER #1	19,924.29	19,924.29
84044	08/23/2016	00239 NATIONWIDE RETIRE. SOLUTION	VOLUNTARY PAYROLL DEDUCTION	PR 08/19/2016	300.00	300.00

MONTHLY CHECK HISTORY LISTING

CLACKAMAS RIVER WATER

8/1/2016 TO 8/31/2016

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
84045	08/23/2016	00013 NW NATURAL	NATURAL GAS - FILTER PLANT	102924-8 06/15/16	10.88	10.88
84046	08/23/2016	00273 OFFICE MAX INC	OFFICE SUPPLIES FY16-17	724099	120.67	120.67
84047	08/23/2016	00373 OREGON AFSCME	UNION DUES	PR 08/12/2016	881.54	881.54
84048	08/23/2016	00015 OREGON METER REPAIR	LARGE METER TESTING & REPAIR	120298	4,468.00	4,468.00
84049	08/23/2016	00308 OREGONIAN PUBLISHING COMPANY	RECRUITMENT AD - WATER SYSTEMS LABORER	ACCT: 2000300583	486.83	486.83
84050	08/23/2016	00021 PGE	ELECTRICITY - HOLLY LN	802372-2 08/14/2016	6,414.73	
			ELECTRICITY - 15056 S REDLAND RD	365651-8 08/14/16	4,577.74	
			ELECTRICITY - S GLEN OAK RD	480964-5 08/11/16	3,078.83	
			ELECTRICITY - POTTER RD	517476-7 08/15/16	52.10	
			ELECTRICITY - 13700 S REDLAND RD	365182-4 08/14/16	31.33	14,154.73
84051	08/23/2016	00151 PROVIDENCE OCCUPATIONAL HEALTH	OFFICE OUTPATIENT VISIT LEVEL 3	05/11/2016 - 9064811	85.00	85.00
84052	08/23/2016	03548 RIVER CITY ENVIRONMENTAL INC	SERVICE REPLACEMENT - #2204-0256	183470	918.75	918.75
84053	08/23/2016	02244 SOCIETY FOR HUMAN RES.MGMT	SHRM MEMBERSHIP RENEWAL: 11/1/16-10/31/1	9006705754	190.00	190.00
84054	08/23/2016	00577 SPECIAL DISTRICTS ASSOC OREGON	SEPTEMBER HEALTH BENEFITS	03-0054042, 8/1/16	48,929.22	
			WORKER'S COMP RENEWAL FY16/17 - ADD ON	30W84042-463	3,588.99	52,518.21
84055	08/23/2016	00107 UNITED SITE SERVICES INC	PORT-A-POTTY SERVICE AND RENTAL	114-4282505	279.00	279.00
84056	08/23/2016	01959 US BANK	VISA	07/25/15 - CAMPBELL	154.83	154.83
84057	08/23/2016	02854 VERIZON WIRELESS	AUGUST CELL PHONE CHARGES	9770129055	2,063.23	2,063.23
84058	08/30/2016	03441 ACCUSHRED NW	16770 SE 82ND DR. - SERVICE AUG 2016	259080	115.46	
			9100 SE MANGAN DR - SERVICE AUG 2016	257600	70.28	185.74
84059	08/30/2016	01681 ADVANCED AMERICAN CONSTRUCTION	WTP INTAKE REPAIR	7409	3,642.09	3,642.09
84060	08/30/2016	00304 CANTEL SWEEPING	AUGUST - PARKING LOT SWEEPING - OPS	E2986	190.00	
			AUGUST - PARKING LOT SWEEPING - ADMIN	E2984	145.00	
			AUGUST - PARKING LOT SWEEPING - RIVERSIDE	E2985	130.00	465.00
84061	08/30/2016	00164 CENTURYLINK	PHONE SERVICES	5037236700 08/16/16	103.34	103.34
84062	08/30/2016	00009 DAILY JOURNAL OF COMMERCE	ADVERTISEMENT FOR THE RESERVOIR DESIGN S	742885926	605.00	605.00

MONTHLY CHECK HISTORY LISTING

CLACKAMAS RIVER WATER

8/1/2016 TO 8/31/2016

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
84063	08/30/2016	02965 FCS GROUP	CRW WATER WHOLESALE RATE REVIEW	2533-21608043	5,775.00	5,775.00
84064	08/30/2016	00167 GRAINGER INC	BATTERIES, WASH BRUSHES	9186024353	153.92	
			WEB SLING	9197132146	67.66	
			IBUPROFEN	9171204747	33.88	
			PRY BAR	9170884960	25.35	280.81
84065	08/30/2016	00124 H D FOWLER CO INC	INVENTORY	L4284744	4,181.64	4,181.64
84066	08/30/2016	02570 HOME DEPOT CREDIT SERVICES	PROPANE TORCH / DUCT TAPE/ UTIL KNIFE /	972065	149.43	149.43
84067	08/30/2016	00012 METEREADERS LLC	METER READING SERVICE IN AUGUST	7617	3,518.25	3,518.25
84068	08/30/2016	00138 MILWAUKIE, CITY OF	6201 SE LAKE RD - HARMONY SURFACE WATER	24352000 07/20-08/20	119.68	119.68
84069	08/30/2016	00013 NW NATURAL	NATURAL GAS - 1ST FLOOR ADMIN	181027-4 08/22/16	178.03	
			NATURAL GAS - OYER DRIVE	863832-2 08/25/16	18.75	196.78
84070	08/30/2016	03282 NW SAND & GRAVEL INC	SPOILS DISPOSAL	23965	35.00	
			SPOILS DISPOSAL	23966	35.00	
			SPOILS DISPOSAL	23967	35.00	
			SPOILS DISPOSAL	23968	35.00	
			SPOILS DISPOSAL	23969	35.00	
			SPOILS DISPOSAL	23971	35.00	
			SPOILS DISPOSAL	23980	35.00	
			SPOILS DISPOSAL	23981	35.00	
			SPOILS DISPOSAL	23982	35.00	
			SPOILS DISPOSAL	23985	25.00	340.00
84071	08/30/2016	00273 OFFICE MAX INC	OFFICE SUPPLIES FY16-17	809555	30.48	
			OFFICE SUPPLIES FY16-17	781571	16.05	46.53
84072	08/30/2016	00021 PGE	ELECTRICITY - MANGAN DR	500870-5 08/17/16	30,698.50	
			ELECTRICITY - 12731 SE 90 AVE	526029-8 08/17/16	3,710.32	
			ELECTRICITY - 82ND DRIVE	451526-2 08/21/16	1,932.69	
			ELECTRICITY - OYER DR	11224-7 08/15/16	1,826.20	
			ELECTRICITY - MANGAN DR	488871-9 08/18/16	704.47	
			ELECTRICITY - HARMONY RD	346794-5 08/24/16	621.35	
			ELECTRICITY - STRAWBERRY LN	367776-6 08/19/16	259.55	
			ELECTRICITY - S BRADLEY RD	497104-9 08/16/2016	146.63	

BANK APBANK

CHECK #	DATE	VENDOR	DESCRIPTION	INVOICE	AMOUNT PAID	CHECK TOTAL
			ELECTRICITY - ROBERT AVE	134709-9 08/18/16	51.00	
			ELECTRICITY - RIVERSIDE PARK	450324-3 08/18/16	47.43	
			ELECTRICITY - OTTY RD	342336-9 08/18/16	26.15	
			ELECTRICITY - WATER AVE	405592-1 08/18/16	15.59	40,039.88
84073	08/30/2016	02566 PHILLIPS LAW OFFICE	LEGAL SERVICES AUGUST 2016	08/05/2016	15,980.94	15,980.94
84074	08/30/2016	00149 CITY OF PORTLAND PORTLAND WATER BUREAU	REGIONAL WATER PROVIDERS CONSORTIUM DUES	10218604	27,283.00	27,283.00
84075	08/30/2016	00229 RICOH USA, INC.	ADDITIONAL COPIES 07/27/16-08/26/16	5044096712	143.83	143.83
84076	08/30/2016	00023 STEIN OIL CO INC	FUEL	CL17277	1,240.81	1,240.81
84077	08/30/2016	01959 US BANK	VISA	07/25/16 - RAY	348.50	348.50
84078	08/30/2016	00110 WATER ENVIRONMENT SERVICES	SURFACE WATER AT 16770 SE 82ND DRIVE	03-05879-01 AUG 2016	194.00	
			SURFACE WATER AT MATHER RD	03-14578-01 AUG 2016	136.50	330.50
84079	08/30/2016	02373 WORLD CUP COFFEE & TEA SERVICE	COFFEE AND TEA SUPPLIES	12960	291.80	291.80

APBANK TOTAL: 571,157.95

147 CHECKS IN THIS REPORT

TOTAL CHECKS: 571,157.95

CLACKAMAS RIVER WATER

Consent Agenda Item – CA-2

REGULAR BOARD MEETING

September 8, 2016

SUBJECT **Cash Position and Transfers**

DRAFT MOTION
EFFECTIVE DATE

PRINCIPAL STAFF PERSON

BOARD ACTION REQUESTED Approve the consent agenda items.

DOCUMENTS ATTACHED None

Cash and Investment Position as of August 30, 2016 is:

	General Checking	LGIP	Total
Balance as of 7/27/2016	$ 772,418	$ 33,157,646	$ 33,930,064
Cash receipts	1,159,533		1,159,533
Interest earnings (July)		24,778	24,778
Payroll	(235,846)		(235,846)
A/P checks	(571,158)		(571,158)
Bond and other electronic payments		(20)	(20)
Transfers between accounts			-
Balance as of 8/30/2016	$ 1,124,947	$ 33,182,404	$ 34,307,351

Interest earnings for August 2016 are not included.

Agenda Item – 5

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

SUBJECT	Debt Covenant compliance reporting

DRAFT MOTION
EFFECTIVE DATE

PRINCIPAL STAFF PERSON	Carol Bryck, CFO
BOARD ACTION REQUESTED	None
DOCUMENTS ATTACHED	Rate Covenant Report on 2009 Revenue Bonds and 2016 Revenue Bonds

Agenda Summary

BACKGROUND	Per Resolution 4-2000 Master Water Revenue Bond Section 5.2 requires measuring two levels of coverage. Section 5.3 details who and how the information is to be provided. And Resolution 05-2010 First Supplemental Resolution Section E 4 requires compliance with Resolution 4-2000.
ANALYSIS	The Rate Covenant Report on 2009 Revenue Bonds and 2016 Revenue Bonds demonstrates compliance with Resolution 4-2000 Section 5.2 measuring the two levels of coverage.
OPTIONS	
STAFF RECOMMENDATION	

Clackamas River Water

September 8, 2016

Board of Commissioners:

Re: Rate Covenant Report on 2009 and 2016 Revenue Bonds

As an Authorized Officer identified in the 2009 Revenue Bond documentation, I am reporting to you per the bond covenants. This report demonstrates CRW's compliance to Section 5.2 of Resolution 4-2000 Master Water Revenue Bond Resolution authorizing the bond issue.

Section 5.2 requires measuring two levels of coverage. Section 5.3 details who and how the information is to be provided. CRW's year end June 30, 2016 unaudited financial statements are:

	Unaudited
Gross Revenues	$12,732,964
Operating Expenses	$ 8,267,125
Net Revenues	$ 4,465,839
Rate Stabilization Reserve Funds	$ -0-
Stabilized Net Revenue	$ 4,465,839
SDCs & interest	$ 649,049
Debt Service - 2009	$ 449,275
Debt Service – 2016	$ 149,527

For the year ending June 30, 2016, CRW Stabilized Net Revenues were equal to 746% (covenant requires 125%) of the year's annual debt service. This is calculated by dividing the year's debt service into Gross Revenues that have been reduced by operating expenses and the Net Revenues being reduced by transfers to a stabilization account or increased by transfers from it. In this case, operating expenses do not include capital costs, depreciation, debt service or similar expenses.

Also, for the year ending June 30, 2016, CRW Net Revenues minus system development charges and interest earnings were equal to 637% (covenant requires 100%) of the year's annual debt service. This varies only from the first test by the ratio target, the exclusion of SDCs and related interest earnings in the calculation.

This information will be maintained as part of the necessary subsequent disclosures to investors, financial institutions and other interested parties.

Carol Bryck

Carol Bryck, CPFO, CTP
Chief financial Officer

Agenda Item – 6

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

SUBJECT General Manager's Report

PRINCIPAL STAFF PERSON Todd Heidgerken

DOCUMENTS ATTACHED

Table of Contents

The GM report will have four sections: (A) an overview of GM and Staff activity during the month; (B) CRW department activity reports; (C) an overview of executed contracts; (D) an overview of legal activities; and (E) informational articles.

E. Financial Reports

E1. Revenue Report

E2. Expenditure Report

F. Informational Items

F1. Regional Water Providers Consortium 2016 Fall Newsletter

F2. Oregonian Article, "Draining Oregon"

Agenda Item – 6

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

SUBJECT General Manager's Report – Monthly Update

PRINCIPAL STAFF PERSON Todd Heidgerken

BOARD ACTION REQUESTED None

A. GM Monthly Update

1. Intergovernmental Relations

Regional Water Providers Consortium (RWPC) – The Consortium Technical Committee held a workshop on September 7 to learn about planning for seismic resiliency. The purpose of the workshop was to share ideas of how water systems can build in resiliency measures into their current planning process. In addition, the Technical Committee received updates and discussed the Regional Water Supply Plan Update and concepts for the Fiscal Year 2017-18 Consortium budget and work plan.

Clackamas River Water Providers (CRWP) – A pilot program for the distribution of emergency 3-gallon water bottles proved to be extremely popular with over 1100 bottles being requested in just little over a week. A two-day distribution event is being planned for September at Riverside Park. The Incident Command System (ICS) system is being used for the planning process and the bottle distribution is being treated as a drill and will include American Red Cross volunteers and possibly Citizen Emergency Response Team (CERT) members.

The invitations are in the mail for the annual Clackamas Watershed Tour. The event will be held on Saturday, October 1st. Commissioners are encouraged to contact Karin Holzgang if you are interested in attending.

2. **September Work Session Preview -**
   - Oregon City/CRW joint Engineering Study IGA
   - 82nd Avenue CIP Project
   - General Manager Goals
   - General Counsel Replacement Process
   - November/December Work Session schedule

3. **Emergency Management Update**

Radio Licensing Update - CRW staff met with Jim DeRosier with Wireless Communications Technologies (WCT) to discuss the steps required to acquire two pairs of radio licenses. The purpose is to engage Mr. DeRosier and WCT to provide the expertise needed to acquire the license and support CRW staff during the process. Based on existing schedules the project will begin in early September.

Communications Study and Gap Analysis - The Communications Study Request for Proposals (RFP) was issued by the City of Portland on July 29. A non-mandatory pre-bid meeting was held in the CRW Boardroom on August 15. Six potential consultants participated either in person or by phone. Proposals were due August 31 at and five were received. Consultant selection will be done by a Proposal Evaluation Team and includes three water provider representatives and Jamie Hayes, the Technology & Communications Coordinator for Clackamas County Disaster Management. Mike Coreless with Clackamas Fire District #1 (CFD1) has agreed to provide subject matter expertise during the vendor selection process and will serve as the representative for CFD1 on the project itself.

The evaluation of proposals will occur on September 19 and a vendor should be under contract by the middle of October.

September is Emergency Preparedness Month - Gregg Ramirez the Emergency Manager for Clackamas Fire District #1 will be conducting a preparedness campaign in September to coincide with National Preparedness Month. He is developing a web-based campaign and will be sending out over 20 preparedness messages during September. One of the segments covers emergency water and how to store it safely. It was recorded on August 26 by the CRW emergency manager and Gregg Ramirez in an interview format. The segment includes a link to the recently released video produced by the Regional Water Provider Consortium on safe water storage.

4. Water Resources Update

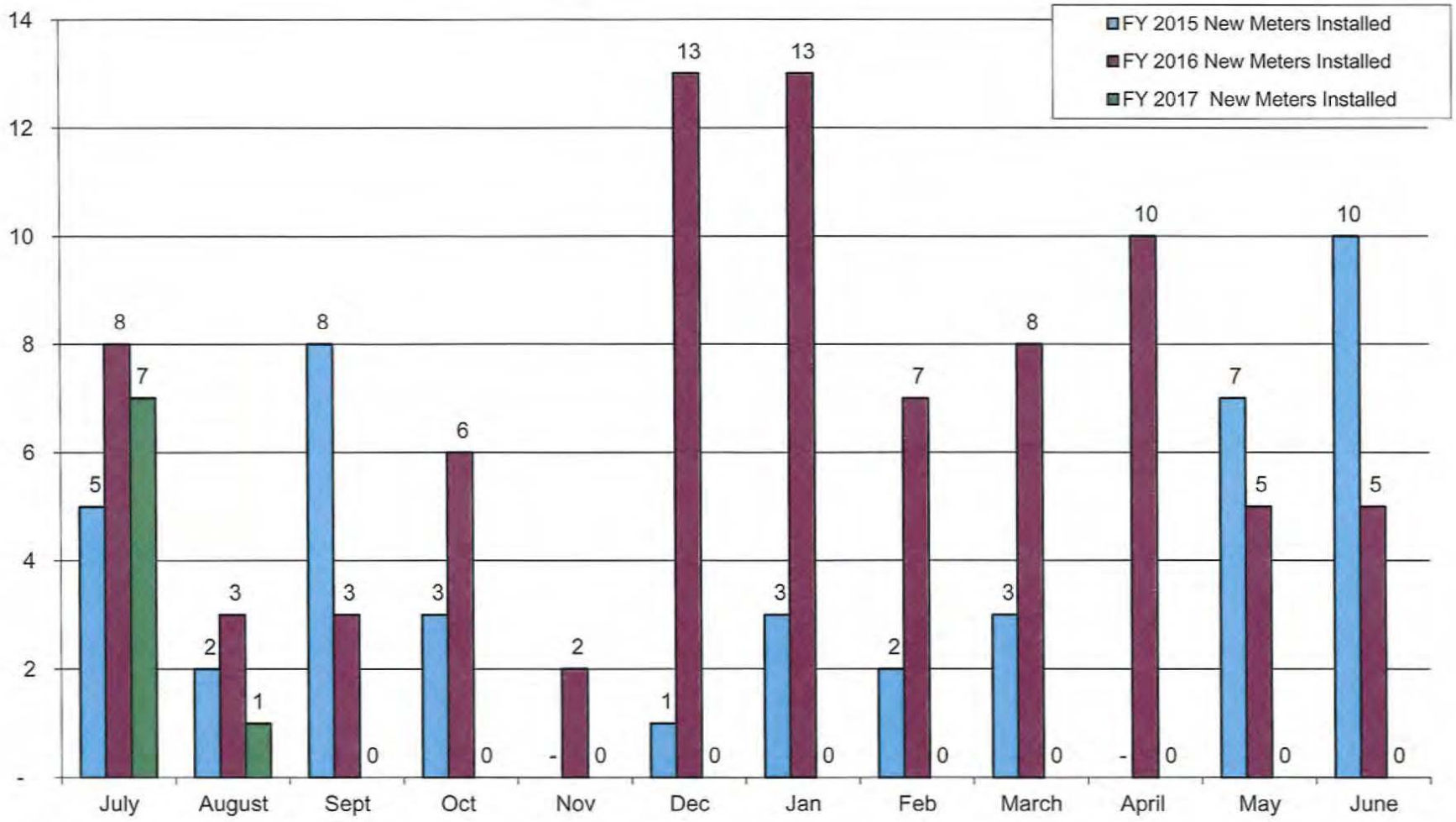
Sunrise Water Authority competed a new pump station construction and startup in August. Steve Prestwood, CRW Control Systems/SCADA Technician, programmed the new SCADA equipment for SWA as part of the CRWSC partnership. This involved working with a new generation programmable logic controller and software package.

5. System Operations (SysOps) Update

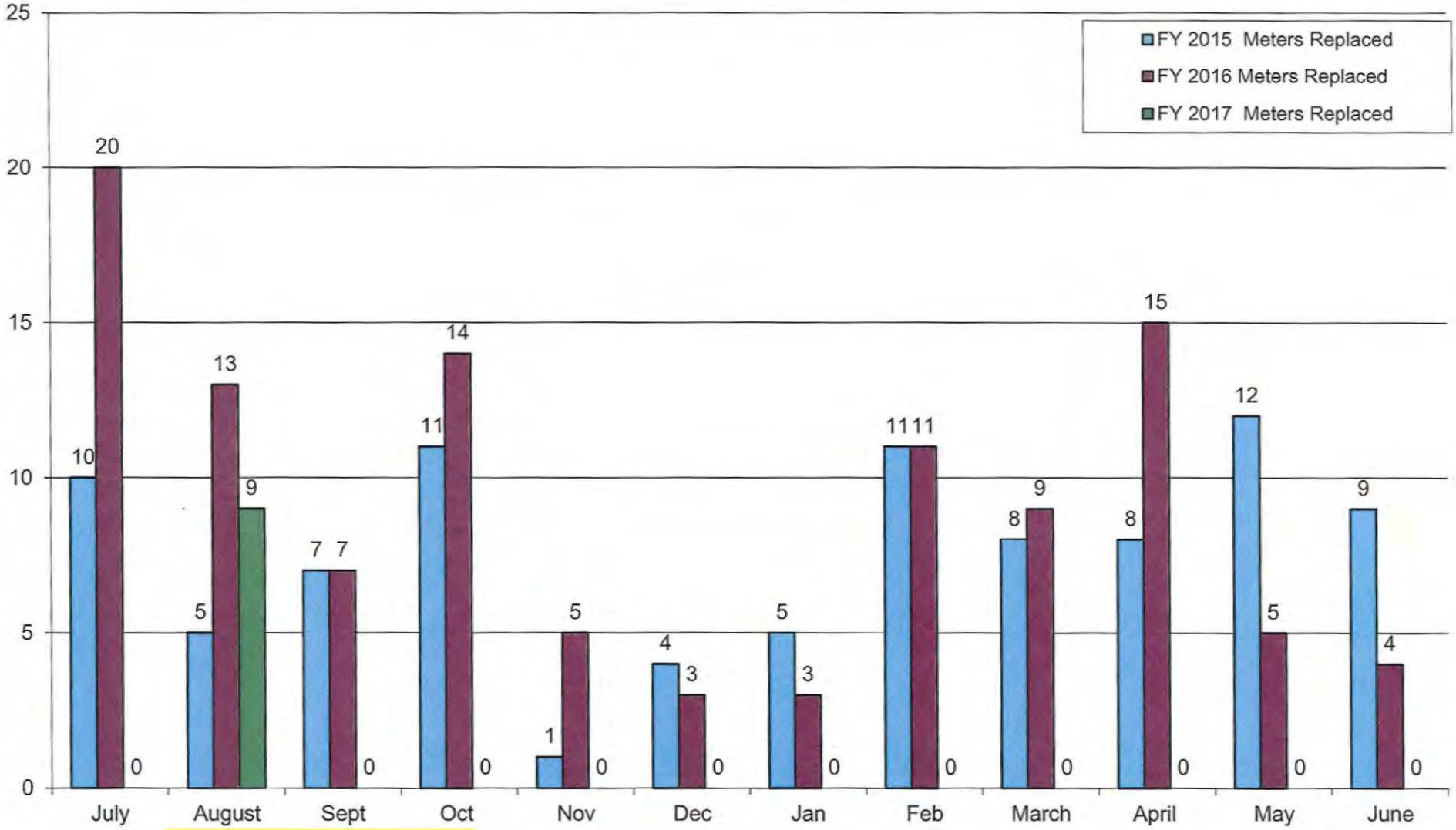
Reservoir RFQ Response: The deadline for firms to submit their Statement of Qualifications (SOQ) was August 25th. We received three responses for the concrete reservoir design (152nd) and five responses for the steel reservoir design (Redland). The evaluation team is reviewing the proposals and will meet in mid-September to score them and to schedule interviews of the top firms. It is envisioned that a recommendation to award will be presented to the Board at the October regular board meeting.

Butterfield Project Start: Construction on the Butterfield Lane Transmission Main has begun. The contractor (Tapani) has been working well with local property owners and CRW in preparation of construction. Work started on Beckman Road south of Potter/Redland Roads the week of August 29th; work will proceed north across Redland Road and up Potter after Labor Day. The conditional use hearing for the northern part of the project will be held at the County on September 8th.

B.2.
New Services Meter Installations

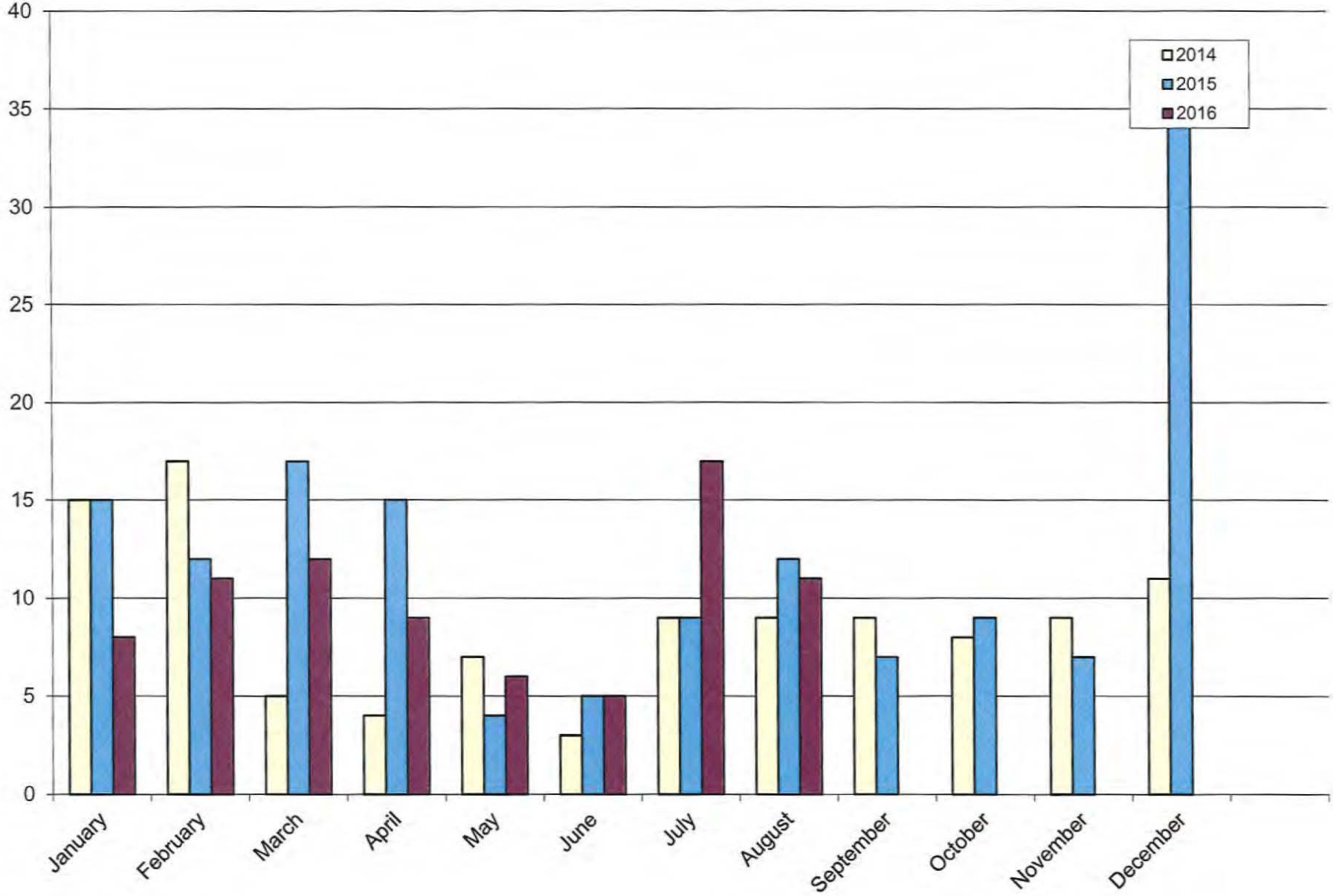


B.2.
Replacement Meter Installations



NO REPLCEMENTS FOR JULY

B.3
Cross Connection Inspections Completed



Attachment C.1

CONTRACTS LOG

(EXECUTED SINCE PREVIOUS BOARD MEETING)

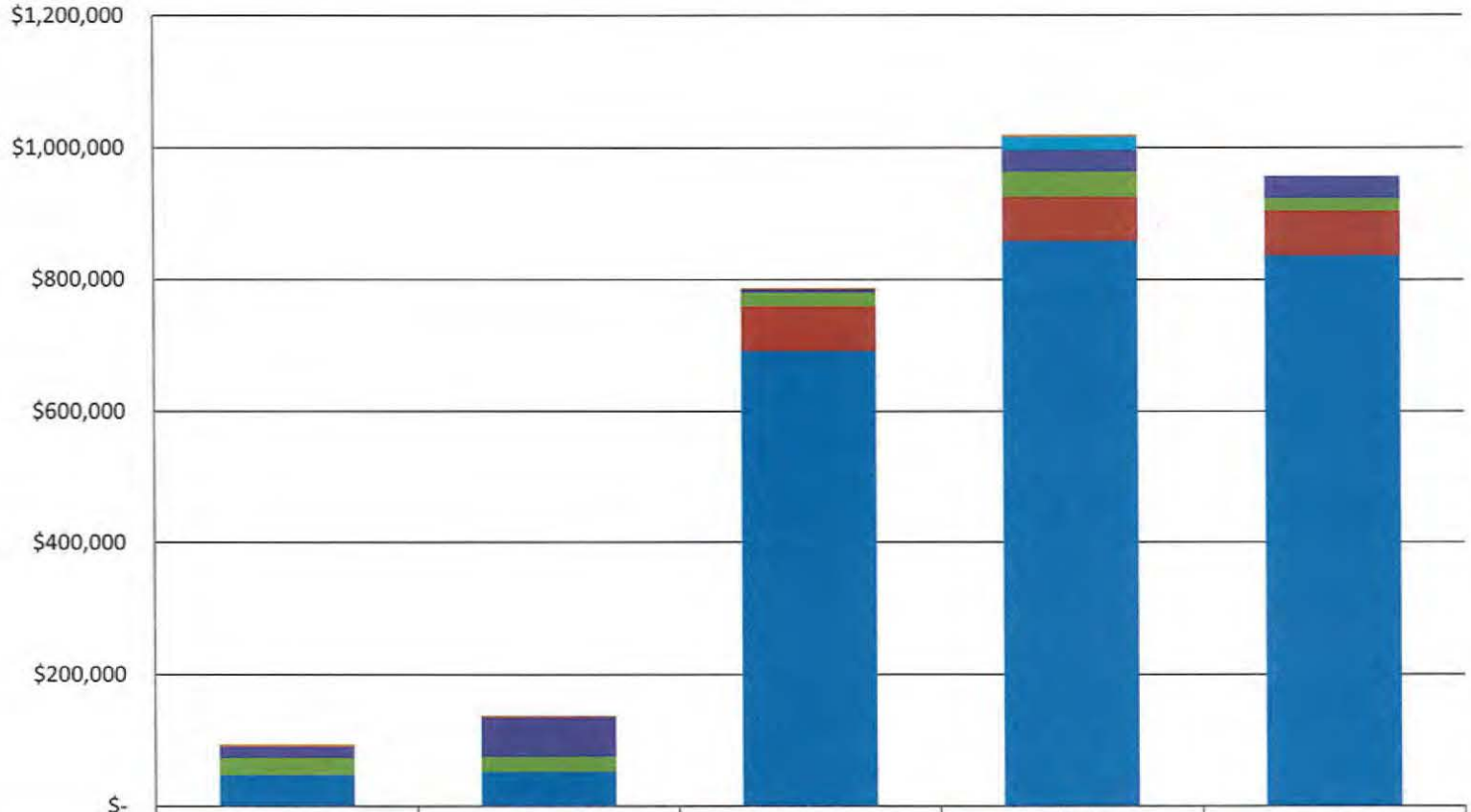
Company	Product / Service	Rates	Effec. Date	Exp. Date	Contract #	New/Amended/ Extended
Advanced Power Solutions	Safety Consulting	NTE $12,500	11/23/2015	12/31/2016	03470-11-2015	
Gormley Plumbing	Eye Wash stations	NTE$ 88,899.00	6/15/2016	9/30/2016	03620-07-2016	
Moore Development	Consulting on backbone	NTE 20k	7/7/2016	2/28/2016	02215-07-2016	
Verizon Wireless - WISCA through	Cell Phone Plans	*	4/16/2012	10/31/2019	02854-05-2013	

D1

Summary of Legal Services Expenses

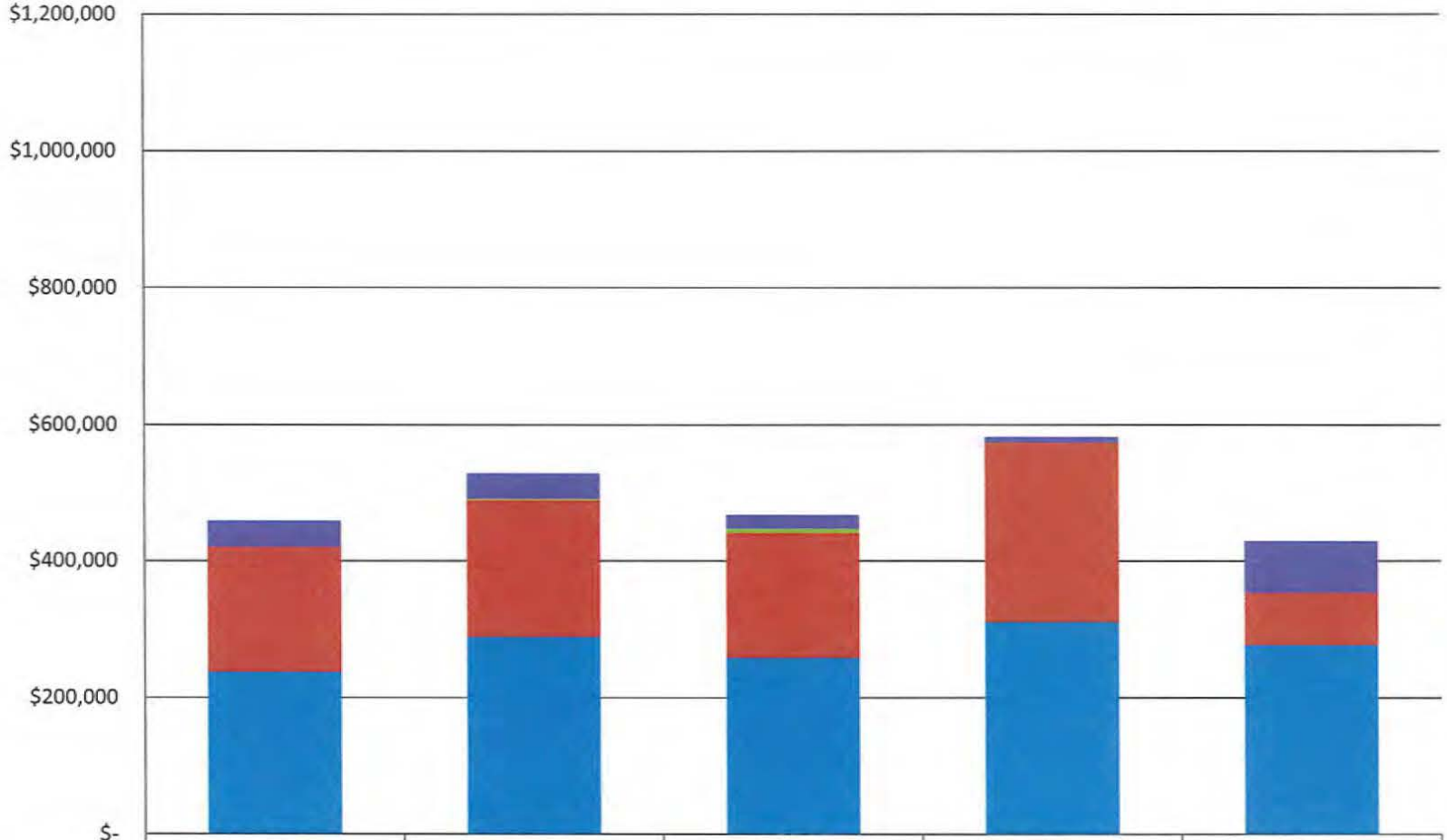
Dean Phillips Law monthly retainer	$ 5,000.00
Dean Phillips Law work outside of retainer	$ 2,007.50
Sub-contracted legal services	$ 8,973.44
Total Legal for July 2016	$ 15,980.94

E.1 - Revenue through July



	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
CIP Revenue	$-	$-	$-	$-	$-
Interest Other Funds	$2,145	$2,194	$2,100	$2,367	$-
CRWSC Revenue	$-	$-	$-	$20,372	
SDC	$17,765	$59,226	$4,798	$32,965	$33,089
Other General Fund	$25,845	$22,313	$20,750	$37,561	19180.58
Wholesale Water Revenue			$67,646	$67,513	68284.39
Water Revenue	$48,008	$53,358	$691,445	$858,510	836273.35

E.2 - Expenditures through July



	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Debt Service	$-	$-	$-	$-	
CIP expenditures	$37,819	$36,936	$19,498	$7,975	$75,229
Capital Outlay	$-	$2,036	$7,275	$160	$-
Materials & Services	$181,877	$199,954	$182,224	$263,739	$77,051
Personnel Services	$237,747	$288,240	$257,686	$310,355	$276,424

F. 1

From: Regional Water Providers Consortium
Sent: Monday, August 15, 2016 2:29 PM
To: kholzgang@crwater.com
Subject: Regionalh2o.org News Fall Issue

Having trouble viewing this email? Click here
Hi, just a reminder that you're receiving this email because you have expressed an interest in Regional Water Providers Consortium. Don't forget to add rwpcinfo@portlandoregon.gov to your address book so we'll be sure to land in your inbox!

You may unsubscribe if you no longer wish to receive our emails.

Like

Regionalh2o News

Regional Water Providers Consortium's triannual newsletter | Fall 2016

It's Time to Get Your [Emergency] Kit Together!

September is National Preparedness month, and that's a good reminder to make sure that you and your household are well prepared for emergencies.

One of the most important things you can do to be prepared is to have an emergency supply of water. Here in the Pacific Northwest, where there is a risk of a major earthquake, your emergency water supply should include enough water to sustain your entire household (pets too!) for 14 days.

Watch our how to video on how to store an emergency supply of water. Then find out what else you can do to prepare here.

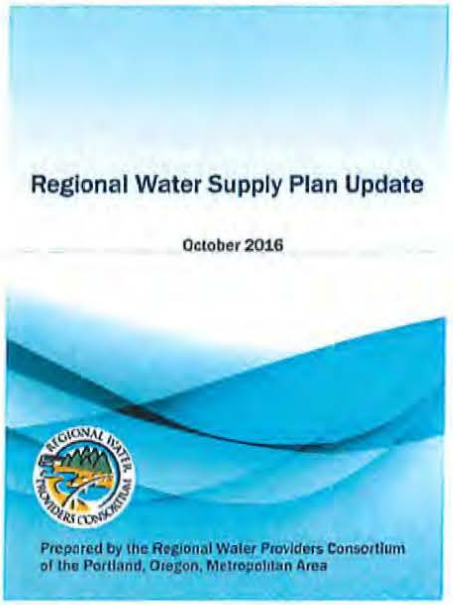
Local Water Providers Are Working Together to Prepare for Emergencies

The Regional Water Providers Consortium's 20 water provider members work together to plan for events that could impact local water supplies, because their job is to make sure water is there for you when you need it - even during an emergency.

In the last 10 years, Consortium members have utilized more than $1 million in Urban Area Security Grants to conduct a regional interconnections study and to purchase emergency equipment such as portable pipe and 13 portable systems that treat and distribute water.

Find out more about how water providers are working together to prepare for emergencies.

Water Supply Plan Update Available for Review



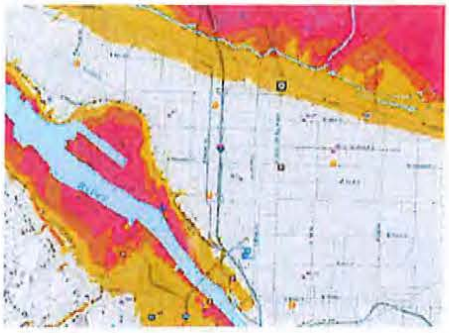
The Consortium recently completed an update of its Regional Water Supply Plan (RWSP), and is inviting public comment via email through Friday, August 26, 2016.

About the 2016 Update:
Unlike the 2004 RWSP update, which included a revised water demand forecast, update of source strategies, and the building of a new regional integration model, the 2016 update is much more modest in scope.

The current update summarizes and identifies changes over the past 12 years to the major sections of the RWSP with the understanding that the original RWSP and 2004 update are still relevant. The Plan's implementation strategies and policy objectives remain unchanged.

Water Providers Check Their Seismic Fitness

The Pacific Northwest, and the greater Portland metro area, isn't usually thought of as disaster prone. But, in the world of water, emergencies come in all different shapes and sizes.



It is for this reason that the Regional Water Providers Consortium and its water provider members are focused on planning for events - small and large - that could impact local water supplies. Water providers work diligently to ensure that their water system can deliver you the water you need, when you need it 24 hours a day, 365 days a year.

In addition, water providers are completing seismic upgrades and other projects to make water systems more resilient. Read about some of these projects here.

Regional Water Providers Consortium
(503) 823-7528
Serving the greater Portland metro area since 1997

F. 2

The Oregonian OREGONLIVE
OREGONIAN MEDIA GROUP

MARK GRAVES/STAFF

Rolling irrigation pipe stands ready in a Dufur Valley field, farm country along Fifteenmile Creek south of The Dalles. In Oregon, the amount of water landowners are allowed to extract statewide totals nearly 1 trillion gallons annually – enough to fill 150 million tanker trucks. An analysis by The Oregonian/OregonLive has found farmers in a quarter of eastern Oregon, the driest part of the state, are allowed to pump more underground water each year than rains deposit.

DRAINING OREGON

By KELLY HOUSE and MARK GRAVES
The Oregonian/OregonLive

WATCHDOG

August 26, 2016

Water giveaway threatens economic chaos and hurts wildlife

By KELLY HOUSE and MARK GRAVES

The Oregonian/OregonLive

Oregon is helping farmers drain the state's underground reservoirs to grow cash crops in the desert, throwing sensitive ecosystems out of balance and fueling an agricultural boom that cannot be sustained, The Oregonian/OregonLive has found.

Managers with the Oregon Water Resources Department have handed out rights to pump water while pleading ignorance about how much was actually available. They have approved new pumping for irrigation even as their own scientists warned it could hurt the water table, interviews and state records show.

The amount of water Oregon farmers can legally extract now totals nearly 1 trillion gallons a year – enough to fill 150 million tanker trucks.

More than 5,000 farms in Oregon's $5.4 billion agricultural industry rely on well water to survive. Nearly a million Oregonians need wells for water they drink.

The unending churn of water comes with consequences.

Overpumping Oregon's underground reserves, known as aquifers, can dry up household wells and saddle farmers with huge costs to pump from ever-greater depths. It also jeopardizes 652 species of sensitive plants and animals. Victims include federally protected salmon and steelhead, whose recovery has failed to materialize despite a 25-year effort that's cost taxpayers billions.

The Oregonian/OregonLive reviewed hundreds of documents, interviewed dozens of ranchers, farmers and water experts, and analyzed three databases covering thousands of water rights and wells.

Among the findings:

• Farmers in a quarter of eastern Oregon, the driest part of the state, are allowed to pump more underground water each year than rains and snows deposit. It's one rough indicator of the mismatch between supply and demand. The shortfall was 49 billion gallons a year in the Willow Creek Basin of Morrow County. In southeastern Oregon's Harney Valley, it was 11 billion gallons.

• It's virtually impossible for the state to

BETH NAKAMURA/STAFF

"Every time I get a wild idea, I just go out and look at that pump," said Bill Doherty, a Morrow County farmer whose well had to be shut off. "But you can't live with that bitterness. You just go on." When the state moved in to shut off wells near Butter Creek and stem groundwater pumping that had lowered the groundwater table dozens of feet, Bill Doherty and his neighbors fought back. The farmers sued the state three times over its attempt to curb their use of groundwater to irrigate crops, and won twice.

enforce its pumping limits. On all but a fraction of Oregon's roughly 400,000 wells, owners have no obligation to disclose their actual water consumption. They are on an honor system not to exceed their allowance.

• Lawmakers routinely budget no money at all for studies to expand Oregon's spotty knowledge of groundwater supplies. At current funding levels, the work won't finish until 2096.

• Other parts of the country set a higher bar than Oregon for granting pumping rights. Washington state, for example, won't allow a new well to be tapped if it could cause any harm to a stream that's already hurting for water. Oregon, in contrast, will deny permits only in cases where the harm would be considered "substantial."

Oregon water resources officials defend their decisions, saying all western states face challenges managing water. The regulators note that federal geologists completed the only statewide study of Oregon aquifers decades ago. They say it's hard to accurately keep tabs on the underground supply without more money for staffing and research.

"We're obligated to evaluate the applications, we're obligated to make a decision

timely, and then we have to defend that decision as well," said Doug Woodcock, deputy director of the Oregon Water Resources Department. "And I think it would be difficult to close down all permit issuance in the state of Oregon until we had all of the information available for everywhere."

Giving away water with abandon has failed Oregonians repeatedly. In river basin after river basin, officials over the decades took no action until aquifers had dwindled measurably. Regulators put on the brakes and farmers, many of whom had bet on water rights for their livelihoods, lost out.

In the Umatilla Basin during the last 1980s and early 1990s, dozens of farmers lost access to their promised water under state orders. Farm values tanked.

"With one signature, how would you like to have $400,000 wiped off your net worth?" said Bill Doherty, a Morrow County farmer who sued the state over restrictions that took half his water supply and left him with $250,000 in debt on an unused well.

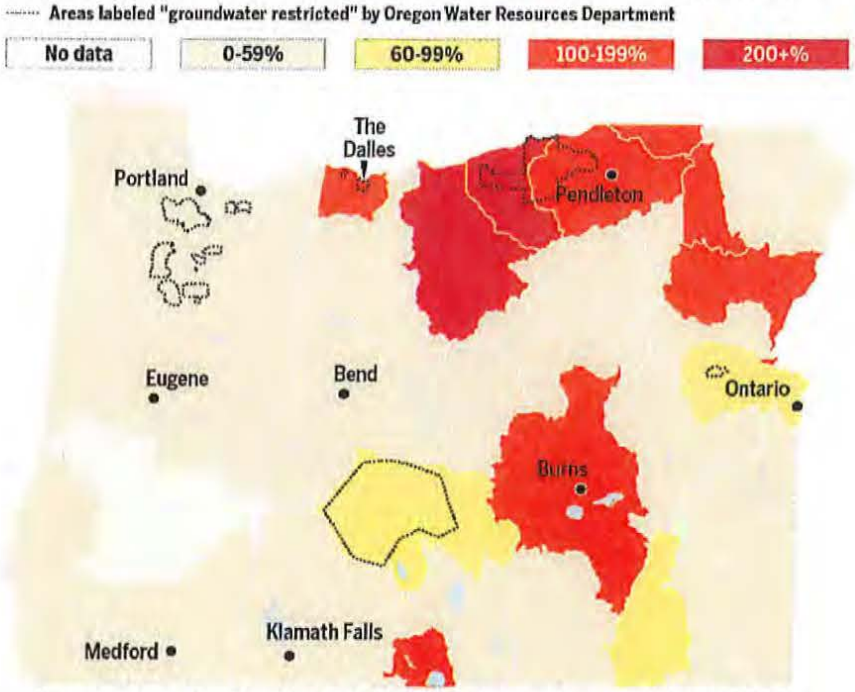
Larry Campbell and his family could see the signs of overpumping years before the state stepped in.

Campbell's father was a dryland wheat farmer in the Hermiston area all his life. But Campbell's neighbors in the 1970s started turning to irrigated crops that can be several times more profitable, and he joined in. Two powerful new wells soaked 2,000 acres of beans, barley, alfalfa and safflower on the Campbell farm.

It wasn't long before their wells lost steam. Rather than chasing the water deeper, Camp-

Irrigation rights vs. capacity

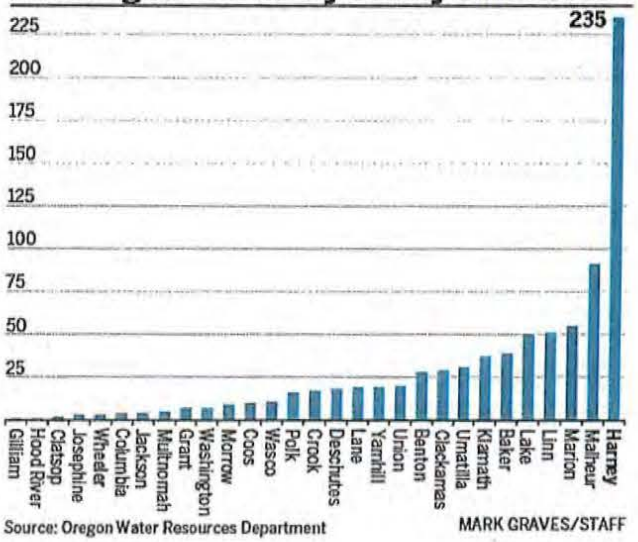
In some of Oregon basins, irrigators are allowed to use a greater percentage of the groundwater that winter rain and snow are estimated to replenish, according to an Oregonian/OregonLive analysis.



Source: The Oregonian/OregonLive analysis, Oregon Water Resources Department

MARK FRIESEN AND MARK GRAVES/STAFF

New irrigation wells by county since 2010



Source: Oregon Water Resources Department

MARK GRAVES/STAFF

bell, now 77, and his brothers chose to "get outta the fight." They sold the farm.

The state's pumping restrictions in the Umatilla were supposed to be evaluated every five years. But regulators rarely have bothered. Oregon's water agency can offer proof of doing such an evaluation only once in the past two decades. And the water table continues to fall, records show.

"Maybe at some point, all the wells will dry up, and everybody loses and goes back to dryland," Campbell said. "It's still good dirt."

"A pro-development approach"

The Oregonian/OregonLive analysis used a basic measure of the mismatch between supply and demand, comparing permitted use with annual replenishment.

The Oregon Water Resources Department labeled it "an overly simplistic and incomplete view." Yet the same state agency, with some refinements, relied on similar calculations to justify halting new permits in the Harney Valley last year.

The new findings echo what environmentalists have long warned: that Oregon is giving away water at an unsustainable rate.

"We're basically writing checks we know we don't have money in our account to cover," said Joe Whitworth, president of The Freshwater Trust, a Portland-based conservation group. "Eventually, they're going to bounce."

Consider how regulators evaluate applications to pump. A state reviewer fills out a form asking whether water is available to support a prospective well. Forms marked "cannot be determined" routinely get the go-ahead, a review of hundreds of permit applications shows.

"It's certainly a pro-development approach," said Ivan Gall, who oversaw the Oregon Water Resources Department's groundwater program until moving to a different job in the agency this spring.

The water resources agency has hesitated to say no to irrigators in the wake of threats from lawmakers and pressure from industry, according to agency critics and former employees. Conservationists say that rather than being a watchdog, the department is a revolving door with the water users it regulates.

Some irrigators are so confident their permits will be approved, they sink wells first and file the paperwork later. Andy Root, a Harney County rancher who began pumping without state approval, said it has long been common practice in the area. He's since applied to obtain a water permit years after he began pumping.

Yet farmers and ranchers pay a price for the state's failure to make hard choices. Oregon's water agency has clamped down on groundwater use in seven basins since the 1950s, changing course after empowering well owners to begin draining down an aquifer.

The newest trouble spot is in Harney County, site of this year's armed standoff at the Malheur National Wildlife Refuge. Records show state officials feared years ago that irrigation wells in the Harney Valley might be draining Malheur Lake, a vital stopover for threatened migratory birds. Yet the state kept issuing permits, more than 100 in the past seven years. Now, state officials believe they gave away too much. There's talk of the state shutting down ranchers' newly dug wells, a move that would have serious economic ramifications.

Oregon's failures aren't unique. Water tables are sinking across the West, from Washington to Arizona. A study last year found humans have overexploited many of the world's largest aquifers.

Agriculture is the biggest water guzzler by far. In Oregon, it accounts for more than 80 percent of all use.

Our enormous demand will only grow. Global trade in Oregon beef, cherries, cheese and other goods is driving farm development

MARK GRAVES/STAFF

State scientists years ago documented their belief that a well-pumping boom in the Harney Valley could be affecting Malheur Lake, a vital stopover for migratory birds. But their supervisors permitted even more pumping. Now, regulators with the Oregon Water Resources Department have clamped down on well development in the valley while they study its impacts on the water table. They plan to include the lake in a five-year analysis of the valley's groundwater system.

across the high desert. At the same time, climate change is forecast to bring more and more droughts like the bone-dry summer of 2015, drawing streams down to a trickle and curtailing flows of rainwater to deep underground aquifers.

If Oregon is going to solve its problem with overpumping, time is running out.

Permanent consequences

To grasp the damage that overpumping can do, it's important to understand what makes the underground water supply essential.

Like subterranean sponges, aquifers are stores of water that percolate unseen beneath our feet, filling the spaces between sand, gravel and rocks. Rainfall that doesn't drain into rivers, evaporate or enter plant roots ends up filtering into the soil, where it inches toward an eventual discharge point.

The water reemerges as springs that sustain lush wetlands in the desert and keep rivers flowing after the summer snowmelt has tumbled out to sea. Fish, wildlife and plants thrive in the cool discharge. Taking water from the

subsurface can rob these places and the animals that live there.

"There's really no such thing as zero-impact groundwater pumping," said Marshall Gannett, a groundwater scientist with the U.S. Geological Survey.

Because aquifers flow into streams, intensive well drilling can sap water from owners of existing wells, while also depriving farmers who need surface water for irrigation.

A falling water table caused springs underneath the Lost River, in the town of Bonanza, to flow backward. The tiny city of Merrill was forced to truck in water when the aquifer dropped below municipal well pumps in 2010. Intensive groundwater irrigation was to blame in both cases.

In some Oregon streams, springs are such a vital component to surface water that nearly every riffle has its origins underground. Such is the case in the Metolius River, which surges out of the forest floor near the central Oregon town of Sisters at a near-constant 50,000 gallons per minute.

Cool water seeping in from underground can be a lifesaver for salmon when summertime river temperatures climb to lethal levels. But overpumping across Oregon has worsened the odds for fish.

Thousands of spring-fed wetlands that dot the state are at risk, as well. These sensitive environments harbor rare plants and insects, including carnivorous cobra lilies and certain caddisflies found only in Oregon. Allison Aldous, a scientist with The Nature Conservancy, calls these wetlands "amazing warehouses of biodiversity."

In some Oregon basins, Aldous said, nearly every spring-fed oasis has been tapped to water livestock, often in a way that damages or destroys the wetland.

"There are best management practices, but based on what we see, those aren't always followed," Aldous said.

As cattle sip from the springs, farmers tap ever deeper into aquifers that supply them.

Profit in the fields

The lure of profit generates the thirst. Without water pumps, the vast deserts of eastern Oregon could grow little other than dryland wheat. Irrigated crops are far more lucrative.

State regulators more than a century ago began issuing rights to directly siphon Oregon's rivers without data to show how much the rivers could give. Today, irrigators routinely drain streams before all farmers with water rights can quench their fields. Many have turned to well water as a fresh supply.

Today's irrigation wells bear little resemblance to ancient versions, those stone-lined holes in the ground with buckets to extract water. New models are products of modern engineering, capable of pumping gallons per second from fathoms below and spreading it across acres of tilled soil.

In a typical farm setup, electric motors force the water into massive wheeled sprinklers known as center pivots. Each pivot's long arm protrudes from an anchor at the center of a field, orbiting around it in circles up to a half-mile wide. When viewed from an airplane, the resulting green fields create the appearance of a landscape stamped with bingo markers.

Landowners gain the right to pump by applying for a permit. It sets an amount that the holder is entitled to pump on a specific piece of land. Once owners start pumping, they can obtain indefinite rights to the water. Buy the land and you buy the water rights.

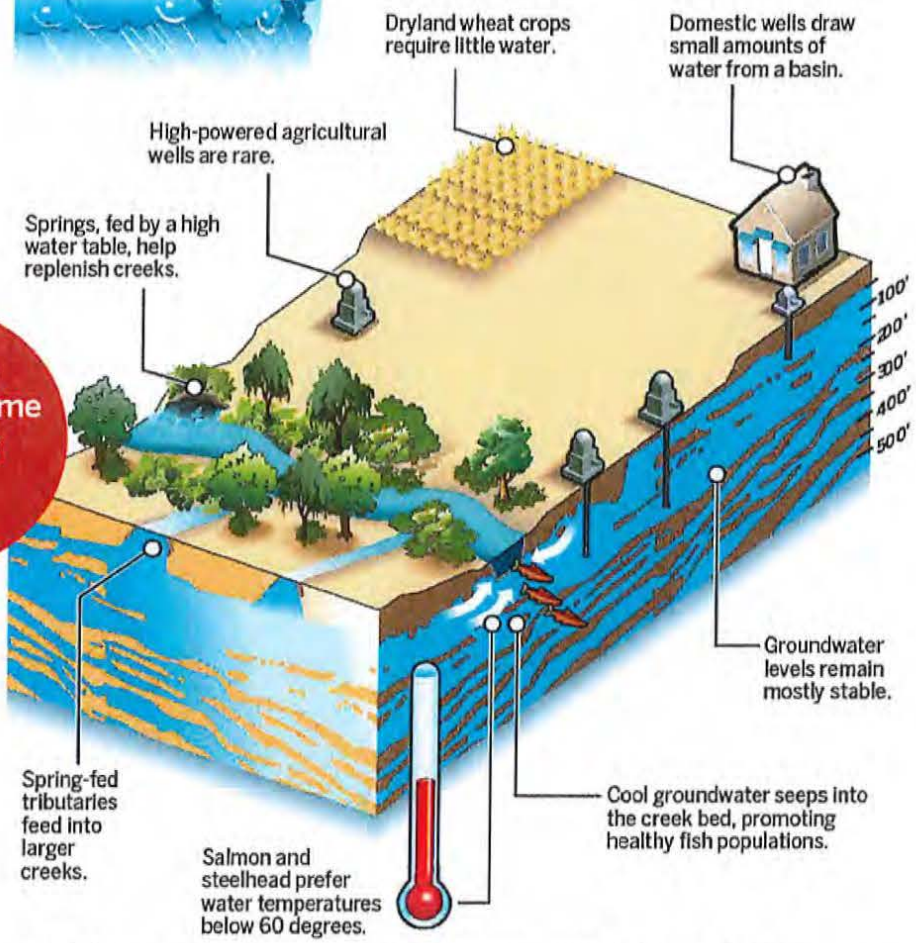
Regulators have authorized more than 17,000 irrigation wells across Oregon, about 1,400 of them since 2000. Every drought brings a bump in drilling, despite construction costs that can rise into the hundreds of thousands of dollars. The water is used to grow sweet cherries sold at Portland markets, potatoes fried in fast food restaurants across America and alfalfa that feeds dairy cows around the Pacific Rim.

The Perils of Pumping

In one-quarter of eastern Oregon, The Oregonian/OregonLive analysis found, regulators have granted well owners the right to pump more groundwater than aquifers can reliably supply.

Aquifers under moderate pumping stress

Average precipitation in parts of eastern Oregon is fewer than 10 inches per year. Where wells are scarce, that's enough to keep underground aquifers stable from year to year.



Aquifers under extreme pumping stress Page 9

Sources: U.S. Geological Survey, Oregon Department of Environmental Quality, Oregon Water Resources Department

Obtaining a permit to pump has always been simple. Check off some boxes, pay fees starting at about $2,000, and you'll generally get a permit by mail within a year. In fact, the Water Resources Department counts among its key performance goals "timely service to customers." The department strives for 80 percent of water users reporting they received "good" or "excellent" service.

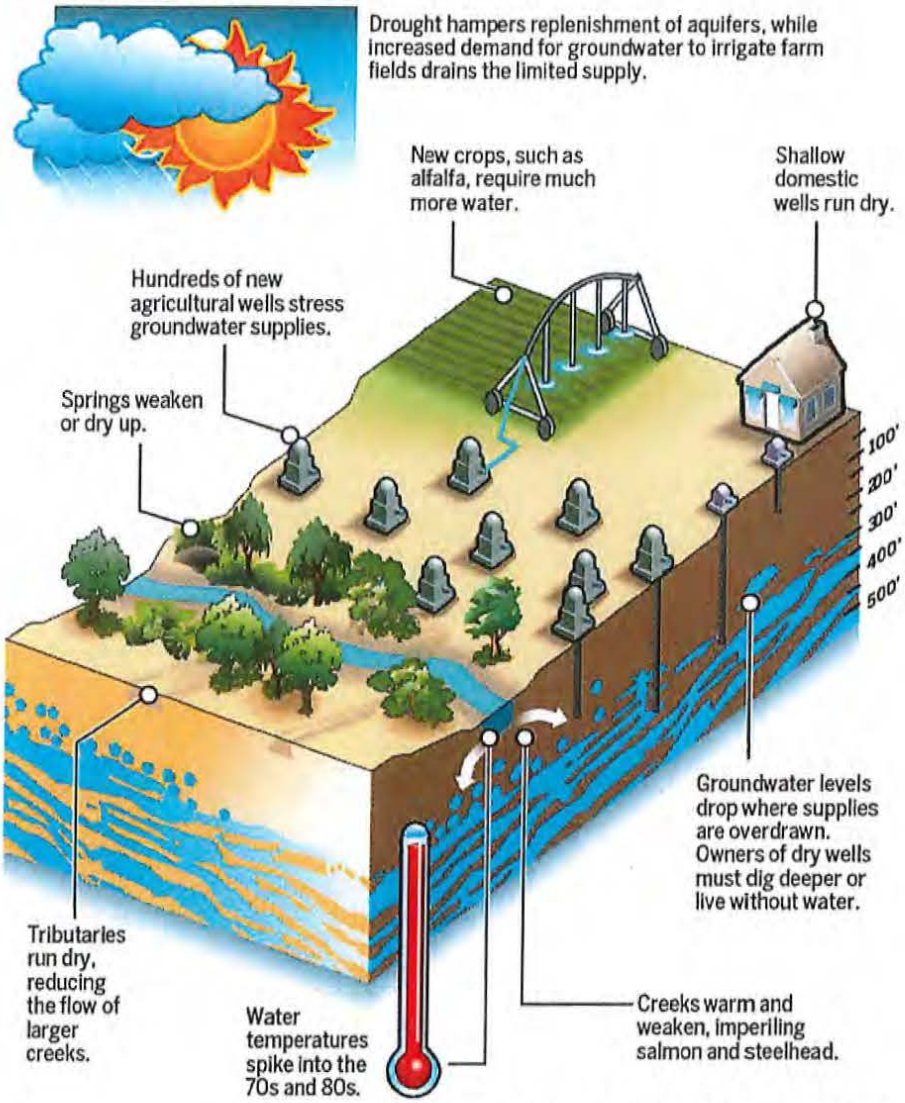
After your permit is issued, the water itself costs you nothing but the price of electricity to pull it to the surface.

However, the state's understanding of the underground resource hasn't kept pace with the clamor to tap it.

Information void

Oregon lawmakers voiced noble intentions in 1955 when they created the state's first legal

Aquifers under extreme pumping stress



GRAPHIC BY SCOTT BROWN/CONTRIBUTING ARTIST

protections for the underground water supply, aiming to preserve it for posterity.

Legislation pushed by Rep. Charles A. Tom, R-Rufus, declared groundwater a public resource to be allocated on a first come, first served basis. Legislators directed state water managers to move "as rapidly as possible" to measure aquifers beneath all of the state's 18 drainage basins.

Six decades later, the state has completed full studies on three.

Not only have such studies been slow in coming, they happened in reaction to crisis. Landowners asked for water rights. Regulators approved them. Only after overuse created conflicts did the state compile data to confirm wells were draining aquifers or robbing rivers.

For vast stretches of Oregon that scientists have not yet studied, the next best thing is a cursory federal survey nearly five decades old.

The 1968 report by the U.S. Geological Survey has not always held up against more thorough studies of individual basins, sometimes drastically under- or overestimating the water supply.

State officials referenced the 1968 estimates last year in explaining why they halted new permits across a large swath of Harney County.

"We used it because there really wasn't anything else available," said Gall, the state groundwater manager at the time.

The Oregonian/OregonLive found that the Harney Valley was one of nine key agricultural areas across eastern Oregon where ranchers are allowed to pump more than is available underground.

Permitted withdrawals in the Harney Basin total more than 96 billion gallons a year. The 1968 study shows precipitation adds back only 85 billion gallons a year.

"It's not like the Harney aquifer is going to be the last one," said Whitworth, of the Freshwater Trust. "We're overdrafting everywhere and the state has no ability to track it."

Other eastern Oregon agricultural communities have begun raising concerns.

In a December request for state money, a John Day Basin group noted the region's wells are losing water at a "noticeable and alarming" rate. Concerns have also arisen in the Powder Basin, where Baker County Commissioner Mark Bennett sought answers from the state after hearing about Harney's woes.

Bennett is the administrator for Unity, a city with three wells to supply water for its 71 residents. A growing number of neighbors are looking to dig wells and start cultivating hay.

"The city doesn't have any money, so how would they pay to deepen their wells if these other folks drilled and sucked all the water down?" Bennett said.

He said state officials told him they would add the Powder Basin to the list of places in need of new groundwater research.

Studies to establish a basin's profile cost $3 million to $5 million and can take about five years. They reveal the aquifer's shape and size, its capacity and its "recharge rate," or how much water seeps in each year. They also tell regulators where the water comes from and where it's headed.

Lacking more precise estimates of how much pumping aquifers can tolerate, regulators track water levels in about 1,000 government and privately owned wells and wait for signs the water table is dropping.

The Oregonian/OregonLive examined 130 wells east of the Cascades for which long-term data exists. Three-fourths showed declines in recent decades, ranging from a few inches to hundreds of feet.

Regulators caution that the result is hard to interpret because observation wells are most plentiful in places with known groundwater problems.

In parts of eastern Oregon, a dozen observation wells might be the only source of information in an area the size of Connecticut. A state push to build more of these wells has inched along, with two dozen constructed since 2012.

"One of the challenges is, nobody really measures water in Oregon," said Todd Jarvis, director of the Institute for Water and Watersheds at Oregon State University.

Although the state knows how much irrigators are entitled to pump, not everyone who owns a water right uses it fully. Conversely, some may be using much more than they are allowed.

Regulators admit they have no way to know either way, because only in the 1990s did Oregon start requiring owners of large new irrigation wells to report how much they pump.

Five out of six wells across the state are exempt.

MARK GRAVES/STAFF

Harney County landowners are legally entitled to 11 billion gallons more groundwater each year than rains and snows can replace.

Pressure to pump

To some degree, regulators' hands are tied.

Lawmakers control the Water Resources Department budget, and dollars to pay for groundwater research and data have come in at a trickle.

Natural resource concerns frequently get less attention than education, health care and social services – issues more visible, more immediate, and viewed as more important to Oregon voters.

"Until there's a crisis, people will say there's no reason to spend the money," said Rep. Cliff Bentz, R-Ontario, who last year unsuccessfully lobbied for a statewide examination of aquifers and a financing program to help homeowners deepen wells that had gone dry. The bill never made it out of committee.

Water resources agency officials in the past two years have received $550,000 to do a job that is expected to cost $45 million to $75 million.

John DeVoe, executive director of the conservation group WaterWatch of Oregon, calls it deliberate ignorance on the part of state lawmakers. He said they worry if they fund the science, they'll be forced to acknowledge the limits of Oregon's water.

The system is "designed, quite intentionally, to be unable to make sustainable ground-

water management decisions," DeVoe said.

Enormous public and political pressure to keep the water flowing drives the state's failure to regulate groundwater more tightly.

When aquifers start drying up, irrigators file lawsuits. Their elected representatives have held budgets hostage and pushed bills to thwart potential crackdowns on water use. Landowners have threatened violence against water managers who stepped in to address declines.

Pressure to keep wells pumping also comes from inside the department.

Agency leaders are sometimes slow to stop doling out well permits, even when their data shows declining water levels and impacts on lakes and streams.

They've opted against further restrictions for the Umatilla Basin, despite acknowledging measures they imposed in the 1980s and 1990s have failed to prevent further drops in the water table.

And in the Klamath Basin, regulators continue granting pumping permits to help irrigators cope with shortages of surface water, despite conceding that the water table is already stressed beyond its sustainable limit.

"They have the authority to stop it, and they haven't exercised that authority," said Jackie Dingfelder, a former state representative from Portland who lobbied for more restraints on groundwater use. "It is a classic case of the iron triangle, where they're beholden to their stakeholders and it's difficult for them to say no."

People who advocate for restrictions on water use say they regularly face off against industry lawyers and consultants who once worked for the department. The list of former employees who have since become consultants or attorneys for water users includes a former director, a policy analyst, a senior policy analyst and a mid-level manager.

"Their attitude for a long time has been to view water users as customers, worry about their needs, and say 'yes' whenever possible," said DeVoe, leader of WaterWatch, which has brought numerous lawsuits against the state over water management.

In Harney County, land permitted for groundwater use skyrocketed from 60,000 acres in 2005 to 95,000 acres last year. The state steadily approved new pumping despite warnings from agency scientists nearly 10 years ago that the valley's water table could be dropping.

Only after multiple complaints from WaterWatch did the state stop giving out more water permits last year. Agency leaders now concede they may have given out access to more water than the system can sustain.

While the state conducts a five-year study to test that hunch, uncertainty looms over ranchers and residents who use well water to drink, bathe and nourish fields of alfalfa. They wonder whether the state's study will bring bad news or good. They're not sure they can trust the results.

They worry their wells will go dry while they wait.

– Kelly House and Mark Graves

August 26, 2016

8 takeaways from "Draining Oregon"

Something seemed amiss in Harney County last summer, long before it became the scene of January's armed standoff at the Malheur National Wildlife Refuge.

After years of liberally granting access to underground water across the high desert of southeastern Oregon, the state abruptly told irrigators it would accept no new applications to pump wells. Regulators launched a 5-year study, saying they feared newly dug wells were sucking up unsustainable quantities of water. Cattle ranching and alfalfa, once bright spots in the struggling rural economy, were thrown into limbo.

How could Oregon so freely approve pumping permits for so long, then suddenly announce concerns so serious that they required immediate action?

The Oregonian/OregonLive found that Harney County fits a disturbing pattern. State regulators frequently lack the basic information they need to make sound decisions about the water that flows under Oregon's surface. Faced with knowledge gaps, they regularly dole out water anyway. The result, often, is groundwater declines that threaten people and the environment.

Here are some key takeaways from this series:

1 Underground water in Oregon is a big deal. More than 5,000 farms in Oregon's $5.4 billion agricultural industry rely on well water to survive. Nearly a million Oregonians need wells for water they drink.

2 Oregon regulators are granting irrigators access to water they don't know we have. Oregon regulators have given away rights to pump groundwater that would fill 150 million tanker trucks annually. Yet in most of the state, they don't know with certainty how much water is down there. The best guess in many places is a cursory federal study from five decades ago.

3 Regulators also have no way to know how much we're using. Most well owners aren't required to meter and report their water use, putting irrigators on an honor system not to pump more water than allowed.

4 Even when regulators have reason to suspect there isn't enough water to sustain new well development, they sometimes grant permits anyway. Our review of applications to pump groundwater in two Oregon counties found that regulators routinely approved irrigators' requests for water, despite

documented concerns from agency staff. In Harney County, state scientists expressed worries more than three dozen times before protests from the Portland-based group WaterWatch of Oregon spurred last summer's moratorium.

5 Oregon's approach to groundwater management has diminished groundwater supplies. Across 26 percent of eastern Oregon, an analysis by The Oregonian/OregonLive found, irrigators are allowed to pump more water than Mother Nature can replace each year.

6 The overpumping of Oregon's groundwater harms people, plants and animals alike. Virtually every drop of underground water is destined, eventually, to resurface somewhere as a natural spring. Pumping can dry up desert wetlands, killing the rare plants that thrive there, and it can deprive fish of the coldwater hiding spots they depend on during hot summer days. For humans, overpumping means well owners siphon water from other users. The resulting clampdowns on irrigation create economic upheaval.

7 Why aren't we doing better? Politics, naturally. Regulators struggle to rein in groundwater use in part because they face enormous public and political pressure to keep the water flowing. Time after time, the Oregon Water Resources Department's attempts to limit groundwater use have prompted lawsuits, open physical threats, or legislative maneuvers designed to thwart regulation. State politicians have repeatedly rejected new money sources for the water resources agency. At the current rate of funding, the state won't complete full studies of all Oregon groundwater basins for at least 80 years.

8 Solutions are out there; we just haven't pursued them. Regulators have contemplated ending the unofficial policy of approving new wells without data to determine their impact, but they haven't done it. Lawmakers could find the $75 million and additional staffing needed to complete the research regulators say they need to make decisions about new pumping. There are also ways to encourage frugality. Australia created a market in water rights, and some irrigation districts charge a per-gallon fee on water.

Make a difference: Contact your leaders

Have a reaction to "Draining Oregon" that you want to share with someone who can address the problem? Here are some of the key officials you can contact:

Gov. Kate Brown
Call: 503-378-4582
Email form: bit.ly/gov-brown
Mail: 900 Court St. N.E., Suite 160, Salem OR 97301

Richard Whitman
Gov. Brown's natural resources policy director
Call: 503-378-5145
Email: richard.m.whitman@oregon.gov
Mail: 900 Court St. N.E., Suite 160, Salem OR 97310

Rep. Brian Clem, D-Salem
Chair, House Committee on Rural Communities, Land Use and Water
Call: 503-986-1421
Email: rep.brianclem@state.or.us
Mail: 900 Court St. N.E., H-284, Salem OR 97301

Sen. Chris Edwards, D-Eugene
Chair, Senate Committee On Environment and Natural Resources
Call: 503-986-1707
Email: sen.chrisedwards@state.or.us
Mail: 900 Court St. NE, S-411, Salem, OR 97301

Tom Byler
Director of Oregon Water Resources Department
Call: 503-986-0900
Email: director@wrd.state.or.us
Mail: 725 Summer St. N.E., Suite A, Salem OR 97301

August 26, 2016

Harney County becomes the latest casualty of lax state oversight of water and irrigation

By KELLY HOUSE

The Oregonian/OregonLive

BURNS –

Rancher Harold Knieriem thought his days of worrying about water would end with retirement. No more angst when the skies dry up or a mild winter dollops too little snow on the mountains, leaving his cattle to dine on withered grass.

Then the irrigation pivots started springing up around his small patch of land, drawing water from deep underground and painting bright green circles of alfalfa on the desert floor. The 76-year-old began to fret.

Would all those high-powered pumps draw down his household well? He and his wife, Alice, need the water to drink and to bathe. It would cost them thousands of dollars to drill deeper.

"I have no idea how much time it has left," he says of the well behind the couple's modest ranch-style home. "Then all the money you thought you'd retire and do stuff with is gone."

As drought and economic opportunity prompt growers to look underground for new water to sustain their crops, it's exposing a fatal flaw in Oregon's water management. Across much of the state, the agency charged with rationing Oregon's water supply lacks solid numbers on the natural reservoirs beneath Earth's surface.

MARK GRAVES/STAFF

Harold Knieriem, 76, worries that Harney Valley's groundwater irrigation boom will suck the earth dry, leaving nothing for the county's youth but dry wells and parched fields.

Knieriem suspects there isn't enough water

MARK GRAVES/STAFF

The ongoing drought in the West has raised prices enough to make it worthwhile for ranchers to dig a well and grow some alfalfa. They can feed the hay to their own cattle or sell it to others.

down there to sustain what's happening in southeastern Oregon's Harney Valley.

State records show regulators shared Knieriem's suspicions for nine years, but continued allowing irrigators to dig new wells. Now state officials admit the evidence suggests they overshot. They abruptly stopped processing new applications for water last year, setting off alarm bells across the basin.

Ivan Gall, field services administrator for the Oregon Water Resources Department, said agency officials lacked the data to take action sooner and are working hard to catch up.

"We're doing the best that we can with the resources we have," Gall said.

Oregon regulators habitually appropriate groundwater without first making sure the added stress won't drain an aquifer. Even when they have reason to suspect harm will come, they sometimes give out permits anyway. The result is groundwater shortages that, with better science or greater caution, could have been prevented.

The Harney Valley is the latest casualty.

Trouble in the valley

Since the homestead days of the mid-1800s, this high desert valley has been, by necessity, about beef. Harney County has 14 cattle for every human.

"Cattle and hay in this county are life," said

Shane Otley, a local rancher who sits on a committee responding to the water declines. "This is the only resource we have."

"You take that away, you're undoing us," said Harney County Judge Steve Grasty, the county's elected administrator. "Undoing the economics, undoing the people here."

Irrigated agriculture remained rare here, even as river siphons enabled farmers to grow watermelons on the Columbia River and onions on the Idaho border. Across much of the Harney Valley, the average year's rainfall is less than 8 inches. Flowing water is limited to two rivers that by midsummer are little more than glorified creeks. All of it drains to Malheur Lake, a massive wetland oasis that forms the cornerstone of Malheur National Wildlife Refuge.

Cattle in the region grazed mostly on rangeland grasses, which grow naturally in the desert.

But as the West's worst drought in recent history sent hay and beef prices soaring from $2.53 per pound of ground beef in 2011 to $4.24 in 2015, a new economic opportunity opened up for landowners in Harney County.

Alfalfa was in huge demand.

Word got out that money could be made by digging a well, plotting a field and growing alfalfa. You could feed the hay to your own cattle, or sell it in other parts of the world that raise livestock.

Water beneath the surface was abundant and free. Obtaining permission to dig was so easy, many landowners started drilling before seeking the state's consent. State regulators didn't seem to mind, said Andy Root, an irrigator who acknowledged drilling a well without state authorization and now risks losing his water, given the state's stance on new permits.

"The entire valley has done it for many, many years," Root said.

In a matter of years, ranchers have swapped tens of thousands of acres of rangeland for irrigated forage crops. Newcomers

MARK GRAVES/STAFF

Ivan Gall, with the Oregon Water Resources Department, says his agency is working hard to catch up on a dearth of data that makes groundwater management difficult.

arrived: Washington dairy operators, Lake County hay growers and ranch corporations headquartered in California and Idaho. One lists a Cheyenne, Wyoming, street address described in numerous media reports as a hub for shell companies that nameless owners use to stash cash and avoid taxes.

Land permitted for groundwater irrigation in Harney County rocketed from about 60,000 acres in 2005 to more than 95,000 last year. In the past 15 years, landowners have added more pumping capacity than the entire quarter-century preceding, state records show.

But at the very moment that ranchers were pumping more water from the deep soil than ever before, less was falling from the sky to percolate back down. Snowpack in the basin remained thin and melted early, prompting drought conditions for the past four summers.

Someone needed to decide whether there was enough water for all the new irrigators.

Repeated warnings

Michael Zwart, a veteran hydrogeologist with the Oregon Water Resources Department, voiced alarm at what he saw happening in the Harney Valley.

A glimpse inside well application G-17249

In November 2009, Michael Zwart, a veteran hydrogeologist with the Oregon Water Resources Department, voices concern about a proposal by Tim Clemens to sink a well to irrigate nearly 1,000 acres.

Public interest review p. 1

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

Water availability "cannot be determined" p. 3

B1. Based upon available data, I have determined that ground water* for the proposed use:

a. ☐ is over appropriated, ☐ is not over appropriated, *or* ☒ cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the ground water portion of the over-appropriation determination as prescribed in OAR 690-310-130;

Asked whether groundwater at this location is or is not over-appropriated, the reviewer chooses "cannot be determined."

Concerns from nearby well owners p. 3

B3. Ground water availability remarks: Region Manager Ivan Gall recommends use of Condition 7N in this basin. These proposed wells are about seven miles north of an area where local well owners have expressed some concern about well interference and ground-water availability. Currently, a water-level recorder has been monitoring water levels at one well and several other wells have been selected for quarterly monitoring. Insufficient data have yet been collected there to conclude that the ground-water resource is over appropriated or that additional appropriations would cause substantial interference with existing users of ground water. However, the short-term record suggests that ground-water levels are declining slightly in that area of the basin. This proposal is rather distant from that area, but the requested rate here, combined with other recent filings in the Harney Basin, raises concern regarding the potential for the ground water resource to be over appropriated when the proposed wells are constructed and water is appropriated.

"These proposed wells are about seven miles north of an area where local well owners have expressed some concern about well interference and ground-water availability." The proposed new well "combined with other recent filings in the Harney Basin, raises concern regarding the potential for the ground water resource to be over appropriated."

The well is approved by the director of the Water Resources Department in March 2010.

Permit issued p. 1

THIS PERMIT IS HEREBY ISSUED

Amount of water p. 1

PURPOSE OR USE: IRRIGATION OF 970.3 ACRES

MAXIMUM RATE: 12.13 CUBIC FEET PER SECOND (CFS), NOT TO EXCEED 1.78 CFS EACH FROM WELL 1, WELL 2, WELL 3, WELL 4, WELL 5, WELL 6, WELL 7 AND WELL 8

Signed for the director p. 6

Issued MARCH 29 2010

E. Timothy Wall

for Phillip C. Ward, Director
Water Resources Department

Take a look at Zwart's comments on application G-17777, another well approved over his concerns.

Nearly every application to draw groundwater in the region crossed his desk. Zwart's role was to document whether the new extraction would harm area streams or lower the water table.

Zwart raised concerns about pumping at least 33 times starting in 2007, records show.

In all but three cases, his superiors waved the well projects ahead anyway.

Most of the approvals came from Tim Wallin, the department's water rights program manager, on behalf of department directors Phil Ward and later Tom Byler.

Byler, the current director, declined to be interviewed for this story through a spokeswoman. Ward did not return a phone call. The agency, in a statement, said it approves permits based not simply on reports from reviewers like Zwart, but also on information the applicant and others may submit later in the process.

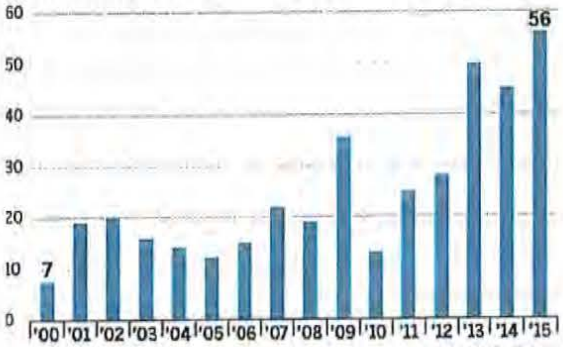
Zwart had been through water shortages before. He was a lead researcher on declines in groundwater in northeastern Oregon's Umatilla Basin a quarter-century earlier.

In August 2007, Zwart was reviewing an application to irrigate 350 acres outside the city of Burns when he noticed a nearby well had lost 20 feet of water in the past two decades. He noted the issue in his review and sent it up the chain of command. Wallin granted the permit.

Rather than turn away applicants, Gall, the department's regional manager for far eastern Oregon at the time, suggested around 2008 that the agency start attaching a notice to permits. The notice said that the agency reserved the right to curb water usage if wells showed continuous or dramatic drops. Regulators have imposed this type of condition on owners of more than 2,000 groundwater permits in Oregon, but they have used it against only two permit holders.

On Jan. 27, 2009, Zwart reviewed an application from a farmer who wanted to irrigate 125 acres of alfalfa east of Burns. He noted nearby

Irrigation wells drilled in Harney County



Source: Oregon Water Resources Department MARK GRAVES/STAFF

residents had voiced concern that neighboring wells might be siphoning water from one another. Wallin granted the permit.

Just four months later, Zwart expressed his personal reservations directly when evaluating a request to pump up to 78 million gallons a year.

"I am concerned," he wrote in the May 2009 public-interest review, "that additional development of ground water in the area will result in long-term water level declines and increased potential for interference between wells."

But Zwart had limited evidence to justify his stance because the state has not closely studied Harney County's groundwater. So he hedged, telling his bosses he didn't have enough information to deem the resource overtapped.

Six months later, Zwart spoke up again. Someone had requested a permit to pump up to 948 million gallons a year to irrigate 1,000 acres. The rancher envisioned eight pivot sprinklers, which typically support circles of alfalfa up to a half-mile wide.

This time, Zwart wrote that well development near the property "raises concern regarding the potential for the groundwater to be over-appropriated when the proposed wells are

MARK GRAVES/STAFF

Rusty Inglis, president of the Harney Farm Bureau, has served as a key liaison between state water officials and farmers in the area, a county where regulators say they may have given irrigators permission to pump more groundwater than the area's aquifers can sustain.

constructed." Wallin issued the permit.

By November 2011, Zwart was highlighting a potentially more dire consequence: Area wells could be robbing water from Malheur Lake.

The important but imperiled waterway is a crucial stopover for migratory birds and a sacred site for the Burns Paiute Tribe. Protected under federal law, the lake encompasses 80,000 acres at times but shrinks to nothing in the worst drought years. Less water to feed the lake from below would further cloud its future.

As groundwater drilling continues, Zwart wrote, "It is likely that there will be some increasing impacts to the level of Malheur Lake."

In the ensuing years, Zwart and his colleagues continued to warn that the Harney Valley's water table was lowering.

Over time, Zwart's superiors stopped issuing permits in two isolated areas to the south and southeast of Burns. But the state continued processing permits to drill everywhere else, even as the Portland conservation group WaterWatch of Oregon formally challenged five permit applications starting in mid-2014.

The giveaway of Harney Valley's groundwater was "a water supply train wreck" in the making, WaterWatch attorney Lisa Brown said.

A year passed before department managers announced, in June 2015, that they might have granted too many permits. The public decla-

ration came nearly eight years after Zwart first raised concerns.

"The development got ahead of the data collection," Gall, the state groundwater manager, said at the time.

Suddenly, the Harney Valley's seemingly endless pipeline of new water permits was all but cut off. People who owned wells began to wonder if they'd be allowed to continue using them.

Uncertainty festers

The uncertainty that followed the state's moratorium on new wells is another blow to a community already jarred by political and economic turmoil.

In the past two years alone, Harney County has weathered a massive wildfire that wiped out nearly 400,000 acres of rangeland, land use restrictions to protect a desert bird called the sage grouse, a prolonged drought and a 41-day armed occupation of the Malheur refuge that upended local life and pitted neighbors across an ideological chasm.

Ranching and alfalfa were helping to revive the local economy, which suffered after the collapse of the timber industry. Now, there are reports of household wells drying up. Farmers who had counted on being able to dig new wells are weighing their options.

"We've just been hit right and left," said Harney County Farm Bureau President Rusty Inglis. Add all those factors up, "and pretty soon it's tragic."

Residents and irrigators alike told The Oregonian/OregonLive they're frustrated that the state didn't catch the problem sooner.

Senior department managers including Gall, Deputy Director Doug Woodcock, Senior Policy Coordinator Racquel Rancier and spokeswoman Diana Enright defended the agency's actions.

Gall said circumstances in the Harney Valley made it "easier to get to yes" on well permits, creating a perfect storm for things to go wrong. The valley's demand for groundwater shot up so suddenly, Gall said, that state officials had little time to ponder the impacts.

State rules call for special scrutiny of wells that are within a mile of a stream, but Harney Valley streams are so sparse that few wells trigger that restriction. The rules allow curbs on drilling that will have a "substantial" impact on any river or lake, regardless of distance, but the main body of water threatened by drilling in the Harney Valley would be Malheur Lake. It is so large that no single well would have a substantial impact.

State rules allow regulators to consider the cumulative impact of many wells on a place like Malheur Lake. But Woodcock said the department typically opts not to.

Managers said that because the state has no estimate of water supplies beneath Harney Valley other than a 1968 federal study, they didn't know how much pumping the valley could withstand. Because they have kept few observation wells to track water levels, water managers had little ability to watch out for declines.

Denying ranchers' requests for water would be difficult without good data to back it up, Woodcock said.

If state managers took that step and further research proved them wrong, he said, "What about all those people that we have denied over the years because we were operating on an incomplete data set?"

But Woodcock's agency also didn't ask for more money to get the data that would answer questions that its scientists raised about Harney Valley groundwater. Gall said that's because the department anticipated rejection. The economic recession had gutted state agency budgets, he said, and "there were just no resources available."

After shutting down the valley to new pumping applications, the state launched a

study of its groundwater. It's scheduled to be finished in 2020.

If the new study finds current pumping is either lowering the water table or draining Malheur Lake, big problems could arise. The lake and surrounding wildlife refuge have long been a source of resentment for some ranchers who believe the federal government shouldn't own water rights or limit cattle grazing there. Ammon Bundy's recent armed standoff at the refuge headquarters emboldened many who share that view.

Harney Valley residents and ranchers can only hope that halting new wells was enough to solve the problem. If not, state regulators could start rolling back the amount of water that existing irrigators are legally entitled to use.

Landowners owe millions on loans they took out for digging wells, laying pivots and buying farm equipment. Some would have to abandon their business plans. Their land values would drop. Ranches could go under.

The last thing this community needs, locals say, is another issue that pits the environment's needs against ranchers' livelihoods.

For now, Malheur refuge manager Chad Karges won't speculate on what happens if pumping is harming the lake.

"Depending who you talk to right now, some people speculate it's connected and others say it isn't," Karges said. "We're waiting on the study."

MARK GRAVES/STAFF

A sprinkler head sends water spraying onto a farm field in Harney County, where last year state regulators clamped down on issuing groundwater permits.

August 26, 2016

The state pours millions into Fifteenmile Creek but fails to help steelhead for lack of water

By KELLY HOUSE

The Oregonian/OregonLive

FIFTEENMILE CREEK –

Government agencies have spent more than $2.8 million in taxpayer money on this tiny Columbia River tributary since 2004. Workers have planted shade willows on the banks, lined its rocky bottom with logpile hiding places, and fenced off cattle from the sensitive habitat.

There's just one element missing in the quest to restore Fifteenmile Creek's threatened steelhead.

Water.

Area irrigators own rights to siphon more water from Fifteenmile Creek than mountain snowmelt and high-elevation springs can provide, draining it to a string of puddles each summer.

Scientists believe the water shortage has contorted the very life cycle of federally protected steelhead in Fifteenmile, forcing them into unnatural spawning patterns that routinely kill them.

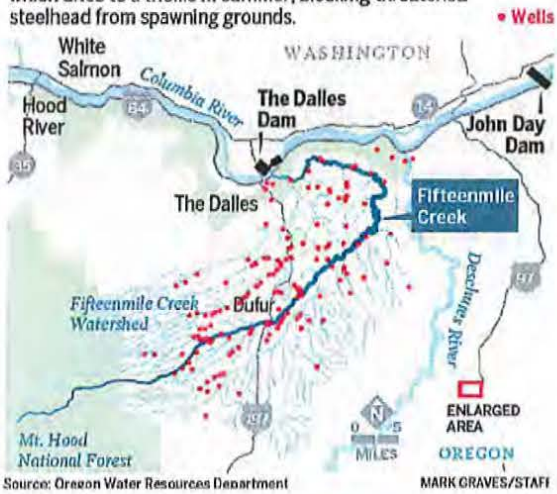
Now, high-powered wells may be draining the basin further, from below.

"We don't have a good handle on it at this time, but certainly there is that feeling that everything is connected," said Shilah Olson, who manages the local watershed council.

Regulators with the Oregon Water Resources Department granted landowners permission to pump the area's underground

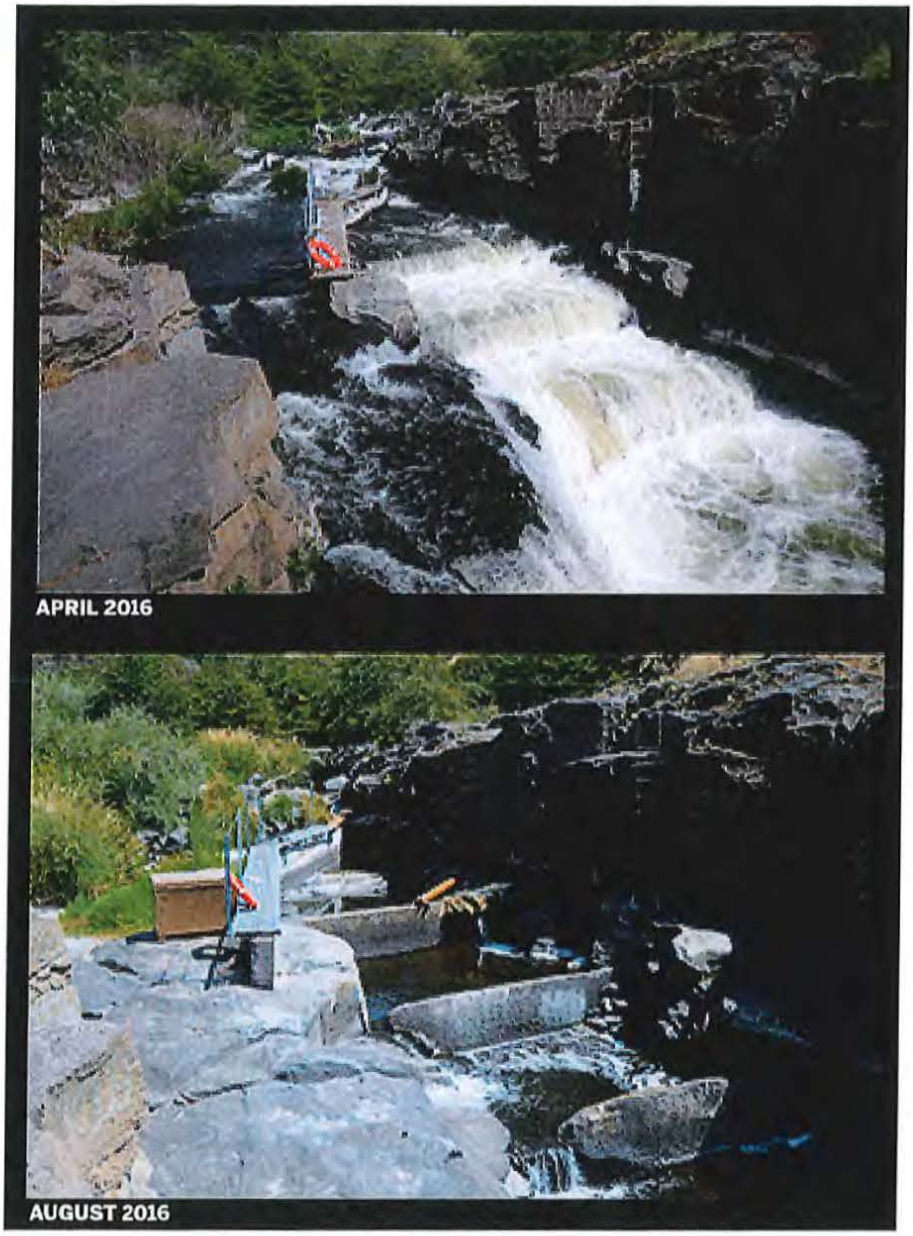
Fifteenmile Creek Watershed

State scientists are studying the Fifteenmile Creek Watershed to see if irrigation wells are robbing water from the stream, which dries to a trickle in summer, blocking threatened steelhead from spawning grounds.



Source: Oregon Water Resources Department

MARK GRAVES/STAFF



At its best, in early spring, Fifteenmile Creek roars down 54 miles from the Cascade Mountains before pouring into the Columbia River. But by summer, the creek's flow is drastically altered by loss of snowmelt and irrigation diversions that suck up much of the remaining water.

MARK GRAVES/STAFF

water without first closely studying its relationship with the creek. Then people's well water levels started dropping. The agency put the brakes on new groundwater permits in 2011.

But water resources officials say they need to do more research on whether Fifteenmile has too many wells, or if water levels in certain wells are declining because they were poorly constructed. Until they find out more, they hesitate to limit existing groundwater rights.

"We take those actions cautiously," said Doug Woodcock, deputy director of the agency. "We want to make sure we got it right."

The problems in the Fifteenmile Watershed are part of a much broader pattern across the state, The Oregonian/OregonLive has found.

U.S. FISH AND WILDLIFE SERVICE

Endangered Hood Canal steelhead are seen at Washington state's Quilcene National Fish Hatchery. Biologists suspect that steelhead in Fifteenmile Creek might act like winter-spawning steelhead, but are actually summer steelhead forced to delay entry to their spawning grounds.

Oregon regulators have given away rights to so much underground water that irrigators in several basins are drawing down aquifers, threatening future economic disruption and posing dangers to plants and wildlife.

It could be years before state scientists can say whether wells are robbing the creek of water. Meanwhile, fish keep dying. Only 424 made it upstream last year in a system that should support an annual run of up to 2,638 spawning adults, according to data compiled by the local soil and water conservation district.

Across the rolling hills south of The Dalles, farmers who rely on groundwater are also watching with trepidation as the state studies the problem.

"This isn't sustainable, what we're doing now," said Tim Dahle, who grows pears and cherries west of Dufur. "We have to improve what we're doing or we'll come to resemble California."

A contorted life cycle

Fed by rain and snowmelt in cooler months, Fifteenmile Creek tumbles down 54 miles from the mountains east of Mount Hood before emptying into the Columbia River just upstream of The Dalles.

By summer, springs originating high in the Cascades are the main source of Fifteenmile's dwindling flow. Irrigation diversions along the

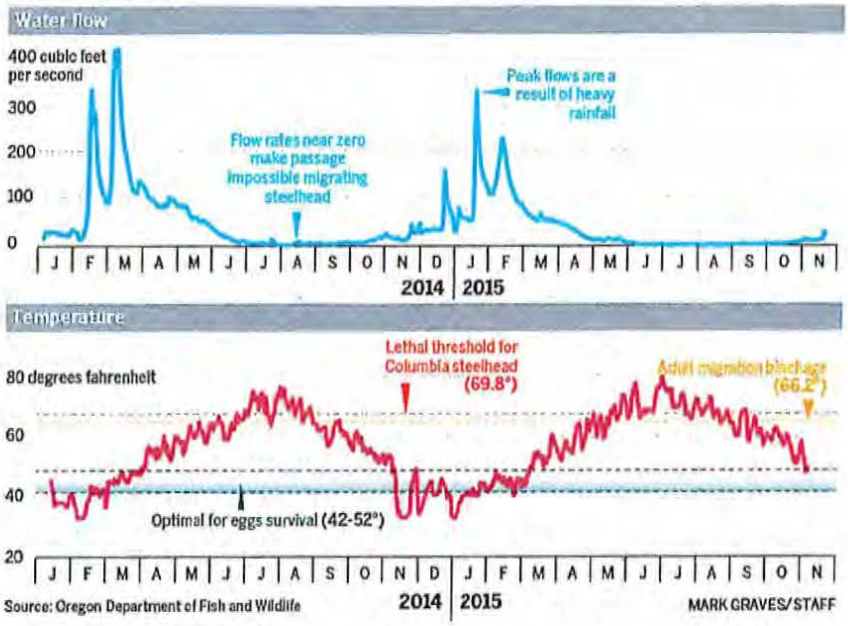
way further sap the creek.

Scientists used to think steelhead spawning in Fifteenmile and its tributaries were the Columbia River's easternmost run of winter steelhead. It turns out that assumption is probably wrong, and the confusion had everything to do with the creek's disappearing water.

Steelhead spend two or more years in the ocean before returning to the stream of their birth to spawn. Biologists designate the fish summer-run or winter-run based on the season they're biologically programmed to arrive home.

Fifteenmile Creek water temperature vs. flow

The data below was collected from two gauge sites near the confluence of Fifteenmile Creek and the Columbia River.



Source: Oregon Department of Fish and Wildlife

MARK GRAVES/STAFF

Fifteenmile Creek's steelhead reach their spawning grounds between November and April, seemingly a textbook winter-run. But biologists discovered something strange when they began implanting these migratory fish with electronic tags that track movement.

Many Fifteenmile fish made a tentative trip home much earlier, in July or August when the stream is bone dry and unswimmable in parts. Government scientists now hypothesize that these aren't winter steelhead at all, but summer fish forced by humans to adopt a winter lifestyle.

The tags showed Fifteenmile steelhead essentially killing time during the inhospitable summer months. They overshot the creek, climbed The Dalles Dam fish ladder and continued up the Columbia River to the Deschutes.

MARK GRAVES/STAFF

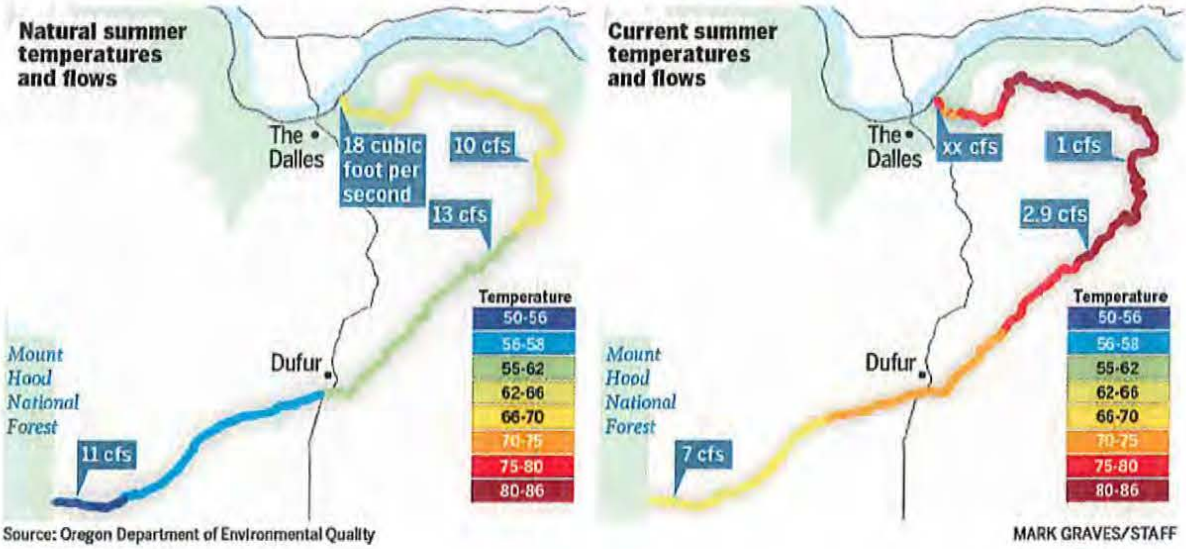
Rod French, district fish biologist for the Oregon Department of Fish and Wildlife in Wasco County.

Some even made it past an additional dam, the John Day, before turning back. Some made the round trip more than once before winter rains made the creek passable.

These unforeseen delays in spawning pose numerous hazards to steelhead. Passage downstream through The Dalles Dam is impossible for fish in certain months without a swim through grinding turbines. The prolonged stay in the Columbia also exposes

Humans and fish on Fifteenmile Creek

State scientists in summer 2002 gathered temperature and flow data for Fifteenmile Creek. They used computer models to simulate conditions before humans took water for irrigation and removed shade trees. About six times more water used to pour out of Fifteenmile into the Columbia River. The August trickle of 1 cubic foot per second today forms a rocky barrier to steelhead trying to enter and spawn, while the water heats to temperatures that can kill fragile offspring.



Source: Oregon Department of Environmental Quality

MARK GRAVES/STAFF

Fifteenmile steelhead to fishermen's hooks and predators' talons for a longer period.

The journey kills about half of all migrating Fifteenmile steelhead, according to research from the Oregon Department of Fish and Wildlife and the Bonneville Power Administration.

Even if adults survive to spawn, their offspring face additional perils in Fifteenmile's hot, scarce water.

The tiny young fish, called fry, emerge from the gravel by early summer and then spend two years in a stream that regularly goes dry or heats up beyond a steelhead's preferred sub-60 temperatures. One stretch never dipped below 70 for two straight weeks last year, according to Oregon Department of Fish and Wildlife data. The hottest water hit 83.

"You're talking about temperatures that are capable of just outright killing fish," said John McMillan, a science director for Trout Unlimited. "If temperatures are consistently that warm, it doesn't bode well for the future of fish in those places."

Before humans altered the watershed, a 2004 study found, each egg's chances of surviving long enough to exit the creek would have been closer to 1 in 4.

Last year, fewer than 1 in 50 smolts made it out alive.

Rod French, a district fish biologist for the Oregon Department of Fish and Wildlife, estimates that mass die-offs of juvenile steelhead happen yearly. But because most of the land abutting Fifteenmile is private, they're rarely documented.

French's job involves protecting fish in Fifteenmile and nearby streams. It's made more difficult by the focus on planting greenery instead of addressing the creek's glaring, human-caused water shortage.

"To be honest, it's frustrating," he said. "It's fairly obvious that fish need water, and it's the lacking component in this recovery effort."

MARK GRAVES/STAFF

The Dufur Valley along Fifteenmile Creek south of The Dalles, traditionally has been a dryland wheat region. But in recent years many of the area's wheat farms have converted to cherry orchards with the help of wells dug deep into the underlying basalt rock.

Increased demand, ignored warnings

So scarce is water in the Dufur Valley, whose slopes drain into Fifteenmile Creek, only landowners who hold 155-year-old surface water rights were able to collect their full allotment last summer. Many farmers settle for growing dryland wheat, using rain alone to nurture their fields.

But in recent years, wells have cropped up across the valley as The Dalles' orchard and vineyard economy moved inland, converting dryland wheat fields to thirstier, more lucrative cherries and grapes. Cherries can bring $10,000 per acre, four times the going price for dryland wheat.

"They're certainly profitable in a good year, and this is a really great climate for growing them," said the local watershed council's Olson.

Acreage of irrigated agriculture in Wasco County nearly doubled between 1997 and 2012, much of it concentrated in the Dufur Valley. The number of wells that officials allowed in the Fifteenmile Creek Basin skyrocketed.

State regulators had many reasons to doubt the Fifiteenmile ecosystem could withstand the new withdrawals of water.

Unlike the Willamette Valley's gravel aquifers, underground water in the Fifteenmile Creek basin is held in Columbia River Basalt, a highly impervious rock formed millions of years ago by lava flows. Local rainfall doesn't

penetrate easily. The water below seeps its way into rock fissures laterally, across vast distances.

Columbia River Basalt bounces back slowly when wells are sunk into it. Groundwater losses during the 1950s forced areawide restrictions on new wells in The Dalles, where Fifteenmile enters the Columbia. Sixteen miles to the west in Mosier, studies have found wells drawing from the basalt aquifer are sapping Mosier Creek.

"It's the same thing you see in other areas where people pull from the Columbia Basalts," said Robert Wood, the Wasco County watermaster. "It's deep water, and it seems like there's a lot of it. But then we start to see declines."

Only two long-term observation wells existed, but their data suggested even limited pumping in the valley before the 1990s was taking a toll.

One, by the creek just west of Dufur, was so packed with water in 1979 that it exerted 95 feet of upward pressure. By the late 1990s, half the pressure was gone.

The other, three miles upstream at Ramsey Creek, dropped 30 feet from its 1962 level.

Fifteenmile Creek is visibly connected to what lies beneath, virtually disappearing underground in some stretches, while swelling up with springwater in others.

Such springs can be a lifeline for fish in overheated streams, offering a rare source of cool, flowing water in the height of the irrigation season. Tapping an aquifer joined to the creek would be practically the same as pumping from the creek itself.

Documents show state employees who reviewed applications to use groundwater warned repeatedly that new wells could bring problems.

Nine times reviewers noted that the underground water source a landowner hoped to tap was likely connected to Fifteenmile Creek or a tributary. In three of those cases, regulators went further, saying that pumping would likely cause harm.

Yet in all of Wasco County, where Fifteenmile is located, water resources officials rejected none of the 70 permit applications the agency reviewed between 1996 and 2011.

Today, irrigators in the Fifteenmile basin and surrounding drainages are entitled to draw 17 billion gallons annually, agency data show. That's two times more water than precipitation sends back to the water table, according to a 1968 estimate of the area's groundwater supply by the U.S. Geological Survey.

Only in 2011 did the Oregon Water Resources Department stop granting new groundwater permits along Fifteenmile and its tributaries.

Ivan Gall, the agency's field services administrator, said officials didn't have robust enough data to stop approving wells any sooner. Two observation wells did not provide adequate coverage.

"At the location of a new application, you may not have any site-specific information," he said.

"Knowing about a decline eight miles away may not be that helpful."

The Oregon Department of Geology and Mineral Industries is two years into a study to map the area's subsurface. The water agency will use that information to test whether wells are draining the water table and Fifteenmile Creek.

Woodcock wouldn't comment on what his agency will do if the answer is yes.

"We'll take a look at the study and see if, in fact, we can confirm there is an impact there before we go and speculate on what it means for adjacent waterholders," he said.

Conclusive information about the impact of wells on the creek and its steelhead, the agency says, could be years away.

"Band-Aids" for fish

Robert Bissonette, a 60-year-old retired teacher who grew up on Fifteenmile Creek, remembers the days when an angler could bring home a full creel after an hour on the water.

The creek of Bissonette's childhood was by no means an ecosystem untouched by human activity. But all manner of fish were far more abundant.

"The water was so clear you could see where the fish would be hanging out and where the lamprey were coming up," he said. Now, recreational steelhead fishing is banned.

MARK GRAVES/STAFF

Robert Bissonette remembers when an angler could bring home a full creel of fish in a short time on Fifteenmile Creek.

The creek looks prettier with all the money taxpayers have poured into restoring fish habitat, Bissonette said, but until regulators restore the water, "you're just putting Band-Aids on something that needs a whole systemic rebuilding. And the wells have to be included."

Every government agency working to save Fifteenmile steelhead has acknowledged irrigation is a major barrier to success. Yet none has forced a clampdown.

The Oregon Department of Environmental Quality, in a 2005 document outlining the creek's violations of the federal Clean Water Act, said water scarcity was a key culprit.

"Increased instream flow, where depleted, will ultimately be needed" to cool the stream to acceptable temperatures, regulators wrote.

The Oregon Department of Fish and Wildlife and the National Oceanic and Atmospheric Administration each repeated the message in subsequent documents addressing the obligation to restore Fifteenmile steelhead under state and federal Endangered Species Acts.

After a major die-off of steelhead in the creek's hot, shallow water in 2009, federal investigators told area irrigators they could be charged criminally if the deaths continued.

Yet agencies with authority under federal environmental laws chose not to order irrigators to make changes that would bolster Fifteenmile's flow.

State law is of little help. Senior water users can legally drain streams dry.

Since the 2009 fish die-off, some irrigators who draw directly from the surface of Fifteenmile Creek have agreed to forgo pumping on hot days in exchange for payments from The Freshwater Trust, an environmental group.

The possibility that well owners are simply sumping the water back out from below is "definitely an issue that's on our radar," said Caylin Barter, who oversees The Freshwater Trust's program to revive Fifteenmile. "It's on everyone's radar out there."

A federal status review released in December indicates Fifteenmile's steelhead are worse off today than they were a decade ago, when they were listed as threatened.

The failed recovery effort left Bissonette, the fisherman, disillusioned and dejected.

Tired of Oregon's unwillingness to take on irrigators around Fifteenmile Creek, he packed up and moved to Alaska.

August 26, 2016

No money to measure Oregon's water levels

By KELLY HOUSE

The Oregonian/OregonLive

Oregon has given away its underground water supply freely, thanks to a strange political equation.

Farming interests and their allies in the Legislature routinely oppose efforts to curb new construction of irrigation wells, saying state regulators lack hard data to prove water is running out.

Yet serious money never materializes for the studies everyone says are needed, a year-long review by The Oregonian/OregonLive found. The Oregon Water Resources Department says completing work on Oregon's 15 remaining uncharted basins would take $45 million to $75 million, plus additional staffing at the agency to get the work done quickly.

"The need for data and information is the one thing every person engaged in this process agrees on," said Mary Anne Nash, a lobbyist for the Oregon Farm Bureau. "Nobody wants to be in a situation where a basin is potentially being shut down while we're gathering more info."

More dramatic reform ideas are out there. Oregon could impose a trading system for water like Australia's. It could aggressively subsidize high-efficiency irrigation, or it could tax irrigators by the gallon, instead of charging users nothing, regardless of how much they draw.

But experts say we'll never know how much these ideas would help until Oregon knows precisely how much underground water flows beneath our feet.

"You can't effectively manage a resource unless you know how much is there," said Eric Schuck, a Linfield College economics professor who specializes in the economics of irrigation.

History provides little reason for optimism.

Legislative pushback

When aquifers start drying up, regulators face enormous legal and political pressures to keep the water flowing. They have been subjected to lawsuits, budget threats and bills designed to block water restrictions.

Ag interests gave more than $900,000 to state and federal candidates in Oregon in

2014 alone, according to data from the National Institute on Money in State Politics.

Fred Lissner, a former scientist for the Oregon Water Resources Department, had a front-row seat to water battles in the Legislature during his long career.

A farming boom fed by well water lowered the Umatilla Basin's water table dozens of feet in some areas by the 1980s. Lissner recalled the reaction from Mike Thorne, a Pendleton senator who ran the Ways and Means Committee, when the Water Resources Department proposed cutbacks on pumping.

FILE/2009

In the 1980s, then-Oregon State Sen. Mike Thorne of Pendleton delayed the Water Resources Department budget when it proposed cutbacks on pumping.

"He didn't think that was a good idea," Lissner said.

When budget season came along, Thorne held the water department's spending plan in committee long after other agency budgets had been approved. Thorne says he wanted department leaders to consider other options before rushing to regulate.

"I wasn't trying to be punitive," the former Democratic senator said. "I just expected a level of performance that I didn't see."

Subsequent attempts to limit groundwater pumping met similar resistance.

Republican Rep. Chuck Norris, a Hermiston real estate agent who chaired the House Committee on Water Policy, introduced legislation in 1995 that some scientists and activists dubbed "the anti-gravity bill." It officially rejected the scientific consensus that rivers and lakes are interconnected with underground water. Never again could the state block a well because it threatened nearby streams.

Gov. John Kitzhaber vetoed the bill.

Separately, Sen. Neil Bryant sought legislation in 1995 to green-light water permits the state had delayed over concerns that new wells would rob the Deschutes River. Bryant, a Bend water lawyer, sponsored the bill after learning that his clients were having trouble getting water.

"They were making it impossible to do any type of new development," Bryant said. "The backlog couldn't continue."

Three years later, state and federal researchers concluded that virtually all groundwater in the Upper Deschutes Basin eventually winds up in the river. It's impossible to obtain a groundwater permit there today without agreeing to return water to the river for every drop of groundwater used.

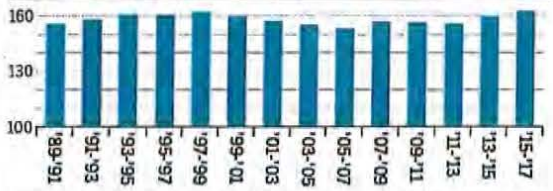
In southern Oregon's Klamath Basin, husband-and-wife Reps. Gail and Doug Whitsett also sponsored bills that would make it harder to limit well usage in the name of protecting surface water.

State and federal officials say pumping in the Klamath has lowered its water table and weakened surface springs.

"We're seeing an overregulation, in my opinion," Gail Whitsett told The Oregonian/OregonLive.

In the Harney Valley, Senate Minority

Oregon water resources department staffing



Source: Oregon Water Resources Department

MARK GRAVES/STAFF

MARK GRAVES/STAFF

Irrigated and harvested fields paint the eastern Oregon landscape along U.S. Route 197 south of The Dalles.

Leader Ted Ferrioli, R-John Day, has criticized the state for turning down new well construction while researchers scramble to study the area's groundwater. Ferrioli says the research money might be better spent helping ranchers deepen their wells.

"People out there are more fearful of the regulatory impact of bureaucrats from Salem than they seem to be concerned about the wells going dry," he said.

Tepid support

Oregon environmental agencies often come up short in the battle for state funding, but the Water Resources Department is a perennial loser. Just 2 percent of the state's general fund budget last year went to natural resources. The water agency as a whole got less than one-tenth of that sliver.

Among its staff of 163, just 12 people work on wells and aquifers. Those 11 hydrogeologists and one manager last year processed 165 new applications for well permits, while also juggling other paperwork and long-term scientific studies of aquifers. To put that in context, the city of Portland employs seven full-time rangers to patrol its parks.

Resources for managing wells and aquifers remained paltry, despite a 2012 warning from the state Water Resources Commission, a group appointed by the governor to oversee the water resources agency.

The commission that year called for water

managers to do more basin studies, build more monitoring wells, and get more irrigators to measure and report their water use. Commissioners noted that such efforts "are underfunded and have been for years."

Lawmakers responded strongly to one of the commission's other 2012 requests: money to plan for future water needs and develop water infrastructure, such as reservoirs. Those efforts received $51 million in the current two-year budget.

But the Legislature came up with only a pittance to quantify Oregon's groundwater supply: $1 million since 2012.

ASSOCIATED PRESS/2015

Senate Minority Leader Ted Ferrioli, R-John Day, says the state's research money on groundwater would be better spent helping ranchers deepen their wells.

Dennis Doherty, a longtime state water commissioner who retired this spring, said it's not fair to blame either the water resources agency or irrigators for the depletion of Oregon's aquifers.

"If the Legislature really cared about understanding groundwater," Doherty said, "they'd put real money into those studies."

When agencies were asked to identify areas to save money during the latest recession, water resources officials offered to sacrifice groundwater studies first. Lawmakers obliged. Over three straight budget cycles, from 2005 through 2011, research on aquifers got a grand total of $100,000.

WaterWatch of Oregon, an advocacy group, tried to create a new source of funding in 2009 by proposing a $100 annual fee on each holder of the state's roughly 87,000 water rights.

Farmers and lobbyists testified against the plan. Martha Pagel, the water resources agency's former director, challenged the fee's legal underpinnings. The bill died in committee.

Kitzhaber resurrected the concept in 2013, endorsed by a state committee that spent more than two years studying ways to pay for the water department's work. Kitzhaber's natural resources policy director, Richard Whitman, told senators that effective water management during a time of climate change was Oregon's leading natural resources issue.

"You can see the crisis that's looming," Whitman said.

The governor pulled his support a day later, after irrigators complained the fee would threaten their livelihoods. Whitman vowed to return the next year with "a more well-formed proposal."

Three years later, no such proposal has surfaced.

Whitman remains in the same job under Kitzhaber's successor, Gov. Kate Brown. A spokesman for Brown declined to make Whitman or any other adviser available for an interview.

Stalled solutions

Decades of Oregon water policy have emphasized developing new sources of water to meet demand for the natural resource, rather than controlling its use. Climatologists and many hydrologists say that emphasis needs to change.

The first, most basic step could be to reverse Oregon's unofficial policy of approving new wells in places where regulators can't determine their impact. A January 2015 internal memo to Water Resources Department Director Tom Byler recommended just that.

"Staff recommends considering a change in processing practice – defaulting to 'no' instead

MIKE GRAVES/STAFF

An irrigation well cap sits in a Dufur Valley field along Fifteenmile Creek south of The Dalles.

of 'yes' when data cannot confirm that new groundwater allocations lie within the capacity of the resource," the memo said.

As of this spring, the policy had not changed.

A separate move, advocated by a wide array of water experts, would be for lawmakers to pay for studying how much each basin has to give. That would give water resources managers better ammunition to reject new wells when necessary.

Water Resources Department leaders say they hope to ask for more money in 2017-19 to expand the agency's groundwater study team.

"We have had conversations with the folks over in the Legislature with regards to the resources necessary to do the job," said Doug Woodcock, the agency's deputy director.

A spokesman for the governor's office said Brown is committed to securing additional funding. He provided no specifics. But he noted that the governor has called on all state agencies to recommend ways of reducing their water use, and that the Water Resources Department's report is due in February.

A $100 annual fee on all water rights, plus federal matching money and some new hires, would likely be enough to complete all remaining groundwater studies in five years.

The state estimates that Oregonians will consume 420 billion more gallons of water annually by 2050, a 15 percent increase.

The state's current thinking on how to cope calls for diverting water from Pacific Northwest rivers during rainy winter months, then storing it in reservoirs or pumping it down into aquifers. Some communities have seen success with artificial recharge tactics, even using treated wastewater to do the job. Experts say the strategy holds promise for more widespread use.

"Wherever there's a wastewater treatment plant, I'd be sticking that treated water underground," said Todd Jarvis, director of Oregon State University's Institute for Water and Watersheds.

But critics caution such approaches may backfire. Taking water from rivers in winter could disrupt the lives of fish in unforeseen ways, they say, and pumping wastewater into the water table is a gamble.

Federal agencies have offered grants to help farmers adopt conservation measures. Dufur Valley orchardist Tim Dahle figures he has cut his water use in half by converting from sprinklers to drip irrigation and laying mulch around his trees. If all irrigators in the valley made the same changes, Dahle said, "the problem would go away."

Currently, farmers lack much financial incentive to follow Dahle's lead, because water rights entitle owners to water free of charge. Farmers do pay higher electricity bills, the more water they pump. But to make a significant dent in water use, advocates say, someone needs to put a price on the commodity.

In Australia, a 10-year drought prompted drastic measures in the Murray-Darling Basin, the country's main agricultural region. Government leaders, realizing that irrigators were using far more water than the system could sustain, began rationing water.

Whereas a water right in Oregon entitles a landowner to a certain volume of water, Australian irrigators get a designated share of what the government decides is available each year. Another difference: Half of all water in the Murray-Darling is reserved for the environment.

The system has created a market in water. Anyone who wants more than their share can pay someone willing to relinquish some of theirs. Regulators require a meter on every pump so that every drop is accounted for. Limits are strictly enforced.

"It gives you an incentive to be as careful with that water as possible," said Schuck, the Linfield economist, who has studied the Australian system.

The program, launched in 2012, is still in its infancy. But it's being lauded as a model for modern water management, particularly in drought-ridden agricultural regions like the western United States.

In Oregon, irrigators have protested even the idea of universally measuring water use, fearing it will cost too much and lead the state inevitably down the road to some kind of charge on water.

Potential responses to Oregon's underground water problem

In many parts of Oregon, state regulators have given away rights to pump more underground water than Mother Nature can sustain. Our canvass of academic experts and a review of policies enacted elsewhere suggest a range of potential responses.

- Rescind Oregon policy of approving wells when there's no way to determine potential harm.
- Adopt a statute like Colorado's, saying Oregon will reject new wells unless applicants prove enough water exists.
- Adopt Washington law prohibiting wells that create any harm to streams short on water. Oregon prohibits only "substantial" harm.
- Create $100 annual fee on each of Oregon's 87,000 water rights. With federal matching dollars and some state hires, Oregon could pay for $75 million in groundwater studies in five years.
- Finance groundwater studies with some of $51 million earmarked for planning water needs and developing infrastructure.
- Spend $25 million completing state well network to detect falling water tables.
- Require meters on all wells and annual usage reports to regulators.
- Cap total water use and allow users to buy and sell water, like in Australia.
- Charge a per-gallon fee on owners of groundwater rights.
- Expand subsidies for high-efficiency irrigation equipment.

August 26, 2016

How we measured the mismatch between Oregon's supply and demand for water

The Oregonian/OregonLive

The Oregonian/OregonLive set out to gauge whether Oregon well users are entitled to pump more water than the state can sustain.

Specifically: We compared legally permitted pumping volumes with the state's best estimate of what Mother Nature replenishes each year through rain and snow. Out of the 31 basins and sub-basins we analyzed in eastern Oregon, we found nine where permitted demand exceeds capacity.

Our estimates can be considered only one very basic indicator of the mismatch between water rights and water supplies. Accurately depicting the flow of water through underground rocks and soil usually takes multi-year, multi-million-dollar studies. Because few studies have been done statewide, we were forced in most cases to use cursory estimates of groundwater replenishment developed nearly 50 years ago.

We tried to follow a conservative approach that, in key ways, is more likely to understate the problem than overstate it. For example, our calculations focused strictly on ensuring well users have water. We didn't take into account any impacts on streams that often lose groundwater when a new well is drilled and pumped. Such stream effects can harm both aquatic creatures and the owners of surface water rights.

Some scientists have criticized such approaches as an inadequate measure of sustainability.

Three academic experts who provided feedback on The Oregonian/OregonLive's analysis said it is no substitute for more extensive studies into the size, shape and behavior of aquifers.

But Sasha Richey, a postdoctoral fellow at Washington State University's Hydro Lab, said scientists widely acknowledge that "a sustainable rate of groundwater pumping should remain well below the rate of annual

MARK GRAVES/STAFF

Water trickles down the slope of a mountain fen deep in the Ochoco Mountains, northeast of Bend. The small streams that flow through such wetlands come from groundwater that springs up from underground to create oases in the desert.

replenishment."

Jay Lund, director of the Center for Watershed Sciences at the University of California, Davis, said the analysis provides a broad sense of the scope of Oregon's overpumping problem. Although additional data might move the numbers either way for individual basins, he said, it wouldn't alter the fundamental conclusion that "we need to do better."

The supply

For the amount of potential new groundwater arriving each year through precipitation, we mainly used a 1968 study by the U.S. Geological Survey. The 15-page report was titled, "Estimated Existing and Potential Groundwater Storage in Major Drainage Basins in Oregon," by J.H. Robison.

Robison examined 67 Oregon sub-basins, starting with the amount of water running through each basin's streams in late summer. Because rain and snowmelt are gone by that time of year, Robison assumed all of the summertime water came from precipitation stored underground. The author then extrapolated from monthly figures to annual volumes.

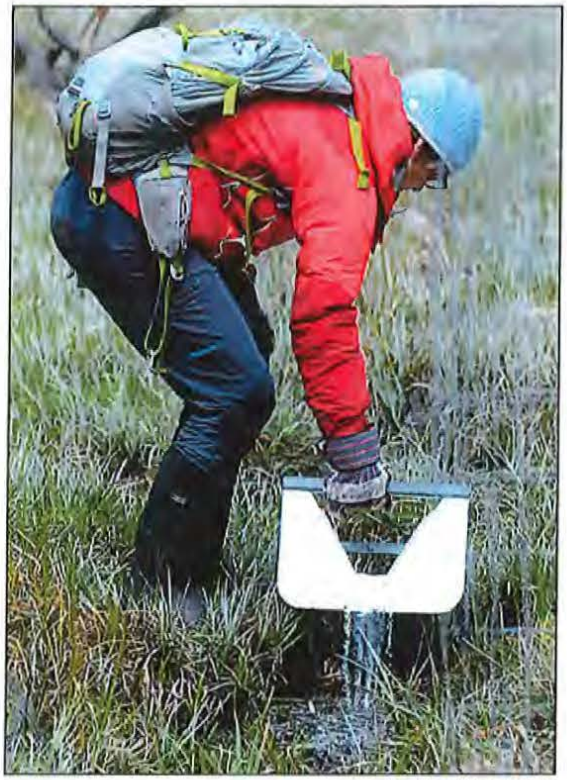
Robison's report acknowledged that the method was subject to error. Another problem, academic experts told us, is that precipitation and the volume that reaches deep aquifers may well have declined in the past 50 years.

Nonetheless, the 1968 numbers are all that's available in most cases. The Oregon Water Resources Department used its estimate for the Harney Valley in testimony to legislators last year, when justifying a halt to new groundwater permits.

Experts recommended we use more current estimates of annual water inflow where available. We did so for the Umatilla, Klamath, Willamette and Upper Deschutes basins.

We also modified the 1968 map, merging some basins to match current boundaries and subsequent studies. State regulators took the same approach in analyzing the Harney Valley last year. Our map had 42 basins and sub-basins statewide.

We did not account for irrigation water that might percolate into the ground, a volume that depends on type of irrigation, crops and the soil types. No comprehensive estimate of such "return flows" exists for Oregon basins. A Klamath Basin study called return flows "not a significant source" of replenishment. Data from a U.S. Geological Survey study of the Upper Deschutes Basin indicated 12 percent of the irrigation water sprayed on crops made it deep into the soil.



MARK GRAVES/STAFF

Allison Aldous, a scientist with The Nature Conservancy, measures the flow of a spring in the Ochoco Mountains. The area's small, spring-fed wetlands sustain a diverse and lush micro-environment in an otherwise arid desert region.

The demand

To measure how much water users are entitled to pump, we used a state permits database. To avoid double-counting water entitlements, we used mapping software to eliminate duplicate and overlapping permits. We labeled each permit with a basin number and then multiplied the permitted acres by the permit "duty," meaning feet of water the state allows per acre for a specific type of use.

State geologists note that not everyone with a permit uses it. Conversely, the state has no universal way to know when users consume more than allowed. Based on interviews with farmers, the state also has its share of unpermitted irrigation wells, which are not included in our estimates.

We focused on what is knowable: the volume to which everyone is legally entitled.

Finally, in each basin, we compared permitted water use with the annual influx of new water. We defined "over capacity" as 100 percent or more. We found nine basins over capacity, one at 80 to 100 percent of capacity, and two at 60 to 80 percent.

Richey, of the University of Washington, said this definition of capacity is a highly conservative choice. The World Resources Institute recently created estimates of "water stress" on surface and groundwater basins, describing a

system as being under "high stress" if water users consume more than 40 percent of what's available, and "extremely high stress" if it's greater than 80 percent.

Other aspects of our analysis also lean toward understating the impact of drilling.

Among them: We had no way of incorporating the effect of pumping on deep aquifers that aren't well-connected to local surface water systems. These aquifers often contain "fossil" water thousands of years old. They refill slowly and can start declining even before water use exceeds annual replenishment.

Well construction and water tables interact in complex and sometimes unpredictable ways, which may explain why our estimates spotted no problems in some basins the state identifies as trouble spots based on other evidence, such as falling water levels in wells.

The analysis also did not flag places on the Oregon coast that some experts say face shortages.

Finally, we omitted domestic wells from our analysis because many do not require permits. The impact of omitting domestic wells is likely small in most areas of the state, given that regulators estimate crops and livestock comprise 80 percent of water use.

The impacts

We also looked for signs that pumping might be causing underground water tables to fall.

Oregon officials track a network of monitoring wells statewide. These are not a representative sample of all agricultural areas, tending instead to cluster in places with groundwater issues. Nonetheless, falling wells across multiple basins might hint at the scope of the problem.

From 19,000 monitoring wells, we selected 185 statewide with the most consistent measurements. Specifically: A well had to be tested at least one quarter out of the year in all nine of the half decades since 1970. For each well, we chose the quarter with the most data.

We then calculated median depth of observations in each half decade and measured the average movement, upward or downward. The long-term trend was falling for about 74 percent of wells east of the Cascades and 63 percent of wells west of the Cascades.

Agenda Item – 8

CLACKAMAS RIVER WATER

REGULAR BOARD MEETING

September 8, 2016

SUBJECT	Commissioner Reports and Reimbursement Requests
DRAFT MOTION	NO MOTION REQUIRED
EFFECTIVE DATE	
PRINCIPAL STAFF PERSON	Board of Commissioners
BOARD ACTION REQUESTED	
DOCUMENTS ATTACHED	1. Commissioner Reimbursements

Agenda Summary

BACKGROUND	None
ANALYSIS	None
OPTIONS	
STAFF RECOMMENDATION	

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month August 2016 **Commissioner's Name** David McNeel Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – August 11, 2016	$ 50.00
	CRW Work Session	$ 50.00
	Miscellaneous Meeting	$
		$
		$
		$
		$
		Total $ 100.00

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $

Amount Due Commissioners $

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted David McNeel

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $ _____ entered P/R _____

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P _____

Board: Reimbursement as of

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month July 2016 **Commissioner's Name** David McNeel Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – July 14, 2016	$ 50.00
	CRW Work Session	$ 50.00
	Miscellaneous Meeting	$
		$
		$
		$
	CRWSC Quarterly meeting	$
		Total $

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

100.00

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $

Amount Due Commissioners $

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Respectfully submitted David McNeel

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $ _____ entered P/R _____

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P _____

Board: Reimbursement as of

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month July 2016 **Commissioner's Name** Naomi Angier Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – July 14, 2016	$ 50.00
	CRW Work Session + agenda meet July 25	$ 50.00
	Miscellaneous Meeting	$
		$
		$
		$
	CRWSC Quarterly meeting	$
		Total $ 100.00

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $

Amount Due Commissioners $ 100.00

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted Naomi Angier

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $ _____ entered P/R 8/15/16 JG

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P

Board: Reimbursement as of

Carol Smith 8-12-16

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month May 2016 **Commissioner's Name** HUGH H. KALAPW Please Print

Date	Meetings	Amount
	CRW Regular Board Meeting – May 12, 2016	$ 50
	CRW Work Session	$
	Miscellaneous Meeting	$
3 MAY 16	BEAR creek BACKBONE	$ 50
5 MAY 16	C-1	$ 50
9 May	Meeting w/Lee & Todd	$ 50
23 May	~~Budget mtg~~ WORK SESSION	$ 50
24 May	Meeting w/Lee & Todd	$ 50
		Total $

Date	Meals	
		$
		$
		$
		$
		Total $

Date	Mileage *	
		$
		$
		$
		$
		$
		$
		Total $

Date	Motel/Hotel Lodging **	
		$
		$
		$
		$
		Total $

Date	Miscellaneous ***	
		$
		$
		$
		Total $

* Mileage $._____per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $ 300

Amount Due Commissioners $

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted HKalapw

Commissioner's Signature

* Subtract anything not meeting standard expense rules. ✓

For Accounting:

Payroll: Taxable $_____ Non-Taxable $_____ entered P/R 8/16/16 RD

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P _____

Board: Reimbursement as of

Carol Krych 8-12-16

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month June 2016 **Commissioner's Name** Hugh H. Kalani Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting - June 9, 2016	$ 50.-
	CRW Work Session 6/27	$ 50.-
	Miscellaneous Meeting	$
	~~[illegible]~~	$
	6/13 CRW/SWA	$ 50.-
	6/30 Agenda mtg	$ 50.-
		$
		Total $

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $ 200-

Amount Due Commissioners $

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted H Kalani

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $_____ entered P/R 8/16/16 pg

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P

Board: Reimbursement as of

Carol Smith 8-12-16

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month July 2016 **Commissioner's Name** Hugh H. Kalani Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – July 14, 2016	$ 50
	CRW Work Session	$
	Miscellaneous Meeting	$
	7/29 Mtg w/Todd	$ 50
		$
		$
	CRWSC Quarterly meeting	$
		Total $

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $ 125

Amount Due Commissioners $

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted, H Kalani

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $ _____ entered P/R 8/16/16 XJ

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P

Board: Reimbursement as of

Carol Boyle 8-12-16

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month August 2016 **Commissioner's Name** Ken Humberston Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – August 11, 2016	$ 50-
	CRW Work Session – 22ND	$ 50-
	Miscellaneous Meeting SWA – 24TH	$ 50-
	AGENDA – 9th & 25TH	$ 50-
		$
		$
		$
		Total $ 200.00

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $

Amount Due Commissioners $

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted Kenneth Humberston

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $ _____ entered P/R 8/29/16 TG

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P _____

Board: Reimbursement as of

Carol Boyck 8.24.16

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month July 2016 **Commissioner's Name** Larry Sowa Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – July 14, 2016	$ 50.00
7/25/16	CRW Work Session	$ 50.00
	Miscellaneous Meeting	$
		$
		$
		$
	CRWSC Quarterly meeting	$
		Total $ 100.00

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $ 100.00

Adjustments $

Amount Due Commissioners $

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted Larry Sowa

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $_____ entered P/R 8/15/16 [illegible]

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P

Board: Reimbursement as of

Carol Boyck 8.12.16

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month August 2016 **Commissioner's Name** Naom. Angier Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – August 11, 2016	$ 50.00
	CRW Work Session Aug. 22	$ 50.00
	Miscellaneous Meeting Agenda setting meet Aug. 25	$ 50.00
		$
		$
		$
		$
		Total $ 150.00

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $

Amount Due Commissioners $ 150.00

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted Naom Angier

Commissioner's Signature

For Accounting:

Payroll: Taxable $_____ Non-Taxable $_____ entered P/R 8/29/16 7d

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P

Board: Reimbursement as of

Carol Bryck 8-26-16

CFO Date

CLACKAMAS RIVER WATER

Commissioner Request for Reimbursement

Month August 2016 **Commissioner's Name** Larry Sonja Please Print

Date	**Meetings**	Amount
	CRW Regular Board Meeting – August 11, 2016	$ 50.00
	CRW Work Session 8/22/16	$ 50.00
	Miscellaneous Meeting	$
		$
		$
		$
		$
		Total $

Date	**Meals**	
		$
		$
		$
		$
		Total $

Date	**Mileage ***	
		$
		$
		$
		$
		$
		$
		Total $

Date	**Motel/Hotel Lodging ****	
		$
		$
		$
		$
		Total $

Date	**Miscellaneous *****	
		$
		$
		$
		Total $

* Mileage $._____ per mile

** Lodging bills must be attached in support of reimbursement request

***Miscellaneous expenses to be supported with bills where possible

Total Expenses $

Adjustments $

Amount Due Commissioners $ 100.00

I hereby certify under penalties of perjury and other laws regarding falsification of records and/or official misconduct, the above request for reimbursement to be accurate and complete and further certify that I am authorized to receive reimbursement as part of my authorized duties as a CRW commissioner.

Respectfully submitted [signature]
Commissioner's Signature

For Accounting:
Payroll: Taxable $_____ Non-Taxable $_____ entered P/R 8/29/16 [illegible]

Accounts Payable: VENDOR #_____ ACCT# 01.701.5730 AMOUNT $_____ Entered A/P

Board: Reimbursement as of

[signature] 8.23.16
CFO Date