



State of Oregon
 Water Resources Department
 725 Summer Street NE, Suite A
 Salem, Oregon 97301-1266
 (503) 986-0900

Application for Permit Amendment

Part 1 of 5 – Minimum Requirements Checklist

This permit amendment application will be returned if Parts 1 through 5 and all required attachments are not completed and included.
 For questions, please call (503) 986-0900, and ask for Transfer Section.

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Check all items included with this application. (N/A = Not Applicable)

- Part 1 – Completed Minimum Requirements Checklist.
- Part 2 – Completed Application Map Checklist.
- Part 3 – Application Fee, payable by check to the Oregon Water Resources Department, and completed Fee Worksheet, page 3. Try the new online fee calculator at: http://apps.wrd.state.or.us/apps/misc/wrd_fee_calculator. If you have questions, call Customer Service at (503) 986-0801. **Find enclosed check for \$1,570**
- Part 4 – Completed Applicant Information and Signature.
- Part 5 – Information about Permits to be Amended: **Number of permits to be amended: 1**
List the Permits here: S-54935 (Attachment A)
 Please include a separate Part 5 for each permit. (See instructions on page 6)
- Completed Permit Amendment Application Map (Does not have to be prepared by a Certified Water Right Examiner). **(Attachment B)**
- N/A Request for Assignment Form and statutory fee. The request for assignment form has to be completed if the applicant is **not** the permit holder of record and needs to be assigned to the permit; **or** the landowner of the proposed place of use is **not** the permit holder of record and needs to be assigned to the permit (the Request for Assignment Form is available online at <https://www.oregon.gov/OWRD/Forms/Pages/default.aspx>). Assignment is not needed if the applicant is the permit holder of record.
- N/A Affidavit(s) of Consent are required from all permit holder(s) of record if the permit is not assigned to the applicant **or** other permit holders of record that are not listed as applicants.
- N/A Oregon Water Resources Department's Land Use Information Form with approval and signature (or signed land use form receipt stub) from each local land use authority in which water is to be diverted, conveyed, and/or used. Not required if water is to be diverted, conveyed, and/or used only on federal lands or if **all** of the following apply: a) a change in place of use only, b) no structural changes, c) the use of water is for irrigation only, and d) the use is located within an irrigation district or an exclusive farm use zone. **(Attachment C)**
- N/A Water Well Report/Well Log for changes in point(s) of appropriation (well(s)) or additional point(s) of appropriation. **(Wells not yet constructed. See Table 3 on page 9.)**
- N/A Geologist Report for a change from a surface water point of diversion to a ground water point of appropriation (well), if the proposed well is more than 500 feet from the surface water source and more than 1000 feet upstream or downstream from the point of diversion. (ORS 540.531(2) or (3)). **(Attachment D)**

(For Staff Use Only)

WE ARE RETURNING YOUR APPLICATION FOR THE FOLLOWING REASON(S):

___ Application fee not enclosed/insufficient	___ Map not included or incomplete
___ Land Use Form not enclosed or incomplete	___ Part ___ is incomplete
___ Additional signature(s) required	
Other/Explanation _____	
Staff: _____ 503-986-0 _____	Date: ____/____/____

Part 2 of 5 – Permit Amendment Map Checklist

Your permit amendment application will be returned if any of the map requirements listed below are not met.

Please be sure that the map you submit includes all the items listed below and meets the requirements of OAR 690-380-3100, however, the map does not have to be prepared by a Certified Water Right Examiner. Check all boxes that apply.

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- N/A If more than three permits are involved, separate maps for each permit.
- Permanent quality printed with dark ink on good quality paper.
- The size of the map can be 8½ x 11 inches, 8½ x 14 inches, 11 x 17 inches, or up to 30 x 30 inches. For 30 x 30 inch maps, one extra copy is required.
- A north arrow, a legend, and scale.
- The scale of the map must be: 1 inch = 400 feet, 1 inch = 1,320 feet, the scale of the county assessor map if the scale is not smaller than 1 inch = 1,320 feet, or a scale that has been pre-approved by the Department.
- Township, Range, Section, ¼ ¼, DLC, Government Lot, and other recognized public land survey lines.
- Tax lot boundaries (property lines) are required. Tax lot numbers are recommended.
- Major physical features including rivers and creeks showing direction of flow, lakes and reservoirs, roads, and railroads.
- Major water delivery system features from the point(s) of diversion/appropriation such as main pipelines, canals, and ditches.
- Existing place of use that includes separate hachuring for each water use permit, priority date, and use including number of acres in each quarter-quarter section, government lot, or in each quarter-quarter section as projected within government lots, donation land claims, or other recognized public land survey subdivisions. If less than the entirety of the permit is being changed, a separate hachuring is needed for the portion of the permit left unchanged.
- N/A If you are proposing a change in place of use, show the proposed place of use with hachuring that includes separate hachuring for each permit, priority date, and use including number of acres in each quarter-quarter section, government lot, or in each quarter-quarter section as projected within government lots, donation land claims, or other recognized public land survey subdivisions.
- Existing point(s) of diversion or well(s) with distance and bearing or coordinates from a recognized survey corner. This information can be found in your water use permit. **The authorized point of diversion is the "Big Butte Creek watershed." The map shows the location of Rancheria Springs where Medford Water Commission has historically diverted water.**
- N/A If you are proposing a change in point(s) of diversion or well(s), show the proposed location and label it clearly with distance and bearing or coordinates. If GPS coordinates are used, latitude-longitude coordinates may be expressed as either degrees-minutes-seconds with at least one digit after the decimal (example – 42°32'15.5") or degrees-decimal with five or more digits after the decimal (example – 42.53764°).

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Part 3 of 5 – Fee Worksheet

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FEE WORKSHEET for PERMIT AMENDMENT

1	Base Fee (includes one type of change to one permit for up to 1 cfs)	1	\$1,160
2	Types of change proposed: <input type="checkbox"/> Place of Use <input checked="" type="checkbox"/> Point of Diversion/Appropriation Number of above boxes checked = 1 (2a) Subtract 1 from the number in line 2a = 0 (2b) <i>If only one change, this will be 0</i> Multiply line 2b by \$930 and enter » » » » » » » » » » » » » » » »	2	0
3	Number of permits included in Permit Amendment 1 (3a) Subtract 1 from the number in 3a: 0 (3b) <i>If only one permit this will be 0</i> Multiply line 3b by \$520 and enter » » » » » » » » » » » » » » » »	3	0
4	Do you propose to add or change a well, or change from a surface water POD to a well? <input type="checkbox"/> No: enter 0 » <input checked="" type="checkbox"/> Yes: enter \$410 »	4	\$410
5	Do you propose to change the place of use? <input checked="" type="checkbox"/> No: enter 0 on line 5 » <input type="checkbox"/> Yes: enter the cfs for the portions of the permits to be amended (see example below*): _____ (5a) Subtract 1.0 from the number in 5a above: _____ (5b) If 5b is 0, enter 0 on line 5 » If 5b is greater than 0, round up to the nearest whole number: _____ (5c) and multiply 5c by \$350, then enter on line 5 » » » » » » » » » » » » » » » »	5	0
6	Add entries on lines 1 through 5 above » » » » » » » » » » Subtotal:	6	\$1,570
7	Is this permit amendment: <input type="checkbox"/> necessary to complete a project funded by the Oregon Watershed Enhancement Board (OWEB) under ORS 541.932? <input type="checkbox"/> endorsed in writing by ODFW as a change that will result in a net benefit to fish and wildlife habitat? If one or more boxes is checked, multiply line 6 by 0.5 and enter on line 7 » If no box is applicable, enter 0 on line 7» »	7	0
8	Subtract line 7 from line 6 » » » » » » » » » » Permit Amendment Fee:	8	\$1,570

*Example for Line 5a calculation to transfer 45.0 acres of Primary Permit S-12345 (total 1.25 cfs for 100 acres) and 45.0 acres of Supplemental Permit S-87654 (1/80 cfs per acre) on the same land:

- For irrigation calculate cfs for each permit involved as follows:
 - Divide total authorized cfs by total acres in the permit (*for S-12345, 1.25 cfs ÷ 100 ac*); then multiply by the number of acres to be changed to get the application cfs (*x 45 ac = 0.56 cfs*).
 - If the water right permit does not list total cfs, but identifies the allowable use as 1/40 or 1/80 of a cfs per acre; multiply number of acres proposed for change by either 0.025 (1/40) or 0.0125 (1/80). (*For S-87654, 45.0 ac x 0.0125 cfs/ac = 0.56 cfs*)
- Add cfs for the portions of permits on all the land included in the application; however **do not count cfs for supplemental permits on acreage for which you have already calculated the cfs fee for the primary permit on the same land**. The fee should be assessed only once for each “on the ground” acre included in the application. (*In this example, blank 5a would be only 0.56 cfs, since both permits serve the same 45.0 acres. Blank 5b would be 0 and Line 5 would then also become 0*).

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Part 4 of 5 – Applicant Information and Signature

Applicant Information **OWRD**

APPLICANT/BUSINESS NAME Medford Water Commission on behalf of the City of Medford, Attn: Andy Huffman		PHONE NO. 541-774-2455	ADDITIONAL CONTACT NO.
ADDRESS 200 S Ivy St. – Room 177			FAX NO.
CITY Medford	STATE OR	ZIP 97501	E-MAIL andy.huffman@medfordwater.org
BY PROVIDING AN E-MAIL ADDRESS, CONSENT IS GIVEN TO RECEIVE ALL CORRESPONDENCE FROM THE DEPARTMENT ELECTRONICALLY. COPIES OF THE FINAL ORDER DOCUMENTS WILL ALSO BE MAILED.			

Agent Information – The agent is authorized to represent the applicant in all matters relating to this application.

AGENT/BUSINESS NAME GSI Water Solutions, Inc., Attn: Adam Sussman		PHONE NO. 541-257-9001	ADDITIONAL CONTACT NO.
ADDRESS 1600 SW Western Blvd, Suite 240			FAX NO.
CITY Corvallis	STATE OR	ZIP 97333	E-MAIL asussman@gsiws.com
BY PROVIDING AN E-MAIL ADDRESS, CONSENT IS GIVEN TO RECEIVE ALL CORRESPONDENCE FROM THE DEPARTMENT ELECTRONICALLY. COPIES OF THE FINAL ORDER DOCUMENTS WILL ALSO BE MAILED.			

Explain in your own words what you propose to accomplish with this permit amendment; and why:
The Applicant is requesting a surface water to groundwater permit amendment for a 3.1 cfs portion of Permit S-54935. Medford Water Commission (MWC) is proposing to change the location of water collection from the historic location at Rancheria Springs to up to 10 proposed wells directly up-gradient of the springs.

Check this box if this project is fully or partially funded by the American Recovery and Reinvestment Act. (Federal stimulus dollars)

Is the applicant the permit holder of record? Yes No

If NO, include either:

- A completed assignment form (with required statutory assignment fee), assigning all or a portion of the permit to the applicant(s), **OR**
- An affidavit of consent from the permit holder(s) of record that gives permission for the applicant to amend the permit.

Has the Completion ("C") Date of the permit(s) in this application expired? Yes No

If YES, this application will not be accepted by the Department.

If NO, what are the completion dates of the permit(s)? 10/1/2056


- If the permit completion date expires while the Permit Amendment Application is pending, the Department will not approve the Permit Amendment Application until an Extension of Time Application is approved for the permit.
- You may consider using the Reimbursement Authority process to expedite the processing of this Permit Amendment Application if the completion date of the permit expires within 6 months of the date of filing this application.

By my signature below, I confirm that I understand:

- Prior to Department approval of the permit amendment, I may be required to submit payment to the Department for publication of a notice in a newspaper with general circulation in the area where the permit is located, once per week for two consecutive weeks. If more than one qualifying newspaper is available, I suggest publishing the notice in the following newspaper: The Mail Tribune.

I (we) affirm that the information contained in this application is true and accurate.




 Applicant Signature

Brad Taylor; Medford Water Commission
 Print Name (and Title if applicable)

9/23/19
 Date

Check one of the following:

- The applicant is responsible for completion of change(s). Notices and correspondence should continue to be sent to the applicant.
- The permit holder(s) of record will be responsible for completing the proposed change(s) after the final order is issued. Copies of notices and correspondence should be sent to the permit holder(s) of record.

Check the appropriate box, if applicable:

- Check here if any of the permits proposed for amendment are or will be located within or served by an irrigation or other water district.

IRRIGATION DISTRICT NAME N/A	ADDRESS	
CITY	STATE	ZIP

- Check here if water for any of the permits supplied under a water service agreement or other contract for stored water with a federal agency or other entity.

ENTITY NAME N/A	ADDRESS	
CITY	STATE	ZIP



To meet State Land Use Consistency Requirements, you must list all local governments (each county, city, municipal corporation, or tribal government) within whose jurisdiction water will be diverted, conveyed or used.

ENTITY NAME Jackson County Community Development	ADDRESS 10 South Oakdale Ave, Room 100	
CITY Medford	STATE OR	ZIP 97501

ENTITY NAME	ADDRESS	
CITY	STATE	ZIP

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Please use a separate Part 5 for each permit being changed. See instructions on page 6, to copy and paste additional Part 5s, or to add additional rows to tables within the form.

PERMIT # S-54935

Table 1. Location of Authorized and Proposed Point(s) of Diversion (POD) or Appropriation (POA)
(Note: If the POD/POA name is not specified in the permit, assign it a name or number here.)

POD/POA Name or Number	Is this POD/POA Authorized by the permit or is it Proposed?	If POA, OWRD Well Log ID# (or Well ID Tag # L-)	Twp		Rng		Sec	¼ ¼		Tax Lot, DLC or Gov't Lot	Measured Distances (from a recognized survey corner)
EW-1	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SW	SE	2800	425 feet North and 1440 feet West from the SE corner of Section 17
EW-2	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SE	SE	2800	365 feet North and 1340 feet West from the SE corner of Section 17
EW-3	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SE	SE	2800	310 feet North and 1270 feet West from the SE corner of Section 17
EW-4	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SE	SE	2800	275 feet North and 1230 feet West from the SE corner of Section 17
EW-5	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SE	SE	2800	175 feet North and 1240 feet West from the SE corner of Section 17
EW-6	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SE	SE	2800	130 feet North and 1240 feet West from the SE corner of Section 17
EW-7	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SE	SE	2800	80 feet North and 1240 feet West from the SE corner of Section 17
EW-8	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SE	SE	2800	30 feet North and 1240 feet West from the SE corner of Section 17
EW-9	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SW	SE	2800	30 feet North and 1345 feet West from the SE corner of Section 17
EW-10	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	17	SW	SE	2800	20 feet North and 1390 feet West from the SE corner of Section 17
EW-11	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed		35	S	3	E	20	NW	NE	2800	10 feet South and 1435 feet West from the SE corner of Section 17

Check all type(s) of change(s) proposed below (change "CODES" are provided in parentheses):

- | | |
|---|---|
| <input type="checkbox"/> Place of Use (POU) | <input type="checkbox"/> Point of Appropriation/Well (POA) |
| <input type="checkbox"/> Point of Diversion (POD) | <input type="checkbox"/> Additional Point of Appropriation (APOA) |
| <input type="checkbox"/> Additional Point of Diversion (APOD) | <input checked="" type="checkbox"/> Surface water POD to Ground Water POA (SW/GW) |

Will all of the proposed changes affect the entire water use permit?

- Yes Complete only the proposed ("to" lands) section of Table 2 on the next page. Use the "CODES" listed above to describe the proposed changes.
- No Complete all of Table 2 to describe the portion of the permit to be changed.

For a change in place of use: N/A – No change in place of use proposed

Does the permit holder of record own or control the land TO which the place of use is being moved?

Yes No

If NO, the landowner of the land TO which the place of use is being moved **must be assigned to the permit as a permit holder of record** by submitting a completed Request for Assignment form and the required statutory fee for an assignment.

Is the proposed place of use contiguous to the authorized place of use? Yes No

The permitted place of use can be moved only to lands that are contiguous to the authorized place of use **unless** the change to non-contiguous lands is in furtherance of mitigation or conservation efforts undertaken for the purposes of benefiting a species listed as sensitive, threatened, or endangered under ORS 496.171 to 496.192 or the federal Endangered Species Act of 1973 (16 U.S.C. 1531 to 1544), as determined by the listing agency. Contiguous land being either adjacent land or land separated from the land to which a permit is authorized by roads, utility corridors, irrigation ditches or publicly owned rights of way.

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Please use and attach additional pages of Table 2 as needed.
See page 6 for instructions.

Do you have questions about how to fill-out the tables?
Contact the Department at 503-986-0900 and ask for Transfer Staff.

Table 2. Description of Changes to Water Use Permit # S-54935

List the change proposed for the acreage in each ¼ ¼. If more than one change is proposed, specify the acreage associated with each change.
If there is more than one POD/POA involved in the proposed changes, specify the acreage associated with each POD/POA.

AUTHORIZED (the "from" or "off" lands) The listing that appears on the certificate BEFORE PROPOSED CHANGES List only that part or portion of the water right that will be changed.										Proposed Changes (see "CODES" from previous page)	PROPOSED (the "to" or "on" lands) The listing as it would appear AFTER PROPOSED CHANGES are made.															
Twp	Rng	Sec	¼	¼	Tax Lot	Gvt Lot or DLC	Rate (if applicable)	POD(s) or POA(s) (name or number from Table 1)	Priority Date		Twp	Rng	Sec	¼	¼	Tax Lot	Gvt Lot or DLC	Rate (if applicable)	POD(s) or POA(s) to be used (from Table 1)	Priority Date						
EXAMPLE																										
2	S	9	E	15	NE	NW	100		15.0	POD #1 POD #2		POU/POD	2	S	9	E	15	NW	NW	100	1	10.0	POD #5			
"	"	"	"	"	"	"	"	"	EXAMPL E	"		"	2	S	9	E	15	SW	NW	200		5.0	POD #6			
Municipal Use Water Right authorized within the boundaries of the City of Medford. See Attachment B for Place of Use Map										3.1 cfs	MWC has historically diverted water from Rancheria Springs	5/28/1925	SW/GW	Municipal Use Water Right authorized within the boundaries of the City of Medford. See Attachment B for Place of Use Map.										3.1 cfs	Well 1 Well 2 Well 3 Well 4 Well 5 Well 6 Well 7 Well 8 Well 9 Well 10 Well 11	5/28/1925
TOTAL RATE										3.1 cfs	TOTAL RATE										3.1 cfs					

Additional remarks: The Applicant is proposing to change the location of water collection for a 3.1 cfs portion of Permit S-54935. MWC has historically diverted the water from Rancheria Springs. MWC proposes to divert water from up to 11 proposed wells directly up-gradient of the springs. See application map (Attachment B) for the location of the springs and the planned locations of the up to 11 proposed wells.

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Are there other water rights certificates, water use permits or ground water registrations associated with the "from" or "to" lands? Yes No N/A – Applicant is a municipality so "layering" does not apply

If YES, list the other certificate, permit, or ground water registration numbers: _____



If the permit(s) are for irrigation or supplemental irrigation use, other water rights existing on the same land for irrigation that are subject to transfer must either change concurrently or be cancelled. Any change to a water right certificate or ground water registration must be filed separately in a water right transfer application or ground water registration modification application, respectively.

For a change in point(s) of appropriation (well(s)) or additional point(s) of appropriation:

- Well log(s) are attached for each authorized and proposed well(s) that are clearly labeled and associated with the corresponding well(s) in Table 1 above and on the accompanying application map. (Tip: You may search for well logs on the Department's web page at: http://apps.wrd.state.or.us/apps/gw/well_log/Default.aspx)

AND/OR

- Describe the construction of the authorized and proposed well(s) in Table 3 for any wells that do not have a well log. For *proposed wells not yet constructed or built*, provide "a best estimate" for each requested information element in the table. The Department recommends you consult a licensed well driller, geologist, or certified water right examiner to assist with assembling the information necessary to complete Table 3.

Table 3. Construction of Point(s) of Appropriation

Any well(s) in this listing must be clearly tied to corresponding well(s) described in Table 1 and shown on the accompanying application map. Failure to provide the information will delay the processing of your transfer application until it is received. The information is necessary for the department to assess whether the proposed well(s) will access the same source aquifer as the authorized point(s) of appropriation (POA). The Department is prohibited by law from approving POA changes that do not access the same source aquifer.

Proposed or Authorized POA Name or Number	Is well already built? (Yes or No)	If an existing well, OWRD Well ID Tag No. L-	Total well depth	Casing Diameter	Casing Intervals (feet)	Seal depth(s) (intervals)	Perforated or screened intervals (in feet)	Static water level of completed well (in feet)	Source aquifer (sand, gravel, basalt, etc.)	Well - specific rate (cfs or gpm). If less than full rate of water right
Well 1	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 2	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 3	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)

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Proposed or Authorized POA Name or Number	Is well already built? (Yes or No)	If an existing well, OWRD Well ID Tag No. L-	Total well depth	Casing Diameter	Casing Intervals (feet)	Seal depth(s) (intervals)	Perforated or screened intervals (in feet)	Static water level of completed well (in feet)	Source aquifer (sand, gravel, basalt, etc.)	Well - specific rate (cfs or gpm). If less than full rate of water right
Well 4	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 5	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 6	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 7	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 8	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 9	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 10	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)
Well 11	No		110 ft. (est.)	12 in.	2-20 ft. 100-110 ft. (est.)	0-18 ft. 100-110 ft. (est.)	20-100 ft. (est.)	3 ft. (est.)	Young High Cascade Andesite Aquifer (Qa)	500 gpm (est.)

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Attachment A
Permit S-54935

Application for a Water Right Transfer – City of Medford

Permit to Appropriate the Public Waters of the State of Oregon

STATE OF OREGON,
County of Marion, ss.

This superseding permit, in the name of

**CITY OF MEDFORD
200 IVY STREET ROOM 177
MEDFORD OR 97501**

is issued to describe an amendment for an additional point of diversion proposed under Permit Amendment Application T-11916, approved by Special Order Vol. 96, Page 37-40, entered June 3, 2015, and to describe extension of time for complete application of water approved November 22, 2013 and a Water Management and Conservation Plan approved May 18, 2009. This permit supersedes Permit S-6884.

This is to certify that I have examined the foregoing application and do hereby grant the same, subject to the following limitations and conditions:

Subject to existing rights the City of Medford is hereby granted the exclusive right to the use of the waters of Big Butte Creek and of the springs at the head of and which form said stream, and of tributaries of said stream, for municipal purposes, as provided in Chapter 166, Laws of Oregon for 1925.

The amount of water appropriated shall be limited to the amount which can be applied to beneficial use and not exceedSee above..... cubic feet per second, or its equivalent in case of rotation. The priority date of this permit is ...May 28, 1925..., the date upon which the law providing for this appropriation became effective.

Authorized Points of Diversion:

Twp	Rng	Mer	Sec	Q-Q	DLC	Measured Distances
THE BIG BUTTE CREEK WATERSHED (see ORS 538.430(1))						
36 S	2 W	WM	13	SW NW	41	DUFF WATER TREATMENT PLANT POD - SOUTH 25° 25' 28" EAST 4385.6 FEET FROM THE NE CORNER OF DLC 42.

Authorized Place of Use:

MUNICIPAL USE WITHIN THE BOUNDARIES OF CITY OF MEDFORD

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Permit Amendment T-11916 Conditions

The quantity of water diverted at the new additional point of diversion shall not exceed the quantity of water lawfully available at the mouth of Big Butte Creek, measured at USGS Stream Gage Station number 14337500, Big Butte Creek Near McLeod, OR.

For purposes of water use regulation by priority date, the use of water at the additional point of diversion on the Rogue River, as authorized by Permit Amendment T-11916, will be subordinate to Eagle Point Irrigation District's water use for generation of electric power under Certificate 31970 during the non-irrigation season (November 1 through March 31) of each year.

Water use measurement conditions:

- a. Before water use may begin under this order, the water user shall install a totalizing flow meter, or, with prior approval of the Director, another suitable measuring device, at each point of diversion (new and existing).
- b. The water user shall maintain the meter(s) or measuring device(s) in good working order.
- c. The water user shall allow the Watermaster access to the meter(s) or measuring device(s); provided however, where the meter(s) or measuring device(s) are located within a private structure, the Watermaster shall request access upon reasonable notice.

Water shall be acquired from the same surface water source as the original point of diversion.

The water user shall operate and maintain an approved fish screen at the new point of diversion. If Oregon Department of Fish and Wildlife (ODFW) determines the screen is not functioning properly, and is unsuccessful in working with the water user to meet ODFW standards, ODFW may request that OWRD regulate the use of water until OWRD receives notification from ODFW that the fish screen is functioning properly.

Extension of Time Conditions

1. Development Limitations

Diversion of any water beyond 3.1 cfs under Permit S-54935 shall only be authorized upon issuance of a final order approving a Water Management and Conservation Plan (WMCP) under OAR Chapter 690, Division 86, that authorizes access to a greater rate of diversion under the permit consistent with OAR 690-086-0130(7). The required WMCP shall be submitted to the Department within 3 years of November 22, 2013. The amount of water used under Permit S-54935 must be consistent with this and subsequent WMCP's approved under OAR Chapter 690 on file with the Department.

The deadline established in the Extension Final Order for submittal of a WMCP shall not relieve a permit holder of any existing or future requirement for submittal of a WMCP at an earlier date as established through other orders of the Department. A WMCP submitted to meet the requirements of the final order may also meet the WMCP submittal requirements of other Department orders.

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2. Conditions to Maintain the Persistence of Listed Fish

I. Conditions to Maintain the Persistence of Listed Fish – Option #1

A. Authorization for a Change in/Additional Point(s) of Diversion

- a. Prior to diversion of any water under Permit S-54935 from the Rogue River, a change in or addition of point(s) of diversion to a location on the mainstem of the Rogue River near or below the Duff Water Treatment Plant located in DLC 41 within the SWNW, Section 13, Township 36 South, Range 2 West, W.M. must be approved by the Department in accordance with ORS 537.211 or ORS 540.510.
- b. To prevent injury or enlargement, diversion of water from the Rogue River under Permit S-54935 will be limited as part of any transfer process to the amount of water measured in Big Butte Creek near the mouth at USGS Gage No. 14337500, or its equivalent.

B. Fish Persistence Target Flows

- a. Fish persistence target flows in the Rogue River as recommended by ODFW are in Table 1, below; flows are to be measured in the Rogue River near Agness, Oregon (USGS Gage Number 14372300, or its equivalent), or at Raygold, near Central Point, Oregon (USGS Gage Number 14359000, or its equivalent), depending on the time of year.

Table 1

ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS MEASURED AT USGS GAGE 14372300, ROGUE RIVER AT AGNESS, OREGON	
Month	Cubic Feet per Second
May 1 – June 30	3800
July 1 – Sept 10	2000
ODFW'S RECOMMENDED FISH PERSISTENCE TARGET FLOWS MEASURED AT USGS GAGE 14359000, ROGUE RIVER AT RAYGOLD, OREGON	
Month	Cubic Feet per Second
Sept 11 – April 30	1200

b. Alternate Streamflow Measurement Point

The location of a target flow measurement point as established in these Conditions to Maintain the Persistence of Listed Fish may be revised if the City provides evidence in writing that ODFW has determined that persistence flows may be measured at an alternate streamflow measurement point and provides an adequate description of the location of the alternate streamflow measurement point, and the Water Resources Director concurs in writing.

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C. Determining Water Use Reductions - Generally

The developed portion of the permit, 3.1 cfs, is *not* subject to these fish persistence conditions.

The maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition is determined in proportion to the amount by which the flows shown in Table 1 are missed based on a seven day rolling average of average of mean daily flows measured in the Rogue River at the specified gage location. The percent of missed target flows is defined as:

$$(1 - [Q_A / Q_T]) \times 100\%$$

where Q_A is the actual flow measured at the designated location based on the seven day rolling average, and Q_T is the target flow (from Table 1).

The percent by which the target flow is missed applied to the undeveloped portion of the permit provides the maximum amount of the undeveloped portion of the permit that can be diverted as a result of this fish persistence condition, and is defined as:

$$E - (E \times \% \text{ missed target flows}),$$

where E is the undeveloped portion of the permit. For water use under Option #1 for Permit S-54935, the undeveloped portion of the permit is equivalent to the streamflow at the mouth of Big Butte Creek as measured at USGS Gage No. 14337500, or its equivalent, minus any portion of the 3.1 cfs developed portion of the permit not diverted above the gage.

The maximum amount of undeveloped portion of the permit that can be diverted as a result of this fish persistence condition may be adjusted by a Consumptive Use Percentage, when applicable, as per Item 2.I.D., below.

When $Q_A \geq Q_T$, the amount of the undeveloped portion of the permit that can be diverted would not need to be reduced as a result of this fish persistence condition.

D. Consumptive Use Percentages for Utilization in Rogue River Calculations

a. Initial Consumptive Use Percentages

The City of Medford has not identified any Consumptive Use Percentages based on the return of flows to the Rogue River through effluent discharge. Thus, at this time the City may not utilize Consumptive Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition.

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b. First Time Utilization of Consumptive Use Percentages

Utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition may begin after the issuance of the Final Order for the extension of time.

First time utilization of Consumptive Use Percentages is contingent upon the City (1) providing evidence in writing that ODFW has determined that withdrawal points and effluent discharges are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting monthly Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages. Utilization of Consumptive Use Percentages is subject to an approval period described in 2.I.D.f., below.

Consumptive Use Percentages submitted to the Department for review must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The proposed Consumptive Use Percentages should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for the extension of time, approved November 22, 2013.

c. Consumptive Use Percentages Updates

Continuing the utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition beyond an approval period (as described in 2.I.D.f., below) is contingent upon the City submitting updated Consumptive Use Percentages and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages Updates. Utilization of Consumptive Use Percentages Updates is subject to an approval period described in 2.I.D.f., below.

The updates to the Consumptive Use Percentages must (1) be specified as a percentage (may be to the nearest 1/10 percent) for each month of the year and (2) include a description and justification of the methods utilized to determine the percentages. The updates should be submitted on the *Consumptive Use Percentages Update Form* provided with the Final Order for the extension of time approved November 22, 2013.

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d. Changes to Wastewater Technology and/or Wastewater Treatment Plant Practices

If there are changes to either wastewater technology or the practices at the City's wastewater treatment facility resulting in 25% or more reductions in average monthly return flows to the Rogue River, then the Consumptive Use Percentages in effect at that time may no longer be utilized for the purposes of calculating the maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition. The 25% reduction is based on a 10-year rolling average of monthly wastewater return flows to the Rogue River as compared to the average monthly wastewater return flows from the 10 year period just prior to date of the first approval period described in 2.I.D.f., below.

If such changes to either wastewater technology or the practices at the City's wastewater treatment facility occur resulting in 25% reductions, further utilization of Consumptive Use Percentages is contingent upon the City submitting Consumptive Use Percentages Updates as per 2.I.D.c., above, and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages.

e. Relocation of the Point(s) of Diversion(s) and/or Return Flows

If the point(s) of diversion(s) and/or return flows are relocated, Consumptive Use Percentages in effect at that time may no longer be utilized for the purposes of calculating the maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition.

After relocation of the point(s) of diversion(s) and/or return flows, further utilization of Consumptive Use Percentages is contingent upon the City

(1) providing evidence in writing that ODFW has determined that any relocated withdrawal points and effluent discharge points are within reasonable proximity to each other, such that fish habitat between the two points is not impacted significantly, and (2) submitting Consumptive Use Percentages Updates as per 2.I.D.c., above, and receiving the Water Resources Director's concurrence with the proposed Consumptive Use Percentages.

f. Approval Periods for Utilization of Consumptive Use Percentages

The utilization of Consumptive Use Percentages for the purpose of calculating the maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition may continue for a 10 year approval period that ends 10 years from the Water Resources Director's most recent date of concurrence with Consumptive Use Percentages Updates as evidenced by the record, unless sections 2.I.D.d., or 2.I.D.e. (above) are applicable.

Consumptive Use Percentages (first time utilization or updates) which are submitted and receive the Director's concurrence will begin a new 10 year approval period. The approval period begins on the date of the Water Resources Director's concurrence with Consumptive Use Percentages Updates, as evidenced by the record. The City at its discretion may submit updates prior to the end of an approval period.

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E. Big Butte Creek Flow Restoration Credits for Utilization in Rogue River Calculations

This flow restoration credit is based on the amount of water restored to Big Butte Creek through qualified and Department-approved instream transfers. The credit is in cubic feet per second (cfs). When target flows are not met, the credit may be used to increase allowed diversions to the extent discussed below, when diverting the undeveloped portion of Permit S-54935 from the Rogue River.¹

- a. The credit will equal the total combined maximum rate of the instream transfer(s) that protect water to the mouth of Big Butte Creek and also meet at least one of the following three criteria:
 1. The POD(s) are downstream of Eagle Point Irrigation District's (EPID) Big Butte Creek diversion located within the NWNW, Section 3, Township 35 South, Range 2 East, W.M.; or
 2. The priority date(s) are senior to April 21, 1915; or
 3. A written agreement with EPID protects the water transferred instream past EPID's Big Butte Creek diversion located within the NWNW, Section 3, Township 35 South, Range 2 East, W.M.
- b. The credit may be applied to the calculated allowed diversion of the undeveloped portion of Permits S-54935 so long as (1) water under the undeveloped portion of the permit is diverted from the mainstem Rogue River, (2) the allowed diversion of the undeveloped portion of the permit is determined in accordance with 2.I.A., 2.I.B., 2.I.C., and 2.I.D. above, (3) the total credit as determined above is not exceeded, and (4) the legal amount of water that can be diverted under the permit as granted through the Department's review and approval of the municipal water user's WMCP under OAR 690-086 is not exceeded.
- c. Establishing the Flow Restoration Credit
The City of Medford has not identified any instream transfers in Big Butte Creek that meet the criteria in Section 2.I.E.a., above, for the purpose of a flow restoration credit. Thus, at this time the City may not utilize a Flow Restoration Credit for the purpose of offsetting any required reduction to use of the undeveloped portion of Permit S-54935 due to fish persistence conditions.

In order to establish the Flow Restoration Credit, the City must receive the Water Resources Director's concurrence with any proposed Flow Restoration Credit.

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¹ A separate potential credit based on the same instream transfers is also applicable to the undeveloped portion under Permit S-23210.

F. Examples for Option #1

Example 1: Target flow met.

On June 15, the last seven mean daily flows in the Rogue River at the Agness gage were 4100, 4000, 4100, 4000, 3900, 3800 and 3800 cfs. The seven day rolling average (Q_A) is 3957 cfs. The amount of the undeveloped portion of the permit that can be diverted would not be reduced because the 7 day average of mean daily flows is greater than the 3800 cfs target flow (Q_T) for June 15. In this example, $Q_A \geq Q_T$.

Example 2: Target flow missed.

Step 1: If on June 15, the average of the last seven mean daily flows (Q_A) was 2600 cfs, and the target flow (Q_T) is 3800, then the target flow would be missed by 31.6 %.

$$(1 - (2600 / 3800)) \times 100\% = 31.6\%$$

Step 2: Assuming the Consumptive Use Percentage is 62.2%² during the month of June and the utilization of this percentage is authorized, and the target flow is missed by 31.6% (from Step 1), then the amount of the undeveloped portion of the permit that could be diverted would be reduced by 19.7%.

$$(62.2\% \times 31.6\%) / 100 = 19.7\%$$

(If adjustments are not to be made by a Consumptive Use Percentage, then the undeveloped portion of the permit would be reduced only by the % by which the target flow is missed – 31.6% in this example).

Step 3: If the gage reading on Big Butte Creek near the mouth at USGS Gage No. 14337500, or its equivalent, is 70 cfs, and the City is diverting the 3.1 cfs developed portion of the permit above the gage, then in this example, the undeveloped portion of Permit S-54935 (E) would be 70.0 cfs.

Step 4: If the undeveloped portion of this permit (E) is 70.0 cfs, and the undeveloped portion of the permit needs to be reduced by 19.7% (from Step 2), or 13.8 cfs, then the maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition is 56.2 cfs.

$$(70.0 \times 19.7\%) / 100 = 13.8$$

$$70.0 - 13.8 = 56.2$$

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² Currently, the City of Medford may not utilize Consumptive Use Percentages for the purpose of calculating the amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition. The utilization of the Consumptive Use Percentage 62.2%¹⁸ only for illustrative purposes in this example.

Step 5: Assuming the Flow Restoration Credit is 5.0 cfs, and the utilization of this whole credit is authorized, then the maximum amount of water that could be diverted under the undeveloped portion of the permit as a result of this fish persistence condition is 61.2 cfs. (This maximum amount may be limited as illustrated in Step 6, below.)

$$56.2 + 5.0 = 61.2$$

Step 6: The calculated maximum amount of water that could be diverted under the permit due to the fish persistence condition may not exceed the amount of water to which the City is legally entitled to divert. In this example, if the amount of water legally authorized for diversion under this permit is 60.0 cfs (for example, authorization provided through a WMCP), then 60.0 cfs would be the maximum amount of diversion allowed under this permit including the developed portion of the permit, being 3.1 cfs.

(Conversely, if the amount of water legally authorized for diversion under this permit is 70.0 cfs, then 64.3 cfs (61.2 from Step 5 + the 3.1 developed portion) would be the maximum amount of diversion allowed under this permit.)

II. Conditions to Maintain the Persistence of Listed Fish - Option #2

A. Fish Persistence Target flows January 1 – December 31

- a. Fish persistence target flows for South Fork Big Butte Creek and Big Butte Creek as recommended by ODFW are in Table 2, below. Flows are to be measured at each designated location that is downstream of the allowable POD(s) being used under Permit S-54935. The three designated measurement locations are (1) below EPID's POD #1 on South Fork Big Butte Creek at approximately RM 1, (2) below EPID's POD #2 on Big Butte Creek – near the confluence of North and South Forks of Big Butte Creek, and (3) in Big Butte Creek near McLeod, Oregon (USGS Gage Number 14337500, or its equivalent).

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Table 2

ODFW's RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN SOUTH FORK BIG BUTTE CREEK, MEASURED (1) BELOW EPID'S POD #1 ^a ON SOUTH FORK BIG BUTTE CREEK AT APOX. RM 1	
Month	Cubic Feet per Second
Jan 1 – Jan 31	70
Feb 1 – May 15	120
May 16 – Jun 30	70
July 1 – Oct 31	47
Nov 1 – Nov 30	60
Dec 1 – Dec 31	70
ODFW's RECOMMENDED FISH PERSISTENCE TARGET FLOWS IN BIG BUTTE CREEK, MEASURED (2) BELOW EPID'S POD 2 ^b ON BIG BUTTE CREEK – NEAR CONFLUENCE OF NORTH AND SOUTH FORK BIG BUTTE CREEK, AND (3) USGS GAGE 14337500, BIG BUTTE CREEK NEAR MCLEOD, OREGON	
Month	Cubic Feet per Second
Jan 1 – May 15	135
May 16 – June 30	80
July 1 – Aug 15	54
Aug 16 – Dec 31	135

^a Eagle Point Irrigation District's (EPID) POD #1 is located within the NENE, Section 10, Township 35 South, Range 2 East, W.M.

^b Eagle Point Irrigation District's (EPID) POD #2 date is located within the NWNW, Section 3, Township 35 South, Range 2 East, W.M.

B. Determining Water Use Reductions – Generally

The developed portion of the permit, 3.1 cfs, is *not* subject to these fish persistence conditions.

a. January 1 through December 31.

Diversion of the undeveloped portion of Permit S-54935 cannot reduce stream flows below target levels at any of the designated measurement location(s) located below any allowable POD(s) being used under this permit.

The maximum amount of the undeveloped portion of Permit S-54935 that can be diverted as a result of this fish persistence condition is based on a comparison of the target flows (Q_T) at the designated measurement locations located downstream of the allowable POD(s) being used under Permit S-54935, to the corresponding actual flows (Q_A) prior to any diversion of the undeveloped portion under this permit. Q_A is based on a seven day rolling average of mean daily flows.

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- i. When $Q_A \leq Q_T$ at any designated measurement location(s) downstream from the allowable POD(s) being used under Permit S-54935:

No water beyond 3.1 cfs may be diverted from Big Butte Creek and its tributaries and springs under this permit when $Q_A \leq Q_T$ at any of the three pertinent measurement locations described above, where Q_A is the actual flow and Q_T is the target flow (from Table 2). Q_A is based on a seven day rolling average of mean daily flows.

- ii. When $Q_A > Q_T$ at each designated measurement location(s) downstream from the allowable POD(s) being used under Permit S-54935:

Water may be diverted from Big Butte Creek and its tributaries and springs under the undeveloped portion of the permit when $Q_A > Q_T$ at all pertinent measurement locations. The maximum amount of the undeveloped portion of the permit that can be diverted is equal to the smallest difference between Q_A and Q_T among the pertinent measurement locations:

$$(Q_A - Q_T)$$

where Q_A is the actual flow based on the seven day rolling average, and Q_T is the target flow (from Table 2).

C. November 1 – April 30: Required Diversion Caps or Protection Agreement

In the absence of a Protection Agreement with ODFW for related seasonally varying flows, any diversion of the undeveloped portion of Permit S-54935 as determined in Sections 2.II.A and 2.II.B will be capped as recommended by ODFW in Table 3, below.

TABLE 3

DIVERSION CAPS FOR BIG BUTTE CREEK AS RECOMMENDED BY ODFW NOVEMBER 1 – APRIL 30	
Month	Cubic Feet per Second
November	0
December	9
January	33
February	102
March	145
April	112

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D. Examples for Option #2

May 1 – October 31

In these examples, the POD is located above EPID's POD #1, therefore all three designated measurement locations are pertinent to determining the maximum amount of the undeveloped portion of the permit that can be diverted.

Example 1 – Target flows met at each measurement location – diversion limited

Step 1: On July 15, the last seven mean daily flows in the South Fork Big Butte Creek below EPID's POD #1 were 62, 62, 61, 60, 59, 59 and 58 cfs. The seven day rolling average (Q_A) is 60 cfs. The target flow (Q_T) for July 15 at this location is 47. $Q_A - Q_T = 13$ cfs.

$$60 - 47 = 13$$

AND, on July 15, the last seven mean daily flows in Big Butte Creek below EPID's POD #2 were 72, 72, 71, 70, 69, 69 and 68 cfs. The seven day rolling average (Q_A) is 70 cfs. The target flow (Q_T) for July 15 at this location is 54. $Q_A - Q_T = 16$ cfs.

$$70 - 54 = 16$$

AND, on July 15, the last seven mean daily flows in Big Butte Creek at Gage 14337500 were 82, 82, 81, 80, 79, 79 and 78 cfs. The seven day rolling average (Q_A) is 80 cfs. The target flow (Q_T) for July 15 at this location is 54. $Q_A - Q_T = 26$ cfs.

$$80 - 54 = 26$$

Step 2: The maximum amount of the undeveloped portion of the permit that can be diverted equals the smallest difference ($Q_A - Q_T$) among the three measurement locations.

The smallest difference from Step 1 is 13.0, thus the maximum amount of the undeveloped portion of the permit that can be diverted is 13.0 cfs. (This maximum amount may be limited as illustrated in Step 3, below.)

Step 3: The calculated maximum amount of water that could be diverted under the permit due to the fish persistence condition may not exceed the amount of water to which the City is legally entitled to divert. In this example, if the amount of water legally authorized for diversion under this permit is 10.0 cfs (for example, authorization provided through a WMCP), then 10.0 cfs would be the maximum amount of diversion allowed under this permit including the developed portion of the permit, being 3.1 cfs.

(Conversely, if the amount of water legally authorized for diversion under this permit is 20.0 cfs, then 16.1 cfs (13.0 from Step 2 + the 3.1 developed portion) would be the maximum amount of diversion allowed under this permit.)

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Example 2 – Actual flows are less than target flows at one measurement location.

If on July 15, the average of the last seven mean daily flows (Q_A) at South Fork Big Butte Creek below EPID's POD #1 was 50 cfs, and the target flow (Q_T) is 47, then $Q_A > Q_T$. The target flow is met at this location.

AND, on July 15, the last seven mean daily flows (Q_A) in Big Butte Creek below EPID's POD #2 was 30 cfs, and the target flow (Q_T) is 54, then $Q_A \leq Q_T$. The target flow is NOT met at this location.

AND, on July 15, the last seven mean daily flows (Q_A) in Big Butte Creek at Gage 14337500 was 60 cfs, and the target flow (Q_T) is 54, then $Q_A > Q_T$. The target flow is met at this location.

In this example no water may be diverted from Big Butte Creek and its tributaries and springs under the undeveloped portion of this permit as a result of this fish persistence condition because the flow target was missed at one of the three designated measurement locations.

November 1 – April 30

In these examples, the POD is located below EPID's POD #1, but above EPID's POD #2. Therefore the two designated measurement locations pertinent to determining the maximum amount of the undeveloped portion of the permit that can be diverted are EPID's POD #2 and Big Butte Creek at Gage 14337500.

Example 3: – Target flows met at each pertinent measurement location – diversion limited

Step 1: On January 15, the last seven mean daily flows in Big Butte Creek below EPID's POD #2 were 172, 172, 171, 170, 169, 169 and 168 cfs. The seven day rolling average (Q_A) is 170 cfs. The target flow (Q_T) for January 15 at this location is 135. $Q_A - Q_T = 35$ cfs.

$$170 - 135 = 35$$

AND, on January 15, the last seven mean daily flows in Big Butte Creek at Gage No. 14337500 were 182, 182, 181, 180, 179, 179 and 178 cfs. The seven day rolling average (Q_A) is 180 cfs. The target flow (Q_T) for January 15 at this location is 135. $Q_A - Q_T = 45$ cfs.

$$180 - 135 = 45$$

Step 2: The maximum amount of the undeveloped portion of the permit that can be diverted equals the smallest difference ($Q_A - Q_T$) among the two relevant measurement locations, subject to a cap as shown in Step 3, below.

The smallest difference is 35.0, thus the maximum amount of the undeveloped portion of the permit that can be diverted is 35.0 cfs, subject to the cap (Step 3).

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Step 3: The cap in January based on ODFW's determination of "Net Available Water" is 33.0 cfs. Assuming the City does not have an agreement with ODFW regarding seasonally varying flows, the maximum amount of the undeveloped portion of the permit that can be diverted is capped at 33.0 cfs. (This maximum amount may be limited as illustrated in Step 4, below.)

Step 4: The calculated maximum amount of water that could be diverted under the permit due to the fish persistence condition may not, however, exceed the amount of water to which the City is legally entitled to divert. In this example, if the amount of water legally authorized for diversion under this permit is 25.0 cfs (for example, authorization provided through a WMCP), then 25.0 cfs would be the maximum amount of diversion allowed under this permit including the developed portion of the permit, being 3.1 cfs.

(Conversely, if the amount of water legally authorized for diversion under this permit is 40.0 cfs, then 36.1 cfs (33.0 from Step 3 + the 3.1 developed portion) would be the maximum amount of diversion allowed under this permit.)

Example 4: – Actual flows are less than target flows at one measurement location.

If, on January 15, the last seven mean daily flows (Q_A) in Big Butte Creek below EPID's POD #2 was 130 cfs, and the target flow (Q_T) is 135, then $Q_A \leq Q_T$. The target flow is NOT met at this location.

AND, on January 15, the last seven mean daily flows (Q_A) in Big Butte Creek at Gage 14337500 was 160 cfs, and the target flow (Q_T) is 135, then $Q_A > Q_T$. The target flow is met at this location.

In this example no water may be diverted from Big Butte Creek and its tributaries and springs under the undeveloped portion of this permit as a result of this fish persistence condition because the flow target was missed at one of the two pertinent measurement locations.

Water Management and Conservation Plan Conditions

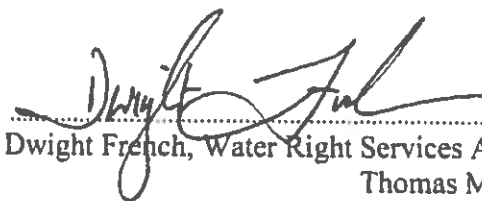
The Medford Water Commission's Water Management and Conservation Plan shall remain in effect until April 13, 2019, unless rescinded pursuant to OAR 690-086-0920.

The Medford Water Commission shall submit an updated plan meeting the requirements of OAR Chapter 690, Division 86 (effective November 1, 2002) within 10 years (of the plan approval) and no later than October 7, 2018.

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Actual construction work shall begin on or beforeSeptember 18, 1930.... and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 2056 complete application of the water to the proposed use shall be made on or before October 1, 2056.

WITNESS my hand this 3rd day of June, 2015



Dwight French, Water Right Services Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

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Attachment B
Application Maps
Application for a Water Right Transfer – City of Medford

Attachment D
Geologist Report

Application for a Water Right Transfer – City of Medford

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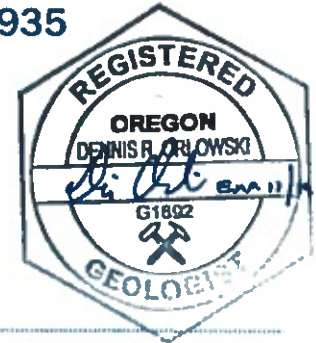
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TECHNICAL MEMORANDUM

Technical Support – Proposed Amendment to Permit S-54935

To: Oregon Water Resources Department
From: Dennis Orlowski, RG / GSI Water Solutions, Inc.
Matt Kohlbecker, RG / GSI Water Solutions, Inc.
CC: Andy Huffman, Medford Water Commission
Date: October 1, 2019



The purpose of this technical memorandum is to support the Medford Water Commission's (MWC) application to amend a portion of Permit S-54935, which authorizes the use of all of the unappropriated water from Big Butte Creek, its tributaries and the springs at the head of Big Butte Creek. Permit S-54935 has an authorized point of diversion that is "the Big Butte Creek Watershed."

To date, MWC has diverted up to 3.1 cubic feet per second (cfs) of water under Permit S-54035. MWC has historically diverted this water from Rancheria Springs, which is part of the springs at the head of Big Butte Creek. These springs are referred to as the Big Butte Springs (BBS) system.

Due to water quality concerns, MWC is evaluating the opportunity to use wells to appropriate water from the groundwater system that provides water to Rancheria Springs and the Big Butte Creek watershed.

The permit amendment application for Permit S-54935 requests to use production wells near Rancheria Springs to appropriate the 3.1 cfs portion of the permit. This memorandum provides additional information to demonstrate that appropriation from the proposed wells, as described in this permit amendment application meets the criteria for a transfer to change a surface water point of diversion to a groundwater appropriation.

This technical memorandum is organized as follows:

- **Section 1 - Background.** Provides an overview of the BBS system and discussion of OWRD's general criteria for approving a change for a surface water right to allow appropriation of groundwater.
- **Section 2 - Hydrogeologic Conditions and Spring Source.** Discusses the source of the BBS, including Rancheria Springs.
- **Section 3 - Conclusion**

1 Background

1.1 BBS System Overview

MWC's primary source of water is from the Big Butte Springs (BBS) system. The BBS are located approximately 22 miles northeast of Medford within the Rogue River watershed. Big Butte Creek is a tributary to the Rogue River.

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The BBS source is comprised of seven spring collection systems that are interconnected to feed two transmission pipelines. The BBS system delivers water by gravity flow to Medford except for low lift pumping at one spring complex: Rancheria Springs are at a slightly lower elevation than other BBS springs, and thus water from Rancheria Springs requires pumping to one of the pipelines. In 2015 the BBS system provided 73 percent of the MWC system's total annual water demand. MWC staff have estimated that the total spring discharge ranges from 25 to 35 million gallons per day (mgd) depending on seasonal rainfall, snow pack, and groundwater conditions. Current transmission piping limits maximum delivery of BBS water to Medford to 26.4 mgd (CH2M Hill, 2016).

1.2 Transfer Criteria

Despite the fact that use of water from the Big Butte Springs system is authorized by *surface water* permit S-54935, from a hydrologic perspective spring water is considered part of the local *groundwater* system. Despite this technical distinction, it is understood that OWRD water rights with spring sources are typically classified as surface water rights. Thus, for this proposed amendment to permit S-54935 it is understood that the criteria of Oregon Administrative Rules (OAR) 690-380-2130 (2), "Change from a Surface Water Point of Diversion to a Groundwater Appropriation", must be satisfied.

The purpose for this technical memorandum is to provide OWRD with additional information demonstrating that production wells installed near Rancheria Springs would meet the criteria listed in OAR 690-380-2130(2). A description of hydrogeologic conditions is presented that demonstrates that wells installed near Rancheria Springs, at the proposed locations and depths, would obtain water from the same groundwater system that provides water to those springs, as well as the surface water sources in the Big Butte Creek watershed, which are the authorized sources for Permit S-54935. In other words, the proposed wells would be hydraulically connected to the authorized source.

Furthermore, in our previous discussions with Mike Thoma of the OWRD Groundwater section, it was agreed that there are no reliable methods available to accurately and quantifiably estimate depletion to *springs* caused by groundwater pumping. Therefore, the "similarity" criterion of OAR 690-380-2130 (2)(c) could be demonstrated qualitatively by showing that groundwater that normally discharges at Rancheria Springs would instead be intercepted by production wells installed at the proposed locations and depths.

2 Hydrogeologic Conditions and Spring Source

Most of the current understanding of hydrogeologic conditions presented in this memorandum is summarized from a major 1990 collaborative study commissioned by MWC and led by the US Forest Service. The report summarizing the findings of that study is entitled "Big Butte Springs Watershed Geohydrologic Report" (USFS 1990). Additional site-specific information was obtained from two shallow borings (boring B-1/JACK 63776 and boring B-2/JACK 63777) and several test pits completed earlier in 2019 at the Rancheria Springs site.

2.1 Regional Geology and Hydrogeology

The BBS system is located within the Willow Creek Basin, one of four drainage basins with headwaters located along the western flanks of Mt. McLoughlin, which is located about 10 miles to the southeast of the BBS (Figure 1). The 1990 USFS study refers to the four drainage basins collectively as the Big Butte Springs watershed (BBS watershed).

Within the BBS watershed defined by the USFS, underlying rock units consist of volcanic flow deposits emplaced during Western and High Cascade volcanic activity, with most of the source material emanating from Mt. McLoughlin and other nearby volcanic features. Regional stratigraphy is generally comprised of the following, listed from oldest to youngest (note: unit abbreviations, e.g., "Qa", are those presented in the 1990 report) and shown in Figure 1:

- Volcanic rocks of the Late Western Cascades (WC):
 - Mostly mafic intrusives and basaltic lava flows (Tb4), some interbedded pyroclastics (Ti4)

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- Approximately 15-23 million years old.
- Mostly fracture-flow system with very low to moderate permeability.
- Volcanic rocks of the Older High Cascades (OHC):
 - Primarily andesites (QTa) and basaltic andesites (Tbr) and pyroclastics (QTBa)
 - Approximately 3-6 million years old.
 - Extensive flows that formed broad shield volcanic surfaces and infilled valleys.
 - Permeability ranges from low to high, with latter present along interflow zones.
- Volcanic rocks of the Younger High Cascades (YHC):
 - Primarily andesite flows (Qa, Qamf) forming composite volcano of Mt. McLoughlin and associated valley-filling flows.
 - Less than ~100,000 years old.
 - Permeability ranges from low in dense, fractured rock (“diffuse zones”) to very high in scoriaceous zones, flow contact zones, and in rubbly and block areas (“conduit-like zones”).

The 1990 USFS study concluded that the primary groundwater units in the BBS watershed reside within YHC lava flows that vary in thickness from an estimated 4000 feet on Mt. McLoughlin, thinning to about 80 feet at the BBS system. The YHC lava flows emanated from Mt. McLoughlin onto and down a relatively-linear valley surface created by about 3 million years of erosion and weathering of OHC and WC volcanics (Figure 1 and Figure 2).

2.1.1.1 Groundwater Flow Characteristics

The YHC volcanics, specifically the Qa and Qamf andesitic flow deposits, form the primary surface water recharge and groundwater transmission units in the basin. Being the youngest volcanic deposits, the YHC units are generally present very near ground surface, typically mantled by perhaps only a few feet of soil; only in limited areas are the YHC volcanics overlain by much thicker glacial or alluvial fan deposits (USFS 1990).

Relative groundwater flow rates vary widely depending on the structure and texture present in the Qa and Qamf units. Lower hydraulic conductivity zones are found in relatively massive, fractured portions of the lava flows, whereas very high conductivity is present in scoriaceous, clinker-rich flow contacts along the edges, tops, and bottoms of the generally lobate flow bodies. The USFS report refers to the low-conductivity portions as “diffuse zones” and high-conductivity areas as “conduit-like zones” (USFS 1990).

Aquifer recharge in the form of precipitation is greatest in the upper elevations of Mt. McLoughlin. Recharge water infiltrates the ground surface until it reaches zones of saturation, migrating through highly-conductive areas that are underlain by strata of relatively-lower permeability. The highly-conductive zones are comprised largely of Qa flow deposits: the very-high permeability/infiltration rates of the Qa deposits is evident by the relative absence of surface water flows on the lower flanks of Mt. McLoughlin.

In the study area, the top of the Older High Cascades (OHC) volcanics, specifically the Tbr and QTba units, comprises a relatively low-permeability surface that impedes deeper groundwater infiltration. The approximately 3 million year period between OHC and YHC volcanic activity promoted extensive erosion and weathering of the upper portions of OHC volcanics. This weathering resulted in the formation of a paleosol that in many areas marks the contact between generally high-conductivity YHC (Qa and Qamf) and low-conductivity OHC (Qta, Tbr) volcanic flow deposits. The paleosol is noted in several core holes and test holes drilled for the 1990 USFS study. The formation of the paleosol and other weathering processes (e.g., secondary clay mineralization in pore spaces) reduced the permeability of the OHC volcanics.

The “conduit-like zones” of the Qa and Qamf units of the YHC are oriented generally parallel to the lava flow direction, which in regard to the BBS location was from or near Mt. McLoughlin downwards to the west-northwest towards BBS and Rancheria Springs. The BBS system, including Rancheria Springs, issues from the distal end of valley-filling Qa flows that are oriented from southeast to northwest (Figure 1). Typically, the

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springs are located at or near the toe of a slope that marks the end of a volcanic flow deposit, which is the case at the Rancheria Springs location (Figure 3).

2.1.2 Shallow Groundwater Flow System and Spring Source

The differences in permeability between the YHC and OHC volcanic deposits has formed a shallow groundwater flow system within the YHC volcanic deposits. This shallow system, which for the BBS is hosted mostly in the Qa unit, transmits groundwater that originates as recharge on the upper flanks of Mt. McLoughlin and migrates relatively rapidly downslope where it discharges at the BBS system, including Rancheria Springs. This hydrogeologic conceptualization is supported by the following major findings from the 1990 USFS study:

- **Very high recharge rates and spring discharge efficiency:** It was estimated that for water year 1988, approximately 88 percent of precipitation recharged to the groundwater system emerges as springs, which then flow into streams downslope near the BBS system. Thus the majority of “new” groundwater migrates rapidly through the shallow system, with a lesser amount infiltrating to deeper portions of the system. The USFS study generally concluded “that throughout the post-Western Cascade history of the basin, most groundwater has emerged as springs within the downslope area of the watershed.”
- **High sensitivity of spring flow to precipitation changes:** The USFS study found that changes in spring discharge correlated well and rapidly with changes in seasonal precipitation. The study concluded that this correlation “confirmed the direct connection between precipitation and recharge to the highly conductive primary groundwater transmitting conduit-like zones.”
- **Groundwater chemistry signatures and relatively-rapid travel times:** Relative differences in groundwater Total Dissolved Solids (TDS) concentrations were found between samples collected from lower-conductivity (“diffuse”) and higher-conductivity (“conduit-like”) portions of the shallow groundwater system: 101-156 ppm for the former, and 56-79 ppm for the latter. It was inferred that the lower TDS concentrations reflected shorter groundwater residence/faster travel times in the higher-conductivity flow paths of the shallow groundwater system (relative age estimates derived from tritium analyses were also used to substantiate this inference). The USFS study concluded that “the low TDS values and high quality of the groundwater issuing at the BBS system is indicative of the rapid movement and relatively shallow depth (of penetration) of this groundwater.”
- **Groundwater levels:** Groundwater levels suggest that the YHC and the OHC comprise different groundwater flow systems. The 1990 study included the drilling of 17 small-diameter core holes and 4 larger-diameter test holes, ranging in depth from 8 to 220 feet. However, all were abandoned within approximately one and a half years at the conclusion of the study, so unfortunately long-term static water measurement data was not obtained; the study used the limited water-level data to generally differentiate between “diffuse” and “conduit-like” zones, based largely on groundwater level responses to recharge events. Also, the boreholes had significant open intervals, so in almost all cases discrete head data corresponding to different water-bearing units is not available. However, two deep coreholes (CH-5 at 220 feet deep, and CH-8 at 210 feet) did have two piezometers installed in each borehole and sealed to different depths: CH-5 showed approximately a five-foot head difference between the piezometers (and a small upward gradient), and CH-8 showed a 95-ft head difference between piezometers (very large downward gradient). These data, though limited, help support other more robust data which was used to establish the existence of shallow and deeper groundwater systems.

2.2 Hydrogeology near Rancheria Springs

The Big Butte Spring system is located at the distal, down-gradient end of a Qa volcanic flow that originated from the southeast at Mt. McLoughlin (Figure 1 and Figure 4). In this area the Qa unit of YHC volcanics is underlain by the lower-permeability Tbr, Qta, and Qtba units of the OHC volcanics. The permeability difference

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between the younger Qa and OCH units, coupled with the termination of the lobate Qa flow deposit, is the reason the BBS system is present at that particular location.

Figure 5 is a topographic map from the 1990 USFS report that encompasses Big Butte Springs, including Rancheria Springs to the northwest (Figure 5 is a portion of Plate II from the report). From the map unit descriptions on the original Plate II, the following is noted for unit Qa: "Young Mt. McLoughlin flows; at least two flow units interpreted at this location. One narrow flow continued downstream toward Butte Falls. These units and their channels are associated with the high discharge springs at Big Butte Springs and nearby" (USFS 1990).

Also shown on Figure 5 are several cross-section lines; Figure 6 shows two of those cross-sections: section IIA-II-A' that extends from the southeast at the CH-1 location to the northwest at Rancheria Springs; and section IID-II-D' that is roughly perpendicular to IIA-II-A'. Both cross-sections illustrate that groundwater flow is predominantly in the Qa unit, and that groundwater discharges at various spring locations, most of which are at the toes of slopes.

At the Rancheria Springs location, the contact between Qa (YHC) and OHC units is estimated to be at about 80-90 ft below ground surface (bgs). This estimate is based primarily on the log from core hole CH-15, as well as CH-1 and CH-2, all drilled as part of the 1990 USFS study (locations shown on Figure 4 and Figure 5). The CH-15 log shows the younger, high-permeability Qa unit extending from near ground surface to a depth of about 85 feet (Figure 7). At the bottom of the Qa unit is the presence of a paleosol that formed in the approximately 3 million year interval between emplacement of OHC and YHC volcanics. Below the paleosol is interpreted to be Qta, although in other areas the deeper OHC units were identified as Tbr or Qtba. The paleosol present in CH-15 was also recorded in several other deeper borings at the contact between YHC and OHC units, so it appears to be a useful marker bed for making that distinction.

Figure 8 is a generalized cross-section that shows estimated depths of the key hydrostratigraphic units, i.e., Qa and Tbr, at the Rancheria Springs location. Although static groundwater levels shown at the borings installed for the 1990 study are not contemporaneous with the level shown at boring B-1 (JACK 63776), it is assumed that those levels have not changed appreciably because groundwater pumping in this area appears to have been, and continues to be, minimal. Thus, estimated groundwater levels shown on Figure 8 illustrate hydraulic continuity between borings and wells completed in the Qa unit and the approximate discharge elevation at Rancheria Springs.

3 Conclusion

Groundwater that discharges at Rancheria Springs is part of a regional, shallow groundwater system that originates in upland recharge areas along the flanks of Mt. McLoughlin located approximately eight to ten miles away. This extensive shallow groundwater system, hosted primarily within the Qa flow unit, is underlain by lower-permeability weathered rocks of the OHC volcanics.

It is estimated that production wells installed to depths of approximately 80-100 ft bgs and at the locations shown on the permit amendment application map for Permit S-54935 would withdraw water from the shallow groundwater system (Qa unit). Consequently, pumping from those wells would intercept groundwater that would normally discharge to Rancheria Springs, located just down-gradient of the proposed well locations. Accordingly, the wells would be hydraulically connected to the Rancheria Springs.

Further, use of water from the proposed wells will affect the surface water of the Big Butte Creek Watershed (the authorized source for Permit S-54935). An important finding from the 1990 USFS study is that 88 percent of groundwater in the shallow system emerges as spring flow, which then flows into streams downslope near the BBS system (USFS 1990). Therefore, based on the hydrogeologic framework described above, it is anticipated that all of the water appropriated from the wells would have discharged very quickly into the Big Butte Creek Watershed, resulting in almost immediate "stream depletions" of nearly 100 percent

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of the rate of appropriation. As a result, the proposed wells would affect the surface water source similarly to the authorized point of diversion in Permit S-54935, which is the entire Big Butte Creek Watershed.

References

Personal communication, Mike Thoma, Oregon Water Resources Department, September 12, 2019.

CH2M Hill, 2016: Big Butte Springs and Robert A. Duff Water Treatment Plant Facility Plan, December 2016.

USFS, 1990: Big Butte Springs Watershed Geohydrologic Report, Volume I, Medford Water Commission, March, 1990.

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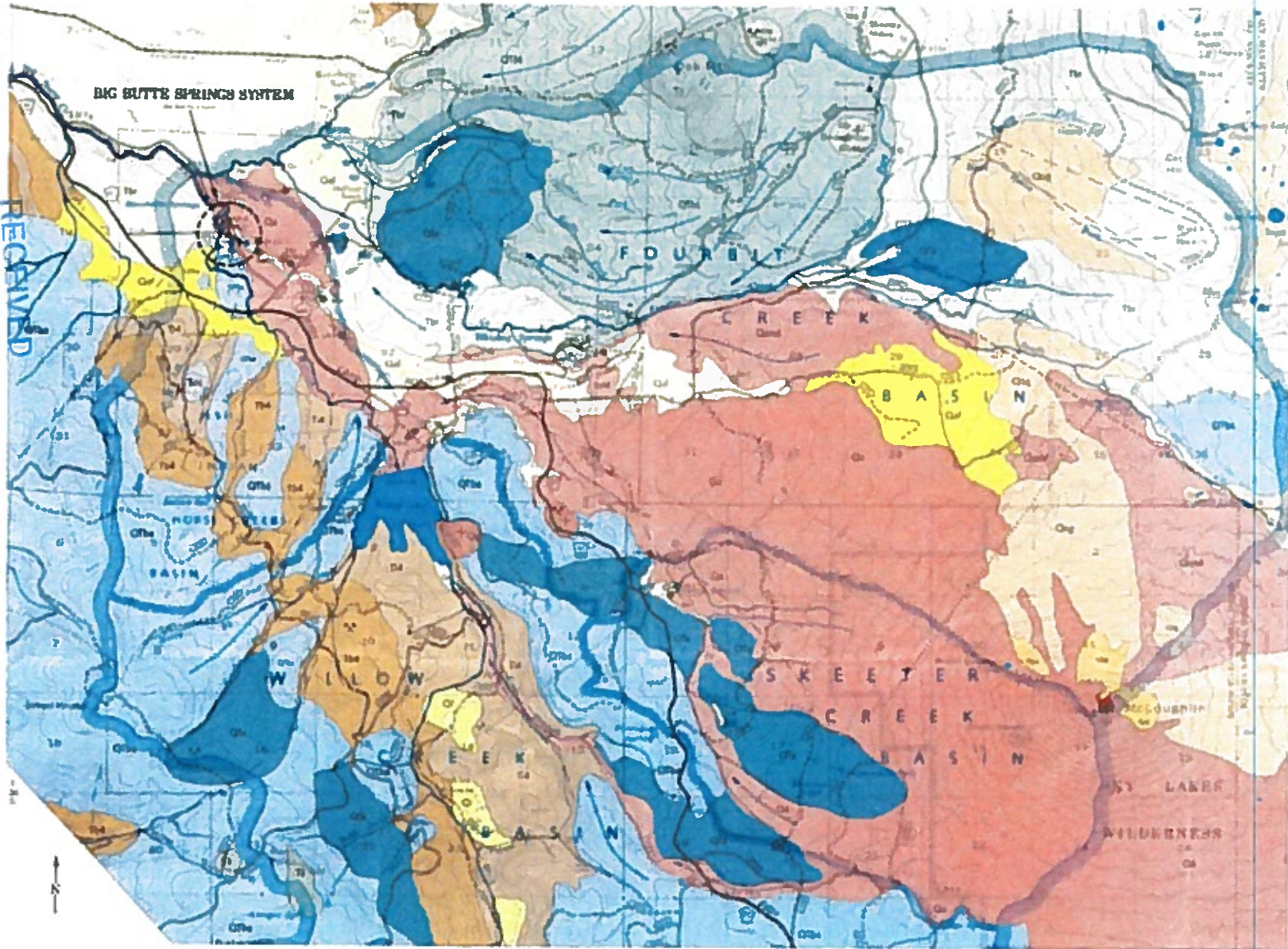


Figure 1 - Geologic map showing location of Big Butte Springs system relative to Mt. McLoughlin (YHC units are generally red, OHC are blue, and WC are brown) (from USFS 1990)

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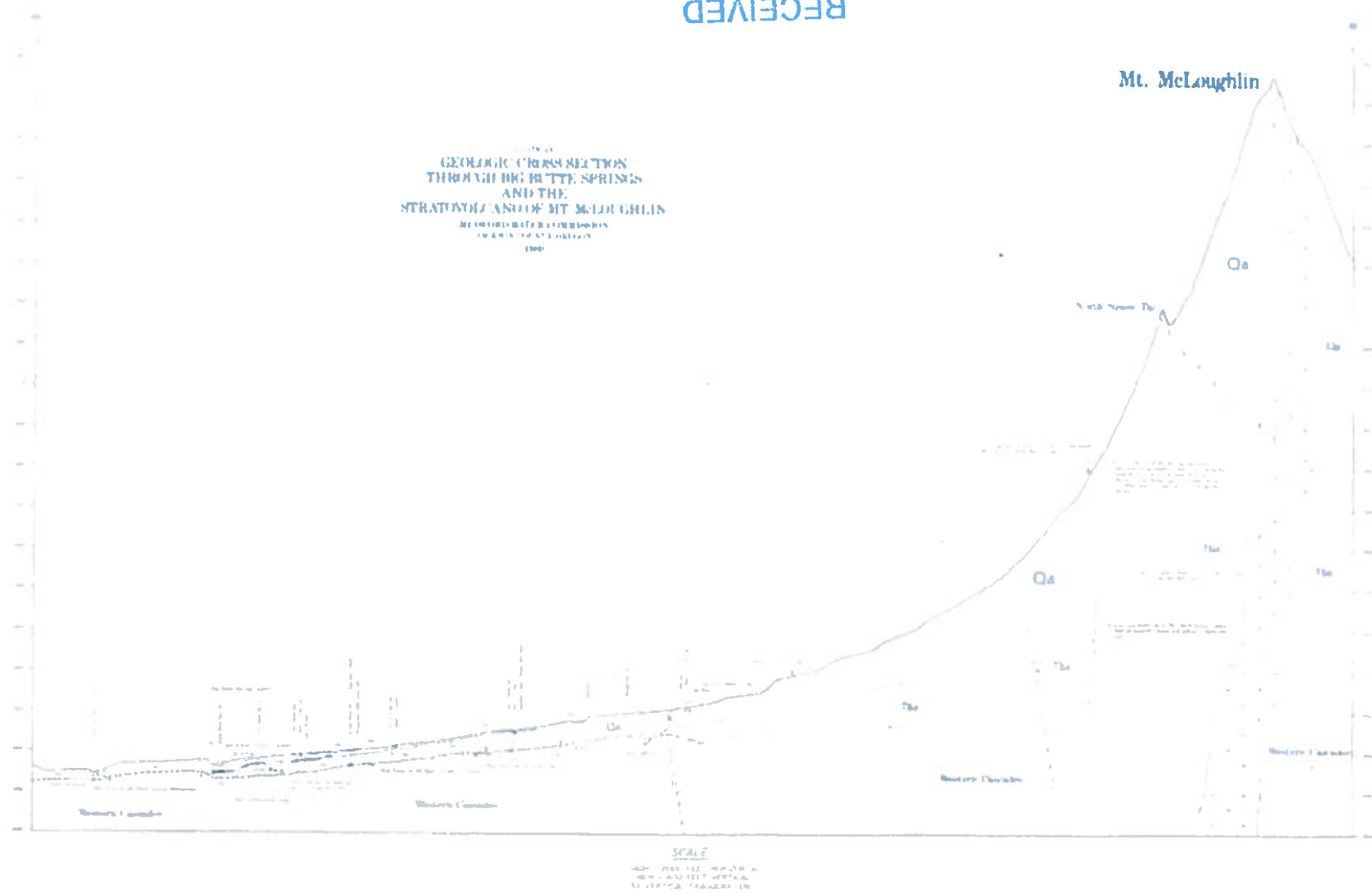


Figure 2 - Geologic cross-section oriented from Mt. McLoughlin northwest to the BBS system (to left), illustrating areal extent and thickness distribution of high-permeability Qa flow deposit, which is part of the YHC lava (from USFS 1990).



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Figure 3 - View of Rancheria Springs looking towards the southeast; note spring location at toe of slope which is terminus of Qa flow deposit

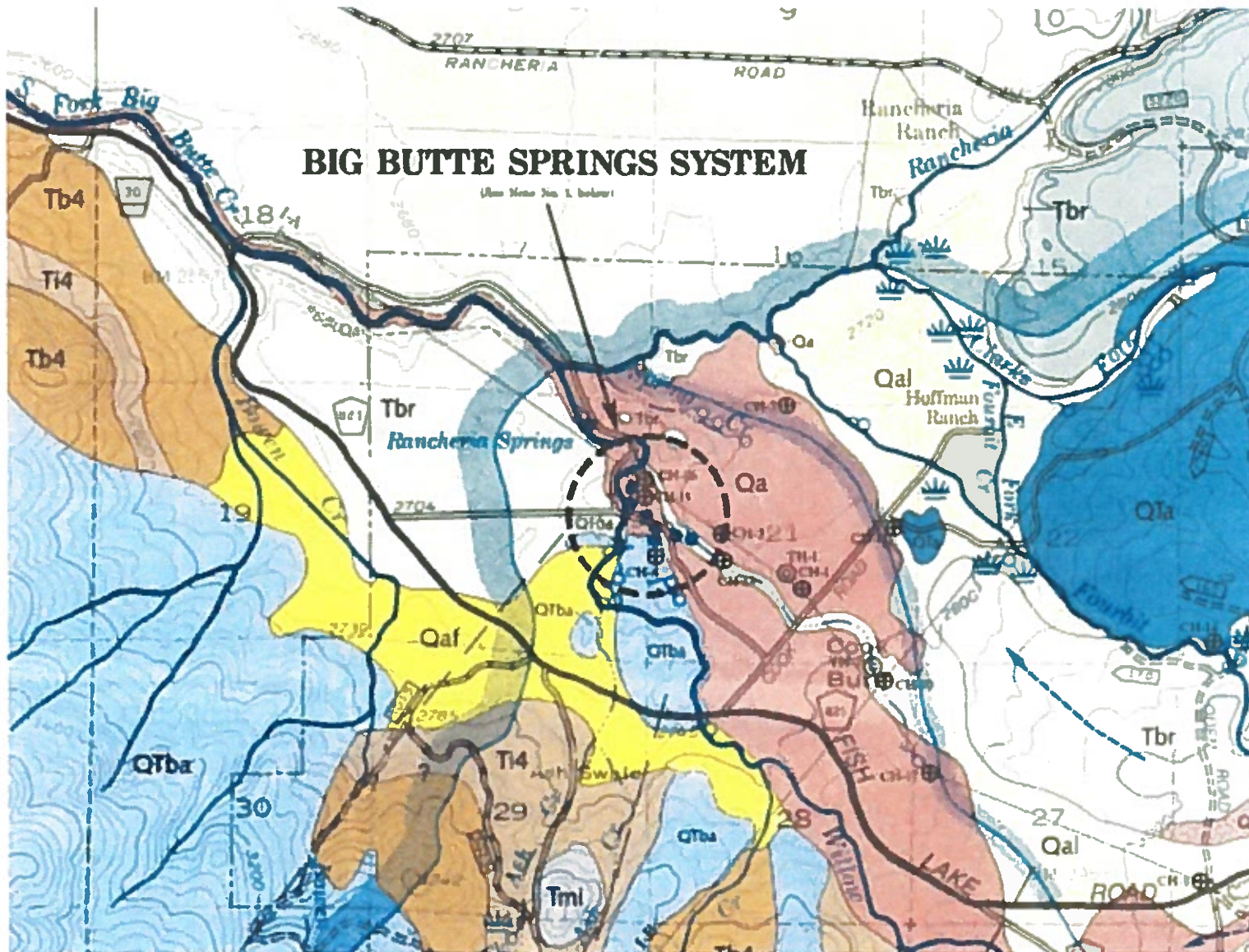
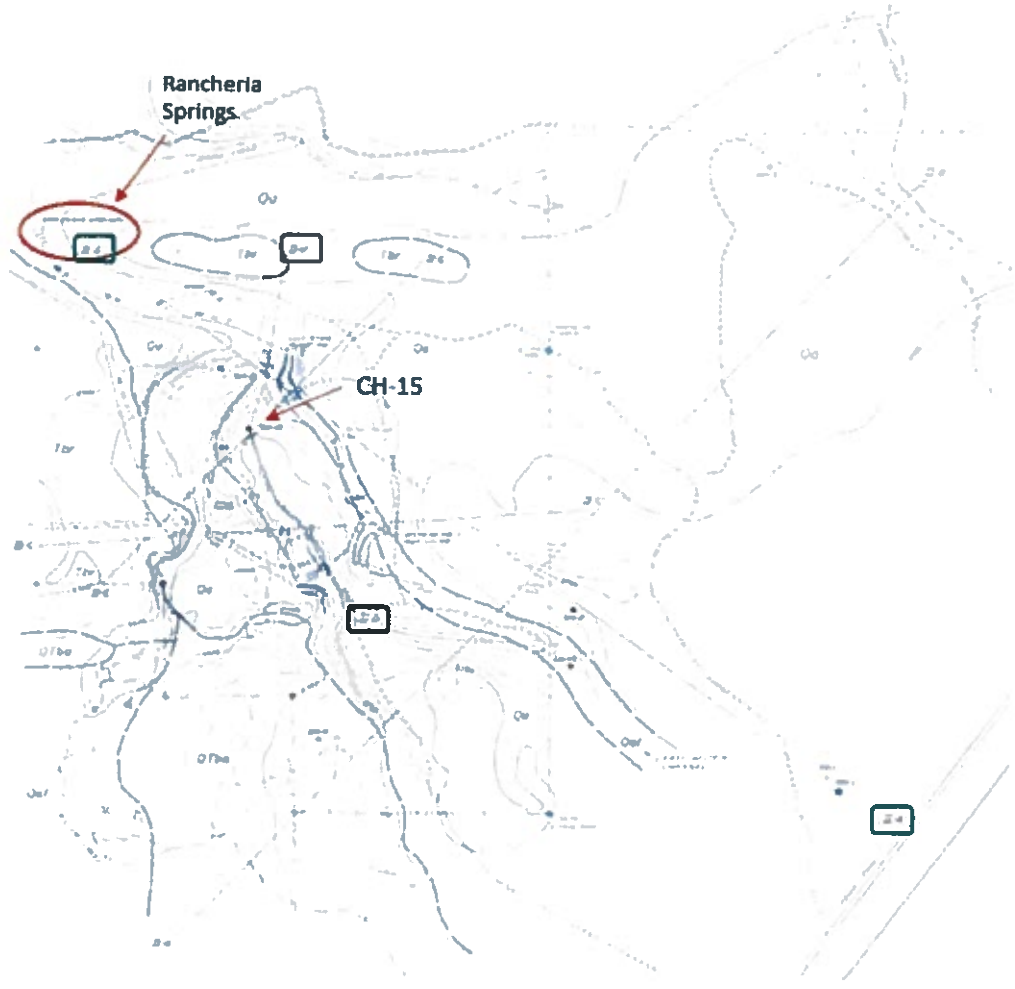


Figure 4 - Close-up geologic map showing BBS and locations of several test holes (TH) and core holes (CH) drilled for 1990 study (from USFS 1990)

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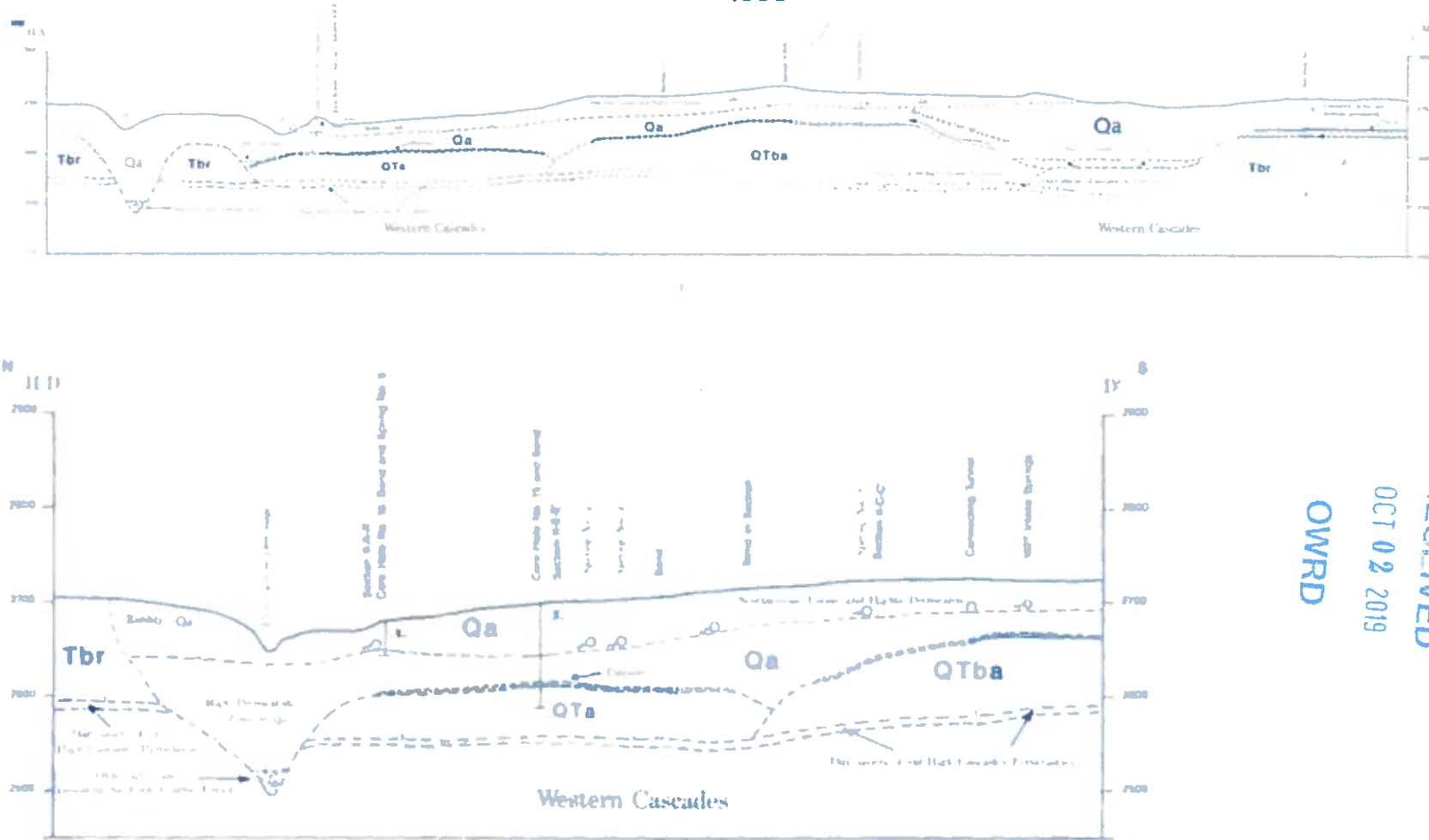
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Figure 5 - Topographic map showing Big Butte Springs area, including Rancheria Springs to the northwest (excerpt from Plate II, 1990 USFS report)

PLATE VI
GEOLOGIC CROSS SECTIONS AT THE BIG BUTTE SPRINGS AREA
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Figure 6 - Cross-sections through Big Butte Springs (from Plate VI, 1990 USFS report)

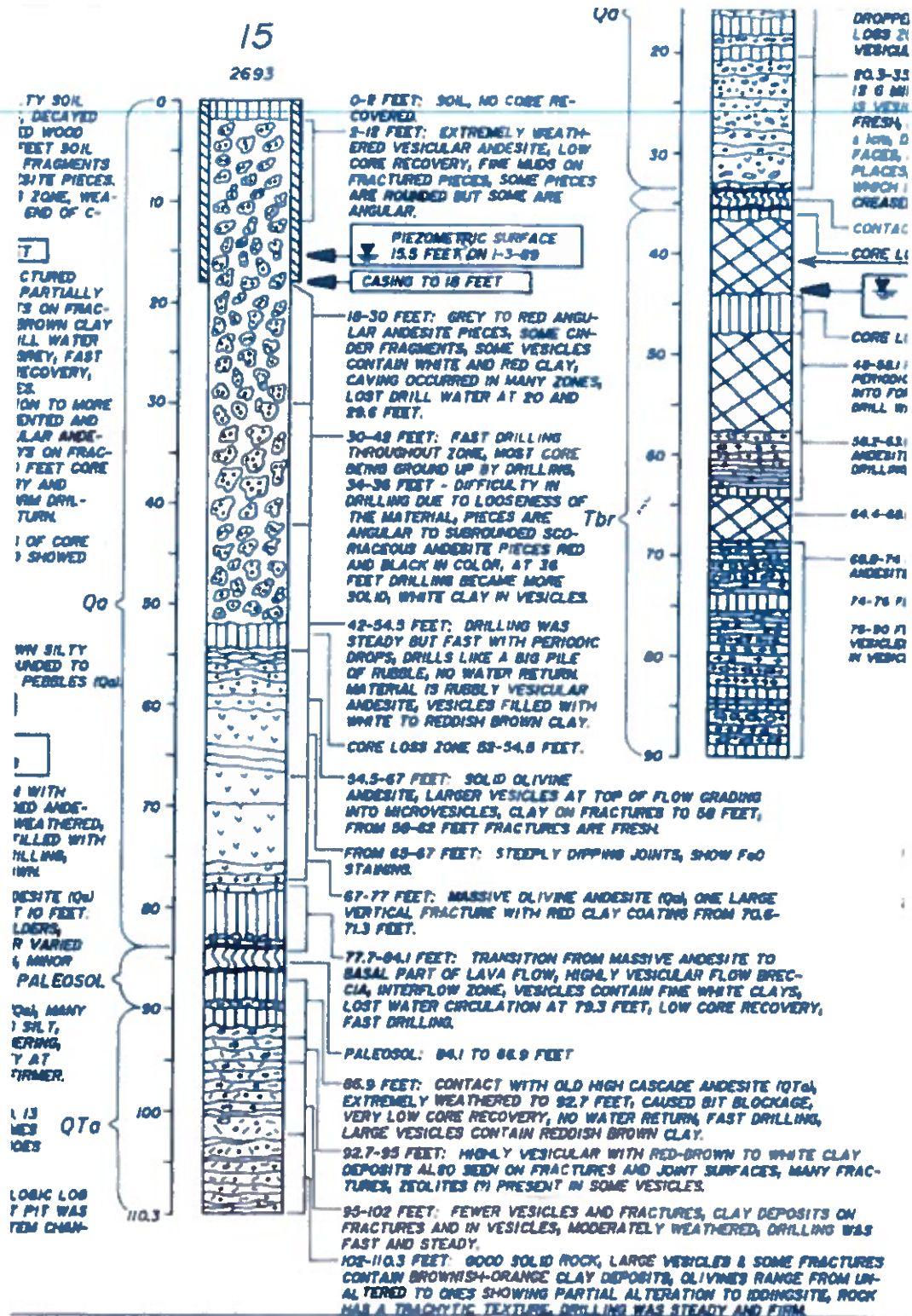


Figure 7 - Geologic log for corehole CH-15 showing presence of Qa flow unit and paleosol marking contact between YHC and OCH volcanics (from Figure E-2, 1990 USFS study)

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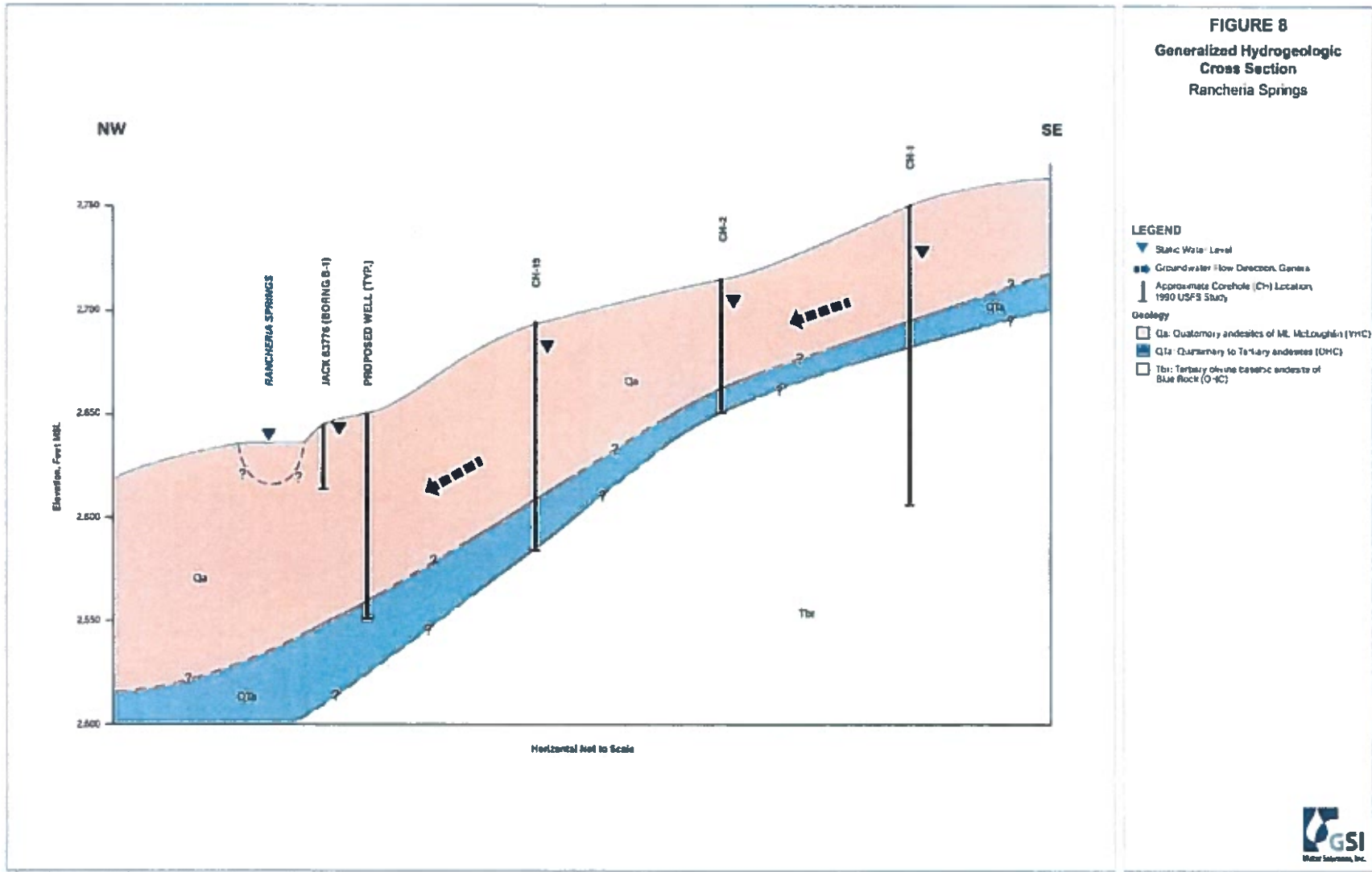


Figure 8 - Generalized cross-section at Rancheria Springs showing major hydrostratigraphic units