

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

Application for Permanent Water Right Transfer

Part 1 of 5 – Minimum Requirements Checklist

This transfer 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)

JUL 30 2018

- Part 1 – Completed Minimum Requirements Checklist.
- Part 2 – Completed Transfer 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.
- Part 4 – Completed Applicant Information and Signature.
- Part 5 – Information about Water Rights to be Transferred: **How many water rights are to be transferred? 1 List them here: 16677**
Please include a separate Part 5 for each water right. (See instructions on page 6)

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Attachments:

- Completed Transfer Application Map.
- Completed Evidence of Use Affidavit and supporting documentation.
- N/A Affidavit(s) of Consent from Landowner(s) (if the applicant does not own the land the water right is on.) **The enclosed agreement in Attachment "A" shows that despite the sale of the land, Willamette Valley Land retained ownership and control of the water rights in this transfer.**
- N/A Supplemental Form D – For water rights served by or issued in the name of an irrigation district. Complete when the transfer applicant is not the irrigation district.
- N/A Land Use Information Form with approval and signature (or signed land use form receipt stub). 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.
- N/A Water Well Report/Well Log for changes in point(s) of appropriation (well(s)) or additional point(s) of appropriation.
- 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' from the surface water source and more than 1000' upstream or downstream from the point of diversion. See OAR 690-380-2130 for requirements and applicability.

(For Staff Use Only)

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

- | | |
|--|---|
| <input type="checkbox"/> Application fee not enclosed/insufficient | <input type="checkbox"/> Map not included or incomplete |
| <input type="checkbox"/> Land Use Form not enclosed or incomplete | |
| <input type="checkbox"/> Additional signature(s) required | <input type="checkbox"/> Part _____ is incomplete |

Other/Explanation _____

Staff: _____ 503-986-0 _____ Date: ____/____/____

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

Please be sure that the transfer application map you submit includes all the required items and matches the existing water right map. Check all boxes that apply.

- N/A Certified Water Right Examiner (CWRE) Stamp and Original Signature. For a list of CWREs, see http://apps.wrd.state.or.us/apps/wr/cwre_license_view/. CWRE stamp and signature are not required for substitutions.
- N/A If **more than three** water rights are involved, separate maps are needed for each water right.
- 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 Final Proof/Claim of Beneficial Use Map (the map used when the permit was certificated), 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 right, 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 water right is being changed, a separate hachuring is needed for lands left unchanged.
- N/A Proposed place of use that includes separate hachuring for each water right, 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 right certificate or permit.
- 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°).

FEE WORKSHEET for PERMANENT TRANSFER (Part 3 of 5 – Fee Worksheet

1	Base Fee (includes one type of change to one water right for up to 1 cfs)	1	\$1,160
	Types of change proposed: <input checked="" type="checkbox"/> Place of Use <input type="checkbox"/> Character of Use <input checked="" type="checkbox"/> Point of Diversion/Appropriation Number of above boxes checked = <u>2 (2a)</u> Subtract 1 from the number in line 2a = <u>1 (2b)</u> <i>If only one change, this will be 0</i>		
2	Multiply line 2b by \$930 and enter » » » » » » » » » » » » » » » »	2	930
	Number of water rights included in transfer <u>1 (3a)</u> Subtract 1 from the number in 3a above: <u>0 (3b)</u> <i>If only one water right this will be 0</i>		
3	Multiply line 3b by \$520 and enter » » » » » » » » » » » » » » » »	3	0
	Do you propose to add or change a well, or change from a surface water POD to a well? <input checked="" type="checkbox"/> No: enter 0 » <input type="checkbox"/> Yes: enter \$410 »	4	0
	Do you propose to change the place of use or character of use? <input type="checkbox"/> No: enter 0 on line 5 » <input checked="" type="checkbox"/> Yes: enter the cfs for the portions of the rights to be transferred (see example below*): <u>0.32 (5a)</u> Subtract 1.0 from the number in 5a above: <u>-0.58 (5b)</u> If 5b is 0 or less, enter 0 on line 5 » If 5b is greater than 0, round up to the nearest whole number: <u>N/A (5c)</u> and multiply 5c by \$350, then enter on line 5 » » » » » » » » » » » » » » » »	5	0
6	Add entries on lines 1 through 5 above » » » » » » » » » » » » » » » » Subtotal:	6	2090
	Is this transfer: <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 »		
7	If no box is applicable, enter 0 on line 7 »	7	0
8	Subtract line 7 from line 6 » » » » » » » » » » » » » » » » Transfer Fee:	8	2090

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

- For irrigation calculate cfs for each water right involved as follows:
 - Divide total authorized cfs by total acres in the water right (for C12345, 1.25 cfs ÷ 100 ac); then multiply by the number of acres to be transferred to get the transfer cfs (x 45 ac = 0.56 cfs).
 - If the water right certificate 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 C87654, 45.0 ac x 0.0125 cfs/ac = 0.56 cfs)
- Add cfs for the portions of water rights on all the land included in the transfer; however **do not count cfs for supplemental rights on acreage for which you have already calculated the cfs fee for the primary right on the same land.** The fee should be assessed only once for each "on the ground" acre included in the transfer. (In this example, blank 5a would be only 0.56 cfs, since both rights serve the same 45.0 acres. Blank 5b would be 0 and Line 5 would then also become 0).

FEE WORKSHEET for SUBSTITUTION

1	Base Fee (includes change to one well)	1	\$840.00
	Number of wells included in substitution _____ (2a) Subtract 1 from the number in 3a above: _____ (2b) <i>If only one well this will be 0</i>		
2	Multiply line 2b by \$410 and enter » » » » » » » » » » » » » » » »	2	
3	Add entries on lines 1 through 2 above » » » » » » Fee for Substitution:	3	

Part 4 of 5 – Applicant Information and Signature

Applicant Information

APPLICANT/BUSINESS NAME WILLAMETTE VALLEY LAND, LLC C/O PAUL KUEHNE		PHONE NO. (503) 864-4422	ADDITIONAL CONTACT NO. (503) 437-4833
ADDRESS PO BOX 99		FAX NO. N/A	
CITY LAFAYETTE	STATE OR	ZIP 97127	E-MAIL N/A
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 ASPEN RURAL LAND CONSULTING, C/O ERIC URSTADT		PHONE NO. 971.250.1520	ADDITIONAL CONTACT NO. 971.250.1520
ADDRESS 39290 NW MURTAUGH ROAD		FAX NO.	
CITY NORTH PLAINS	STATE OR	ZIP 97133	E-MAIL N/A
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 transfer application, and why:
This transfer is simply to permanently transfer what was accomplished in a temporary transfer known as T-12204. More information is presented in Attachment "D" - Narrative.

If you need additional space, continue on a separate piece of paper and attach to the application as "Attachment 1".

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

Check One Box

- By signing this application, I understand that, upon receipt of the draft preliminary determination and prior to Department approval of the transfer, I will be required to provide landownership information and evidence that I am authorized to pursue the transfer as identified in OAR 690-380-4010(5); **OR**
- I affirm the applicant is a municipality as defined in ORS 540.510(3)(b) and that the right is in the name of the municipality or a predecessor; **OR**
- I affirm the applicant is an entity with the authority to condemn property and is acquiring by condemnation the property to which the water right proposed for transfer is appurtenant and have supporting documentation.

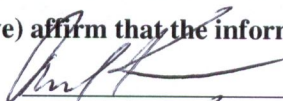
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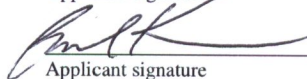
I understand that prior to Department approval of the transfer application, I may be required to submit payment to the Department for publication of a notice in a newspaper with general circulation in the area where the water right is located, once per week for two consecutive weeks. If more than one qualifying newspaper is available, I suggest publishing the notice in the following newspaper: CAPITAL PRESS.

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


 Applicant signature

Paul Kuehne, Owner
 Print Name (and Title if applicable)

7-20-18
 Date


 Applicant signature

Paul Kuehne
 Print Name (and Title if applicable)

7-20-18
 Date

Is the applicant the sole owner of the land on which the water right, or portion thereof, proposed for transfer is located? Yes No *If NO, include signatures of all deeded landowners (and mailing and/or e-mail addresses if different than the applicant's) or attach affidavits of consent (and mailing and/or e-mail addresses) from all landowners or individuals/entities to which the water right(s) were conveyed.*

Check the following boxes that apply:

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

At this time, are the lands in this transfer application in the process of being sold? Yes No

If YES, and you know who the new landowner will be, please complete the receiving landowner information table below. If you do not know who the new landowner will be, then a request for assignment will have to be filed for at a later date.

If a property sells, the certificated water right(s) located on the land belong to the new owner, unless a sale agreement or other document states otherwise. For more information see:

<http://www.oregon.gov/owrd/docs/transfer-propertytransactions.pdf>

RECEIVING LANDOWNER NAME			PHONE NO.	ADDITIONAL CONTACT NO.
ADDRESS				FAX NO.
CITY	STATE	ZIP	E-MAIL	RECEIVED

Describe any special ownership circumstances here: _____

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- Check here if any of the water rights proposed for transfer are or will be located within or served by an irrigation or other water district. (Tip: Complete and attach Supplemental Form D.)

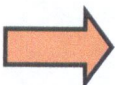
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IRRIGATION DISTRICT NAME N/A	ADDRESS		
CITY	STATE	ZIP	

- Check here if water for any of the rights 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 county, city, municipal corporation, or tribal governments within whose jurisdiction water will be diverted, conveyed or used.



ENTITY NAME Washington County Department of Land Use and Transportation	ADDRESS 155 N First Ave		
CITY Hillsboro	STATE OR	ZIP 97124	

ENTITY NAME	ADDRESS		
CITY	STATE	ZIP	

Part 5 of 5 – Water Right Information

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

CERTIFICATE # 16677

Description of Water Delivery System

System capacity: 0.32 cubic feet per second (cfs) **OR** (per certificate 16677)
 _____ gallons per minute (gpm)

Describe the current water delivery system or the system that was in place at some time within the last five years. Include information on the pumps, canals, pipelines, and sprinklers used to divert, convey, and apply the water at the authorized place of use. **The current water system is the temporary transfer system that uses a pump in the stream that conveys water via underground pipelines to a series of drip lines.**

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

POD/POA Name or Number	Is this POD/POA Authorized on the Certificate 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)
“Div.” Cert. 16677	<input checked="" type="checkbox"/> Authorized <input type="checkbox"/> Proposed	NA	1	S	4	W	31	SW	NE	58	1590' S & 1485' W of NE S31
“PD1” Cert. 89459	<input type="checkbox"/> Authorized <input checked="" type="checkbox"/> Proposed	NA	1	S	4	W	32	SW	SE	59	820' N & 2200' W of SE S32.

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

- | | |
|--|---|
| <input checked="" type="checkbox"/> Place of Use (POU) | <input type="checkbox"/> Supplemental Use to Primary Use (S to P) |
| <input type="checkbox"/> Character of Use (USE) | <input type="checkbox"/> Point of Appropriation/Well (POA) |
| <input checked="" type="checkbox"/> Point of Diversion (POD) | <input type="checkbox"/> Additional Point of Appropriation (APOA) |
| <input type="checkbox"/> Additional Point of Diversion (APOD) | <input type="checkbox"/> Substitution (SUB) |
| <input type="checkbox"/> Surface Water POD to Ground Water POA (SW/GW) | <input type="checkbox"/> Government Action POD (GOV) |

Will all of the proposed changes affect the entire water right?

- Yes Complete only the Proposed (“to” or “on” 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 water right to be changed.

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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 Right Certificate # 16677

List the change proposed for the acreage in each 1/4 1/4. 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	1/4 1/4	Tax Lot	Gvt Lot or DLC	Acres	Type of USE listed on Certificate	POD(s) or POA(s) (name or number from Table 1)	Priority Date		Twp	Rng	Sec	1/4 1/4	Tax Lot	Gvt Lot or DLC	Acres	New Type of USE	POD(s)/ POA(s) to be used (from Table 1)	Priority Date			
										POD/POU	1	S	4	W	32	SE	NW	401	59	0.5	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	NE	SW	401 & 500	59	6.0	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	NW	SW	401 & 500	59	1.1	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	SW	SW	500	59	2.1	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	SE	SW	401 & 500	59	7.6	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	NE	SE	401	59	0.3	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	NE	SE	401	4	0.4	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	NW	SE	401	59	5.1	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	SW	SE	401 & 500	59	1.6	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	SE	SE	401	59	0.5	Irrig	PD1	1941
										POD/POU	1	S	4	W	32	SE	SE	401	5	0.4	Irrig	PD1	1941
TOTAL ACRES:						25.6	= the complete right				TOTAL ACRES:						25.6						

Additional remarks: This table has the same data as the temporary transfer T-12204, remarks are continued below and in Attachment "D".

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1. The entire right is being transferred so the left side of the chart is not completed.
2. The proposed Place of Use (POU) is the same irrigated area as the existing right being 25.6 acres. However, because the several strips of irrigated land are within a larger area of land, it is needed to have two area labels. In this application the irrigated area is named "Net Acres"; and the entire farmed area that includes all of the irrigated strips and the non-irrigated area, is called "Gross Acres".
3. The gross acres of irrigation were computed by a completing a site visit to map the land being farmed. Then the outside of the line of the land being farmed was offset 25 feet inward to account for a strip around the tree rows that is not to be irrigated and is instead used for farming access. This offset line is my best estimate of the gross acres that will be irrigated.
4. Within these gross acres are rows of hazelnut trees that are 20.00 feet apart. The strips have been computed to need to be 5.03 feet wide centered on each row of hazelnut trees. Therefore for every lineal foot along a row there is $(5.03 \times 1.0 =) 5.03$ square feet (SF) of irrigation (net area) within $(20.0 \times 1.0 =) 20.00$ SF of gross area. The ratio of Net to Gross area is $5.03/20.00 = 0.2516$; or in other words, the net acres is 25.16% of the gross acres. There is 101.8 Gross Acres and 25.6 Net Acres. I find this method reasonable to compute the actual area to be irrigated under this temporary transfer.
5. Because of this non-typical Net to Gross acres irrigation pattern, and the requirement to not increase the right, the Water Resources Department (WRD) has mentioned the need for a method to determine the actual irrigation area. The site is very flat and appears to have four major soil types according to the NRCS. Further review of the NRCS soil types shows that all of the four soils have similar aspect, drainage, and area all the typical silty, clay loams with similar soil moisture characteristics. Therefore, Mike McCord of WRD stated that one baseline or control site and one or two measuring sites would be required by WRD.
6. ~~An~~ Moisture Monitoring Plan (MMP) has been in place and has been satisfactory for the Water Resources Department as described in an email from the local Watermaster, see Attachment G. The current system has Meter (formerly Decagon) GS1 soil sensors. See "<https://www.metergroup.com/environment/products/ech2o-gs-1/>". There are currently soil moisture monitoring sensors at soil depths of 1', 2', and 3' in the control, the drip line and at a distances of 2'6" from the centerline of the dripline. The applicant proposes to maintain the current moisture monitoring and reporting system, however, if WRD needs a system other than what follows, or various upgrades to the system, the applicant wants WRD to work with the applicant to find a mutually agreeable solution. The applicant provides Attachment D to describe how the future MMP that we expect to be required in the Final Order for this application can be adapted to prevent potential issues that have come up with certain other transfers similar to this one.
7. The owner has already installed an ODFW approved fish screen as required by T-12204.

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For Place of Use or Character of Use Changes

Are there other water right certificates, water use permits or ground water registrations associated with the “from” or the “to” lands? Yes No

If YES, list the certificate, water use permit, or ground water registration numbers: 89459 and 68069

Note: Cert 89459 is for stockwater and the POU for it is on the same property, but is not on the same POU as this transfer POU. The POD for this transfer is the same POD as is called “PD1” in Cert 89459. No other water rights were found applicable to this property other than the city of Hillsboro and Forest Grove service areas, which are not known to be utilized on this site.



Pursuant to ORS 540.510, any “layered” water use such as an irrigation right that is supplemental to a primary right proposed for transfer must be included in the transfer or be cancelled. Any change to a ground water registration must be filed separately in a ground water registration modification application.

For Substitution (ground water supplemental irrigation will be substituted for surface water primary irrigation)

Ground water supplemental Permit or Certificate # N/A;
Surface water primary Certificate # N/A.

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For a change from Supplemental Irrigation Use to Primary Irrigation Use

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Identify the primary certificate to be cancelled. Certificate # N/A

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
N/A										

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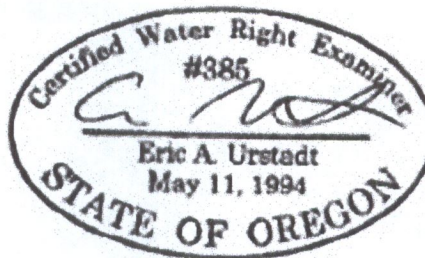
Aspen

Rural Land Consulting

Water Resources, Water Rights, Land Surveying,
Engineering, Land Use Planning

ERICURSTADT@HOTMAIL.COM
971-250-1520 (MOBILE)

Oregon Water Resources Department
Transfer Section
725 Summer Street NE, Ste. A
Salem, OR, 97301



July 23, 2018

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Subject: Narrative for Proposed Permanent Transfer of Temporary Transfer T-12204

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To Whom It May Concern,

Some in the Water Resources Department (WRD) have mentioned that these types of transfers, sometimes referred to as a “strip/drip” transfers, are being discouraged by WRD. Strip/drip transfers come with Moisture Monitoring Plans (MMP) to ensure WRD that the right will not be expanded.

On this particular property, the current MMP has worked. The flat ground and types of soil on this property works well with the technology available, and WRD would be preventing wise water use if this application were not approved in some form. The applicant is a sophisticated farmer with many operations in the Willamette Valley. He has utilized vast amounts of funds to make the current temporary transfer work to the satisfaction of WRD. Since he had heard that the temporary transfer was going fine and had not heard that WRD was having problems with other such transfers, he purchased land and water rights to make the temporary transfer become permanent. When WRD is happy with the results as shown in Attachment G, it is not fair to the applicant to not allow the transfer to be made permanent.

Everyone agrees that the “strip/drip” transfers allow a great increase in the production of certain agricultural products using the same amount of water. For these reasons, the strip/drip transfers should be promoted by WRD if they can be proven to have relatively simple and reliable MMPs to assure compliance with Oregon water laws.

Three main issues have sometimes come up on some of these transfers: (1) the sensors do not produced clear data, (2) the analysis of the data reported is time consuming for WRD, and (3) WRD wants more assurance that the right will not be expanded.

I have been involved in number of the past strip/drip transfers, and well as the “polka dot/drip” transfers

and their MMP's. The earlier MMPs were limited by the instrumentation and systems available at that time. Some systems were very cumbersome to install and even more cumbersome to obtain the readings. Some MMP's required that the owner would give raw data to WRD, and WRD had to decipher the data. Some sensors did not read in direct moisture percent and instead gave some other form of reading that needed to be converted to moisture. Taking measurements was often labor intensive and time consuming. In their initial stages these transfers have had some weaknesses, but that should be expected for new techniques, and technology has improved significantly.

The applicant currently uses a more recent MMP and the Watermaster and Regional Director have told me that the current MMP being used for the *temporary* transfer (T-12204) being on the exact same site as this proposed *permanent* transfer has been working very well and does not have problems mentioned above, see Attachment G. Nevertheless, the owner, the moisture monitoring contractor, and I, all believe that MMP's for these transfers can be further improved economically. All three of the main concerns can be addressed.

Instrumentation and Sensors:

The intent of the MMP is to make sure the water being applied by the drip lines is not getting outside the prescribed strip. Currently, when the moisture readings increase (without precipitation) *at* the edge of the strip, the water is shut off. As preventative measure, another set of sensors could be placed about 1-2" inside the edge of the strip and monitored to see if moisture was getting *near* the edge of the strip, so the water could be shut off *before* the moisture gets to the edge of the strip. This would give WRD further confidence that the right will not be expanded.

The current instrumentation is comprised of permanently set moisture sensors that directly read moisture percent. Field observations indicate the readings are accurate to around 0.1 to 0.2%, which has shown to be accurate enough for the intended use. The current sensors are Meter (Decagon) GS1 sensors; they have proven to be reliable during the past few years.

Improvements in Monitoring:

In the current MMP for the subject site, a person was required to go to the site weekly, plug in a data collector, and take readings for each of the three sets of sensors. While this is much simpler than some MMPs of the past, it is still relatively time consuming. The data is manually put into a spreadsheet and sent to the Watermaster as seen in Attachment B-1/5 to B-3/5. That data is then reorganized so that it can be placed in a graph per Attachment B-4/5 and B-5/5. Although this has worked satisfactorily for WRD and the landowner, we found ways to improve on this system by adding automation.

There are now data loggers for these sensors that allow for automatic reading up to every 15 minutes instead of weekly. With a connection to the "web", the information can be stored on a local device or sent to the cloud or other device.

Improvements in Data Presentation:

Typically, what has been presented to the Watermaster and WRD is a table of data reading from a number of sensors for each period the data was collected. The table of data is difficult to decipher to determine what is going on. Furthermore, although soils are often shown as being constant on the National Resource Conservation Service (NRCS) soils maps for various areas; we know that in Western Oregon, soils are still variable from place to place, even within constant NRCS soil types. For this reason, it cannot be expected that moisture readings in soils will all match even if sensors are close to each other and are at

the same depth. For example, a sensor at depth 36" may read 24% and another sensor a few feet away 36" may read 28% - even at the same time with the same watering conditions. This is confusing to anyone viewing the tables of data.

Even though the sensors from identical depths might be at different moisture readings, the relative pattern of moisture over time can be easily understood with a graphical representation. After all, it is really the change in moisture over time that is relevant and not the exact moisture percent. In 2017, we used graphical methods to illustrate to the Watermaster how the system is working. An example of the charts that summarize a full year of watering are attached. See Attachment B-5/5.

[Note: There is a chart for *each depth* of sensor, and here is the reasoning why. It is obvious that the top layers of any soil type (especially silty/clay/loams) are affected by precipitation, arid conditions, or irrigation much faster than the deeper depths. The upper soil layers would typically be increased in moisture by an irrigation event sooner and with greater magnitude than lower depths especially in the especially silty/clay/loams of the subject site. The upper layers are closer to the sun, rain, wind and drip systems and as such they get affected much more by that. So it is clear that comparing the moisture of different depths is irrational.]

For a given depth of soil, the moisture reading for location and depth should drop slowly over the typical local summer drought conditions unless the soil has been irrigated or there has been an odd precipitation event. The moisture will trend downward over time unless irrigation has been applied or there was a rain event. Rain events are not typical and can be easily verified by various websites. Those events can be labelled on the charts. The dates of the start of watering and the end of watering can also be shown on the charts. This all worked very well in the current MMP for the subject site.

The applicant has been told that the new data loggers can remotely record data, send it to a remote site, and present the data in graphical form for both ease of use by the applicant, but also ease of monitoring by the Watermaster and WRD, and the applicant plans to put this system in place.

Improvements in Watering Control:

With the new ways to automatically collect the data, to automatically graphically show the data, and the ability to place the data on the "cloud", both WRD and the applicant will be able to know the moisture conditions whenever needed, and watering can be controlled quickly. But further conditions could be added if necessary.

The Final Order might state that the applicant must self-monitor the moisture and control watering, instead of adding this work to the Watermaster's workload.

The Final Order could state that "only after 5 years of proven compliance to the MMP" can a Claim of Beneficial Use can be completed for the transfer. This would enable WRD to know that the MMP is working and therefore will be working into the future.

Summary:

WRD should approve this application because:

1. The strip/drip transfers are a wise use of water.
2. WRD should encourage wise use of water.
3. Technological advances have made these transfers easier to manage.

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4. The applicant is only proposing to make permanent a temporary transfer that has been proven to be working well; and is proposing to improve the MMP.
5. If the application is not approved, the applicant will be severely harmed because he relied on WRD's past history of approving these applications, that his MMP was working well; and the fact that WRD did not inform water users that they might change their attitude toward these applications.

Sincerely,
Aspen Rural Land Consulting

Eric Urstadt, PE, PLS

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