

LL 1441

ISSUED

LL 1441

LL-

Doverport Newberry Holdings

NAME	ISSUED	DATE	EXPIRES	DATE
ADDRESS 225 NW FRANKLIN AVE	ISSUED	1/10/2013		
BENTON, OREGON	DENIED			12/31/2017
97701				
PHONE 541.323.1190	WITHDRAWN			

DATE	FEES PAID	RECEIPT #
11-21-12	300.00	107414
FEES REFUNDED		

PUBLIC NOTICE DATE 11/27/2012

AVAILABLE FOR ISSUANCE 12/31/2012

AMOUNT 127624 3 WELLS

ROUTE TO G.W. AFTER PUBLIC NOTICE

USE GEOVITRICAL GE

DURATION 1/1/2013 -> 12/31/2017

SOURCE 3 WELLS

P.O.D. LOCATED SW 1/4, NE 1/4, SECTION 29

NE 1/4, SW 1/4, SECTION 16 TOWNSHIP 21 SOUTH, RANGE 12 EAST, N.M.

NE 1/4, SW 1/4, SECTION 21

COUNTY DESCHUTES

RELATED FILES  
LL-1347 & G-1370

WATERMASTER JEREMY GUFFIN #11

G-1371

ODFW DECA

RS 11/21/2012

Jerry,  
Please contact me  
with any questions

Thanks,  
Paul

303-442-4259

# Oregon Water Resources Department



## **Final Order Limited License Application LL-1441**

### ***Appeal Rights***

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date, the petition was filed, the petition shall be deemed denied.

### ***Requested Water Use***

On November 21, 2012, the Water Resources Department received completed application **LL-1441** from Davenport Newberry Holdings for the use of 187 gallons per minute, up to 435 acre-feet from any combination of 3 wells, located in the NE  $\frac{1}{4}$ , SW  $\frac{1}{4}$ , Section 16, the NE  $\frac{1}{4}$ , SW  $\frac{1}{4}$ , Section 21, and the SW  $\frac{1}{4}$ , NE  $\frac{1}{4}$ , Section 29, all in Township 21 South, Range 12 East, W.M., for geo-thermal testing (energy production), for the period January 1, 2013, through December 31, 2017.

### ***Authorities***

The Department may approve a limited license pursuant to its authority under ORS 537.143, 537.144 and OAR 690-340-0030.

ORS 537.143(2) authorizes the Director to revoke the right to use water under a limited license if it causes injury to any water right or a minimum perennial streamflow.

A limited license will not be issued for more than five consecutive years for the same use, as directed by ORS 537.143(8).

### ***Findings of Fact***

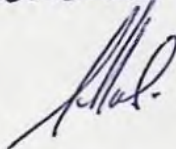
1. The forms, fees, and map have been submitted, as required by OAR 690-340-0030(1).
2. The Department provided public notice of the application, on November 27, 2012, as required by OAR 690-340-0030(2).
3. This request is limited to an area within a single drainage basin as required by OAR 690-340-0030(3).
4. The Department has determined that there is water available for the requested use.
5. The Department has determined that the proposed source has not been withdrawn from further appropriation.

4. Before water use may begin under this license, the licensee shall install a totalizing flow meter at each point of diversion/appropriation. The totalizing flow meter must be installed and maintained in good working order.
5. The licensee shall maintain a record of all water use, including the total number of hours of pumping, the total quantity pumped, and the categories of beneficial use to which the water is applied. During the period of the license, the record of use shall be submitted to the Department annually, and shall be submitted to the Watermaster upon request.
6. If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this license, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.
7. This limited license is conditioned to allow groundwater production only from the Newberry lava groundwater reservoir.
8. Due to potential diminishment of flow in Paulina Creek, POA # 3 (DESC 10060) shall not be used for production, but monitored continuously as a proxy to judge potential interference with Paulina Creek. The continuous monitoring shall be with a data logger and transducer that meet Department standards. The data from the data logger shall be reported on a monthly schedule while pumping is occurring.
9. The Director may revoke the right to use water for any reason described in ORS 537.143(2), and OAR 690-340-0030(6). Such revocation may be prompted by field regulatory activities or by any other information.
10. Use of water under a limited license shall not have priority over any water right exercised according to a permit or certificate, and shall be subordinate to all other authorized uses that rely upon the same source.
11. A copy of this license shall be kept at the place of use, and be available for inspection by the Watermaster or other state authority.

LL-1441

- 187 GRU - 435 AC/FT MINIMUM
- GEOTHERMAL TESTING.
- 217.5 AC/FT MITIGATION
- SAME AS LL-1347 THAT JUST EXPIRES.
- REPLACES LL-1347. SAME REVIEW AS LL-1347

RECOMMENDING OFFICER:

 1/9/2013

FEMMY  
→

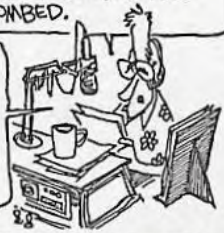
# NON SEQUITUR

HOMELAND SECURITY  
WENT ON PINK ALERT  
TODAY WHEN A BOAT  
WAS INTERCEPTED  
OFF THE COAST OF  
MAINE...

THE FISHING BOAT PREIN SUSPICION  
BECAUSE A CAT WAS AT THE HELM,  
BUT A REPORT OF A BOMB ON  
BOARD JUST TURNED OUT TO  
BE THE CAPTAIN ON BOARD  
BEING BOMBED.



THE CAT  
BROUGHT  
THE BOAT  
SAFELY  
BACK TO  
PORT...



WILEY

...AND HOMELAND  
SECURITY REDUCED  
THE ALERT LEVEL  
TO CHARTREUSE



I DON'T  
SUPPOSE  
YOU'D LIKE  
TO HEAR  
MY SIDE  
OF THE  
STAHRY

OH...REALITY  
IS BIZZAH  
ENOUGH  
THESE DAYS  
WITHOUT YAH  
HELP, EDDIE



Easter Monday  
(Australia, Canada, NZ, UK—  
except Scotland)

Monday  
APRIL  
12



# Oregon

John A. Kitzhaber, MD, Governor

Water Resources Department  
North Mall Office Building  
725 Summer Street NE, Suite A  
Salem, OR 97301-1271  
503-986-0900  
FAX 503-986-0904

**November 27, 2012**

DAVENPORT NEWBERRY HOLDINGS  
PAUL L STERN  
225 NW FRANKLIN AVE STE 1  
BEND OR 9701

Reference: LL # 1441

We received your request on November 27, 2012 for a limited license to use 187 gallons per minute from up to 3 wells a tributary of Paulina Creek for Geothermal System Demonstration Project. Enclosed is a copy of your receipt #107414 in the amount of \$300.00.

As required by OAR 690-340-030, a description of this license request will be included in the Department's weekly public notice. A-14 day public comment period will begin at that time. Any substantial public interest issues raised during the comment period must be addressed before your application is processed further.

At this time, a preliminary review of your application has been completed. As a result of that review the Department has concluded that your proposed water use may occur in an area that may affect the habitat of sensitive, threatened or endangered fish species. This determination is based upon information provided by Oregon Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service or the appropriate Indian tribes.

This letter will serve as your notice (required by OAR 690-33-330 (1)) that based on this preliminary determination, your proposed use may affect the habitat of sensitive, threatened or endangered fish species and the application may be conditioned or denied.

We are also required to notify an interagency review team comprised of staff from the Departments of Agriculture, Environmental Quality, Fish and Wildlife, Water Resources and other state natural resource agencies as appropriate.

The interagency review team will be convened, as needed; to review applications that the Department determines may affect sensitive, threatened or endangered fish species. The interagency review team, if possible, will attempt to condition the proposed use, if necessary, to ensure there is no loss of essential habitat as identified by ODFW.

If the interagency review team cannot condition the proposed use to ensure there is no loss of essential habitat as identified by ODFW, the interagency review team may recommend denial of the application unless it concludes that the proposed use would not harm the species.

If you need further assistance, contact Jerry Sauter in the Water Rights Section at the address listed above or phone 503.986.0817.

Enclosure

cc:File

Watermaster # 11 Jeremy Giffin

Brett Hodgson, ODFW (w/ map copy, Watermaster's comments, & application)

Bonnie Lamb, DEQ (w/ map copy, Watermaster's comments, & application)

# Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # LL-1441

ROUTED TO: Water Rights

TOWNSHIP/

RANGE-SECTION: 21s/12E-16, 21, 29

CONDITIONS ATTACHED?:  yes  no

REMARKS OR FURTHER INSTRUCTIONS:

Note: Potential Interference

w/ Paulina Creek;

Special Conditions as LL-1347

Reviewer: K. Lite



**PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS**

TO: Water Rights Section Date 01/02/2013

FROM: Ground Water/Hydrology Section K. Lite

Reviewer's Name

SUBJECT: Application LL- 1441 Supersedes review of \_\_\_\_\_

Date of Review(s)

**PUBLIC INTEREST PRESUMPTION; GROUNDWATER**

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review ground water applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.

A. **GENERAL INFORMATION:** Applicant's Name: Davenport Newberry Holdings LLC County: Deschutes

A1. Applicant(s) seek(s) 0.42 cfs from 3 well(s) in the Deschutes Basin, Little Deschutes subbasin Quad Map: Paulina Peak and Lava Cast Forest

A2. Proposed use: Geothermal Testing Seasonality: Year-Round

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	Desc 58395	S-29	Newberry Lava	0.42	21S/12E-29ACC	None Given
2	Desc 58649	S-16	Newberry Lava	0.42	21S/12E-16CAA	None Given
3	Desc 10060	WW-2	Newberry Lava	0.42	21S/12E-21CAD	None Given

\* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	5790	400	325	3/13/08	583	0-118	+2-118	0-583	539-579	500		A
2	6185	704	672	8/3/08	890	0-25	+1-25	12-823	742-823	350	2	P
3	6040	782	556	7/17/12	825	203	+2-203	+2-793	?-773	40		A

Use data from application for proposed wells.

A4. **Comments: WELLS ARE CONSTRUCTED INTO WATER BEARING ZONES WITHIN LAYERED NEWBERRY LAVAS. VERY LITTLE HYDRAULIC HEAD DATA EXISTS IN THIS AREA. HOWEVER, THE ELEVATIONS OF THE WATER LEVEL IN ALL THREE WELLS (DESC 10060, 58395, AND 58649) IN THE AREA ARE COINCIDENT WITH THE ELEVATION OF A GAINING STREAM REACH OF PAULINA CREEK. THERE IS LIKELY TO BE SOME INTERFERENCE WITH PAULINA CREEK.**

A5.  **Provisions of the Deschutes** Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water  are, or  are not, activated by this application. (Not all basin rules contain such provisions.)  
Comments: Within USGS Study Area Boundary.

A6.  Well(s) # \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, tap(s) an aquifer limited by an administrative restriction.  
Name of administrative area: \_\_\_\_\_  
Comments: \_\_\_\_\_

**B. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070**

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

- a.  is over appropriated,  is not over appropriated, or  cannot be determined to be over appropriated during any period of the proposed use. \* This finding is limited to the ground water portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b.  will not or  will likely be available in the amounts requested without injury to prior water rights. \* This finding is limited to the ground water portion of the injury determination as prescribed in OAR 690-310-130;
- c.  will not or  will likely to be available within the capacity of the ground water resource; or
- d.  will, if properly conditioned, avoid injury to existing ground water rights or to the ground water resource:
  - i.  The permit should contain condition #(s) 7B \_\_\_\_\_;
  - ii.  The permit should be conditioned as indicated in item 2 below.
  - iii.  The permit should contain special condition(s) as indicated in item 3 below;

- B2. a.  Condition to allow ground water production from no deeper than \_\_\_\_\_ ft. below land surface;
- b.  Condition to allow ground water production from no shallower than \_\_\_\_\_ ft. below land surface;
- c.  Condition to allow ground water production only from the Newberry Lava ground water reservoir between approximately \_\_\_\_\_ ft. and \_\_\_\_\_ ft. below land surface;
- d.  Well reconstruction is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Ground Water Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**B3. Ground water availability remarks: THE NEAREST OBSERVATION WELL WAS POA #3 (DESC 10060), LOCATED WITHIN THE PROPOSED GEOTHERMAL PROJECT AREA. IT HAD BEEN MONITORED CONTINUOUSLY FROM AUGUST 2005 THROUGH JULY 2010. THE WATER LEVEL APPEARS TO BE IN DYNAMIC EQUILIBRIUM DURING MOST OF THE PERIOD OF RECORD. HOWEVER ABOUT 0.5 FEET OF DRAWDOWN (INTERFERENCE) IS APPARENT IN THE RECORD DURING THE FALL OF 2008, LIKELY DUE TO WATER USE ASSOCIATED WITH GEOTHERMAL EXPLORATION ACTIVITIES.**

**DUE TO POTENTIAL DIMINISHMENT OF FLOW IN PAULINA CREEK, IT IS RECOMMEND THAT POA #3 (DESC 10060) NOT BE USED FOR PRODUCTION, BUT MONITORED CONTINUOUSLY AS A PROXY TO JUDGE POTENTIAL INTERFERENCE WITH PAULINA CREEK. THE CONTINUOUS MONITORING SHALL BE WITH A DATALOGGER AND TRANSDUCER THAT MEETS DEPARTMENT STANDARDS. THE DATA FROM THE LOGGER SHALL BE REPORTED ON A MONTHLY SCHEDULE WHILE PUMPING IS OCCURRING.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**C. GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**

C1. 690-09-040 (1): Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: \_\_\_\_\_

C2. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than 1/4 mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: \_\_\_\_\_

Water Availability Basin the well(s) are located within: \_\_\_\_\_

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be hydraulically connected and less than 1 mile from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% natural flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked  box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < 1/4 mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be hydraulically connected and less than 1 mile from a surface water source. Complete only if Q is distributed among wells. Otherwise same evaluation and limitations apply as in C3a above.

SW #	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

C4a. **690-09-040 (5):** Estimated impacts on hydraulically connected surface water sources greater than one mile as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
	Well Q as CFS												
	Interference CFS												
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
	Well Q as CFS												
	Interference CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
	Well Q as CFS												
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	Well Q as CFS												
	Interference CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
	Well Q as CFS												
	Interference CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
	Well Q as CFS												
	Interference CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
	Well Q as CFS												
	Interference CFS												
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	Well Q as CFS												
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	Well Q as CFS												
	Interference CFS												
		%	%										



**D. WELL CONSTRUCTION, OAR 690-200**

D1. Well #: \_\_\_\_\_ Logid: \_\_\_\_\_

D2. THE WELL does not meet current well construction standards based upon:

- a.  review of the well log;
- b.  field inspection by \_\_\_\_\_;
- c.  report of CWRE \_\_\_\_\_;
- d.  other: (specify) \_\_\_\_\_

D3. THE WELL construction deficiency:

- a.  constitutes a health threat under Division 200 rules;
- b.  commingles water from more than one ground water reservoir;
- c.  permits the loss of artesian head;
- d.  permits the de-watering of one or more ground water reservoirs;
- e.  other: (specify) \_\_\_\_\_

D4. THE WELL construction deficiency is described as follows: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- D5. THE WELL a.  was, or  was not constructed according to the standards in effect at the time of original construction or most recent modification.
- b.  I don't know if it met standards at the time of construction.

D6.  Route to the Enforcement Section. I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

**THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL**

D7.  Well construction deficiency has been corrected by the following actions: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

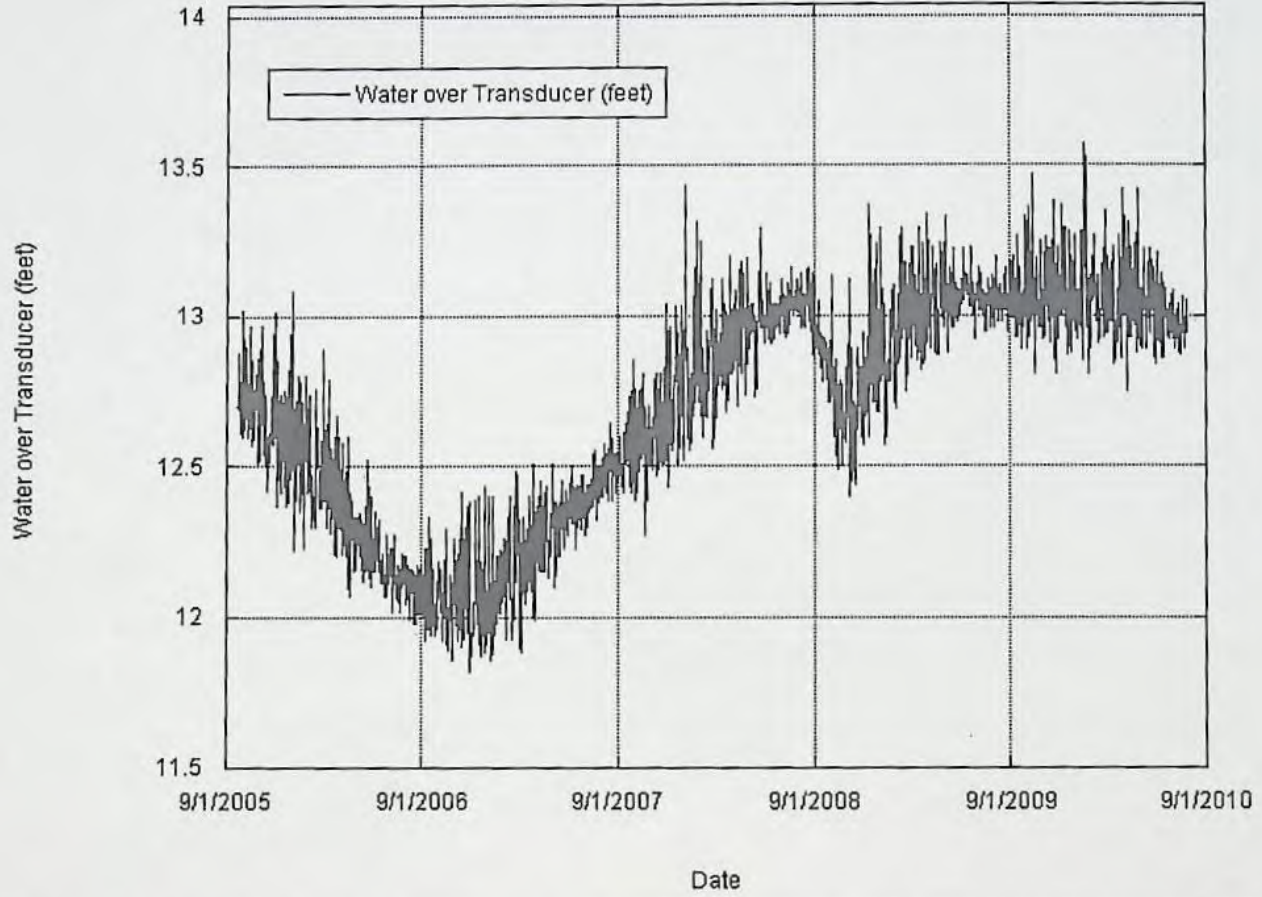
\_\_\_\_\_

\_\_\_\_\_

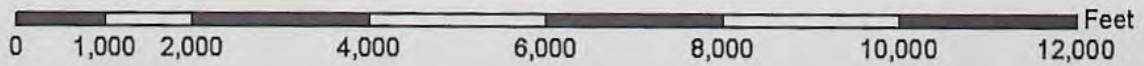
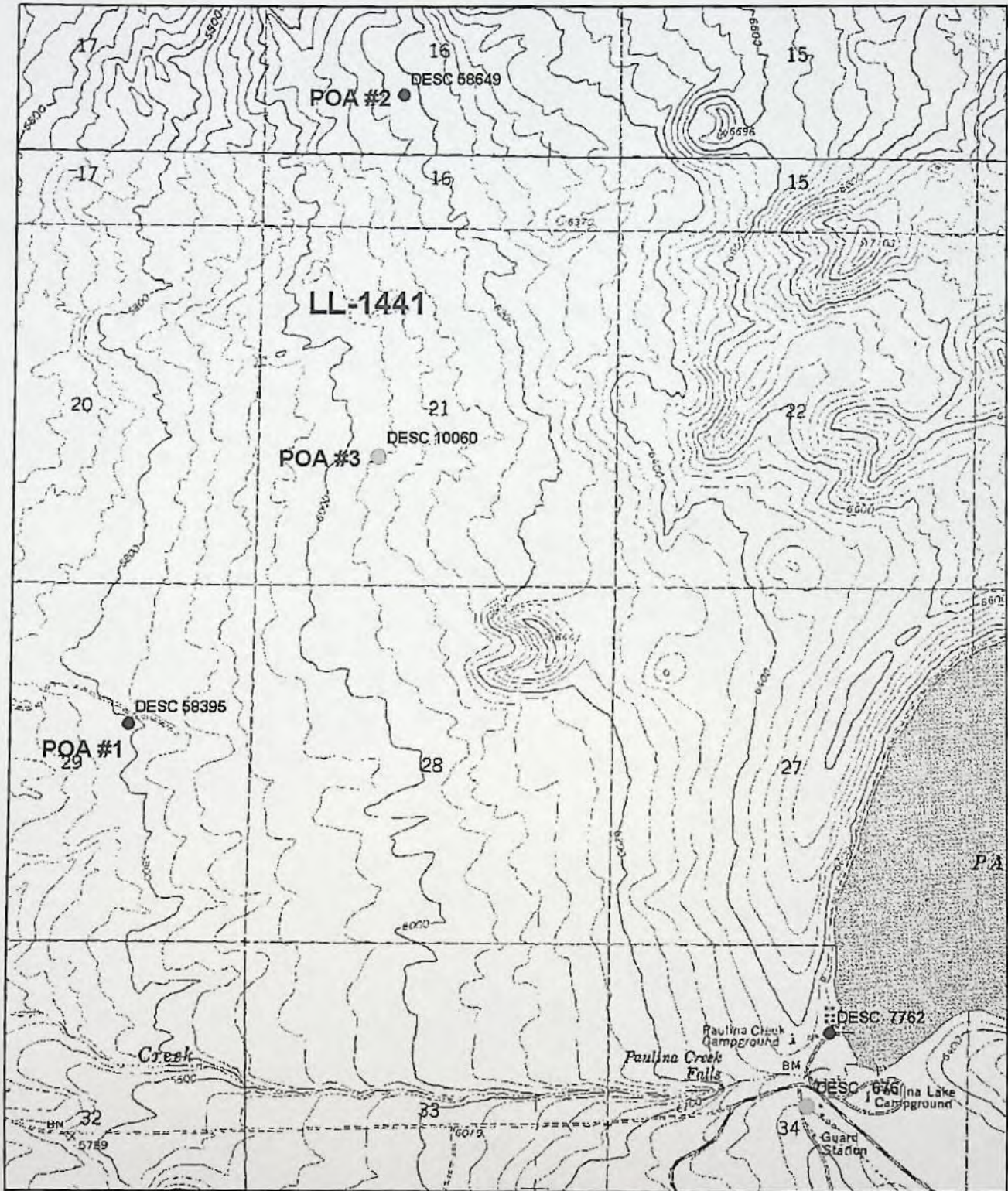
\_\_\_\_\_, 200\_\_\_\_\_  
(Enforcement Section Signature)

D8.  Route to Water Rights Section (attach well reconstruction logs to this page).

ORMAT Well (Desc 10060) Water Level Data  
2-hour log interval



### LL-1441: Paulina Peak and Lava Cast Forest Quadrangles



# Limited License "Completeness" Checklist

Minimum Requirements (OAR 690-340-030) (ORS 537.143)

LL-1441

Received Date: <u>11/21/2012</u>	Township: <u>21</u> <u>21</u> <u>21</u>
Public Notice Date: <u>11/27/2012</u>	Range: <u>12</u> <u>12</u> <u>12</u>
Earliest Issue Date: <u>12/12/2012</u>	Section: <u>24</u> <u>16</u> <u>21</u>
Source: <u>3 WELLS</u>	POD Loc: <u>SW NE</u> <u>NE SW</u> <u>NE SW</u>
Amount: <u>187 GPM</u>	Watermaster: <u>JEREMY GIFFEN #11</u>
Duration: <u>1/1/2013 - 12/31/2017</u>	ODFW: _____
County: <u>DECATUR</u>	DEQ: _____
Basin: _____	

MITIGATION 50% 217.5 AC/AF.  
AB LL-1347

- Applicant/Organization Name, Mailing Address, Telephone Number, and Contact Person. Signature in ink. Original "wet" signature required.
- Source listed?
- If source is groundwater...are well log(s) or sufficient information for the Department to determine aquifer, well depth, well seal, open interval, etc. included? Was the intended aquifer identified?. If for multiple wells, each map location shall be clearly tied to a well log.
- Proposed Use of the water....is each proposed use identified?
- If source is stored water.... Is there a contract for delivery of stored water. Must have a copy
- If use is supplemental...is the primary water right-listed?
- Amount of water from each source listed in 187 GPM, CFS or AF?
- Acreage being proposed, if applicable.
- Duration of Limited License being requested by applicant.
- Project schedule... Date when water use will start and date when water use will be completed
- Is the application signed in ink by the applicant(s) or by the authorized agent with title or authority if an organization or corporation?
- Water Master Report... Is the local Water Masters report on water availability included?
- Federal Land  
Land Use Form... Is the Land Use Form completed by local planning officials included? Signature must be within the last 12 months. Signature must be an original "wet" signature.

**CONTINUED ON BACK**

Does the **map meet requirements** of OAR 690-340-030? If map is larger than 11 x 17, four copies must be submitted.

Township, Range, Section

Location of each diversion point, well or dam

Reference corner on map

Each POD coordinate by reference to a recognized public land survey corner

Scale of the Map, not less than 2" = 1 mile

Other topographical features such as roads, streams, railroads, etc, which may be helpful in locating the diversion points in the field.

Fees enclosed?

Base Fee

Water Amount

\$250.00 including the first point of diversion  
\$25.00 for each additional point of diversion x 2

250.00  
+ 50.00  
300.00 total fee

FEE PAID	<u>300.00</u>
STILL OWED	<u>0</u>

Completeness Check by: JKS

Date: 11/21/2012



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

# Application for Limited Water Use License

*A summary of review criteria and procedures that are generally applicable to these applications is available at [www.wrd.state.or.us/OWRD/PUBS/forms.shtml](http://www.wrd.state.or.us/OWRD/PUBS/forms.shtml).*

License No. LL-1441

Applicant(s): Davenport Newberry Holdings

Contact Person: Paul L. Stern, Agent (Tel: 303-442-4259)

Mailing Address: 225 NW Franklin Avenue, Suite 1 **RECEIVED BY OWRD**

Bend City OR State 97701 Zip **NOV 21 2012**

Telephone No: (541) 323-1190 **SALEM, OR**

I (We) make application for a Limited License to use or store the following described surface waters or groundwater-not otherwise exempt, or to use stored water of the State of Oregon for a use of a short-term or fixed duration:

1. SOURCE(S) OF WATER for the proposed use: Groundwater a tributary of \_\_\_\_\_.
2. TOTAL AMOUNT OF WATER to be diverted: \_\_\_\_\_ cubic feet per second, or 187\* gallons per minute. If water is to be used from more than one source, give the quantity from each: 187\* gpm from one well or any combination of 3 wells.
3. INTENDED USE(S) OF WATER: (check all that apply)
  - Road construction or maintenance
  - General construction
  - Forestland and rangeland management; or
  - Other: Enhanced Geothermal System (EGS) Demonstration Project
4. DESCRIPTION OF PROPOSED PROJECT: Include a description of the intended place of use as shown on the accompanying site map, the method of water diversion, the type of equipment to be used (including pump horsepower, if applicable), length and dimensions of supply ditches and pipelines:

The project will use a maximum of 43,657,589 gallons in year one and 98,038,354 gallons in year two for a total of 141,695,943 gallons over two years. A maximum anticipated flow rate of 1,600 gpm from either one well or any combination of 3 wells would occur for two 5 day periods. Details of anticipated water usage and diversion points is attached.

\* 187 gpm is an annualized average over 2 years, assuming the highest annual volume of water used in year 2 (98,038,354 gallons)

5. PROJECT SCHEDULE: (List day, month, and year)

Date water use will begin January 1, 2013

NOV 21 2012

Date project will be completed December 31, 2017

SALEM, OR

Date water use will be completed December 31, 2017

Is this project fully or partially funded by the American Recovery and Reinvestment Act? (Federal stimulus dollars)  Yes  No

**PLEASE READ CAREFULLY**

**NOTE:** A completed water availability statement from the local watermaster, Land Use Information Form completed by the local Planning Department, fees and site map meeting the requirements of OAR 690-340-030 must accompany this request. The fee for this request is \$250 for the first point of diversion plus \$25 for each additional point of diversion. Please review the Department's fee schedule to view fees required to request a limited license for Aquifer Storage and Recovery testing purposes or for Artificial Groundwater Recharge testing purposes.

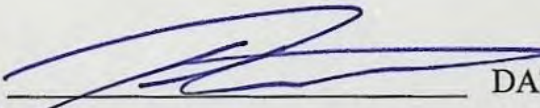
Failure to provide any of the required information will result in return of your application. The license, if granted, will not be issued or replaced by a new license for a period of more than five consecutive years. The license, if granted, will be subordinate to all other authorized uses that rely upon the same source, or water affected by the source, and may be revoked at any time it is determined the use causes injury to any other water right or minimum perennial streamflow.

If water source is a well, well logs or adequate information for the Department to determine aquifer, well depth, well seal and open interval, etc. are required. The licensee shall indicate the intended aquifer. If for multiple wells, each map location shall be clearly tied to a well log.

If a limited license is approved, the licensee shall give notice to the Department (Watermaster) at least 15 days in advance of using the water under the Limited License and shall maintain a record of use. The record of use shall include, but need not be limited to, an estimate of the amount of water used, the period of use and the categories of beneficial use to which the water is applied. During the period of the Limited License, the record of use shall be available for review by the Department upon request.

**REMARKS:**

A meter will be installed at each well and a record of use will be kept.

SIGNATURE of Applicant:  DATE: 11/20/12  
Title: Agent

**Mapping Requirements (OAR 690-340-0030):**

(1) A request for a limited license shall be submitted on a form provided by the Water Resources Department, and shall be accompanied by the following:

(c) A site map of reproducible quality, drawn to a standard, even scale of not less than 2 inches = 1 mile, showing:

(A) The locations of all proposed points of diversion referenced by coordinates or by bearing and distance to the nearest established or projected public land survey corner;

(B) The general course of the source for the proposed use, if applicable;

(C) Other topographical features such as roads, streams, railroads, etc., which may be helpful in locating the diversion points in the field.

***This page to be completed by the local Watermaster.***

**WATER AVAILABILITY STATEMENT**

Name of Applicant: Davenport Newberry Holdings Limited License Number: 26-1441

1. To your knowledge, has the stream or basin that is the source for this application ever been regulated for prior rights?  Yes  No

If yes, please explain:

2. Based on your observations, would be there water available in the quantity and at the times needed to supply the use proposed by this application?  Yes  No

3. Do you observe this stream system during regular fieldwork?  Yes  No

If yes, what are your observations for the stream?

4. If the source is a well and if WRD were to determine that there is the potential for substantial interference with nearby surface water sources, would there still be ground water and surface water available during the time requested and in the amount requested without injury to existing water rights?  Yes  No  N/A

What would you recommend for conditions on a limited license that may be issued approving this application?

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**SALEM, OR**

5. Any other recommendations you would like to make?

Signature \_\_\_\_\_ WM District #: \_\_\_\_\_ Date: \_\_\_\_\_

# Land Use Information Form



Oregon Water Resources Department  
725 Summer Street NE, Suite A  
Salem, Oregon 97301-1266  
(503) 986-0900  
www.wrd.state.or.us

## NOTE TO APPLICANTS

In order for your application to be processed by the Water Resources Department (WRD), this Land Use Information Form must be completed by a local government planning official in the jurisdiction(s) where your water right will be used and developed. The planning official may choose to complete the form while you wait, or return the receipt stub to you. Applications received by WRD without the Land Use Form or the receipt stub will be returned to you. Please be aware that your application will not be approved without land use approval.

**This form is NOT required if:**

- 1) Water is to be diverted, conveyed, and/or used only on federal lands; **OR**
- 2) The application is for a water right transfer, allocation of conserved water, exchange, permit amendment, or ground water registration modification, and all of the following apply:
  - a) The existing and proposed water use is located entirely within lands zoned for exclusive farm-use or within an irrigation district;
  - b) The application involves a change in place of use only;
  - c) The change does not involve the placement or modification of structures, including but not limited to water diversion, impoundment, distribution facilities, water wells and well houses; and
  - d) The application involves irrigation water uses only.

## NOTE TO LOCAL GOVERNMENTS

The person presenting the attached Land Use Information Form is applying for or modifying a water right. The Water Resources Department (WRD) requires its applicants to obtain land-use information to be sure the water rights do not result in land uses that are incompatible with your comprehensive plan. Please complete the form or detach the receipt stub and return it to the applicant for inclusion in their water right application. You will receive notice once the applicant formally submits his or her request to the WRD. The notice will give more information about WRD's water rights process and provide additional comment opportunities. You will have 30 days from the date of the notice to complete the land-use form and return it to the WRD. If no land-use information is received from you within that 30-day period, the WRD may presume the land use associated with the proposed water right is compatible with your comprehensive plan. Your attention to this request for information is greatly appreciated by the Water Resources Department. If you have any questions concerning this form, please contact the WRD's Customer Service Group at 503-986-0801.

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SALEM, OR

LL-1441

# Land Use Information Form



Oregon Water Resources Department  
 725 Summer Street NE, Suite A  
 Salem, Oregon 97301-1266  
 (503) 986-0900  
 www.wrd.state.or.us

Applicant: Davenport Newberry Holdings LLC  
First Last

Mailing Address: 225 NW Franklin Avenue, Suite 1

Bend OR 97701 Daytime Phone: (541) 323-1190  
City State Zip

## A. Land and Location

Please include the following information for all tax lots where water will be diverted (taken from its source), conveyed (transported), and/or used or developed. Applicants for municipal use, or irrigation uses within irrigation districts may substitute existing and proposed service-area boundaries for the tax-lot information requested below.

Township	Range	Section	¼ ¼	Tax Lot #	Plan Designation (e.g., Rural Residential/RR-5)	Water to be:			Proposed Land Use:
21S	12E	16	NESW		USFS	<input checked="" type="checkbox"/> Diverted	<input type="checkbox"/> Conveyed	<input checked="" type="checkbox"/> Used	monstration
21S	12E	29	SWNE		USFS	<input checked="" type="checkbox"/> Diverted	<input checked="" type="checkbox"/> Conveyed	<input checked="" type="checkbox"/> Used	monstration
21S	12E	21	NESW		USFS	<input checked="" type="checkbox"/> Diverted	<input checked="" type="checkbox"/> Conveyed	<input checked="" type="checkbox"/> Used	monstration
						<input type="checkbox"/> Diverted	<input type="checkbox"/> Conveyed	<input type="checkbox"/> Used	

List all counties and cities where water is proposed to be diverted, conveyed, and/or used or developed:

Deschutes

## B. Description of Proposed Use

Type of application to be filed with the Water Resources Department:

- Permit to Use or Store Water   
  Water Right Transfer   
  Permit Amendment or Ground Water Registration Modification  
 Limited Water Use License   
  Allocation of Conserved Water   
  Exchange of Water

Source of water:  Reservoir/Pond     Ground Water     Surface Water (name) \_\_\_\_\_

Estimated quantity of water needed: 435 (Max)     cubic feet per second     gallons per minute     acre-feet

Intended use of water:  Irrigation     Commercial     Industrial     Domestic for \_\_\_\_\_ household(s)  
 Municipal     Quasi-Municipal     Instream     Other EGS Demonstration Pro

Briefly describe:

The water from groundwater wells will be used for the drilling, stimulation and testing of an enhanced geothermal system (EGS) demonstration project.

**Note to applicant:** If the Land Use Information Form cannot be completed while you wait, please have a local government representative sign the receipt at the bottom of the next page and include it with the application filed with the Water Resources Department.

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See bottom of Page 3. →

NOV 21 2012

NOV 21 2012

# For Local Government Use Only

SALEM, OR

The following section must be completed by a planning official from each county and city listed unless the project will be located entirely within the city limits. In that case, only the city planning agency must complete this form. This deals only with the local land-use plan. Do not include approval for activities such as building or grading permits.

**Please check the appropriate box below and provide the requested information**

- Land uses to be served by the proposed water uses (including proposed construction) are allowed outright or are not regulated by your comprehensive plan. Cite applicable ordinance section(s): \_\_\_\_\_.
- Land uses to be served by the proposed water uses (including proposed construction) involve discretionary land-use approvals as listed in the table below. (Please attach documentation of applicable land-use approvals which have already been obtained. Record of Action/land-use decision and accompanying findings are sufficient.) **If approvals have been obtained but all appeal periods have not ended, check "Being pursued."**

Type of Land-Use Approval Needed (e.g., plan amendments, rezones, conditional-use permits, etc.)	Cite Most Significant, Applicable Plan Policies & Ordinance Section References	Land-Use Approval:	
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued

Local governments are invited to express special land-use concerns or make recommendations to the Water Resources Department regarding this proposed use of water below, or on a separate sheet.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Phone: \_\_\_\_\_ Date: \_\_\_\_\_

Government Entity: \_\_\_\_\_

**Note to local government representative:** Please complete this form or sign the receipt below and return it to the applicant. If you sign the receipt, you will have 30 days from the Water Resources Department's notice date to return the completed Land Use Information Form or WRD may presume the land use associated with the proposed use of water is compatible with local comprehensive plans.



**Receipt for Request for Land Use Information**

Applicant name: \_\_\_\_\_

City or County: \_\_\_\_\_ Staff contact: \_\_\_\_\_

Signature: \_\_\_\_\_ Phone: \_\_\_\_\_ Date: \_\_\_\_\_

# Application for Limited Water Use License—Newberry Volcano EGS Demonstration Project

## Supplementary Information

**Table 3: Maximum water use estimate for all major activities in the Newberry EGS Demonstration**

Activity	Estimated Water Usage Rate, <i>gpm</i>	Maximum Water Volume, <i>gal</i>	Maximum Water Volume, <i>acre-ft</i>	Duration, <i>days</i>
Single well stimulation <sup>1</sup>	800	24,192,000	74.2	21
Rig use during stimulation <sup>2</sup>	-	210,000	0.6	21
Drilling producer #1 <sup>3</sup>		3,152,150	9.7	90
Drilling producer #2 <sup>3</sup>		3,152,150	9.7	90
Connectivity test PW1 <sup>5</sup>	455	4,583,439	14.1	7
Dual well stimulation PW1 <sup>4</sup>	1600 (split between 2 wells)	11,520,000	35.4	5
Connectivity test PW2 <sup>5</sup>	455	4,583,439	14.1	7
Dual well stimulation PW2 <sup>4</sup>	1600 (split between 2 wells)	11,520,000	35.4	5
Circulation Test <sup>6</sup>	912	78,782,765	241.8	60
<b>Total</b>		<b>141,695,942</b>	<b>435</b>	

<sup>1</sup>This uses Soutz GPK2 stimulation volumes and multiplies it by three to achieve our desired network size.

<sup>2</sup>Assumes rig is sitting idle during 21 days of stimulation operations and requires less than 10,000 gpd of water for standby operations.

<sup>3</sup>Davenport Power used 19.4 acre-ft when drilling both well 55-29 and 46-16. We assume that our usage will be similar.

<sup>4</sup>The dual well stimulation assumes pumping simultaneously at 800 gpm into two wells for a maximum total time of 5 days.

<sup>5</sup>The connectivity tests between the injection well and each individual producer are planned for a duration between 3 and 7 days. It is assumed that 16.3 to 37.6% of the flashing fluid will be lost to the atmosphere. Additionally, it is assumed that 2% of the injected volume is never recovered due to leak-off in the reservoir. The numbers above reflect a water usage rate of 455 gpm for a full 7 days with 37.6% of evaporative steam loss.

<sup>6</sup>The long-term circulation test is planned to last 30-60 days. It is assumed that 16.3%-37.6% of the production fluid will be lost to the atmosphere. Additionally, it is assumed that 2% of the injected volume is never recovered due to leak-off in the reservoir. The high end estimate is listed above and it represents 37.6% evaporation for a 60 day test.

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LL-1441

SALEM, OR

## ESTIMATED PROJECT WATER USE BY YEAR

From the stimulation of the injection well to the conclusion of the circulation test, the Newberry EGS Demonstration may use a maximum of 435 acre-ft gross of groundwater. An estimated timeline for the occurrence of major events in Phase II, as well as event durations, is outlined in the timeline below (Figure 1). The project begins in July 2011 with the stimulation of well 55-29, which will utilize approximately 74.2 acre-ft over a 21-day period. Following the stimulation, a three-day flow-back test of 55-29 will be conducted. This task does not use any additional make-up water. In September 2011, drilling of the first of two production wells will begin. Based on Davenport's experience, we expect that each well will require 90 days to drill and 9.7 acre-ft of groundwater. Following the completion of each producer, the connection between the injector and the producer will be tested for up to 7 days and a 5-day stimulation to enhance that connection will be conducted. Finally, a three-well circulation test between the injector and newly-drilled producers will commence in May 2012. The circulation test is scheduled to last between 30 and 60 days and require up to 242 acre-ft of groundwater. Figure 2 presents the projected monthly water usage between July 2011 and June 2012.

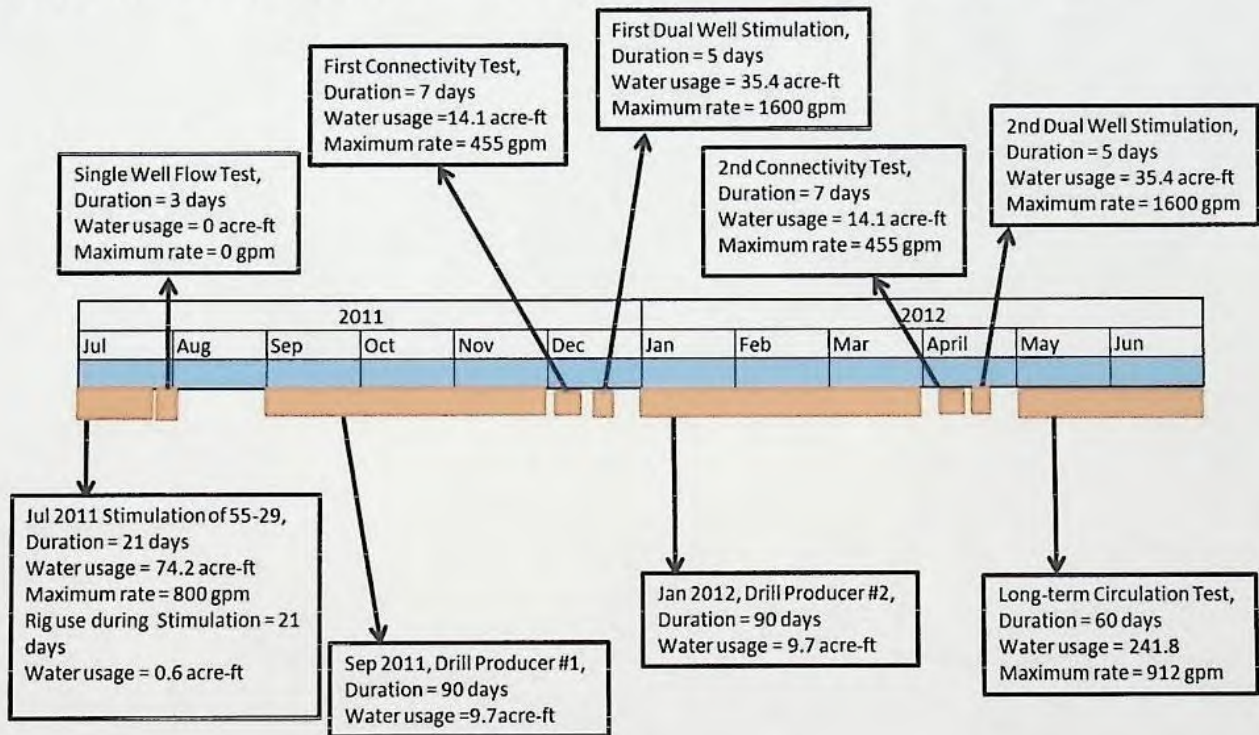


Figure 1: Major events and durations of water use.

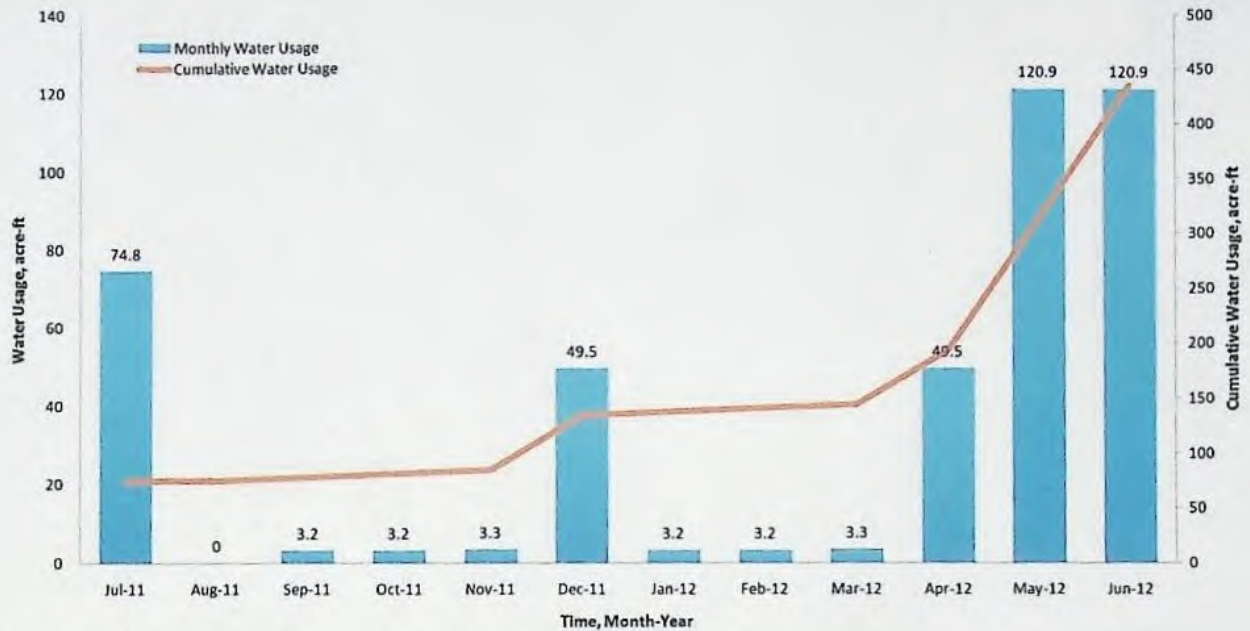
Note: Disregard calendar dates as the project started later than anticipated.

The durations and anticipated rates are the same.

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**Figure 2: Water usage by month.**

The water usage breakdown by year is summarized in Tables 4 and 5 below.

Groundwater usage in 2011, 31% of the total, is estimated to be a maximum of 43.7 million gallons. The majority of the project's water use, 69%, will occur in 2012. Usage in 2012 is dominated by the long-term circulation test. Table 5 and Figure 3 break down the estimated usage by sink type. Evaporative losses are the dominant sink, utilizing 58% of project water. Water that is used to 'fill' the reservoir during stimulation and drilling is estimated to use 34% of the project water budget. Losses due to leak-off account for the remaining 8%.

**Table 4: Summary of maximum water usage by year.**

Year	Water Usage, gals	Water Usage, acre-ft	Percent of Total Usage
2011	43,657,589	134	31%
2012	98,038,354	301	69%

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NOV 21 2012

SALEM, OR

LL-441

# DESC 58649

**STATE OF OREGON**  
**WATER SUPPLY WELL REPORT**  
 (as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 94394  
 START CARD # 1004249

**(1) LAND OWNER** Owner Well I.D. PadS-16  
 First Name \_\_\_\_\_ Last Name \_\_\_\_\_  
 Company NEWBERRY GEOTHERMAL HOLDINGS, LLC.  
 Address 300 ATLANTIC STREET, SUITE 301  
 City STAMFORD State CT Zip 06901

**(2) TYPE OF WORK**  New Well  Deepening  Conversion  
 Alteration (repair/recondition)  Abandonment

**(3) DRILL METHOD**  
 Rotary Air  Rotary Mud  Cable  Auger  Cable Mud  
 Reverse Rotary  Other

**(4) PROPOSED USE**  Domestic  Irrigation  Community  
 Industrial/ Commercial  Livestock  Dewatering  
 Thermal  Injection  Other

**(5) BORE HOLE CONSTRUCTION** Special Standard  (Attach copy)  
 Depth of Completed Well 823 ft.

BORE HOLE			SEAL			sacks/	
Dia	From	To	Material	From	To	Amt	lbs
18	0	25	Cement	0	25	30	S
12.45	25	890					

How was seal placed: Method  A  B  C  D  E  
 Other  
 Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
 Filter pack from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_ Size \_\_\_\_\_  
 Explosives used:  Yes Type \_\_\_\_\_ Amount \_\_\_\_\_

**(6) CASING/LINER**

Casing	Liner	Dia	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	14	1	25	.250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	10	12	823	.312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Shoe  Inside  Outside  Other Location of shoe(s) \_\_\_\_\_  
 Temp casing  Yes Dia \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_

**(7) PERFORATIONS/SCREENS**  
 Perforations Method Torch  
 Screens Type \_\_\_\_\_ Material \_\_\_\_\_

Perf/Screen	Casing/Liner	Screen Dia	From	To	Slot width	Slot length	# of slots	Tele/pipe size
		742	823		.5	12	810	

**(8) WELL TESTS: Minimum testing time is 1 hour**  
 Pump  Bailer  Air  Flowing Artesian  

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
350	2	845	24

Temperature 51 °F Lab analysis  Yes By \_\_\_\_\_  
 Water quality concerns?  Yes (describe below)  

From	To	Description	Amount	Units

**(9) LOCATION OF WELL (legal description)**  
 County DESCHUTE Twp 21 S N/S Range 12 E E/W WM  
 Sec 16 NE 1/4 of the NE 1/4 Tax Lot N/A  
 Tax Map Number \_\_\_\_\_ Lot \_\_\_\_\_  
 Lat 43° 45' 0.090" or 43.750025 DMS or DD  
 Long -121° 19' 601" or -121.48361111 DMS or DD  
 Street address of well  Nearest address

NEWBERRY GEOTHERMAL PROJECT, WELL PAD S-16

**(10) STATIC WATER LEVEL**  

Existing Well / Predeepening	Date	SWL(psi)	+ SWL(ft)
Completed Well	<u>08-03-2008</u>		<u>672</u>

 Flowing Artesian?  Dry Hole?

**WATER BEARING ZONES** Depth water was first found

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
<u>07-24-2008</u>	<u>704</u>	<u>890</u>	<u>500</u>		<u>672</u>

**(11) WELL LOG** Ground Elevation 6,190

Material	From	To
Fill	0	3
Blue Gray Basalt	3	18
Gray Basalt	18	82
Red Cinders	82	95
Gray Broken Basalt (Lost Circ.)	95	152
Cemented back to bottom of seal casing	25	152
Red Cinders	152	186
Gray Basalt	186	204
Gray Basalt Very Hard	204	223
Red Cinders	223	231
Brown Sandstone Conglomerate	231	268
Red Cinders	268	408
Gray Basalt Hard	408	518
Red Cinders	518	552
Brown Sandstone	552	569
Gray Basalt	569	634
Red Cinder	634	688
Gray Basalt	688	704
Red Cinder WB	704	715

Date Started 07-22-2008 Completed 08-03-2008

**(unbonded) Water Well Constructor Certification**  
 I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number \_\_\_\_\_ Date \_\_\_\_\_  
 Password: (if filing electronically) \_\_\_\_\_  
 Signed \_\_\_\_\_  
**WATER RESOURCES DEPT SALEM, OREGON**

**(bonded) Water Well Constructor Certification**  
 I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1385 Date 12-28-2008  
 Password: (if filing electronically) \_\_\_\_\_  
 Signed Robert Buckner  
 Contact Info (optional) \_\_\_\_\_

RECEIVED

RECEIVED

ORIGINAL - WATER RESOURCES DEPARTMENT  
 THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version: 0.89

JAN 07 2009

66-1441

WATER RESOURCES DEPT  
 SALEM, OREGON

MAILED TO FILE  
 1/12/09



STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

03-27-2008

WELL LABEL # L 93031
START CARD # 1002875

(1) LAND OWNER Owner Well I.D.
First Name Last Name
Company NEWBERRY GEOTHERMAL LLC
Address C/O HAP TAYLOR
City BEND State OR Zip 97709

(2) TYPE OF WORK [X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD
[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE [ ] Domestic [ ] Irrigation [ ] Community
[X] Industrial/ Commercial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION Special Standard [ ] (Attach copy)
Depth of Completed Well 583.00 ft

Table with columns: Dia, From, To, Material, SEAL, Amt, lbs. Rows include Bentonite Chips and Cement.

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E
[X] Other Poured Dry
Backfill placed from ft. to ft. Material
Filter pack from ft. to ft. Material Size
Explosives used: [ ] Yes Type Amount

(6) CASING/LINER
Table with columns: Casing, Liner, Dia, From, To, Gauge, Stl, Plstc, Wld, Thrd. Includes graphical symbols for casing types.

Shoe [X] Inside [ ] Outside [ ] Other Location of shoe(s) 583
Temp casing [ ] Yes Dia From To

(7) PERFORATIONS/SCREENS
Perforations Method Air Perf
Screens Type Material
Table with columns: Perf/S, Casing/Screen, Dia, From, To, Scrm/slot width, Slot length, # of slots, Tele/pipe size.

(8) WELL TESTS: Minimum testing time is 1 hour
Pump [ ] Bailer [ ] Air [X] Flowing Artesian [ ]
Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)
Table with 4 columns and 2 rows of data.

Temperature 53 °F Lab analysis [ ] Yes By
Water quality concerns? [ ] Yes (describe below)
Table with columns: From, To, Description, Amount, Units.

(9) LOCATION OF WELL (legal description)
County Deschutes Twp 21.00 S N/S Range 12.00 E E/W WM
Sec 29 SW 1/4 of the NE 1/4 Tax Lot NON
Tax Map Number Lot
Lat 43° 43' 48.000" or 43.73000000 DMS or DD
Long -121° 18' 48.000" or -121.31333333 DMS or DD
[ ] Street address of well [ ] Nearest address

FOREST SERVICE RD 558 DRILL PAD 29 NE CORNER

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Predeepening
Completed Well 03-13-2008 325
Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 400
Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft). Rows include dates from 03-10-2008 to 03-12-2008.

(11) WELL LOG Ground Elevation 5,800
Table with columns: Material, From, To. Lists various geological layers like Clay Pumice, Ash Tuff Purple, Sand Pumice Brown, etc.

Date Started 01-17-2008 Completed 03-13-2008

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
NOV 21 2012

License Number 758 Date 03-27-2008
Electronically Filed
Signed THOMAS R PECK (E-filed) WATER RESOURCES DEPT SALEM, OREGON

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1720 Date 03-27-2008
Electronically Filed
Signed JACK ABBAS (E-filed)
Contact Info (optional)



DESC 10060

215/12E/2/BB

DESC 10060

AUG 11 1995

WATER RESOURCES DEPT. SALEM, OREGON

STATE OF OREGON WATER WELL REPORT (as required by ORS 537765)

(START CARD #) 70924

(1) OWNER 95 21 CALIFORNIA ENERGY COMPANY INC. 900 N. HERITAGE DR. BLDG. D, RIDGECREST CA 93655

(9) LOCATION OF WELL by legal description: County DESCHUTES Latitude Longitude Township 21 S Range 12 E Section 21 NW 1/4 NW 1/4 Tax Lot MAP Lot Block Subdivision Street Address of Well (or nearest address) NATIONAL FOREST

(2) TYPE OF WORK: NEW WELL

(3) DRILL METHOD: ROTARY AIR

(4) PROPOSED USE: Industrial

(10) STATIC WATER LEVEL: -565 R. below land surface Date July 8, 1995 Artesian pressure Date

(5) BORE HOLE CONSTRUCTION:

(11) WATER BEARING ZONES: Depth at which water was first found -782 From To Estimated Flow Rate SWL -782 -805 200 GPM -665

Table with columns: Explosives used, HOLE Diameter, SEAL Material, AMOUNT Secks. Includes data for 15 1/2" and 9 7/8" diameters.

How was seal Placed C Backfill placed from ft. to ft. Material Gravel placed from ft. to ft. Size of Gravel

(6) CASING / LINER:

Table with columns: Dia., From, To, Gage, Material. Includes data for CASING 10" and LINER 7".

(12) WELL LOG: Ground Elevation FROM TO SWL SOIL & PUMICE 0 10 BROKEN GREY ROCK 10 82 GREY ROCK 82 205 BROKEN CAVING GREY ROCK 205 374 HARD GREY ROCK 374 433 RED ROCK 433 570 HARD RED & GREY ROCK 570 685 HARD GREY ROCK 685 729 RED ROCK 685 729 HARD GREY 729 782 RED CINDERS 782 793 555 BROKEN BROWN ROCK 793 805 555

(7) PERFORATIONS / SCREENS:

Table with columns: METHOD, TYPE, MATERIAL, From, To, Slot size, Number, Dia., Tels / pipe size. Includes data for TORCH method.

(8) WELL TESTS:

Table with columns: TESTING METHOD, Yield GPM, Drawdown, Drill stem at, Time. Includes data for AIR testing method.

Temperature of Water 66 F Depth Artesian Flow Found Was a water analysis done? NO By whom Did any strata contain water not suitable for intended use?

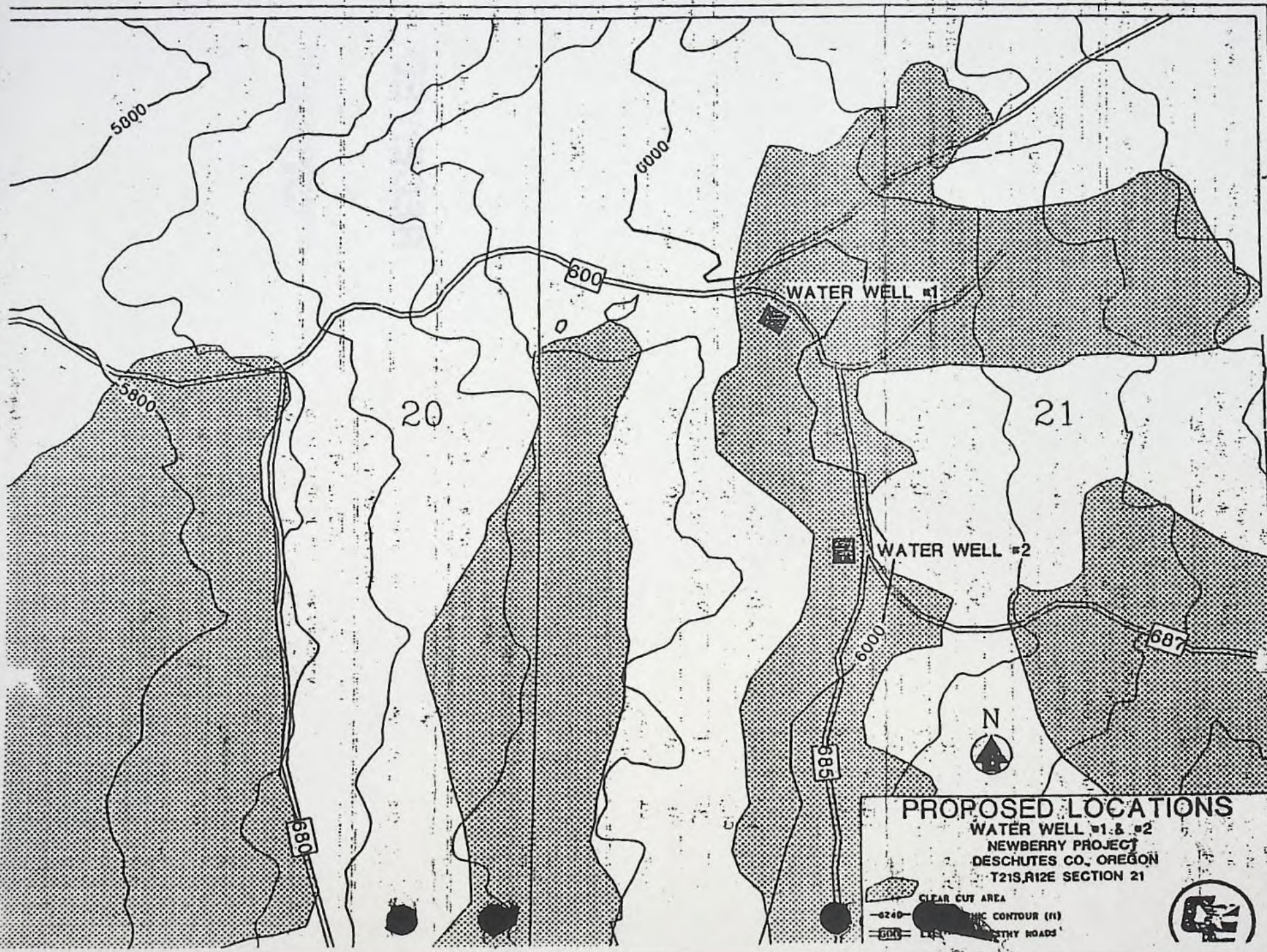
WATER RESOURCES DEPT SALEM, OREGON Date started May 1, 1995 Completed July 28, 1995 (Unbonded) Water Well Constructor Certification: I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

(Bonded) Water Well Constructor Certification: I accept responsibility for the construction alteration or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

LL-1441 AUG 21 1995 TO FILE 11/21/2002 JLS




Signature: [Handwritten Signature] DATE 8-1-95 WWC NUMBER 639

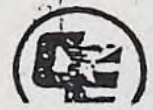
DESC 10060



**PROPOSED LOCATIONS**

WATER WELL #1 & #2  
NEWBERRY PROJECT  
DESCHUTES CO., OREGON  
T21S, R12E SECTION 21

-  CLEAR CUT AREA
-  10' CONTOUR (11)
-  RUSTY ROADS



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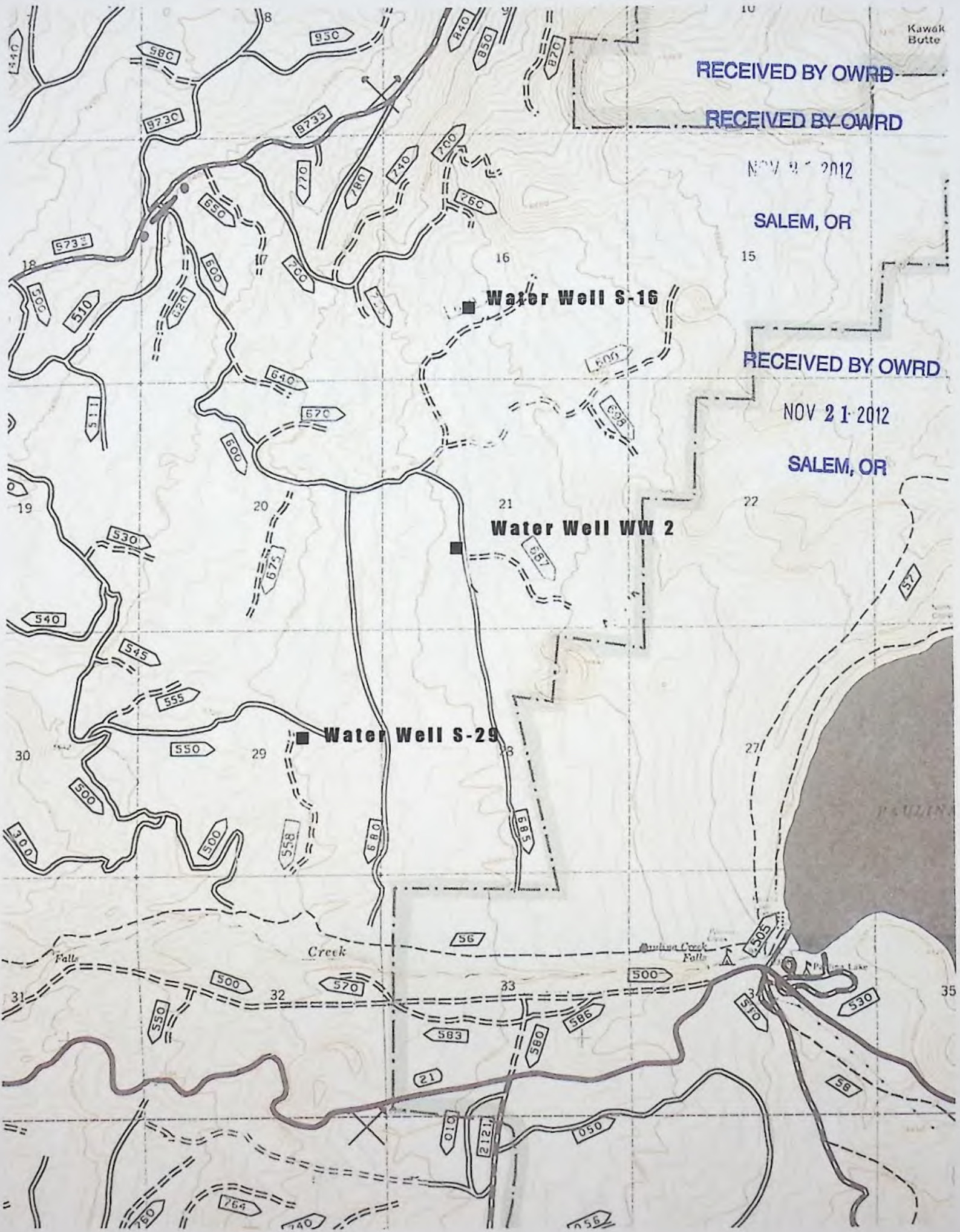
NOV 21 2012

SALEM, OR

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NOV 21 2012

SALEM, OR



**This page to be completed by the local Watermaster.**

**WATER AVAILABILITY STATEMENT**

Name of Applicant: Davenport Newberry Holdings Limited License Number: LL-1441

1. To your knowledge, has the stream or basin that is the source for this application ever been regulated for prior rights?  Yes  No

If yes, please explain: Groundwater

2. Based on your observations, would be there water available in the quantity and at the times needed to supply the use proposed by this application?  Yes  No

3. Do you observe this stream system during regular fieldwork?  Yes  No

If yes, what are your observations for the stream? OWRD monitors the groundwater system through the local observation wells (as well as some of the test wells on site). These observations generally show changes in the groundwater elevations due to climatic variations.

4. If the source is a well and if WRD were to determine that there is the potential for substantial interference with nearby surface water sources, would there still be ground water and surface water available during the time requested and in the amount requested without injury to existing water rights?  Yes  No  N/A

What would you recommend for conditions on a limited license that may be issued approving this application?

The applicant will need to mitigate the requested amount in the required zone of impact for their consumptive usage.

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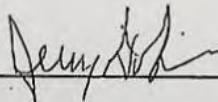
NOV 21 2012

5. Any other recommendations you would like to make?

Make sure flowmeters are properly installed and working.

SALEM, OR

Signature



WM District #: 11

Date: 11-28-12

CL-1441



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 NOV 21 2012  
 SALEM, OR  
 Paulina Lake

# Limited License "Completeness" Checklist

Minimum Requirements (OAR 690-340-030) (ORS 537.143)

Received Date: _____	Township: _____
Public Notice Date: _____	Range: _____
Earliest Issue Date: _____	Section: _____
Source: _____	POD Loc: _____
Amount: _____	_____
Duration: _____	Watermaster: _____
County: _____	ODFW: _____
Basin: _____	DEQ: _____

- Applicant/Organization Name, Mailing Address, Telephone Number, and Contact Person.**  
*Signature in ink. Original "wet" signature required.*
- Source listed?**
- If source is groundwater...**are well log(s) or sufficient information for the Department to determine aquifer, well depth, well seal, open interval, etc. included? Was the intended aquifer identified?. If for multiple wells, each map location shall be clearly tied to a well log.
- Proposed Use of the water....**is each proposed use identified?
- If source is stored water....** Is there a contract for delivery of stored water. Must have a copy
- If use is supplemental...**is the primary water right listed?
- Amount of water** from each source listed in GPM, CFS or AF?
- Acreage** being proposed, if applicable.
- Duration of Limited License** being requested by applicant.
- Project schedule...** Date when water use will start and date when water use will be completed
- Is the application signed in ink** by the applicant(s) or by the authorized agent with title or authority if an organization or corporation?
- Water Master Report...** Is the local Water Masters report on water availability included?
- Land Use Form...** Is the Land Use Form completed by local planning officials included?  
*Signature must be within the last 12 months. Signature must be an original "wet" signature.*

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SALEM, OR

66441

CONTINUED ON BACK

Does the **map meet requirements** of OAR 690-340-030? If map is larger than 11 x 17, four copies must be submitted.

Township, Range, Section

Location of each diversion point, well or dam

Reference corner on map

Each POD coordinate by reference to a recognized public land survey corner

Scale of the Map, not less than 2" = 1 mile

Other topographical features such as roads, streams, railroads, etc, which may be helpful in locating the diversion points in the field.

**Fees** enclosed?

Base Fee

Water Amount

\$250.00 including the first point of diversion

\$25.00 for each additional point of diversion

✓  
\_\_\_\_\_  
+ 2  
\$ 350 total fee

FEE PAID

\_\_\_\_\_

STILL OWED

\_\_\_\_\_

Completeness Check by: \_\_\_\_\_

Date: \_\_\_\_\_

S:\groups\wr\Customer Service Group\templates\limited-license-checklist 1/18/2011 JKS

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NOV 21 2012

SALEM, OR

LL-1441

LL-1441

# WATER RESOURCES DEPARTMENT MEMORANDUM

DATE 01/02/2013

APPLICATION\_NUMBER LL 1441

OWNER DAVENPORT NEWBERRY HOLDINGS

AMOUNT\_REQUESTED 187 GPM NUMBER\_OF\_WELLS 3 BASIN DESCHUTES

QUADRANGLE\_MAP\_1 PAULINA PEAK SUB\_BASIN LITTLE DESCHUTES  
LAVA CAST FOREST COUNTY DESCHUTES

WELL\_# 1 WELL\_LOG\_STATUS NOT YET DRILLED POA\_AMOUNT 187 GPM

WELL\_LOG\_NUMBER DESC 58395 DPN\_LOG\_1

TWNSHP 21S RANGE 12E SECTION 29 QQQ ACC

PROPOSED\_LEGAL\_LOCATION 2050 FEET SOUTH AND 1810 FEET WEST OF NE CORNER OF SEC 29

DISTANCE\_FROM\_STREAM\_1 4.330 STREAM\_1 PAULINA CREEK

DISTANCE\_FROM\_STREAM\_2  STREAM\_2

PROPOSED\_WELL\_DEPTH

WELL\_ELEV 5790 STREAM\_ELEV 5620 WELL\_ELEV\_minus\_STREAM\_ELEV 170

WELL\_DEPTH 583 SWL 325

SEAL\_DEPTH 118 SWL\_DATE 03/13/2008

CASING\_DEPTH 118 FIRST\_WATER\_DEPTH 400

LINER\_DEPTH 0-583 WELL\_TEST\_1\_TYPE AIR

PERFORATIONS\_SCREEN\_1 539-579 YIELD\_1 500 GPM

PERFORATIONS\_SCREEN\_2  DRAWDOWN\_1

AQUIFER\_TYPE SEMI-CONFINED DURATION\_1 2 HR

HYDRAULIC\_CONNECTION NOT AT NEAREST REACH

DIVISION\_9\_FINDING POTENTIAL FOR SUBSTANTIAL INTERFERENCE

ZONE\_OF\_IMPACT MAIN STEM DESCHUTES RIVER

CONDITIONED\_WATER\_RIGHTS\_IN\_AREA G-13711, LL-1092, LL-1347

OTHER\_NEARBY\_WATER\_RIGHTS G-13711, LL-1092, LL-1347

DENSITY\_OF\_NEARBY\_WELLS GEOHERMAL EXPLORATION AND MONITORING WELLS

COMMENTS WELLS ARE CONSTRUCTED INTO WATER BEARING ZONES WITHIN LAYERED NEWBERRY LAVAS. HYDRAULIC HEAD DATA IN THIS AREA INDICATE WATER LEVELS IN WELLS ARE COINCIDENT WITH THE ELEVATION OF A GAINING STREAM REACH OF PAULINA CREEK. THE WELLS ARE LOCATED WITHIN THE DESCHUTES GROUND WATER STUDY AREA AND SUBJECT TO DIVISION 690-505-0500 TO 0620.

REFERENCES WRIR 00-4162; WRIR 02-4015; WRIR 97-4088; APPL. FILE LL-1441; OWRD WATER LEVEL DATA; WELL REPORTS DESC 58395, DESC 10060 AND DESC 58649; LAVA CAST FOREST AND PAULINA PEAK QUADRANGLE MAPS; DIVISION 690-505.

Oregon Water Resources Department

MEMO

January 2, 2013

TO Application <sup>LL-1441</sup> ~~6~~ \_\_\_\_\_

FROM GW: K. Lite  
(Reviewer's Name)

SUBJECT **Scenic Waterway Interference & General/Local Surface Water Impact Evaluation for Deschutes Ground Water Study Area**

The source of appropriation is within or above the Deschutes Scenic Waterway

Use the Scenic Waterway condition (Condition 7J).

PREPONDERANCE OF EVIDENCE FINDING UNDER ORS 390.835:

The Department has found that there is a preponderance of evidence that the proposed use of ground water will measurably reduce the surface water flows necessary to maintain the free-flowing character of the Deschutes Scenic Waterway in quantities necessary for recreation, fish and wildlife.

LOCALIZED IMPACT FINDING

The proposed use of ground water will have a localized impact to surface water in the \_\_\_\_\_ River/Creek Subbasin

If the localized impact box above is checked, then the water use under any right issued pursuant to this application is presumed to have a localized impact on surface water within the identified subbasin. Mitigation of the impact, originating from within the Local Zone of Impact identified by the Department, will be required before a permit may be issued for the proposed use.

If the localized impact box above is not checked, then the water use under any right issued pursuant to this application is presumed to have a general (regional) impact on surface water. Mitigation of the impact, originating anywhere within the Deschutes Basin above the Madras gage, will be required before a permit may be issued for the proposed use.

# WATER RESOURCES DEPARTMENT MEMORANDUM

DATE 01/02/2013

APPLICATION\_NUMBER LL 1441

OWNER DAVENPORT NEWBERRY HOLDINGS

AMOUNT\_REQUESTED 187 GPM NUMBER\_OF\_WELLS 3 BASIN DESCHUTES

QUADRANGLE\_MAP\_1 PAULINA PEAK SUB\_BASIN LITTLE DESCHUTES  
LAVA CAST FOREST COUNTY DESCHUTES

WELL\_# 2 WELL\_LOG\_STATUS NOT YET DRILLED POA\_AMOUNT 187 GPM

WELL\_LOG\_NUMBER DESC 58649 DPN\_LOG\_1

TWNSHP 21S RANGE 12E SECTION 16 QQQ CAA

PROPOSED\_LEGAL\_LOCATION 870 FEET NORTH AND 2070 FEET EAST OF SW CORNER OF SEC 16

DISTANCE\_FROM\_STREAM\_1 14.600 STREAM\_1 PAULINA CREEK

DISTANCE\_FROM\_STREAM\_2  STREAM\_2

PROPOSED\_WELL\_DEPTH

WELL\_ELEV 6180 STREAM\_ELEV 5940 WELL\_ELEV\_minus\_STREAM\_ELEV 240

WELL\_DEPTH 890 SWL 672

SEAL\_DEPTH 25 SWL\_DATE 08/03/2008

CASING\_DEPTH 25 FIRST\_WATER\_DEPTH 704

LINER\_DEPTH 12-823 WELL\_TEST\_1\_TYPE PUMP

PERFORATIONS\_SCREEN\_1 742-823 YIELD\_1 350 GPM

PERFORATIONS\_SCREEN\_2  DRAWDOWN\_1 2

AQUIFER\_TYPE SEMI CONFINED DURATION\_1 24 HR

HYDRAULIC\_CONNECTION NOT AT NEAREST REACH

DIVISION\_9\_FINDING POTENTIAL FOR SUBSTANTIAL INTERFERENCE

ZONE\_OF\_IMPACT MAIN STEM DESCHUTES RIVER

CONDITIONED\_WATER\_RIGHTS\_IN\_AREA G-13711, LL-1092, LL-1347

OTHER\_NEARBY\_WATER\_RIGHTS G-13711, LL-1092, LL-1347

DENSITY\_OF\_NEARBY\_WELLS GEO THERMAL EXPLORATION AND MONITORING WELLS

COMMENTS WELLS ARE CONSTRUCTED INTO WATER BEARING ZONES WITHIN LAYERED NEWBERRY LAVAS. HYDRAULIC HEAD DATA IN THIS AREA INDICATE WATER LEVELS IN WELLS ARE COINCIDENT WITH THE ELEVATION OF A GAINING STREAM REACH OF PAULINA CREEK. THE WELLS ARE LOCATED WITHIN THE DESCHUTES GROUND WATER STUDY AREA AND SUBJECT TO DIVISION 690-505-0500 TO 0620.

REFERENCES WRIR 00-4162; WRIR 02-4015; WRIR 97-4088; APPL. FILE LL-1441; OWRD WATER LEVEL DATA; WELL REPORTS DESC 58395, DESC 10060 AND DESC 58649; LAVA CAST FOREST AND PAULINA PEAK QUADRANGLE MAPS; DIVISION 690-505.

# WATER RESOURCES DEPARTMENT MEMORANDUM

DATE 01/02/2013

APPLICATION\_NUMBER LL 1441

OWNER DAVENPORT NEWBERRY HOLDINGS

AMOUNT\_REQUESTED 187 GPM NUMBER\_OF\_WELLS 3 BASIN DESCHUTES

QUADRANGLE\_MAP\_1 PAULINA PEAK SUB\_BASIN LITTLE DESCHUTES  
LAVA CAST FOREST COUNTY DESCHUTES

WELL\_# 3 WELL\_LOG\_STATUS NOT YET DRILLED POA\_AMOUNT 187 GPM

WELL\_LOG\_NUMBER DESC 10060 DPN\_LOG\_1 DESC 59592

TWNSHP 21S RANGE 12E SECTION 21 QQQ CAD

PROPOSED\_LEGAL\_LOCATION 1910 FEET NORTH AND 1780 FEET EAST OF SW CORNER OF SEC 21

DISTANCE\_FROM\_STREAM\_1 9,300 STREAM\_1 PAULINA CREEK

DISTANCE\_FROM\_STREAM\_2  STREAM\_2

PROPOSED\_WELL\_DEPTH

WELL\_ELEV 6040 STREAM\_ELEV 5920 WELL\_ELEV\_minus\_STREAM\_ELEV 120

WELL\_DEPTH 825 SWL 556.1

SEAL\_DEPTH 203 SWL\_DATE 07/17/2012

CASING\_DEPTH 203 FIRST\_WATER\_DEPTH 782

LINER\_DEPTH 793 WELL\_TEST\_1\_TYPE AIR

PERFORATIONS\_SCREEN\_1 693-773 YIELD\_1 40 GPM

PERFORATIONS\_SCREEN\_2  DRAWDOWN\_1

AQUIFER\_TYPE SEMI-CONFINED DURATION\_1 2 HR

HYDRAULIC\_CONNECTION NOT AT NEAREST REACH

DIVISION\_9\_FINDING POTENTIAL FOR SUBSTANTIAL INTERFERENCE

ZONE\_OF\_IMPACT MAIN STEM DESCHUTES RIVER

CONDITIONED\_WATER\_RIGHTS\_IN\_AREA G-13711, LL-1092, LL-1347

OTHER\_NEARBY\_WATER\_RIGHTS G-13711, LL-1092, LL-1347

DENSITY\_OF\_NEARBY\_WELLS GEOHERMAL EXPLORATION AND MONITORING WELLS

COMMENTS WELLS ARE CONSTRUCTED INTO WATER BEARING ZONES WITHIN LAYERED NEWBERRY LAVAS. HYDRAULIC HEAD DATA IN THIS AREA INDICATE WATER LEVELS IN WELLS ARE COINCIDENT WITH THE ELEVATION OF A GAINING STREAM REACH OF PAULINA CREEK. THE WELLS ARE LOCATED WITHIN THE DESCHUTES GROUND WATER STUDY AREA AND SUBJECT TO DIVISION 690-505-0500 TO 0620.

REFERENCES WRIR 00-4162; WRIR 02-4015; WRIR 97-4088; APPL. FILE LL-1441; OWRD WATER LEVEL DATA; WELL REPORTS DESC 58395, DESC 10060 AND DESC 58649; LAVA CAST FOREST AND PAULINA PEAK QUADRANGLE MAPS; DIVISION 690-505.

POA #1

DESC 58395

STATE OF OREGON  
WATER SUPPLY WELL REPORT  
(as required by ORS 537.765 & OAR 690-205-0210)

03-27-2008

WELL LABEL # L 93031

START CARD # 1002875

(1) LAND OWNER Owner Well I.D. \_\_\_\_\_

First Name \_\_\_\_\_ Last Name \_\_\_\_\_  
Company NEWBERRY GEOTHERMAL LLC  
Address C/O HAP TAYLOR  
City BEND State OR Zip 97709

(2) TYPE OF WORK  New Well  Deepening  Conversion  
 Alteration (repair/recondition)  Abandonment

(3) DRILL METHOD  
 Rotary Air  Rotary Mud  Cable  Auger  Cable Mud  
 Reverse Rotary  Other \_\_\_\_\_

(4) PROPOSED USE  Domestic  Irrigation  Community  
 Industrial/ Commercial  Livestock  Dewatering  
 Thermal  Injection  Other \_\_\_\_\_

(5) BORE HOLE CONSTRUCTION Special Standard  Attach copy  
Depth of Completed Well 583.00 ft.

BORE HOLE			SEAL			sacks/lbs	
Dia	From	To	Material	From	To	Amt	lbs
14	0	118	Bentonite Chips	0	2	4	S
10	118	410	Cement	2	118	132	S
9.5	410	583					

How was seal placed: Method  A  B  C  D  E  
 Other Poured Dry

Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
Filter pack from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_ Size \_\_\_\_\_  
Explosives used:  Yes Type \_\_\_\_\_ Amount \_\_\_\_\_

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10		2	118	.250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	8		0	543	.188	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	8		543	583	.250	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Shoe  Inside  Outside  Other Location of shoe(s) 583

Temp casing  Yes Dia \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_

(7) PERFORATIONS/SCREENS

Perforations Method Air Perf  
Screens Type \_\_\_\_\_ Material \_\_\_\_\_

Perf/Sreen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Perf	Liner	8	539	579	125	2	1,440	

(8) WELL TESTS: Minimum testing time is 1 hour

Pump  Bailer  Air  Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
500		580	2

Temperature 53 °F Lab analysis  Yes By \_\_\_\_\_  
Water quality concerns?  Yes (describe below)

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County Deschutes Twp 21.00 S N/S Range 12.00 E E/W WM  
Sec 29 SW 1/4 of the NE 1/4 Tax Lot NON  
Tax Map Number \_\_\_\_\_ Lot \_\_\_\_\_  
Lat 43° 43' 48.000" or 43.73000000 DMS or DD  
Long -121° 18' 48.000" or -121.31333333 DMS or DD  
 Street address of well  Nearest address

FOREST SERVICE RD 558 DRILL PAD 29 NE CORNER

(10) STATIC WATER LEVEL

Existing Well / Predeepening	Date	SWL(psi)	+ SWL(ft)
Completed Well	03-13-2008		325

Flowing Artesian?  Dry Hole?

WATER BEARING ZONES Depth water was first found 400

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
03-10-2008	400	420	30		325
03-11-2008	458	510	40		325
03-11-2008	550	562	100		325
03-12-2008	570	583	500		325

(11) WELL LOG

Ground Elevation 5,800

Material	From	To
Clay Pumice	0	2
Ash Tuff Purple	2	22
Sand Pumice Brown	22	35
Cinders Black Sand	35	45
Cinders Ash Pumice	45	105
Lava Gray Hard	105	135
Lava Creviced Red Brown Vesicular	135	145
Lava Gray Hard	145	155
Broken Lava Basalt Caving	155	170
Lava Gray	170	190
Creviced Lava	190	220
Lava Gray	220	265
Conglomerate Brown	265	275
Lava Gray	275	320
Lava Red Brown Fractured Caving	320	345
Lava Fractured Clay Seams	345	400
Cobbles Sand Brown	400	421
Lava Gray	421	426
Lava Basalt Clay Seams	426	458

Date Started 01-17-2008 Completed 03-13-2008

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 758 Date 03-27-2008  
Electronically Filed  
Signed THOMAS R PECK (E-filed)

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1720 Date 03-27-2008  
Electronically Filed  
Signed JACK ABBAS (E-filed)  
Contact Info (optional)



POA#2

DESC 58649

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 94394

START CARD # 1004249

(1) LAND OWNER Owner Well I.D. PadS-16

First Name Last Name
Company NEWBERRY GEOTHERMAL HOLDINGS, LLC.
Address 300 ATLANTIC STREET, SUITE 301
City STAMFORD State CT Zip 06901

(2) TYPE OF WORK [X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE [ ] Domestic [ ] Irrigation [ ] Community

[X] Industrial/ Commercial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION Special Standard [ ] (Attach copy)

Depth of Completed Well 823 ft.

Table with columns: Dia, From, To, Material, From, To, Amt, Sacks/lbs. Row 1: 18, 0, 25, Cement, 0, 25, 30, S. Row 2: 12.45, 25, 890.

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E

[ ] Other

Backfill placed from ft. to ft. Material

Filter pack from ft. to ft. Material Size

Explosives used: [ ] Yes Type Amount

(6) CASING/LINER

Table with columns: Casing Liner, Dia, From, To, Gauge, Stl, Plstc, Wld, Thrd. Row 1: 14, 1, 25, .250, [X]. Row 2: 10, 12, 823, .312, [X].

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s)

Temp casing [ ] Yes Dia From To

(7) PERFORATIONS/SCREENS

Perforations Method Torch

Screens Type Material

Table with columns: Perf/S, Casing/Screen, Liner, Dia, From, To, Scrn/slot width, Slot length, # of slots, Tele/pipe size. Row 1: Perf, Liner, 742, 823, .5, 12, 810.

(8) WELL TESTS: Minimum testing time is 1 hour

[X] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Row 1: 350, 2, 845, 24.

Temperature 51 °F Lab analysis [ ] Yes By

Water quality concerns? [ ] Yes (describe below)

Table with columns: From, To, Description, Amount, Units.

(9) LOCATION OF WELL (legal description)

County DESCHUTE Twp 21 S N/S Range 12 E E/W WM

Sec 16 NE 1/4 of the NE 1/4 Tax Lot N/A

Tax Map Number Lot

Lat 43 ° 45 ' 0.090 " or 43.750025 DMS or DD

Long -121 ° 19 ' 601 " or -121.48361111 DMS or DD

[ ] Street address of well [X] Nearest address

NEWBERRY GEOTHERMAL PROJECT, WELL PAD S-16

(10) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), SWL(ft). Row 1: Existing Well / Predeepening. Row 2: Completed Well 08-03-2008, 672.

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), SWL(ft). Row 1: 07-24-2008, 704, 890, 500, 672.

(11) WELL LOG

Ground Elevation 6,190

Table with columns: Material, From, To. Rows include Fill, Blue Gray Basalt, Gray Basalt, Red Cinders, Gray Broken Basalt, Cemented back to bottom of seal casing, Red Cinders, Gray Basalt, Gray Basalt Very Hard, Red Cinders, Brown Sandstone Conglomerate, Red Cinders, Gray Basalt Hard, Red Cinders, Brown Sandstone, Gray Basalt, Red Cinder, Gray Basalt, Red Cinder WB.

Date Started 07-22-2008 Completed 08-03-2008

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number Date

Password: (if filing electronically)

Signed

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1385 Date 12-28-2008

Password: (if filing electronically)

Signed Robert Buchanan

Contact Info (optional)

RECEIVED

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK

Form Version: 0.89

JAN 07 2009

WATER RESOURCES DEPT
SALEM, OREGON



POA #3

DESC 10060

215/12E/2/BB

DESC 10060

AUG 11 1995

WATER RESOURCES DEPT. SALEM, OREGON

STATE OF OREGON WATER WELL REPORT (as required by ORS 637765)

(START CARD #) 70924

(1) OWNER 95 21 CALIFORNIA ENERGY COMPANY INC. 900 N. HERITAGE DR. BLDG. D, RIDGECREST CA 93655

(9) LOCATION OF WELL by legal description: County DESCHUTES Latitude Longitude Township 21 S Range 12 E Section 21 NW 14 NW 1/4 Tax Lot MAP Lot Block Subdivision Street Address of Well (or nearest address) NATIONAL FOREST

(2) TYPE OF WORK: NEW WELL

(3) DRILL METHOD: ROTARY AIR

(4) PROPOSED USE: Industrial

(10) STATIC WATER LEVEL: -665 ft. below land surface Date July 8, 1995 Artesian pressure Date

(5) BORE HOLE CONSTRUCTION: Special Construction Approval No Depth of Completed Well -805 ft. Explosives used NO Type Amount HOLE Diameter From To SEAL Material From To AMOUNT Sacks 15 1/2" 0 -209 CEMENT 0 -209 28 YD 9 7/8" -209 -805

(11) WATER BEARING ZONES: Depth at which water was first found -782 From To Estimated Flow Rate SWL -782 -805 200 GPM -665

How was seal Placed C Backfill placed from ft. to ft. Material Gravel placed from ft. to ft. Size of Gravel

(12) WELL LOG: Ground Elevation FROM TO SWL SOIL & PUMICE 0 10 BROKEN GREY ROCK 10 82 GREY ROCK 82 205 BROKEN CAVING GREY ROCK 205 374 HARD GREY ROCK 374 433 RED ROCK 433 570 HARD RED & GREY ROCK 570 685 HARD GREY ROCK 685 861 RED ROCK 661 729 HARD GREY 729 782 RED CINDERS 782 793 655 BROKEN BROWN ROCK 793 805 655

(6) CASING / LINER: Dia. From To Gage Material CASING 10" +2 -209 .260 STEEL / WELDED

LINER 7" +2 -793 .188 STEEL / WELDED Final location of shoe (9)

(7) PERFORATIONS / SCREENS: Perforations METHOD TYPE MATERIAL TORCH From To Slot size Number Dia. Tels / pipe size -693 -778 14X6 144 7" 7" LINER

Date started May 1, 1995 Completed July 28, 1995 (Unbonded) Water Well Constructor Certification: I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

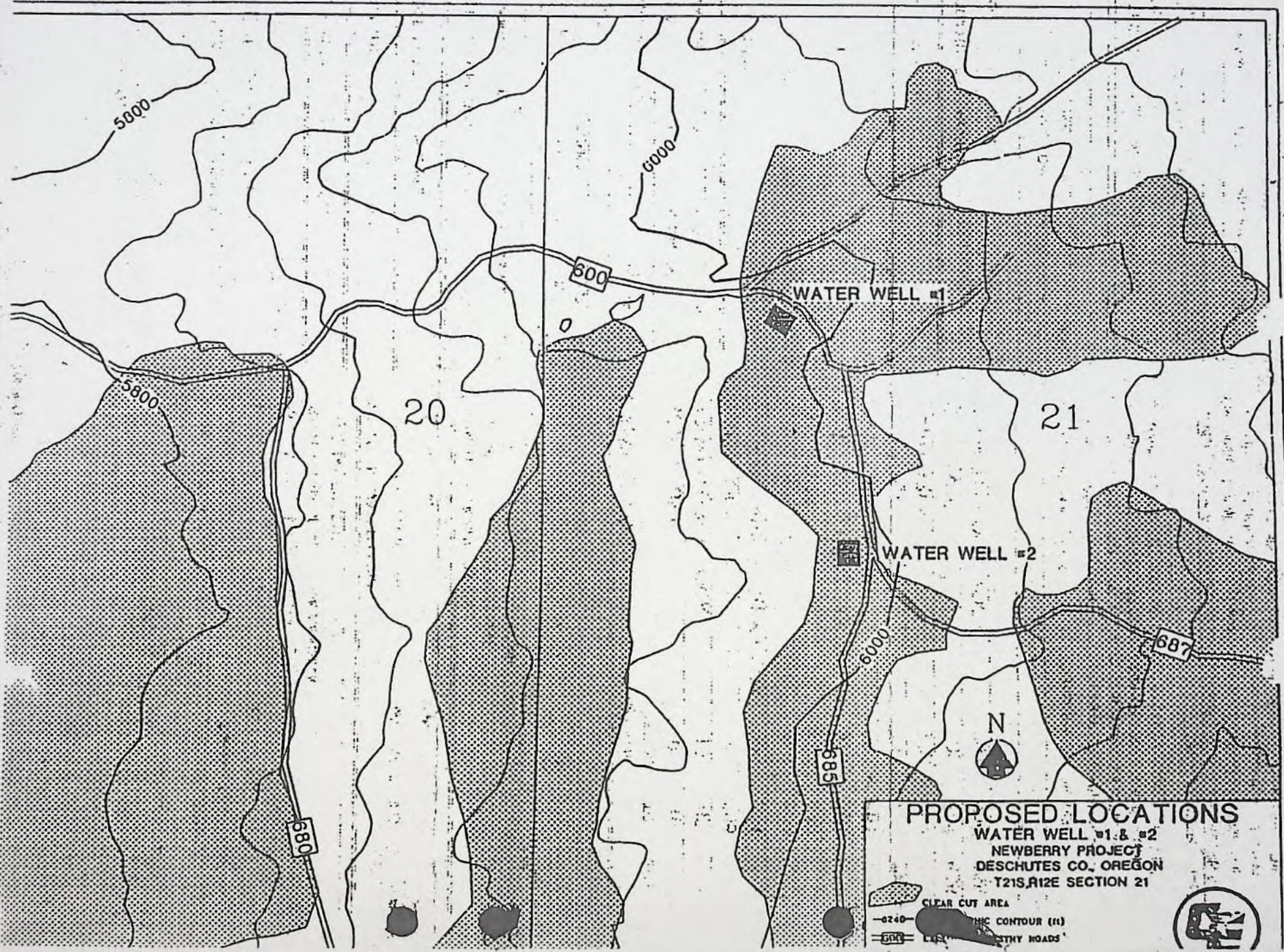
(8) WELL TESTS: Minimum testing time is 1 hour TESTING METHOD AIR Yield GPM Drawdown Drill stem at Time 60 GPM -995 1 HOUR 200 GPM -790 1 HOUR

DATE WWC NUMBER 1462 (Bonded) Water Well Constructor Certification: I accept responsibility for the construction alteration or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

Temperature of Water 68 F Depth Artesian Flow Found Was a water analysis done? NO By whom Did any strata contain water not suitable for intended use?

DATE 8-1-95 WWC NUMBER 693

DESC 10060



**PROPOSED LOCATIONS**

WATER WELL #1 & #2  
NEWBERRY PROJECT  
DESCHUTES CO., OREGON  
T21S, R12E SECTION 21

- CLEAR CUT AREA
- CONTOUR (ft)
- DITCHY ROADS







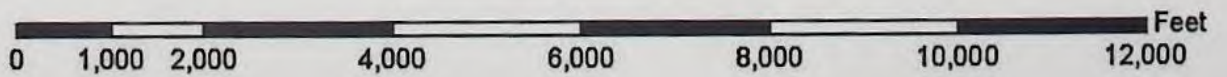
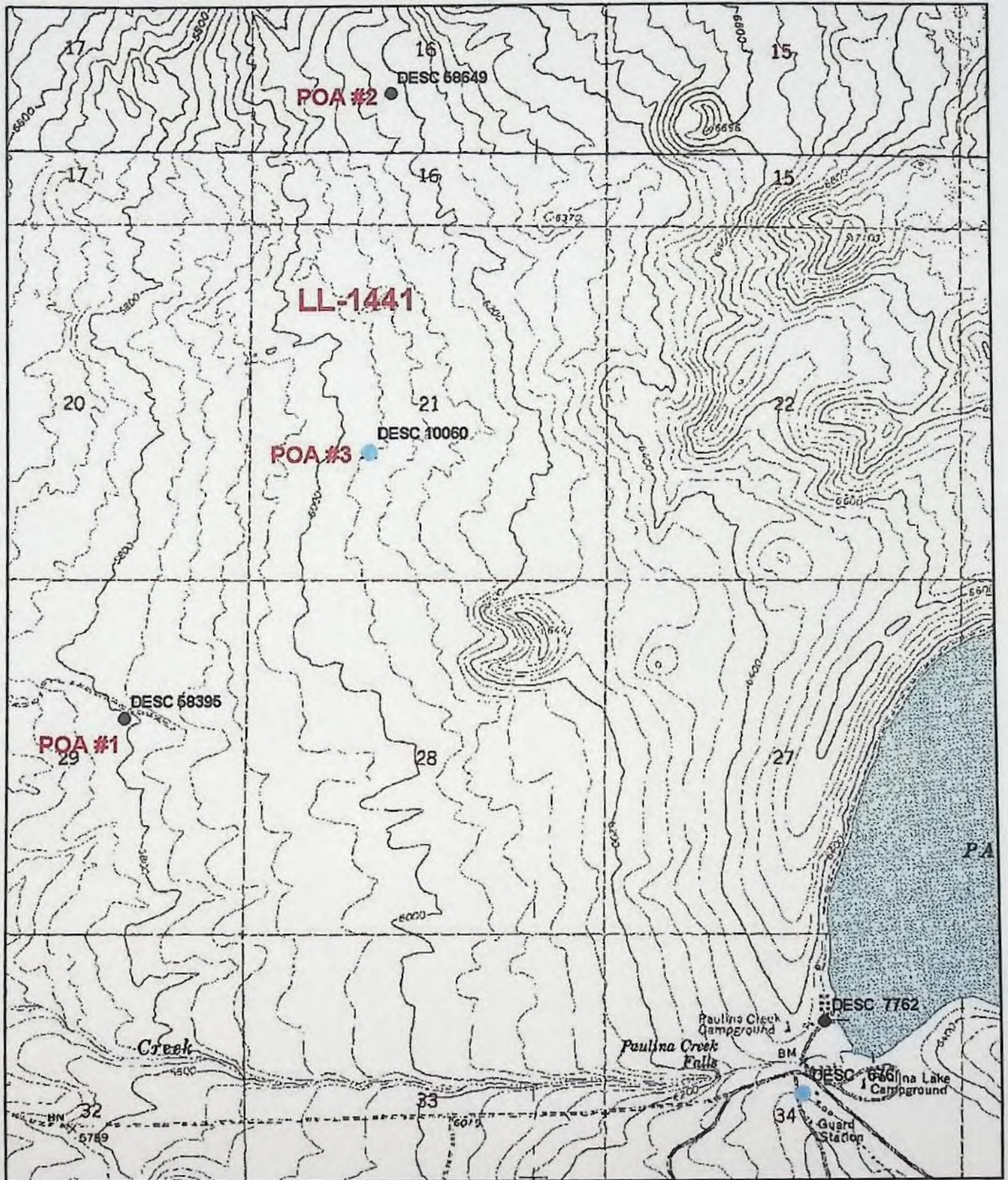
LADINE — HWY 97 — BEND



DESC 59592

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# LL-1441: Paulina Peak and Lava Cast Forest Quadrangles



# Oregon Water Resources Department



## Final Order

### Limited License Application LL-1347

#### *Appeal Rights*

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date, the petition was filed, the petition shall be deemed denied.

#### *Requested Water Use*

On March 30, 2011, the Water Resources Department received completed application LL-1347 from **Davenport Newberry Holdings LLC** for the use of 187 gallons per minute, up to 435 acre-feet from one, or any combination of three wells, located in the SW 1/4., NE 1/4, Section 29, the NE 1/4, SW 1/4, Section 16, and the NE 1/4, SW 1/4, Section 21, all in Township 21 South, Range 12 East, W.M., for an enhanced geothermal system demonstration project, for the period June 1, 2011 through December 31, 2012.

#### *Authorities*

The Department may approve a limited license pursuant to its authority under ORS 537.143, 537.144 and OAR 690-340-0030.

ORS 537.143(2) authorizes the Director to revoke the right to use water under a limited license if it causes injury to any water right or a minimum perennial streamflow.

A limited license will not be issued for more than five consecutive years for the same use, as directed by ORS 537.143(8).

#### *Findings of Fact*

1. The forms, fees, and map have been submitted, as required by OAR 690-340-0030(1).
2. The Department provided public notice of the application, on March 5, 2011, as required by OAR 690-340-0030(2).
3. This limited license request is limited to an area within a single drainage basin as required by OAR 690-340-0030(3).
4. The Department has determined that there is water available for the requested use.
5. The Department has determined that the proposed source has not been withdrawn from further appropriation.

6. The Department has determined that the use is subject to its rules under OAR 690-33-0310. These rules aid the Department in determining whether a proposed use will impair or be detrimental to the public interest with regard to sensitive, threatened, or endangered fish species.

In accordance with OAR 690-505, the Department will require that mitigation be provided by the applicant in the amount of **217.5 acre-feet** annually for the life of the limited license. The mitigation must be produced in the Deschutes general zone of impact as defined in OAR 690-505-0605.

7. As part of its review to determine ground water availability, the Department's Ground Water/Hydrology Section has stipulated conditions pertaining to measurement and reporting, interference, allowing groundwater production from the Newberry lava aquifer only, and allowing POA # 3 for monitoring and not production to avoid diminishment of flow in Paulina Creek.
8. Pursuant to OAR 690-340-0030(4)(5), conditions have been added with regard to notice and water-use measurement.

### *Conclusions of Law*

The proposed water use will not impair or be detrimental to the public interest pursuant to OAR 690-340-0030(2), as limited in the order below.

### *Order*

Therefore, pursuant to ORS 537.143, ORS 537.144, and OAR 690-340-0030, application LL-1347 is approved as conditioned below.

1. Use of water under this limited license is not authorized until proof of acceptable mitigation<sup>1</sup> in the amount of **217.5 acre-feet** in the Deschutes general zone of impact as defined in OAR 690-505-0605, has been submitted to the Department, and accepted in writing by the Department.
2. The period, rate and volume of use for LL-1347 shall be from June 1, 2011, through December 31, 2012, for the use of 187 gallons per minute, up to 435 acre-feet from one, or any combination of two wells, for the purpose of an enhanced geothermal system demonstration project.
3. The licensee shall give notice to the Watermaster in the district where use is to occur not less than 15 days or more than 60 days in advance of using the water under the limited license. The notice shall include the location of the diversion, the quantity of water to be diverted and the intended use and place of use.

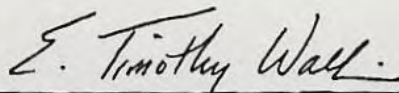
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<sup>1</sup> Mitigation opportunities may include, but are not limited to; instream leases, purchasing credits, water-right transfers, and stored water releases. Contact the local watermaster for details; for assistance in locating the watermaster see [http://www.wrd.state.or.us/OWRD/offices.shtml#Region\\_Watermaster\\_Map](http://www.wrd.state.or.us/OWRD/offices.shtml#Region_Watermaster_Map).

4. Before water use may begin under this license, the licensee shall install a totalizing flow meter at each point of appropriation. The totalizing flow meter must be installed and maintained in good working order. In addition the licensee shall maintain a record of all water use, including the total number of hours of pumping, the total quantity pumped, and the categories of beneficial use to which the water is applied. During the period of the limited license, the record of use shall be submitted to the Department annually, and shall be submitted to the Watermaster upon request.
5. If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this license, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.
6. This limited license is conditioned to allow groundwater production only from the Newberry lava groundwater reservoir.
7. Due to potential diminishment of flow in Paulina Creek, POA # 3 (DESC 10060) shall not be used for production, but monitored continuously as a proxy to judge potential interference with Paulina Creek. The continuous monitoring shall be with a data logger and transducer that meet Department standards. The data from the data logger shall be reported on a monthly schedule while pumping is occurring.
8. The Director may revoke the right to use water for any reason described in ORS 537.143(2), and OAR 690-340-0030(6). Such revocation may be prompted by field regulatory activities or by any other information.
9. Use of water under a limited license shall not have priority over any water right exercised according to a permit or certificate, and shall be subordinate to all other authorized uses that rely upon the same source.
10. A copy of this limited license shall be kept at the place of use, and be available for inspection by the Watermaster or other state authority.

NOTE: This water-use authorization is temporary. Applicants are advised that issuance of this final order does not guarantee that any permit for the authorized use will be issued in the future; any investments should be made with that in mind.

Issued April 27, 2011



E. Timothy Wallin, Water Rights Program Manager, for  
Phillip C. Ward, Director  
Water Resources Department

Enclosures - limited license

cc: Jeremy Giffin, District 11 Watermaster  
Brett Hodgson, ODFW  
Eric Nigg, DEQ  
Hydrographics  
File

If you need further assistance, please contact the Water Rights Section at the address, phone number, or fax number below. When contacting the Department, be sure to reference your limited license number for fastest service.

Remember, this limited license does not provide a secure source of water. Water use can be revoked at any time. Such revocation may be prompted by field regulatory activities or many other reasons.

Water Rights Section  
Oregon Water Resources Department  
725 Summer Street NE, Suite A  
Salem OR 97301-1271  
Phone: (503) 986-0817      Fax: (503) 986-0901



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

# Application for Limited Water Use License

*A summary of review criteria and procedures that are generally applicable to these applications is available at  
[www.wrd.state.or.us/OWRD/PUBS/forms.shtml](http://www.wrd.state.or.us/OWRD/PUBS/forms.shtml).*

License No. LL-1441

Applicant(s): Davenport Newberry Holdings

Contact Person: Paul L. Stern, Agent (Tel: 303-442-4259)

Mailing Address: 225 NW Franklin Avenue, Suite 1 **RECEIVED BY OWRD**

Bend City OR State 97701 Zip **NOV 21 2012**

Telephone No: (541) 323-1190 **SALEM, OR**

I (We) make application for a Limited License to use or store the following described surface waters or groundwater-not otherwise exempt, or to use stored water of the State of Oregon for a use of a short-term or fixed duration:

1. SOURCE(S) OF WATER for the proposed use: Groundwater a tributary of \_\_\_\_\_.
2. TOTAL AMOUNT OF WATER to be diverted: \_\_\_\_\_ cubic feet per second, or 187\* gallons per minute. If water is to be used from more than one source, give the quantity from each: 187\* gpm from one well or any combination of 3 wells.
3. INTENDED USE(S) OF WATER: (check all that apply)
  - Road construction or maintenance
  - General construction
  - Forestland and rangeland management; or
  - Other: Enhanced Geothermal System (EGS) Demonstration Project
4. DESCRIPTION OF PROPOSED PROJECT: Include a description of the intended place of use as shown on the accompanying site map, the method of water diversion, the type of equipment to be used (including pump horsepower, if applicable), length and dimensions of supply ditches and pipelines:

The project will use a maximum of 43,657,589 gallons in year one and 98,038,354 gallons in year two for a total of 141,695,943 gallons over two years. A maximum anticipated flow rate of 1,600 gpm from either one well or any combination of 3 wells would occur for two 5 day periods. Details of anticipated water usage and diversion points is attached.

\* 187 gpm is an annualized average over 2 years, assuming the highest annual volume of water used in year 2 (98,038,354 gallons)

5. PROJECT SCHEDULE: (List day, month, and year)

Date water use will begin January 1, 2013

NOV 21 2012

Date project will be completed December 31, 2017

SALEM, OR

Date water use will be completed December 31, 2017

Is this project fully or partially funded by the American Recovery and Reinvestment Act? (Federal stimulus dollars)  Yes  No

**PLEASE READ CAREFULLY**

**NOTE:** A completed water availability statement from the local watermaster, Land Use Information Form completed by the local Planning Department, fees and site map meeting the requirements of OAR 690-340-030 must accompany this request. The fee for this request is \$250 for the first point of diversion plus \$25 for each additional point of diversion. Please review the Department's fee schedule to view fees required to request a limited license for Aquifer Storage and Recovery testing purposes or for Artificial Groundwater Recharge testing purposes.

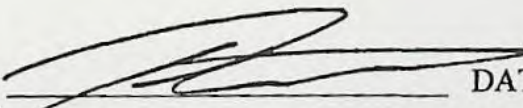
Failure to provide any of the required information will result in return of your application. The license, if granted, will not be issued or replaced by a new license for a period of more than five consecutive years. The license, if granted, will be subordinate to all other authorized uses that rely upon the same source, or water affected by the source, and may be revoked at any time it is determined the use causes injury to any other water right or minimum perennial streamflow.

If water source is a well, well logs or adequate information for the Department to determine aquifer, well depth, well seal and open interval, etc. are required. The licensee shall indicate the intended aquifer. If for multiple wells, each map location shall be clearly tied to a well log.

If a limited license is approved, the licensee shall give notice to the Department (Watermaster) at least 15 days in advance of using the water under the Limited License and shall maintain a record of use. The record of use shall include, but need not be limited to, an estimate of the amount of water used, the period of use and the categories of beneficial use to which the water is applied. During the period of the Limited License, the record of use shall be available for review by the Department upon request.

**REMARKS:**

A meter will be installed at each well and a record of use will be kept.

SIGNATURE of Applicant:  DATE: 11/20/12  
Title: Agent

**Mapping Requirements (OAR 690-340-0030):**

(1) A request for a limited license shall be submitted on a form provided by the Water Resources Department, and shall be accompanied by the following:

(c) A site map of reproducible quality, drawn to a standard, even scale of not less than 2 inches = 1 mile, showing:

(A) The locations of all proposed points of diversion referenced by coordinates or by bearing and distance to the nearest established or projected public land survey corner;

(B) The general course of the source for the proposed use, if applicable;

(C) Other topographical features such as roads, streams, railroads, etc., which may be helpful in locating the diversion points in the field.

***This page to be completed by the local Watermaster.***

**WATER AVAILABILITY STATEMENT**

Name of Applicant: Davenport Newberry Holdings Limited License Number: 661441

1. To your knowledge, has the stream or basin that is the source for this application ever been regulated for prior rights?  Yes  No

If yes, please explain:

2. Based on your observations, would be there water available in the quantity and at the times needed to supply the use proposed by this application?  Yes  No

3. Do you observe this stream system during regular fieldwork?  Yes  No

If yes, what are your observations for the stream?

4. If the source is a well and if WRD were to determine that there is the potential for substantial interference with nearby surface water sources, would there still be ground water and surface water available during the time requested and in the amount requested without injury to existing water rights?  Yes  No  N/A

What would you recommend for conditions on a limited license that may be issued approving this application?

**RECEIVED BY OWRD**

NOV 21 2012

SALEM, OR

5. Any other recommendations you would like to make?

Signature \_\_\_\_\_ WM District #: \_\_\_\_\_ Date: \_\_\_\_\_

# Land Use Information Form



Oregon Water Resources Department  
725 Summer Street NE, Suite A  
Salem, Oregon 97301-1266  
(503) 986-0900  
www.wrd.state.or.us

## NOTE TO APPLICANTS

In order for your application to be processed by the Water Resources Department (WRD), this Land Use Information Form must be completed by a local government planning official in the jurisdiction(s) where your water right will be used and developed. The planning official may choose to complete the form while you wait, or return the receipt stub to you. Applications received by WRD without the Land Use Form or the receipt stub will be returned to you. Please be aware that your application will not be approved without land use approval.

**This form is NOT required if:**

- 1) Water is to be diverted, conveyed, and/or used only on federal lands; **OR**
- 2) The application is for a water right transfer, allocation of conserved water, exchange, permit amendment, or ground water registration modification, and all of the following apply:
  - a) The existing and proposed water use is located entirely within lands zoned for exclusive farm-use or within an irrigation district;
  - b) The application involves a change in place of use only;
  - c) The change does not involve the placement or modification of structures, including but not limited to water diversion, impoundment, distribution facilities, water wells and well houses; and
  - d) The application involves irrigation water uses only.

## NOTE TO LOCAL GOVERNMENTS

The person presenting the attached Land Use Information Form is applying for or modifying a water right. The Water Resources Department (WRD) requires its applicants to obtain land-use information to be sure the water rights do not result in land uses that are incompatible with your comprehensive plan. Please complete the form or detach the receipt stub and return it to the applicant for inclusion in their water right application. You will receive notice once the applicant formally submits his or her request to the WRD. The notice will give more information about WRD's water rights process and provide additional comment opportunities. You will have 30 days from the date of the notice to complete the land-use form and return it to the WRD. If no land-use information is received from you within that 30-day period, the WRD may presume the land use associated with the proposed water right is compatible with your comprehensive plan. Your attention to this request for information is greatly appreciated by the Water Resources Department. If you have any questions concerning this form, please contact the WRD's Customer Service Group at 503-986-0801.

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NOV 21 2012

SALEM, OR

# Land Use Information Form



Oregon Water Resources Department  
 725 Summer Street NE, Suite A  
 Salem, Oregon 97301-1266  
 (503) 986-0900  
 www.wrd.state.or.us

Applicant: Davenport Newberry Holdings LLC  
First Last

Mailing Address: 225 NW Franklin Avenue, Suite 1

Bend OR 97701 Daytime Phone: (541) 323-1190  
City State Zip

## A. Land and Location

Please include the following information for all tax lots where water will be diverted (taken from its source), conveyed (transported), and/or used or developed. Applicants for municipal use, or irrigation uses within irrigation districts may substitute existing and proposed service-area boundaries for the tax-lot information requested below.

Township	Range	Section	¼ ¼	Tax Lot #	Plan Designation (e.g., Rural Residential/RR-5)	Water to be:	Proposed Land Use:
21S	12E	16	NESW		USFS	<input checked="" type="checkbox"/> Diverted <input type="checkbox"/> Conveyed <input checked="" type="checkbox"/> Used	monstration
21S	12E	29	SWNE		USFS	<input checked="" type="checkbox"/> Diverted <input checked="" type="checkbox"/> Conveyed <input checked="" type="checkbox"/> Used	monstration
21S	12E	21	NESW		USFS	<input checked="" type="checkbox"/> Diverted <input checked="" type="checkbox"/> Conveyed <input checked="" type="checkbox"/> Used	monstration
						<input type="checkbox"/> Diverted <input type="checkbox"/> Conveyed <input type="checkbox"/> Used	

List all counties and cities where water is proposed to be diverted, conveyed, and/or used or developed:

Deschutes

## B. Description of Proposed Use

Type of application to be filed with the Water Resources Department:

- Permit to Use or Store Water   
  Water Right Transfer   
  Permit Amendment or Ground Water Registration Modification  
 Limited Water Use License   
  Allocation of Conserved Water   
  Exchange of Water

Source of water:  Reservoir/Pond     Ground Water     Surface Water (name) \_\_\_\_\_

Estimated quantity of water needed: 435 (Max) \_\_\_\_\_  cubic feet per second     gallons per minute     acre-feet

Intended use of water:  Irrigation     Commercial     Industrial     Domestic for \_\_\_\_\_ household(s)  
 Municipal     Quasi-Municipal     Instream     Other EGS Demonstration Pro

Briefly describe:

The water from groundwater wells will be used for the drilling, stimulation and testing of an enhanced geothermal system (EGS) demonstration project.

Note to applicant: If the Land Use Information Form cannot be completed while you wait, please have a local government representative sign the receipt at the bottom of the next page and include it with the application filed with the Water Resources Department.

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See bottom of Page 3. →

NOV 21 2012

# For Local Government Use Only

NOV 21 2012

SALEM, OR

The following section must be completed by a planning official from each county and city listed unless the project will be located entirely within the city limits. In that case, only the city planning agency must complete this form. This deals only with the local land-use plan. Do not include approval for activities such as building or grading permits.

### Please check the appropriate box below and provide the requested information

- Land uses to be served by the proposed water uses (including proposed construction) are allowed outright or are not regulated by your comprehensive plan. Cite applicable ordinance section(s): \_\_\_\_\_.
- Land uses to be served by the proposed water uses (including proposed construction) involve discretionary land-use approvals as listed in the table below. (Please attach documentation of applicable land-use approvals which have already been obtained. Record of Action/land-use decision and accompanying findings are sufficient.) **If approvals have been obtained but all appeal periods have not ended, check "Being pursued."**

Type of Land-Use Approval Needed (e.g., plan amendments, rezones, conditional-use permits, etc.)	Cite Most Significant, Applicable Plan Policies & Ordinance Section References	Land-Use Approval:	
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued
		<input type="checkbox"/> Obtained <input type="checkbox"/> Denied	<input type="checkbox"/> Being Pursued <input type="checkbox"/> Not Being Pursued

Local governments are invited to express special land-use concerns or make recommendations to the Water Resources Department regarding this proposed use of water below, or on a separate sheet.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Phone: \_\_\_\_\_ Date: \_\_\_\_\_

Government Entity: \_\_\_\_\_

**Note to local government representative:** Please complete this form or sign the receipt below and return it to the applicant. If you sign the receipt, you will have 30 days from the Water Resources Department's notice date to return the completed Land Use Information Form or WRD may presume the land use associated with the proposed use of water is compatible with local comprehensive plans.

### Receipt for Request for Land Use Information

Applicant name: \_\_\_\_\_

City or County: \_\_\_\_\_ Staff contact: \_\_\_\_\_

Signature: \_\_\_\_\_ Phone: \_\_\_\_\_ Date: \_\_\_\_\_

# Application for Limited Water Use License—Newberry Volcano EGS Demonstration Project

## Supplementary Information

**Table 3: Maximum water use estimate for all major activities in the Newberry EGS Demonstration**

Activity	Estimated Water Usage Rate, <i>gpm</i>	Maximum Water Volume, <i>gal</i>	Maximum Water Volume, <i>acre-ft</i>	Duration, <i>days</i>
Single well stimulation <sup>1</sup>	800	24,192,000	74.2	21
Rig use during stimulation <sup>2</sup>	-	210,000	0.6	21
Drilling producer #1 <sup>3</sup>		3,152,150	9.7	90
Drilling producer #2 <sup>3</sup>		3,152,150	9.7	90
Connectivity test PW1 <sup>5</sup>	455	4,583,439	14.1	7
Dual well stimulation PW1 <sup>4</sup>	1600 (split between 2 wells)	11,520,000	35.4	5
Connectivity test PW2 <sup>5</sup>	455	4,583,439	14.1	7
Dual well stimulation PW2 <sup>4</sup>	1600 (split between 2 wells)	11,520,000	35.4	5
Circulation Test <sup>6</sup>	912	78,782,765	241.8	60
<b>Total</b>		<b>141,695,942</b>	<b>435</b>	

<sup>1</sup>This uses Sultz GPK2 stimulation volumes and multiplies it by three to achieve our desired network size.

<sup>2</sup>Assumes rig is sitting idle during 21 days of stimulation operations and requires less than 10,000 gpd of water for standby operations.

<sup>3</sup>Davenport Power used 19.4 acre-ft when drilling both well 55-29 and 46-16. We assume that our usage will be similar.

<sup>4</sup>The dual well stimulation assumes pumping simultaneously at 800 gpm into two wells for a maximum total time of 5 days.

<sup>5</sup>The connectivity tests between the injection well and each individual producer are planned for a duration between 3 and 7 days. It is assumed that 16.3 to 37.6% of the flashing fluid will be lost to the atmosphere. Additionally, it is assumed that 2% of the injected volume is never recovered due to leak-off in the reservoir. The numbers above reflect a water usage rate of 455 gpm for a full 7 days with 37.6% of evaporative steam loss.

<sup>6</sup>The long-term circulation test is planned to last 30-60 days. It is assumed that 16.3%-37.6% of the production fluid will be lost to the atmosphere. Additionally, it is assumed that 2% of the injected volume is never recovered due to leak-off in the reservoir. The high end estimate is listed above and it represents 37.6% evaporation for a 60 day test.

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LL-1441

SALEM, OR

## ESTIMATED PROJECT WATER USE BY YEAR

From the stimulation of the injection well to the conclusion of the circulation test, the Newberry EGS Demonstration may use a maximum of 435 acre-ft gross of groundwater. An estimated timeline for the occurrence of major events in Phase II, as well as event durations, is outlined in the timeline below (Figure 1). The project begins in July 2011 with the stimulation of well 55-29, which will utilize approximately 74.2 acre-ft over a 21-day period. Following the stimulation, a three-day flow-back test of 55-29 will be conducted. This task does not use any additional make-up water. In September 2011, drilling of the first of two production wells will begin. Based on Davenport's experience, we expect that each well will require 90 days to drill and 9.7 acre-ft of groundwater. Following the completion of each producer, the connection between the injector and the producer will be tested for up to 7 days and a 5-day stimulation to enhance that connection will be conducted. Finally, a three-well circulation test between the injector and newly-drilled producers will commence in May 2012. The circulation test is scheduled to last between 30 and 60 days and require up to 242 acre-ft of groundwater. Figure 2 presents the projected monthly water usage between July 2011 and June 2012.

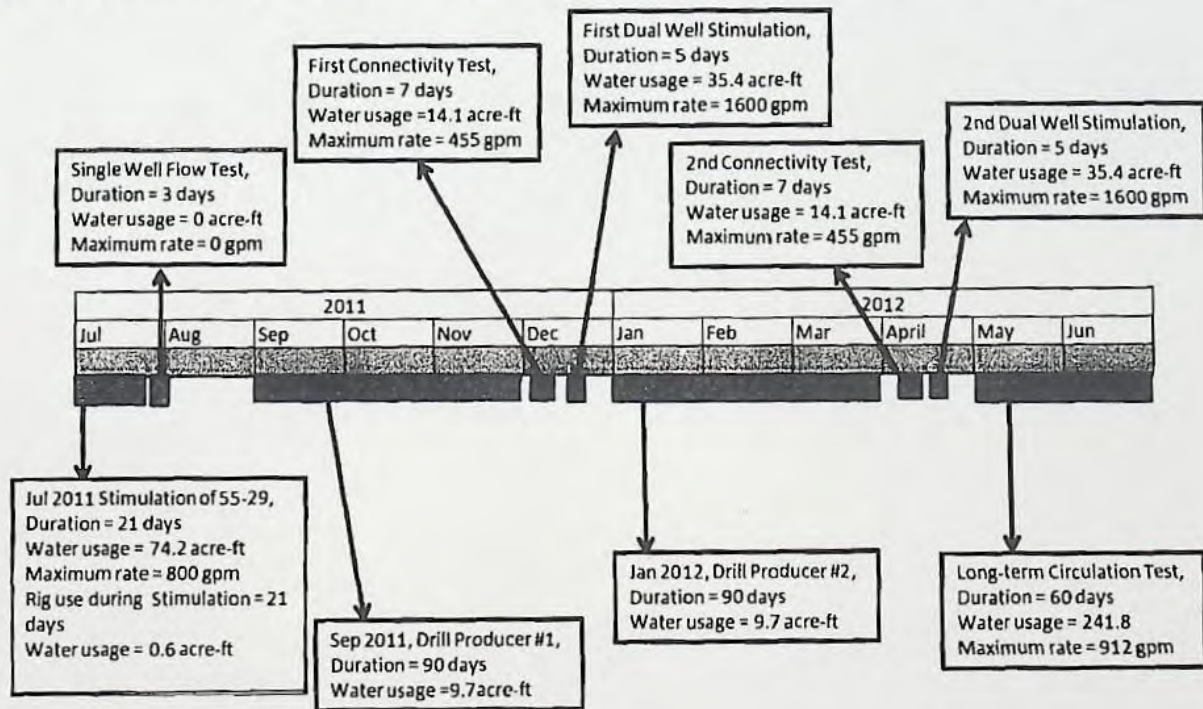


Figure 1: Major events and durations of water use.

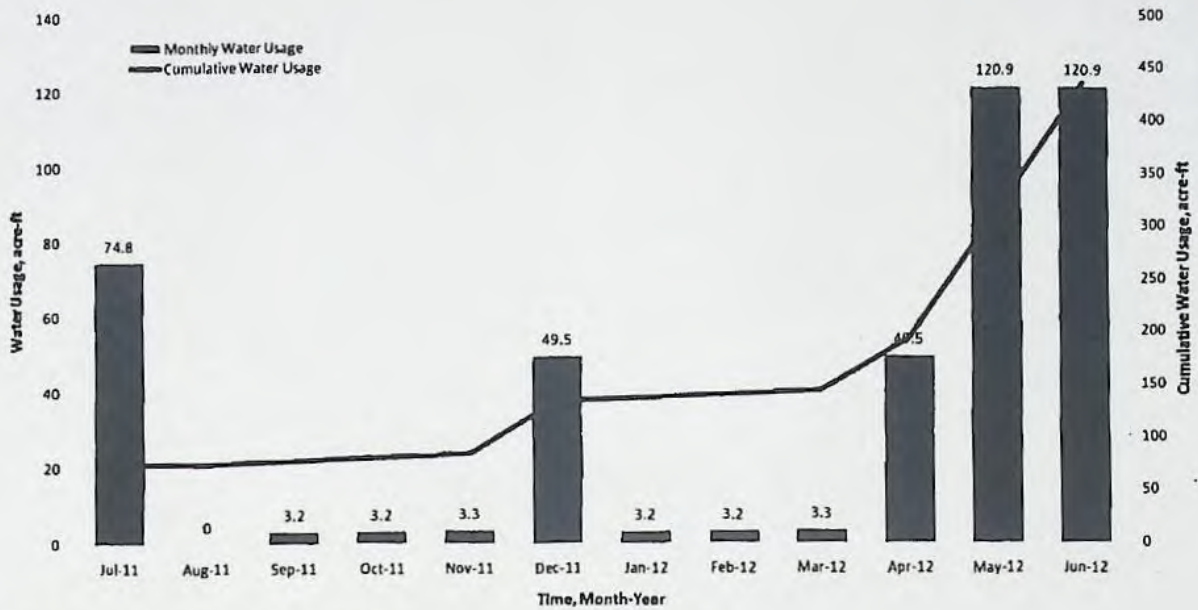
Note: Disregard calendar dates as the project started later than anticipated.

The durations and anticipated rates are the same.

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**Figure 2: Water usage by month.**

The water usage breakdown by year is summarized in Tables 4 and 5 below. Groundwater usage in 2011, 31% of the total, is estimated to be a maximum of 43.7 million gallons. The majority of the project's water use, 69%, will occur in 2012. Usage in 2012 is dominated by the long-term circulation test. Table 5 and Figure 3 break down the estimated usage by sink type. Evaporative losses are the dominant sink, utilizing 58% of project water. Water that is used to 'fill' the reservoir during stimulation and drilling is estimated to use 34% of the project water budget. Losses due to leak-off account for the remaining 8%.

**Table 4: Summary of maximum water usage by year.**

Year	Water Usage, gals	Water Usage, acre-ft	Percent of Total Usage
2011	43,657,589	134	31%
2012	98,038,354	301	69%

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SALEM, OR

LL-1441

# DESC 58649

STATE OF OREGON  
 WATER SUPPLY WELL REPORT  
 (as required by ORS 537.765 & OAR 690-205-0210)

WELL LABEL # L 94394  
 START CARD # 1004249

**(1) LAND OWNER** Owner Well ID, PadS-16  
 First Name \_\_\_\_\_ Last Name \_\_\_\_\_  
 Company NEWBERRY GEOTHERMAL HOLDINGS, LLC.  
 Address 300 ATLANTIC STREET, SUITE 301  
 City STAMFORD State CT Zip 06901

**(2) TYPE OF WORK**  New Well  Deepening  Conversion  
 Alteration (repair/recondition)  Abandonment

**(3) DRILL METHOD**  
 Rotary Air  Rotary Mud  Cable  Auger  Cable Mud  
 Reverse Rotary  Other \_\_\_\_\_

**(4) PROPOSED USE**  Domestic  Irrigation  Community  
 Industrial/ Commercial  Livestock  Dewatering  
 Thermal  Injection  Other \_\_\_\_\_

**(5) BORE HOLE CONSTRUCTION** Special Standard  Attach copy  
 Depth of Completed Well 823 ft.

BORE HOLE			SEAL			acres/lbs	
Dia	From	To	Material	From	To	Amt	lbs
18	0	25	Cement	0	25	30	S
12.45	25	890					

How was seal placed: Method  A  B  C  D  E  
 Other \_\_\_\_\_  
 Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
 Filter pack from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_ Size \_\_\_\_\_  
 Explosives used:  Yes Type \_\_\_\_\_ Amount \_\_\_\_\_

**(6) CASING/LINER**

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wid	Thrd
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	14		1	25	.250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	10		12	823	.312	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Shoe  Inside  Outside  Other Location of shoe(s) \_\_\_\_\_  
 Temp casing  Yes Dia \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_

**(7) PERFORATIONS/SCREENS**  
 Perforations Method Torch  
 Screens Type \_\_\_\_\_ Material \_\_\_\_\_

Perf/Screen	Casing/Screen	Liner	Dia	From	To	Scr/slot width	Slot length	# of slots	Tele/pipe size
Perf	Liner			742	823	.5	12	810	

**(8) WELL TESTS: Minimum testing time is 1 hour**

Pump  Bailer  Air  Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
350	2	845	24

Temperature 51 °F Lab analysis  Yes By \_\_\_\_\_  
 Water quality concerns?  Yes (describe below)  

From	To	Description	Amount	Units

**(9) LOCATION OF WELL (legal description)**  
 County DESCHUTE Twp 21 S N/S Range 12 E E/W WM  
 Sec 16 NE 1/4 of the NE 1/4 Tax Lot N/A  
 Tax Map Number \_\_\_\_\_ Lot \_\_\_\_\_  
 Lat 43 ° 45 ' 0.090 " or 43.750025 DMS or DD  
 Long -121 ° 19 ' 601 " or -121.48361111 DMS or DD  
 Street address of well  Nearest address

NEWBERRY GEOTHERMAL PROJECT, WELL PAD S-16

**(10) STATIC WATER LEVEL**

Existing Well / Predeepening	Date	SWL (psi)	+ SWL (ft)
Completed Well	<u>08-03-2008</u>		<u>672</u>

Flowing Artesian?  Dry Hole?

WATER BEARING ZONES Depth water was first found

SWL Date	From	To	Est Flow	SWL (psi)	+ SWL (ft)
<u>07-24-2008</u>	<u>704</u>	<u>890</u>	<u>500</u>		<u>672</u>

**(11) WELL LOG** Ground Elevation 6,190

Material	From	To
Fill	0	3
Blue Gray Basalt	3	18
Gray Basalt	18	82
Red Cinders	82	95
Gray Broken Basalt (Lost Circ.)	95	152
Cemented back to bottom of seal casing	25	152
Red Cinders	152	186
Gray Basalt	186	204
Gray Basalt Very Hard	204	223
Red Cinders	223	231
Brown Sandstone Conglomerate	231	268
Red Cinders	268	408
Gray Basalt Hard	408	518
Red Cinders	518	552
Brown Sandstone	552	569
Gray Basalt	569	634
Red Cinder	634	688
Gray Basalt	688	704
Red Cinder WB	704	715

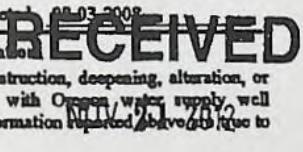
Date Started 07-22-2008 Completed 08-03-2008

(unbonded) Water Well Constructor Certification  
 I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number \_\_\_\_\_ Date \_\_\_\_\_  
 Password: (if filing electronically) \_\_\_\_\_  
 Signed \_\_\_\_\_

(bonded) Water Well Constructor Certification  
 I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1385 Date 12-28-2008  
 Password: (if filing electronically) \_\_\_\_\_  
 Signed Robert Buchanan  
 Contact Info (optional) \_\_\_\_\_



THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version: 0.89

JAN 07 2009

6444

WATER RESOURCES DEPT  
 SALEM, OREGON

REC'D TO FILE  
 1/11/2009



WELL LABEL # L 93031  
 START CARD # 1002875

(1) LAND OWNER Owner Well I.D. \_\_\_\_\_  
 First Name \_\_\_\_\_ Last Name \_\_\_\_\_  
 Company NEWBERRY GEOTHERMAL LLC  
 Address C/O HAP TAYLOR  
 City BEND State OR Zip 97709

(2) TYPE OF WORK  New Well  Deepening  Conversion  
 Alteration (repair/recondition)  Abandonment

(3) DRILL METHOD  
 Rotary Air  Rotary Mud  Cable  Auger  Cable Mud  
 Reverse Rotary  Other \_\_\_\_\_

(4) PROPOSED USE  Domestic  Irrigation  Community  
 Industrial/ Commercial  Livestock  Dewatering  
 Thermal  Injection  Other \_\_\_\_\_

(5) BORE HOLE CONSTRUCTION Special Standard  (Attach copy)  
 Depth of Completed Well 583.00 ft.

BORE HOLE			SEAL			sacks/
Dia	From	To	Material	From	To	Amt lbs
14	0	118	Bentonite Chips	0	2	4 S
10	118	410	Cement	2	118	132 S
9.5	410	583				

How was seal placed: Method  A  B  C  D  E  
 Other Poured Dry  
 Backfill placed from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_  
 Filter pack from \_\_\_\_\_ ft. to \_\_\_\_\_ ft. Material \_\_\_\_\_ Size \_\_\_\_\_  
 Explosives used:  Yes Type \_\_\_\_\_ Amount \_\_\_\_\_

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10		2	118	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	8		0	543	.188	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	8		543	583	.250	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Shoe  Inside  Outside  Other Location of shoe(s) 583  
 Temp casing  Yes Dia \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_

(7) PERFORATIONS/SCREENS  
 Perforations Method Air Perf  
 Screens Type \_\_\_\_\_ Material \_\_\_\_\_

Perf/Screen	Casing/Liner	Dia	From	To	Scr/slot width	Slot length	# of slots	Tele/pipe size
		8	539	579	125	2	1,440	

(8) WELL TESTS: Minimum testing time is 1 hour  
 Pump  Bailer  Air  Flowing Artesian  
 Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)  
 500 \_\_\_\_\_ 580 2

Temperature 53 °F Lab analysis  Yes By \_\_\_\_\_  
 Water quality concerns?  Yes (describe below)  

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)  
 County Deschutes Twp 21 00 S N/S Range 12 00 E E/W WM  
 Sec 29 SW 1/4 of the NE 1/4 Tax Lot NON  
 Tax Map Number \_\_\_\_\_ Lot \_\_\_\_\_  
 Lat 43° 43' 48.000" or 43.7300000 DMS or DD  
 Long -121° 18' 48.000" or -121.3133333 DMS or DD  
 Street address of well  Nearest address

FOREST SERVICE RD 558 DRILL PAD 29 NE CORNER

(10) STATIC WATER LEVEL  
 Date 03-13-2008 SWL(psi) \_\_\_\_\_ SWL(ft) 325  
 Existing Well / Predeepening \_\_\_\_\_  
 Completed Well \_\_\_\_\_  
 Flowing Artesian?  Dry Hole?

WATER BEARING ZONES Depth water was first found 400

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
03-10-2008	400	420	30		325
03-11-2008	458	510	40		325
03-11-2008	550	562	100		325
03-12-2008	570	583	500		325

(11) WELL LOG Ground Elevation 5,800

Material	From	To
Clay Pumice	0	2
Ash Tuff Purple	2	22
Sand Pumice Brown	22	35
Cinders Black Sand	35	45
Cinders Ash Pumice	45	105
Lava Gray Hard	105	135
Lava Creviced Red Brown Vesicular	135	145
Lava Gray Hard	145	155
Broken Lava Basalt Caving	155	170
Lava Gray	170	190
Creviced Lava	190	220
Lava Gray	220	265
Conglomerate Brown	265	275
Lava Gray	275	320
Lava Red Brown Fractured Caving	320	345
Lava Fractured Clay Seams	345	400
Cobbles Sand Brown	400	421
Lava Gray	421	426
Lava Basalt Clay Seams	426	458

Date Started 01-17-2008 Completed 03-13-2008

(unbonded) Water Well Constructor Certification  
 I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.  
 License Number 758 Date 03-27-2008  
 Electronically Filed  
 Signed THOMAS R PECK (E-filed)  
 WATER RESOURCES DEPT  
 SALEM, OREGON

(bonded) Water Well Constructor Certification  
 I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.  
 License Number 1720 Date 03-27-2008  
 Electronically Filed  
 Signed JACK ABBAS (E-filed)  
 Contact Info (optional)



DESC 10060

215/128/2/BB

DESC 10060

AUG 11 1995

WATER RESOURCES DEPT. SALEM, OREGON

STATE OF OREGON WATER WELL REPORT (as required by ORS 637765)

(START CARD #) 70924

(1) OWNER 95 21 CALIFORNIA ENERGY COMPANY INC. 900 N. HERITAGE DR. BLDG. D, RIDGECREST CA 93655

(8) LOCATION OF WELL by legal description: County DESCHUTES Latitude Longitude Township 21 8 Range 12 E Section 21 NW 14 NW 14 Tax Lot MAP Lot Block Subdivision Street Address of Well (or nearest address) NATIONAL FOREST

(2) TYPE OF WORK: NEW WELL

(3) DRILL METHOD: ROTARY AIR

(4) PROPOSED USE: Industrial

(10) STATIC WATER LEVEL: -665 ft. below land surface Date July 8, 1995 Artesian pressure Date

(5) BORE HOLE CONSTRUCTION:

Special Construction Approval No Depth of completed hole -806 ft. Explosives used NO Type Amount HOLE SEAL AMOUNT Diameter From To Material From To Seals 18 1/2" 0 -203 CEMENT 0 -203 22 YD 8 7/8 -203 -806

(11) WATER BEARING ZONES: Depth at which water was first found -782 From To Estimated Flow Rate SWL -782 -805 200 GPM -665

How was seal Placed C Backfill placed from ft. to ft. Material Gravel placed from ft. to ft. Size of Gravel

(12) WELL LOG: Ground Elevation FROM TO SWL SOIL & PUMICE 0 10 BROKEN GREY ROCK 10 82 GREY ROCK 82 205 BROKEN CAVING GREY ROCK 205 374 HARD GREY ROCK 374 433 RED ROCK 433 570 HARD RED & GREY ROCK 570 585 HARD GREY ROCK 585 661 RED ROCK 661 728 HARD GREY 728 782 RED CINDERS 782 793 555 BROKEN BROWN ROCK NOV 21 793 805 555

(6) CASING / LINER:

Table with columns: Dia., From, To, Gage, Material. CASING 10" +2 -203 .260 STEEL / WELDED LINER 7" +2 -798 .100 STEEL / WELDED

Final location of shoe (8)

(7) PERFORATIONS / SCREENS: Perforations

Table with columns: METHOD, TYPE, MATERIAL, From, To, Slot size, Number, Dia., Tote / pipe size. TORCH LINER

(9) WELL TESTS: Minimum testing time is 1 hour

Table with columns: TESTING METHOD, Yield GPM, Drawdown, Drill stem at, Time. AIR 60 GPM 200 GPM

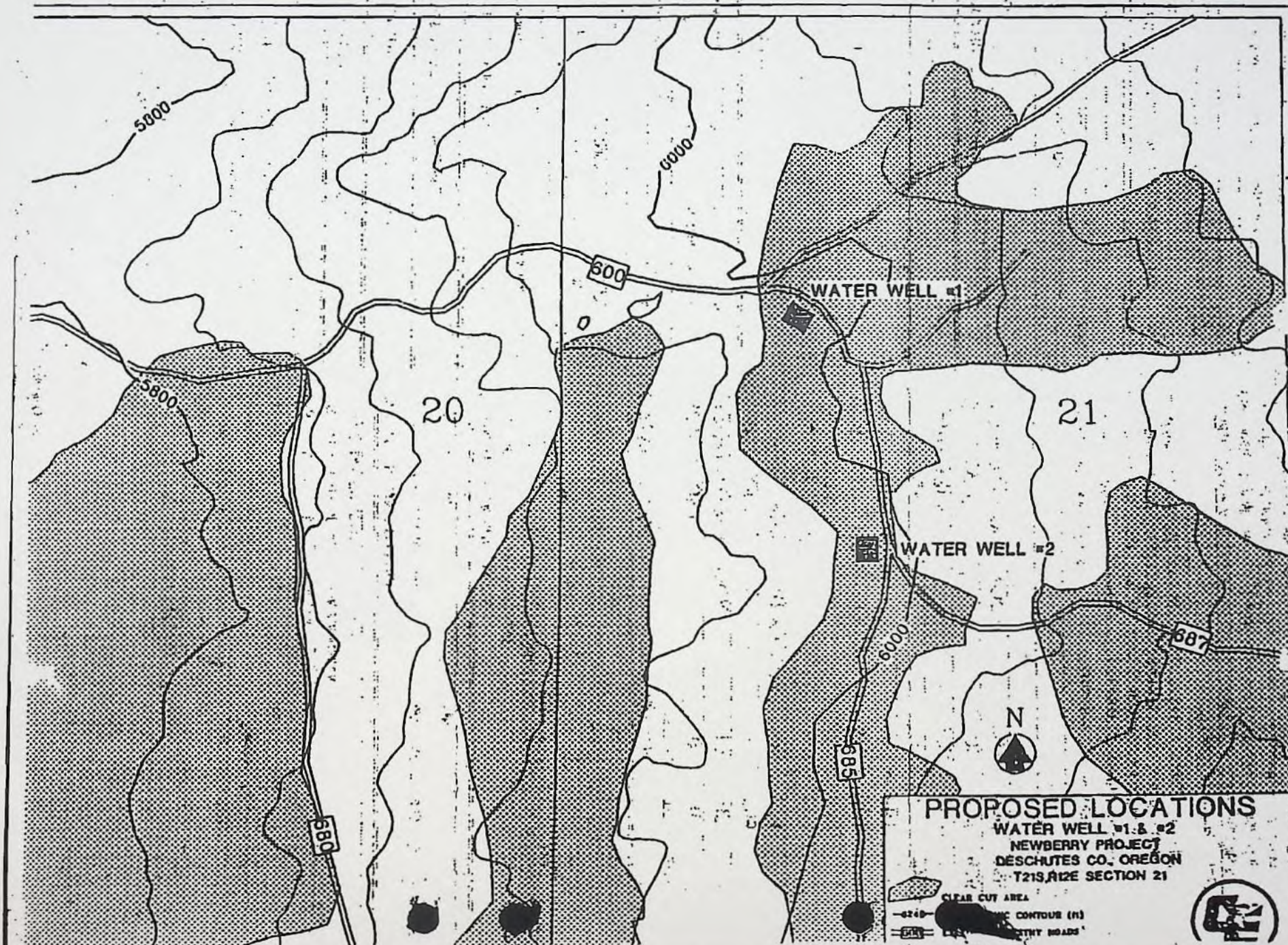
Temperature of Water 68 F Depth Artesian Flow Found Was a water analysis done? NO By whom Did any strata contain water not suitable for intended use?

WATER RESOURCES DEPT SALEM, OREGON Date started May 1, 1995 Completed July 28, 1995 (Unbonded) Water Well Constructor Certification: I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

(Bonded) Water Well Constructor Certification: I accept responsibility for the construction alteration or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief. DATE 8-1-95 WWC NUMBER 693

LL-1441




ADVICE TO FILE 11/21/2001 RL



DESC 10060

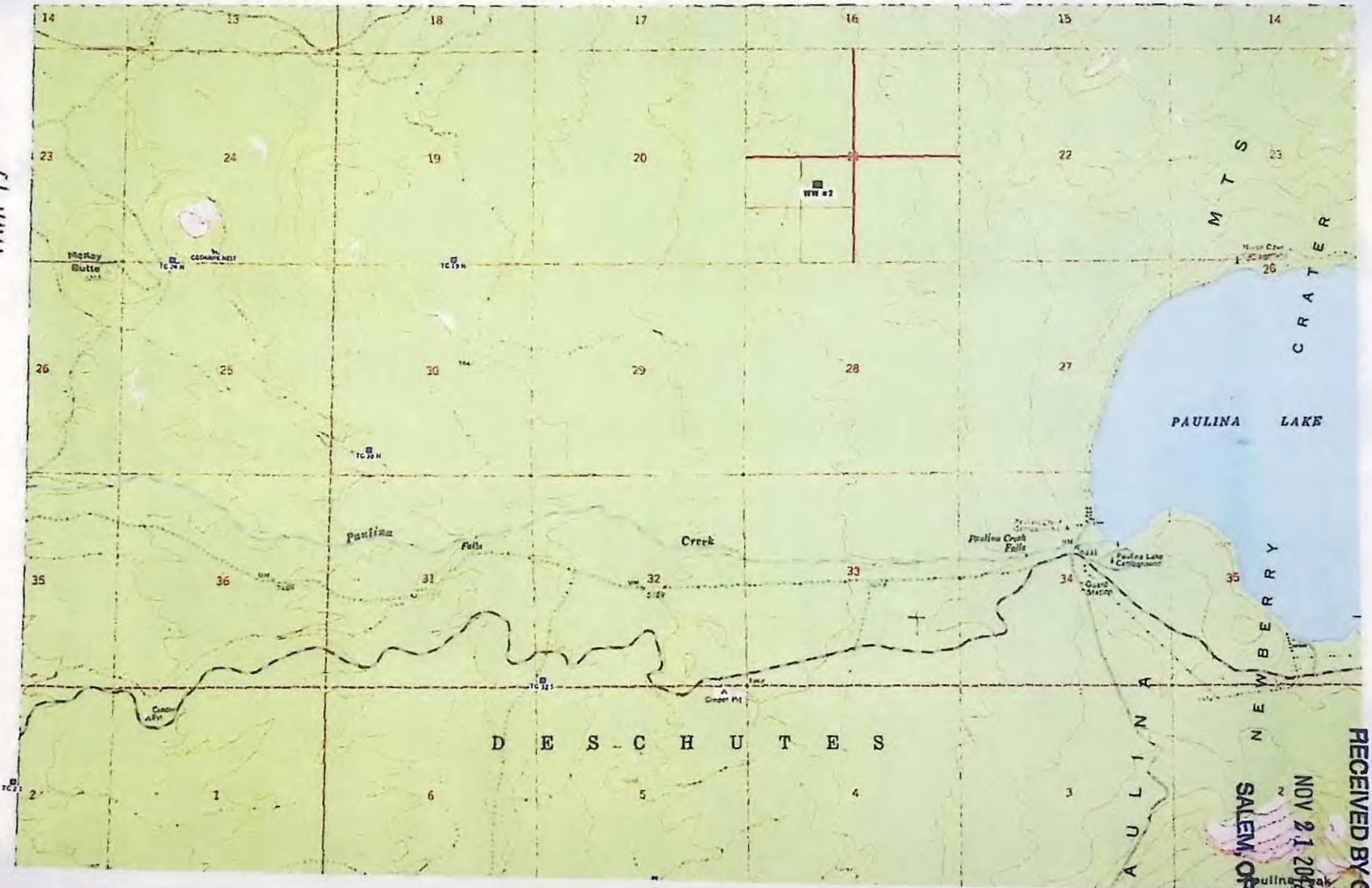
**PROPOSED LOCATIONS**

WATER WELL #1 & #2  
 NEWBERRY PROJECT  
 DESCHUTES CO., OREGON  
 T21S, R12E SECTION 21

-  CLEAR CUT AREA
-  CONTOUR (ft)
-  UTILITY ROADS



1hh1-77



NOV 21 2012  
 SALEM, OR

RECEIVED BY OWRD

RECEIVED BY OWRD

RECEIVED BY OWRD

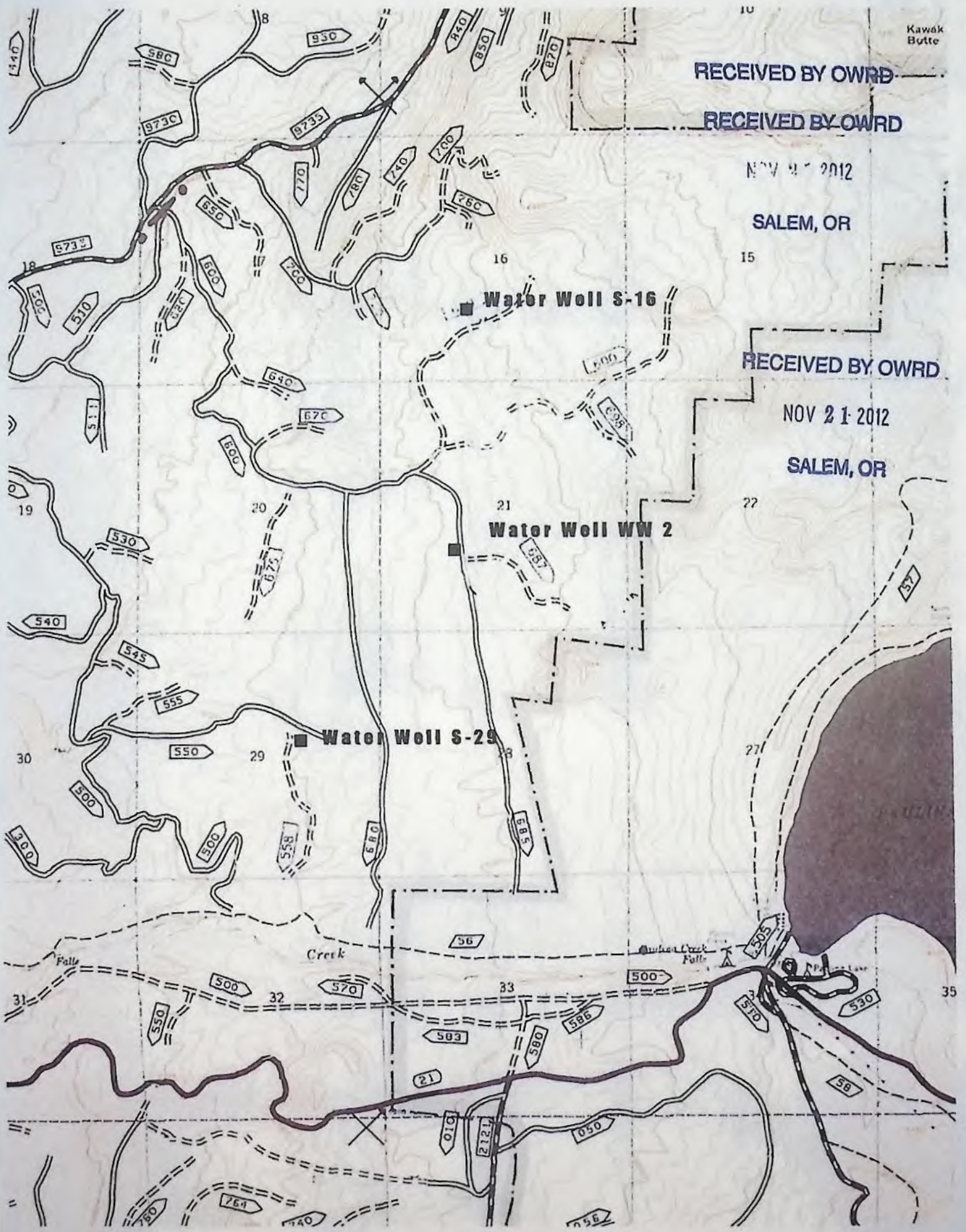
NOV 21 2012

SALEM, OR

RECEIVED BY OWRD

NOV 21 2012

SALEM, OR



Water Well S-16

Water Well WW 2

Water Well S-29

**STATE OF OREGON  
WATER RESOURCES DEPARTMENT**

725 Summer St. N.E. Ste. A  
SALEM, OR 97301-4172  
(503) 986-0900 / (503) 986-0904 (fax)

RECEIPT # **107414**

INVOICE # \_\_\_\_\_

RECEIVED FROM: PLS Environmental  
BY: LLC

APPLICATION	LL-1441
PERMIT	
TRANSFER	

CASH:  CHECK:#  2066 OTHER: (IDENTIFY)

TOTAL REC'D \$ 300.00

**1083 TREASURY 4170 WRD MISC CASH ACCT**

0407 COPIES \$ \_\_\_\_\_  
OTHER: (IDENTIFY) \$ \_\_\_\_\_

0243 I/S Lease \_\_\_\_\_ 0244 Muni Water Mgmt. Plan \_\_\_\_\_ 0245 Cons. Water \_\_\_\_\_

**4270 WRD OPERATING ACCT**

MISCELLANEOUS 46111  
0407 COPY & TAPE FEES \$ \_\_\_\_\_  
0410 RESEARCH FEES \$ \_\_\_\_\_  
0408 MISC REVENUE: (IDENTIFY) Limited License \$ 300.00  
TC162 DEPOSIT LIAB. (IDENTIFY) \$ \_\_\_\_\_  
0240 EXTENSION OF TIME \$ \_\_\_\_\_

WATER RIGHTS:  
0201 SURFACE WATER EXAM FEE \$ \_\_\_\_\_ 0202 RECORD FEE \$ \_\_\_\_\_  
0203 GROUND WATER EXAM FEE \$ \_\_\_\_\_ 0204 RECORD FEE \$ \_\_\_\_\_  
0205 TRANSFER EXAM FEE \$ \_\_\_\_\_

WELL CONSTRUCTION  
0218 WELL DRILL CONSTRUCTOR EXAM FEE \$ \_\_\_\_\_ 0219 LICENSE FEE \$ \_\_\_\_\_  
LANDOWNER'S PERMIT 0220 LICENSE FEE \$ \_\_\_\_\_  
OTHER (IDENTIFY) \_\_\_\_\_

**0536 TREASURY 0437 WELL CONST. START FEE**

0211 WELL CONST START FEE \$ \_\_\_\_\_ CARD # \_\_\_\_\_  
0210 MONITORING WELLS \$ \_\_\_\_\_ CARD # \_\_\_\_\_  
OTHER (IDENTIFY) \_\_\_\_\_

**0607 TREASURY 0467 HYDRO ACTIVITY LIC NUMBER**

0233 POWER LICENSE FEE (FW/WRD) \$ \_\_\_\_\_  
0231 HYDRO LICENSE FEE (FW/WRD) \$ \_\_\_\_\_  
HYDRO APPLICATION \$ \_\_\_\_\_

**TREASURY OTHER / RDX**

FUND \_\_\_\_\_ TITLE \_\_\_\_\_  
OBJ. CODE \_\_\_\_\_ VENDOR # \_\_\_\_\_  
DESCRIPTION \$ \_\_\_\_\_

RECEIPT: **107414** DATED: 11-21-12 BY: L Bell