Oregon
Tina Kotek, Governor

Department of Environmental Quality
Eastern Region Bend Office
475 NE Bellevue Dr., Suite 110
Bend, OR 97701
(541) 388-6146
FAX (541) 388-8283
TTY 711

June 4, 2024

Pineriver Homes LLC
23410 Highway 20
Bend, OR 97701

Re: WQ: Variance Approval: 248-23-000487-VAR: 17146 Covina Road; T.20S; R.10E; Sec. 12AD; Tax Lot 700; Lot 30, Block 20 Deschutes River Recreation Homesites Inc (Blks 18-25), 0.58 Acres; Deschutes County.

Dear Brian Holland,

This correspondence verifies that a variance hearing provided for under Oregon Administrative Rules 340-071-0430, was held on the site at 2:45 pm on April 24, 2024, for the subject property referenced above on Covina Road in Deschutes County. The purpose of the hearing was to provide a forum for the presentation of supportive facts to show that strict compliance with certain rules regulating onsite sewage disposal are inappropriate, or that special physical conditions at the site render strict compliance unreasonable, burdensome or impractical. The proposal and associated supporting information you provided with the application was presented during the recorded hearing.

Variance Decision:
Based on review and evaluation of the variance record and observations made during the variance hearing, I am pleased to inform you that the variance from the rules cited above is hereby granted. In my opinion, it would be unreasonable to prohibit this method of wastewater treatment by strictly following the administrative rules at this specific location at this time. It is my judgement that the proposed system is not likely to present a public health hazard risk or have any significant adverse impact to groundwater or surface water quality if properly operated and maintained.

Justification for this decision:

- The proposed Orenco® AdvanTex AX20N-Mode 3B system is currently approved as a system meeting DEQ's Treatment Standard 2; OAR 340-071-0100(168) "Treatment Standard 2".
- On average, the AX20N-Mode 3B system is one of the best available technologies for Total Nitrogen treatment that has been approved for use in Oregon and is expected to treat residential wastewater to 20 mg/L Total Nitrogen, which is about two thirds of a reduction from that of a standard system and about half from a sand filter system in this climate.
- Treatment Standard 2, for the reduction of fecal coliform, will be met or exceeded with pre-treated effluent from the AX20N-Mode 3B unit (proposed w/o UV disinfection) and the RidNOx™ unit that will discharge into a 250 square foot bottomless sand filter with an additional 12-inches of sand filter media (embedded 6-inches below ground surface) placed below the filter to meet or exceed the minimum 24-inch separation requirement to

groundwater below. Note: The bottomless sand filter is assumed to meet Treatment Standard 2 criteria independently of the ATT, which is why UV disinfection is not included in the proposal.

- Overall Treatment: Treatment first occurs within the AX20N-Mode 3B system (w/o UV) for reductions in TSS, BOD_5 and Total Nitrogen (TN). The RidNOx™ unit is expected to further reduce TN (and Nitrate) as the effluent passes through and makes contact with the soluble carbon being released from the wood chip material. Final discharge will occur through the elevated bottomless sand filter, which may provide some additional reduction/treatment of BOD_5, TSS, Fecal Coliform and TN. It is expected that the final effluent being discharged shall meet or exceed that of the similar Nitrex unit, that was tested during the La Pine National Demonstration Project, which averaged a 96% reduction of TN. The final effluent Nitrate concentration is expected to be well under the EPA drinking water standard of 10 mg/L as well as local action levels set at 7 mg/L.
- The proposed system, with innovative technology, shall be required to be maintained by a certified maintenance provider for the life of the system. Additionally, the system shall be monitored and sampled at regular intervals to ensure that the system is performing as expected. The sampling, monitoring, and maintenance of the system shall be reported to Deschutes County on an annual basis.

Standards found in Oregon Administrative Rules Chapter 340, Division 071 & 073 have been developed to protect public health and the environment in Oregon. The variance officer's duty is to determine if in their professional judgement, the system proposed for this variance consideration is adequate to safeguard the public's health and the environment if variance from the standards noted above are granted. In my opinion, your proposal adequately addresses the limitations present at the site.

Other Considerations:
The effluent from the ATT and RidNOx™ system, discharging through a bottomless sand filter, will have a significant reduction in BOD, TSS, TN, and Fecal Coliform. In this proposal, treated ATT to RidNOx™ effluent will be discharged into a 250 square foot bottomless sand filter with an additional 12- inches of sand filter media embedded 6 - inches into the native soil that will be used to exceed the 24-inch separation from the shallowest water table depth standard by providing a total separation of 27- inches. The additional media will mitigate the lack of vertical separation from the bottom of the sand filter to the highest level of groundwater on site. The RidNOx™ unit is expected to provide a significant reduction of Total Nitrogen (and Nitrate) before the treated effluent enters the bottomless sand filter with a basal area intersecting the native soil and ultimately the groundwater below.

This variance approval is being granted on the condition that requirements contained in the enclosed schedules are met. Schedules A and B (attached) include requirements and specifications for the design and location of the system approved through this variance. Failure to meet these conditions may cause the variance approval to become null & void.

Site History & Variance Proposal:
Deschutes County conducted a site evaluation with 3 test pits within the subject property on September 15, 2023, where a denial was issued for the use of an onsite wastewater system on September 20, 2023. The primary reason for denial was due to the predicted depth to the seasonally

high permanent water table being less than 24- inches below the ground surface. Observed conditions associated with saturation that are used to determine water table levels and site suitability were observed between 15- inches and 22-inches below ground surface (bgs), respectively.

The proposal to overcome the site limitations is by installing an Orenco® AdvanTex AX20N-Mode 3B Alternative Treatment Technology System followed by a RidNOx™ solid-phase carbon flow-through filter before discharging to a 250 sq. ft. elevated Bottomless Sand Filter system constructed on a 12-inch bed of sand filter media embedded 6 inches into the native soil. It is expected that the highest level of groundwater within the lowest point of the sand filter areas will come to 21- inches bgs. The proposal overcomes this limitation by providing additional sand filter media with 3- inches of extra vertical separation and providing a total 27-inch separation to the shallowest predicted groundwater depth. The rest of the sand filter will be "conventional" from there up, consisting of 6 inches of underdrain media, 24- inches of sand filter media, 6- inches of drain media (with the distribution laterals), filter fabric, and 6 t- 9 inches deep of final backfill on top. The sand filter will be contained within a supporting berm with a slope no steeper than 3:1.

You are seeking a variance from the following Oregon Administrative Rules (OAR):

340-071-0135(1) – which addresses DEQ approval of new or innovative technologies, materials, or designs for onsite systems. **This rule is being varied from due to deviating from the approved design for the AX20N in Mode 3B by not requiring UV disinfection. Treatment Standard 2 will still be met or exceeded without the UV disinfection by discharging the treated effluent through a bottomless sand filter.**

340-071-071-0150(4)(a)(B) - which requires all criteria for approving a specific type or types of systems, as described in this division are satisfied.

340-071-0290(4)(d) which states: Bottomless Sand Filter. Sites may use a conventional bottomless sand filter if the site meets the criteria in this section and section (3) of this rule. (d) The water table is at least 24- inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter.

Conclusion:
The decision to grant your variance request is a Final Order of DEQ. Any person who is adversely affected or aggrieved by this Order is entitled to a contested case hearing before the Environmental Quality Commission. A request for a hearing must be received by DEQ within twenty days from the date of certified mailing of this Order. The request must specifically describe how the Order fails to meet the requirements of Oregon Revised Statutes 454.657 and 454.660, and include the technical basis that supports the petition. The appeal must be directed to the Environmental Quality Commission, in care of Lindsay Trapp, EQC Assistant, Department of Environmental Quality, 700 NE Multnomah St., Suite 600, Portland, OR 97232-4100.

Deschutes County onsite staff is hereby authorized to issue a construction-installation permit, subject to all the conditions, upon their receipt of a complete permit application. The application must include a favorable land use compatibility statement issued by Deschutes County, a set of detailed

plans and specifications for the onsite wastewater treatment system, a current maintenance service agreement and the appropriate application fee.

Please feel free to contact me if you have any questions concerning this decision. I can be reached by telephone at (541) 776-6130, or by email at david.hurley@deq.oregon.gov.

Sincerely,

David Hurley, REHS
Variance Officer – Onsite Wastewater Program

Encl: Schedule A- Special Conditions
Schedule B- Approved Plans
Approved Drawings / Schematics

cc: Todd Cleveland, REHS; Deschutes County Onsite Wastewater Division, 117 NW Lafayette Ave, Bend OR 97703
Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC, 14833 Goodrich Creek Lane, Baker City, OR 97814
Anastasi R. Hampton, 16869 SW 65th #287, Lake Oswego, OR 97035
Ronald E Harter Revocable Living Trust, 17139 Bakersfield Rd., Bend, OR 97707
Ethan L. Nelson, 3554 Butterfly Creek Ln., Eugene, OR 97404
Christopher J. Collins, 17150 Covina Rd., Bend, OR 97707
Daniel C. Leahy, 19897 Ponderosa Trl., Wickenburg, AZ 85390
Corey Burns, 10512 SE Stanley Ave., Milwaukie, OR 97222
Jason & Ying Ramirez Trust, 8379 Westlawn Ave., Los Angeles, CA 90045

Variance Protocol

Date: April 24, 2024
Time: 2:45 PM
Variance Officer: David Hurley

Applicant: Pineriver Homes LLC
Address: 23410 Hwy 20
Bend, OR 97701

WQ/O – Variance Assignment 248-23-000487-VAR
T. 20S, R. 10E, Sec. 12AD, Tax Lot 700, 0.58 acres
Site address: 17146 Covina Rd, Bend
Deschutes County

Variance location: **17146 Covina Rd, Bend OR**
Legal description: **T. 20S, R. 10E, Sec. 12D, Tax Lot 16900**
Acreage: **0.58 acres**

Attendance: See attached attendance record sheet and hearing introductory sheet.

Prior to recording start:
This is a public informational gathering hearing and is recorded. I will begin by introducing myself and reading the proposal narrative and exhibits of records submitted by Brian Rabe on behalf of Pineriver Homes LLC. After completion, I will open it up for any questions or comments.

Good morning, it is now 2:45 pm on Wednesday, April 24, 2024.

My name is David Hurley and I am a Department of Environmental Quality employee assigned as today's variance officer.

(Roll call)

We are conducting a public information hearing regarding at the subject property located at 17146 Covina Rd in Bend owned by Pineriver Homes LLC. The parcel is approximately 0.58 acres in size; described as Township 20 South, Range 10 East, Section 12AD, Tax lot 700, in Deschutes County.

I visited the site on April 23, 2024 as required by Oregon Administrative Rule Chapter 340 Division 71 Section 0430 subsection 4.

This is a public information gathering hearing which is being held pursuant to OAR 340-071-0430. This hearing is being held to gather testimony into the record that will demonstrate:

1) Why strict compliance with certain Oregon Administrative Rules is inappropriate for cause, or
2) Why specific physical conditions render strict compliance to rules unreasonable, burdensome, or impractical.

Since this is a public information gathering hearing rather than a contested case hearing, cross-examination of persons providing testimony will not be allowed.

As a variance officer, I may request that a person providing testimony expand upon information submitted into the record. I may also ask questions to clarify the record.

All persons wishing to testify must preface their remarks with their name and affiliation with the variance proposal.

Introduction

Deschutes County denied Site Evaluation 247-23-000862-EVAL for this property on September 20, 2023 because the water table rises to within 24 inches of ground surface.

The site evaluation was denied due to the following reasons:

Does not meet minimum separation from permanent water table (OAR 340-071-0220, 0260, 0265,
0275, 0280, 0285, 0290, 0302).

• Installation of an onsite wastewater system in the area evaluated will likely lead to nitrate pollution of public waters. The Nitrate Loading Management Model indicates this area, Management Area 3, cannot sustain added loading from high groundwater lots if nitrate levels are to remain below the action level in groundwater (Morgan, Hinkle, Weick. USGS. 2007). Groundwater shall be protected from pollution that could impair existing and future beneficial uses, including domestic drinking water from wells (OAR 340-040-0020).

• Deschutes County may not authorize installation or use of a system that is likely to pollute public waters or create a public health hazard (OAR 340-071-0130(1)).

You are requesting a variance from the following Oregon Administrative Rules:

1) OAR 340-071-0135(1) which states: Coordination with listing of alternative treatment technologies, OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)). Under OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)), DEQ maintains a list of alternative treatment technologies (ATTs) that have been tested by an NSF/ANSI organization that meets the requirements of ISO/IEC 17025 – 2005. The ATT must meet the performance standards and other requirements in OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)). ATTs are usually separate treatment units that are installed in onsite systems. Only listed ATTs may be installed under the siting criteria in OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)). This rule provides a process for approving new or innovative technologies, materials, or designs for various components of onsite systems, such as drainfield products or appurtenances. Add-on treatment units, such as units to remove nitrogen following an ATT or sand filter, may also be approved under this rule. However, DEQ does not intend to approve alternatives to standard systems under this rule. Alternative systems will need to be listed as ATTs under OAR 340-071-0345 (Alternative Treatment Technologies (ATTs)) or approved under new rules in this division.
2) OAR 340-071-0150(4)(a)(B) which states: Approval or denial:
(a) A site must be approved for a system if the site evaluation report documents the following:
(A) The site evaluation report identifies the types of the initial and replacement systems for which the site is approved.
(B) All criteria for approving a specific type or types of systems, as described in this division are satisfied.
3) OAR 340-071-0290(4)(d) which states: Bottomless sand filter. Sites may use a conventional sand filter without a bottom (BSF) if the site meets the criteria in this section and section (3) of this rule. (d) The water table is at least 24 inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter.

I have identified an additional rule that requires a variance:

- OAR 340-071-0130(1) which states: Protection of public waters from public health hazards. An agent may not authorize installing or using a system that is likely to pollute public waters or create a public health hazard. If, in the judgment of the agent, the minimum standards in this division will not adequately protect public waters or public health on a particular site, the agent must require a system to meet requirements that are protective. This may include but is not limited to increasing setbacks, increasing drainfield sizing, or using an alternative system.

The agent must provide the applicant with a written statement of the specific reasons why more stringent requirements are necessary

Variance Description:

Brian Rabe, Elkhorn Consulting LLC, prepared your proposal and system plans to overcome the site limitations through the use of a recirculating textile filter system (AdvanTex AX20N-Mode 3B) prior to discharge through a RidNOx™ post-anoxic tank (solid-phase flow-through filter) and then into a 250 sqft elevated reduced sized Bottomless Sand Filter (BSF) system constructed on a 12-inch bed of sand filter media embedded at least 6 inches into the native soil. The proposal includes deviating from the ATT Mode 3B configuration slightly by not installing UV disinfection because it is assumed that discharging to a bottomless sand filter will meet treatment standard 2 criteria independently of the treatment unit.

Open up for discussion, comments, other input……

Any questions:

My Questions:

Leave room for additional questions

I will now review all of the exhibits and comments entered into the record and will make a decision within 45 days to grant the variance as presented or deny the variance. Approval of the variance may be appealed to the Environmental Quality Commission. Denial of the variance may be appealed in Circuit Court per ORS 183.484.

Last call for anyone wishing to enter testimony.

I then declare the hearing closed (or hold open for _____ days for the submission of additional testimony).

End recording.

Attendance list:

Oregon
Tina Kotek, Governor

Department of Environmental Quality
Eastern Region Bend Office
475 NE Bellevue Dr., Suite 110
Bend, OR 97701
(541) 388-6146
FAX (541) 388-8283
TTY 711

April 10, 2024

Pineriver Homes LLC
23410 Highway 20
Bend, OR 97701

Re: WQ: CAS: Variance Assignment: 248-23-000487-VAR: 17146 Covina Road; T.20S; R.10E; Sec. 12AD; Tax Lot 700; Lot 30, Block 20 Deschutes River Recreation Homesites Inc (Blocks 18-25), 0.58 Acres; Deschutes County.

Dear Pineriver Homes LLC,

The Department of Environmental Quality is in receipt of your onsite wastewater variance application and proposal. The application has been assigned to me for further action. I plan to hold an information gathering hearing (as provided under OAR 340-71-430) regarding your proposal on **Wednesday, April 24, 2024, at 2:45 pm** at the subject property. Your proposal and system plans have been prepared by Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC. It is my understanding that Mr. Rabe will be present to answer any questions regarding the proposal.

Deschutes County conducted a site evaluation with three test pits at the subject property on September 15, 2023, where a denial was issued for the use of an onsite wastewater system on September 20, 2023. The primary reason for denial was due to the predicted depth to the seasonally high permanent water table being less than 24 inches below the ground surface. Observed conditions associated with saturation that are used to determine water table levels and site suitability were observed less than 24 inches from the ground surface between 10 and 14 inches below ground surface (bgs).

Southern Deschutes County has a shallow water table that is typically unconfined in porous pumice soils and is susceptible to contamination from soluble and mobile constituents. The most common constituent of concern is nitrate-nitrogen from septic systems.

The proposal is to overcome the site limitations by installing an Orenco® AdvanTex AX20N-Mode 3B Alternative Treatment Technology (ATT) System followed by a reduced sized Bottomless Sand Filter (BSF) system constructed with a reinforced concrete berm. The nitrate-nitrogen is proposed to be further reduced with a post-anoxic RidNOx unit. You are seeking variance from the following Oregon Administrative Rules (OARs):

OAR 340-071-0135(1): which addresses Department of Environmental Quality approval of new or innovative technologies, materials, or designs for onsite systems.

OAR 340-071-0150(4)(a)(B) which states: All criteria for approving a specific type or types of systems, as described in this division are satisfied.

OAR 340-071-0290(4)(d) which states: Bottomless sand filter. Sites may use a conventional sand filter without a bottom (BSF) if the site meets the criteria in this section and section (3) of this rule. (d) The water table is at least 24 inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter.

Sometimes during a hearing, it can be determined that other rules or standards need to be considered in order to finalize a proposal. Should this occur, based on the proposal, site observations, and other considerations, I may or may not proceed with the hearing and my final decision process until further information is provided.

Notice of the hearing will be mailed to the neighboring property owners and to the Deschutes County Onsite Wastewater Division staff, see copy enclosed. However, all persons who wish to attend the hearing are welcome. The hearing will provide an opportunity for you and others to offer additional facts or reasons either in support of or in opposition to the proposal and requested variance to the rules.

Please remember, it is the burden of the applicant to show that strict compliance to the rules or standards are inappropriate, or that special physical conditions render strict compliance with the rules or standards to be unreasonable, burdensome or impractical. Additionally, the applicant needs to provide prudent reasonable justification in how their proposal will still protect both public health and the environment.

Deschutes County Onsite Wastewater Division staff will get a copy of your proposal and will have an opportunity to provide both written and verbal comments on your proposal. Others wishing to review your proposal can contact me.

The Department is committed to accommodating people with disabilities. Please notify DEQ of any special physical or language accommodations needed as far in advance of the hearing date as possible. To make any of these arrangements please contact, David Hurley, at (541) 776-6130 or toll free at (866)-863-6668, or by email at: david.hurley@deq.oregon.gov. People with hearing impairments can call DEQ's TTY at (800)-735-2900.

If you have questions concerning the variance process or hearing arrangements, please give me a call. You may also visit https://ordeq.org/septicvariance for more information about variances.

Sincerely,

David Hurley

David Hurley, REHS
Natural Resource Specialist 4
Variance Officer – Onsite Wastewater Program

cc: Todd Cleveland, REHS; Deschutes County Onsite Wastewater Division, 117 NW Lafayette Ave, Bend OR 97703
Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC, 14833 Goodrich Creek Lane, Baker City, OR 97814

In Addition, To The Following Adjacent Property Owners:

Anastasi R. Hampton, 16869 SW 65th #287, Lake Oswego, OR 97035
Ronald E Harter Revocable Living Trust, 17139 Bakersfield Rd., Bend, OR 97707
Ethan L. Nelson, 3554 Butterfly Creek Ln., Eugene, OR 97404
Christopher J. Collins, 17150 Covina Rd., Bend, OR 97707
Daniel C. Leahy, 19897 Ponderosa Trl., Wickenburg, AZ 85390
` Corey Burns, 10512 SE Stanley Ave., Milwaukie, OR 97222
Jason & Ying Ramirez Trust, 8379 Westlawn Ave., Los Angeles, CA 90045

Encl. Neighbor Notice

Oregon
Tina Kotek, Governor

Department of Environmental Quality
Eastern Region Bend Office
475 NE Bellevue Dr., Suite 110
Bend, OR 97701
(541) 388-6146
FAX (541) 388-8283
TTY 711

April 10, 2024

Hearing Date/Time is 2:45 PM on April 24, 2024

Re: WQ: CAS: Variance Assignment: 248-23-000487-VAR: 17146 Covina Road; T.20S; R.10E; Sec. 12AD; Tax Lot 700; Lot 30, Block 20 Deschutes River Recreation Homesites Inc (Block 18-25), 0.58 Acres; Deschutes County.

Dear Resident:

Neighbors of yours, Pineriver Homes LLC , own the property referenced above and herein to be referred to as the "Property", has submitted an application to the Oregon Department of Environmental Quality (DEQ) requesting a "For Cause Variance" from Oregon Administrative Rules regulating Onsite Wastewater Treatment Systems. The Property has been denied due to conditions associated with saturation being within 24 inches of the ground surface.

In the variance application, the applicant's proposal is to install an Orenco® AdvanTex AX20N-Mode 3B Alternative Treatment Technology (ATT) System followed by a reduced sized Bottomless Sand Filter (BSF) system with an additional RidNOx unit for nitrate-nitrogen reduction.

For more detail, please review the enclosed variance hearing notice.

A variance to the Oregon Administrative Rules regulating Onsite Wastewater Treatment Systems may be granted if a variance officer finds that:

1. Strict compliance with the rules or standards are inappropriate: or

2. Special physical conditions render strict compliance unreasonable, burdensome or impractical.

Part of the variance process involves an information gathering hearing. In this hearing, information is shared about the site conditions, rule requirements, public health or environmental protection concerns, and how the proposed system design overcomes these concerns. It is also an opportunity for all parties involved, including adjacent property owners, to voice any concerns they might have with the proposal. Department policy requires a variance officer to inform all adjacent property owners of the variance hearing date, time and place. You are not required to attend this hearing, but can, should you desire to do so.

The information gathering hearing for this variance proposal is to begin at **2:45 PM, Wednesday, April 24, 2024,** at the subject property.
The Department is committed to accommodating people with disabilities. Please notify DEQ of any special physical or language accommodations needed as far in advance of the hearing date as possible. To make any of these arrangements please contact, David Hurley, at (541) 776-6130 or toll free at (866)-863-6668, or by email at: david.hurley@deq.oregon.gov. People with hearing impairments can call DEQ's TTY at (800)-735-2900.

If you have any questions concerning this variance process or hearing arrangements, please give me a call.

Sincerely,

David Hurley

David Hurley, REHS
Natural Resource Specialist 4
Variance Officer – Onsite Wastewater Program

cc: Todd Cleveland, REHS; Deschutes County Onsite Wastewater Division, 117 NW Lafayette Ave, Bend OR 97703
Brian T. Rabe, CPSS, WWS; Principal Soil Scientist, of Elkhorn Consulting LLC, 14833 Goodrich Creek Lane, Baker City, OR 97814
Pineriver Homes, 23410 Highway 20, Bend, OR 97701

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` Corey Burns, 10512 SE Stanley Ave., Milwaukie, OR 97222
Jason & Ying Ramirez Trust, 8379 Westlawn Ave., Los Angeles, CA 90045

Encl. Variance Hearing Notice

ELKHORN CONSULTING LLC

14833 Goodrich Creek Lane
Baker City, OR 97814 • 503-881-1604
elkhornconsultingllc@gmail.com

November 13, 2023

Variance Officer
Onsite Variance Program
DEQ - Eastern Region Water Quality
475 NE Bellevue, Ste. 110
Bend, Oregon 97701

SUBJECT: Formal Variance Request – Brian Holland – T20S, R10E, Section 12AD, Tax Lot 700 (0.58 acres), Deschutes County, South of Bend, Oregon.

Dear Variance Officer:

A formal variance from selected onsite rules is hereby requested under the provisions of Oregon Administrative Rules, Chapter 340, Division 071, Section 0415 (OAR 340-071-0415).[1] The property is located at 17167 Downey Road, south of Bend in Deschutes County, Oregon (Site) (Figure 1) and consists of 0.57 acres. A Tax Lot map is attached in Appendix A and a copy of the Deed is attached in Appendix B.

Background

A site evaluation was conducted on September 15, 2023, and a denial was issued by Deschutes County on September 20, 2023. The evaluation included a total of 3 test pits; one near the southeastern corner of the parcel, one near the southwest corner of the parcel, and the third along the western boundary north of the second test pit. The test pits were described with indications of a seasonally high permanent water table at 15 to 22 inches below the existing ground surface (bgs). A copy of the site evaluation documentation from Deschutes County is attached in Appendix C. The primary reasons cited for the denial was the predicted depth to the highest level attained by a fluctuating permanent water table. A copy of the site evaluation documentation from Deschutes County is attached in Appendix C.

Southern Deschutes County has a shallow water table that is typically unconfined in porous pumice soils and is susceptible to contamination from soluble and mobile constituents. The most common constituent of concern is nitrate-nitrogen from septic systems. The onsite rules require a minimum of 24 inches of separation from the upper limit of the water table to the bottom of a bottomless sand filter as well as being 24 inches below the ground surface.

Soils

The web soil survey shows the location of the Site and a copy of the output from the web soil survey is provided in Appendix D. The entire parcel is shown within a delineation of Map Unit 144A, Sunriver sandy loam 0 to 3 percent slopes. Sunriver soils are described as very deep, somewhat poorly drained soils that formed on pumice mantled stream terraces. The typical profile generally consists of the following:

[1] Onsite wastewater treatment systems, 340 OAR § 340.71. (2020).

- Up to 2 inches of organic material underlain by,
- 5 inches of very dark gray ashy sandy loam underlain by,
- 15 inches of dark gray ashy loamy coarse sand underlain by,
- 9 inches of light brownish gray ashy coarse sand underlain by,
- 31 inches of very dark gray sandy loam.

The Sunriver series is described as having a water table that rises to about 2 to 4 feet below the surface from April to June.

The characteristics observed at the Site are reasonably similar to the Sunriver series. The primary differences between the conditions noted in the 2015 soil notes and the conditions typical for the Sunriver series are related primarily to coloration (browner colors) that are more indicative of the Shanahan series.

Preliminary Assessment

The Site was reviewed by Brian Rabe, CPSS, WWS, on August 4, 2023. The purpose was to review the Site conditions and assess the potential to design a modified bottomless sand filter that incorporates additional fill to create adequate separation from the underlying water table following advanced secondary treatment meeting the criteria for Treatment Standard 2 (TS2). The proposed bottomless sand filter area is located on this highest ground, represented by Test Pit 3 in the 2018 site evaluation (northeastern part of the lot - see Figure 2 and Appendix C). The area to the west (northwest corner of the lot) is slightly higher, however, EHC was not able to confirm the absence of a well within 100 feet on the neighboring property to the west.

Other Considerations

This parcel and developed parcels in the surrounding area are served by individual private wells. A search of the database of the Oregon Department of Water Resources was conducted for the section that the subject property lies within (Section 12 of Township 20 South, Range 10 East of the Willamette Meridian). There are about 496 records on file for this section. A total of 15 water well records (well logs) were identified in Section 12 that could be tied to specific parcels within about one-eighth of a mile of the subject property (Appendix E).

The nearest well that could be identified is on Tax Lot 600 and is about 110 feet to the north-northeast of the bottomless sand filter area. This well was completed on April 8, 2021, to a depth of 84 feet. Water was described as being first found at a depth of 68 feet within a layer of "fractured brown rock" and had a static water level of 26 feet bgs on the date of completion with a reported yield of 22 gallons per minute (gpm) with 3 feet of drawdown after 2 hours with a pump.

The next closest well is for Tax Lot 800, about 200 feet northwest of the proposed bottomless sand filter area. This well was completed on May 19, 2021, to a depth of 94 feet. Water was described as being first found at a depth of 67 feet within a layer of "fractured brown rock" and had a static water

level of 17 feet bgs on the date of completion with a reported yield of 18 gpm with 40 feet of drawdown after 1 hour with a pump. with 3 feet of drawdown after 2 hours with a pump.

The well for Tax Lot 2100 is about 220 feet east-southeast of the proposed bottomless sand filter area and was completed on September 11, 2017, to a depth of 60 feet. Water was described as being first found at a depth of 40 feet in a layer of "Grey clay" and had a static water level of 30 feet bgs on the date of completion with a reported yield of 10 gpm with no drawdown after 4 hours with a pump.

The well for Tax Lot 500 is about 230 feet to the northeast and was completed on September 8, 2020 to a depth of 89 feet. Water was described as being first found at a depth of 78 feet within a layer of "fractured brown rock" and had a static water level of 17 feet bgs on the date of completion with a reported yield of 15 gpm with 40 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 5700 is about 240 feet to the north-northeast of the proposed bottomless sand filter area and was completed on March 14, 2022, to a depth of 87 feet. Water was described as being first found at a depth of 57 feet in a layer of "soft black rock porus" and had a static water level of 22 feet bgs on the date of completion with a reported yield of 10 gpm with 15 feet drawdown after 2 hours with a pump.

The well for Tax Lot 300 is about 380 feet northeast of the proposed bottomless sand filter area and was completed on April 26, 2007, to a depth of 80 feet. Water was described as being first found at a depth of 63 feet in a layer of "broken rock" and had a static water level of 15 feet bgs on the date of completion with a reported yield of 20 gpm with 45 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 3500 is more than 450 feet to the southwest of the proposed bottomless sand filter area and was completed on September 20, 2018, to a depth of 77 feet. Water was described as being first found at a depth of 9 feet in a layer of "sandy loam and pumice" but this layer was sealed off. Water was next described as being found at a depth of 63 feet in a layer of "greenish clay and sand layers" followed by a layer of "coarse sand and gravel" and had a static water level of 22 feet bgs on the date of completion with a reported yield of 22 gpm with no drawdown after 2 hours with a pump.

The well for Tax Lot 5500 is about 510 feet northeast of the proposed bottomless sand filter area and was completed on July 10, 2019, to a depth of 72 feet. Water was described as being first found at a depth of 57 feet in a layer of "soft black rock fractured" and had a static water level of 14 feet bgs on the date of completion with a reported yield of 20 gpm with 20 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 3400 is more than 520 feet to the south-southwest of the proposed bottomless sand filter area and was completed on December 4, 2021, to a depth of 75 feet (This record is mislabeled – the well is actually on Tax Lot 3300, as shown on the site plan for the recently constructed home). Water was described as being first found at a depth of 63 feet in a layer of "black gravel and cinder" and had a static water level of 17 feet bgs on the date of completion with a reported yield of 20 gpm with 4 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 2200 is about 560 feet east-southeast of the proposed bottomless sand filter area. This well was completed on September 7, 2021, to a depth of 85 feet. Water was described as being

first found at a depth of 60 feet within a layer of "soft black rock porus" underlain by a layer of "fractured brown rock" and had a static water level of 19 feet bgs on the date of completion with a reported yield of 14 gpm with 10 feet of drawdown after 2 hours with a pump.

The well for Tax Lot 3200 is about 570 feet south-southwest of the proposed bottomless sand filter area. This well was completed on April 28, 2021, to a depth of 75 feet. Water was described as being first found at a depth of 70 feet within a layer of "gray rock" and had a static water level of 18 feet bgs on the date of completion with a reported yield of 20 gpm with 5 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 5300 is about 570 feet northeast of the proposed bottomless sand filter area. This well was completed on December 2, 2021, to a depth of 85 feet. Water was described as being first found at a depth of 16 feet in a layer of "ash," but this layer was sealed off. Water was next described as being found at a depth of 65 feet in a layer of "Fractured brown rock" and had a static water level of 17 feet bgs on the date of completion with a reported yield of 20 gpm with 43 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 5200 is about 590 feet northeast of the proposed bottomless sand filter area, and was completed on January 13, 2018, to a depth of 85 feet. Water was described as being first found at a depth of 55 feet in a layer of "soft black rock" and had a static water level of 18 feet bgs on the date of completion with a reported yield of 23 gpm with 27 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 4500 is about 620 feet north-northwest of the proposed sand filters. This well was completed on January 29, 2018, to a depth of 84 feet. Water was described as being first found at a depth of 50 feet in a layer of "soft black rock and sand" and had a static water level of 14 feet bgs on the date of completion with a reported yield of 22 gpm with 30 feet of drawdown after 1 hour with a pump.

The well for Tax Lot 100 (formerly 12200) is about 660 feet east-northeast of the proposed sand filters. This well was completed on November 2, 1992, to a depth of 95 feet. Water was described as being first found at a depth of 91 feet in a layer of "cinders" and had a static water level of 17 feet bgs on the date of completion with a reported yield of 30 gpm with 7 feet of drawdown after 5 hours with a pump.

The regional groundwater gradient, as indicated in a study published by the U.S. Geological Survey, is to the east-northeast toward the Deschutes River.[2] The subject property is located within Management Area 3, which recommends a 79% to 100% reduction from the base scenario loading (standard systems) for existing and future homes. The results of the Nitrate Loading Management Model within the study (Figures 25 and 26) suggest that this area represents a moderate to high risk of adverse impacts to groundwater quality. According to the interactive map for Oregon Domestic Well Testing, this part of Deschutes County has an average nitrate-nitrogen concentration in domestic wells of 0.51 milligrams per liter (mg/L) with 7.58% exceeding 3 mg/L and none exceeding 10 mg/L (based on 211 test results, viewed on November 6, 2023).[3]

[2] Morgan, D. S., & Hinkle, R. S. (2007). *Evaluation of approaches for managing nitrate loading from on-site wastewater systems near La Pine, Oregon*, (Scientific Investigations Report 2007-5237). Reston, VA: U.S. Geologic Survey.

[3] ARC GIS Online. (n.d.). Oregon domestic well testing, [Data file]. Retrieved November 6, 2023, from ARC GIS Online: https://www.arcgis.com/apps/MapSeries/index.html?appid=c0d7daea497049c1a686d07dab7106e5

Formal Variance Request

Variance is requested from the following rules:

1. OAR 340-071-0135(1) – which addresses Department of Environmental Quality (DEQ) approval of new or innovative technologies, materials, or designs for onsite systems.[1]
2. OAR 340-071-0150(4)(a)(B) – which requires all criteria for approval shall be met.[1]
3. OAR 340-071-0290(4)(d) – which states that the water table is at least 24 inches bgs throughout the year.[1]

This request seeks to overcome the limitations of this Site by treating the sewage using a recirculating textile filter system (AdvanTex® AX20N-Mode 3B) prior to discharge into an elevated bottomless sand filter. AdvanTex units do an effective job of reducing five-day biochemical oxygen demand and total suspended solids to below 10 mg/L. Nitrogen is often fully converted from ammonia-nitrogen to nitrate-nitrogen (greater than 90%). Operating in Mode 3, the AdvanTex unit reduces total nitrogen sufficiently to meet TS2 (less than 30 mg/L). The DEQ approval of the AX20N in Mode 3B includes an ultraviolet light to satisfy the pathogen reduction requirements of TS2. However, this request

includes the use of a modified bottomless sand filter to achieve the pathogen reduction requirements of TS2 instead of an ultraviolet light and, therefore, this configuration does not have (or need) an ultraviolet disinfection unit. The "B" designation indicates the AdvanTex unit is configured with the second pump for the final discharge to the modified bottomless sand filter. A post-anoxic treatment process (RidNOx^{TM}) is proposed to reduce the total nitrogen concentration in the final effluent pumped to the modified bottomless sand filter to less than 2 mg/L.

The AX20 systems in the La Pine project produced a effluent with an average total nitrogen (TN) concentration of 17 mg/L. A post-anoxic process similar to the RidNOx unit that is proposed, referred to at the time as Nitrex, was tested following treatment through a lined intermittent sand filter. The Nitrex unit consisted of a 2-compartment concrete tank filled with what was described as a proprietary carbon media (wood chips).

The sand filters in the La Pine project produced an average TN of about 50 mg/L and the final effluent from the Nitrex units had an average TN of 2.4 mg/L, representing a 96% reduction from the 60 mg/L average TN concentration in the septic tank effluent. So long as there is sufficient soluble carbon being released from the wood chips, and the hydraulic loading rate is low enough to allow the dissolved oxygen in the effluent to approach zero, the NO_3-N concentration will typically be below the method detection limit. What nitrogen remains in the effluent will often be organic, as measured by the Total Kjeldahl Nitrogen (TKN) method. The organic nitrogen may be subsequently oxidized in the bottomless sand filter, but is just as likely to be retained or recycled in the biomass that develops in the sand filter media. Therefore, the concentration of nitrogen leaving the bottomless sand filter after treatment through both the AX20 and the RidNOx unit is expected to be even lower than the results from the La Pine project.

The RidNOx unit described in this proposal is configured similar to larger units used on several systems permitted under Water Pollution Control Facilities (WPCF) permits and monitored on a regular basis. Some of these units have been in tanks and some have been in lined basins. Typical

results from the post-anoxic process (prior to discharge, typically to a soil absorption system) include NO3-N concentrations near or below the method detection limit and TKN concentrations between 1 and 3 mg/L.

A recent test result (August 2022) from a similarly configured system (predominantly residential sources using AdvanTex treatment with Mode 3-style pre-anoxic denitrification, followed by post-anoxic treatment in tanks filled with wood chips) produced a TKN concentration of 0.68 mg/L and a NO_3-N concentration of 0.13 mg/L for a TN of 0.81 mg/L.

A recent test result (July 2022) from a high-nitrogen source (150 mg/L TKN treated by AdvenTex with alkalinity augmentation to support full nitrification, configured in a Mode 3-style pre-anoxic process, followed by post-anoxic treatment in lined wood-chip beds) produced a TKN concentration of 0.99 mg/L and a NO_3-N concentration of 0.05 mg/L for a TN of 1.04 mg/L. Assuming a maximum 65 to 75% reduction from the starting concentration, the NO_3-N concentration entering the post-anoxic process is expected range between 40 and 45 mg/L, similar to the sand filter effluent from the La Pine Project and higher than what is expected from the AX20 in a residential scenario.

Based on the performance of the commercial systems described above, and a typical residential TN concentration of 60 mg/L, an average TN concentration in the AX20 effluent of 17 mg/L, the TN concentration leaving the RidNOx unit and going to the modified bottomless sand filter the typical reduction from the base scenario presented in the groundwater study cited previously is expected to be approximately 98 percent.

The initial and replacement bottomless sand filter areas are proposed on the highest ground near the southeast corner of the parcel. This represents an area with the appropriate spatial footprint and meets all required horizontal setback requirements.

Test Pit 1 (2023) was described as:

- Very dark grayish brown (10YR 3/2) loamy coarse sand from 0 to 11 inches with weak medium and coarse subangular blocky structure; common very fine and fine, and few medium roots; underlain by
- Very dark grayish brown (10YR 3/2) loamy coarse sand from 11 inches to 21 to 37 inches, weak fine subangular structure to structureless (single grain); few very fine, fine, and medium roots; with redoximorphic features described beginning at a depth of 22 inches; underlain by
- Very dark brown (10YR 2/2) sandy loam from 21 to 37 inches to 46 inches with moderate medium and fine subangular blocky structure; few roots; with redoximorphic features throughout.

Relative elevation measurements were made at all 4 corners of both the proposed initial and replacement bottomless sand filters as well as at the existing ground surface adjacent to Test Pit 1 (2023). The highest level of the water table is expected to be slightly less than 21 inches below the existing ground surface at the lowest point within the area proposed for the initial and replacement sand filters based on the depth to the redoximorphic features described in Test Pit 1 (2023).

The proposed system seeks to overcome this limitation by elevating the modified bottomless sand filter in a manner that provides an additional 3 inches of separation (Figure 3). The sod and underlying sandy soil to a depth of 6 inches within the footprint of the sand filter will be excavated and replaced with sand filter media. An additional 6 inches of sand filter media (total of 12 inches) will be used to exceed the 24-inch separation from shallowest water table depth standard by providing a total separation of 27 inches.

Deschutes County has noted that the results of the Nitrate Management Loading Model indicated that there was little to no surplus capacity within Management Area 3 to accommodate additional lots that were denied or otherwise not expected to be approved. More than a dozen parcels have been approved through the formal variance process in this area and concern has been expressed about the cumulative effects of the additional nutrient load on groundwater and surface water quality.

Brian Rabe will need to be involved during the construction of this system to install the lysimeter in the sand filter and oversee the installation of the RidNOx unit. Additional information regarding the installation of the RidNOx unit and the lysimeter, as well as sampling instructions, are described in Appendix F and shown in Figures 4, 5, and 6. The owner agrees to facilitate sampling of the RidNOx effluent in conjunction with routine service visits (twice per year for the first 2 years and annually thereafter) to monitor the performance. Samples will be collected from the pump basin between the RidNOx unit and the sand filter. When the media begins to show signs of depletion (as indicated by average nitrogen concentrations climbing to above 7 mg/L nitrate-nitrogen or 10 mg/L total nitrogen), the owner will schedule media replacement for the following summer when the water table is at least 30 inches below the top of the tank (to prevent displacement of the empty tank by buoyant forces). If this request is approved, a condition of approval will require access be allowed to the treatment system and sand filter by current and future property owners for periodic sampling.

In addition to the high level of treatment achieved by the AdvanTex treatment system and post-anoxic denitrification process, further treatment of the effluent will occur with predominantly unsaturated flow within the imported sand and native sandy soil beneath the bottomless sand filter (minimum of 24 inches above the highest predicted level of the underlying fluctuating water table). Small doses, coupled with substantial resting periods achieved with pressure distribution (see recommended sand filter plan detail in Figure 4), will ensure unsaturated, thin-film flow through the soils above the water table. This will further reduce pathogens and other residual contaminants. The subsoil found beneath the sandy surface soils include evidence of both oxidation and reduction of iron. Conditions that support the reduction of iron will reduce nitrate-nitrogen to nitrogen gas since nitrate ions are used as electron acceptors preferentially over iron compounds. This will facilitate additional reduction of nitrate-nitrogen as the highly treated effluent is assimilated into the environment.

As described, the proposed combination of treatment components is expected to produce a final effluent with very high quality and a low potential to impact water quality, human health, or the environment. Given the unique circumstances at this Site, strict compliance with the rules is considered to be unreasonable.

It is acknowledged that detailed plans and specifications will need to be submitted and approved before any construction can take place. It is also understood that if this request is approved, there will be

language included that allows the county to allow or require a prescriptive system that is demonstrated to perform equal to or better than what is described in this proposal.

Directions to the Site as well as a map showing the ownership of adjacent parcels along with a list of names and addresses are attached in Appendix G. If you have any questions or comments, please do not hesitate to contact me directly at (503) 881-1604.

Sincerely,
ELKHORN CONSULTING LLC

Brian T. Rabe, CPSS, WWS
Principal Soil Scientist

Certified Professional
Soil Scientist
BRIAN T. RABE
15239 Exp. 31DEC23
Registered Wastewater Specialist
No. EH-W-448430 Exp. 30SEP24

BTR/ddr
Enc: Figures 1-6, Appendices A-G
c: Brian Holland
Todd Cleveland, REHS – Deschutes County

FIGURES

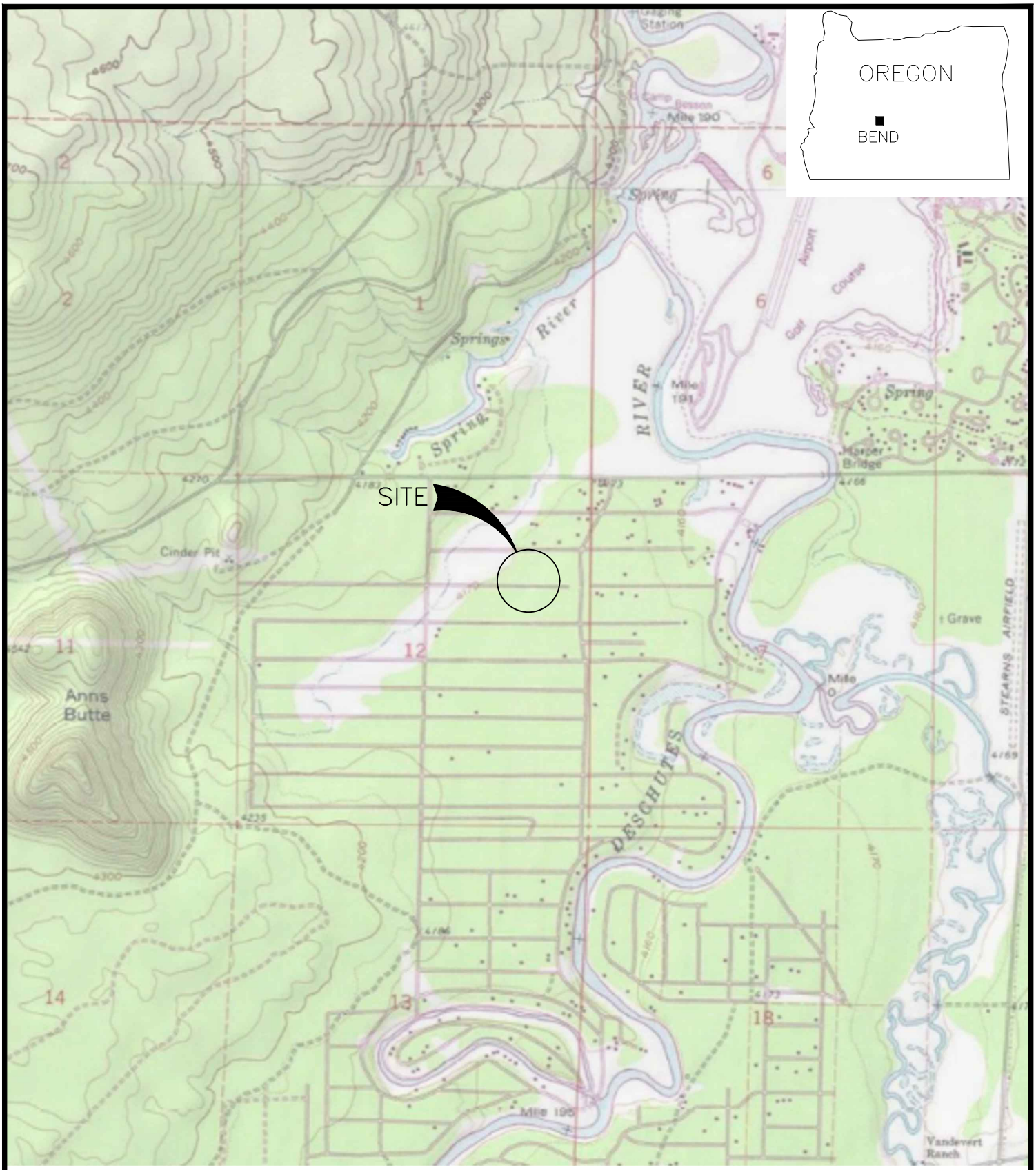

Figure 1. Vicinity Map

0 2,000'

1" = 2,000'

(LOCATIONS AND SCALE ARE APPROXIMATE)

(SOURCE: ©2013 National Geographic Society, i-cubed)

PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12AD, Tax Lot 700
DATE: 11/7/2023	
DWG NO: 2023030 F1-6.DWG	Brian Holland 17146 Covina Road Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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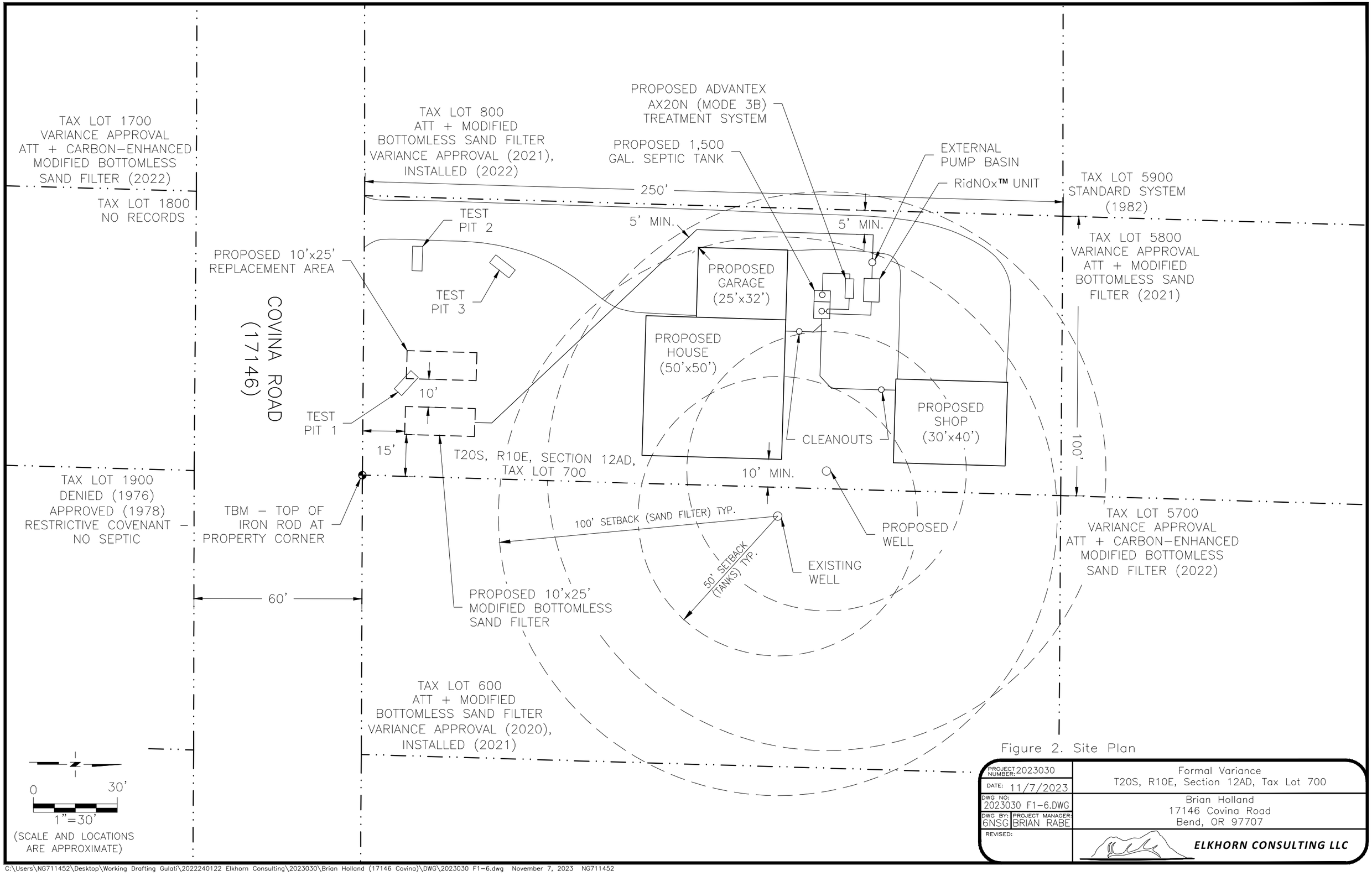

Figure 2. Site Plan

PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12AD, Tax Lot 700
DATE: 11/7/2023	
DWG NO: 2023030 F1–6.DWG	Brian Holland 17146 Covina Road Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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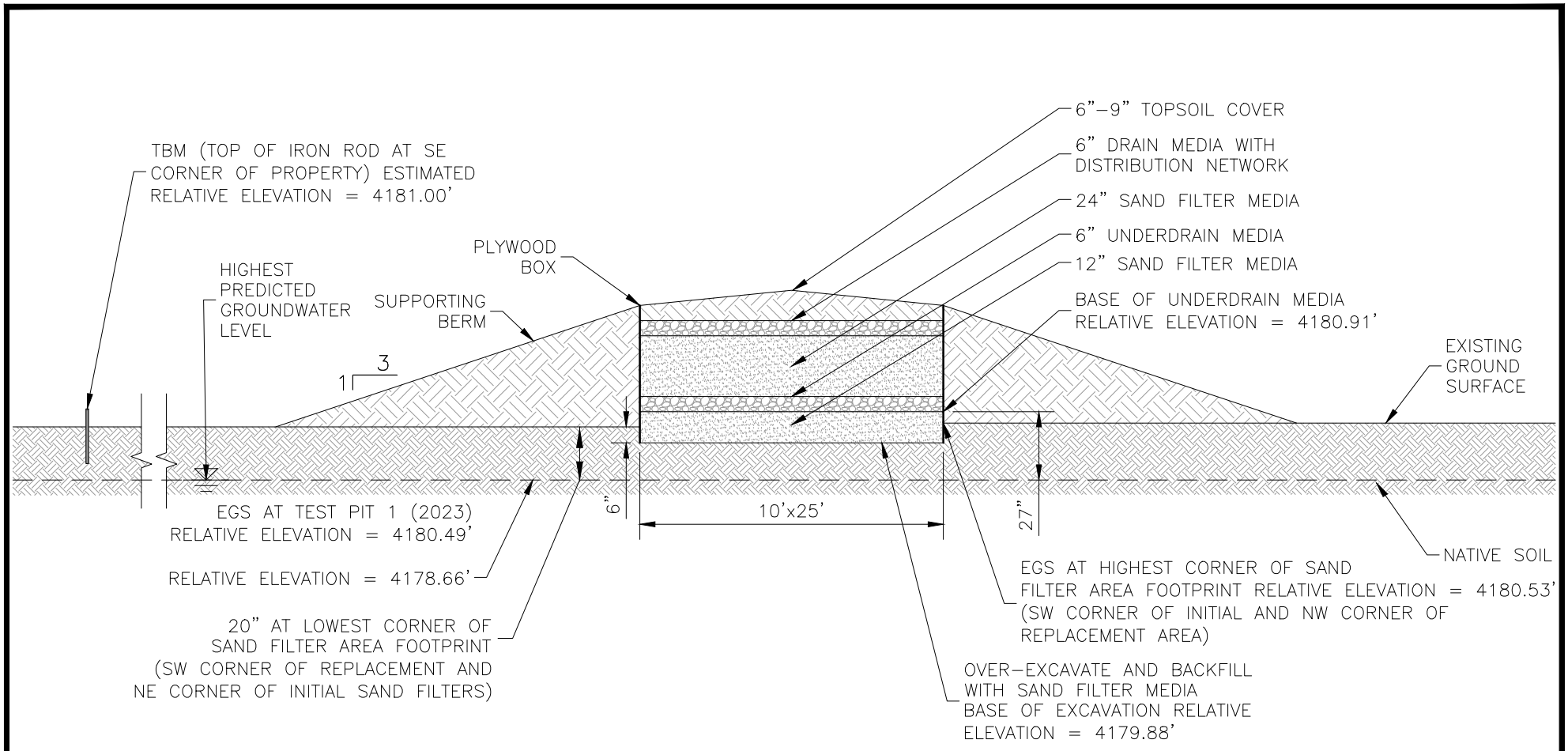

Figure 3. Modified Bottomless Sand Filter Section

PROJECT NUMBER: 2023030	Formal Variance
DATE: 11/7/2023	T20S, R10E, Section 12AD, Tax Lot 700
DWG NO: 2023030 F1–6.DWG	Brian Holland
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	17146 Covina Road
REVISED:	Bend, OR 97707
	ELKHORN CONSULTING LLC

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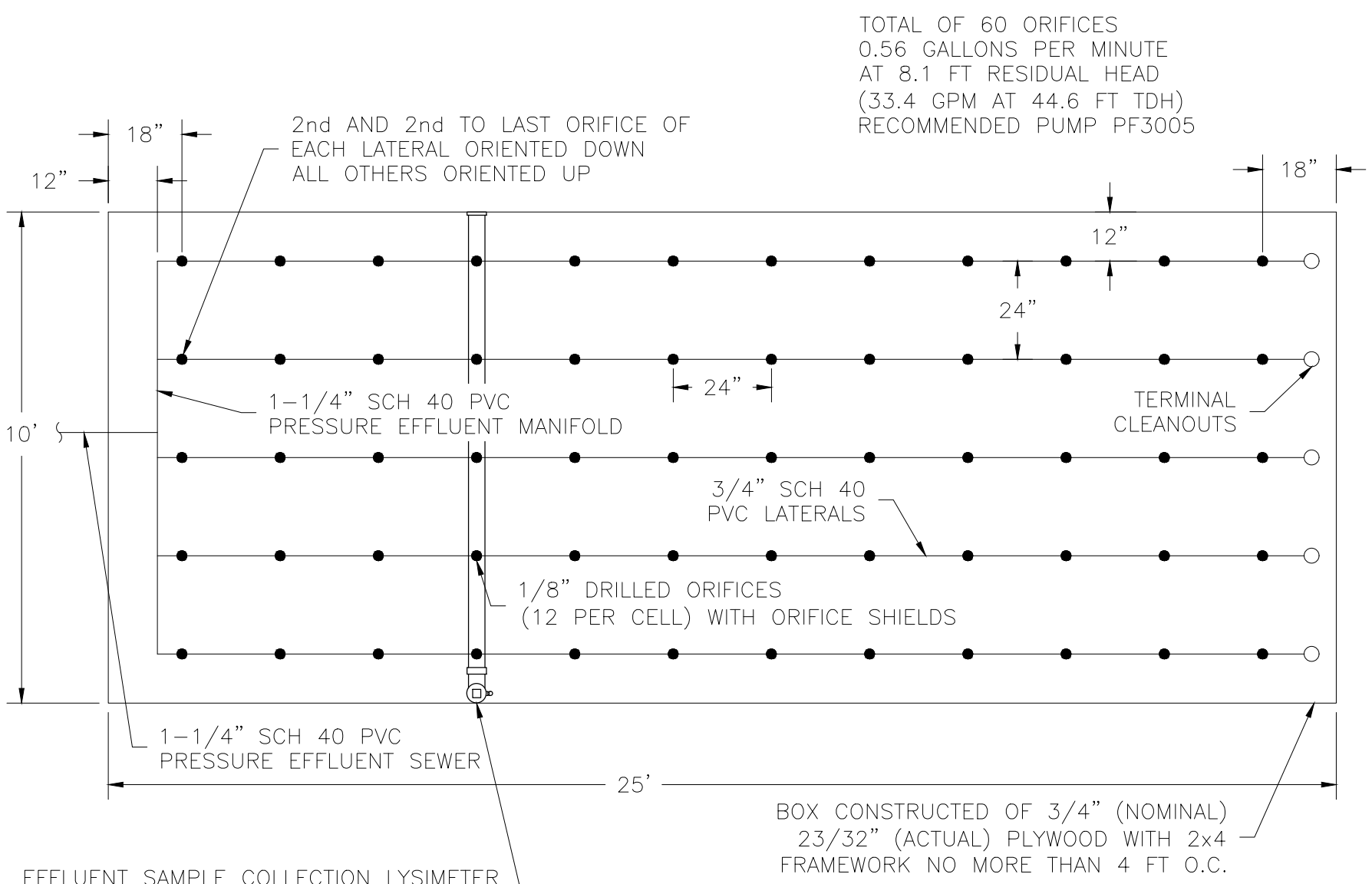

Figure 4. Sand Filter Plan Detail

PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12AD, Tax Lot 700
DATE: 11/7/2023	
DWG NO: 2023030 F1-6.DWG	Brian Holland 17146 Covina Road Bend, OR 97707
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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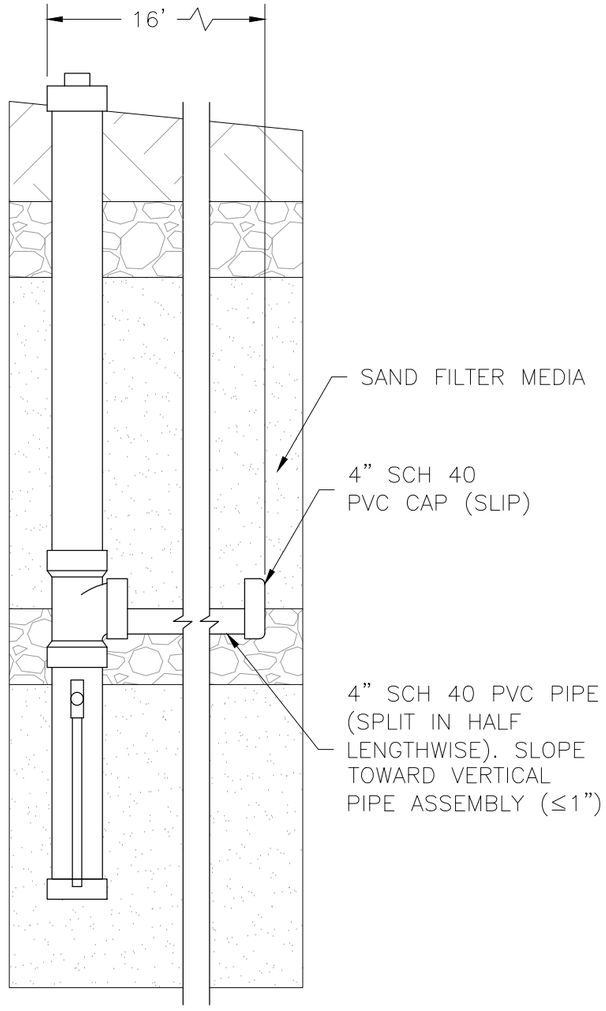
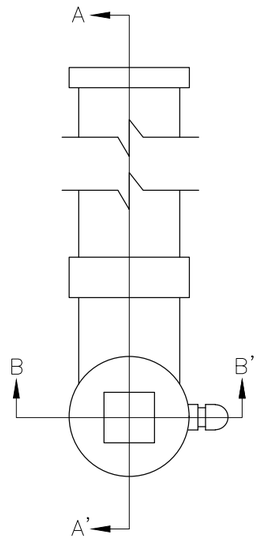


VIEW A–A'

0 1'

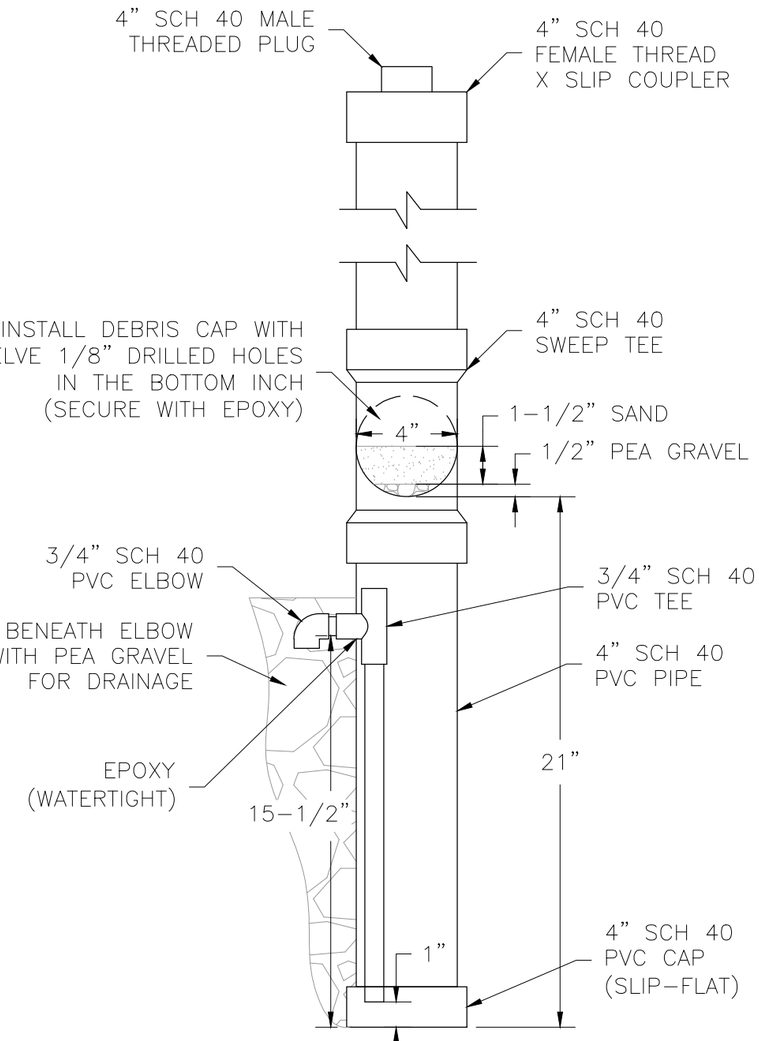
1"=1'



PLAN VIEW

0 0.5'

1"=0.5'



VIEW B–B'

0 0.5'

1"=0.5'

Figure 5. Lysimeter Details

PROJECT NUMBER: 2023030	Formal Variance T20S, R10E, Section 12AD, Tax Lot 700
DATE: 11/7/2023	
DWG NO: 2023030 F1–6.DWG	Brian Holland 17146 Covina Road Bend, OR 97707
DWG BY: 6NSG PROJECT MANAGER: BRIAN RABE	
REVISED:	ELKHORN CONSULTING LLC

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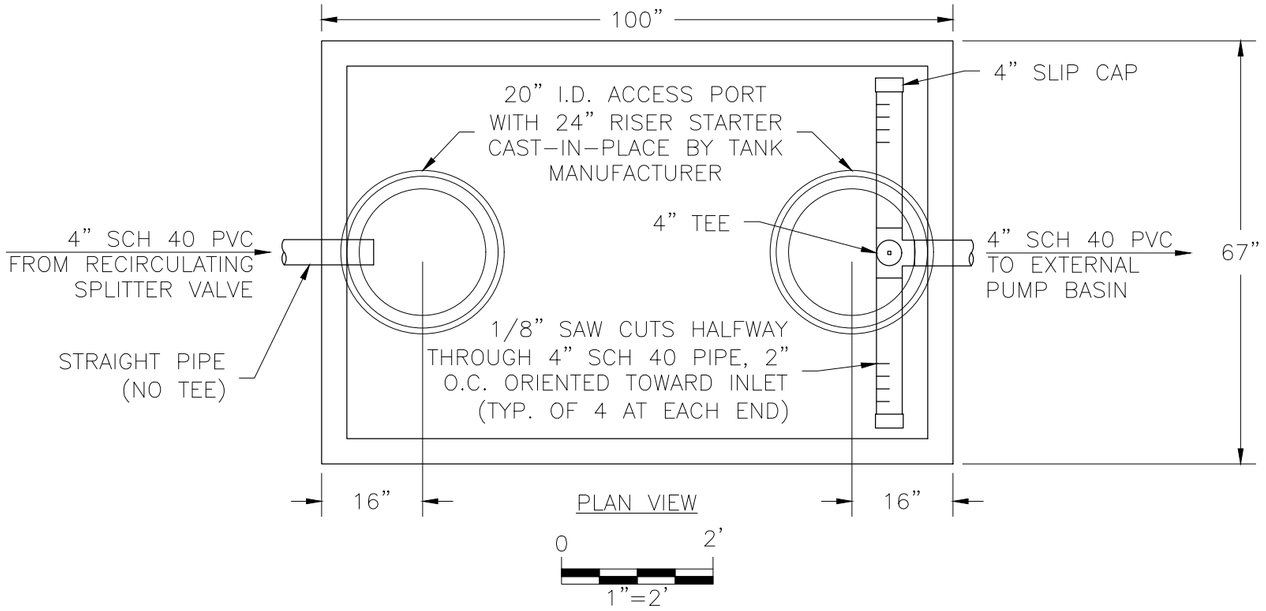

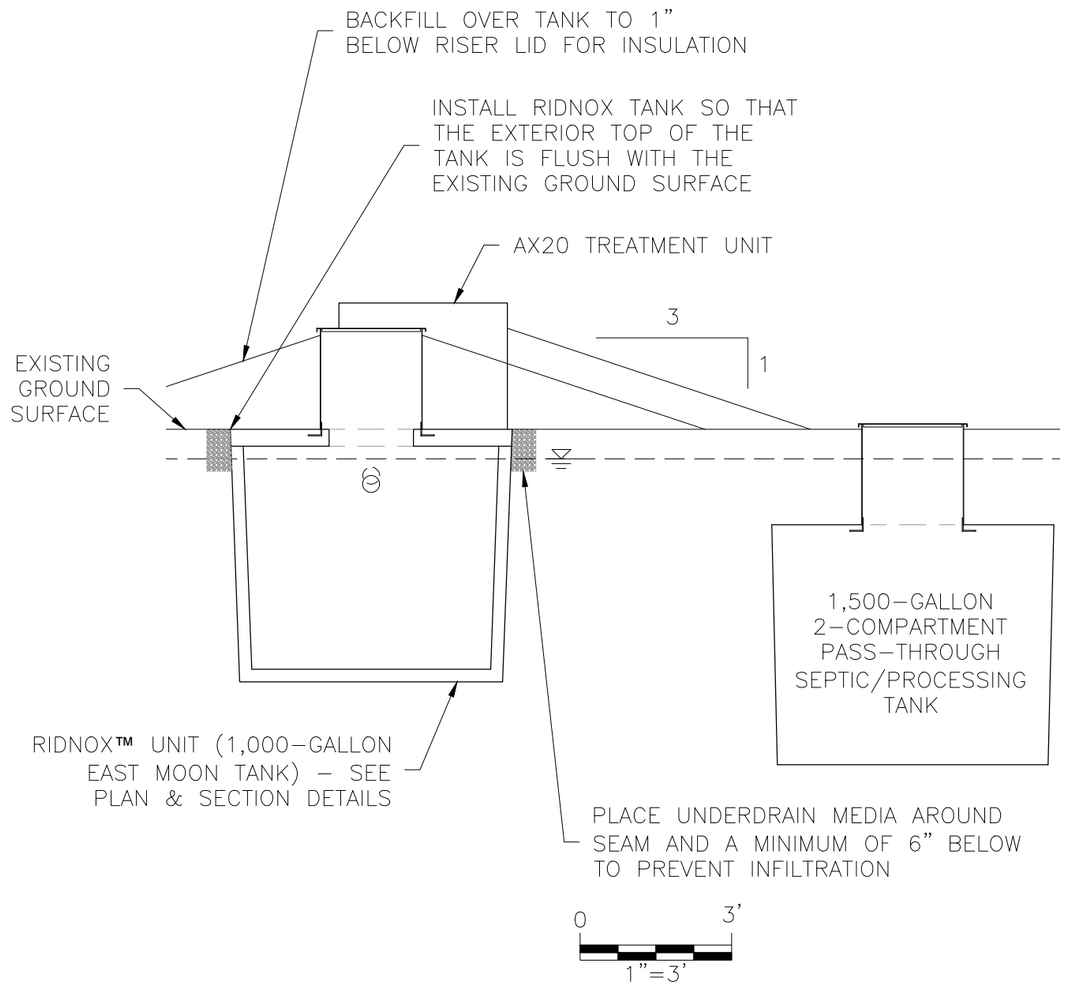

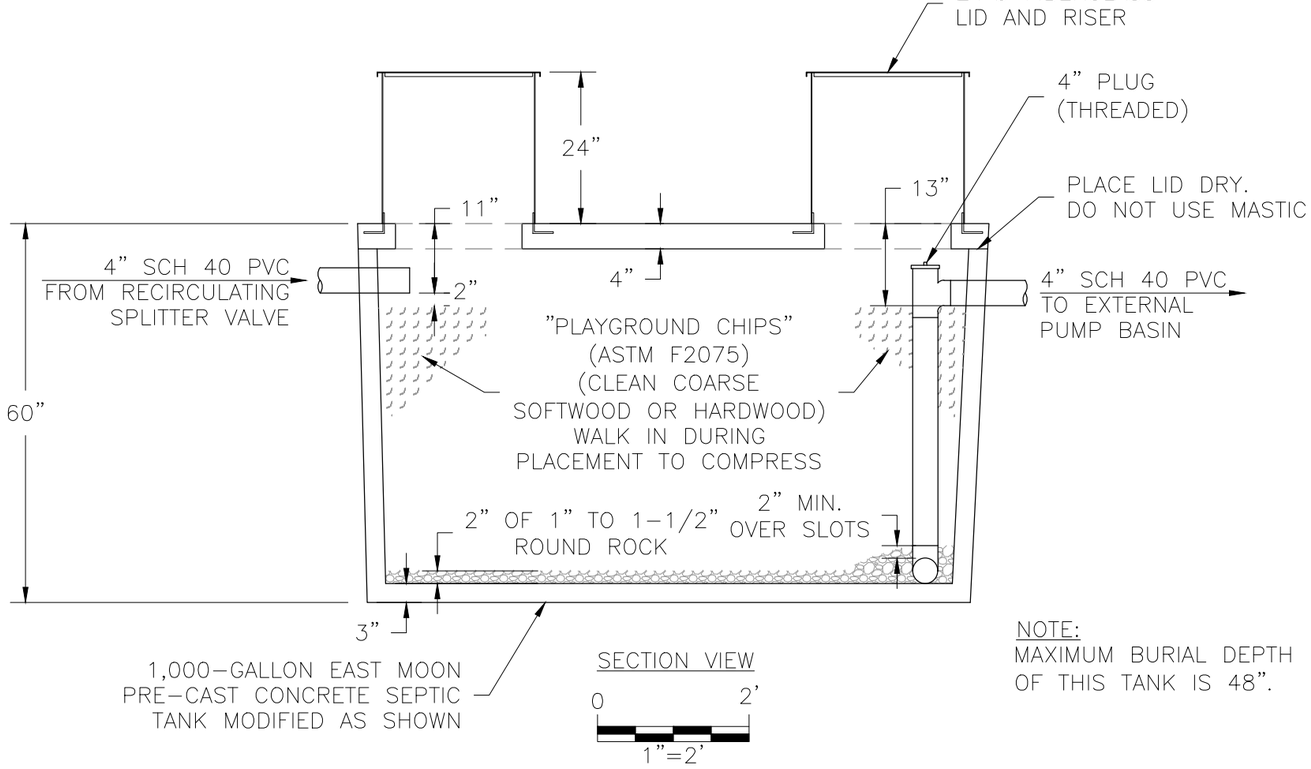

NOTE:
MAXIMUM BURIAL DEPTH OF THIS TANK IS 48".

Figure 6. RidNOx™ Details

PROJECT NUMBER: 2023030	Formal Variance
DATE: 11/7/2023	T20S, R10E, Section 12AD, Tax Lot 700
DWG NO: 2023030 F1-6.DWG	Brian Holland
DWG BY: 6NSG / PROJECT MANAGER: BRIAN RABE	17146 Covina Road
REVISED:	Bend, OR 97707
	ELKHORN CONSULTING LLC

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APPENDICES

Appendix A.

Tax Lot Map

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

5/2/2018

S.E.1/4 N.E.1/4 SEC.12 T.20S. R.10E. W.M.
DESCHUTES COUNTY
1" = 100'

20 10 12AD

20 10 12AD

Appendix B.

Deed

After recording return to:
Brian Holland
PO Box 3033
Sunriver, OR 97707

Until a change is requested all tax statements shall be sent to the following address:
Brian Holland
PO Box 3033
Sunriver, OR 97707

File No.: 7064-3650853 (SNB)
Date: January 06, 2021

THIS SPACE RESERVED FOR RECORDER'S USE

Deschutes County Official Records **2021-06666**
D-D
Stn=1 BN **02/01/2021 09:40 AM**
$15.00 $11.00 $10.00 $61.00 $6.00 **$103.00**

I, Nancy Blankenship, County Clerk for Deschutes County, Oregon, certify that the instrument identified herein was recorded in the Clerk records.
Nancy Blankenship - County Clerk

STATUTORY WARRANTY DEED

Ellen Larsen, Grantor, conveys and warrants to **Brian Holland** , Grantee, the following described real property free of liens and encumbrances, except as specifically set forth herein:

LEGAL DESCRIPTION: Real property in the County of Deschutes, State of Oregon, described as follows:

Lot 30 in Block 20 of Deschutes River Recreation Homesites Inc., Deschutes County, Oregon.

Subject to:
1. Covenants, conditions, restrictions and/or easements, if any, affecting title, which may appear in the public record, including those shown on any recorded plat or survey.

The true consideration for this conveyance is **$45,000.00**. (Here comply with requirements of ORS 93.030)

After recording return to:
First American Title
395 SW Bluff Drive, Suite 100
Bend, OR 97702

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated this 28 day of January, 2021.

Ellen Larsen

STATE OF ~~Oregon~~ Idaho)
)ss.
County of ~~Deschutes~~ Jefferson)

This instrument was acknowledged before me on this 28 day of January, 2021 by **Ellen Larsen**.

KAREN YOUNG NOTARY PUBLIC MY COMMISSION EXPIRES 10-28-2025 STATE OF IDAHO COMMISSION NUMBER 62300

Notary Public for ~~Oregon~~ Idaho
My commission expires: October 28, 2025

CERTIFICATION OF VITAL RECORD

STATE OF IDAHO

IDAHO DEPARTMENT OF HEALTH AND WELFARE
BUREAU OF VITAL RECORDS AND HEALTH STATISTICS

CERTIFICATE OF DEATH

Date Filed NOVEMBER 06, 2020

State File No. 2020-13075

DECEDENT - LEGAL NAME
LEE A. LARSEN
AKA: LELAND ANTHONY LARSEN

SEX	SOCIAL SECURITY NUMBER	AGE	DATE OF BIRTH
MALE		76 YEARS	DECEMBER 08, 1943

BIRTHPLACE	PLACE OF RESIDENCE
SEATTLE, WASHINGTON	RIGBY, IDAHO

MARITAL STATUS AT TIME OF DEATH	NAME OF SURVIVING SPOUSE (if wife, maiden name)	WAS DECEDENT EVER IN U.S. ARMED FORCES?
MARRIED	ELLEN DOMAN	NO

FATHER - NAME	BIRTHPLACE
LLOYD JESSE LARSEN	IDAHO
MOTHER - MAIDEN NAME	BIRTHPLACE
LIANE MAZAC	CALIFORNIA

METHOD OF DISPOSITION	FUNERAL SERVICE LICENSEE
BURIAL	GLEN W. BENNETT

NAME AND ADDRESS OF FUNERAL FACILITY
ECKERSELL MEMORIAL CHAPEL, RIGBY, IDAHO

DATE OF DEATH	TIME OF DEATH	CITY, TOWN OR LOCATION OF DEATH	COUNTY OF DEATH
OCT. 28, 2020	2:21 P.M.	IDAHO FALLS, IDAHO	BONNEVILLE

CAUSE OF DEATH (underlying cause last) — Approximate Interval Between Onset and Death
a.

DUE TO (or as a consequence of)
b.

DUE TO (or as a consequence of)
c.

DUE TO (or as a consequence of)
d.

OTHER SIGNIFICANT CONDITIONS CONTRIBUTING TO DEATH but not resulting in the underlying cause given above	WAS AN AUTOPSY PERFORMED?
NONE STATED	NO

MANNER OF DEATH	NAME OF CERTIFIER	TITLE
NATURAL	JASON BLAIR CROFTS, D.O.	PHYSICIAN

CORONER SUBSEQUENT CERTIFICATION IF NECESSARY

EXTERNAL CAUSES ONLY

DATE OF INJURY	TIME OF INJURY	PLACE OF INJURY	INJURY AT WORK?

LOCATION WHERE INJURY OCCURRED

DESCRIPTION OF HOW INJURY OCCURRED

This is a true and correct reproduction of the document officially registered and placed on file with the IDAHO BUREAU OF VITAL RECORDS AND HEALTH STATISTICS

DATE ISSUED: NOVEMBER 09, 2020

This copy not valid unless prepared on engraved border displaying state seal and signature of the Registrar

JAMES B. AYDELOTTE
STATE REGISTRAR

Appendix C.

Site Evaluation Reports

September 20, 2023

HOLLAND, BRIAN
PO BOX 3033
SUNRIVER, OR 97707

RE: 247-23-000862-EVAL
17146 COVINA RD, BEND

A site evaluation for an onsite wastewater treatment system for a single family dwelling was recently completed at the property noted above. Test pits were evaluated on 9/15/23. Part of the evaluation is to determine the level to which the groundwater rises during the wet season of a normal weather year. Permanent water tables are present throughout the year although they may fluctuate in elevation seasonally. The soil indicators used to determine the level to which the water table rises include gray soils and discoloration of the soil.

In the test pits on the property the indicators suggest the water table may rise to within 15 inches of the ground surface. Stripping and staining, observed as a splotchy pattern in the soil profile, was observed starting between 15 and 22 inches below ground surface, which is a condition associated with saturation. Past observations and site evaluations in the surrounding area also verify the presence of a high water table. Extensive study and modeling of the groundwater in south Deschutes County has demonstrated that this area is sensitive to added loading from areas that do not meet separation to groundwater. **This site is denied due to high permanent groundwater observed and conditions associated with saturation.**

The site is denied based on the following:

- Does not meet minimum separation from permanent water table (OAR 340-071-0220, 0260, 0265, 0275, 0280, 0285, 0290, 0302).
- Installation of an onsite wastewater system in the area evaluated will likely lead to nitrate pollution of public waters. The Nitrate Loading Management Model indicates this area, Management Area 3, cannot sustain added loading from high groundwater lots if nitrate levels are to remain below the action level in groundwater (Morgan, Hinkle, Weick. USGS. 2007). Groundwater shall be protected from pollution that could impair existing and future beneficial uses, including domestic drinking water from wells (OAR 340-040-0020).
- Deschutes County, may not authorize installation or use of a system that is likely to pollute public waters or create a public health hazard (OAR 340-071-0130(1)).

You have 90 days from the initial site visit to provide additional test pits for evaluation at no additional fee. However, it appears that other areas on the property would not be suitable because the remainder of the lot is at a similar landscape position.

REVIEW AVAILABLE

Pursuant to Oregon Administrative rules (OAR 340-071). You may request a site evaluation report review if you believe this report to be in violation of the rules. The Oregon DEQ conducts report reviews upon submission of the appropriate application materials including: a written request that includes all information you have received from Deschutes County, the reason the report is in error including the specific Oregon Administrative Rules that

conflict with the report, and the application fee. The DEQ will review the county's report and visit the site to determine the report's compliance with the appropriate rules.

Also pursuant to this rule, you may request a variance from these rules. The Oregon DEQ reviews variance requests upon application. This is not an automatic variance. You must provide technical justification that demonstrates your proposed system will operate over an extended period of time, will not degrade the environment, and will provide public health protection.

An application, application fee, justification and exhibits, including this report, a land use compatibility statement and detailed plans of your proposed system are required for the application. Technical advice from a knowledgeable consultant is recommended. A Variance Office from DEQ will review your application and the property and issue a written determination following an informational hearing.

Deschutes County recognizes your right to a variance request. This property, however, has severe limitations for onsite wastewater treatment as noted above. Unless public health and environmental protection can be assured, a variance request cannot be supported by the Deschutes County Onsite Wastewater Division and will not likely be approved by DEQ.

For further information regarding a report review for a variance request, please contact the Oregon Department of Environmental Quality at 471 NE Bellevue Dr., #110, Bend, OR 97701, phone 541-388-6146.

If you have any questions, please do not hesitate to call this office at 541-388-6519.

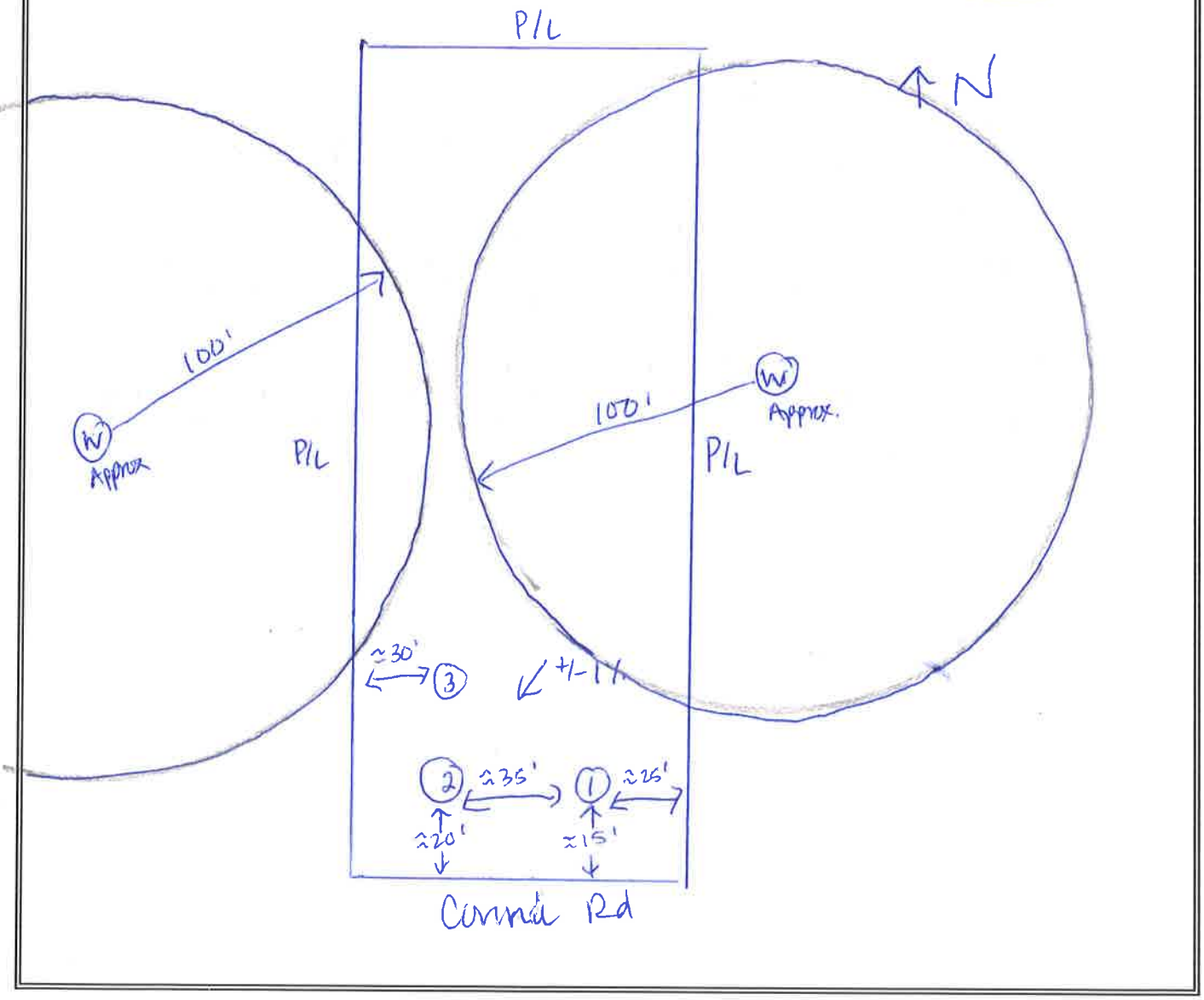
Sincerely,
Onsite Wastewater Division

KILEY RUCKER CLAMONS, REHS
Onsite Wastewater Specialist II

SITE EVALUATION FIELD INSPECTION FORM

Applicant: Brian Holland Site Evaluation # 247-23-000862-EVAL
Evaluator: K. Rucker Clamons Date: 9/15/2023 Parcel Size: 0.58 Acres
Subdivision: DRIFT T 20 R 10 S 12 TL 700 L 30 B 20

Suitable **Sketch/Not to Scale** **Unsuitable**



systems approved are the **minimum to meet current DEQ rules and are not design specifications*

System type approved: _____ Absorption facility:
Initial _____ Min. Size _____ Max. Depth _____ Min. Depth _____
Replacement _____ Min. Size _____ Max. Depth _____ Min. Depth _____
Tank Size _____ Sewage Flow _____
Special Conditions: Denied

SITE EVALUATION FIELD INSPECTION FORM

Applicant: Brian Holland Site Evaluation # 247-23-000912-EVAL
Evaluator: K. Rucker Clamons Date: 9/15/2023 Parcel Size: 0.58 Acres
Subdivision: DRH T 20 R 10 S 12 TL 700 L 30 B 20

	DEPTH	TEXTURE	COLOR	Notes on roots, structure, rock frag, redox, limiting layer type & depth
1	0-11"	LCOS	10YR 3/2	2vf2flm; 1m.csbk; FR
	11-(21-37)"	LCOS	10YR 3/2	1vf1flm; 1fsbk → sg; FR → loose; Stripping & staining @ 22"
	(21-37)-46"	SL	10YR 2/2	few roots; 2m, csbk; FR → VFI; C2f Fe concentrations @ 22"
2	0-13"	LCOS	10YR 3/2	2vf1flm; 1m, csbk; FR
	13-21"	LCOS	10YR 3/2	1vf1flm; 1f, msbk; FR; C2p Fe concentrations @ 15"
	21-48"	LCOS	10YR 3/4	few roots; 1csbk; FR → VFI; Stripping (10YR 4/2) + staining (10YR 5/6)
3	0-10"	LCOS	10YR 3/2	2vf2flm; 1m csbk; FR
	10-22"	LCOS	10YR 3/2	1vf1flm; 1f, msbk → sg; FR → loose; stripping & staining @ 18"
	22-34"	SL	10YR 2/2	few roots; 2m, csbk; FR → VFI; C2f Fe concentrations
	34-48"	XgrS	10YR 2/1	no roots; sg; loose; 70% gr
4				
5				
6				
7				

Landscape Note: lodgepole; Idaho fescue; Bitterbrush; Broadleaf Strawberry
Slope: +/- 1% Aspect: SW Groundwater: permanent
Other site notes:

Comments: Conditions associated with saturation: stripping and staining

Reason for Unsuitability: (Include Rule Reference)
See Site Evaluation Report Letter dated 9/20/23 for details.
OAR 340-071-0220, 0260, 0265, 0275, 0280, 0285, 0290, 0302
OAR 340-040-0020
OAR 340-071-0130 (1)

Appendix D.

NRCS Soil Report

United States Department of Agriculture

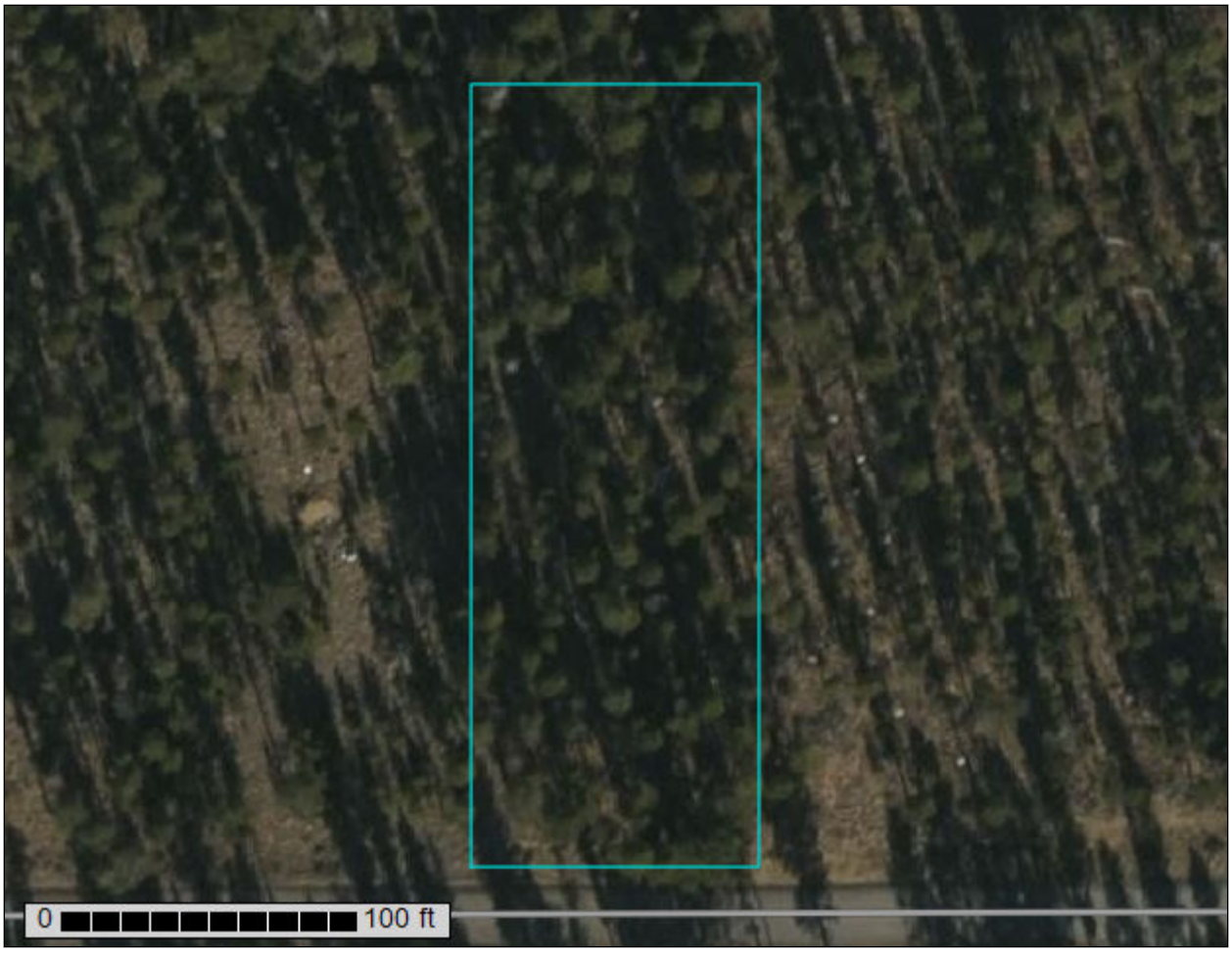
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

17146 Covina Road



November 6, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Map Scale: 1:471 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties
Survey Area Data: Version 21, Sep 8, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 1, 2019—Nov 4, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (17146 Covina Road)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
144A	Sunriver sandy loam, 0 to 3 percent slopes	0.6	100.0%
Totals for Area of Interest		**0.6**	**100.0%**

Map Unit Descriptions (17146 Covina Road)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

144A—Sunriver sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 241l
Elevation: 4,000 to 4,300 feet
Mean annual precipitation: 18 to 25 inches
Mean annual air temperature: 40 to 44 degrees F
Frost-free period: 10 to 50 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Sunriver and similar soils: 85 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sunriver

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash over old alluvium

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 20 inches: loamy coarse sand
H3 - 20 to 29 inches: coarse sand
H4 - 29 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: F006XE807OR - Cryic Aquic Pumice Basins
Hydric soil rating: No

Minor Components

Cryaquolls

Percent of map unit: 8 percent

Landform: Mountains
Ecological site: R006XB102OR - COLD WET MEADOW
Hydric soil rating: Yes

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Appendix E.

Water Well Reports

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

DESC 62559

4/9/2021

WELL I.D. LABEL# L 141968
START CARD # 1051362
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name CHRISTOPHER Last Name COLLINS
Company
Address 20 BEAZA WAY
City HOT SPR. VILLAGE State AR Zip 71909

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 84.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	84

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	14	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	70	250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
22	3	40	2

Temperature 44 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 58 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the NW 1/4 Tax Lot 600
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ○ Nearest address
17150 COVINA THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	4/8/2021		☐	26

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 8.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
4/8/2021	68	84	40		☐	26
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	4
clay and gravel	4	9
pink ash	9	13
green diatamite	13	37
gray clay and green diatamite with silt	37	60
soft black rock porous	60	68
fracured brown rock	68	83
red cinders	83	84

Date Started 4/6/2021 Completed 4/8/2021

(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

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 1528 Date 4/9/2021

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

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

DESC 62640

5/24/2021

WELL I.D. LABEL# L 142397
START CARD # 1052012
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name JASON Last Name RAMIREZ
Company
Address 8379 WEST LAWN AVE.
City L A State CA Zip 90045

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 94.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	94

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	14	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	69	250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
18	40	65	1

Temperature 46 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 90 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the NW 1/4 Tax Lot 800
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ○ Nearest address
17132 COVINA THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	5/19/2021		☐	17

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 67.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
5/19/2021	67	94	20		☐	17
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	4
clay and gravel	4	7
pink ash	7	16
gray clay and green diatamite	16	56
black silty sand with clay	56	65
fracured brown rock	65	94

Date Started 5/17/2021 Completed 5/19/2021

(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

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 1528 Date 5/24/2021

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

REVISIONS REQUESTED

L 122725

DESC 61227

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

WELL I.D. LABEL# L ~~124624~~
START CARD # 195486
ORIGINAL LOG #

DESC 61227

(1) LAND OWNER Owner Well I.D.
First Name George Last Name Lofton
Company 17161 Cooina
Address 17161 Cooina
City Bend State OR Zip 97707

(2) TYPE OF WORK ~~X~~ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD
☐ Rotary Air ☐ Rotary Mud ~~X~~ Cable ☐ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE ~~X~~ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

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

BORE HOLE Dia	From	To	SEAL Material	From	To	Amt	sacks/lbs
10	0	20	Bentonite	0	20		
6	20	60			Calculated		
					Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
Proposed Amount _____ Pounds Actual Amount _____ Pounds

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
~~X~~	☐	6	~~X~~	1	60		~~X~~	☐	~~X~~	☐

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

(7) PERFORATIONS/SCREENS Perforations Method Torch
~~X~~ Screens Type _____ Material _____

Perf/Screen	Casing/Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/pipe size
		6"	40	60	1/4"	4"	30	

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

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
10	0		1 HR

Temperature _____ °F Lab analysis ☐ Yes By _____
Water quality concerns? ☐ Yes (describe below) TDS amount _____

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
County Deschutes Twp _____ N/S Range _____ E/W WM
Sec _____ _____ 1/4 of the _____ 1/4 Tax Lot _____
Tax Map Number _____ Lot _____
Lat _____ ° _____ ' _____ " or _____ DMS or DD
Long _____ ° _____ ' _____ " or _____ DMS or DD
○ Street address of well ○ Nearest address
17161 Cooina

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well				

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found _____

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
9-10-17	40	60	10			30

(11) WELL LOG Ground Elevation _____

Material	From	To
Sandy Loam	0	10
Gray Clay	10	55
Black Sand	55	60

RECEIVED
JUN 26 2018
OWRD

Date Started 9-10-17 Completed 9-11-17

(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 _____
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 1557 Date 5-22-18
Signed _____
Contact Info (optional) _____

ORIGINAL - WATER RESOURCES DEPARTMENT
THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version: 0.95

DESC 61227

OREGON WATER RESOURCES DEPARTMENT
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301
(503) 986-0900
www. oregon.gov/owrd

Application for Well ID Number

RECEIVED
MAR 09 2021
OWRD

Do not complete if the well already has a Well Identification Number.

I. OWNER INFORMATION

Current Owner Name *(please print)*: GEORGE E LOFTEN, JR.
Mailing Address: 16887 COUINA RD.
City, State, Zip: BEND, OR 97707
Mail Well ID to: ☐ ~~SAME AS ABOVE~~ ☐ In Care Of (C/O) N/A - TAG PLACED ON WELL
Name & Address: BY INSPECTOR
City, State, Zip:

II. WELL LOCATION INFORMATION *(Please fill out as completely as possible)*

Township: 20 (North / South) Range: 10 (East / West) Section: 12 SE 1/4 of the NE 1/4
Tax Lot (usually last 3-5 numbers of Tax Map #): 2100 County DESC.
GPS Coordinates: 43.85846 ; -121.46830
Street Address of Well. City: 17171 COUINA RD., BEND, OR 97707
If the property had a different street address in the past:

III. GENERAL WELL INFORMATION *(Please fill out as completely as possible, AND attach copy of Well Report, if available)*

Use of Well (domestic, irrigation, commercial, industrial, monitoring): Well shared amongst 2. RV's on Lots 2000+ 2100
Date Well Constructed (or property built): 9/11/2017 Total Well Depth: 60' Casing Diameter: 6"
Owner at time the well was constructed (if known): GEORGE LOFTEN, JR Well Report # (if known): DESC 61227
Other Information:

SUBMITTED BY *(please print)*: WILLIAM NASHEM - SCTC WELL INSPECTOR
PHONE: 541/639-4109 **EMAIL &/or FAX:** William.d.nashem@oregon.gov

Send application to: Oregon Water Resources Department 725 Summer St NE. Suite A, Salem, Oregon 97301, fax to (503) 986-0902, or you are welcome to email the completed form to Ladeena.K.Ashley@oregon.gov.

For Official Use Only by the Oregon Water Resources Department:

Received Date:	Well Report Number:	Well Identification #:
3-9-21	DESC 61227	L122725

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

DESC 62216

9/8/2020

WELL I.D. LABEL# L 139850
START CARD # 1048866
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name PAUL Last Name CAIRNS
Company
Address 17154 COVINA
City BEND State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 89.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	89

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	18	S
		Calculated	11	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	73	250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
15	40	70	1

Temperature 37 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 54 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 NE 1/4 of the NE 1/4 Tax Lot 500
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ○ Nearest address
17154 COVINA, BEND, OR 97707

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	9/8/2020			17

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 78.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
9/8/2020	78	89	15			17

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	3
clay and gravel	3	12
pink ash	12	16
gray clay and green diatamite with silt	16	61
soft black rock porous	61	78
fracured brown rock	78	89

Date Started 9/4/2020 Completed 9/8/2020

(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

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 1528 Date 9/8/2020

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.545 & 537.765 and OAR 690-205-0210)

DESC 63263
3/20/2022

WELL I.D. LABEL# L 144528
START CARD # 1055863
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name STACY Last Name HAMPTON
Company
Address 16869 SW 65TH #287
City LAKE OSWEGO State OR Zip 97035

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:						◯	◯	☐	☐

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 87.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	87

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	15	S
		Calculated	12	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
◉	◯	6	☐	0	70	250	◉	◯	☒	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
10	15	40	2

Temperature 47 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 55 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 1/4 of the 1/4 Tax Lot 5700
Tax Map Number Lot
Lat ° ' " or 43.85917000 DMS or DD
Long ° ' " or -121.46904000 DMS or DD
◉ Street address of well ◯ Nearest address
17149 BAKERSFIELD THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	3/14/2022		☐	22

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 57.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
3/14/2022	57	87	10		☐	22
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	3
cobbles	3	4
coarse gravel	4	5
coarse brown sand and gravel	5	9
brown clay	9	10
gray clay	10	12
green diatamite	12	28
gray clay green diatamite and silt	28	48
yellow brown diatamite	48	57
soft black rock porus	57	65
fine black sand	65	70
fractured brown rock	70	87

Date Started 3/7/2022 Completed 3/14/2022

(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

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 1528 Date 3/18/2022

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version:
New exempt use wells must be submitted with a map and recording fee.

WATER SUPPLY WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

DESC 63263

3/20/2022

Map of Hole

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department
725 Summer St NE, Salem OR 97301
(503)986-0900

LOCATION OF WELL

Latitude: 43.85917000 Datum: WGS84
Longitude: -121.46904000
Township/Range/Section/Quarter-Quarter Section:
WM20.00S10.00E12SENE
Address of Well:
17149 BAKERSFIELD THREE RIVERS

Well Label: 144528

Printed: March 18, 2022

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor

DESC 58178

DESC 58178

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

WELL LABEL # L 90102

START CARD # 192815

(1) LAND OWNER Owner Well I.D.

First Name jason Last Name grizzle

Company

Address 250 market st.

City lebanon State or Zip 97355

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

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

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

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

Depth of Completed Well 80 ft.

BORE HOLE Dia	From	To	SEAL Material	From	To	Amt	sacks/ lbs
11	0	20	Bentonite Chips	0	20	15	S
6	20	80					

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

[X] Other poured

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
●		6"	X	1	62	250	●		X	

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

Temp casing [ ] Yes Dia From To

(7) PERFORATIONS/SCREENS

Perforations Method

Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

(●) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	45	60	1

Temperature 47 °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 20 S N/S Range 10 E/W WM

Sec 12 NE 1/4 of the NE 1/4 Tax Lot 12500

Tax Map Number Lot

Lat ° 0 ' " or DMS or DD

Long ° 0 ' " or DMS or DD

(●) Street address of well ( ) Nearest address

17174 covina

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Predeepening				
Completed Well	04-30-2007			15

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 5

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
04-30-2007	63	80				15

(11) WELL LOG Ground Elevation

Material	From	To
soil and pumice	0	4
brown clay	4	11
pink ash	11	15
green diatamite	15	63
broken rock	63	80

RECEIVED
AUG 17 2007
WATER RESOURCES DEPT
SALEM, OREGON

RECEIVED
JUN 06 2008
WATER RESOURCES DEPT
SALEM, OREGON

Date Started 04-25-2007 Completed 04-26-2007

(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 1528 Date

Password : (if filing electronically) *******

Signed

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

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

Form Version: 0.88

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

DESC 61441

3/6/2019

WELL I.D. LABEL# L 129732
START CARD # 1039892
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name PAUL Last Name HUMPHREY
Company
Address 62935 FLORENCE DRIVE
City BEND State OR Zip 97701

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:						◯	◯	☐	☐

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 77.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	77

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	15	S
		Calculated	9.13	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
◉	◯	6	☒	2	77	.250	◉	◯	☒	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐

Shoe ☐ Inside ☒ Outside ☐ Other Location of shoe(s) 77
Temp casing ☐ Yes Dia From + ☐ To

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
22	0	50	2

Temperature 51 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 92 ppm

From	To	Description	Amount	Units
63	77	PH	7.8	ppb

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the NE 1/4 Tax Lot 3500
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ◯ Nearest address
17118 DOWNEY ROAD, BEND, OREGON 97707

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	9/20/2018		☐	22

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
9/19/2018	9	15	10		☐	9
9/20/2018	63	77	40		☐	22
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation 4185.00

Material	From	To
Sandy Loam & Pumice	0	15
Black Clay with Sand Streaks	15	29
Greenish Clay & Sand Layers	29	66
Coarse Sand & Gravel	66	77

Date Started 9/19/2018 Completed 9/20/2018

(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

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 3/6/2019

Signed ROBERT BUCKNER (E-filed)

Contact Info (optional)

ORIGINAL - WATER RESOURCES DEPARTMENT

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

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

DESC 61652

7/12/2019

WELL I.D. LABEL# L 134573
START CARD # 1043569
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name LUCAS Last Name MAUSEN
Company
Address 17122 OXNARD
City BEND State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 72.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	72

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	11	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	65	250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	20	60	1

Temperature 44 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 58 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 NE 1/4 of the NE 1/4 Tax Lot 5500
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ○ Nearest address
17163 BAKERSFIELD

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	7/10/2019		☐	14

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 57.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
7/10/2019	57	72	30		☐	14
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	3
brown sand with clay	3	12
brown clay	12	25
gray clay and green diatamite	25	57
soft black rock fractured	57	65
grey rock fractured	65	72

Date Started 7/8/2019 Completed 7/10/2019

(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

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 1528 Date 7/12/2019

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

Amended 12/17/2021

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

DESC 63058

12/8/2021

WELL I.D. LABEL# L 145500
START CARD # 1054776
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name Last Name
Company DOWNEY RD LLC
Address 17138 DOWNEY RD
City BEND State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:						◯	◯		

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 75.00 ft.

BORE HOLE

Dia	From	To
10	0	20
6	20	75

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	20	15	S
		Calculated	12	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
◉	◯	6	☒	1	69	250	◉	◯	☒	
◯	◯						◯	◯		
◯	◯						◯	◯		
◯	◯						◯	◯		
◯	◯						◯	◯		

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	4	30	1

Temperature 51 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 45 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the SE 1/4 Tax Lot 3400
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ◯ Nearest address
17124 DOWNEY THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	12/4/2021			17

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 63.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
12/4/2021	63	75	40			17

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	3
clay and gravel	3	8
pink ash	8	17
gray clay	17	43
green diatamite	43	63
black gravel and cinder	63	75

Date Started 12/1/2021 Completed 12/4/2021

(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

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 1528 Date 12/8/2021

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

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

DESC 62890

9/7/2021

WELL I.D. LABEL# L 144550
START CARD # 1053776
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name STANISLAW Last Name SHIVETS
Company
Address 2945 NE CANE CT. #1
City BEND State OR Zip 97701

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:						◯	◯	☐	☐

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 85.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	85

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	11	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
◉	◯	6	☒	1	66	250	◉	◯	☒	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐
◯	◯		☐				◯	◯	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ◯ Bailer ◯ Air ◯ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
14	10	40	2

Temperature 50 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 25 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the NE 1/4 Tax Lot 2200
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ◯ Nearest address
17189 COVINA THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	9/7/2021		☐	19

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 60.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
9/7/2021	60	85	40		☐	19
					☐	
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	3
clay and gravel	3	10
pink ash	10	14
gray clay and green diatamite	14	60
soft black rock porus	60	65
fractured brown rock	65	85

Date Started 9/4/2021 Completed 9/7/2021

(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

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 1528 Date 9/7/2021

Signed STEVE MATHERS (E-filed)
Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

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

DESC 62600

4/29/2021

WELL I.D. LABEL# L 142317
START CARD # 1051656
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name Last Name
Company PAUL HUMPHREY REALTY TRUST
Address 62935 FLORENCE DR.
City BRND State OR Zip 97701

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 75.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	75

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	12	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	72	250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	5	45	1

Temperature 44 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 61 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 SE 1/4 of the NE 1/4 Tax Lot 3200
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
◉ Street address of well ○ Nearest address
17144 DOWNEY THREE RIVERS

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	4/28/2021			18

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 60.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
4/28/2021	70	75	40			18

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	4
clay and gravel	4	9
pink ash	9	16
gray clay	16	43
green diatamite	43	60
soft black rock porous	60	70
gray rock	70	75

Date Started 4/26/2021 Completed 4/28/2021

(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

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 1528 Date 4/29/2021

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

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

DESC 63064

12/8/2021

WELL I.D. LABEL# L 144532
START CARD # 1054727
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name KEITH Last Name PETERSEN
Company
Address 16695 MILKY WAY
City BEND State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☒ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 85.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	85

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	20	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1.5	65	.240	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

● Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
20	43	60	1

Temperature 50 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 57 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 NE 1/4 of the NE 1/4 Tax Lot 5300
Tax Map Number Lot
Lat ° ' " or DMS or DD
Long ° ' " or DMS or DD
● Street address of well ○ Nearest address
56703 SOLAR

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			☐	
Completed Well	12/2/2021		☐	17

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 16.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
11/30/2021	16	17	7		☐	16
12/2/2021	65	85	20		☐	17
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation

Material	From	To
Topsoil	0	2
Pumice	2	5
Grey clay, and sand	5	9
Ash	9	23
clay and silt layers	23	55
Soft black rock	55	65
Fractured brown rock	65	85

Date Started 11/29/2021 Completed 12/2/2021

(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 2045 Date 12/8/2021

Signed SHANE HARRIS (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 1528 Date 12/8/2021

Signed STEVE MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

WATER SUPPLY WELL REPORT - continuation page

DESC 63064

12/8/2021

WELL I.D. LABEL# L 144532

START CARD # 1054727

ORIGINAL LOG #

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Material	From	To	Amt	sacks/lbs

(5) BORE HOLE CONSTRUCTION

BORE HOLE Dia	From	To

SEAL Material	From	To	Amt	sacks/lbs
		Calculated		
		Calculated		
		Calculated		
		Calculated		

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

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

Water Quality Concerns

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(11) WELL LOG

Material	From	To

Comments/Remarks

assisted by brian stewart

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

DESC 61089

1/14/2018

WELL I.D. LABEL# L 128105
START CARD # 1037560
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name RON Last Name COZAD
Company
Address PO BOX 3274
City SUNRIVER State OR Zip 97707

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 85.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	85

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	10	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	65	250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

◉ Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
23	27	50	1

Temperature 51 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 58 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 1/4 of the 1/4 Tax Lot 12000
Tax Map Number Lot
Lat ° ' " or 43.85991200 DMS or DD
Long ° ' " or -121.46734400 DMS or DD
◉ Street address of well ○ Nearest address
17183 BAKERSFIELD SUNRIVER OR. 97707

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	1/13/2018			18

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 65.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
1/12/2018	55	65	10			19
1/13/2018	65	85	30			18

(11) WELL LOG

Ground Elevation

Material	From	To
soil and pumice	0	4
clay and gravel	4	9
pink ash	9	22
gray clay and green diatamite with fine	22	55
black silt layers	22	55
soft black rock	55	65
fractured brown rock	65	85

Date Started 1/10/2018 Completed 1/13/2018

(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

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 1528 Date 1/14/2018

Signed STEVE W MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

WATER SUPPLY WELL REPORT - continuation page

DESC 61089

1/14/2018

WELL I.D. LABEL# L 128105

START CARD # 1037560

ORIGINAL LOG #

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Material	From	To	Amt	sacks/lbs

(5) BORE HOLE CONSTRUCTION

BORE HOLE Dia	From	To

SEAL Material	From	To	Amt	sacks/lbs
		Calculated		
		Calculated		
		Calculated		
		Calculated		

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

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

Water Quality Concerns

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(11) WELL LOG

Material	From	To

Comments/Remarks

tyler mathers helper

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

DESC 61094

1/31/2018

WELL I.D. LABEL# L 128106
START CARD # 1037668
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name GREG Last Name GOSLING
Company
Address 1159 RIDGEPOINT
City KEIZER State OR Zip 97303

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Conversion ☐ Alteration (complete 2a & 10) ☐ Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD

☐ Rotary Air ☐ Rotary Mud ☒ Cable ☐ Auger ☐ Cable Mud
☐ Reverse Rotary ☐ Other

(4) PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commericial ☐ Livestock ☐ Dewatering
☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION

Special Standard ☐ (Attach copy)
Depth of Completed Well 84.00 ft.

BORE HOLE

Dia	From	To
10	0	18
6	18	84

SEAL

Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	10	S
		Calculated	10	
		Calculated		

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

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	6	☒	1	65	250	●	○	☒	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐
○	○		☐				○	○	☐	☐

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

(7) PERFORATIONS/SCREENS

Perforations Method
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

● Pump ○ Bailer ○ Air ○ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
22	30	50	1

Temperature 52 °F Lab analysis ☐ Yes By
Water quality concerns? ☐ Yes (describe below) TDS amount 50 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County DESCHUTES Twp 20.00 S N/S Range 10.00 E E/W WM
Sec 12 1/4 of the 1/4 Tax Lot 8500
Tax Map Number Lot
Lat ° ' " or 43.86033700 DMS or DD
Long ° ' " or -121.46961700 DMS or DD
● Street address of well ○ Nearest address
17130 BAKERSFIELD SUNRIVER OR. 97707

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	1/29/2018			14

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found 50.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
1/26/2018	50	65	7			19
1/29/2018	65	84	30			14

(11) WELL LOG

Ground Elevation

Material	From	To
soil and clay	0	4
clay and gravel	4	8
pink ash and gray clay	8	40
black silt layers and clay	40	50
soft black rock with and sand	50	65
fractured brown rock	65	84

Date Started 1/23/2018 Completed 1/29/2018

(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

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 1528 Date 1/31/2018

Signed STEVE W MATHERS (E-filed)

Contact Info (optional) 541 389 0743

ORIGINAL - WATER RESOURCES DEPARTMENT

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

WATER SUPPLY WELL REPORT - continuation page

DESC 61094

1/31/2018

WELL I.D. LABEL# L 128106

START CARD # 1037668

ORIGINAL LOG #

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Material	From	To	Amt	sacks/lbs

Water Quality Concerns

From	To	Description	Amount	Units

(5) BORE HOLE CONSTRUCTION

BORE HOLE Dia	From	To

SEAL Material	From	To	Amt	sacks/lbs
		Calculated		
		Calculated		
		Calculated		
		Calculated		

FILTER PACK

From	To	Material	Size

(10) STATIC WATER LEVEL

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)

(11) WELL LOG

Material	From	To

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

(7) PERFORATIONS/SCREENS

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

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

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

Comments/Remarks

helper tyler mathers

DESC 1575 DEC - 3 1992

205/10E/12

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

WATER RESOURCES DEPT.
SALEM, OREGON

(START CARD) # 46257

(1) OWNER: Well Number

Name Ron Simantel

Address 17950 S. Anderson Rd.

City Oregon City State ORE Zip 97045

(2) TYPE OF WORK:

[x] New Well [ ] Deepen [ ] Recondition [ ] Abandon

(3) DRILL METHOD:

[ ] Rotary Air [ ] Rotary Mud [x] Cable

[ ] Other

(4) PROPOSED USE:

[x] Domestic [ ] Community [ ] Industrial [ ] Irrigation

[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval [ ] Yes [ ] No Depth of Completed Well 95 ft.

Explosives used [ ] Yes [ ] No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10	0	18	Cement	0	18	8 sacks
6	18	84				

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

[ ] Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1	84	.250	[x]	[ ]	[x]	[ ]
Liner:								

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

[ ] Perforations Method

[ ] Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner

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

[x] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
30	7		5 hr.

Temperature of Water 46 Depth Artesian Flow Found

Was a water analysis done? [ ] Yes By whom

Did any strata contain water not suitable for intended use? [ ] Too little

[ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Des. Latitude Longitude

Township 20 S N or S. Range 10 E E or W. WM.

Section 12 ¼ ¼

Tax Lot 1200 Lot Block Subdivision

Street Address of Well (or nearest address) 56693 Solar Dr Bend Ore.

(10) STATIC WATER LEVEL:

17 ft. below land surface. Date 11-3-92

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 91

From	To	Estimated Flow Rate	SWL
91	95	30	17

(12) WELL LOG:

Ground elevation

Material	From	To	SWL
Top Soil	0	3	
Clay	3	12	
Clay & Gravel	12	25	
Yellow Clay	25	35	
Black Sand	35	41	
Brown Clay	41	62	
Clay & Sand	62	80	
Soft Lava	80	91	17
Cinders	91	95	

Date started 10-28-92 Completed 11-2-92

(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.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

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

WWC Number 620

Signed Mike [illegible] Date 11-30-92

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 10/91

Appendix F.

RidNOx™ and Lysimeter Installation, and Sampling Instructions

ELKHORN CONSULTING LLC

14833 Goodrich Creek Lane
Baker City, OR 97814 • 503-881-1604
elkhornconsultingllc@gmail.com

RidNOx Installation Instructions

RidNOx Installation

1. Excavate to a depth that will result in the top of the RidNOx tank being at the same elevation as the existing ground surface.
2. Prepare a level, stable base.
3. Set the body of the tank in the hole.
4. Prepare and install inlet and outlet fittings as shown on the approved plans.
5. Place a 2-inch layer of ½ to ¾-inch round rock on the floor of the tank.
6. Cover the slotted outlet pipe with the same rock to a minimum depth of 2 inches.
7. Install the clean wood media (playground chips meeting ASTM F2075) in 6 inch lifts, walking in each lift to compress the media, to the bottom of the outlet fitting.
8. Set the lid on the tank. **Do not use mastic.**
9. Backfill the tank to 6 inches below the seam between the body and the lid.
10. Place underdrain media to the top of the tank.
11. Backfill over the tank with native soil after the risers are attached.

Media Replacement

- Pothole near tank to make sure the water table is at least 30” below the top of the tank to prevent buoyancy during replacement operations.
- Carefully remove the soil cover from over and around the tank to a level below the seam.
- Carefully remove the lid from the tank.
- Use a sump pump to transfer free water from the media to the pump basin.
- Scoop the media from the tank being careful not to damage the inlet and outlet piping or the underdrain media.
- After the excess moisture drains from the spent media, it can be loaded into a dump truck and hauled to a sanitary landfill.
- Install fresh media and re-install the lid as described in steps 7 through 11 above.

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Lysimeter Installation Instructions

Lysimeter Installation in a Bottomless Sand Filter

- Remove duff and surface soil layer (typically 6 inches) to provide an infiltrative surface free of roots.
- When installing sampling devices (trough lysimeters), carefully mark the location of the orifice positions on each side of the sand filter container.
- Also mark the target elevations for each layer on the walls.
- Install the lower layer of medium sand and the underdrain media.
- Remove enough underdrain media from a 4-inch wide strip (trough) across the bottom aligned with a row of orifices (typically the 4th row from either end).
- With an auger or a tile spade, dig a hole at one end of the trough large enough and deep enough to set the vertical part of the lysimeter against the wall.
- Fine-grade the placement of the body of the lysimeter with the horizontal fitting of the sanitary tee aligned with the trough.
- Bed the half pipe with a slight slope (no more than 1 inch in 10 feet) toward the body of the lysimeter.
- Glue one end of the half pipe into the coupler extending from the sanitary tee with a cap glued at the opposite end.
- Place about one-half inch of underdrain media (pea gravel) in the bottom of the trough with enough ramped up inside the sanitary tee to cover the drilled holes in the debris cap.
- Backfill around the lysimeter with pea gravel to provide drainage from the self-emptying port.
- Secure the body of the lysimeter to the wall with a metal strap or other device to stabilize it during the placement of the various layers of media.
- The rest of the sand filter will be constructed in a customary fashion.

ELKHORN CONSULTING LLC

14833 Goodrich Creek Lane
Baker City, OR 97814 • 503-881-1604
elkhornconsultingllc@gmail.com

RidNOx and Bottomless Sand Filter Sampling Instructions

General

- Contact the laboratory to coordinate scheduling and acquire sample containers,
- Target parameters are total Kjeldahl nitrogen (TKN) and nitrate-nitrogen (NO_3-N).
- Make sure you have the proper sampling equipment, chain-of-custody forms, and a cooler with ice.
- Label all sample bottles in advance.

RidNOx Sampling Procedures

- Remove the lid from the pump basin.
- Use a bailer, peristaltic pump, or other appropriate sampler, to carefully collect a sample from the pump basin without disturbing and attached growth on the surfaces of pipes, floats, etc.
- Transfer sample into sample bottles.
- Repeat as necessary until all bottles are filled.
- Secure the caps on each bottle and place them immediately in a cooler with ice.
- Deliver samples to the laboratory (nitrate-nitrogen samples need to be analyzed within **48 hours** of sample collection).

Lysimeter Sampling Procedures (if/when desired)

- Loosen the square nut plug on the lysimeter.
- Shine a flashlight down the pipe to confirm the presence of filtrate.
- Use a bailer (disposable or cleaned) on a string to collect sample from the body of the lysimeter.
- Transfer sample into sample bottles.
- Repeat as necessary until all bottles are filled.
- Secure the caps on each bottle and place them immediately in a cooler with ice.
- Replace the square nut plug.
- If funding allows, collect sample of the AdvanTex-treated effluent as it flows into the RidNOx unit at the inlet of the tank.
- Deliver samples to the laboratory (nitrate-nitrogen samples need to be analyzed within **48 hours** of sample collection).

Appendix G.

Directions to Site, List of Names and Addresses for Neighboring Property Owners

Google Maps 475 NE Bellevue Dr, Bend, OR 97701 to 17146 Covina Rd, Bend, OR 97707

You can enter notes here.

475 NE Bellevue Dr
Bend, OR 97701

Take NE Dalton St to US-20

26 sec (361 ft)

1. Head east toward NE Dalton St

125 ft

2. Turn right onto NE Dalton St

236 ft

Take SE 27th St, Knott Rd and US-97 S to Solar Dr

27 min (20.9 mi)

3. Turn right onto US-20

0.2 mi

4. Turn left onto SE 27th St

3.3 mi

5. Continue onto Knott Rd

4.2 mi

6. Slight right

0.3 mi

7. Merge onto US-97 S

9.4 mi

8. Take exit 153 for S Century Dr toward Sunriver

0.2 mi

9. Turn right onto S Century Dr/Lava Cast Forest Rd/NF-9720 (signs for Sunriver/Mt Bachelor)
   Continue to follow S Century Dr

1.5 mi

10. At the traffic circle, take the 2nd exit and stay on S Century Dr

0.6 mi

11. Continue onto Spring River Rd

1.2 mi

Continue on Solar Dr. Drive to Covina Rd

1 min (0.5 mi)

12. Turn left onto Solar Dr

0.3 mi

13. Turn right at the 3rd cross street onto Covina Rd
    Destination will be on the right

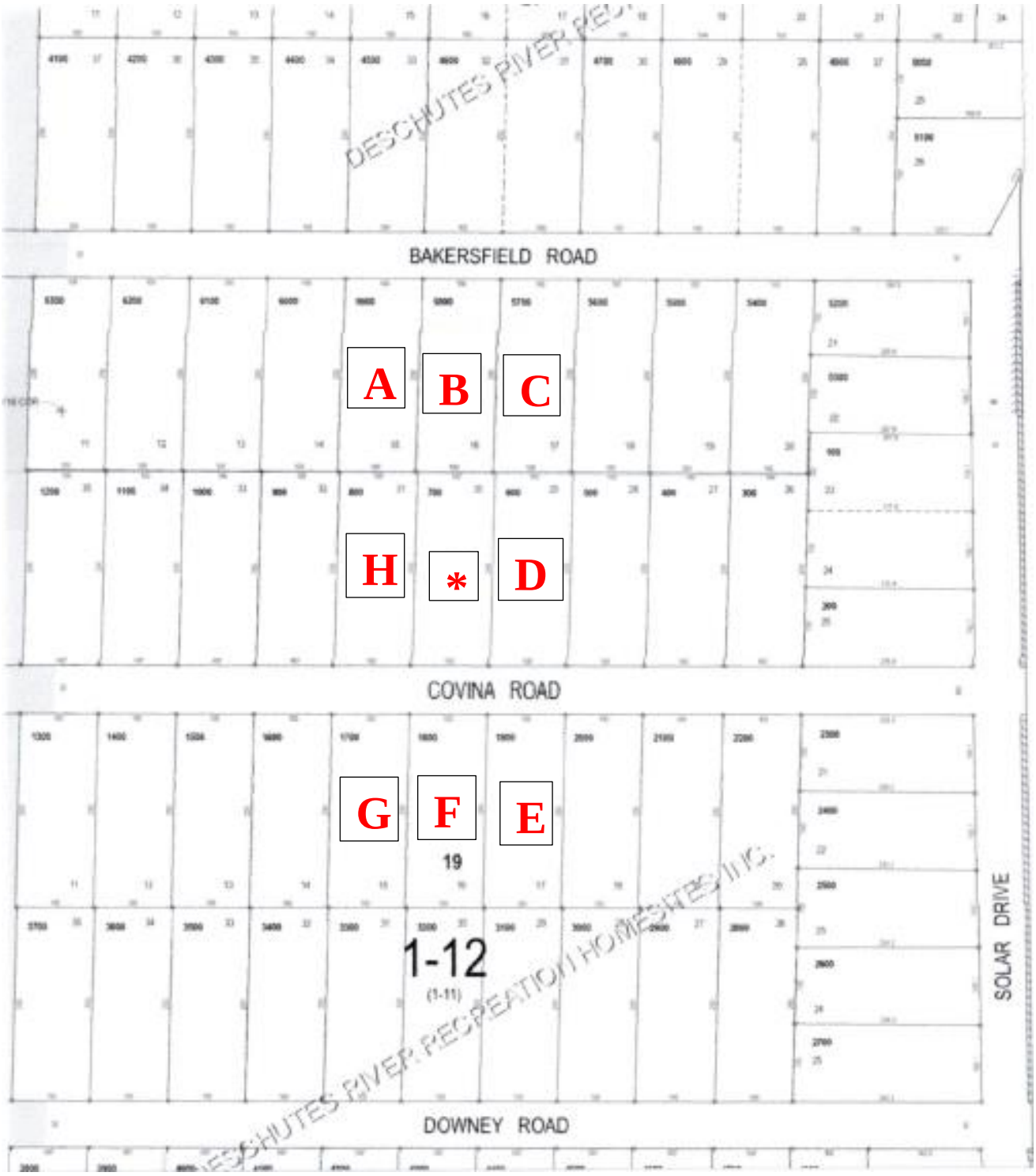
0.1 mi

17146 Covina Rd
Bend, OR 97707

Adjacent Parcels Property Owners

17146 Covina Road, Bend, Oregon
(T20S, R10E, Section 12AD, Tax Lot 0700, 0.58 acres

*	Tax Lot	4700	Brian Holland PO Box 3033 Sunriver, OR 97707
A.	Tax Lot	5900	Ronald E Harter Revocable Living Trust 17139 Bakersfield Rd Bend, OR 97707
B.	Tax Lot	5800	Nelson, Ethan Lee 3554 Butterfly Creek Ln Eugene, OR 97404
C.	Tax Lot	5700	Hampton, Anastasi R 16869 SW 65th #287 Lake Oswego, OR 97035
D.	Tax Lot	600	Collins, Christopher J & Krause, Kahla C 17150 Covina Rd Bend, OR 97707
E.	Tax Lot	1900	Leahy, Daniel Curtis 19897 Ponderosa St Bend, OR 97702
F.	Tax Lot	1800	Surwall, Paula et al 4275 Ponderosa Trl Wickenburg, AZ 85390
G.	Tax Lot	1700	Burns, Corey 10512 SE Stanley Ave Milwaukie, OR 97222
H.	Tax Lot	800	Jason & Ying Ramirez Trust 8379 Westlawn Ave Los Angeles, CA 90045


DESCHUTES RIVER REC
BAKERSFIELD ROAD
A
B
C
H
*
D
COVINA ROAD
G
F
E
19
1-12
(1-11)
SOLAR DRIVE
DESCHUTES RIVER RECREATION HOMESITES INC.
DOWNEY ROAD

Variance Application from Oregon Administrative Rules Regulating Onsite Wastewater Treatment Systems

DEQ
State of Oregon Department of Environmental Quality

Western and Northwest Regions:

Oregon Department of Environmental Quality
Onsite Program
165 East Seventh Ave, Ste 100
Eugene, Oregon 97401

Eastern Region:

Oregon Department of Environmental Quality
Onsite Program
475 NE Bellevue Dr, Ste 110
Bend, OR 97701

Please complete this application form and submit it with the fee and required attachments to one of the addresses above. The fees can be found in the current rule tables on DEQ's website here: https://ordeq.org/variancefees

Please note: Variance approval is not guaranteed, and fees are non-refundable. Learn more about the variance process at https://ordeq.org/septicvariance

Owner Information - Please Print:

Owner Name(s) (Last, First) Holland, Brian

Mailing Address PO Box 3033

City, State, Zip Sunriver, OR 97707

Phone (541) 598-7773 Email pineriverhomesllc@gmail.com

Property Information:

County Deschutes

Township, Range, Section, Tax Lot T20S R10E S12AD Tax Lot 700

Lot and Block Number Lot 30, Block 20 Subdivision Name Deschutes River Recreation Homesites Inc (Blocks 18-25)

Provide the Following Attachments:

1. A locator map showing accurate directions to the property. List the property's street address if the street address is known.

2. **Two copies** of the parcel's legal description (metes and bounds, warranty deed, sales contract or approved subdivision plat). Include copies of the protective covenants, deed restrictions and easements applicable to the property.

3. **Two copies** of the assessor's tax lot map showing the property or a surveyor's plat map.

4. **Two copies** of a land use compatibility statement from the appropriate land use authority that your proposed land use is compatible with the Land Conservation and Development Commission's acknowledged comprehensive plan or statewide planning goals.

5. **One copy** of the DEQ (or county agent) site evaluation report, field notes, and other correspondence relating to past evaluations for septic system development.

RECEIVED
NOV 17 2023
DEQ
Eastern Region Bend

6. **Two copies** of a narrative description for your variance proposal, including system construction specifications and the step-by-step procedures you propose to follow when installing the system. You must clearly describe how your proposal will overcome the limitations cited by DEQ or the county in the original denial.

7. **Two copies** of a plot plan drawn with the location and dimensions of all components of the proposed system. Use a defined scale that is not smaller than one-inch equals 30 feet. Also, be sure to include the replacement absorption facility in the plot plan drawing. Indicate separation distances between disposal trenches, springs, water courses, agricultural drainage tile, ditches, drainage ways, water lines, buildings, roads, embankments, and other identifying features, which help demonstrate parcel-to-drainfield relationships. Locate all wells within 200 feet of the proposed system and the replacement system.

8. The names and mailing addresses of all adjacent property owners and other known interested persons, for hearing notice.

9. The variance officer will request additional items be provided, if found necessary for the variance. The application will be deemed incomplete until the requested items are provided.

A minimum of two test pits must be provided within the specific area where the variance system is proposed, and should be approximately two feet wide, four feet long, and excavated to either bedrock or to a depth of five feet. Similar pits must be provided in the area of the repair system. The variance officer may require the proposed drainfield and the future replacement drainfield to be staked out.

Hardship Variances:

Hardship variances may be considered in cases of extreme and unusual hardship. The following factors may be considered: advanced age or bad health of applicant, need of applicant to care for aged, incapacitated or disabled relative, and the hardship variance will have relative, insignificant environmental impact. Documentation of hardship must be provided.

☐ MARK THIS BOX FOR HARDSHIP CONSIDERATION

By my (our) signature(s), I (we) request DEQ act on this application and hereby grant permission to enter onto the above-described property. I (we) also acknowledge that I (we) have read the Variance Process Fact Sheet found here: https://ordeq.org/septicvariance

11-8-23 Bi Hu

Date Owner Signature

Date Owner Signature

NOTE: All owners must sign this application form. If there are more than two owners, have them sign additional duplicate applications and include them with submittal.

* Pursuant to ORS 454.662, the applicant is not required to submit the application fee if, at the time of filing the application, the applicant is 65 years of age or older, is a resident of the State of Oregon, and has an annual household income, as defined in ORS 310.630, of $15,000 or less. Appropriate documentation must be submitted with the application.