PUBLIC HEALTH DIVISION
Drinking Water Services
Kate Brown, Governor

Oregon Health Authority

800 NE Oregon Street, #640
Portland, OR 97232-2162
Phone: 971-673-0191
Fax: 971-673-0694
www.healthoregon.org/DWP

July 28, 2020

Aaron Yoder
Camp Cooper BSA
2145 SW Naito Parkway
Portland, OR 97201

**Re: New Well (L15811) and 2,500-Gallon Tank (PR#46-2018)**
**Camp Cooper BSA (PWS ID#92088)**
**Final Approval**

Dear Mr. Yoder:

Thank you for your original submittal to the Oregon Health Authority's Drinking Water Services (DWS) of plan review information for the new well and tank for Camp Cooper BSA and revisions provided by Corby Boatwright on January 23, 2019. On July 9, 2020, you provided the remaining documentation for the constructed well and tank and a Request for Final Approval form completed by Corbey Boatwright was received on July 28, 2020.

**The Project is granted Final Approval.** The project involved the construction of a new dug well (L15811) and new 2,500-gallon polyethylene tank (Norwesco Model #40867) and related site piping (subject to local plumbing code). More project details and drawings are provided on pages 3-14 of this letter.

**Due to the semi-confined nature of the aquifer and shallow well construction, monthly coliform monitoring from the source must be done for a year** (12 consecutive months) upon start up to further assess the well for potential contamination that may reveal seasonally influenced source water problems.

Nitrate and Arsenic sampling completed on 6/19/19 demonstrated no detections of either contaminant. **Nitrate sampling done once each year at the entry point to the distribution system remains in effect and no further arsenic sampling is needed.**

Also note, that the **overflow piping that also serves as the air vent for the NORWESCO 2,500-gallon polyethylene tank for finished water, although screened, should be fitted with a downward turned screened elbow**, such that particles cannot drop or be blown into the overflow piping and insects cannot enter the tank.

Thank you for your cooperation during the plan review process and if you have any questions, please do not hesitate to contact me at 971-673-0419 or via e-mail at evan.e.hofeld@dhsoha.state.or.us.

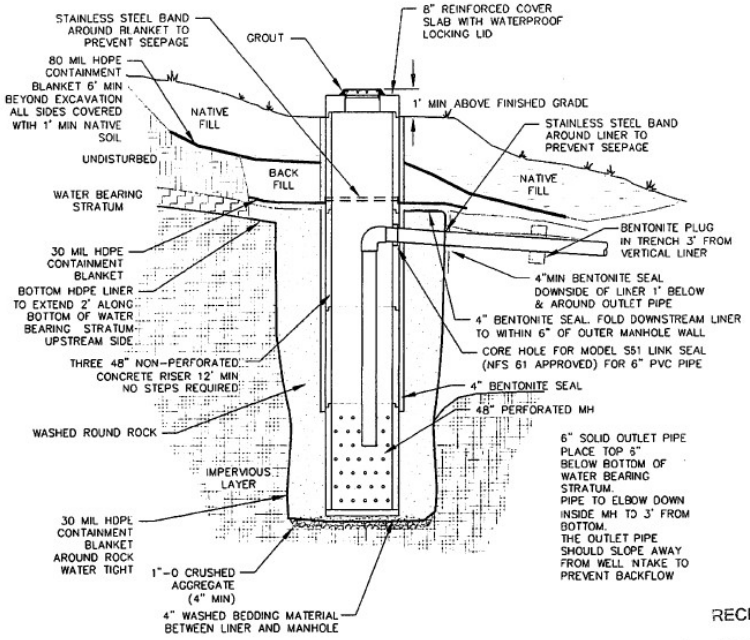
Sincerely,

Evan Hofeld
Regional Engineer
Drinking Water Services

cc: Annette Pampush, Tillamook County Environmental Health
Corbey Boatwright, PE, Boatwright Engineering, Inc

## *Project Details and Drawings:*

On April 4, 2018, our office received plans and a land use compatibility statement for a dug well and polyethylene tank. A plan review fee of $825 was also received. Additional plans were received on April 6, 2018. Plans were subsequently revised and received on January 23, 2019. A Final Order dated January 9, 2019 was also issued by the Oregon Water Resources Department (OWRD) regarding a Special Standards Request for the revised well design (shown in the well detail at right) and received in our office on January 15, 2019.




Tom Pattee, a regional geologist in our program reviewed the revised well construction and provided comments in the e-mail to Carrie Gentry shown below.

**From:** PATTEE Tom
**Sent:** Thursday, January 10, 2019 2:50 PM
**To:** GENTRY Carrie L <Carrie.L.GENTRY@dhsoha.state.or.us>; Hofeld Evan E <EVAN.E.HOFELD@dhsoha.state.or.us>
**Subject:** RE: New Well Camp Cooper BSA PR#46-2018

Carrie,

Thanks for keeping me in the loop on this. Based on the diagram they provided, it looks like the only real change is the depth to the water-bearing stratum and the depth at which the 30 Mil HDPE – Bentonite cap will overlie the washed round rock. So, my original comments should still be valid – Since, based on the geology, this well can't be constructed to meet current OWRD standards, they should submit designs to OWRD and request a Special Construction Standard. If OWRD issues the Special Construction Standard, it should be included in the materials they submit to us, otherwise we won't be able to approve it for public water supply use. Note that due to the shallow nature of the water-bearing strum, we are likely to require monthly raw water bacteria samples (to start) either as a part of distribution system monitoring or as source assessment monitoring if residual maintenance chlorination is to be continued.

Thanks!

Tom

Tom Pattee's following original comments were relayed to you in the first Site Plan Approval from Carrie Gentry dated April 23, 2018:

- Based on available data, it is difficult to determine if groundwater at this location originates within the unconfined sediments at the surface or within the fractured bedrock below the sediments. Based on the technical specifications provided, it's assumed that the dug well will be 17 feet deep (12 feet of grouted manhole sections plus 5 feet of perforated manhole base.) Oregon Administrative Rules (OARs) concerning the construction of dug wells can be found in OAR 690-210-0400. It requires dug wells that are 21 feet or less in depth to be sealed with grout to within 3 feet of the bottom of the well.
- If it is unreasonable to seal the well to within 3 feet of the well bottom, a Special Construction Standard should be obtained from Water Resources Department as per OAR 690-200-0021 and submitted to DWS along with the required items below.

**The project was granted a revised Site Plan Approval on January 30, 2019 (no Conditional Approval letter was issued, however, the Final Approval was based on construction plans and information supplied before, during, and after construction).**

Tom Pattee reviewed the post-construction well information and well log and issued the following findings on July 22, 2020:

**As Built Well Construction Evaluation for Plan Review and/or Setback Waiver:**

☒ Well/Spring meets current construction standards.
  ☒ WRD special construction standards, see well log or Comments.
☐ Well/Spring construction does not meet construction standards.
  ☐ Not sealed to appropriate depth. Recommended depth: _____
  ☐ Not appropriate seal materials
  ☐ Open to more than one aquifer
  ☐ Seal info missing or unknown
  ☐ Seal not constructed properly (☐ Insufficient sealant volume ☐ Insufficient annular space)
☐ Susceptible construction, but grandfathered source. Consider for reconstruction if nitrate ≥ 5mg/L or confirmed *E. coli* at source.
☐ Susceptible well construction, **not approved for use.**

Comments: This is a dug well that extends to a depth of 16.4 ft. The casing consists of pre-cast 48-inch diameter concrete rings that extend to the bottom of the hole. The casing is sealed to a depth of 12.4 ft. Water enters the well through casing perforations below the casing seal. The immediate area around the casing is capped with an 80 mil HDPE containment blanket to help guard against surface/storm water intrusion into the well. The containment blanket is overlain by native fill. Sensitivity Analysis results suggest that well construction is not sensitive to nearby land use practices.

**Nature of Aquifer Evaluation:**

Aquifer Nature: ☐ Confined aquifer ☒ Semi-confined aquifer ☐ Unconfined aquifer

Comments: This well draws water from a very shallow semi-confined gravel aquifer. The silt/clay layer above the water-bearing zone is only 8 ft thick and therefore may not be as protective to the water-bearing zone as a thicker clay/silt might be. The static water-level in the well was reported to be 10.8 ft above ground level, about 19.5 ft above the top of the water-bearing gravel located at 8.7 ft below ground level. Due to the reported flowing artesian condition of this well and the thin silt layer over the top, this aquifer is considered to be semi-confined. Sensitivity Analysis results suggest that the aquifer is highly sensitive to nearby land use practices. There do not appear to be any mappable fecal contaminant sources uphill from the well. However, given the shallow nature of the water-bearing zone (less than 10 ft below ground level), monthly source assessment monitoring should be initiated for the well (at start-up) for the months that the well is serving water to the public if the water system is to continue residual maintenance hypochlorination. If hypochlorination is discontinued, monthly distribution sampling should occur for the first year or until there is a representative distribution sample for each month that the water system is serving water to the public.

## Cooper Well Photos

Sorted by name


2019-04-23 (1).jpg


2019-04-23.jpg


2019-05-09 (1).jpg


2019-05-09.jpg


20190422_083255.jpg


20190422_083338.jpg


20190422_083620.jpg


20190422_083635.jpg


20190422_083913.jpg


20190422_084829.jpg


20190422_084831.jpg


20190422_084834.jpg


20190422_103040.jpg


20190422_173515.jpg

# TILL 52867

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

WELL I.D. LABEL# L 15811
START CARD # 213935
ORIGINAL LOG # TILL - 52867

**(1) LAND OWNER** Owner Well I.D. Camp Cooper
First Name Jim Last Name Hill
Company Cascade Pacific Council
Address 2145 SW Naito Pkwy
City Portland State OR Zip 97

**(2) TYPE OF WORK** [X] New Well [ ] Deepening [ ] Conversion [ ] Alteration (complete 2a & 10) [ ] Abandonment (complete 5a)

**(2a) PRE-ALTERATION**
Casing: Dia | + | From | To | Gauge | Stl | Plstc | Wld | Thrd
Seal: Material | From | To | Amt | sacks/lbs

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

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

**(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 |
|---|---|---|---|---|---|---|---|
| | | | Bentonite Chips | 0 | -12.4 | 126 | 5 |
| | | | | | Calculated | | |
| | | | | | Calculated | | |

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E [ ] Other
Backfill placed from 0 ft. to -12.1 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 | | 48 | X | 1 | 12.4 | | | | | |

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

**(7) PERFORATIONS/SCREENS**
Perforations Method Paracut 1½" Tapered Holes
Screens Type 2" Round Rack Material Concrete

| Perf/Screen | Casing/Liner | Screen Dia | From | To | Scrn/slot width | Slot length | # of slots | Tele/pipe size |
|---|---|---|---|---|---|---|---|---|
| | | 48 | 12.4 | 16.4 | 1.5 | 1.5 | 112 | |

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

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

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 Tillamook Twp 4 S N/S Range 7 W E/W WM
Sec 2 SE 1/4 of the NE 1/4 Tax Lot 800
Tax Map Number 04S07W Lot
Lat ° ' " or 45.253814 DMS or DD
Long ° ' " or -123.5069337 DMS or DD
[ ] Street address of well [X] Nearest address
6000 Bald Mt Rd, Wilsonville OR 97396

**(10) STATIC WATER LEVEL**

| | Date | SWL(psi) | + | SWL(ft) |
|---|---|---|---|---|
| Existing Well / Pre-Alteration | | | | |
| Completed Well | 5/10/2019 | | | 10.85 |

Flowing Artesian? [X] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found -8.7

| SWL Date | From | To | Est Flow | SWL(psi) | + | SWL(ft) |
|---|---|---|---|---|---|---|
| 04-18-2019 | -8.7 | -9.7 | 50 | | | |

**(11) WELL LOG** Ground Elevation _____

| Material | From | To |
|---|---|---|
| Duff | 0 | -.7 |
| Red Brown Clay face-pounding cobbles up to 12" dia | -.7 | -8.7 |
| Round alluvial rocks up to 1.5" diameter | -8.7 | -9.7 |
| Yellow Clay face-pounding large cobbles up to 12" diameter and irregular blue/green clay pockets up to 12" dia | -9.7 | -18 |

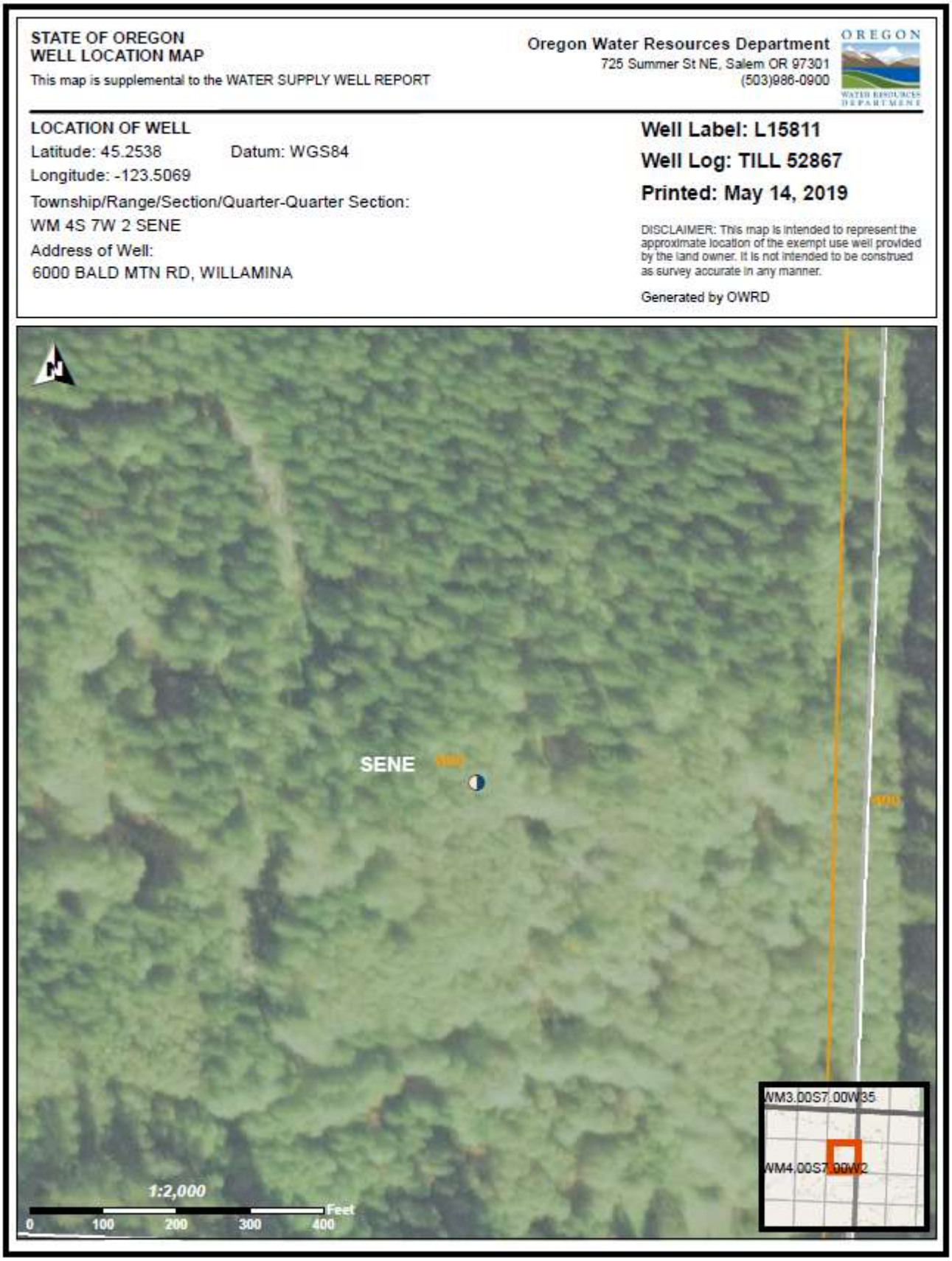
RECEIVED
MAY 10 2019
OWRD

Date Started 04-18-2019 Completed 04-22-2019

**(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 _____ Date May 10, 2019
Signed _____
Contact Info (optional) _____ - 503.703.9246

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


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
OREGON
WATER RESOURCES DEPARTMENT
LOCATION OF WELL
Latitude: 45.2538 Datum: WGS84
Longitude: -123.5069
Township/Range/Section/Quarter-Quarter Section:
WM 4S 7W 2 SENE
Address of Well:
6000 BALD MTN RD, WILLAMINA
Well Label: L15811
Well Log: TILL 52867
Printed: May 14, 2019
DISCLAIMER: This map is intended to represent the approximate location of the exempt use well provided by the land owner. It is not intended to be construed as survey accurate in any manner.
Generated by OWRD
N
SENE
1:2,000
0 100 200 300 400 Feet
WM3.00S7.00W35
WM4.00S7.00W2

Oregon
Kate Brown, Governor

KM
JAN 14 2019

Water Resources Department
North Mall Office Building
725 Summer St NE, Ste A
Salem, OR 97301
Phone: 503-986-0900
Fax: 503-986-0904
www.Oregon.gov/OWRD

January 9, 2019

CASCADE PACIFIC COUNCIL
C/O MR. JIM HILL
2145 SW NAITO PARKWAY
PORTLAND, OREGON 97203

**FINAL ORDER**

Dear Mr. Hill:

The Special Standards Request Form you submitted for owner: Cascade Pacific Council, Start Card number; 215935 is hereby approved for the following: You may construct this dug well as described on your Special Standards Request Form dated January 4, 2019 and as presented on the attached schematic well diagram. All other well construction standards must be adhered to. A stipulation of this Special Standards Request approval is that a representative of the Water Resources Department be contacted ten days prior to construction of the well and the words "Water Well" must be marked permanently on top of the well cover. A copy of your Special Standards Request Form is enclosed.

If you have any questions concerning this letter, I may be contacted at (503) 986-0852, or by e-mail at Joel.W.Jeffery@oregon.gov.

Sincerely,

Joel Jeffery, Coordinator
Well Construction Program
Well Construction and Compliance Section

Oregon
Kate Brown, Governor

**Water Resources Department**
Watermaster District #1
4000 Blimp Blvd., Suite 400
Tillamook, OR 97141-9624
Ph: 503-815-1967
Fax: 503-815-1968
Email: Nikki.M.Hendricks@wrd.state.or.us
www.wrd.state.or.us

January 30, 2019

Evan Hofeld,

No water right is needed for the Boy Scouts of America well under the exempt uses of ORS 537.545.

No registration, certificate of registration, application for a permit, permit, certificate of completion or ground water right certificate under ORS 537.505 (Short title) to 537.795 (ORS 537.505 to 537.795 supplementary) and 537.992 (Civil penalties) is required for the use of ground water for:

(a) Stockwatering purposes;

(b) Watering any lawn or noncommercial garden not exceeding one-half acre in area;

(c) Watering the lawns, grounds and fields not exceeding 10 acres in area of schools located within a critical ground water area established pursuant to ORS 537.730 (Designation of critical ground water area) to 537.740 (Filing rules designating critical ground water area);

(d) Single or group domestic purposes in an amount not exceeding 15,000 gallons a day;

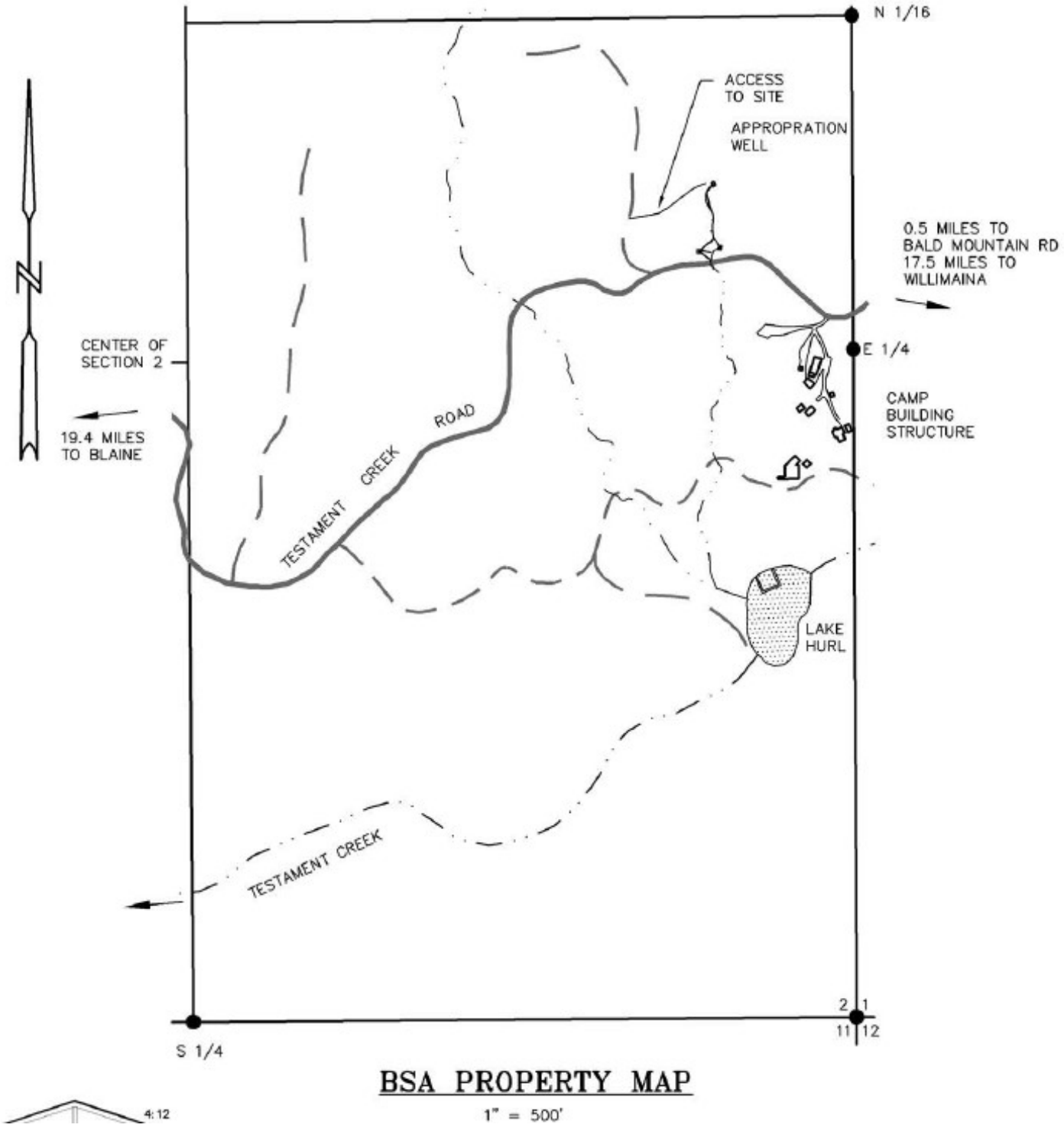
(e) Down-hole heat exchange purposes;

(f) Any single industrial or commercial purpose in an amount not exceeding 5,000 gallons a day; or

Sincerely,

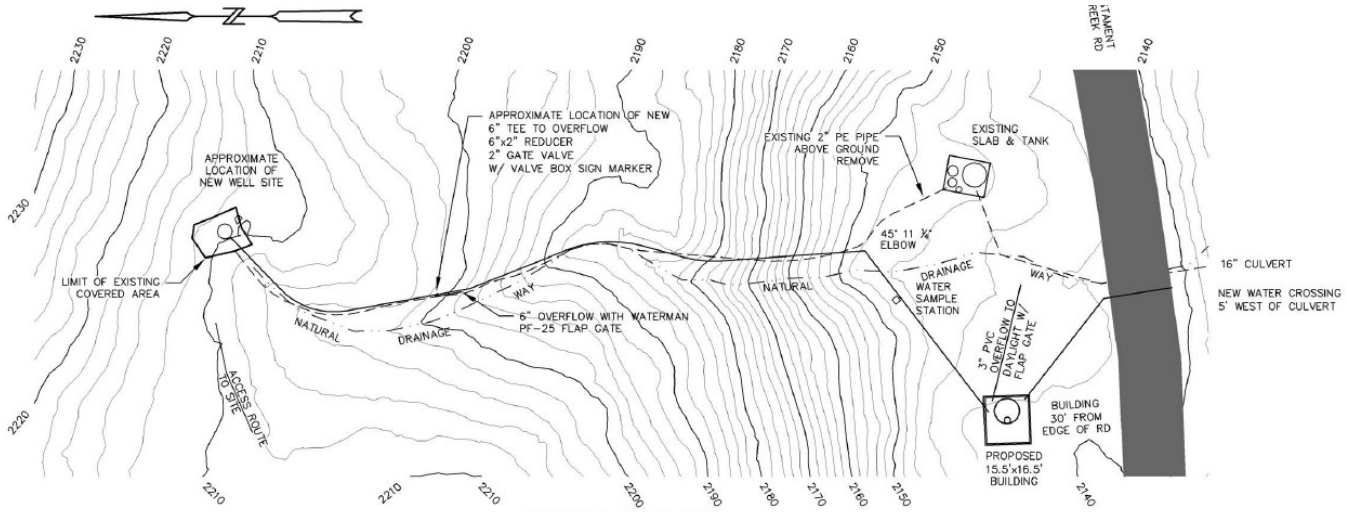
Nikki Hendricks

District 1 Watermaster

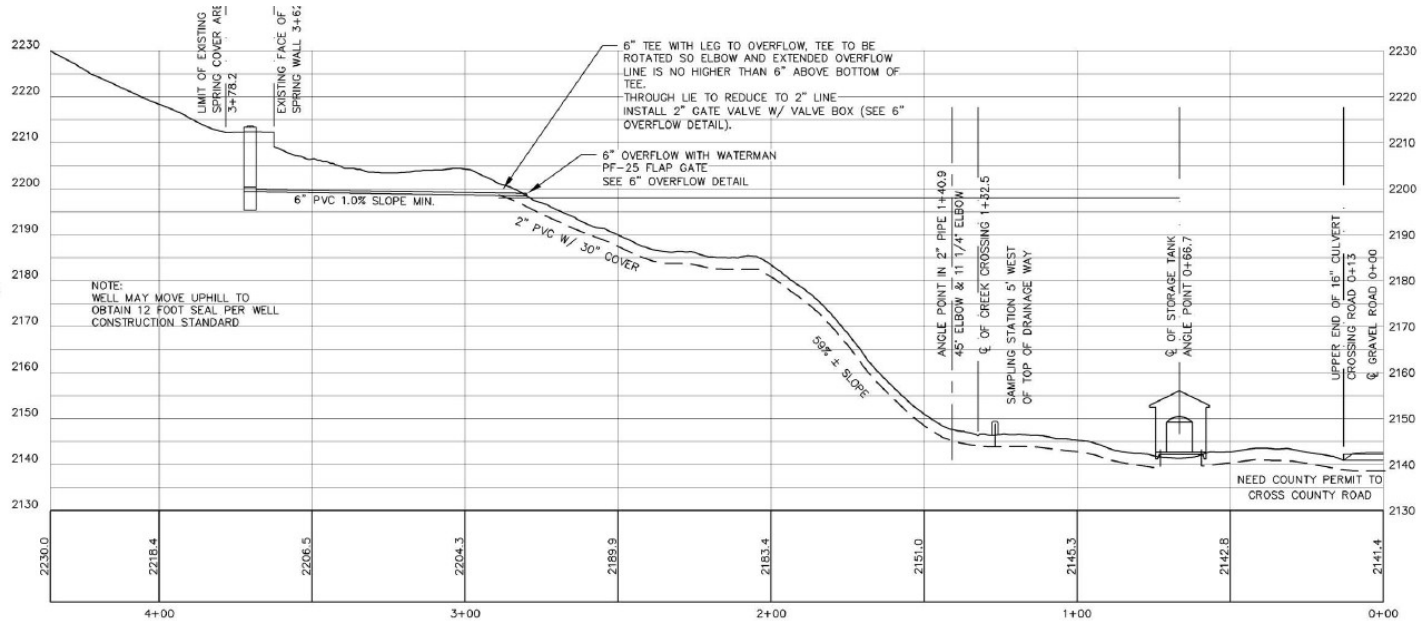


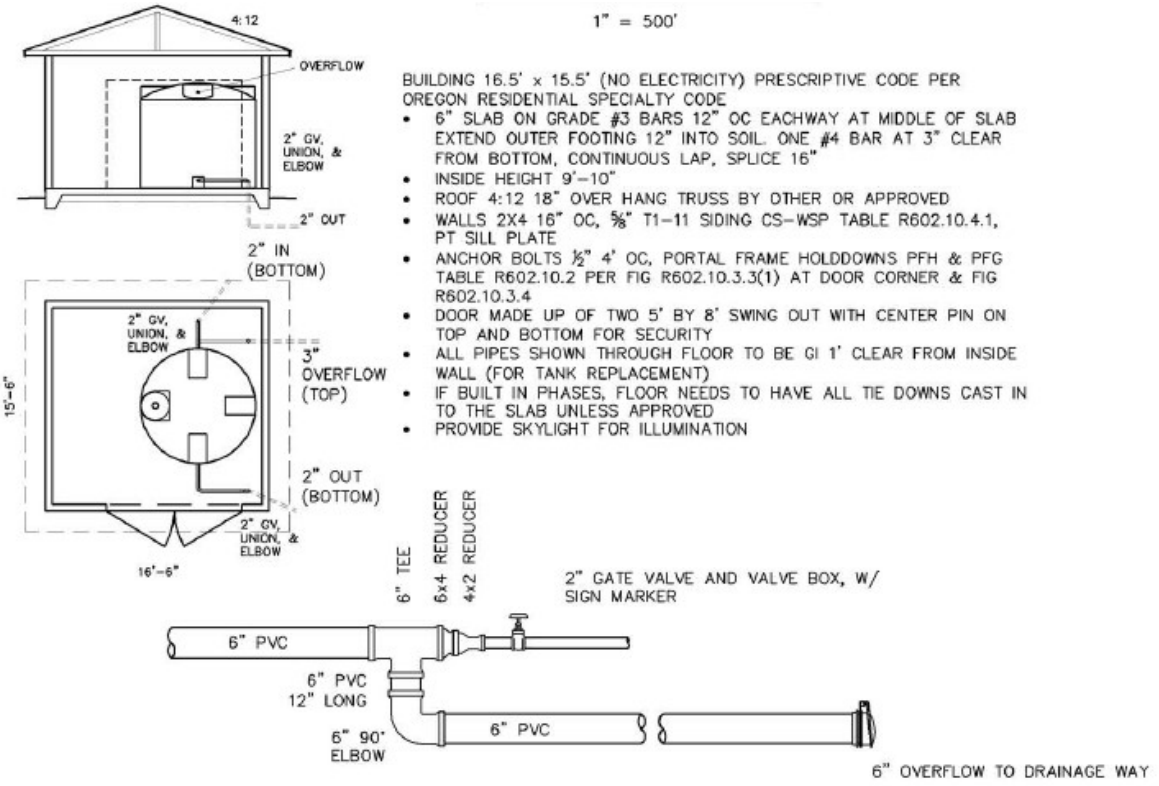

**BSA PROPERTY MAP**

1" = 500'



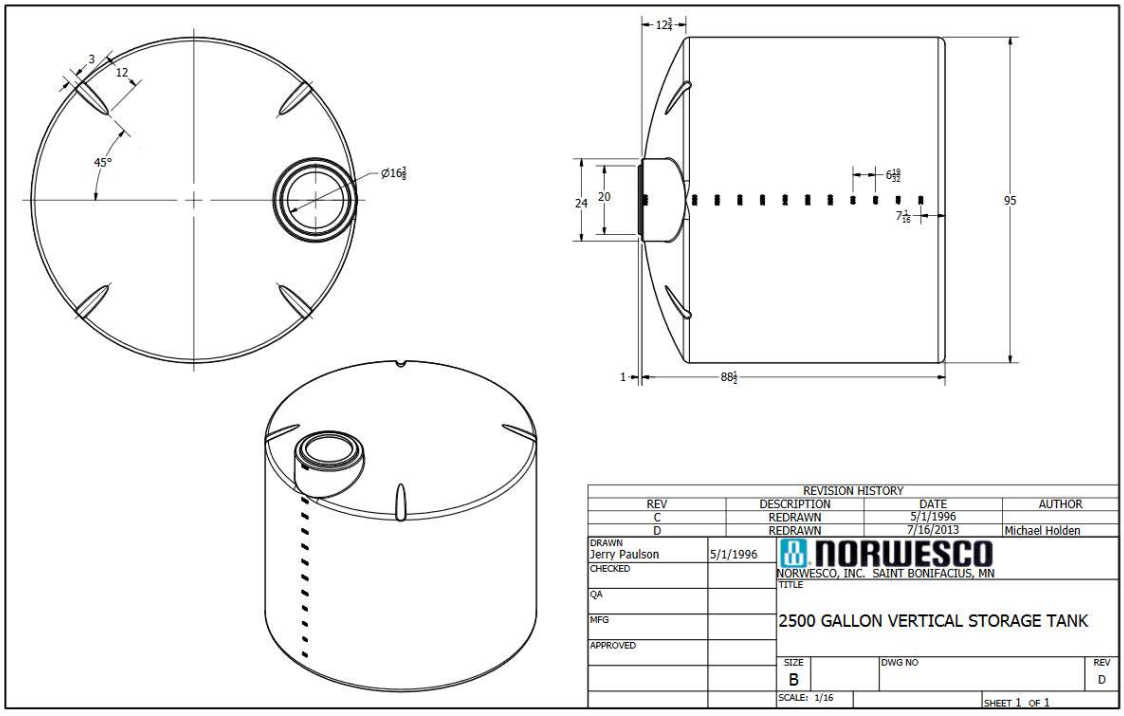

SPRING SITE MAP






## 6" OVERFLOW DETAIL

NOT TO SCALE



Oregon Health Authority

**Drinking Water Services**
**Project Final Approval Request Form**

Print

Project Name: Well L15811 PR#: 46-2018

Public Water System ID#: 92088 Click HERE to locate ID# / PWS Name

PWS Name: Camp Cooper BSA

| | YES | NO | DATE |
|---|---|---|---|
| 1. Was the project undertaken? If so, what was the starting date? | ☑ | ☐ | 12/09/2018 |
| 2. If project was not undertaken, has the project been abandoned? | ☐ | ☐ | |
| 3. Was the project completed? If so, when? If project not complete, estimated completion date: _____ | ☑ | ☐ | 04/18/2019 |
| 4. If completed, was the work accomplished in conformance with all conditions listed in the Conditional Approval letter and DWS Construction Standards, Oregon Administrative Rule (OAR) 61-0050? **In the comments below or on a separate sheet please make clear how all conditions specified in the Conditional Approval letter were met.** | ☑ | ☐ | |
| 5. If the project was completed, were there any differences between what is shown on the plans and what was actually installed? | ☐ | ☑ | |
| 6. If the completed project is different from what is shown on the plans, were the plans modified to show as-built conditions? | ☐ | ☑ | |
| 7. Have as-builts been sent to Drinking Water Services? **NOTE: As-builts are not required if there were no significant changes noted in 5.** | ☐ | ☑ | |
| 8. Are the facilities operating? If so, starting when? | ☐ | ☑ | _____ |

Signature of Engineer: Corbey Boatwright PE LS CWRE Date: 07/24/2020

Name: Corbey Boatwright, PE OR PE#: 12924

Firm: Boatwright Engineering, Inc. Phone: 503.363.9225

Comments

The well was constructed per the plans. The location was shifted uphill, about 20 feet, to avoid removing a large stump and disturbing the adjacent soil.

The outflow pipe is buried from the well to about 20 feet downstream, where solid basalt was encountered. Due to the basalt rock at the surface and the terrain, the pipe was laid above ground to a point 15 feet away from the tank building, where it goes back underground. The exposed pipe is a heavy walled PE.

Additional comments

The well\manhole lid has been covered with a tall, plastic tank that was equipped with a doorway cut into the side. The tank prevents any water from collecting on the waterproof seal of the manhole rim and frame. The access door has two padlocks installed on it.

The flap valve was installed on the well's overflow outlet and will be monitored.

The inlet line to the tank comes through the building floor and enters the tank at the top. There is an overflow riser from the inlet line that goes out through the building wall. When the tank is full, the water will exit the pipe through the overflow riser before it reaches the tank. At this time there is not a vent on the top of the tank. The inlet pipe will act as a vent and allow air to go out of the overflow pipe. If this is a concern, a tee could be installed near the tank on the inlet pipe. The tee would be turned up and extended above the tank height where a turned down elbow could be installed with a screen. The outlet from the tank to the camp is located at 90 degrees from the inlet pipe. A water meter was installed. A screen was placed on the outlet end of the overflow. The overflow pipe outside the tank building is all above ground and consists of heavy walled PE pipe.

The tank used is Norwesco 40867, 102-inches diameter by 78-inches tall, with 2,500 gallon capacity.

The sample station is just outside the tank building on the inlet pipe before it enters the building.

Other than these, all items were installed according to the plans using NFS-61 products