Amended 11/28/2022

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

WELL I.D. LABEL# L 134388
START CARD # 1056329
ORIGINAL LOG # MORR 52683

(1) LAND OWNER

Owner Well I.D. Airport Well #3
First Name _____ Last Name _____
Company Port of Morrow
Address 2 Marine Drive
City Boardman, State OR Zip 97818

(2) TYPE OF WORK

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

(2a) PRE-ALTERATION See Original Log Morr 52683

	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 1570 ft.

BORE HOLE

Dia	From	To
9-7/8	1302	1570

SEAL

Material	From	To	Amt	sacks/lbs
		Calculated		
		Calculated		

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☐ Other _____
Backfill placed from 1230 ft. to 1302 ft. Material Cement
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
☒	☐	10		1219	1302	.365	☒	☐	☒	
☐	☐						☐	☐		
☐	☐						☐	☐		
☐	☐						☐	☐		
☐	☐						☐	☐		

Shoe ☒ Inside ☒ Outside ☐ Other Location of shoe(s) 1302
Temp casing ☒ Yes Dia 10" From +2 To 1219

(7) PERFORATIONS/SCREENS

Perforations Method _____
Screens Type _____ Material _____

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

☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
90-100	478.86		5 HR

Temperature 75 °F Lab analysis ☒ Yes By GSI Water Solutions
Water quality concerns? ☐ Yes (describe below) TDS amount 540 mg/l

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County Morrow Twp 4-N N/S Range 24 E E/W WM
Sec 21 SE 1/4 of the NE 1/4 Tax Lot 131
Tax Map Number _____ Lot _____
Lat ° ' " or 45.81532500 DMS or DD
Long ° ' " or -119.81208200 DMS or DD
○ Street address of well ⊗ Nearest address

Just south of the junction of Boardman Airport lane and Boardman Airport

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration	1/5/2022		☐	80
Completed Well	11/22/2022		☐	81.9

Flowing Artesian? ☐ Dry Hole? ☐

WATER BEARING ZONES Depth water was first found See Original Log

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
6/20/2022	1321	1324	25-50		☐	77.61
6/20/2022	1460	1475	25-50		☐	77.61
					☐	
					☐	
					☐	

(11) WELL LOG

Ground Elevation _____

Material	From	To
Basalt Hard Black	1302	1321
Fractured Basalt WB	1321	1324
Basalt Black Hard	1324	1342
Basalt Dark Gray Fractured	1342	1350
Basalt Hard Black	1350	1362
Basalt Hard Black	1362	1420
Basalt Black Fractured	1420	1427
Basalt Hard Black	1427	1460
Basalt Fractured WB	1460	1465
Basalt Hard Black	1475	1482
Basalt Fractured W/Brown and Red Oxidation	1482	1503
Basalt Hard Black	1543	1550
Basalt Med Black	1550	1560
Basalt Black Heavily Fractured	1560	1567
Med Soft Weathered Basalt Blueish Green	1567	1617
Basalt Black Med/Hard	1617	1632
Borehole backfilled with cement from 1632 to 1570		
26 sacks of cement		

Date Started 4/23/2022 Completed 9/13/2022

(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 2040 Date 10/31/2022
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 1523 Date 10/31/2022
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

WATER SUPPLY WELL REPORT - continuation page

WELL I.D. LABEL# L	134388
START CARD #	1056329
ORIGINAL LOG #	MORR 52683

(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

10" casing was installed from 1302 to ground surface initially prior to deepening. Upon completion it was then cut off and removed from 1219 feet BGS leaving 83 feet of casing. Cement was placed around the the 10" casing and previous 14-3/4" hole from 1230' to 1302' prior to drilling to isolate new construction from previous construction. Final construction has both zones combined. Pump test shown was performed in the isolated 10" borehole only

Oregon
Kate Brown, Governor

Water Resources Department
725 Summer St NE, Ste A
Salem, OR, 97301
Phone: 503-986-0900
Fax: 503-986-0904

May 12, 2022

ROBERT STADELI WWC/MWC #1523
HOLT SERVICES
12305 NW 56TH STREET
VANCOUVER, WA 98682

FINAL ORDER

Dear Mr. Stadeli:

The Special Standards Request Form you submitted for owner: Port of Morrow, Start Card number 1056329; is hereby approved for the following: You may deepen and construct this well (MORR 52638) as described on your Special Standards Request Form dated May 10, 2022, and GSI Supporting Documentation dated February 28, 2022. ***The stipulations for this Special Standard Request approval are:***

- ***You must consult Tommy Laird, Well Construction Program Coordinator, prior to the final well construction decision.***
- ***You must contact Tommy at least 10 days prior to beginning work on this well to indicate the construction schedule and an approximate date when consultation will be requested.***
- ***You must have approval for the final well construction decision from the Oregon Water Resources Department prior to completing the well.***

All other well construction standards shall apply. A copy of your Special Standards Request Form is enclosed.

Verbal approval of this Special Standards Request was provided on May 6, 2022.

The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

If you have any questions regarding this letter, I may be contacted at (503) 302-8618, or by e-mail at tommy.k.laird@water.oregon.gov.

Sincerely,

Tommy Laird
Well Construction Program Coordinator
Oregon Water Resources Department

enclosure

cc: Shaun Finn, Well Inspector, North Central Region

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

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

Special Standards
Request Form

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before the request can be considered, this form must be completed. Requests shall be submitted to the Well Construction Program Coordinator, Water Resources Department, 725 Summer Street NE, Suite A, Salem OR 97301-1266. Requests may also be considered by the appropriate Regional Manager.

Date of request: 5/10/2022 **Oral approval date (if applicable):** 5/3/2022

Bonded Well Constructor (**name, license #, and mailing address**): Robert Stadeli 1523

12305 NE 56th Street Vancouver, WA 98682

(1) Location of Well: NE 1/4 SE 1/4 Tax lot 131 Section 21 ,

Township 4 N , Range 24 E , Morrow County

Address at well site: AT THE JUNCTION OF BOARDMAN AIRPORT LN AND THE BOARDMAN AIRPORT. BOARD

(2) Start Card Number(s)(for work to be done): 1056329

(3) Name and Address of Land Owner: Port of Morrow

2 Marine Drive Boardman, OR 97818

(4) Distance to the nearest septic tank, drainfield, closed sewage line (if water supply well)

N/A nothing in the area

(5) The unusual site conditions which necessitate this request: See attached from GSI

previously discussed with OWRD

(6) The proposed construction methods that the bonded well constructor believes will be adequate for this well: (attach additional pages if needed)

See attached from GSI previously discussed and supplied to OWRD

(7) Diagram showing the pertinent features of the proposed well design and construction: (attach additional pages if needed)

See Attached

PLEASE NOTE:

(1) The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

(2) If it should be determined at some future date that the well, due to its construction, is allowing ground water contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.

(3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior oral approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: _____

GSI Water Solutions, Inc.

REQUEST FOR SPECIAL STANDARDS SUPPORTING DOCUMENTATION

Port of Morrow Airport Well 3 Deepening

Date:	February 28, 2022
Project:	Port of Morrow Airport Well 3 Deepening
Attachments:	Airport Well 3 As-Built Geology
Recommendations by:	Port of Morrow & GSI Water Solutions, Inc.

1. Purpose

The Port of Morrow (Port) recently installed a new basalt production well, MORR 52638, at the Port's Airport Industrial Park in Boardman, Oregon. Due to the limited productivity of the existing well (completed to a depth of 1,300 feet below ground surface [bgs]), the Port wishes to deepen the well in hopes of obtaining a higher yield. The well is currently completed in the Basalt of Sand Hollow (Frenchman Springs Member of the Wanapum Formation) member of the Columbia River Basalt Group (CRBG) aquifer (see attached Figure).

The next flow within the CRBG is the Basalt of Ginkgo (also a member of the Frenchman Springs Member of the Wanapum Formation), which will be the target CRBG flow for this exploratory drilling and possible well deepening project. It is possible that the Ginkgo flow will have water-bearing units at the top, and possibly base, of the flow. These depths are likely around 200 feet and 500 feet deeper than the current well depth, respectively. The water bearing unit at the top of the Ginkgo will be tested and evaluated for productivity before determining whether exploration will continue to the base of the flow. From this information the Port will make an assessment regarding whether the Ginkgo is making sufficient water for the Port's needs, or if the combined water bearing zones of the Sand Hollow and Ginkgo (all within these Frenchman Spring Member of the CRBG flows) could all be included as production zones in the final well (water level data dependent).

2. Current Well Construction

Airport Well 3 (MORR 52638) is constructed with a telescoping borehole. The upper borehole is 24-inches in diameter to a depth of 416 feet bgs, and is cased and sealed into the Umatilla (Saddle Mountain Basalt) member of the CRBG. The borehole is 20-inches in diameter from 416 feet bgs to 985 feet bgs, with16-inch casing and a cement grout seal into competent rock within the second flow of the Sentinel Gap (Wanapum Basalt) member of the CRBG. The borehole is 16-inches in diameter from 985 feet bgs to 1,300 feet bgs (the current total depth of the well), and was left as an open borehole. Currently, the well is open to the water-bearing zones at the top of the first and second Sand Hollow flows (Wanapum Basalt, see attached as-built). Exploration below the second Sand Hollow flowtop (below 1175 ft bgs) only encountered competent basalt (dense flow interior) to the base of the borehole.

3. Well Deepening/Exploratory Drilling

The proposed approach for additional exploration and deepening of this existing well is as follows:

1) The driller will install 10-inch casing from 2 feet above the surface to the current total depth of the well (1,300 feet bgs) and install a split seal. The split seal will be installed using Method B (per 690-210-0150). Once the cement is placed, it will be allowed to set for a minimum of 72 hours and the depth verified (by tagging within the annular space) prior to commencing drilling. Because the base of the existing borehole is part of the dense flow interior the proposed cement seal will be set into competent rock and will be approximately 10 – 25 feet thick. This will create separation between the Sand Hollow and Ginkgo water bearing zones during the deepening process.
2) Once the seal is installed, and the depth verified, the contractor will drill through the cement inside the 10-inch casing to advance a 10-inch borehole to the flowtop associated with the Basalt of Ginkgo flow. The top of the Ginkgo is expected to be a water-bearing zone.
3) Static water levels will be monitored for changes during drilling, and the water level in the Ginkgo will be compared to the water level in the Sand Hollow to determine whether the water bearing zones of the two Wanapum basalt flows are connected (this determination will be made in collaboration with Oregon Water Resources Department [OWRD]).
4) A pump test will be conducted once the borehole has been advanced through the top of the Ginkgo to evaluate the productivity of the interflow zone at the top of the flow.
5) If the pump test reveals a need for additional yield, the driller will advance the 10-inch borehole to the base of the Basalt of Ginkgo where the flow in other areas has pillow lava deposits that are water bearing.
6) Once the borehole reaches the base of the Ginkgo flow, another pump test will be conducted to evaluate the productivity of the open borehole and determine if additional production capacity is available from a water bearing zone at the base of the flow.

4. Final Well Construction Decisions

The following determinations will be made in consultation with OWRD, depending on the results of exploratory drilling:

1) If static water levels are similar between the Ginkgo and Sand Hollow flows within the Frenchman Springs Member of the Wanapum Formation (and OWRD is in agreement), then the production zone of the well will include both the Sand Hollow and the Ginkgo basalt flows. To accomplish this, the 10-inch casing will be cut above the split seal and removed to re-expose the Sand Hollow water bearing zones.
2) If static water levels are different, two scenarios may apply:
    a) If the Sand Hollow is more productive than the Ginkgo, then the lower portion of the hole (below 1,300 feet bgs) will be abandoned. The 10-inch casing will be cut above the seal (at approximately 1,270 feet bgs and removed to retain connection with the water-bearing zones of the Sand Hollow flows.
    b) If the Ginkgo is more productive than the Sand Hollow, then the 10-inch casing will be left in place and the seal will be completed (using Method C) between the 10-inch casing and 16-inch borehole/casing to an overlap of 10 feet or more inside the 16-inch casing.

5. Summary

A special standard is required for this drilling project to allow the Port to explore the production capacity of the deeper CRBG flows while also preserving the completion of the final well configuration in either of the two options described above. The split seal will seal off the current production zones from the deeper zones until the exploratory drilling and testing data can be collected and analyzed. The proposed split seal plan provides protection of water resources (the Basalt of Sand Hollow water bearing zones and Basalt of Ginkgo

water bearing zones) by sealing casing in a section of competent rock with an approximate 10–25 feet thick seal (exceeding the standard seal requirement of 5 feet into competent rock) thereby separating the two water bearing zones during the exploratory work. Once the final well design has been determined (in collaboration with OWRD), the constructed final seal will provide the same level of protection as a seal placed in accordance with OAR 690-210-0150.

MORR 52638

STATE OF OREGON
WATER SUPPLY WELL REPORT

(as required by ORS 537.545 & 537.765 and OAR 690-205-0210)

WELL I.D. LABEL# L L134388
START CARD # 1050324
ORIGINAL LOG #

(1) LAND OWNER
Owner Well I.D. Airport Well #3
First Name Port of Morrow Last Name
Company Port of Morrow
Address 2 Marine dr
City Boardman State OR Zip 97818

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

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

(5) BORE HOLE CONSTRUCTION
Special Standard [ ] (Attach copy)
Depth of Completed Well 1303 ft.

BORE HOLE Dia	From	To	SEAL Material	From	To	Amt	sacks/lbs
36	0	20	Cement	0	995	90 yds	
24	30	460			Calculated		
20.5	460	990					
14.75	990	1302			Calculated		

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [X] E
[ ] Other
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 P Actual Amount P

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	30		0	20	.500	●	○	X	
●	○	16		0	985	.375	●	○	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/ 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)
700	390	500	26 hours

Temperature 54 °F Lab analysis [ ] Yes By
Water quality concerns? [ ] Yes (describe below) TDS amount 100 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
County MORROW Twp 4 N N/S Range 24 E E/W WM
Sec 21 NE 1/4 of the SE 1/4 Tax Lot 131
Tax Map Number Lot
Lat ° ' " or 45.8154277 DMS or DD
Long ° ' " or 119.8157882 DMS or DD
(●) Street address of well ( ) Nearest address
½ mile West of Tower Road Boardman, OR 97818

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	1/5/22			80

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 30 ft

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
1/5/22	985	1303	700			80

(11) WELL LOG
Ground Elevation 304

Material	From	To
See Attached		

RECEIVED
JAN 28 2022
OWRD

Date Started 3/20/21 Completed 1/5/22

(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 10576 Date 1/18/22
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:
New exempt use wells must be submitted with a map and recording fee.

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JAN 28 2022
OWRD

DRILLER DESCRIPTIONS/NOTES - POM AIRPORT WELL 3

FT	FT	DRILLERS DESCRIPTIONS
	17	30 CEMENT
	30	35 BASALT
	37	52 HARD BASALT
	52	66 FRACTURED BASALT
	130	180 CLAY AND WEATHER BASALT
	175	185 CLAY
	185	275 BASALT
	280	315 WEATHERED FRACTURED BASALT
	315	323 GRAY GREEN SILTSTONE
	323	350 HARD BASALT AND SILTSTONE
	350	380 HARD BASALT AND SILTSTONE
	377	387 NO CUTTINGS
	392	395 FINE SAND AND SILTSTONE
	413	420 BASALT
	415	426 MEDIUM HARD BLACK BASALT
	426	432 FRACTURED BASALT
	432	435 BLACK SILTY BASALT
	435	441 HEAVILY FRACTURED BASALT
	500	518 BASALT
	518	528 FRACTURED BASALT/GREEN CLAY
	528	530 BASALT
	541	569 HARD BLACK BASALT
	569	595 FRACTURED MEDIUM/HARD BASALT
	595	600 LARGE FRACTURED BASALT WITH GREEN CLAY/SILT MIXED
	600	611 HARD BLACK BASALT
	611	653 MEDIUM HARD BASALT MIXED WITH GREEN CLAY
	653	670 HARD BLACK BASALT
	688	691 VERY HARD BASALT
	696	704 BASALT BLACK HARD
	704	732 HARD BLACK BASALT WITH GREEN MINERAL MIXED
	732	742 FRACTURED BASALT
	745	754 LARGE FRACTURES/VERY HARD TO DRILL
	759	762 BASALT (BADLY FRACTURED)

RECEIVED
JÁN 28 2022
OWRD

762	772	FRACTURED BLACK POROUS BASALT
772	775	HARD BASALT WITH BIG FRACTURES
775	783	VERY HARD BASALT
783	797	BASALT GREEN SOFT
797	806	BASALT BLACK HARD NO FRACTURES
806	810	HARD BLACK BASALT
810	815	HARD BLACK BASALT; FRACTURES THROUGHOUT
815	818	FRACTURED BLACK BASALT WITH GREEN MIX
818	821	FRACTURED HARD BASALT
821	824	HARD BLACK BASALT
824	827	VERY HARD BLACK BASALT
829	834	HARD BLACK BASALT
835	839	VERY HARD BASALT
839	845	FRACTURED BLACK BASALT
845	870	HARD BLACK BASALT
870	880	HARD BLACK BASALT
886	890	HARD BLACK BASALT WITH GRAY
900	912	VERY HARD BLACK BASALT
912	922	FRACTURED/WEATHERED BASALT
922	925	HARD BLACK BASALT
925	938	FRACTUED BLACK BASALT
938	951	VERY HARD BLACK BASALT
951	973	VERY HARD BLACK BLUE BASALT
1002	1010	EXTREMELY HARD BLACK/BLUE BASALT
1017	1023	VERY HARD BLACK/BLUE BASALT
1028	1034	VERY HARD BASALT BLACK/GREY
1041	1048	VERY HARD BASALT
1048	1051	FRACTURED HARD BASALT
1059	1063	HARD BLACK BASALT
	1065.5	CHANGE FM. GREY/GREEN GRAVELS TO BLACK BASALT
1069	1076	EXT HARD BASALT
1076	1076	BROWN/GREY BASALT TURNED INTO GRAY/GREEN ROUNDED GR.
1077	1080	BLACK/GREY BASALT W GRAYCLAY
	1083	GREY/BLACK BASALT
1086	1095.5	VERY HARD BASALT
1095.5	1098	VESICULAR BLACK/BLUE BASALT
1117	1026.5	FRACTURED HARD BASALT
1126	1131	BLACK/GREY/GREEN BASALT
1131	1135	HARD BLACK BASALT
1135	1143	VERY HARD BLACK BASALT

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OWRD

1150	1157.5	EXT HARD BLACK/GREY BASALT
1158	1167	BLACK/GREEN BASALT W GRAY CLAY
1167	1176	BLACK BASALT
1176	1181	VERY HARD BLACK/GREY BASALT
1181	1190.5	HARD SLOW BLACK BASALT
1190.5	1201.5	HARD BLACK BASALT
1201.5	1212.5	HARD SLOW BLACK BASALT
1212.5	1220.5	EXT HARD BLACK/GREY BASALT
1220.5	1228.5	VRY HARD BLACK BASALT (NO FRACTURES)
1228.5	1238.5	EXT HARD BLACK/GREY BASALT
	1245	DRILL CHATTER/RODS JUMPY
1248.5	1257	VRY HARD BLACK BASALT
1257	1260	HARD BLACK BASALT
1265	1269	VRY HARD BLACK BASALT
1269	1271	BLACK BASALT
1274	1280	VRY HARD BLACK BASALT
1280	1287	HARD BLACK BASALT
1287	1293	VRY HARD BLACK BASALT
1293	1297	VRY HARD BLACK BASALT
1297	1300	FRACTURED BLACK BASALT
1300	1300.5	GREY CLAY
1300	1302	HARD BLACK/GREY BASALT

MORR 52638

FIGURE 1

Site Location Map

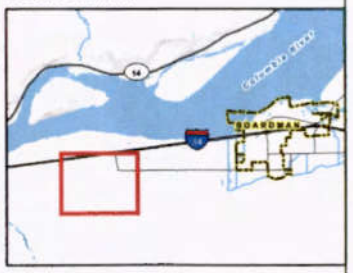
Morrow County, Oregon
Township 4 North,
Range 24 East (W.M.)

LEGEND

- Proposed Well Location
- Irrigation Well
- Road
- Watercourse
- Waterbody

RECEIVED
JAN 28 2022
OWRD

LOCATOR MAP:



N

0 500 1,000 1,500
Feet

Date: August 12, 2020
Data Sources: USGS, OGIC, BLM.
Maxar imagery 2018.

GSI Water Solutions, Inc.

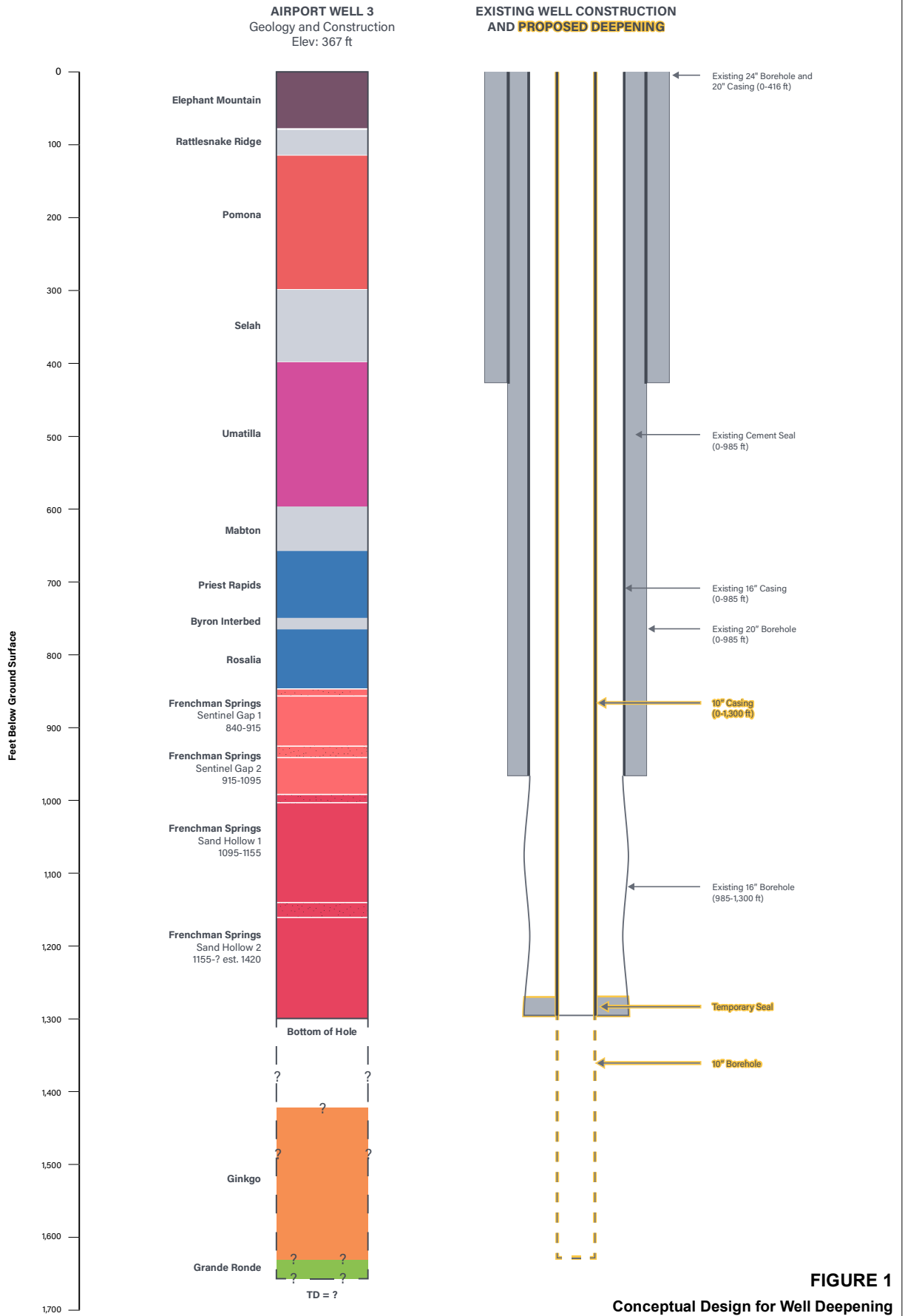


FIGURE 1

Conceptual Design for Well Deepening

Port of Morrow

GSI Water Solutions, Inc.

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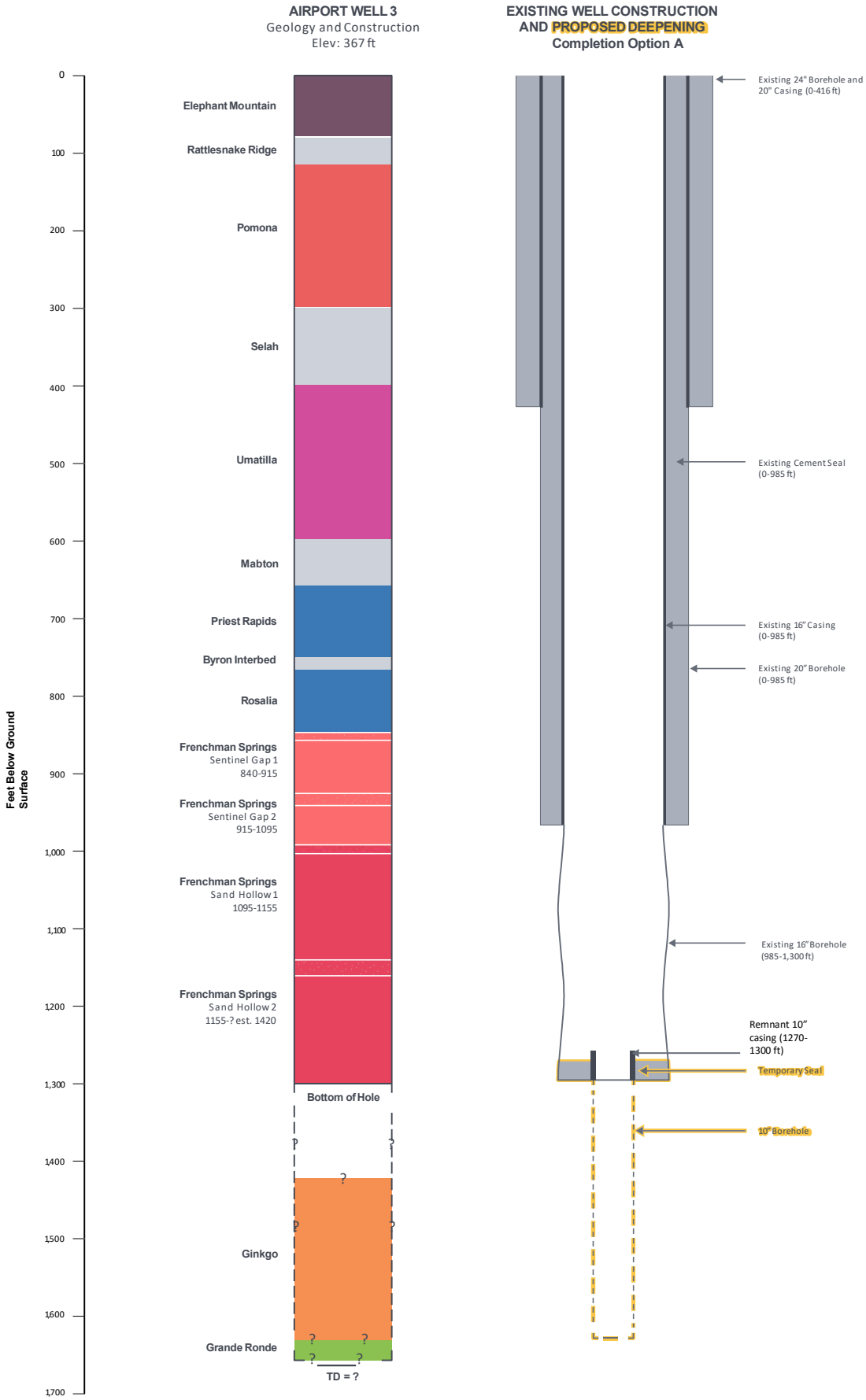

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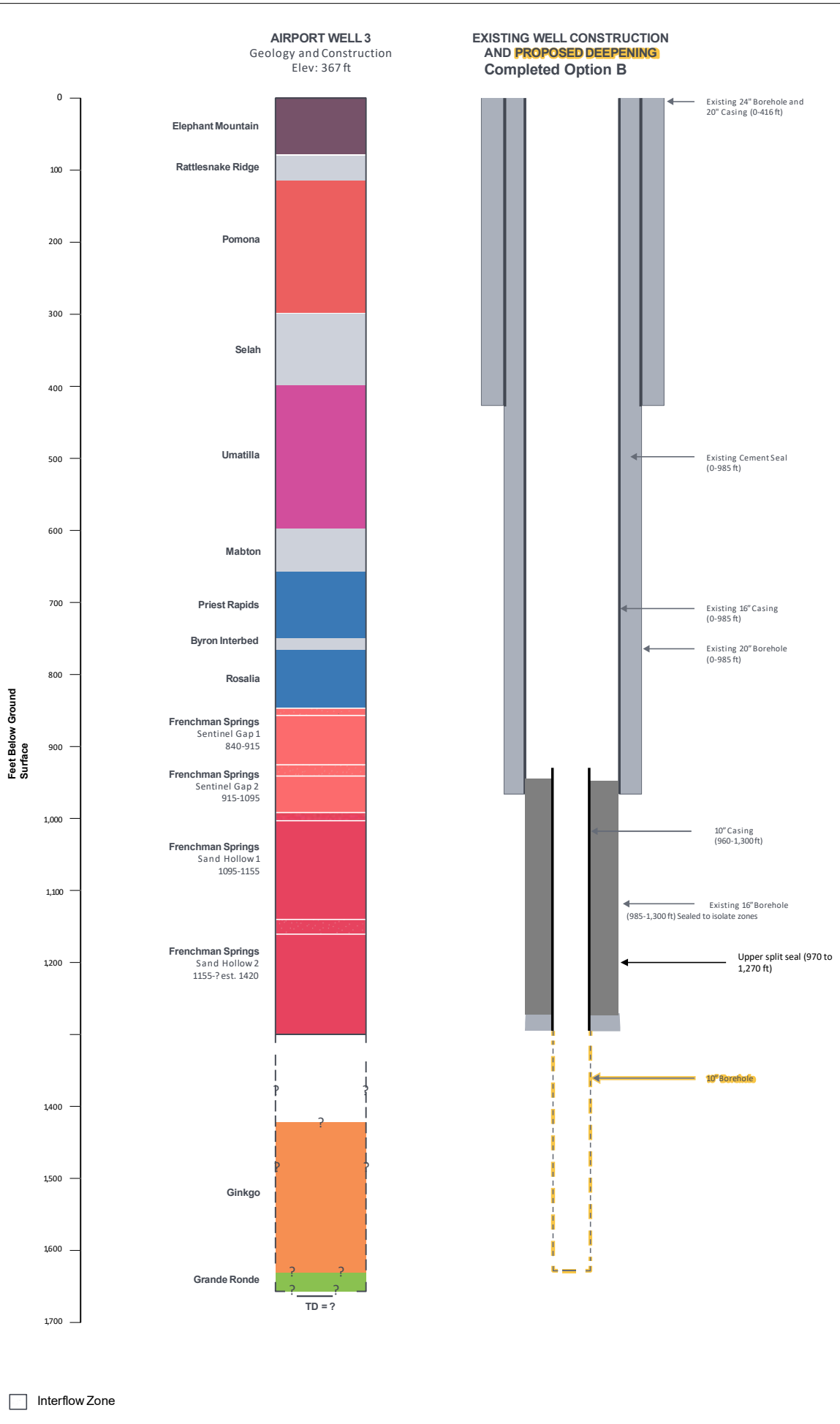

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