Groundwater Transfer Review Summary Form

Transfer/PA # T- _13270_

GW Reviewer _Aurora C Bouchier_ Date Review Completed: _~~April 10, 2020~~ August 31, 2020

Summary of Enlargement (Same Source) Review:

☐ The proposed transfer fails to keep the original place of use from receiving water from the same source.

Summary of Injury Review:

☐ The proposed transfer will result in another, existing water right not receiving previously available water to which it is legally entitled or result in significant interference with a surface water source.

Summary of Similarity Review:

☐ The proposed SW-GW transfer doesn't meet the definition of "similarly" as per OAR 690-380-2130.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations.

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Ground Water Review Form:

- ☐ **Water Right Transfer**
- ☐ **Permit Amendment**
- ☐ **GR Modification**
- ☐ **Other**

Application: T-13270 Applicant Name: City of Echo

Proposed Changes: ☐ POA ☒ APOA ☐ SW→GW ☐ RA
☐ USE ☐ POU ☐ OTHER

Reviewer(s): Aurora C Bouchier Date of Review: August 31, 2020

Supersedes review of: April 10, 2020

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 10/9/2020

The information provided in the application is insufficient to evaluate whether the proposed transfer may be approved because:

☐ The water well reports provided with the application do not correspond to the water rights affected by the transfer.

☐ The application does not include water well reports or a description of the well construction details sufficient to establish the ground water body developed or proposed to be developed.

☐ Other _____

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1. Basic description of the changes proposed in this transfer: The City has not used Well 2 (UMAT 1314/1313, which is authorized for 2.9 cfs under Permit G-8546) since 2002. They wish to replace it with a new well at one of two proposed locations. Their intent is to develop the entire water right (4.9 cfs) from the new well, if possible. Permit G-8546 also includes a second well, Well 4 (UMAT 1311/5842), which is authorized for a maximum rate of 2 cfs. The City was producing approximately 61 to 95 AF of water from Well 4 (UMAT 1311/5842) over the past decade until 2017, at which point production from this well has apparently ceased.

   This re-review takes into account the content and results of a recent contested case (OAH Reference No. 2019-OWRD-00027, hearing on 05/28/2020) that reinforced how the potential for substantial or undue interference relates to the injury assessment performed during a transfer review. See item 8 for additional details.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
☒ Yes ☐ No Comments: Both authorized wells (Well 4: UMAT 1311/5841 and Well 2: UMAT 1314/1313) are physically located within the Stage Gulch Critical Groundwater Area Subarea A. However, it appears that the 1992 deepening of Well 4 (UMAT 1311 originally 600 feet deep, deepened to 1045 feet under log UMAT 5842) connected Well 4 (UMAT 1311/5842) with the aquifer of the Stage Gulch Critical Groundwater Area Subarea D or Subarea H. Another City well, Well 5 (UMAT 5970, constructed in 1994 and 1282 feet deep), also appears connected to the aquifer of Subarea D or Subarea H. Both Well 4 (UMAT 1311/5842) and Well 5 (UMAT 5970) are located in close proximity to a mapped fault. This fault appears to act as a groundwater conduit, at a depth greater than 600 feet below land surface. Regardless, past practice has been to treat all basalt wells within Subarea A as same source.

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
☐ Yes ☒ No Both wells authorized under Permit G-8546 are producing from basalt aquifers. Water level data indicates that Well 2 (UMAT 1314/1313) is producing from the same basalt aquifer as the other wells in Stage Gulch Critical Groundwater Area Subarea A. It appears that Well 4 (UMAT 1311/5842) was producing from the same basalt aquifer as other wells in Subarea A until it was deepened in 1992 from 600 feet to 1045 feet. At that time it appears that Well 4 became hydraulically connected to wells in Stage Gulch Critical Groundwater Area Subarea D or Subarea H, based on annual water level data.

b) If yes, estimate the portion of the right supplied by each of the sources and describe any limitations that will need to be placed on the proposed change (rate, duty, etc.): _____

4. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another ground water right**?
☒ Yes ☐ No Comments: See item 8 below.

b) If yes, would this proposed change, at its maximum allowed rate of use, likely result in another groundwater right not receiving the water to which it is legally entitled?
~~☒ Yes ☐ No If yes, explain: See item 8 below.~~
☐ Yes ☒ No If yes, explain: See item 8 below.

5. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another surface water source**?
☐ Yes ☒ No Comments: _____

b) If yes, at its maximum allowed rate of use, what is the expected change in degree of interference with any **surface water sources** resulting from the proposed change?
Stream: _____ ☐ Minimal ☐ Significant
Stream: _____ ☐ Minimal ☐ Significant
Provide context for minimal/significant impact: _____

6. For SW-GW transfers, will the proposed change in point of diversion affect the surface water source similarly to the authorized point of diversion specified in the water use subject to transfer?
☐ Yes ☐ No Comments: NA

7. What conditions or other changes in the application are necessary to address any potential issues identified above: The proposed well will have to comply with current well construction standards including the sealing of a water supply well in consolidated formations (OAR 690-210-0150) and for artesian water supply wells (OAR 690-210-0155). The application states a casing and seal depth of approximately 1275 feet which may or may not be adequate to comply with current well construction standards. In order to ensure that the well complies with current well construction standards the driller should be required to a) collect cuttings every 10 feet and at changes in lithology with a split of each sampled interval provided to the Department, b) work with the well inspector to determine the exact (continuous) casing and (continuous) seal depth – likely requiring a downhole video log, a copy of which shall also be provided to the Department, and c) install a 1-inch dedicated measuring tube in addition to the required access port required in (OAR 690-507-0780). This dedicated measuring tube must be installed and positioned such that it is useable for measuring water-levels.

   In addition, the proposed water right will have to comply with the Stage Gulch CGWA rules (OAR 690-507-0750), including the duties of a water user (OAR 690-507-0780) and flow meter specifications (OAR 690-507-0785).

~~8.~~ Any additional comments: The proposed new well, at either location, is near the Echo Heights subdivision, which contains many domestic wells. The domestic wells of Echo Heights are approximately 700 feet deep or less. Presumably, the deep proposed (continuous) casing and (continuous) seal (1275 feet below land surface) and proposed total depth (1500 feet below land surface) are intended to prevent interference with the domestic wells and nearby irrigation wells. Once the new well is constructed (as per item 7 above), the new well will demonstrate either a) that it is producing from a distinctly different aquifer than nearby Echo Heights wells and permitted irrigation wells, or b) that it is producing from the same aquifer as the nearby Echo Heights wells and permitted irrigation wells.

   If the new well is producing from a distinctly different aquifer as nearby wells, then interference/injury will not be an issue.

   On the other hand, if the new well is producing from the same aquifer as the nearby wells then there is potential for hydraulic interference with the nearby wells. Theis drawdown modeling indicates that drawdown at UMAT 55716 (the Echo Heights deep well closest to either proposed location for Well 6) could be up to approximately 135 feet due to pumping at proposed Well 6B, or approximately 128 feet due to pumping at proposed Well 6A (see Theis Drawdown Analysis below), after a year of continuous pumping. The transmissivity value used in these models is derived from a pump test at UMAT 2075, located in the town of Hermiston. UMAT 2075 is the only basalt well within the Stage Gulch Critical Groundwater Area which has analyzable pump test results. **However, taking into account the content and results of a recent contested case (OAH Reference No. 2019-OWRD-00027, hearing on 05/28/2020), the proposed transfer will not result in injury to the nearby wells if the nearby wells are not reasonably efficient and/or do not fully penetrate the aquifer. If the new well (constructed as per item 7) is producing from the same aquifer as the nearby wells, this will demonstrate that the nearby wells are not fully penetrating the aquifer.**

If this transfer goes through, a constant-rate aquifer test should be conducted to determine aquifer properties locally. The test should be designed and conducted by an Oregon Registered Geologist but the test design should be subject to the approval of the Groundwater Section of the Department prior to the test. The test should have a duration of at least 24 hours, and should include discharge measurements in the pumping well and water level measurements in the pumping well and other permitted wells. If practicable, water level measurements should also be made in nearby wells that are not on the permit. If permission is granted, either UMAT 1277 or UMAT 54154 would be good to monitor during the aquifer test, along with deep wells in the Echo Heights subdivision.

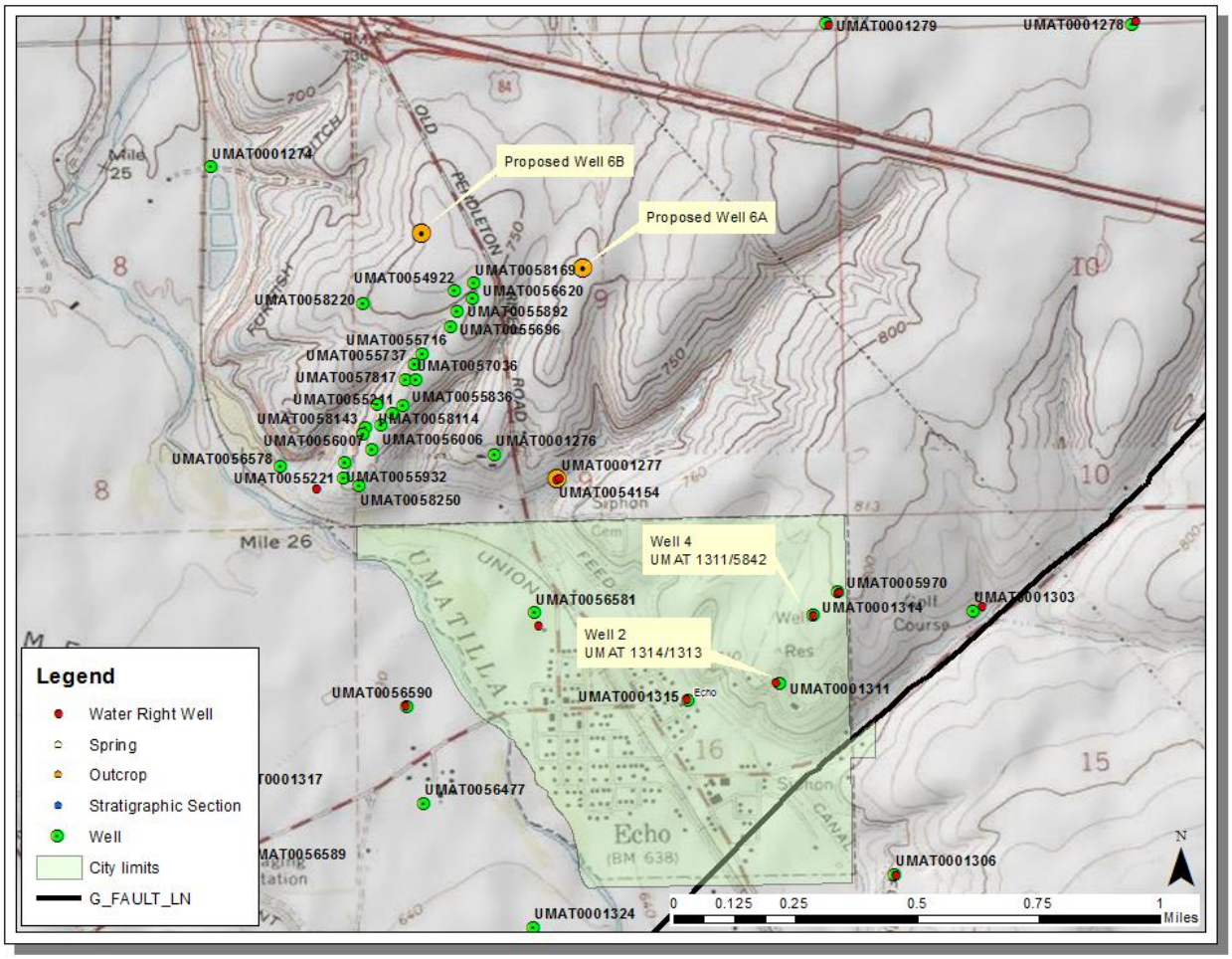
References:

Application file: T-13270

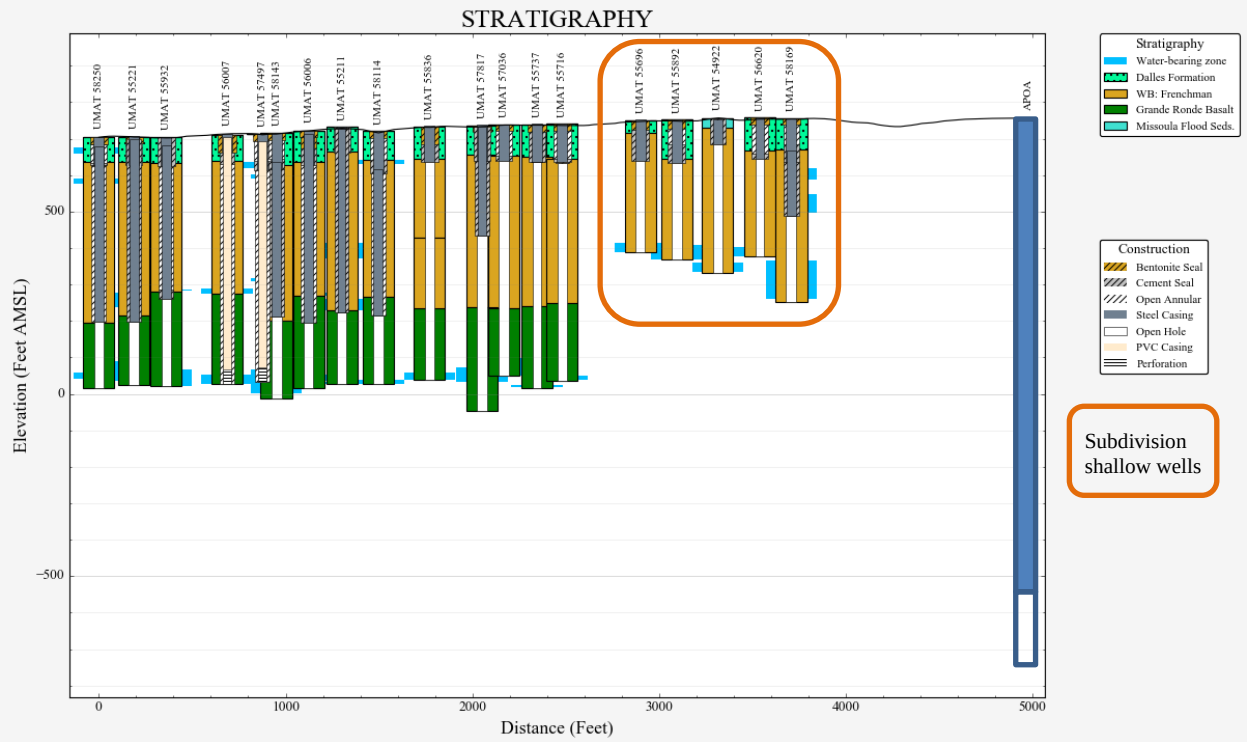
McConnell, Vicki S., 2003, Preliminary Geologic Map of Service Buttes, Echo, Nolin, Barnhart, and Pendleton 7.5' Quadrangles (west to east), Umatilla County, Oreon; Oregon Department of Geology and Mineral Industries Open-File Report O-06-20.

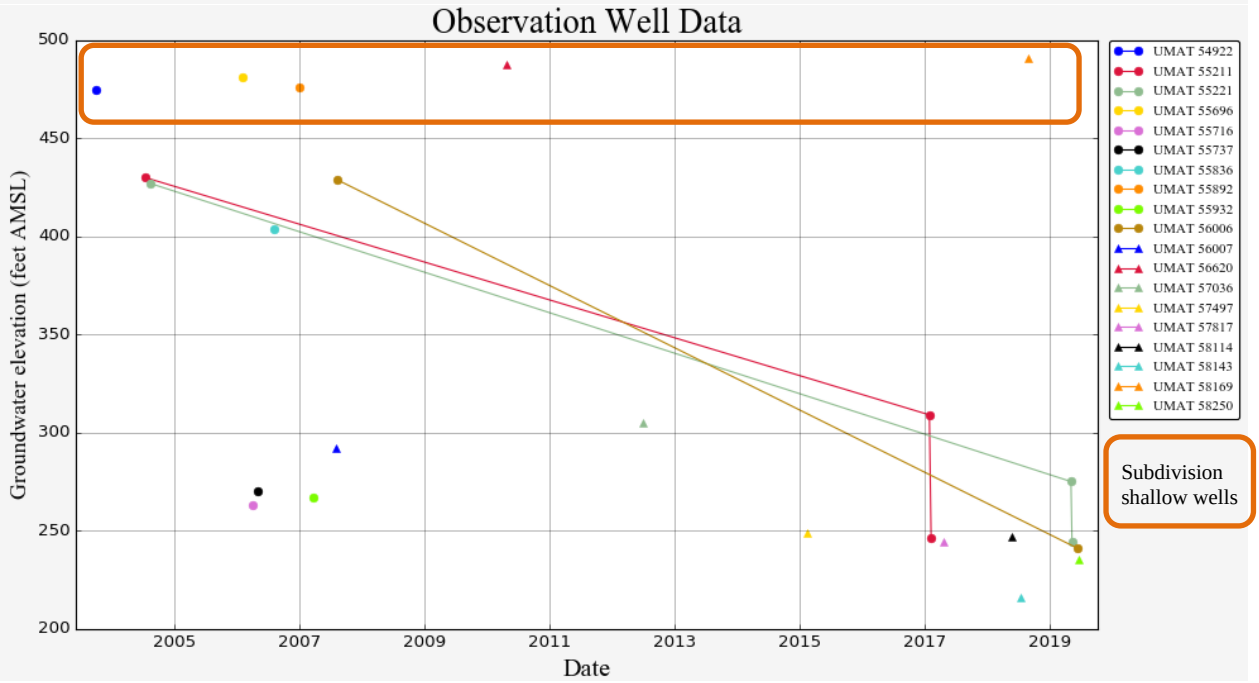
OWRD Water Level and Well Log Databases.

Location Map



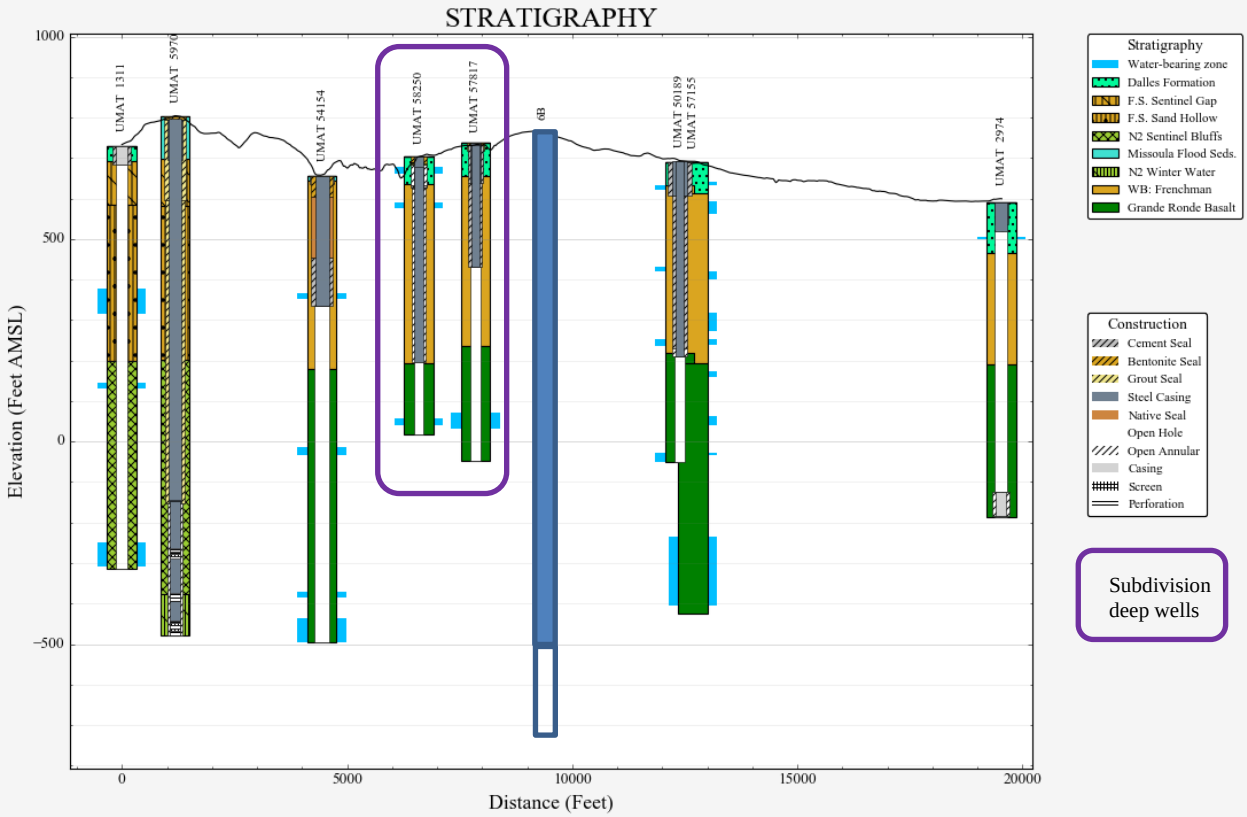
Wells in Echo Heights

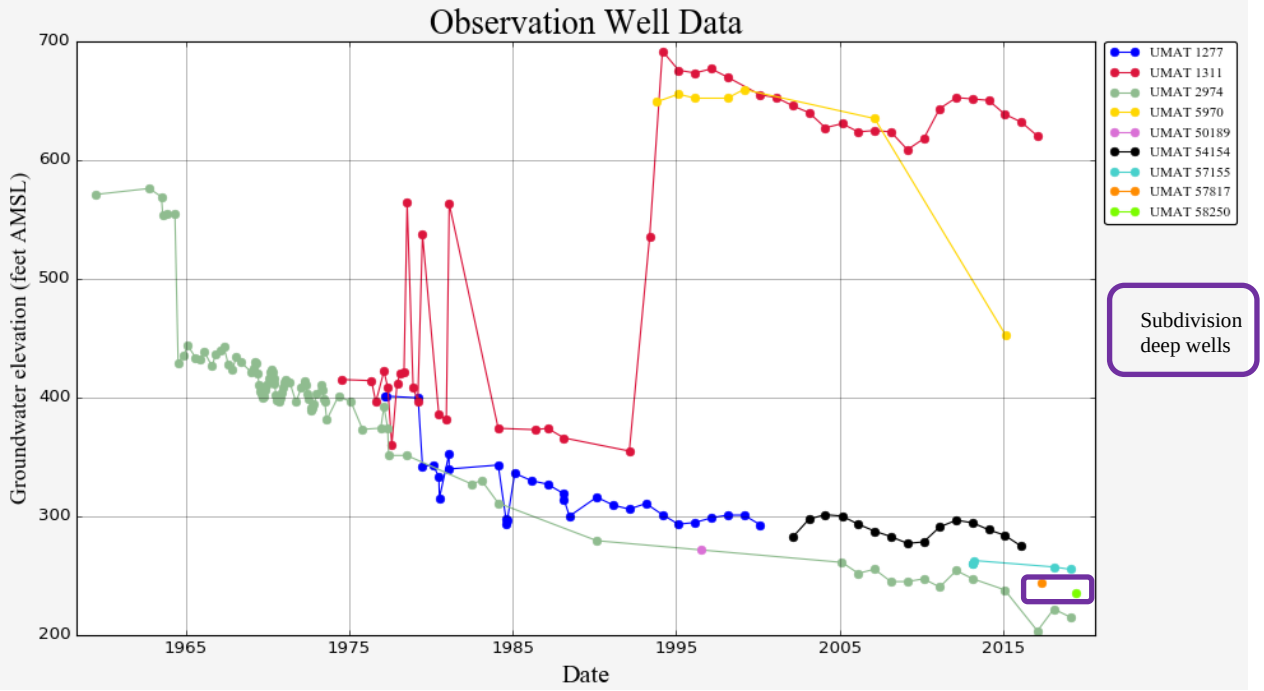





UMAT 58159
UMAT 54922
UMAT 56620
UMAT 55882
UMAT 55696
UMAT 55716
UMAT 55737
UMAT 57817
UMAT 57036
UMAT 58114
UMAT 55211
UMAT 55836
UMAT 58143
UMAT 56006
UMAT 57497
UMAT 56007
UMAT 55932
UMAT 55221
UMAT 58254
Thielsen Rd
Echo Cemetery Rd
Thielsen Rd
© 2018 Google
Google earth
lat 45.755841° lon -119.209297° elev 615 ft eye alt 2884 ft
1994

Regional Wells from Critical Groundwater Area Subarea A

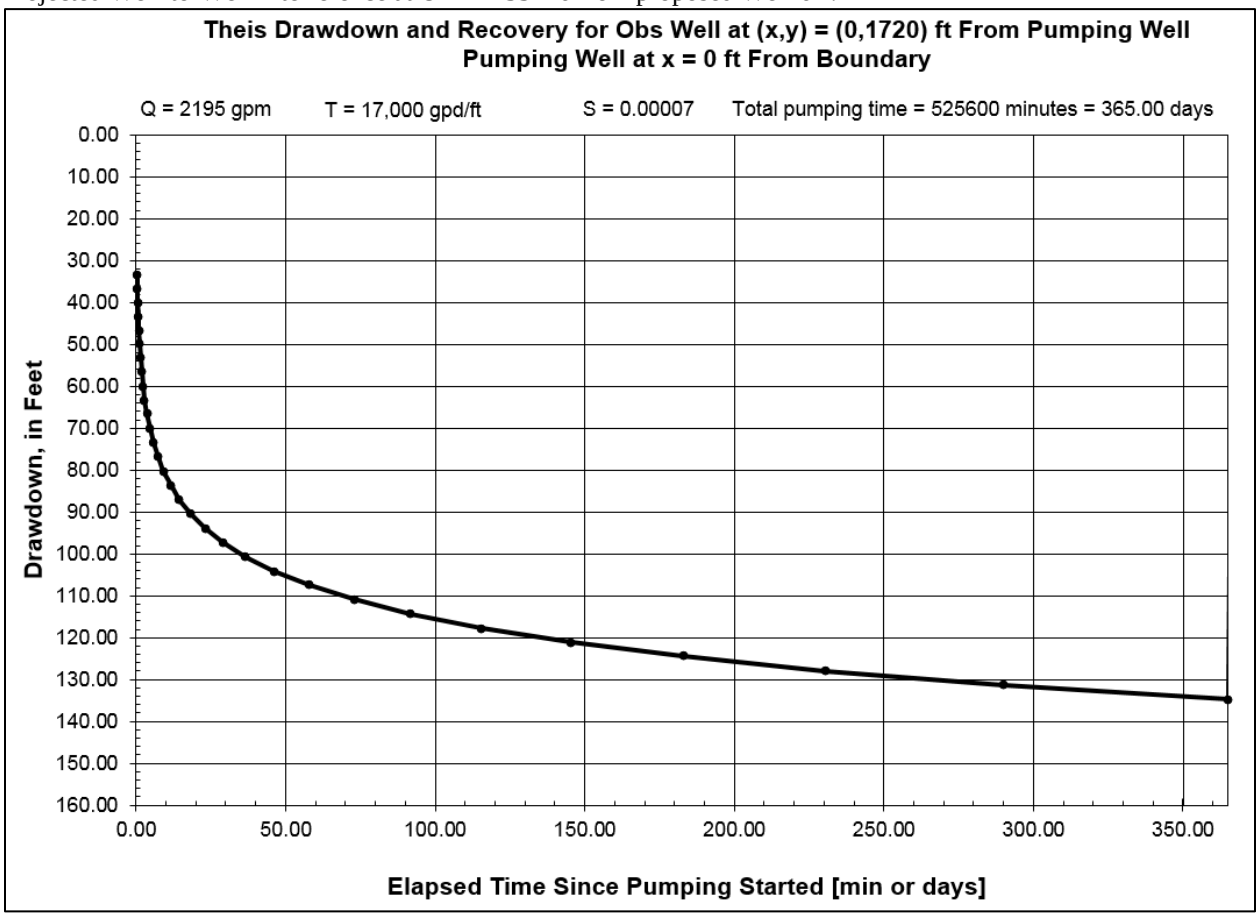





UMAT 2074
UMAT 57155
UMAT 50189
84
65
Thiesen Rd
UMAT 57817
UMAT 54154
UMAT 58250
N Thielsen St
UMAT 5970
Co 1347 Rd
UMAT 1311
W Main St
Echo Rd
Buckley St
Oregon Trail Rd
2506 ft
© 2018 Google
1994
Google earth
lat 45.809961° lon -119.257361° elev 661 ft eye alt 11854 ft

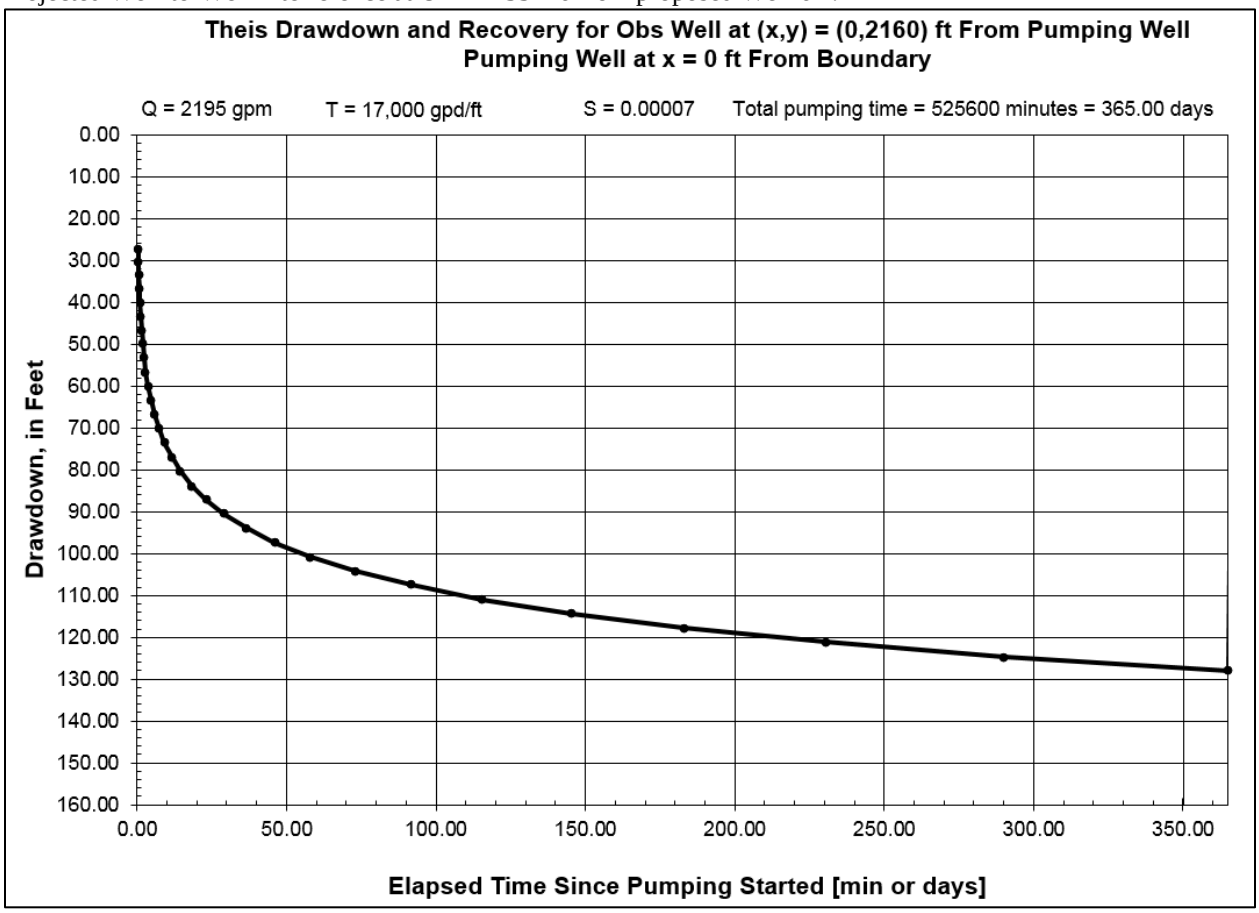
Theis Drawdown Analyses

Projected Well-to-Well Interference at UMAT 55716 from proposed Well 6B.



Distance from Pumping Well to Affected Well (UMAT 55716) (x, y): 0, 1720 feet [from proposed well 6B]
Pumping Rate (Q): 2195 gpm (4.9 cfs)
Aquifer Transmissivity (T) = 17000 gpd/ft (2272 ft^2/day) [based on data from pumping test at UMAT 2075]
Aquifer Storativity (S) = $7x10^{-5}$ [based on aquifer tests in Columbia River Basalts]
Total Pumping Time = 365 days [permit G-8546 specifies 4.9 cfs {2.9 cfs from well #1 and 2.0 cfs from well #4} with no duty listed, therefore the presumptive use could be pumping at 2195 gpm 24 hours a day, 365 days a year]

Projected Well-to-Well Interference at UMAT 55716 from proposed Well 6A.



Distance from Pumping Well to Affected Well (UMAT 55716) (x, y): 0, 2160 feet [from proposed well 6A]
Pumping Rate (Q): 2195 gpm (4.9 cfs)
Aquifer Transmissivity (T) = 17000 gpd/ft (2272 ft^2/day) [based on data from pumping test at UMAT 2075]
Aquifer Storativity (S) = $7x10^{-5}$ [based on aquifer tests in Columbia River Basalts]
Total Pumping Time = 365 days [permit G-8546 specifies 4.9 cfs {2.9 cfs from well #1 and 2.0 cfs from well #4} with no duty listed, therefore the presumptive use could be pumping at 2195 gpm 24 hours a day, 365 days a year]