Approved: 

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager

From: Travis Kelly, Well Construction Program Coordinator

Subject: Review of Water Right Application G-19002

Date: December 11, 2020

The attached application was forwarded to the Well Construction and Compliance Section by the Groundwater Section. Aurora Bouchier reviewed the application. Please see Aurora's Groundwater Review and the Well Reports.

Applicant's Well #1 (MARI 2892): Based on a review of the Well Report, Applicant's Well #1 does not appear to comply with current minimum well construction standards (See OAR 690 Division 210). The problem is that according to the Water Supply Well Report, the well was not sealed with an approved grout. Also, the Well Report indicates that the well head is flush with land surface. In order to meet minimum well construction standards, the well head must be extended so that it is at least one-foot above land surface and the well must be resealed with an approved grout to a minimum depth of 18 feet below land surface.

My recommendation is that the Department not issue a permit for Applicant's Well #1 (MARI 2892) unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

The repair of Applicant's Well #1 may not satisfy hydraulic connection issues.

Applicant's Well #2 (MARI 2900): Based on a review of the Well Report, Applicant's Well #2 does not appear to comply with current minimum well construction standards (See OAR 690 Division 210). The problem is that according to the Water Supply Well Report, the upper oversized bore hole is only 3-inches larger in diameter than the nominal diameter of the permanent well casing. Also, the Well Report indicates that the well head is flush with land surface. In order to meet minimum well construction standards, the the upper oversized bore hole must be reconstructed to be at least 4-inches larger in diameter than the nominal diameter of the permanent well casing and be resealed with an approved grout to a minimum depth of 18 feet below land surface. In addition the well head must be extended so that it is at least one-foot above land surface.

My recommendation is that the Department not issue a permit for Applicant's Well #2 (MARI 2900) unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

The repair of Applicant's Well #2 may not satisfy hydraulic connection issues.

Applicant's Well #3 (MARI 2890): Based on a review of the Well Report and the approved special standard, Applicant's Well #3 seems to protect the groundwater resource.

The construction of Applicant's Well #3 may not satisfy hydraulic connection issues.

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

RECEIVED
MAY 12 1969
STATE ENGINEER
SALEM OREGON

WATER WELL REPORT
STATE OF OREGON

(Please type or print)
(Do not write above this line)

MAR 2892

State Well No. 5/3W-11

State Permit No. .....

(1) OWNER:
Name OPAL MAHONY
Address Route 1 Gervais Ore 97026

(2) TYPE OF WORK (check):
New Well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary [ ] Driven [ ]
Cable [X] Jetted [ ]
Dug [ ] Bored [ ]

(4) PROPOSED USE (check):
Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [X] Test Well [ ] Other [ ]

(5) CASING INSTALLED:
Threaded [ ] Welded [X]
12 " Diam. from 0 ft. to 63 ft. Gage 1/4
..... " Diam. from ..... ft. to ..... ft. Gage .....
..... " Diam. from ..... ft. to ..... ft. Gage .....

PERFORATIONS:
Perforated? [X] Yes [ ] No.
Type of perforator used MILLS
Size of perforations 3/8 in. by 2 1/2 in.
240 perforations from 43 ft. to 52 ft.
48 perforations from 59 ft. to 62 ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.
..... perforations from ..... ft. to ..... ft.

(7) SCREENS:
Well screen installed? [ ] Yes [X] No
Manufacturer's Name .....
Type ..... Model No. .....
Diam. ..... Slot size ..... Set from ..... ft. to ..... ft.
Diam. ..... Slot size ..... Set from ..... ft. to ..... ft.

(8) WATER LEVEL: Completed well.
Static level 6'6" ft. below land surface Date 5-9-69
Artesian pressure ..... lbs. per square inch Date .....

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No If yes, by whom?
Yield: ..... gal./min. with ..... ft. drawdown after ..... hrs.
" " " "
" " " "
Bailer test 75 gal./min. with 13' ft. drawdown after 1 hrs.
Artesian flow ..... g.p.m. Date .....
Temperature of water 50° Was a chemical analysis made? [ ] Yes [X] No

(10) CONSTRUCTION:
Well seal—Material used PUDDLED CLAY
Depth of seal 30' ft.
Diameter of well bore to bottom of seal 16" in.
Were any loose strata cemented off? [ ] Yes [X] No Depth .....
Was a drive shoe used? [X] Yes [ ] No
Did any strata contain unusable water? [X] Yes [ ] No
Type of water? SANDY depth of strata 28' TO 35'
Method of sealing strata off CASED
Was well gravel packed? [ ] Yes [X] No Size of gravel: .....
Gravel placed from ..... ft. to ..... ft.

(11) LOCATION OF WELL:
County MARION Driller's well number .....
¼ ¼ Section 11 T. 5S R. 3W W.M.
Bearing and distance from section or subdivision corner .....

(12) WELL LOG:
Diameter of well below casing 12"
Depth drilled 63' ft. Depth of completed well 63' ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level as drilling proceeds. Note drilling rates.

MATERIAL	From	To	SWL
TOPSOIL	0	3'	
CLAY YELLOW SILTY	3	18	
BLACK SAND FINE } DECOMPOSED VEGETATION }	18	28	6'6"
LOG- FIR SOLID.	28	30	
SAND & PEBBLES ½"—	30	35	
GRAVEL & SAND 1"—	35	44	
GRAVEL COARSE	44	53	6'6"
SAND- BROWN MEDIUM.	53	58	
GRAVEL -BLACK COARSE	58	62	6'6"
CLAYSTONE BLUE-STICKY	62	63	

Work started 5-7- 1969 Completed 5-9- 1969
Date well drilling machine moved off of well 5-9- 1969

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] R.J. Sneed (Drilling Machine Operator) Date 5-9, 1969
Drilling Machine Operator's License No. 187

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME J.A. SNEED & SONS (Person, firm or corporation) (Type or print)
Address 3940 SILVERTON RD SALEM ORE.
[Signed] R.J. Sneed (Water Well Contractor)
Contractor's License No. 6 Date 5-9 1969

(USE ADDITIONAL SHEETS IF NECESSARY)

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

2900

WATER WELL REPORT

STATE OF OREGON (Please type or print) (Do not write above this line)

RECEIVED JUN 12 1968 STATE ENGINEER SALEM OREGON

State Well No. 5/3W-12

State Permit No. 6-8868

(1) OWNER:

Name Mel Hansen

Address Rt. 1, Box 277 Turner, Ore.

(2) TYPE OF WORK (check):

New Well ☑ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☐ Driven ☐
Cable ☑ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED:

Threaded ☐ Welded ☑

12 " Diam. from 0 ft. to 130 ft. Gage 250

" Diam. from ft. to ft. Gage

" Diam. from ft. to ft. Gage

PERFORATIONS:

Perforated? ☑ Yes ☐ No.

Type of perforator used Mills Knife

Size of perforations 5/16 in. by 2 in.

432 perforations from 101 ft. to 119 ft.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☒ No

Manufacturer's Name

Type Model No.

Diam. Slot size Set from ft. to ft.

Diam. Slot size Set from ft. to ft.

(8) WATER LEVEL: Completed well.

Static level 55 ft. below land surface Date 5-21-68

Artesian pressure lbs. per square inch Date

(9) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☑ Yes ☐ No If yes, by whom?

Yield: 218 gal./min. with 76 ft. drawdown after 4 hrs.

" with air lift " "

" " " "

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m. Date

Temperature of water Was a chemical analysis made? ☐ Yes ☐ No

(10) CONSTRUCTION:

Well seal—Material used Bentonite

Depth of seal 20 ft.

Diameter of well bore to bottom of seal 15 in.

Were any loose strata cemented off? ☐ Yes ☒ No Depth

Was a drive shoe used? ☐ Yes ☒ No

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel:

Gravel placed from ft. to ft.

(11) LOCATION OF WELL:

County Marion Driller's well number

¼ ¼ Section 12 T. 5S R. 3W W.M.

Bearing and distance from section or subdivision corner

(12) WELL LOG:

Diameter of well below casing 12

Depth drilled 156 ft. Depth of completed well 130 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level as drilling proceeds. Note drilling rates.

MATERIAL	From	To	SWL
top soil	0	6"	
brown clay	6"	25'	
brown silt	25	38	
blue clay	38	65	
blue silt	65	67	
black sand	67	77	
brown sandy clay	81	96	
red sand & gravel, mo 2"	96	119	
brown clay (light)	119	126	
brown clay	126	138	
blue silty clay	138	151	
brown sand	151	156	
gravel	156		

Work started 5-8 1968 Completed 6-3 1968

Date well drilling machine moved off of well 6-3 1968

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Roger J. Mullen (Drilling Machine Operator) Date 6-4, 1968

Drilling Machine Operator's License No. 581

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Mike Schneider (Person, firm or corporation) (Type or print)

Address Star Rt. Box 97 St. Paul Ore.

[Signed] Mike Schneider (Water Well Contractor)

Contractor's License No. 387 Date 6-4, 1968

(USE ADDITIONAL SHEETS IF NECESSARY)

WATER WELL REPORT
STATE OF OREGON

MARI 2890

RECEIVED
SEP 2 1982
WATER RESOURCES DEPT.
SALEM, OREGON

State Well No. 5S/3W-11ab

State Permit No.

(1) OWNER:
Name Gary Baker (S. Coleman)
Address 21880 SW Farmington Rd
City Beaverton State Oregon 97015

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary Air ☐ Driven ☐
Rotary Mud ☐ Dug ☐
Cable ☒ Bored ☐

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☒ Test Well ☐ Other ☐
Thermal: ☐ Withdrawal ☐ Reinjection ☐

(5) CASING INSTALLED:
Steel ☒ Threaded ☐ Plastic ☐ Welded ☒
16" Diam. from +1 ft. to 40 ft. Gauge .375
" Diam. from ft. to ft. Gauge

LINER INSTALLED:
" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:
Perforated? ☒ Yes ☐ No
Type of perforator used Mills knife
Size of perforations ½ in. by 3 in.
536 perforations from 10 ft. to 33 ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:
Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot Size Set from ft. to ft.
Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☐ No If yes, by whom? Owner
Yield: over 500 gal./min. with 5 ft. drawdown after 8 hrs.
" " " "
Air test gal./min. with drill stem at ft. hrs.
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:
Special standards: Yes ☒ No ☐
Well seal—Material used 22-sk cement grout
Well sealed from land surface to 10 ft.
Diameter of well bore to bottom of seal 20 in.
Diameter of well bore below seal 20 in. to 20' -16" to 40'
Number of sacks of cement used in well seal 22 sacks
How was cement grout placed? pumped into annular space as temporary casing was removed from bottom up
Was pump installed? no Type HP Depth ft.
Was a drive shoe used? ☐ Yes ☒ No Plug Size: location ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of Water? – depth of strata –
Method of sealing strata off –
Was well gravel packed? ☒ Yes ☐ No Size of gravel: 3/4 minus
Gravel placed from 10 ft. to 20 ft. void between 20 & 16

(10) LOCATION OF WELL:
County Marion Driller's well number 8207
NW ¼ NE ¼ Section 11 T. 5S R. 3W W.M.
Tax Lot # Lot Blk Subdivision
Address at well location:

(11) WATER LEVEL: Completed well.
Depth at which water was first found 4' ft.
Static level 3' ft. below land surface. Date 7/26
Artesian pressure – lbs. per square inch. Date –

(12) WELL LOG:
Diameter of well below casing –
Depth drilled 40 ft. Depth of completed well 35 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
See attached correspondence			

Work started 7/7 19 82 Completed 7-29 19 82
Date well drilling machine moved off of well 8/26 19 82

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Eugene Mack (Drilling Machine Operator) Date 8-31, 19 82
Drilling Machine Operator's License No. 1522

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name Schneider Equipment, Inc. (Person, firm or corporation) (Type or print)
Address 21801 River Rd NE, St. Paul, Or 97137
[Signed] Stephen Schneider (Water Well Contractor)
Contractor's License No. 649 Date 8-31, 19 82

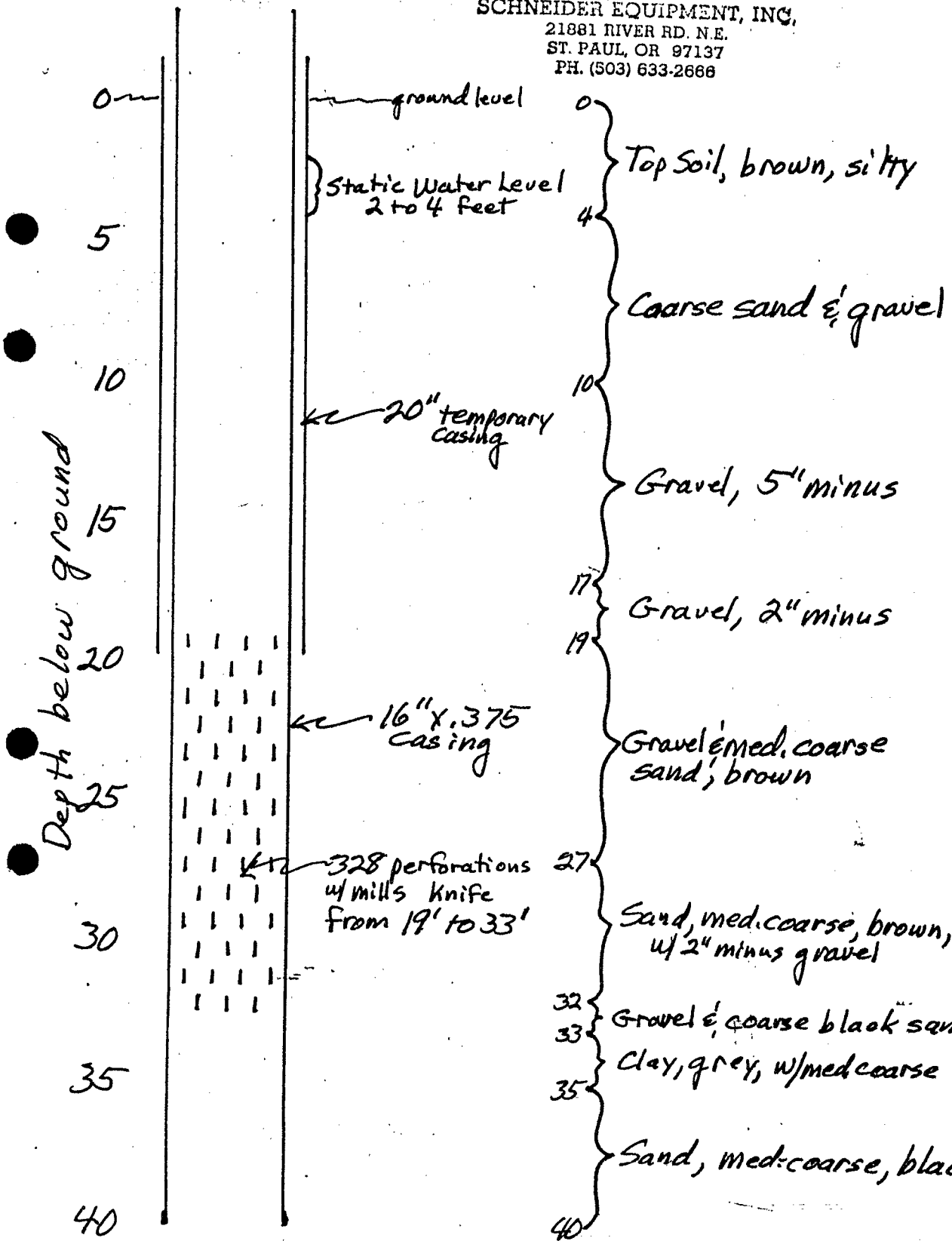
NOTICE TO WATER WELL CONTRACTOR The original and first copy of this report are to be filed with the WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP*12658-690

MAPI 2890

Steve Coleman – Gary Baker
Cable Tool Drilled Well
As built to date –
July 26, 1982
by:
SCHNEIDER EQUIPMENT, INC.
21881 RIVER RD. N.E.
ST. PAUL, OR 97137
PH. (503) 633-2666

5s | 3w – 11 ab
Marion



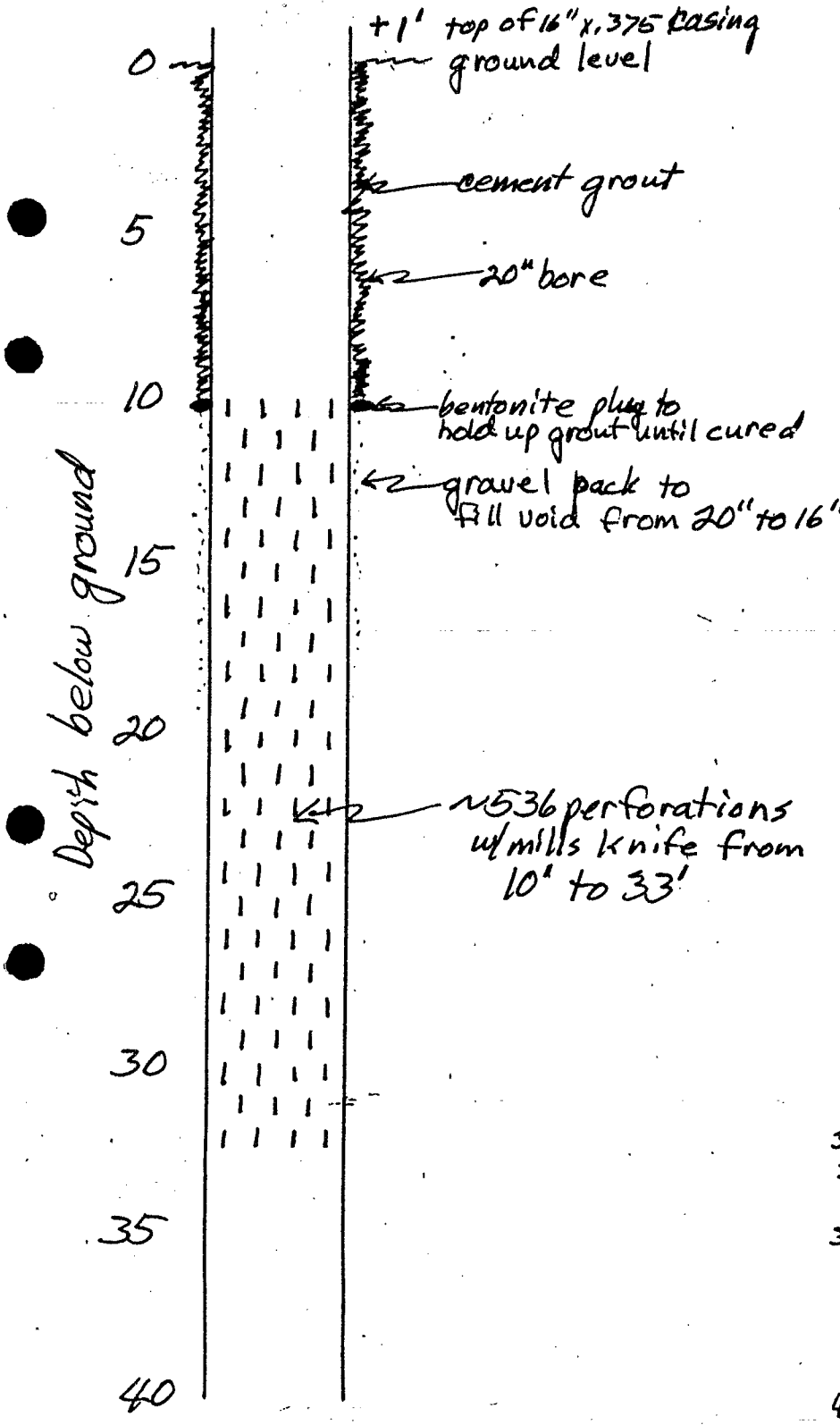
MARI 2890

Steve Coleman - Gary Baker
Cable Tool Drilled Well
as proposed to be
completed July 26, 1982

55/3w-11ab
Marion

by:

SCHNEIDER EQUIPMENT, INC.
21881 RIVER RD. N.E.
ST. PAUL, OR 97137
PH. (503) 633-2666



0 – 4 Top soil, brown, silty
4 – 10 Coarse sand & gravel
10 – 17 Gravel, 5" minus
17 – 19 Gravel, 2" minus
19 – 27 Gravel & med. coarse sand, brown
27 – 32 Sand, med. coarse, brown, w/ 2" minus gravel
32 – 33 Gravel & coarse black sand
33 – 35 Clay, grey, w/ med coarse black sand
35 – 40 Sand, med-coarse, black

VICTOR ATIYEH
GOVERNOR

Water Resources Department

MILL CREEK OFFICE PARK
555 13th STREET N.E., SALEM, OREGON 97310

PHONE 378-3741
or
1-800-452-7813
(message line)

July 30, 1982

RECEIVED
SEP 2 1982
WATER RESOURCES DEPT.
SALEM, OREGON

Stephen Schneider
Schneider Equipment, Incorporated
21881 River Road, NE
St. Paul, OR 97137

Dear Steve:

This letter is to grant the special standards you requested in your letter of July 26, 1982, for the Coleman-Baker well located in the NW 1/4 NE 1/4 of Section 11, Township 5 South, Range 3 West in Marion County.

Given the condition described in the letter, it is acceptable to seal this well to five feet below the mean summer flow of the Willamette, or 10 feet from land surface.

Thanks for your cooperation and the excellent drawings.

Sincerely,

Dan

DANIEL KENNEDY
Administrator
Administrative Services Division

DK:wpc
1838B

Log In
9/2/82

#6649
W
5S
MA21 2890

WELL DRILLING
IRRIGATION
CONTROL SYSTEMS

SCHNEIDER
EQUIPMENT, INC.

PUMPS
ENGINEERED WATER SYSTEMS
SALES AND SERVICE

21881 River Road N.E. St. Paul, Oregon 97137 (503) 633-2666

July 26, 1982

RECEIVED
JUL 27 1982
WATER RESOURCES DEPT.
SALEM, OREGON

Dept. of Water Resources
555 - 13th St. N. E.
Salem, OR 97310

Attn: Mr. Dan Kennedy

Re: Request for Special Standards

Dear Mr. Kennedy,

As discussed with you by phone on July 22, 1982, we are drilling an irrigation well for Mr. Steve Coleman (renter), c/o Mr. Gary Baker (owner), 21880 S.W. Farmington Rd., Beaverton, OR 97005. The well is located in Marion County, NW ¼ of NE ¼ of Section 11 T5S, R3W. No septic tanks or drainfields, Or other wells are known to be within approximately 1000 feet of this well. A copy of formations penetrated is attached along with a sketch of the well as constructed to date. The customer has test pumped the well and is not satisfied with the yield and pumping level. It is therefore desired to additionally perforate the well from 19 feet to 10 feet since this zone contains some of the best water bearing formation penetrated. Note that the static of the well varies from 2 to 4 feet below ground and appears to fluctuate very closely to the level of the Willamette River, which is understandable considering the well is located less than 50 feet from a ditch connected to the river. Considering the extremely low level of the river at this time, if we perforate no higher than 10 feet, we will still be over 5 feet below the mean water level. A sketch of the proposed final construction is attached.. Please confirm that the proposed construction is acceptable.

Sincerely,

Stephen J. Schneider
Vice Pres. - General Manager

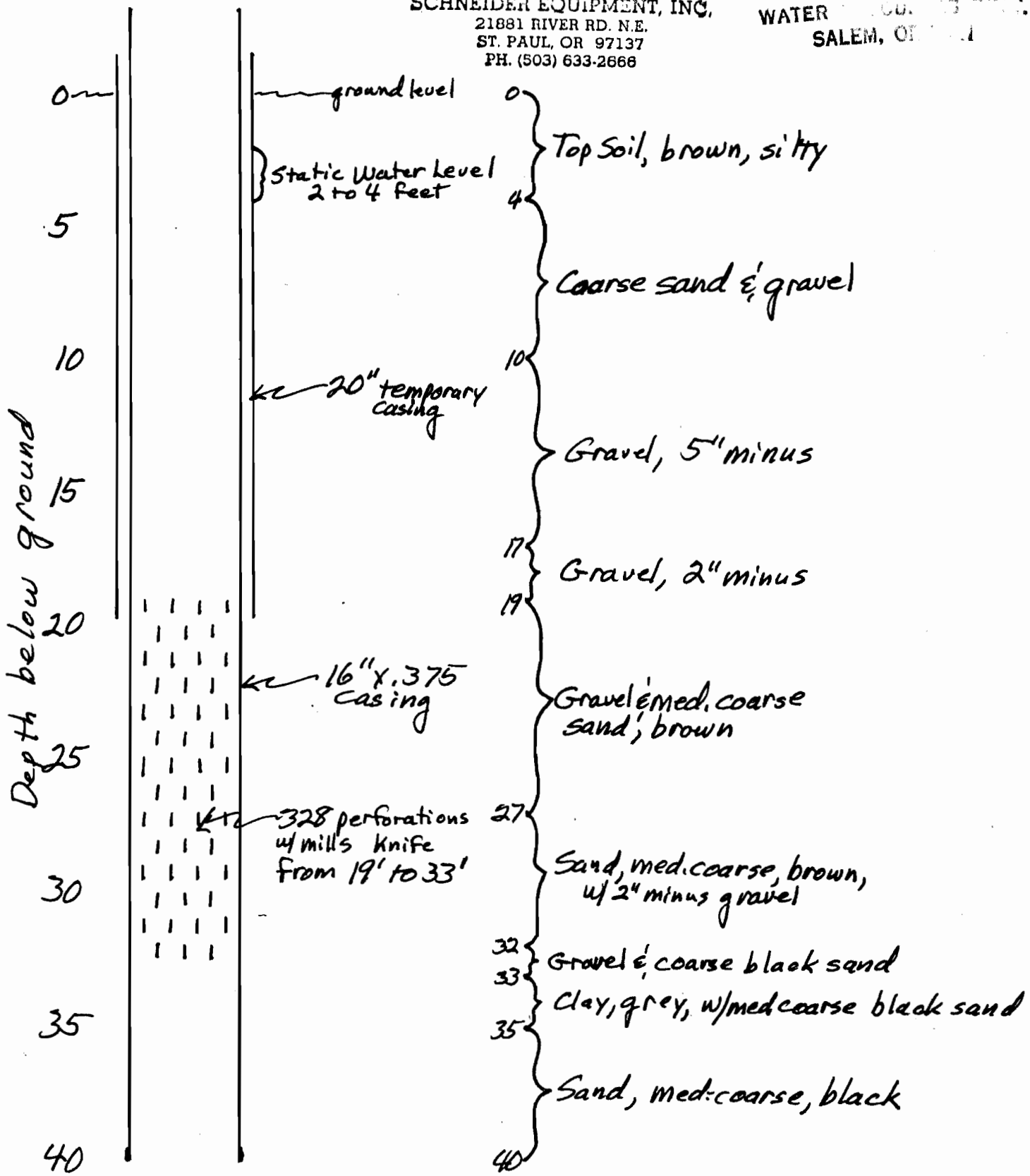
SJS:ams

Encl.

Steve Coleman – Gary Bak
Cable Tool Drilled Well
as built to date –
July 26, 1982
by:

SCHNEIDER EQUIPMENT, INC.
21881 RIVER RD. N.E.
ST. PAUL, OR 97137
PH. (503) 633-2666

JUL 27 1982
WATER
SALEM, OR

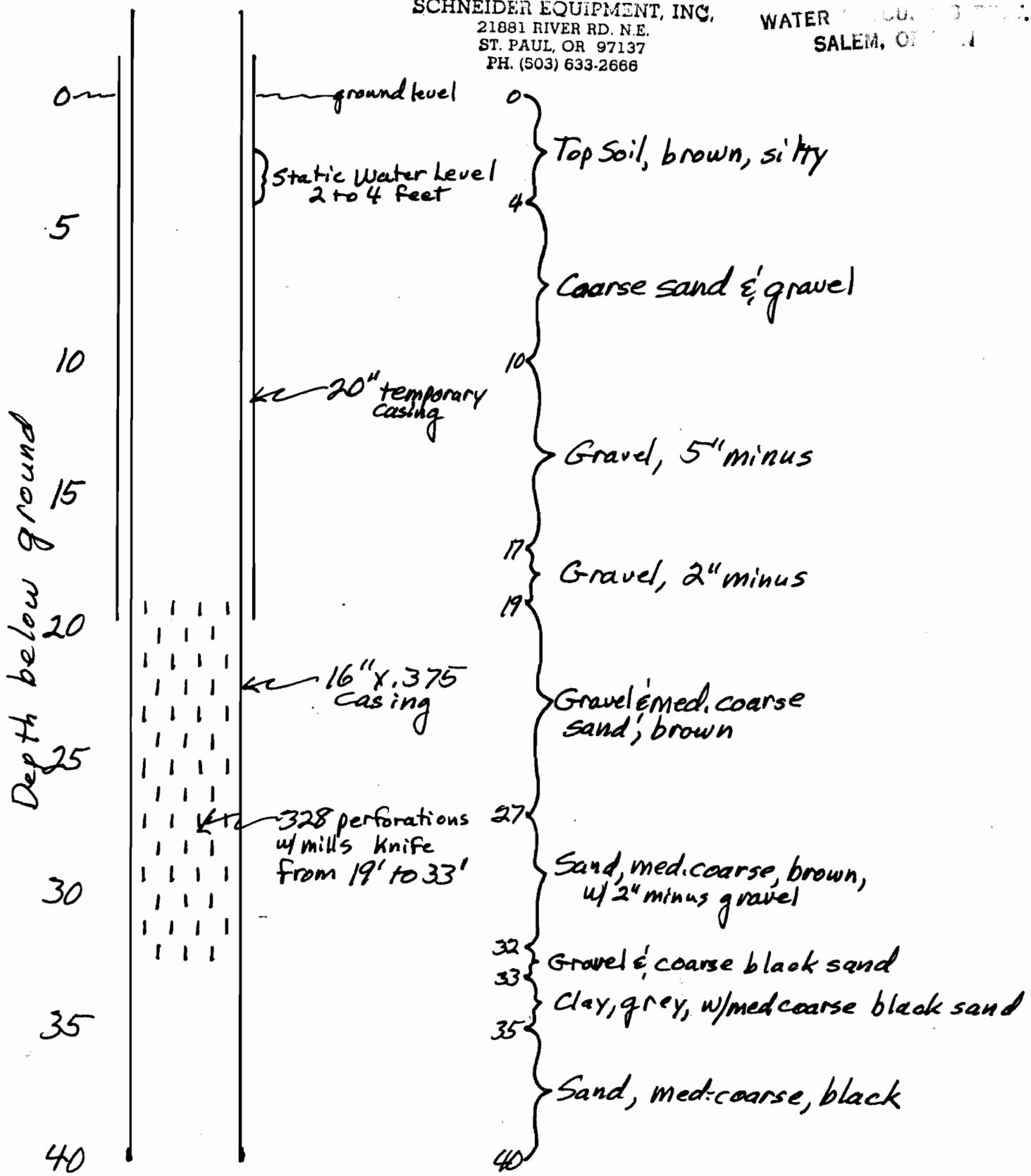


35
32 Gravel & coarse black sand
33
Clay, grey, w/ med coarse black sand
35

Steve Coleman – Gary Baker
Cable Tool Drilled Well
as built to date –
July 26, 1982
by:

SCHNEIDER EQUIPMENT, INC.
21881 RIVER RD. N.E.
ST. PAUL, OR 97137
PH. (503) 633-2666

RECEIVED
JUL 27 1982
WATER RESOURCES DEPT.
SALEM, OREGON

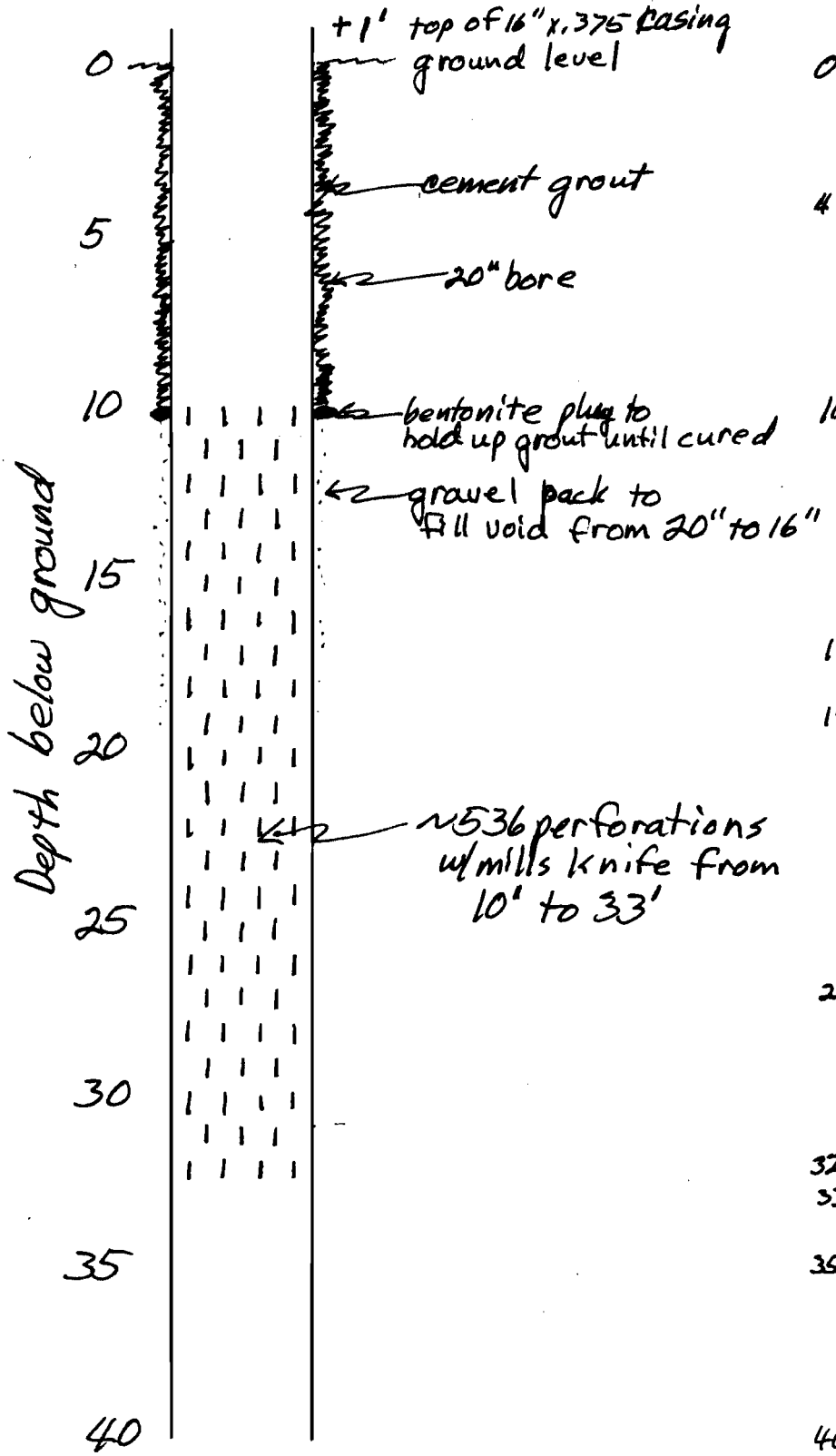


Steve Coleman - Gary Baker
Cable Tool Drilled Well
as proposed to be
completed July 26, 1982

RECEIVED
JUL 27 1982
WATER RESOURCES DEPT.
SALEM, OREGON

by:

SCHNEIDER EQUIPMENT, INC.
21881 RIVER RD. N.E.
ST. PAUL, OR 97137
PH. (503) 633-2666



0 – Top soil, brown, silty
4 – Coarse sand & gravel
10 – Gravel, 5" minus
17 – Gravel, 2" minus
19 – Gravel & med. coarse sand, brown
27 – Sand, med. coarse, brown, w/ 2" minus gravel
32 – Gravel & coarse black sand
33 – Clay, grey, w/ med coarse black sand
35 – Sand, med-coarse, black
40

Groundwater Application Review Summary Form

Application # G- _19002_

GW Reviewer _Aurora C Bouchier_ Date Review Completed: _12/1/2020_

Summary of GW Availability and Injury Review:

☐ Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

☒ There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

☒ The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO **_12/1/2020_**

TO: **Application** G-**_19002_**

FROM: **GW:** **_Aurora C Bouchier_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO**

The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

☐ **YES**
☒ **NO**

Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is *unable to make a Preponderance of Evidence finding.*

Exercise of this permit is calculated to reduce monthly flows in _[Enter]_ Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 12/1/2020

FROM: Groundwater Section Aurora C Bouchier
Reviewer's Name

SUBJECT: Application G- **19002** Supersedes review of na
Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

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

A. GENERAL INFORMATION: Applicant's Name: **J and S Farms** County: **Marion**

A1. Applicant(s) seek(s) 3* cfs from 3 well(s) in the Willamette Basin, Middle Willamette subbasin

A2. Proposed use IR (78.7 acres) & NU Seasonality: 3/1 – 10/31 & year round

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

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	MARI 2892	1	Alluvium	2.23*	5S/3W-11 NE-SW	850' S, 2940' W fr E ¼ Cor S 11
2	MARI 2900	2	Alluvium	2.23*	5S/3W-12 SE-SW	880' S, 2320' W fr SE cor DLC 71
3	MARI 2890	3	Alluvium	0.77*	5S/3W-11 NW-NE	1725' N, 2130' W fr E ¼ Cor S 11
4						

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	90	18	6.5	5/9/1969	63	0-30	0-63	--	43-52, 59-62	75	12	P
2	180	130	55	5/21/1968	156	0-20	0-130	--	101-119	218	26	P
3	79	4	3	7/26/1982	40	0-10	-1-40	--	10-33	500	5	P

Use data from application for proposed wells.

A4. **Comments:** *The application is requesting 2.23 cfs from Wells 1 & 2 for irrigation of 17.5 acres and nursery use of 162.9 acres, and 0.77 cfs from Well 3 for irrigation of 61.2 acres. Each of the wells is authorized by other water rights, and there appears to be substantial overlap between the proposed POU on this application and that from the other water rights which include these wells.

Well 1 (MARI 2892) is authorized for 1.44 cfs for irrigation of 114.9 acres under Certificate 43676 owned by Opal M Mahony. It appears that the 114.9 acres irrigated under Certificate 43676 are proposed as nursery use from wells 1 & 2 under this application. Well 1 is also authorized for 0.04 cfs for irrigation of 9.5 acres under Certificate 75639 owned by Michael W Mahony. **This groundwater review evaluates against a stacked rate of 3.71 cfs.**

Well 2 (MARI 2900) is authorized for 0.18 cfs for irrigation of 14.2 acres under Certificate 55955 owned by John Stockfleth. It appears that the 14.2 acres irrigated under Certificate 55955 are proposed as nursery use from wells 1 & 2 under this application. **This groundwater review evaluates against a stacked rate of 2.41 cfs.**

Well 3 (MARI 2890) is authorized for 2.16 cfs for irrigation of 172.6 acres under Permit G-11145 owned by Gerald A Baker. It appears that up to 30.2 acres irrigated under Permit G-11145 are proposed for irrigation from Well 3 under this application. **This groundwater review evaluates against a stacked rate of 2.93 cfs.** In November 2019, a pump test was rejected for this water right as it only measured the water level to the nearest foot. A new test has been submitted, although it has not yet been analyzed.

A5. ☒ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☒ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: Well 2 is greater than ¼-mile from the nearest surface water source, so the pertinent basin rules (OAR 690-502-0240) do not apply.
Well 1 & 3 are less than ¼-mile from the nearest surface water source, and produce from an unconfined aquifer (or weakly confined for Well 1), so the pertinent basin rules (OAR 690-502-0240) apply.

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

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

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

a. ☐ **is** over appropriated, ☐ **is not** over appropriated, *or* ☒ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;

b. ☐ **will not** *or* ☐ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;

c. ☐ **will not** *or* ☐ **will** likely to be available within the capacity of the groundwater resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:

i. ☒ The permit should contain condition #(s) **7N (annual measurement), large water use reporting**;

ii. ☒ The permit should be conditioned as indicated in item 2 below.

iii. ☐ The permit should contain special condition(s) as indicated in item 3 below;

B2. a. ☐ **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;

c. ☒ **Condition** to allow groundwater production only from the **alluvial** groundwater reservoir ~~between approximately _____ ft. and _____ ft. below land surface~~;

d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

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

B3. **Groundwater availability remarks:**

Well 2 produces groundwater from a confined aquifer in the older alluvial sands and gravels that occur beneath approximately 80 feet of Willamette Silt on the terraces east of the Holocene floodplain of the Willamette River. Wells 1 & 3 are located in the Holocene (recent) floodplain of the Willamette River and produce from an unconfined to weakly confined aquifer in the Holocene sands and gravels.

The water level in nearby wells that produce from the confined aquifer show no systemic long-term declines (as seen in MARI 2541 – located approximately 3 miles to the southeast and MARI 2218 – located approximately 7 miles to the east). Water levels in the Holocene floodplain aquifer are expected to be stable since the water level in this aquifer is likely to by river stage of the adjacent reaches of the Willamette River.

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

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

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**Holocene alluvium**	☒	☐
2	**Older alluvium**	☒	☐
3	**Holocene alluvium**	☐	☒
		☐	☐

Basis for aquifer confinement evaluation: Proposed POA 1 & 3 are located in the low elevation Holocene floodplain of the Willamette River. Well 1 appears at least weakly confined by a ~15 foot thick layer of fine grain near land surface. Well 3 does not appear to have a confining layer. The water-bearing zone in Well 2 is confined by approximately 80 feet of fine grained sediment which are likely saturated within 5-15 feet of land surface

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Willamette R**	**~80**	**76-82**	**2340**	☒	☐	☐	☐	☒
2	**1**	**Willamette R**	**~150**	**76-83**	**4120**	☒	☐	☐	☐	☒
3	**1**	**Willamette R**	**~80**	**76-82**	**2050**	☒	☐	☐	☐	☒
1	**2**	**Unnamed Slough of Willamette R**	**~80**	**81**	**200**	☒	☐	☐	☐	☒
3	**2**	**Unnamed Slough of Willamette R**	**~80**	**76-82**	**800**	☐	☐	☒	☒	☐

Basis for aquifer hydraulic connection evaluation: Water-level maps indicate that ground water discharges from the alluvial aquifer to streams in the area (Woodward and others, 1998, Plate 1).

Water Availability Basin the well(s) are located within: 182: Willamette R> Columbia R – Ab Molalla R

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

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	**1**	☐	☐	**NA**	**NA**	☐	**3830**	☐	**<25%**	☐
2	**1**	☐	☐	**NA**	**NA**	☐	**3830**	☐	**<25%**	☐
3	**1**	☐	☐	**NA**	**NA**	☐	**3830**	☐	**<<25%**	☐
1	**2**	☒	☐	**NA**	**NA**	☐	**3830**	☐	**<<25%**	☒
3	**2**	☒	☐	**NA**	**NA**	☐	**3830**	☐	**<<25%**	☒

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

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: Interference with various surface water sources due to the proposed use was quantitatively estimated using the Hunt 1999 analytical model for Wells 1 & 3, and the Hunt 2003 analytical model for Well 2. Hydraulic parameters used for the analysis were derived from regional data and studies (Conlon et al., 2005). Results indicate that none of the proposed POA are anticipated to interfere with nearby surface water sources at a rate greater than 25 percent of the rate of withdrawal within the first 30 days of continuous pumping.

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

Non-Distributed Wells Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: NA

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:

i. ☐ The permit should contain condition #(s)_____;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:**

In the vicinity of Well 2, about 80 feet of Willamette Silt overly the Willamette aquifer (Gannett and Caldwell, 1998). The Deschutes River is completely incised through the Willamette Silt. The available data indicates that the Willamette River is the regional ground water discharge area for the Willamette aquifer.

References Used:

Application G-19002 and recent groundwater review for applications G-17653, G-18502 and G-18961

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32 p.

Hunt, B., 1999. Unsteady stream depletion from ground water pumping: Groundwater, v. 37, no. 1, p. 98-102.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** 1 & 3 **Logid:** MARI 2892 & MARI 2890 (respectively)

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

a. ☒ review of the well log;

b. ☐ field inspection by _____;

c. ☐ report of CWRE _____;

d. ☐ other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:**
Well 1 (MARI 2892) uses puddle clay as a seal
Well 2 (MARI 2900) appears to meet current well construction standards based upon a review of the well log.
Well 3 (MARI 2890) has a 10 foot seal.

D4. ☒ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Water Availability Tables

WATER AVAILABILITY TABLE

WILLAMETTE R > COLUMBIA R - AB MOLALLA R

Watershed ID #: 182 Basin: WILLAMETTE Exceedance Level: 80
Time: 11:01 AM Date: 11/30/2020

Nest	# Watershed ID Number	Stream Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	STOR
1	181	WILLAMETTE R > COLUMBIA R - AT MOUTH	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
2	182	WILLAMETTE R > COLUMBIA R - AB MOLALLA R	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

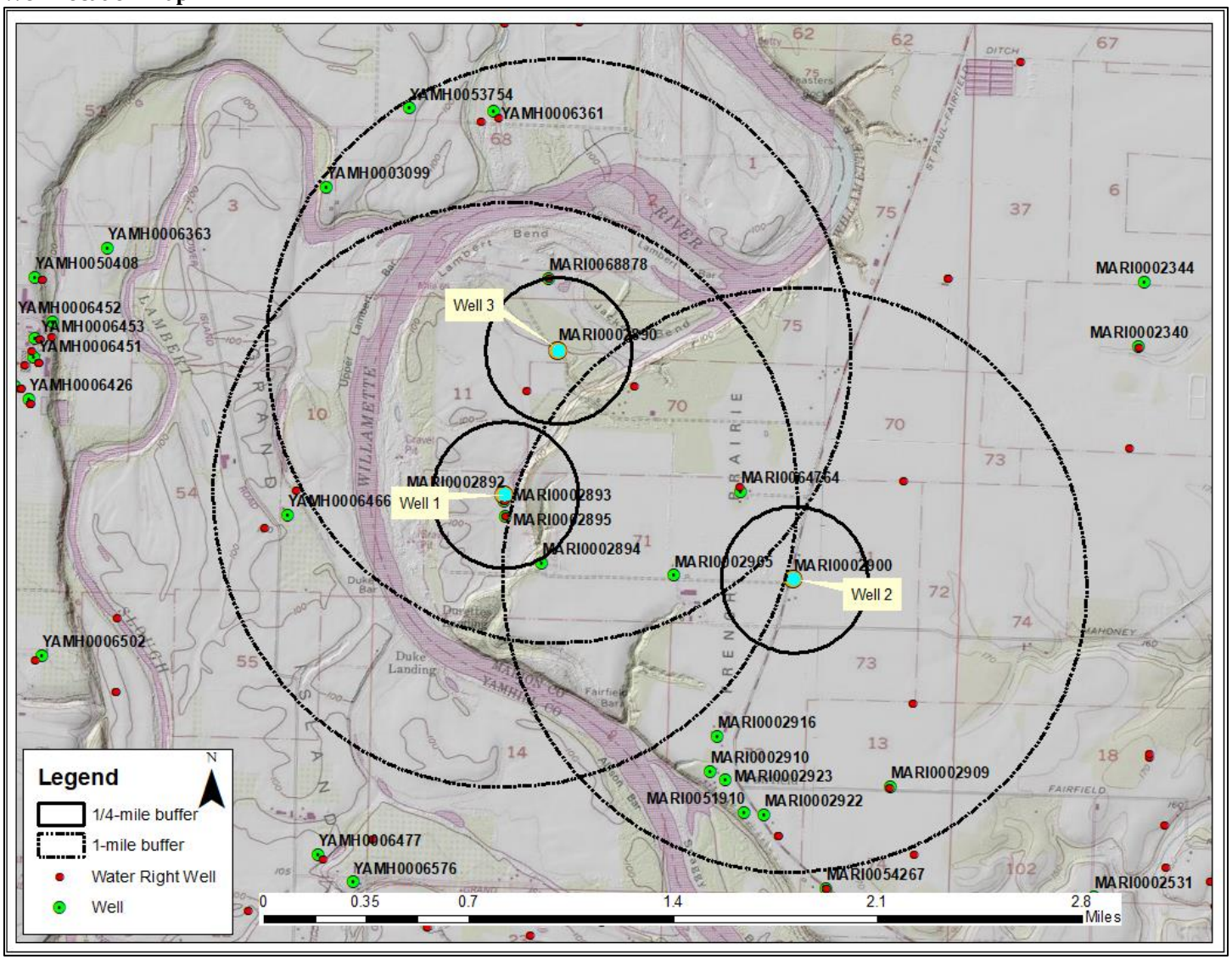
WILLAMETTE R > COLUMBIA R - AB MOLALLA R

Watershed ID #: 182 Basin: WILLAMETTE Exceedance Level: 80
Time: 11:02 AM Date: 11/30/2020

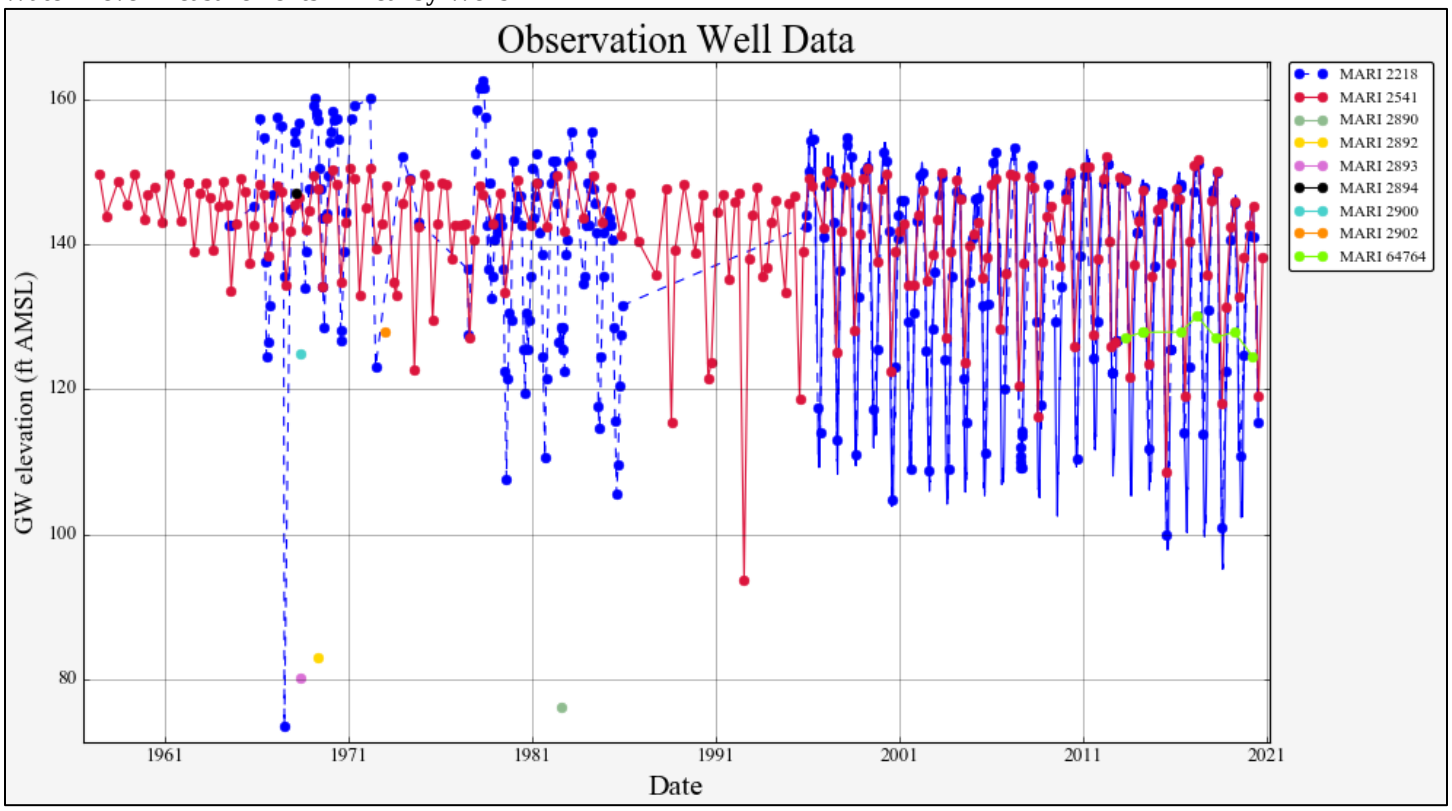
Monthly values are in cfs.
Storage is the annual amount at 50% exceedance in ac-ft.

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
JAN	21,400.00	2,300.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,480.00	15,700.00	0.00	1,500.00	14,200.00
MAR	22,400.00	7,260.00	15,100.00	0.00	1,500.00	13,600.00
APR	19,900.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,250.00	12,300.00	0.00	1,500.00	10,800.00
JUN	8,740.00	1,980.00	6,760.00	0.00	1,500.00	5,260.00
JUL	4,980.00	1,800.00	3,180.00	0.00	1,500.00	1,680.00
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	683.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	999.00
OCT	4,850.00	752.00	4,100.00	0.00	1,500.00	2,600.00
NOV	10,200.00	888.00	9,310.00	0.00	1,500.00	7,810.00
DEC	19,300.00	970.00	18,300.00	0.00	1,500.00	16,800.00
ANN	15,200,000	2,250,000	13,000,000	0	1,090,000	11,900,000

Well Location Map



Water-Level Measurements in Nearby Wells



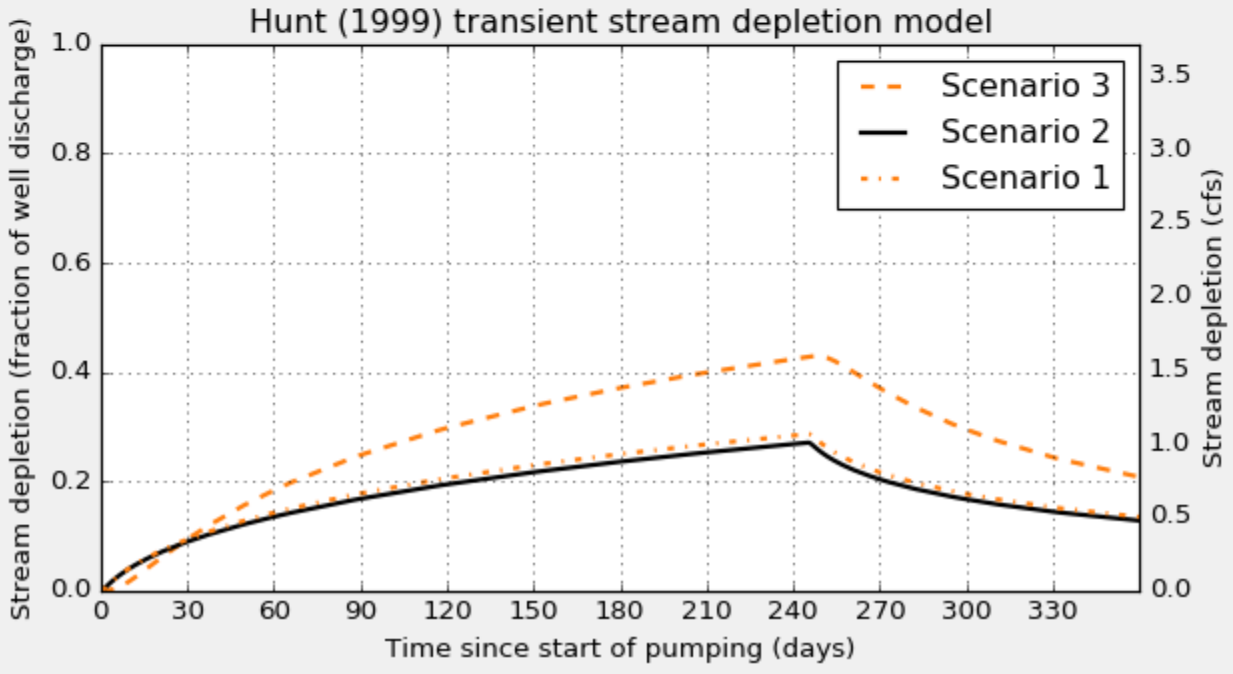
Stream Depletion: Well 1 to Willamette River

Application type:	G
Application number:	19002
Well number:	1
Stream Number:	1
Pumping rate (cfs):	3.71
Pumping duration (days):	245
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	2340	2340	2340	ft
Aquifer transmissivity	T	2000	24000	24000	ft2/day
Aquifer storativity	S	0.002	0.02	0.20	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.1	1	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	40	40	40	ft
Not used		0.2	0.2	0.2	
Stream width	ws	400	400	400	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	4	14	13	9	13	17	19	22	24	25	27	20	17
Depletion (cfs)	0.15	0.53	0.47	0.33	0.50	0.62	0.72	0.80	0.87	0.94	0.99	0.75	0.62



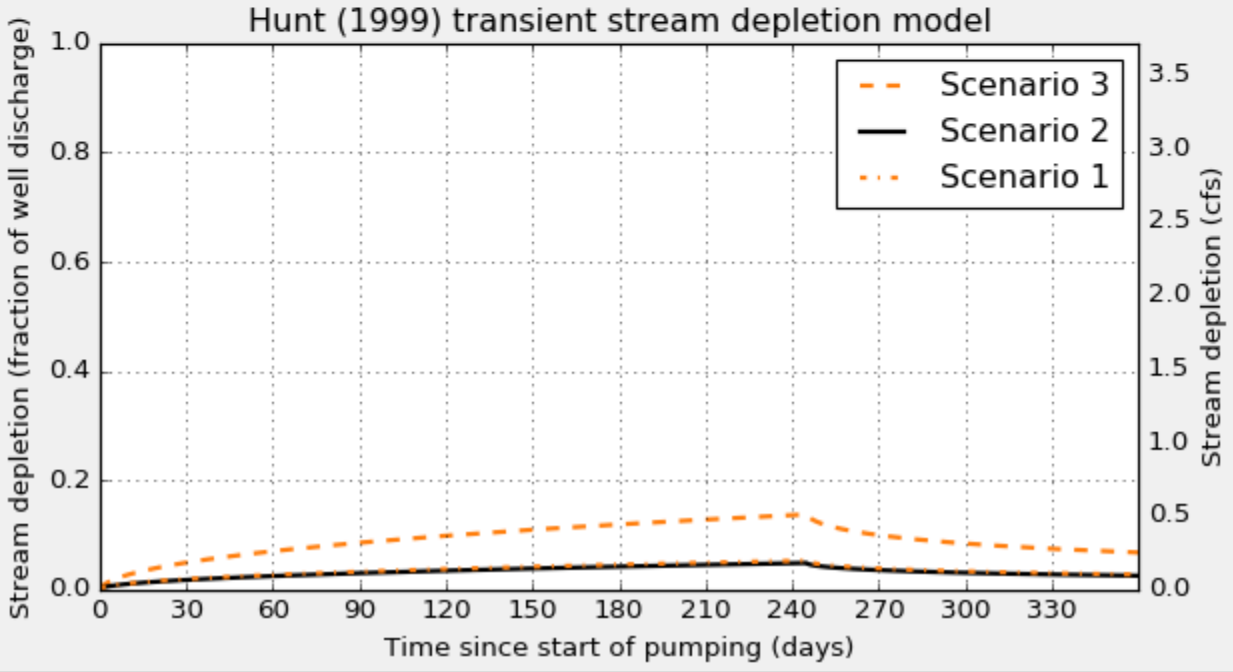
Stream Depletion: Well 1 to Unnamed Slough

Application type:	G
Application number:	19002
Well number:	1
Stream Number:	2
Pumping rate (cfs):	3.71
Pumping duration (days):	245
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	200	200	200	ft
Aquifer transmissivity	T	2000	24000	24000	ft2/day
Aquifer storativity	S	0.002	0.02	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.1	1	ft/day
Not used		20	20	20	
Aquitard thickness below stream	babs	40	40	40	ft
Not used		0.2	0.2	0.2	
Stream width	ws	50	50	50	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	1	3	2	2	2	3	3	4	4	4	5	3	3
Depletion (cfs)	0.04	0.10	0.09	0.06	0.09	0.11	0.13	0.14	0.15	0.17	0.18	0.13	0.11



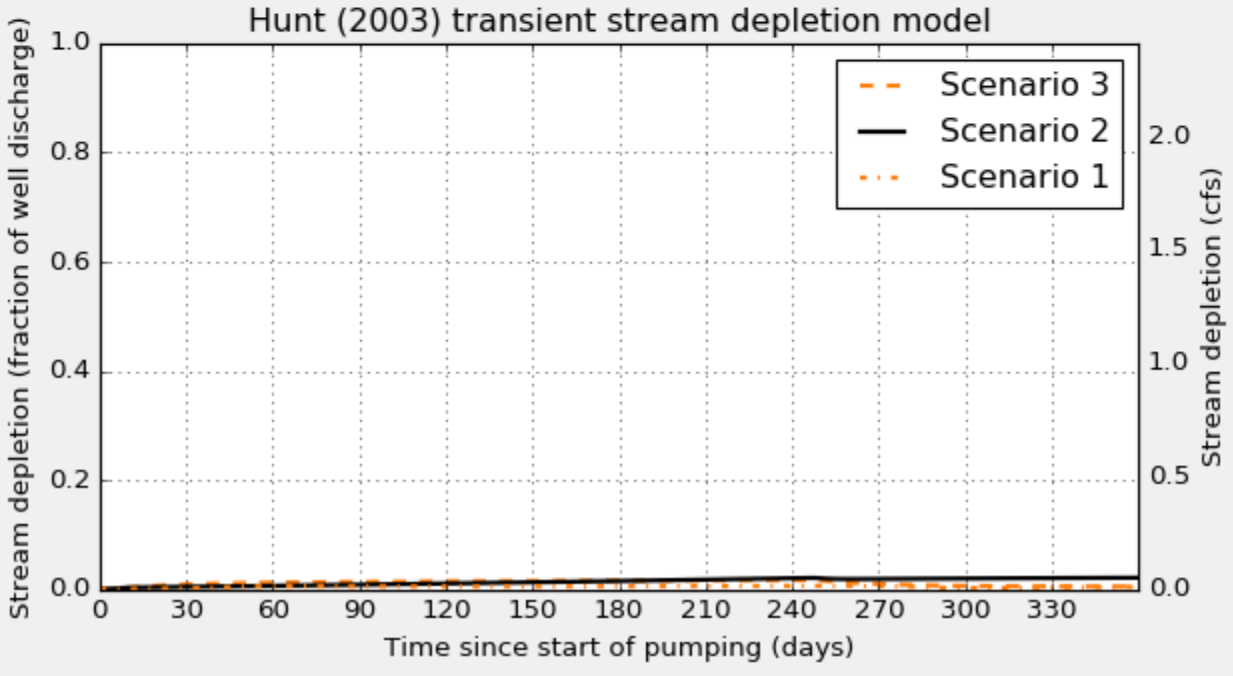
Stream Depletion: Well 2 to Willamette River

Application type:	G
Application number:	19002
Well number:	2
Stream Number:	1
Pumping rate (cfs):	2.41
Pumping duration (days):	245
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	4120	4120	4120	ft
Aquifer transmissivity	T	600	2100	6600	ft2/day
Aquifer storativity	S	.001	.005	.01	-
Aquitard vertical hydraulic conductivity	Kva	.1	.05	.01	ft/day
Aquitard saturated thickness	ba	30	30	30	ft
Aquitard thickness below stream	babs	40	40	40	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	400	400	400	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	0	2	2	0	1	1	1	1	1	2	2	2	2
Depletion (cfs)	0.01	0.05	0.05	0.01	0.01	0.02	0.02	0.03	0.04	0.04	0.05	0.05	0.05



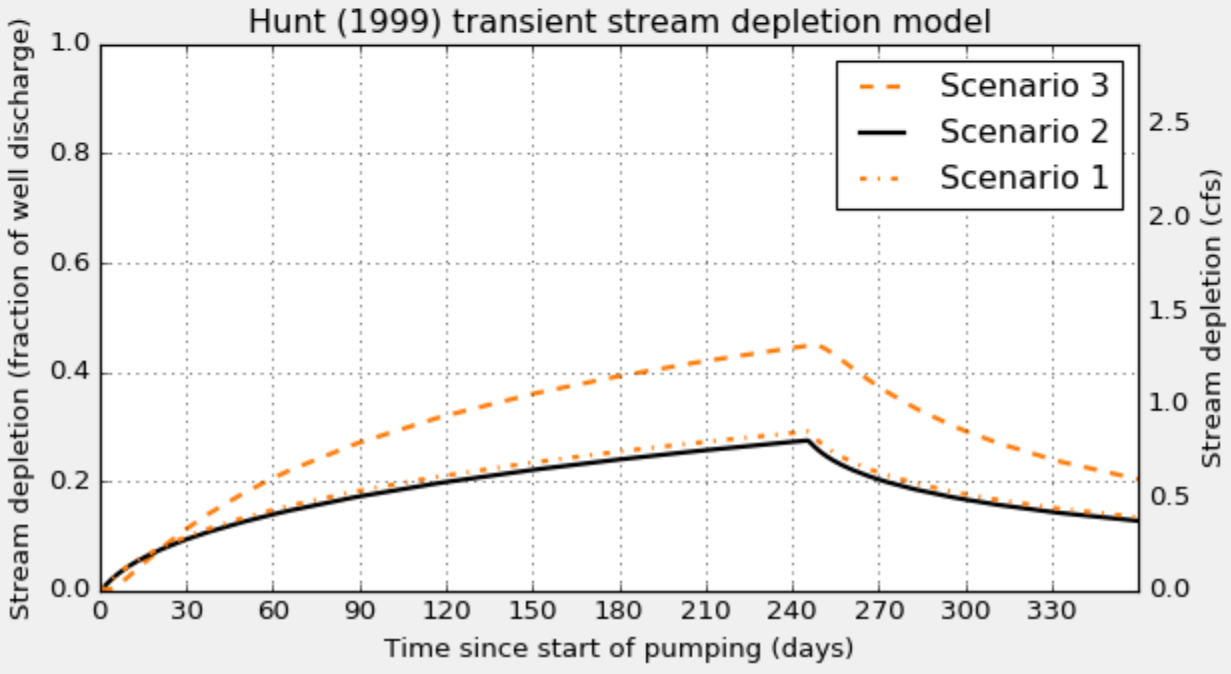
Stream Depletion: Well 3 to Willamette River

Application type:	G
Application number:	19002
Well number:	3
Stream Number:	1
Pumping rate (cfs):	2.93
Pumping duration (days):	245
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	2050	2050	2050	ft
Aquifer transmissivity	T	2000	24000	24000	ft2/day
Aquifer storativity	S	0.002	0.02	0.20	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.1	1	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	40	40	40	ft
Not used		0.2	0.2	0.2	
Stream width	ws	400	400	400	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	4	14	13	9	14	17	20	22	24	26	27	20	17
Depletion (cfs)	0.13	0.42	0.37	0.27	0.41	0.50	0.58	0.65	0.70	0.75	0.80	0.59	0.49



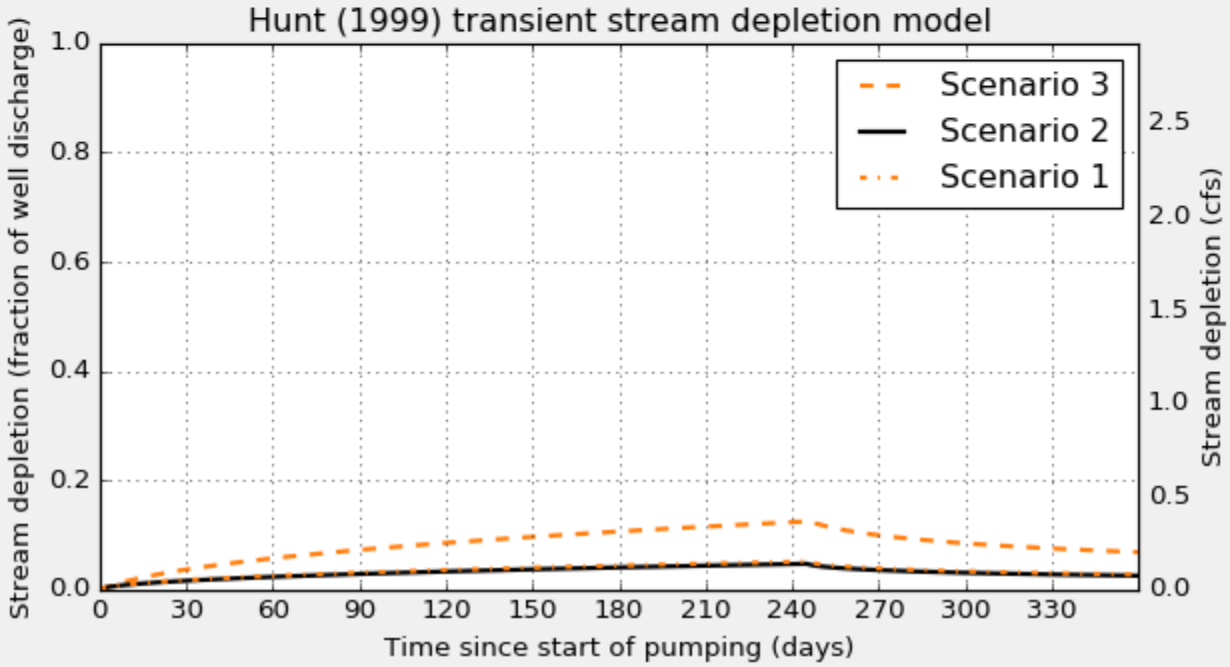
Stream Depletion: Well 3 to Unnamed Slough

Application type:	G
Application number:	19002
Well number:	3
Stream Number:	2
Pumping rate (cfs):	2.93
Pumping duration (days):	245
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	800	800	800	ft
Aquifer transmissivity	T	2000	24000	24000	ft2/day
Aquifer storativity	S	0.002	0.02	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.1	1	ft/day
Not used		20	20	20	
Aquitard thickness below stream	babs	40	40	40	ft
Not used		0.2	0.2	0.2	
Stream width	ws	50	50	50	ft

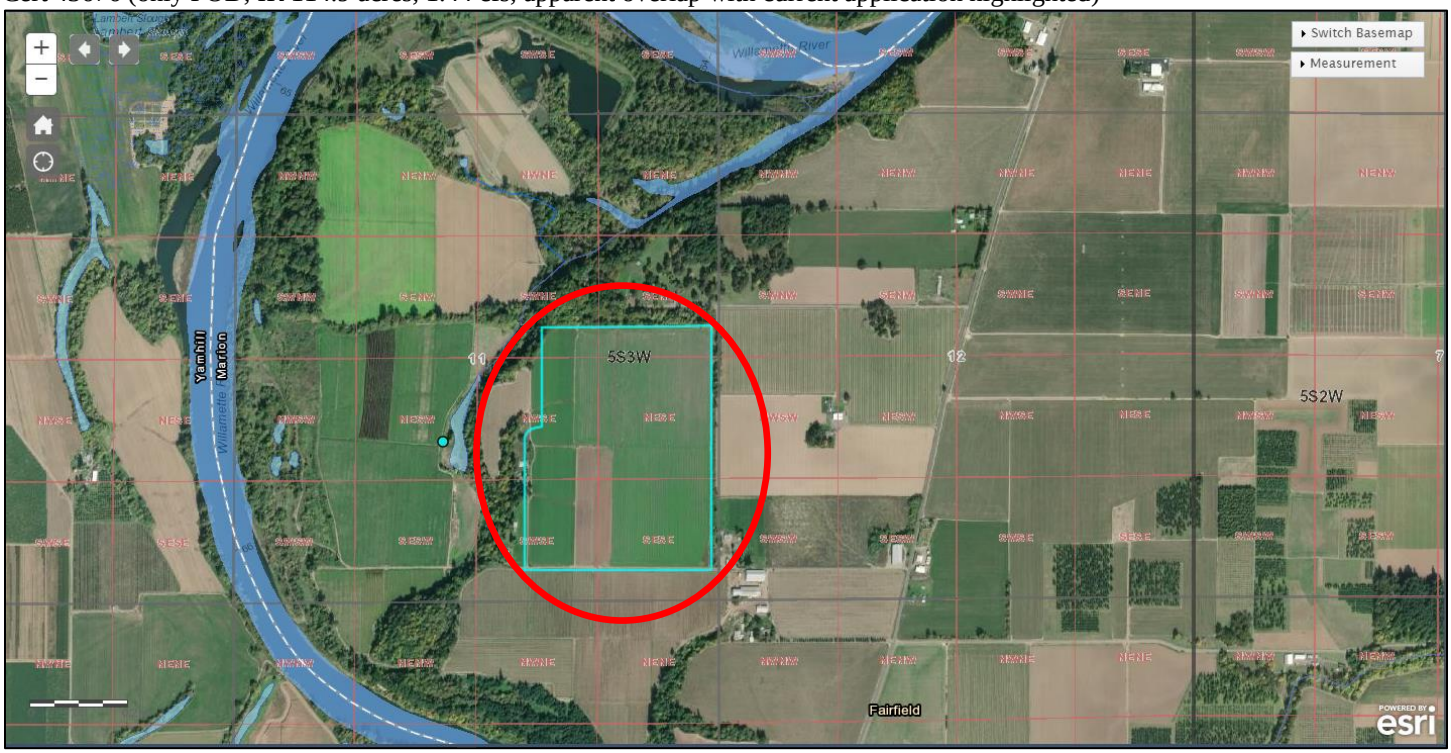
Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	1	3	2	2	2	3	3	4	4	4	5	3	3
Depletion (cfs)	0.02	0.08	0.07	0.05	0.07	0.08	0.09	0.11	0.12	0.13	0.13	0.10	0.09

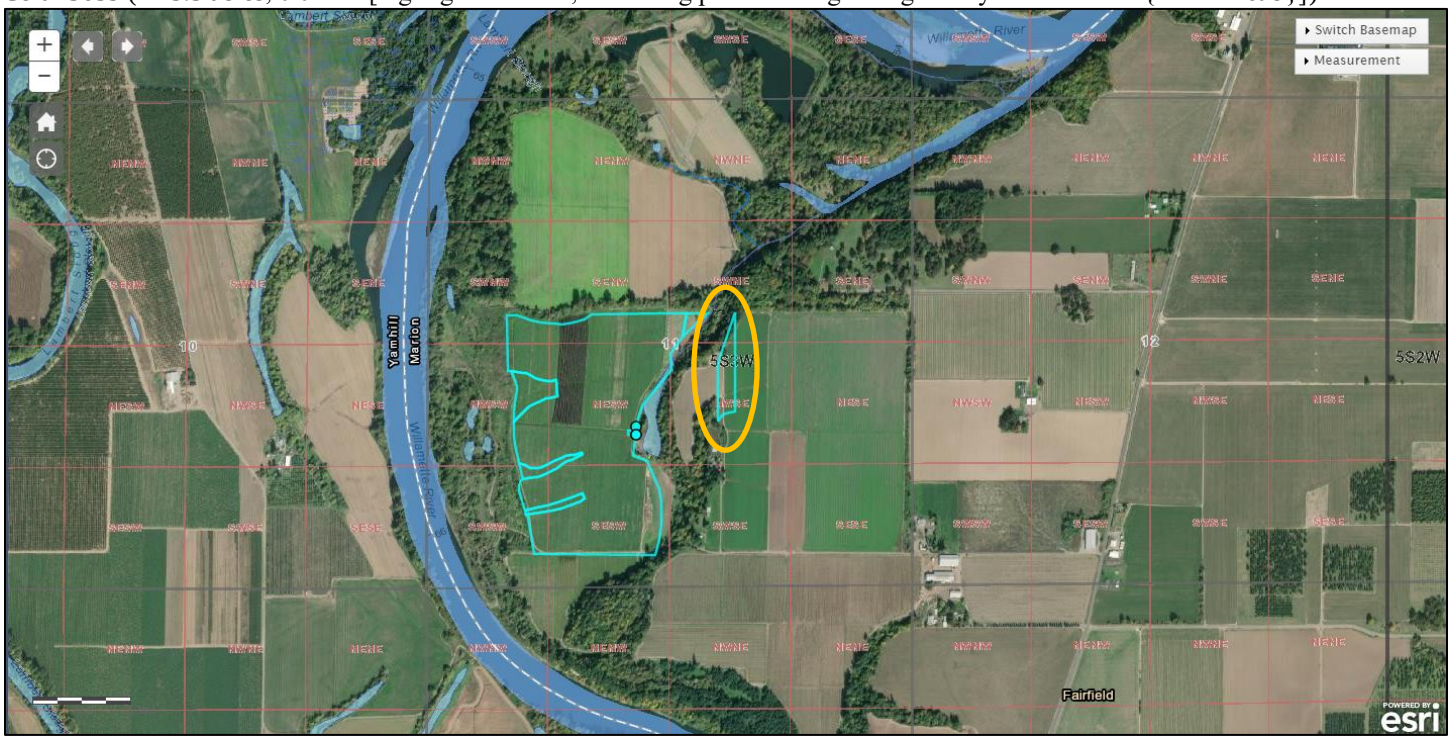


Well 1, MARI 2892

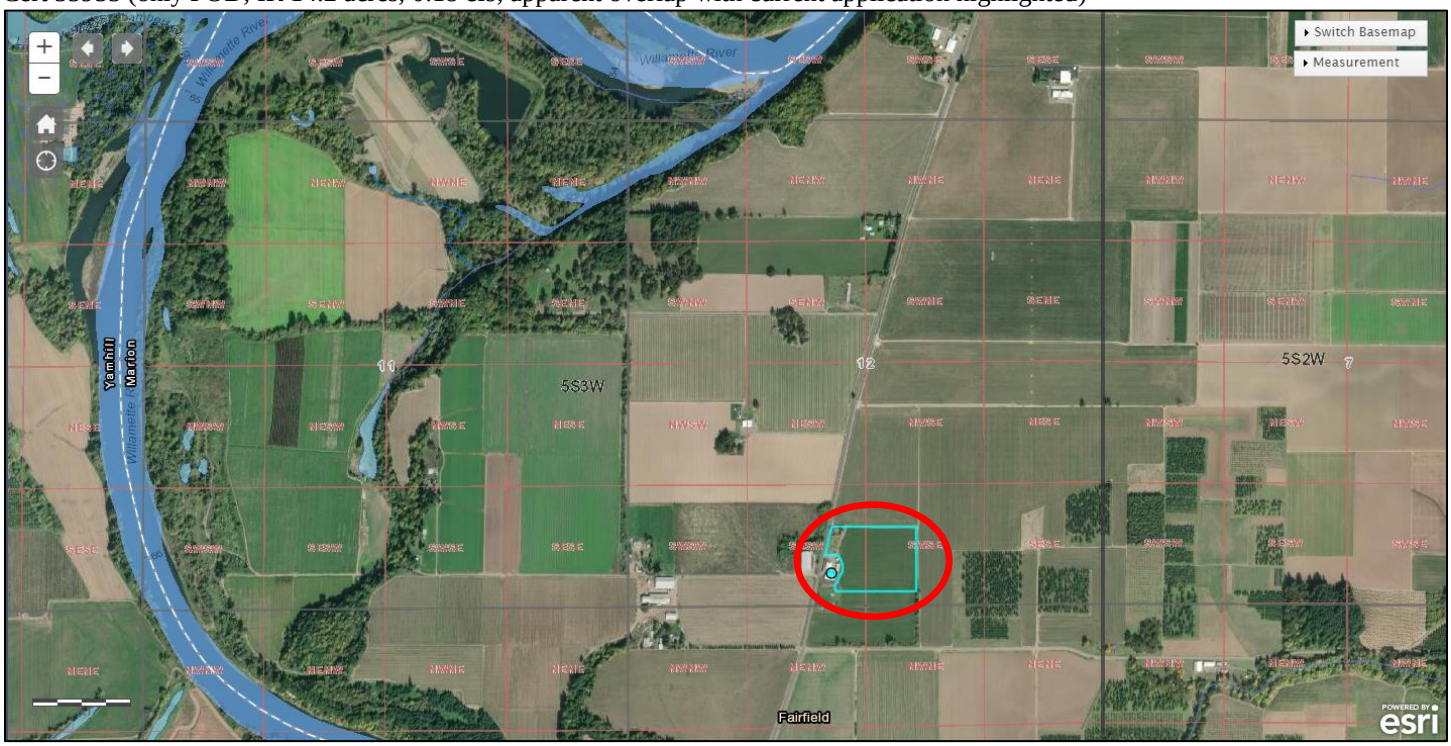
Cert 43676 (only POD, IR 114.9 acres, 1.44 cfs, apparent overlap with current application highlighted)



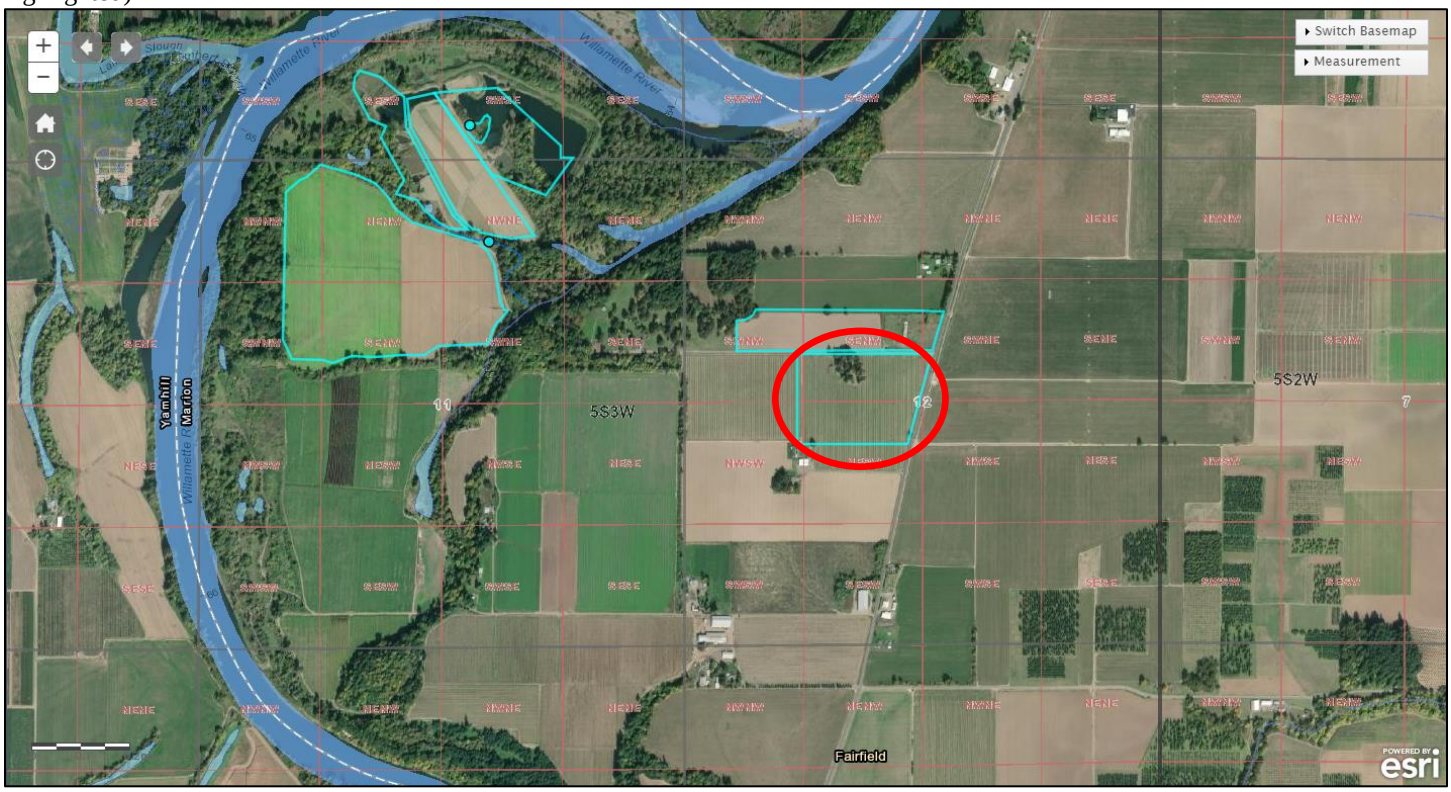
Cert 75639 (IR 3.5 acres, 0.04 cfs [highlighted below, remaining portion of right irrigated by 'South Well' {MARI 2893}])



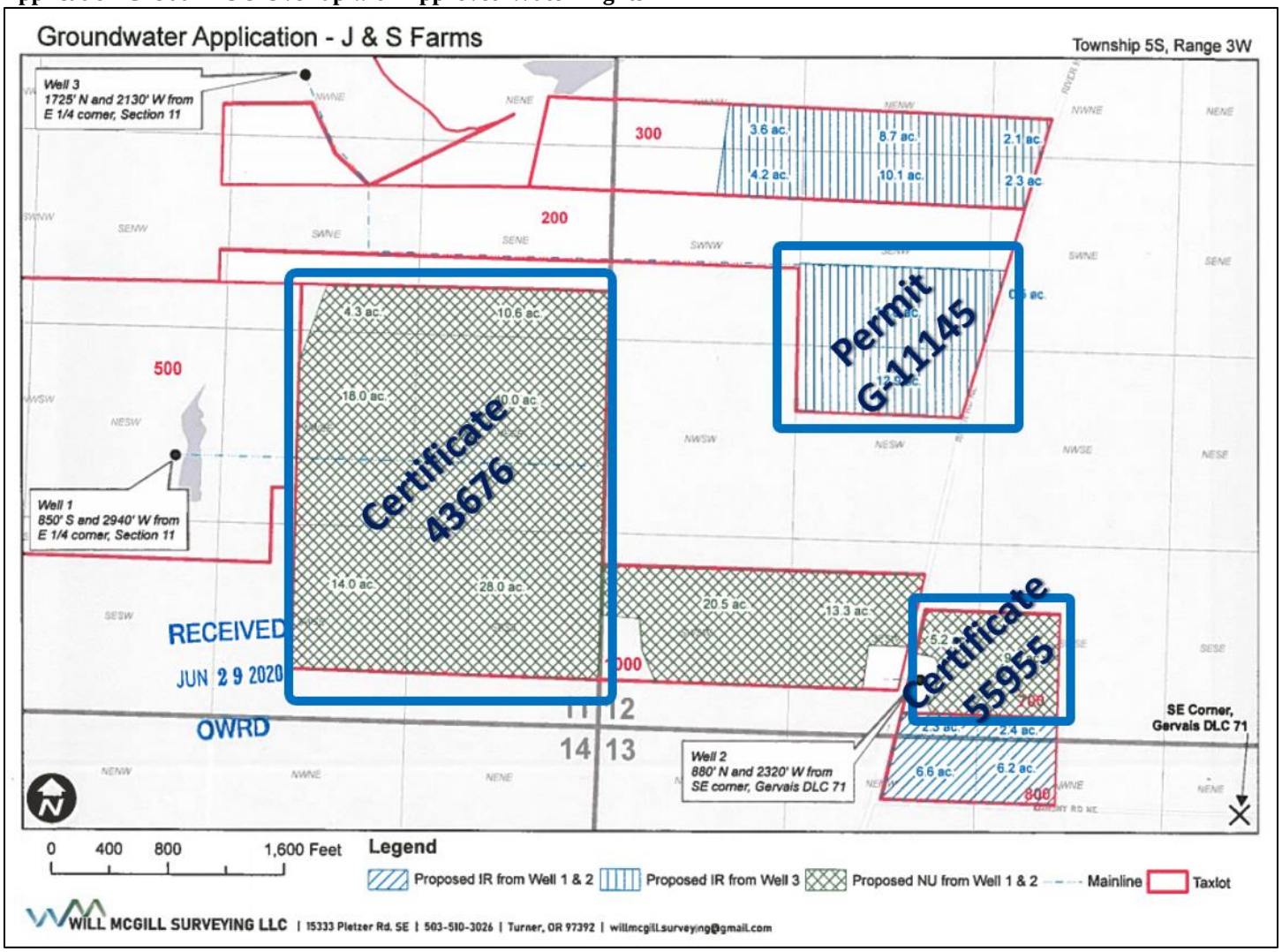
Well 2, MARI 2900
Cert 55955 (only POD, IR 14.2 acres, 0.18 cfs, apparent overlap with current application highlighted)



Well 3, MARI 2890
Permit G-11145 (IR 172.6 acres, 2.16 cfs, also a sump with different rate for industrial uses, apparent overlap with current application highlighted)



Application G19002 POU Overlap with Approved Water Rights



Well to Well Interference – Current Pumping Rates

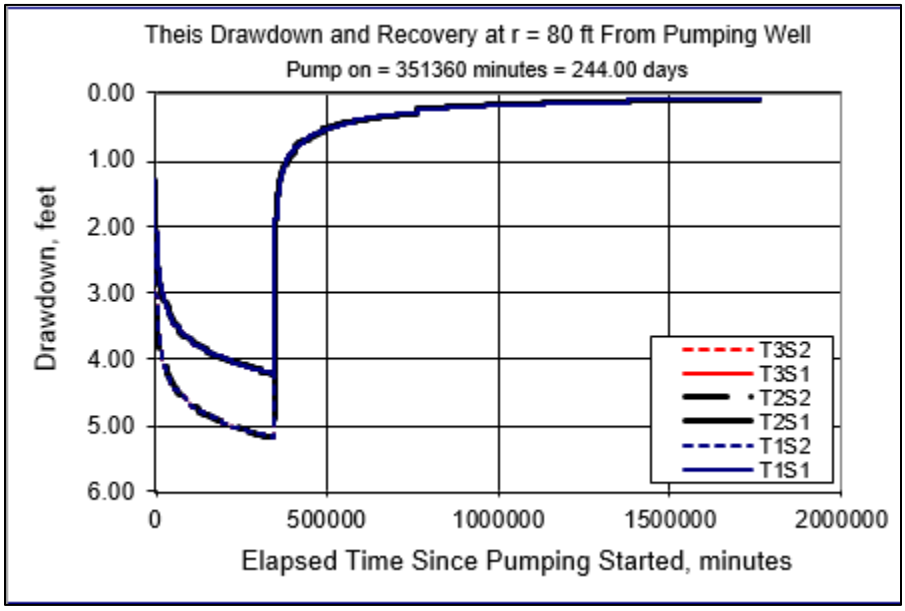
Theis Time-Drawdown Worksheet v.3.00

Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.

Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		244		d	
Radial distance from pumped well:	r		80		ft	Q conversions
Pumping rate	Q		1.48		cfs	664.22 gpm
Hydraulic conductivity	K	600	600	600	ft/day	1.48 cfs
Aquifer thickness	b		40		ft	88.80 cfm
Storativity	S_1		0.1			127,872.00 cfd
	S_2		0.01			2.94 af/d
Transmissivity Conversions	T_f2pd	24000	24000	24000	ft2/day	
	T_ft2pm	16.66667	16.66667	16.66667	ft2/min	Recalculate
	T_gpdpft	179520	179520	179520	gpd/ft	

Use the Recalculate button if recalculation is set to manual



Well to Well Interference – Additional Pump

Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		244		d	
Radial distance from pumped well:	r		80		ft	Q conversions
Pumping rate	Q		3.71		cfs	1,665.05 gpm
Hydraulic conductivity	K	600	600	600	ft/day	3.71 cfs
Aquifer thickness	b		40		ft	222.60 cfm
Storativity	S_1		0.1			320,544.00 cfd
	S_2		0.01			7.36 af/d
Transmissivity Conversions	T_f2pd	24000	24000	24000	ft2/day	
	T_ft2pm	16.6666667	16.6666667	16.6666667	ft2/min	Recalculate
	T_gpdpft	179520	179520	179520	gpd/ft	

Use the Recalculate button if recalculation is set to manual