Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE ** G-16308

ROUTED TO: Water Rights - Anita H.

TOWNSHIP/
RANGE-SECTION: 4S/2W-34

CONDITIONS ATTACHED? [✓] yes [ ] no

REMARKS OR FURTHER INSTRUCTIONS:

Reviewer: Ivan Gall

Water Resources Department

MEMO 12/9, 2004

TO **Application G-** 16308

FROM **GW:** Ivan Gall
(Reviewer's Name)

SUBJECT **Scenic Waterway Interference Evaluation**

☐ Yes
☒ No

The source of appropriation is within or above a Scenic Waterway

☐ Yes
☒ No

Use the Scenic Waterway condition (Condition 7J).

PREPONDERANCE OF EVIDENCE FINDING: (Check box only if statement is true)

☐ At this time the Department is unable to find that there is a preponderance of evidence that the proposed use of ground water will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway in quantities necessary for recreation, fish and wildlife.

FLOW REDUCTION: *(To be filled out only if Preponderance of Evidence box is not checked)*

Exercise of this permit is calculated to reduce monthly flows in _____ 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

app # G-16308

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date **December 9, 2004**

FROM: Ground Water/Hydrology Section **Ivan Gall**
Reviewer's Name

SUBJECT: Application G- **16308** 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 ground water 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: **Kurtis T. Loen** County: **MARI**

A1. Applicant(s) seek(s) **3.0** cfs from **1** well(s) in the **Willamette** Basin, **Champoeg Creek** subbasin Quad Map: **Saint Paul**

A2. Proposed use: **Nursery** Seasonality: **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	**Proposed**	**2**	**Alluvium**	**3.0**	**04S/02W-34NeofNW?**	**1290' S, 680'W fr N ¼ cor S 34**
2						
3						
4						
5						

* 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
2	**170**	**na**	**na**	**na**	**300**	**0-250**	**0-250**	**na**	**na**	**na**	**na**	

Use data from application for proposed wells.

A4. **Comments:** Note: appears to be a discrepancy between the location of the north line of section 34 between county tax lot map and usgs quad sheets. Proposed aquifer based on applicant's proposed well depth of 250 feet.

A5. ☒ **Provisions of the Willamette** Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: **Proposed well is greater than one-quarter mile and will develop groundwater from a confined aquifer.**

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

Application G-16308 continued Date December 8, 2004

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

B1. **Based upon available data**, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or

d. ☒ **will, if properly conditioned**, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ The permit should contain condition #(s) **7B, 7C (March), 7F**;
   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 ground water production from no deeper than _____ ft. below land surface;

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

c. ☒ **Condition** to allow ground water production only from the **alluvial sediments** ground ~~water reservoir between approximately 250 ft. and 1000 ft. below land surface;~~ DEW

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 Ground Water 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. **Ground water availability remarks:** About 1,500 feet of alluvial sediments (the Willamette Confining Unit of Woodward and Gannett, 1998) occur beneath about 100 feet of Willamette Silt at the proposed well site. The alluvial sediments consist of sand and gravel beds with multiple intervening layers of clay and silt of varying thickness. The applicant has indicated that the proposed well will be cased and sealed 250 feet. Seasonal water-level fluctuations in the alluvial sediments are estimated to be 10-50 feet per year (see attached hydrographs for observation wells MARI 1262, 2331, 18546, and 55956). Since the seasonal high water table occurs within the Willamette Silt at about 10 to 20 feet below land surface, there should be sufficient additional head available in the summer months to accommodate the proposed use. However, as ground-water use increases in the area, seasonal fluctuations will also increase.

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

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

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
2	**Alluvium**	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The basin-fill aquifer is confined by about 100 feet of saturated, overlying, fine-grained Willamette Silt in the area of the proposed well (Gannett and Caldwell, 1998). Aquifer test data indicate storativity values of about 0.0001, consistent with confined conditions

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
2	**1**	**Champoeg Creek**	**150***	**110**	**1700**	☒	☐	☐	☐	☒
2	**2**	**Case Creek**	**150***	**145**	**3600**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

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 other, 1998, Plate 1). Champoeg and Case Creeks are fully incised through the Willamette Silt in this area. *The estimated static water level of the proposed well for this area indicates that the surface water stage is less than groundwater levels in the area. Deep casing and seal as proposed by the applicant will decrease the efficiency of the connection between the producing water-bearing zones at depth and nearby streams.

Water Availability Basin the well(s) are located within: Champoeg Creek

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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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?
2	**1**	☐	☐	**na**	**na**	☐	**1.00**	☒	**<1%**	☒
2	**2**	☐	☐	**na**	**na**	☐	**1.00**	☒	**<1%**	☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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 between the proposed well and Champoeg Creek was estimated using the Hunt model (1999). Pumping was set at the maximum requested rate for year-round use as a worse case scenario. The thickness of the sediments above the top of the proposed completion interval at a depth of 250 feet, minus topographic difference of ~ 60 feet, was used as a surrogate for the thickness of the streambed to account for the resistance to vertical flow between the streams and water-bearing sands and gravels in the completion interval. Because these layers extend beyond the streambed clogging layer that they represent in the model, the model will overestimate stream interference based on this conceptualization since the model does not account for leakage through the overlying materials in areas away from the stream. The thickness of the materials overlying the producing zone was estimated from nearby wells and land surface and stream elevations from topographic maps. A conservative (from the persepective of the stream) aquifer thickness of 50 feet was assumed based on the top of the proposed completion interval and the total depth of the well.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
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:

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 ground water 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** The great thickness of largely fine-grained materials that will separate the proposed completion interval from Champoeg and Case Creeks will minimize the interchange of water between these streams and the alluvial aquifer at depth. The available data indicate that the Willamette River is the regional ground-water discharge area for the alluvial aquifer.

References Used:

Gannett, M. W. and Caldwell, R.R., 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and

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

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, 82p.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** _____ **Logid:** _____

D2. **THE WELL does not 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**:

a. ☐ constitutes a health threat under Division 200 rules;
b. ☐ commingles water from more than one ground water reservoir;
c. ☐ permits the loss of artesian head;
d. ☐ permits the de-watering of one or more ground water reservoirs;
e. ☐ other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL**

a. ☐ **was**, *or* ☐ **was not** constructed according to the standards in effect at the time of original construction or most recent modification.

b. ☐ I don't know if it met standards at the time of construction.

D6. ☐ **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

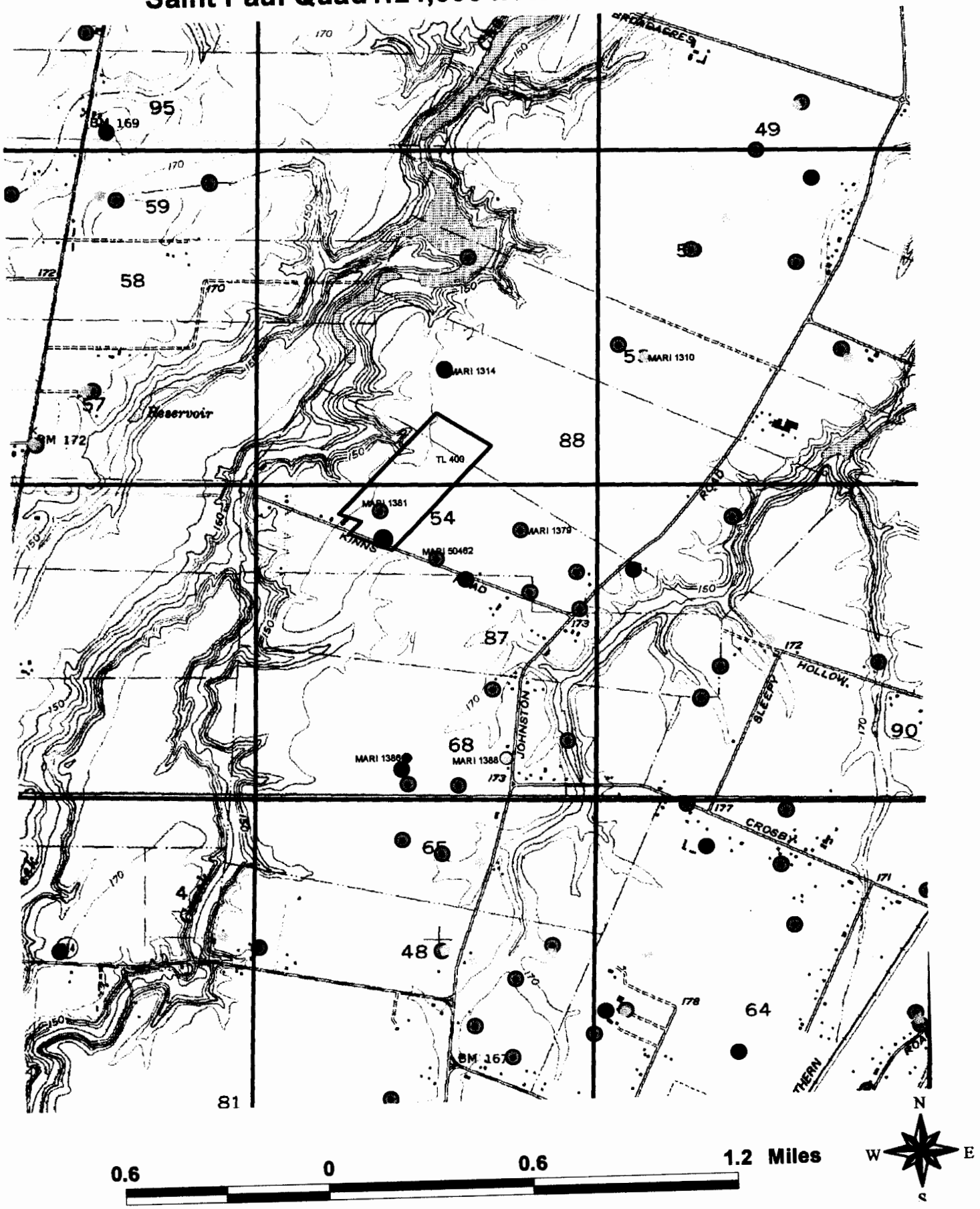
THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. ☐ Well construction deficiency has been corrected by the following actions: _____

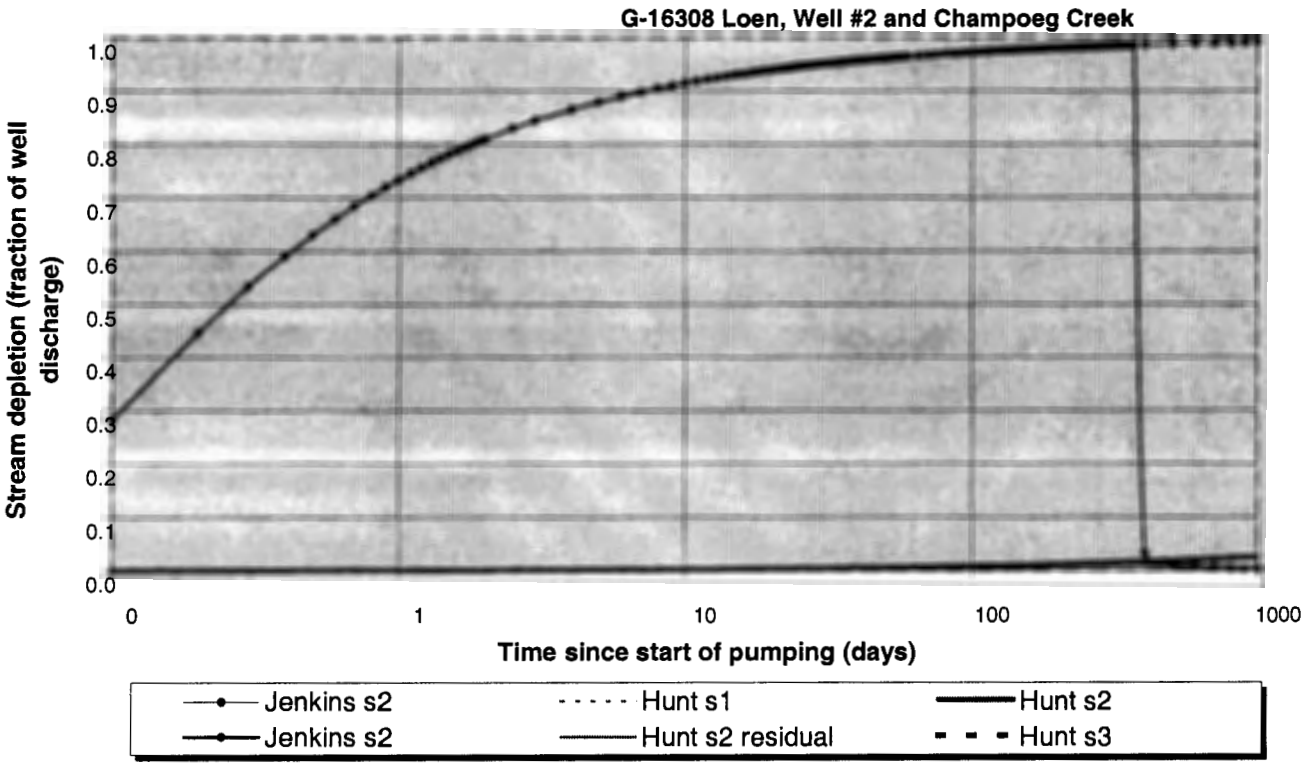
_____ _____, 200____.
(Enforcement Section Signature)

D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

G-16308 Loen 04S/02W-34
Saint Paul Quad1:24,000 note section discrepancy



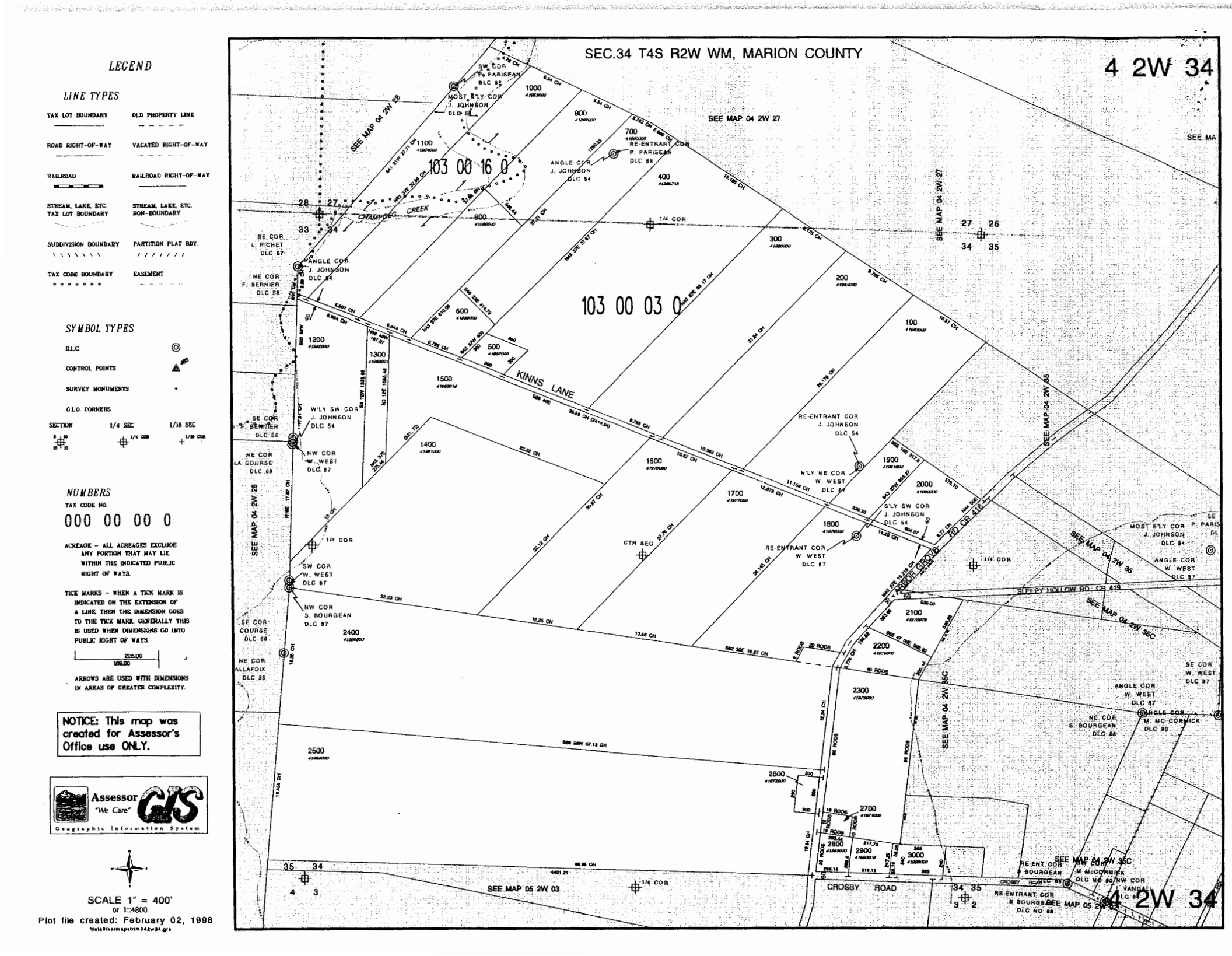
Transient Stream Depletion (Jenkins, 1970; Hunt, 1999)



Output for Hunt Stream Depletion, Scenerio 2 (s2):

Days	30	60	90	120	150	180	210	240	270	300	330	360
Hunt SD s2	0.0042	0.0061	0.0076	0.0088	0.0099	0.0108	0.0117	0.0125	0.0133	0.0140	0.0147	0.0154
Qw, cfs	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
H SD s2, cfs	0.013	0.018	0.023	0.026	0.030	0.032	0.035	0.038	0.040	0.042	0.044	0.046

Parameters:		**Scenario 1**	**Scenario 2**	**Scenario 3**	**Units**
Net steady pumping rate	Qw	3	3	3	cfs
Distance to stream	a	1700	1700	1700	ft
Aquifer hydraulic conductivity	K	25	25	25	ft/day
Aquifer thickness	b	50	50	50	ft
Aquifer transmissivity	T	1250	1250	1250	ft*ft/day
Aquifer storage coefficient	S	0.0001	0.0001	0.0001	
Stream width	ws	20	20	20	ft
Streambed hydraulic conductivity	Ks	0.005	0.005	0.005	ft/day
Streambed thickness	bs	190	190	190	ft
Streambed conductance	sbc	0.000526316	0.000526316	0.000526316	ft/day
Stream depletion factor (Jenkins)	sdf	0.2312	0.2312	0.2312	days
Streambed factor (Hunt)	sbf	0.000715789	0.000715789	0.000715789	


SEC.34 T4S R2W WM, MARION COUNTY
4 2W 34
LEGEND
LINE TYPES
TAX LOT BOUNDARY
OLD PROPERTY LINE
ROAD RIGHT-OF-WAY
VACATED RIGHT-OF-WAY
RAILROAD
RAILROAD RIGHT-OF-WAY
STREAM, LAKE, ETC. TAX LOT BOUNDARY
STREAM, LAKE, ETC. NON-BOUNDARY
SUBDIVISION BOUNDARY
PARTITION PLAT BDY.
TAX CODE BOUNDARY
EASEMENT
SYMBOL TYPES
D.L.C.
CONTROL POINTS
SURVEY MONUMENTS
G.L.O. CORNERS
SECTION
1/4 SEC
1/16 SEC
NUMBERS
TAX CODE NO.
000 00 00 0
ACREAGE - ALL ACREAGES EXCLUDE ANY PORTION THAT MAY LIE WITHIN THE INDICATED PUBLIC RIGHT OF WAYS.
TICK MARKS - WHEN A TICK MARK IS INDICATED ON THE EXTENSION OF A LINE, THEN THE DIMENSION GOES TO THE TICK MARK. GENERALLY THIS IS USED WHEN DIMENSIONS GO INTO PUBLIC RIGHT OF WAYS.
220.00
180.00
ARROWS ARE USED WITH DIMENSIONS IN AREAS OF GREATER COMPLEXITY.
NOTICE: This map was created for Assessor's Office use ONLY.
Assessor GIS
"We Care"
Geographic Information System
SCALE 1" = 400'
or 1:4800
Plot file created: February 02, 1998
103 00 16 0
103 00 03 0
SEE MAP 04 2W 27
SEE MAP 04 2W 28
SEE MAP 04 2W 26
SEE MAP 04 2W 35
SEE MAP 04 2W 36
SEE MAP 04 2W 36C
SEE MAP 05 2W 03
SEE MAP 05 2W 02
CHAMPOEG CREEK
KINNS LANE
CROSBY ROAD
ARBOR GROVE RD. CR 419
SLEEPY HOLLOW RD. CR 419
SW COR P. PARISEAN DLC 88
MOST E'LY COR J. JOHNSON DLC 54
ANGLE COR J. JOHNSON DLC 54
RE-ENTRANT COR P. PARISEAN DLC 88
1/4 COR
SE COR L. PICHET DLC 87
ANGLE COR J. JOHNSON DLC 54
NE COR F. BERNIER DLC 58
W'LY SW COR J. JOHNSON DLC 54
SE COR F. BERNIER DLC 56
NW COR W. WEST DLC 87
NE COR LA COURSE DLC 69
RE-ENTRANT COR J. JOHNSON DLC 54
N'LY NE COR W. WEST DLC 87
S'LY SW COR J. JOHNSON DLC 54
RE-ENTRANT COR W. WEST DLC 87
CTR SEC
SW COR W. WEST DLC 87
NW COR S. BOURGEAN DLC 87
SE COR COURSE DLC 69
NE COR ALLAFOIX DLC 55
MOST E'LY COR P. PARISEAN DLC 54
ANGLE COR W. WEST DLC 87
SE COR W. WEST DLC 87
ANGLE COR W. WEST DLC 87
NE COR S. BOURGEAN DLC 88
ANGLE COR M. MC CORMICK DLC 90
RE-ENT COR S. BOURGEAN DLC 88
M. McCORMICK DLC NO 90
NW COR J. VANDALL DLC 87
RE-ENTRANT COR S. BOURGEAN DLC NO 88
4 2W 34