Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G-17495

ROUTED TO: Water Rights

TOWNSHIP/
RANGE-SECTION: 7S/3W-7

CONDITIONS ATTACHED?: [X] yes [ ] no

REMARKS OR FURTHER INSTRUCTIONS:
See related file G-17494.
See section 46 and conditions on page 2.

Reviewer: Karl Weaver

WATER RESOURCES DEPARTMENT

MEMO December 13, ~~200~~ 2011

TO: **Application G-** 17495

FROM: **GW:** Karl Wozniak
(Reviewer's Name)

SUBJECT: **Scenic Waterway Interference Evaluation**

_____YES
The source of appropriation is within or above a Scenic Waterway
__✓__NO

_____YES
Use the Scenic Waterway condition (Condition 7J)
__✓__NO

_____Per ORS 390.835, the Ground Water 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 Ground Water 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 _____ 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 GROUND WATER APPLICATIONS

TO: Water Rights Section Date **December 13, 2011**

FROM: Ground Water/Hydrology Section Karl C. Wozniak
Reviewer's Name

SUBJECT: Application G- 17495 Supersedes review of _____
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: **X NOVO LLC** County: **Polk**

A1. Applicant(s) seek(s) 0.4 cfs from 1 well(s) in the Willamette Basin, Brush College Crk / Glenn Creek subbasin Quad Map: Salem West

A2. Proposed use Supplemental Irrigation Seasonality: Irr, Mar 1-Oct 31

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	1	CRB	0.4	07S-03W-07 NW/NE	855' S, 270' E fr N1/4 cor S 7
2						

* 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	450				+/-265							

Use data from application for proposed wells.

A4. **Comments:** The application proposes a single well in the Columbia River Basalt aquifer system.

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: The source aquifer is confined so the pertinent basin rules (OAR 690-502-0240) do not apply.

A6. ☒ **Well(s) #** 1 _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: Eola Hills Groundwater Limited Area (OAR 690-502-0200)
Comments: The limited area rules allow the issuance of 5-year permits for drip or equally efficient irrigation limited to one acre-foot per acre per year.

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. ☒ [redacted]d, avoid injury to existing ground water rights or to the ground water resource:
   i. ☒ [redacted] ;
   ii. ☐ The permit should be conditioned as indicated in item 2 below.
   iii. ☒ The permit should contain spe[redacted]ditio[redacted] indicate[redacted]m 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 75 ft. below land surface;

c. ☒ **Condition** to allow ground water production only from the basalt ground water 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 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:**

Special Conditions:

1. The amount of water used for irrigation under this right, together with the amount secured under any other right existing for the same lands, is limited to a diversion of 1.0 acre-foot for each acre irrigated during the irrigation season of each year.

2. Irrigation allowed under this permit shall be by drip irrigation or by an equally efficient method.

3. The well, or any replacement well, shall be constructed to meet the special construction standards specified in OAR 690-200-0028(3): In particular, the well shall be limited to one aquifer and shall be continuously cased and continuously sealed to within 100 feet of the bottom of the hole and, the well shall be equipped with a dedicated measuring tube.

The area under the proposed water right is underlain by the Grande Ronde Basalt Formation of the Columbia River Basalt Group which is underlain by Tertiary marine sediments. Mapped basalt members in the area include the Winter Water basalt and the underlying Ortley basalt. The total basalt thickness is about 250 feet but probably varies locally as there appears to be considerable erosional relief at the top of the underlying marine sediments. Brush College Creek cuts through the entire basalt section and exposes marine sediments in the creek bed about ¼ mile to the southeast of the proposed POA. Unconfined groundwater occurs near the surface of the basalts but most productive groundwater occurs in tabular confined aquifers that occupy thin rubble zones (interflow zones) at the contacts between lava flows. Geologic maps indicate that the basalt layers dip at low angles to the east. The basal contacts of the Winter Water and Ortley basalt members are exposed on the hillsides immediately to the north, east, and south of the proposed well. These contacts represent local boundaries to the Columbia River Basalt aquifer system. Four permitted springs (certificate 85783) in the area coincide with the basal contact of the Winter Water basalt. Because the aquifer associated with this basal contact is confined, pumping impacts from any well within a mile will be transmitted within minutes to the springs. In order to prevent injury to these springs, production from

the proposed well should not be allowed from this aquifer. This can be accomplished by requiring production from no shallower than 75 feet at the proposed well location.

Water levels in nearby basalt wells appear to be stable over time (see attached plot) which suggests that the groundwater system can support some additional appropriation.

OAR 690-502-0250 requires that all new permits issued to appropriate groundwater from Columbia River Basalt Group aquifers shall be conditioned to measure water levels and water use.

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
1	**Columbia River Basalt**	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The application proposes to produce groundwater at depth in the Columbia River Basalt aquifer system. General experience indicates that individual aquifers within the basalts are confined.

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**	**Brush College Creek**	**240**	**250-400**	**900**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Brush College Creek becomes perennial about one mile upstream from the proposed well location. Heads in nearby wells are coincident with adjacent reaches of the creek. Known springs (certificate 85783) coincide with the basal Winter Water basalt contact. These facts are consistent with discharge from basalt aquifers as the drainage system cuts its way down through the basalt column and, therefore, indicate that the basalts are hydraulically connected to the creek. The geometry of the basalt aquifer system suggests that Brush College Creek will be the only stream to be impacted by this diversion.

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

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?
1	**1**	☒	☐			☐	**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: Moderate transmissivities and low storativities typical of Columbia River Basalt aquifers indicate that impacts to nearby streams will be relatively immediate. Although an appropriate model is not readily available to quantify impacts to Brush College Creek from the proposed well, it is likely that the impacts will be greater than 25% after 30 days of pumping. Although the well is within the Willamette River Water Availability Basin, all pumping impacts are likely to be limited to Brush College Creek.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													

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

References Used:

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, 32p.

Tolan, T., and Beason, M., Unpublished geologic map of the Salem West Quadrangle: Oregon Water Resources Department.

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).**

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN

Water Availability as of 11/29/2011

Watershed ID #: 182

Exceedance Level: 80%

Date: 11/29/2011

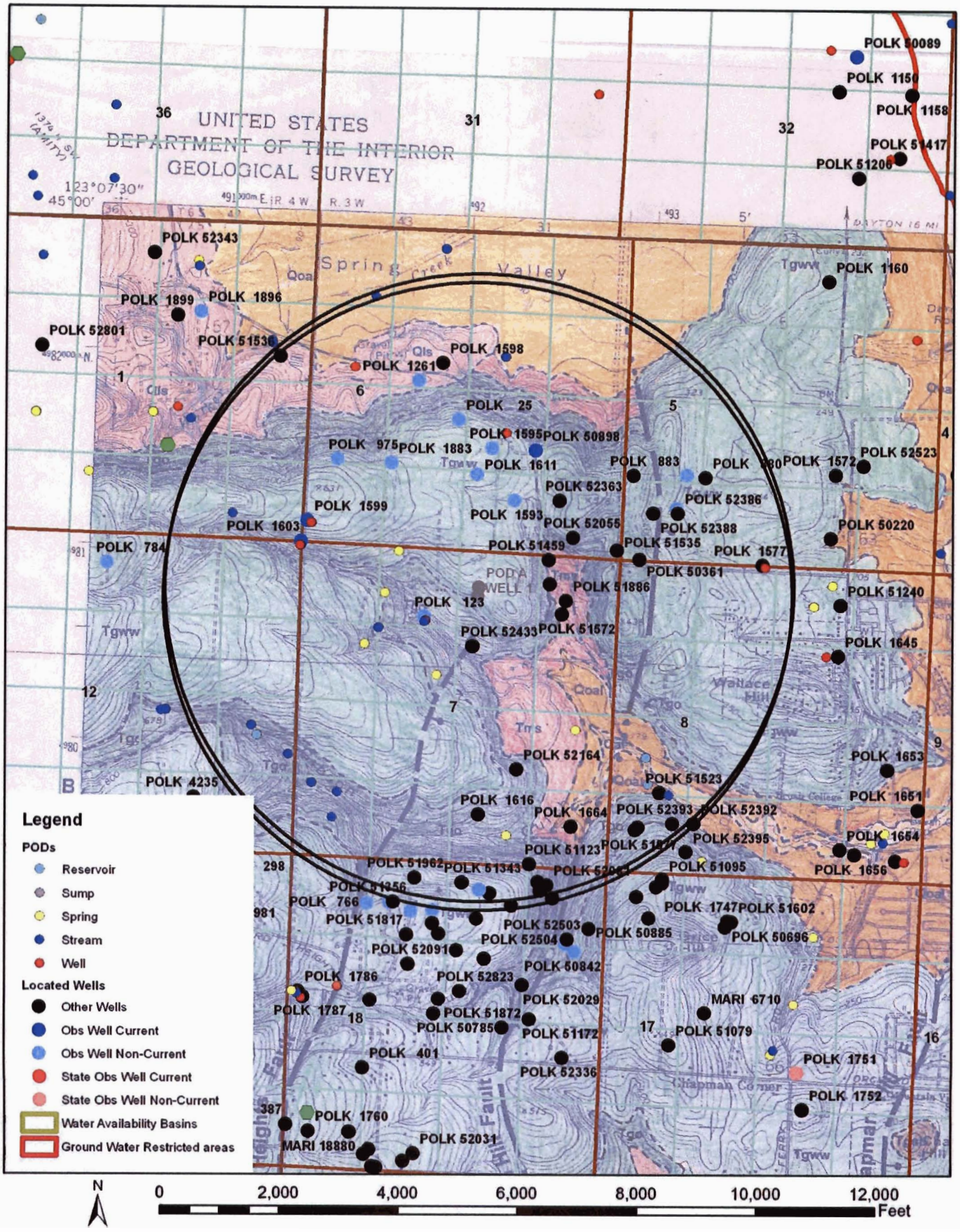
Time: 9:09 AM

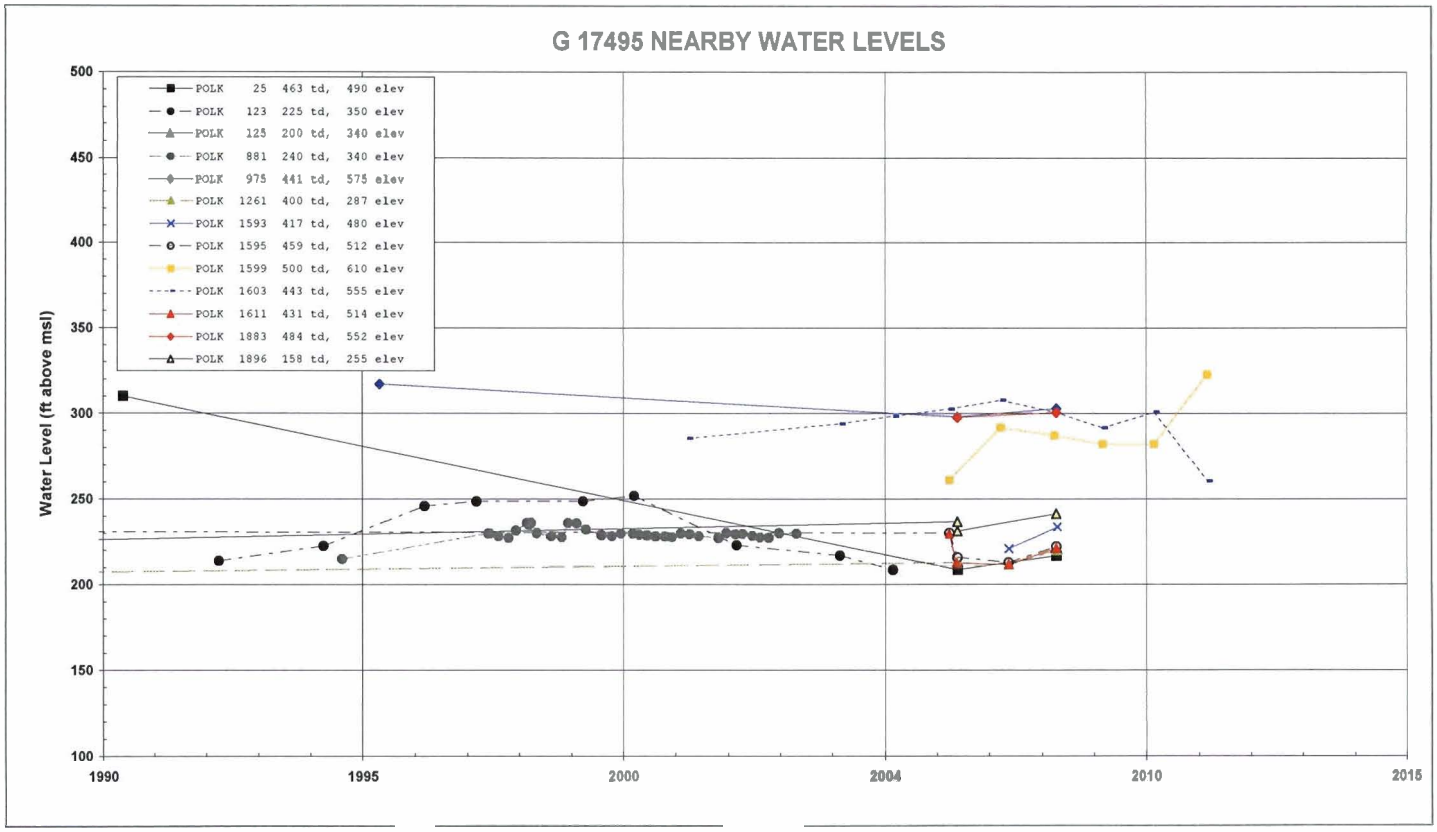
Water Availability Calculation

Monthly Streamflows in Cubic Feet per Second
Storage at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	21,400.00	2,160.00	19,200.00	0.00	1,500.00	17,700.00
FEB	23,200.00	7,340.00	15,900.00	0.00	1,500.00	14,400.00
MAR	22,400.00	7,120.00	15,300.00	0.00	1,500.00	13,800.00
APR	19,900.00	6,780.00	13,100.00	0.00	1,500.00	11,600.00
MAY	16,600.00	4,100.00	12,500.00	0.00	1,500.00	11,000.00
JUN	8,740.00	1,820.00	6,920.00	0.00	1,500.00	5,420.00
JUL	4,980.00	1,640.00	3,340.00	0.00	1,500.00	1,840.00
AUG	3,830.00	1,490.00	2,340.00	0.00	1,500.00	844.00
SEP	3,890.00	1,240.00	2,650.00	0.00	1,500.00	1,150.00
OCT	4,850.00	618.00	4,230.00	0.00	1,500.00	2,730.00
NOV	10,200.00	753.00	9,450.00	0.00	1,500.00	7,950.00
DEC	19,300.00	830.00	18,500.00	0.00	1,500.00	17,000.00
ANN	15,200,000.00	2,150,000.00	13,100,000.00	0.00	1,090,000.00	12,000,000.00

G-17494, 17495, X NOVO




G 17495 NEARBY WATER LEVELS
Water Level (ft above msl)
500
450
400
350
300
250
200
150
100
1990
1995
2000
2004
2010
2015
POLK 25 463 td, 490 elev
POLK 123 225 td, 350 elev
POLK 125 200 td, 340 elev
POLK 881 240 td, 340 elev
POLK 975 441 td, 575 elev
POLK 1261 400 td, 287 elev
POLK 1593 417 td, 480 elev
POLK 1595 459 td, 512 elev
POLK 1599 500 td, 610 elev
POLK 1603 443 td, 555 elev
POLK 1611 431 td, 514 elev
POLK 1883 484 td, 552 elev
POLK 1896 158 td, 255 elev