

Groundwater Application Review Summary Form

Application # G- 18776

GW Reviewer J. Woody Date Review Completed: 9.24.2019

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).

none of the above apply

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 9/24/2019
 FROM: Groundwater Section Jen Woody Reviewer's Name
 SUBJECT: Application G- 18776 Supersedes review of 4/19/2019 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: North American Plants, Inc. c/o Yongjian Chang
 County: Yamhill

A1. Applicant(s) seek(s) 0.31 cfs from 2 well(s) in the Willamette Basin,
Coast Range subbasin

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 | 6 | Alluvium | <u>0.31</u> | T4S/R4W-12 NW ¼ SW ¼ | 615' N, 810' E fr NE cor, DLC 50 |
| 2 | proposed | 7 | Alluvium | <u>0.31</u> | T4S/R4W-12 NW ¼ SW ¼ | 275' N, 270' E fr NE cor DLC 50 |
| 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 |
|------|------------------|--------------------|------------|----------|-----------------|--------------------|-----------------------|----------------------|------------------------------|------------------|----------------|-----------|
| 1 | 155 | unk | 25 | * | 200 | 0-50 | 0-80 | unk | unk | 350 | unk | |
| 2 | 155 | unk | 25 | * | 200 | 0-50 | 0-80 | unk | unl | 350 | unk | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Use data from application for proposed wells.

A4. **Comments:** Both wells have not yet been drilled. The water level is estimated from nearby well logs: YAMH 5656, 5660, 52688, 55661.

Changes related to the rereview are highlighted.

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: 690-502-240 is not activated because the proposed POAs are greater than ¼ mile from surface water.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction. Name of administrative area: N/A
 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) Medium Water Use Reporting, 7C;
 - 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:** The proposed wells will produce water from sand, gravel and clay of the Willamette aquifer. At this location, the aquifer is 20 to 40 feet thick; it is overlain by approximately 80 feet of fine-grained Willamette Silt and underlain by about 1600 feet of the predominantly fine-grained Willamette confining unit. A survey of well logs in sections 11 &12 found 65 well logs on record. Yields range from 2 to 327 gpm with a median yield of 30 gpm.

There are no recent time-series data available within a mile of the proposed wells. Therefore, the groundwater cannot be determined to be over appropriated. Because there is a lack of recent, nearby water level data, water level use and water level monitoring conditions are recommended.

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 | Alluvium | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2 | Alluvium | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> |

Basis for aquifer confinement evaluation: The Willamette Silt approximately 80 feet thick at this location, and acts as a confining layer.

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? | | | Potential for Subst. Interfer. Assumed? | |
|------|------|--------------------|----------------|----------------|---------------|-------------------------------------|--------------------------|--------------------------|---|-------------------------------------|
| | | | | | | YES | NO | ASSUMED | YES | NO |
| 1 | 1 | Hawn Creek | 130 | 90 | 1500 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | 1 | Hawn Creek | 130 | 90 | 1800 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1 | 2 | Yamhill River | 130 | 80 | 2290 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | 2 | Yamhill River | 130 | 80 | 1730 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Basis for aquifer hydraulic connection evaluation: Water table elevation maps show alluvial groundwater flows toward nearby creeks, indicating hydraulic connection.

Water Availability Basin the well(s) are located within: WAB#188: Yamhill R> Willamette R – AB Palmer Cr

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 | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | 56.30 | <input checked="" type="checkbox"/> | <25% | <input checked="" type="checkbox"/> |
| 2 | 1 | <input type="checkbox"/> | <input type="checkbox"/> | | | <input checked="" type="checkbox"/> | 56.30 | <input checked="" type="checkbox"/> | <25% | <input checked="" type="checkbox"/> |
| 1 | 2 | <input type="checkbox"/> | <input type="checkbox"/> | IS73549A | 31.0 | <input checked="" type="checkbox"/> | 56.30 | <input checked="" type="checkbox"/> | <25% | <input checked="" type="checkbox"/> |
| 2 | 2 | <input type="checkbox"/> | <input type="checkbox"/> | IS73549A | 31.0 | <input checked="" type="checkbox"/> | 56.30 | <input checked="" type="checkbox"/> | <25% | <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |

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? |
|--|------|--|--------------------------|-------------------------|------------------------------|--------------------------|------------------------|------------------------------|----------------------------|---|
| | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |
| | | | <input type="checkbox"/> | | | <input type="checkbox"/> | | <input type="checkbox"/> | | <input type="checkbox"/> |

Comments: _____

The rate was reduced to 0.31, so PSI is not triggered. Stream depletion is much less than 25% at 30 days when modelled with Hunt, 2003 (see Figure 4).

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 | | | | | | | | | | | | | |
| (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: N/A

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:** See comments in C3b.

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.

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

OWRD water level and well log databases, includes reported water levels.

US Geological Survey Topographic Map, McMinnville and Dayton Quadrangles.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: N/A _____

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:** _____

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

Figure 1. Water Availability Tables

Water Availability Analysis Detailed Reports

YAMHILL R > WILLAMETTE R - AB PALMER CR WILLAMETTE BASIN

Water Availability as of 4/18/2019

Watershed ID #: 188 ([Map](#))

Exceedance Level: 80%

Date: 4/18/2019

Time: 2:16 PM

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume 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 | 1,780.00 | 58.60 | 1,720.00 | 0.00 | 31.00 | 1,690.00 |
| FEB | 2,010.00 | 56.60 | 1,950.00 | 0.00 | 31.00 | 1,920.00 |
| MAR | 1,710.00 | 34.90 | 1,680.00 | 0.00 | 31.00 | 1,640.00 |
| APR | 1,030.00 | 42.20 | 988.00 | 0.00 | 31.00 | 957.00 |
| MAY | 512.00 | 56.70 | 455.00 | 0.00 | 31.00 | 424.00 |
| JUN | 229.00 | 77.60 | 151.00 | 0.00 | 31.00 | 120.00 |
| JUL | 107.00 | 97.90 | 9.11 | 0.00 | 31.00 | -21.90 |
| AUG | 66.60 | 87.00 | -20.40 | 0.00 | 31.00 | -51.40 |
| SEP | 56.30 | 56.30 | 0.03 | 0.00 | 31.00 | -31.00 |
| OCT | 72.70 | 15.70 | 57.00 | 0.00 | 31.00 | 26.00 |
| NOV | 465.00 | 31.90 | 433.00 | 0.00 | 31.00 | 402.00 |
| DEC | 1,640.00 | 55.80 | 1,580.00 | 0.00 | 31.00 | 1,550.00 |
| ANN | 1,150,000.00 | 40,500.00 | 1,100,000.00 | 0.00 | 22,500.00 | 1,080,000.00 |

Figure 2. Well Location Map

G-18776 North American Plants T4S/R4W-Section 12

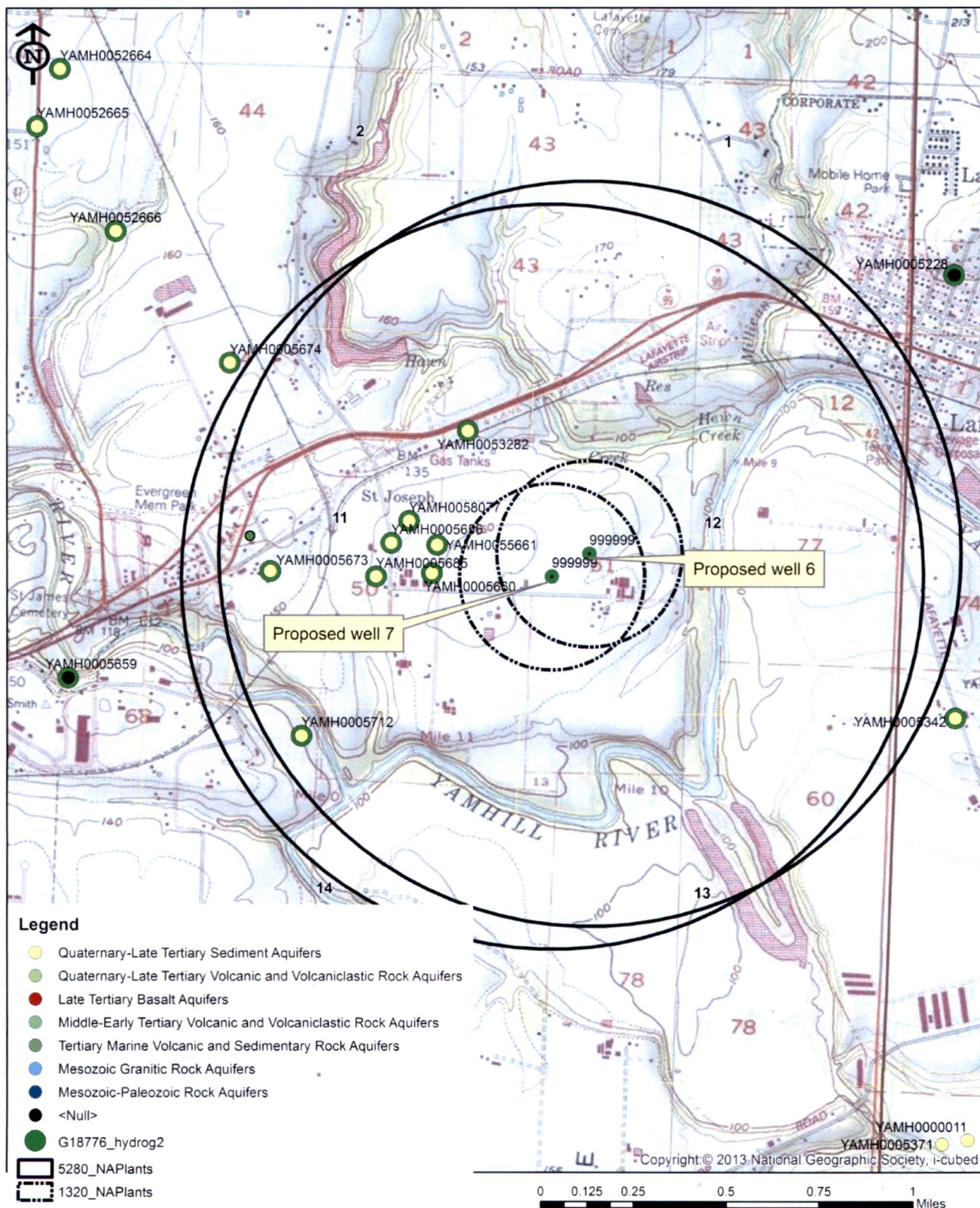


Figure 3. Water-Level Trends in Nearby Wells. There are no recent time-series data available.

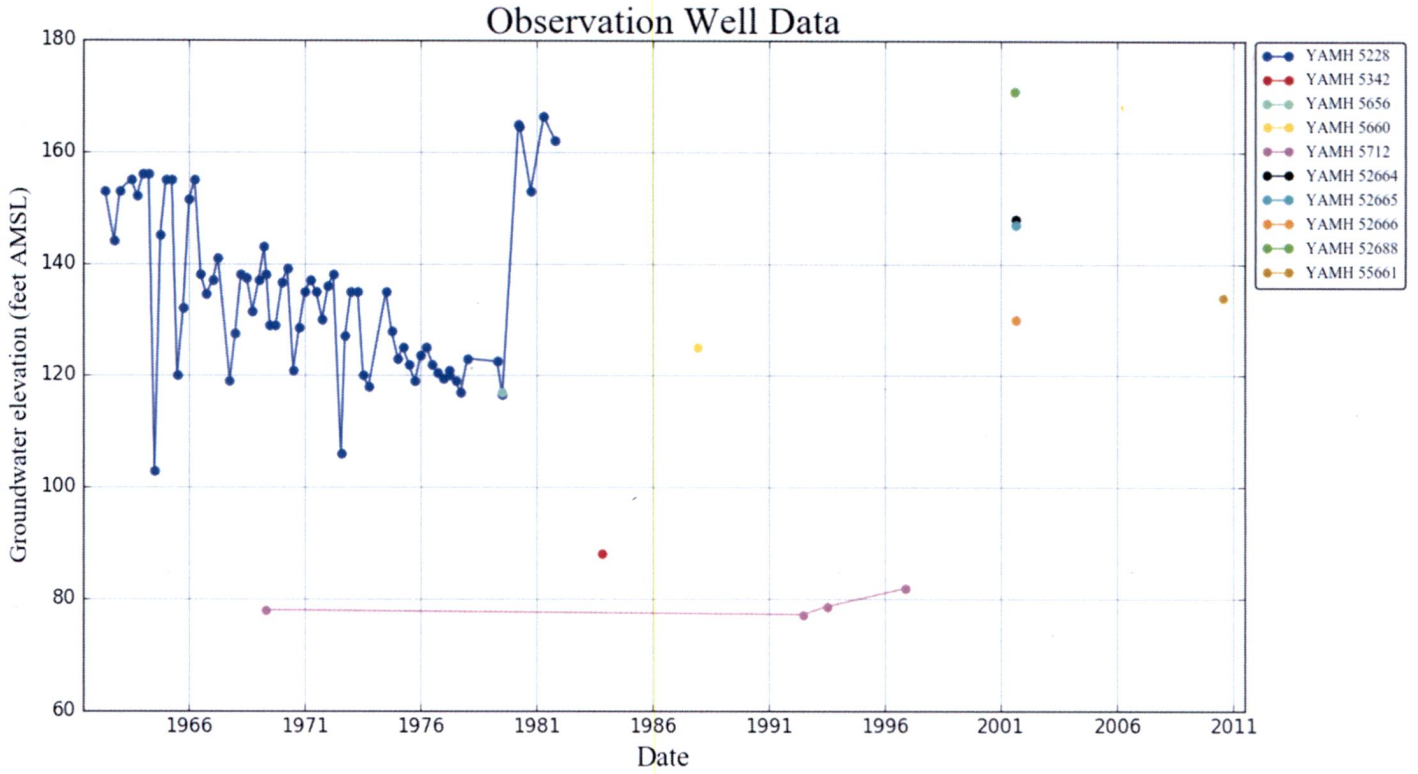
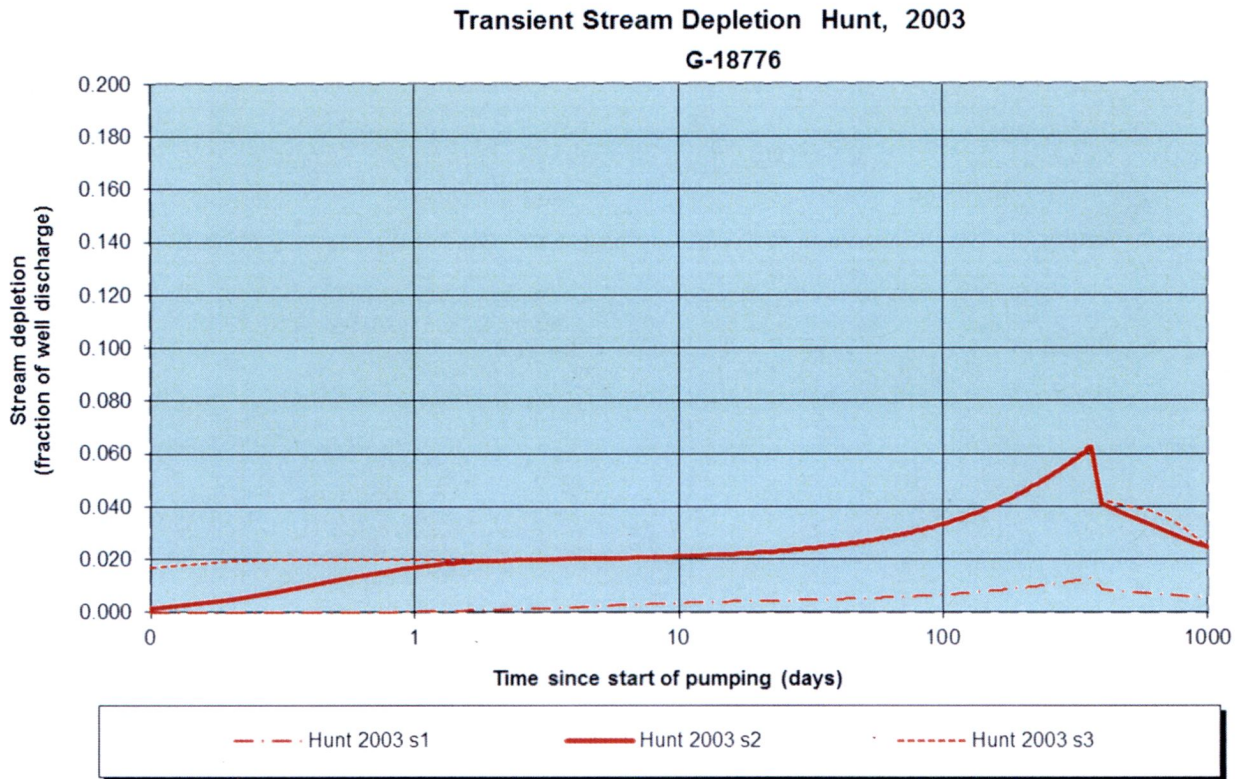


Figure 4. Stream Depletion



| Output for Stream Depletion, Scenerio 2 (s2): | | | | | | Time pump on (pumping duration) = 365 days | | | | | | |
|---|-------|-------|-------|-------|-------|--|-------|-------|-------|-------|-------|-------|
| Days | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 |
| J SD | 93.3% | 95.2% | 96.1% | 96.6% | 97.0% | 97.2% | 97.5% | 97.6% | 97.8% | 97.9% | 98.0% | 98.1% |
| H SD 1999 | 26.5% | 35.0% | 40.5% | 44.6% | 47.8% | 50.4% | 52.6% | 54.5% | 56.2% | 57.7% | 59.0% | 60.2% |
| H SD 2003 | 2.40% | 2.82% | 3.22% | 3.60% | 3.97% | 4.33% | 4.67% | 5.00% | 5.32% | 5.63% | 5.93% | 6.23% |
| Qw, cfs | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 | 0.688 |
| H SD 99, cfs | 0.182 | 0.241 | 0.279 | 0.307 | 0.329 | 0.347 | 0.362 | 0.375 | 0.387 | 0.397 | 0.406 | 0.414 |
| H SD 03, cfs | 0.017 | 0.019 | 0.022 | 0.025 | 0.027 | 0.030 | 0.032 | 0.034 | 0.037 | 0.039 | 0.041 | 0.043 |

| Parameters: | | Scenario 1 | Scenario 2 | Scenario 3 | Units |
|--|------|------------|------------|------------|-----------|
| Net steady pumping rate of well | Qw | 0.69 | 0.69 | 0.69 | cfs |
| Time pump on (pumping duration) | tpon | 365 | 365 | 365 | days |
| Perpendicular from well to stream | a | 1500 | 1500 | 1500 | ft |
| Well depth | d | 200 | 200 | 200 | ft |
| Aquifer hydraulic conductivity | K | 30 | 30 | 30 | ft/day |
| Aquifer saturated thickness | b | 175 | 175 | 175 | ft |
| Aquifer transmissivity | T | 5250 | 5250 | 5250 | ft*ft/day |
| Aquifer storativity or specific yield | S | 0.01 | 0.001 | 0.0001 | |
| Aquitard vertical hydraulic conductivity | Kva | 0.1 | 0.1 | 0.1 | ft/day |
| Aquitard saturated thickness | ba | 60 | 60 | 60 | ft |
| Aquitard thickness below stream | babs | 35 | 35 | 35 | ft |
| Aquitard porosity | n | 0.2 | 0.2 | 0.2 | |
| Stream width | ws | 20 | 100 | 100 | ft |