

Groundwater Application Review Summary Form

Application # G- 19431

GW Reviewer Gabriela Ferreira Date Review Completed: September 13, 2024

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

September 13, 2024

TO: Application G- 19431

FROM: GW: Gabriela Ferreira
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation



YES

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



NO



YES

Use the Scenic Waterway Condition (Condition 7J)



NO



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 Clackamas 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 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 8.3% | 8.3% | 8.3% | 8.3% | 8.3% | 8.3% | 8.3% | 8.3% | 8.3% | 8.3% | 8.3% | 8.3% |

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date September 13, 2024
 FROM: Groundwater Section Gabriela Ferreira
 Reviewer's Name
 SUBJECT: Application G- 19431 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 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: Green Clover Farms c/o Chris Copp County: Clackamas

A1. Applicant(s) seek(s) 0.0125 cfs from one well(s) in the Willamette Basin, _____ subbasin

A2. Proposed use Nursery (0.5 acres) Seasonality: Year-round

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

| POA 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 | CLAC 73540 | 1 | Alluvium | 0.0125 | T2S/R3E-20, NW-SE | 1,175' S, 380' E fr C cor S 20 |

* Alluvium, CRB, Bedrock

| POA Well | Well Depth (ft) | Seal Interval (ft) | Casing Intervals (ft) | Liner Intervals (ft) | Perforations Or Screens (ft) | Well Yield (gpm) | Drawdown (ft) | Test Type |
|----------|-----------------|--------------------|-----------------------|----------------------|------------------------------|------------------|---------------|-----------|
| 1 | 180 | 49 | 180 | -- | 160 – 180 | 100 | N/A | Air |

| POA Well | Land Surface Elevation at Well (ft amsl) | Depth of First Water (ft bls) | SWL (ft bls) | SWL Date | Reference Level (ft bls) | Reference Level Date |
|----------|--|-------------------------------|--------------|-----------|--------------------------|----------------------|
| 1 | 210 ^a | 65 | 65 | 10/4/2017 | TBD | TBD |

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU is approximately 6 miles east of Oregon City. The applicant proposes nursery use on 0.5 acre by one well already constructed, CLAC 73540.

^a Land surface elevation from LIDAR at the proposed well location (OLC, 2016).

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: The proposed POA is greater than 1/4-mile from the nearest perennial surface water source and will develop a confined aquifer; therefore, per OAR 690-502-0160 the relevant Willamette Basin rules (OAR 690-502-0050) do not apply.

A6. ☒ **Well(s) #** 1 tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: Clackamas River State Scenic Waterway

Comments: The proposed POAs will be hydraulically connected to the Clackamas River State Scenic Waterway (OAR 736-040-0075). Any permit issued pursuant to this application should contain the State Scenic Waterway condition (7J).

Stream depletions due to the proposed use will increase with time until a new steady state is reached between recharge (including stream capture) and discharge, at which time approximately 100 percent of the water consumed from the proposed POA will be depleted from surface water (Theis, 1940; Bredehoeft, 2011; Barlow and Leake, 2012). Therefore, the monthly interference with surface water above the State Scenic Waterway is estimated as 1/12 of the full volume of consumptive use, assuming that at steady state the depletion of surface water will be distributed approximately evenly throughout the year. For nursery and irrigation use, this approach is expected to overestimate stream depletion during the cool, high-precipitation months (when groundwater demand is anticipated to be lowest) and underestimate stream depletion during the hot, dry summer months (when groundwater demand is anticipated to be highest). This bias will be greatest for wells that are closest to streams and will lessen the further a well is located from a stream (Bredehoeft, 2011; Barlow and Leake, 2012).

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 **7J, State Scenic Waterway, 7RLN, Static Water Level Condition**;
 - 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 POA/POU location is on floodplains of the ancestral Clackamas River which were then incised by the current Clackamas River, approximately 1,900 feet north of the POA. The proposed POA is on an intermediary upland terrace with steeper and higher elevation terraces further north and south of the Clackamas River. The Clackamas River and tributaries are deeply incised into underlying Quaternary alluvium, the Tertiary Troutdale Formation, and/or the Sandy River Mudstone. Basalt flows of the Boring Lava and High Cascade volcanics are also present in the area to the north and south, which were then incised by smaller streams, producing substantial local topographic relief (Leonard and Collins, 1983; Conlon and others, 2005; Gannett and Caldwell, 1998). The proposed POA appears to produce from Quaternary alluvium, with minor amounts of volcanic gravel reported in the well log.

Within approximately one mile of the proposed POA locations, there are about three groundwater rights, all for irrigation use. The irrigation wells and many of the nearby exempt domestic wells appear to produce from water-bearing zones within shallow Quaternary alluvium or the Troutdale Formation. Nearby wells have generally low yields, with most less than 50 gpm (see attached well statistics). The pump test for Well 1 / CLAC 73540 reported approximately a yield of 100 gpm by air test and did not report the drawdown. The requested rate of ~5.6 gpm is much lower than reported yields.

Four nearby wells producing from Quaternary alluvium and with sufficient water level data for evaluation were identified within approximately 2.5 mile of the proposed POAs, ranging in total depth from 161 to 350 feet bls. Reported water level elevations for these wells range from about 150 feet above mean sea level (amsl) to 450 feet amsl, mostly higher in elevation

than the SWL reported in the POA due to the substantial topographic relief near the POA. Water level data for these wells are generally stable over the time period available with seasonal variability up to 30 feet. Although the well construction and elevations do not correspond exactly to the proposed POA, the water level data is representative of trends within nearby similar construction and water-bearing zone(s).

No nearby wells fully penetrate the ~600 ft deep alluvial system in this area, and thus potential injury to nearby groundwater users was not assessed for this review. Additionally, the proposed withdrawal rate is very low (~5.6 gpm) and therefore unlikely to impact nearby wells.

However, permit condition 7RLN is recommended to assess potential future injury concerns, and as a means to monitor long-term groundwater conditions in this area.

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 | Alluvial | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Basis for aquifer confinement evaluation: Nearby wells completed in Quaternary alluvium report SWLs above the water-bearing zone(s), indicating a confined aquifer or series of aquifers. The reported water bearing zone for Well 1 (CLAC 73540) is between 160 and 180 feet bls with a reported static water level of 65 feet bls. Several fine-grained sediment layers are reported overlying water-bearing zones.

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 ¹ ft msl | SW Elev ² ft msl | Distance (ft) | Hydraulically Connected? | | | Potential for Subst. Interfer. Assumed? | |
|------|------|----------------------------------|--------------------------------|--------------------------------|------------------|-------------------------------------|-------------------------------------|--------------------------|---|--------------------------|
| | | | | | | YES | NO | ASSUMED | YES | NO |
| 1 | 1 | Clackamas River | 145 | 116 - 108 | 1,750 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | 2 | Unnamed Tributary to Clear Creek | 145 | 375 - 190 | 2,730 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | 3 | Foster Creek | 145 | 225 - 120 | 4,160 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Basis for aquifer hydraulic connection evaluation: ¹ Estimated groundwater elevation is based on the reported static water level in Well 1 (CLAC 73540).

² Estimated surface water elevation and distance is provided for the nearest perennial reach for each surface water body (OLC, 2016; USGS 2014).

Because the estimated groundwater elevation for the POA is coincident with or slightly above the estimated elevation ranges for the SW 1 and SW 3, the aquifer system proposed to be accessed by the POA is efficiently hydraulically connected to those stream reaches. The POA is at a lower elevation than the Unnamed Tributary to Clear Creek to the south and as such, is not hydraulically connected within one mile.

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

SW 1, 3 – WID #80: Clackamas River > Willamette River – At Mouth

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, 3 | <input type="checkbox"/> | <input type="checkbox"/> | | | <input type="checkbox"/> | 822.00 | <input type="checkbox"/> | <<25% | <input type="checkbox"/> |

| | 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"/> |

[illegible]

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 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:** _____

References Used: Application File G-19431

Water well reports and data: CLAC 73540, CLAC 4079, CLAC 4667, CLAC 4954, CLAC 5246, CLAC 66847, CLAC 66853, CLAC 70219

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, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, Vol 8, p. 12-19.

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

Oregon Lidar Consortium (OLC), 2016, OLC metro 2014 lidar project, Oregon Department of Geology & Mineral Industries, Portland, OR, November 30.

United States Geological Survey, 2014, National Hydrography Dataset (NHD), 1:24,000, U. S. Department of the Interior, Reston, VA.

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

Logid: CLAC 73540

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: _____

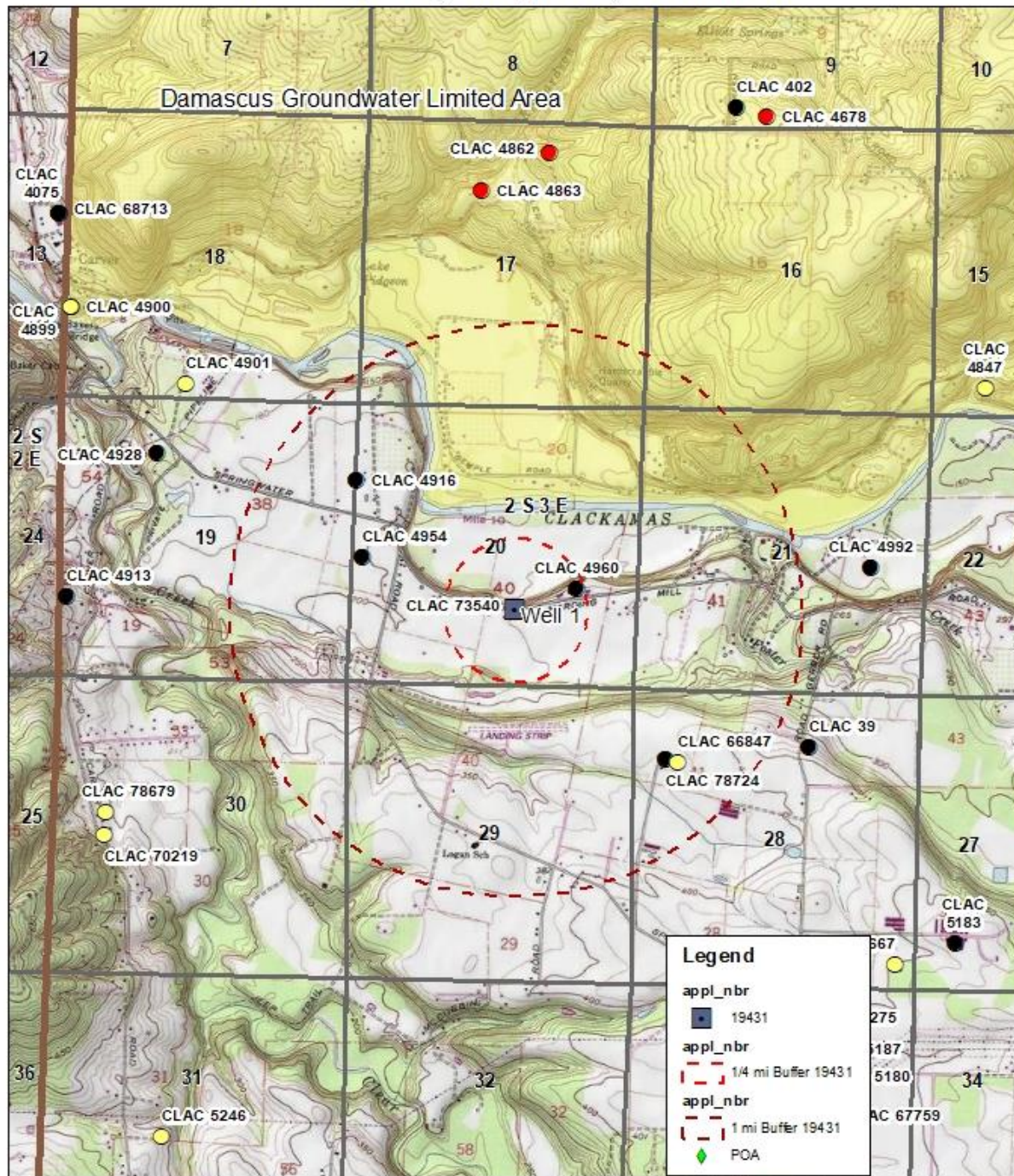
D4.

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

Water Availability Tables

| Water Availability Analysis Detailed Reports | | | | | | | |
|---|---------------------|-------------------------------|----------------------|----------------------|---------------------------|---------------------|--|
| CLACKAMAS R > WILLAMETTE R - AT MOUTH WILLAMETTE BASIN | | | | | | | |
| Watershed ID # 80 (Map) Date: 9/13/2024 | | | | | | | |
| Water Availability as of 9/13/2024 | | | | | | | |
| Exceedance Level: 80% Time: 10:35 AM | | | | | | | |
| <div><div>Water Availability Calculation</div><div>Consumptive Uses and Storages</div><div>Instream Flow Requirements</div><div>Reservations</div><div>Water Rights</div><div>Watershed Characteristics</div></div> | | | | | | | |
| <div><div>Water Availability Calculation</div><div>Monthly Streamflow in Cubic Feet per Second</div><div>Annual Volume at 50% Exceedance in Acre-Feet</div></div> | | | | | | | |
| Month | Natural Stream Flow | Consumptive Uses and Storages | Expected Stream Flow | Reserved Stream Flow | Instream Flow Requirement | Net Water Available | |
| JAN | 2,670.00 | 327.00 | 2,340.00 | 0.00 | 1,000.00 | 1,340.00 | |
| FEB | 2,900.00 | 362.00 | 2,540.00 | 0.00 | 1,000.00 | 1,540.00 | |
| MAR | 2,800.00 | 331.00 | 2,470.00 | 0.00 | 1,000.00 | 1,470.00 | |
| APR | 3,010.00 | 400.00 | 2,610.00 | 0.00 | 1,000.00 | 1,610.00 | |
| MAY | 2,740.00 | 398.00 | 2,340.00 | 0.00 | 1,000.00 | 1,340.00 | |
| JUN | 1,620.00 | 309.00 | 1,310.00 | 0.00 | 1,000.00 | 311.00 | |
| JUL | 980.00 | 309.00 | 671.00 | 0.00 | 1,000.00 | -329.00 | |
| AUG | 822.00 | 294.00 | 528.00 | 0.00 | 890.00 | -362.00 | |
| SEP | 833.00 | 283.00 | 550.00 | 0.00 | 890.00 | -340.00 | |
| OCT | 882.00 | 277.00 | 605.00 | 0.00 | 1,000.00 | -395.00 | |
| NOV | 1,630.00 | 324.00 | 1,310.00 | 0.00 | 1,000.00 | 306.00 | |
| DEC | 2,650.00 | 329.00 | 2,320.00 | 0.00 | 1,000.00 | 1,320.00 | |
| ANN | 2,110,000.00 | 238,000.00 | 1,870,000.00 | 0.00 | 711,000.00 | 1,200,000.00 | |

Well Location Map

**Application G-19431 Green Clover Farms
Township 2 S, Range 3 E, Section 20**

0

Miles

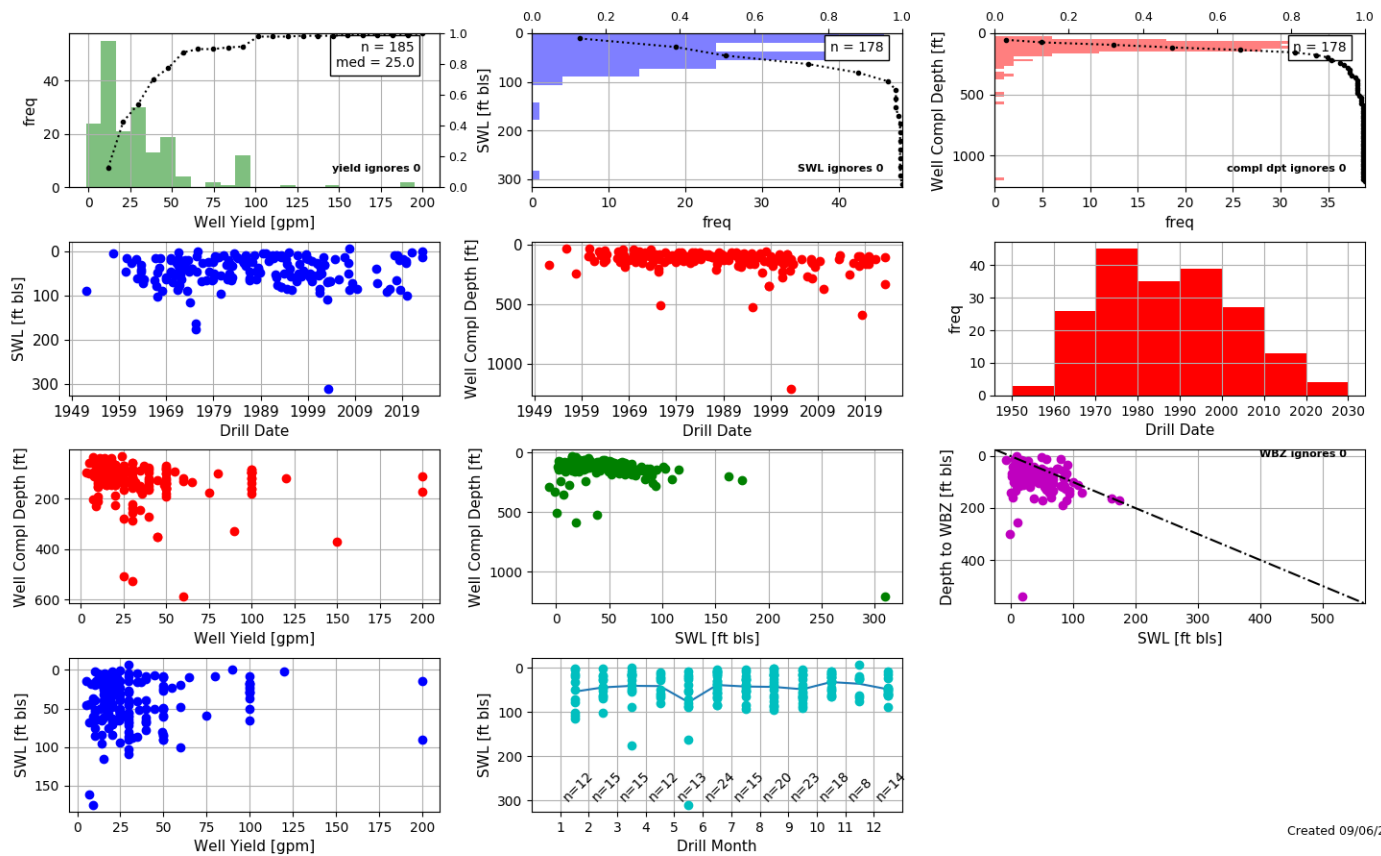
1

2

Main Map Scale = 1:24,000

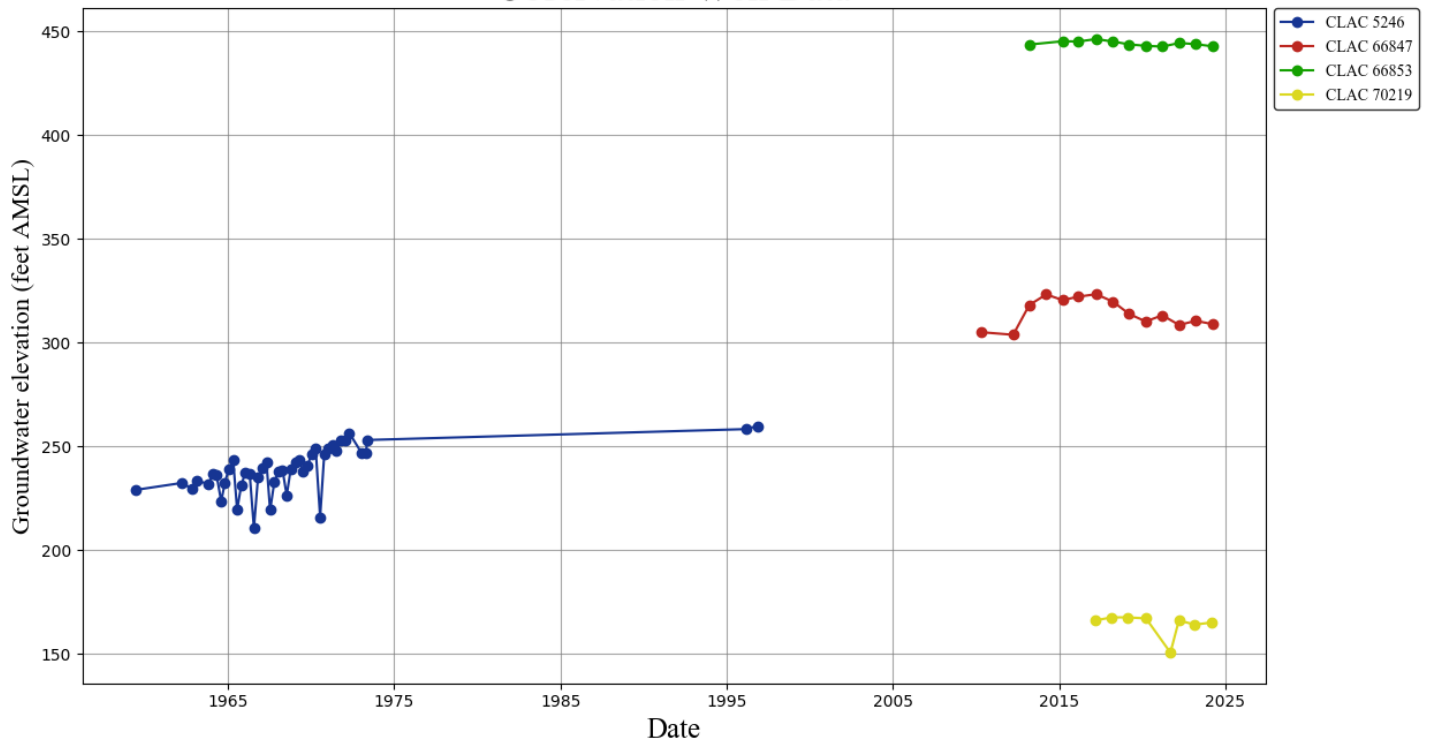
Service Layer Credits: Copyright© 2013 National Geographic Society, i-cubed

Well Statistics



Water-Level Measurements in Nearby Wells

Observation Well Data



Stream Depletion (Hunt) Model Analysis

| | |
|--------------------------------------|--------|
| Application type: | G |
| Application number: | 19431 |
| Well number: | 1 |
| Stream Number: | 1 |
| Pumping rate (cfs): | 0.0125 |
| Pumping duration (days): | 365 |
| Pumping start month number (3=March) | 1 |
| Plotting duration (days) | 365 |

| Parameter | Symbol | Scenario 1 | Scenario 2 | Scenario 3 | Units |
|--|--------|------------|------------|------------|---------|
| Distance from well to stream | a | 1750 | 1750 | 1750 | ft |
| Aquifer transmissivity | T | 250.0 | 350 | 750 | ft2/day |
| Aquifer storativity | S | 0.001 | 0.001 | 0.001 | - |
| Aquitard vertical hydraulic conductivity | Kva | 0.01 | 0.05 | 0.1 | ft/day |
| Aquitard saturated thickness | ba | 7.0 | 7.0 | 7.0 | ft |
| Aquitard thickness below stream | babs | 30 | 30 | 30 | ft |
| Aquitard specific yield | Sya | 0.2 | 0.2 | 0.2 | - |
| Stream width | ws | 200 | 200 | 200 | ft |

| | | | | | | | | | | | | | |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Stream depletion for Scenario 2: | | | | | | | | | | | | | |
| Days | 1 | 31 | 62 | 92 | 122 | 153 | 183 | 213 | 244 | 274 | 304 | 335 | 365 |
| Depletion (%) | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 |
| Depletion (cfs) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

