Print Form

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk
County of: Siskiyou
311 Fourth Street, Room 201
Yreka CA 96097

From: (Public Agency): Environmental Health Division
806 South Main Street
Yreka CA 96097
(Address)

FILED
Siskiyou County
FEB 07 2024
LAURA BYNUM, CLERK
BY: _____ Deputy Clerk

Project Title: Water Well Permit #24003

Project Applicant: Butte Valley Irrigation District

Project Location - Specific:
Macdoel, CA 96058 (APN: 003-420-060)

Project Location - City: ~~Tulelake~~ Macdoel Project Location - County: Siskiyou

Description of Nature, Purpose and Beneficiaries of Project:
Approval of an agricultural production well replacement.

Name of Public Agency Approving Project: Siskiyou County Community Development

Name of Person or Agency Carrying Out Project: Environmental Health Division

Exempt Status: **(check one):**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: 15061(b)(3)
- ☐ Statutory Exemptions. State code number: _____

Reasons why project is exempt:
See attachment.

Lead Agency
Contact Person: Rick Dean Area Code/Telephone/Extension: 530-841-2100

If filed by applicant:
1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☒ Yes ☐ No

Signature: _____ Date: 2/20/2024 Title: Director

☒ Signed by Lead Agency ☐ Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____

Reason why project is exempt:

The study produced by Lawrence and Associates indicates that the operation of the new well at the proposed location will not induce subsidence or interfere with production or function of existing nearby wells. County staff has determined that the well does not pose any threat to human health, safety, or the environment. Per the Siskiyou County Flood Control District, this well is also consistent with the Groundwater Sustainability Plan for the Butte Valley. See study for additional details.

Groundwater Sustainability
Agency Verification Form

Siskiyou County Flood Control and Water Conservation District

Owner Information

Name:	Butte Valley Irrigation District
Address:	12224 Old State Hwy
City:	Macdoel
Zip:	96058
Phone:	530-398-4515
Email:	

Well Information

A.P.N:	003-420-060
Latitude:	41.815029
Longitude:	122.019889
Township	
Range	
Section	

Groundwater Sustainability Agency:

☑ The proposed well is not inconsistent with the Groundwater Sustainability Agency's adopted, or in progress, Groundwater Sustainability Plan; and,

☑ The proposed well does not interfere with the Groundwater Sustainability Agency's SGMA authorities, including the Agency's addressing of undesirable results and the likelihood of achieving the sustainability goal.

I hereby certify that the GSA has reviewed the above conditions for the subject property for compliance with Executive Order N-7-22 and have marked each box for compliance as applicable.

Matt

Groundwater Sustainability Agency Signature

1/30/24

Date

Matt Parker

Printed Name

GSA Plan Manage

Title

LAWRENCE
& ASSOCIATES
ENGINEERS & GEOLOGISTS

January 9, 2024; rev. January 30, 2024 023059.00

District Manager
Butte Valley Irrigation District
12224 Old State Highway
Macdoel, CA 96058

Dear Mr. Cotter:

SUBJECT: EVALUATION OF POTENTIAL INTERFERENCE & SUBSIDENCE IMPACTS FROM PROPOSED IRRIGATION WELL, BUTTE VALLEY IRRIGATION DISTRICT, SISKIYOU COUNTY, CALIFORNIA

This letter describes our evaluation of potential impacts from operation of a proposed irrigation well within the Butte Valley Irrigation District (BVID), Siskiyou County, California (**Text Figures 1 & 2**). Siskiyou County requires such an analysis per the State of California's *Executive Order N-7-22 (Order)*. The relevant section of the Order is as follows:

> *9. To protect health, safety, and the environment during this drought emergency, a county, city, or other public agency shall not:*
>
> *a. Approve a permit for a new groundwater well or for alteration of an existing well in a basin subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed to be located that groundwater extraction by the proposed well would not be inconsistent with any sustainable groundwater management program established in any applicable Groundwater Sustainability Plan adopted by that Groundwater Sustainability Agency and would not decrease the likelihood of achieving a sustainability goal for the basin covered by such a plan; or*
>
> *b. Issue a permit for a new groundwater well or for alteration of an existing well without first determining that extraction of groundwater from the proposed well is (1) not likely to interfere with the production and functioning of existing nearby wells, and (2) not likely to cause subsidence that would adversely impact or damage nearby infrastructure. This paragraph shall not apply to permits for wells that will provide less than two acre-feet per year of groundwater for individual domestic users, or that will exclusively provide groundwater to public water supply systems as defined in section 116275 of the Health and Safety Code.*

The work was conducted under my supervision (California Professional Geologist 6541 and Certified Hydrogeologist No. 626) and support from other Lawrence & Associate staff.

SUMMARY

The proposed well will be an irrigation well installed to a depth greater than 500 feet below ground surface (bgs). It is assumed that the new well will have similar characteristics as the existing BVID Well #30 (1,115 feet deep).

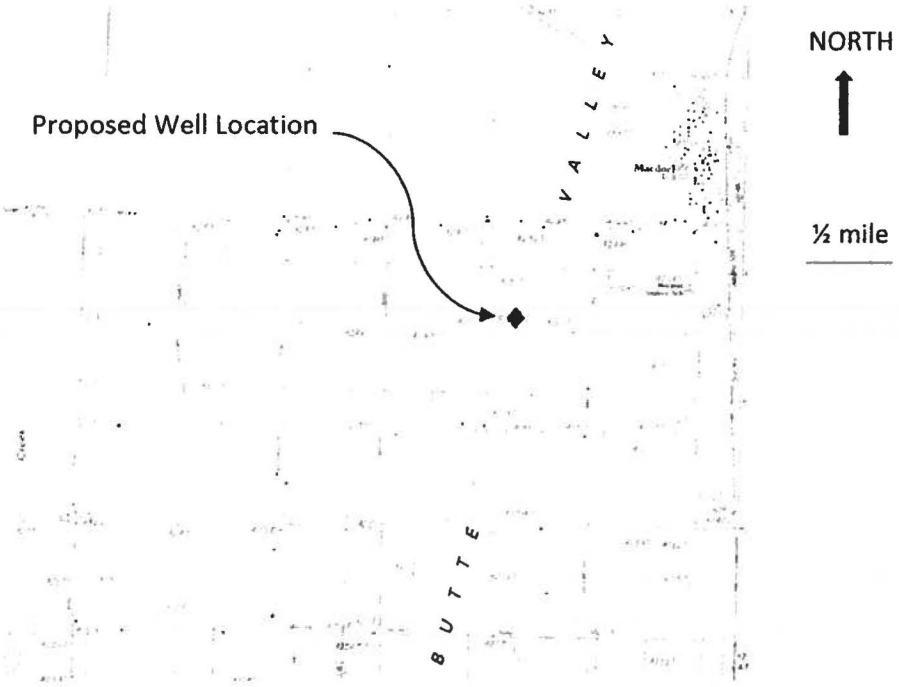
Per BVID staff, the new well will pumping at a rate of approximately 2,000 gallons per minute (gpm), 10-hours per day, for five months per year. Averaged over the entire pumping period of five months, the pumping rate would equate to 833 gpm, 24-hours per day, for five months.

During daily pumping, at approximately 500 feet from the new well, the interference is predicted to be approximately one foot, decreasing to zero within 1,000 feet. During the entire irrigation season, at approximately 1,000 feet from the new well, the interference is predicted to be approximately two feet, decreasing to less than one foot at one mile and less than six inches at two miles.

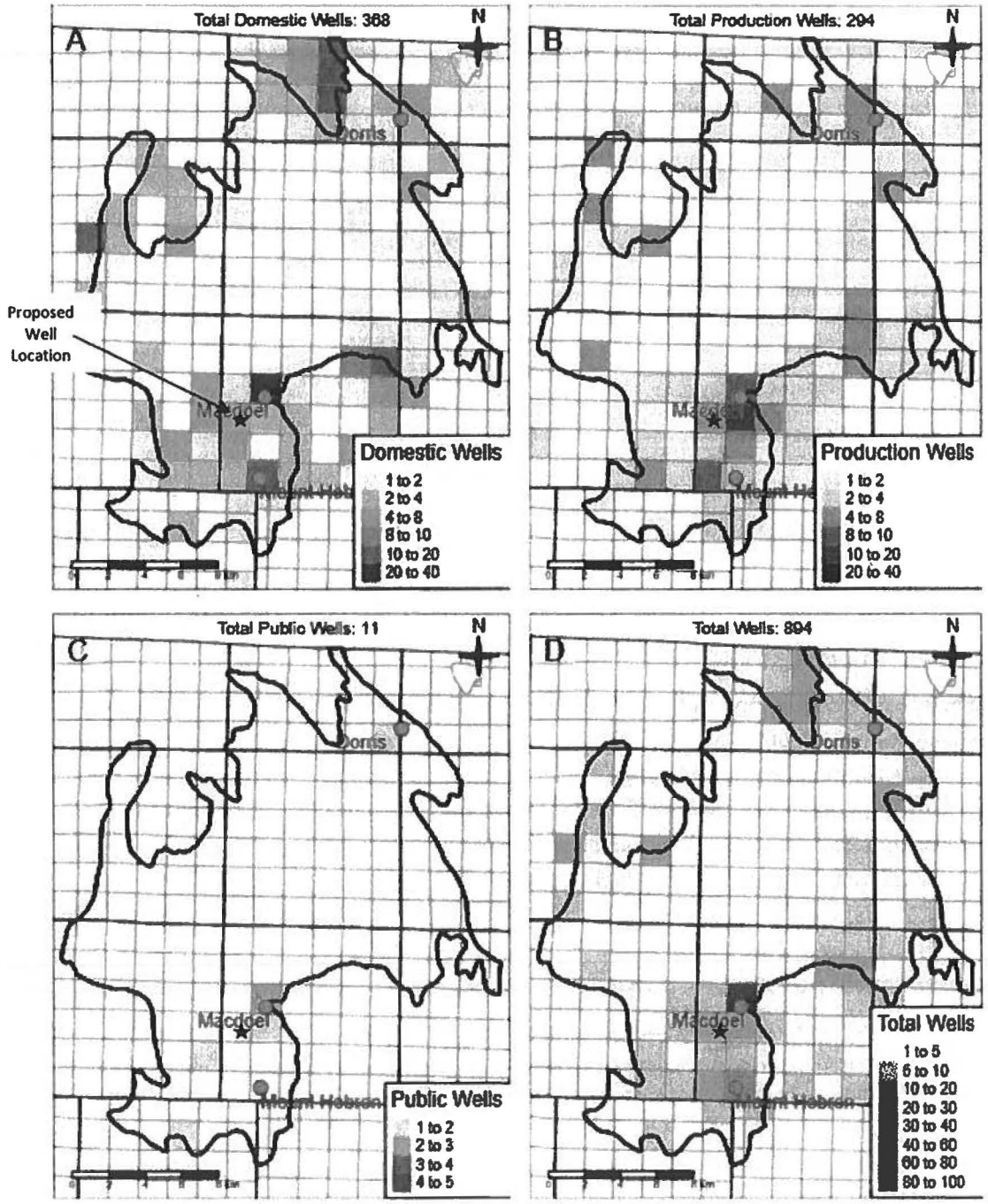
Assuming static water levels of approximately 30 to 100 feet bgs (based on DWR well logs) and well depths of at least 500 to 1,000 feet (wells that are comparable to the proposed well depth), interference of two feet or less on a minimum 400-foot water column would represent less than 0.01% of the water column. This level of interference would not cause adverse effects on neighboring wells.

Therefore, operation of a new irrigation well at the proposed location, completed at a similar depth to other deeper wells in the vicinity and operated at an average of 833 gpm, for a period of five months per year, would not cause an adverse interference impact on vicinity wells. Neither will pumping of the new well induce subsidence.

TEXT FIGURE 1
PROPOSED WELL LOCATION



TEXT FIGURE 2
PROPOSED WELL LOCATION & WELLS OF RECORD
PANEL A – DOMESTIC, PANEL B – PRODUCTION, PANEL C – PUBLIC, PANEL D - ALL
(TAKEN FROM BUTTE VALLEY GSP[1])



[1] Siskiyou County Flood Control & Water Conservation District, December 2021, *Butte Valley Groundwater Sustainability Plan*, Figure 1.6, p. 20.

DISCUSSION

PUMPING RATE

Per the schedule provided by BVID staff, the proposed well will pump at approximately 2,000 gpm, 10-hours per day, for five months per year (May through September). Averaged over the entire pumping period of six months, the pumping rate would equate to 833 gpm (1,200,000 gallons/day ÷ 1440 minutes/day), 24-hours per day (this value will be used to estimate long-term impacts). **Table 1** summarizes these calculations.

TABLE 1
SUMMARY OF PROPOSED PUMPING RATE

Units	Per Day	Averaged Over Season
Gallons Per Minute	2,000	833
Hours/Day	10	10
Gallons Per day	1,200,000	1,200,000
Days/Week	7	7
Months/Year	5	5
Gallons/Season	168,000,000	168,000,000
Acre-Feet/Season	516	516

AQUIFER CHARACTERISTICS

To estimate interference impacts from a pumping well it is necessary to know the transmissivity and storage coefficient of the aquifer. These parameters can be estimated from existing wells that have data for pumping rate and drawdown. There are at least 95 wells of record in the vicinity, although only a few have sufficient information from which to infer aquifer characteristics.[2] The proposed well is along the border of Township 46 North, Range 1 West, Sections 18 and 19. There are several wells relatively close to the proposed well site (most within one to two miles) that have sufficient data to calculate aquifer parameters. **Table 2** lists those wells and show the calculations.

BVID Wells #30 is 1,115 feet deep; it was tested at 2,600 gpm and showed 13 feet of drawdown. BVID Well #15 is 90 feet deep; it was tested at 2,030 gpm and showed 5 feet of drawdown. The proposed well will be completed in the deep zone and so it most likely to have characteristics similar to BVID Well #30.

[2] Vicinity well data from DWR well log database – Township 46 North, Range 1 West, Sections 17 through 20 and Range 2 West, Sections 13 and 14.

The only other deep (greater than 500 feet) well that has publicly available data is a Test Well in Township 46 North, Range 1 West, Section 20. It is over 1,500 feet deep and was tested at 2,980 gpm and showed 60 feet of drawdown.

Table 2 shows the estimated transmissivity of the aquifer at the locations of these three wells.[3] To estimate the storage coefficient, we used the estimated transmissivity in the Theis equation, adjusting the storage coefficient until the calculated drawdown roughly matched the observed drawdown. **Table 1** shows the calculation.

TABLE 2
CALCULATION OF AQUIFER COEFFICIENTS FROM EXISTING WELLS

Parameter	Units	BVID #30 (Deep)	BVID #15 (Shallow)	46N 1W S20 Test Well (Deep)	46N 1W S20 Drilled 1948 (Shallow)	46N 1W S18 1307 Meiss Lk. Rd. (Shallow)	46N 1W S17 Juniper Knoll (Shallow)
Transmissvity, T (estimated from log)	gpd/foot	300,000	609,000	63,675	30,000	60,000	333,333
Storage coefficient, S (estimated)	unitless	0.050	0.100	0.100	0.010	0.050	0.100
Discharge, Q	gpm	2,600	2,030	2,980	1,200	1,000	2,000
Length of pumping period	days	0.1	0.3	1.0	0.5	0.3	0.2
Distance from center of well	r, ft	0.5	0.5	0.5	0.5	0.5	0.5
Storage coefficient	S, dl'less	0.050	0.100	0.100	0.010	0.050	0.100
Transmissivity	T, gpd/ft	300,000	609,000	63,675	30,000	60,000	333,333
u = [1.87r^2S/Tt]	u	6.23E-07	2.30E-07	7.34E-07	3.12E-07	1.17E-06	8.42E-07
Well function of u	W(u)	13.71	14.71	13.55	14.40	13.08	13.41
Drawdown, theoretical = [s1=114.6QW(u)/T]	s1, ft	13.62	5.62	72.66	66.03	24.99	9.22
Well efficiency	eff., percent	1.00	1.00	1.00	1.00	1.00	1.00
Calculated drawdown	s2, ft	13.6	5.6	72.7	66.0	25.0	9.2
Observed drawdown	ft	13.0	5.0	70.2	60.0	25.0	9.0

ERROR in any column indicates that the calculation is out of range; that is, the calculation indicates that there would be no effect at that distance.

[3] Transmissivity calculated by multiplying specific capacity by 1,500 (for confined aquifers), per Driscoll, 1986, *Groundwater and Wells*, Appendix 16.D, p.1021.

INTERFERENCE IMPACTS

Operation of a well could cause interference with vicinity wells completed at similar depths. Interference is the decrease in water level in a well caused by the pumping of a neighboring well. Different pumping rates yield different amounts of interference (for the same pumping period, a high pumping rate causes more interference than a low rate at any given distance).

To evaluate the potential interference, a pumping rate must be used in conjunction with the aquifer coefficients of transmissivity and storativity to calculate drawdown at various distances using the Theis equation. **Table 3** shows these calculations for two scenarios – the daily pumping (2,000 gpm for 10 hours) and the seasonal pumping which accounts for weekends and the portion of each day that pumping does not occur (833 gpm for five months).

During daily pumping, at approximately 500 feet from the new well, the interference is predicted to be approximately one foot, decreasing to zero within 1,000 feet. During the entire irrigation season, at approximately 1,000 feet from the new well, the interference is predicted to be approximately two feet, decreasing to less than one foot at one mile and less than six inches at two miles.

Assuming static water levels of approximately 30 to 100 feet bgs (based on DWR well logs) and well depths of at least 500 to 1,000 feet (wells that are comparable to the proposed well depth), interference of 2 feet or less on a minimum 400-foot water column would represent less than 0.01% of the water column. This level of interference would not cause adverse effects on neighboring wells.

TABLE 3
CALCULATION OF INTERFERENCE – ONE DAY PUMPING

Parameter	Units	New BVID Well	At 500 Feet	At 1000 Feet
Transmissvity, T (based on BVID Well #30)	gpd/foot	300,000	300,000	300,000
Storage coefficient, S (estimated)	unitless	0.050	0.050	0.050
Discharge, Q	gpm	2,000	2,000	2,000
Length of pumping period	days	0.4	0.42	0.42
Distance from center of well	r, ft	0.7	500	1,000
Storage coefficient	S, di'less	0.050	0.050	0.050
Transmissivity	T, gpd/ft	300,000	300,000	300,000
u = [1.87r^2S/Tt]	u	3.32E-07	1.87E-01	7.48E-01
Well function of u	W(u)	14.34	1.26	ERROR
Drawdown, theoretical = [s1=114.6QW(u)/T]	s1, ft	10.96	0.96	0.00
Well efficiency	eff., percent	1.00	1.00	1.00
Calculated drawdown	s2, ft	**11.0**	**1.0**	**0.0**

ERROR in any column indicates that the calculation is out of range; that is, the calculation indicates that there would be no effect at that distance.

TABLE 4
CALCULATION OF INTERFERENCE – SEASONAL PUMPING

Parameter	Units	BVID Well	At 1000 feet	At 1 mile	At 2 miles
Transmissvity, T (based on BVID Well #30)	gpd/foot	300,000	300,000	300,000	300,000
Storage coefficient, S (estimated)	unitless	0.050	0.050	0.050	0.050
Discharge, Q	gpm	833	833	833	833
Length of pumping period	days	150	150	150	150
Distance from center of well	r, ft	0.7	1,000	5,280	10,560
Storage coefficient	S, di'less	0.050	0.050	0.050	0.050
Transmissivity	T, gpd/ft	300,000	300,000	300,000	300,000
u = [1.87r^2S/Tt]	u	9.23E-10	2.08E-03	5.79E-02	2.32E-01
Well function of u	W(u)	20.23	5.60	2.33	1.09
Drawdown, theoretical = [s1=114.6QW(u)/T]	s1, ft	6.44	1.78	0.74	0.35
Well efficiency	eff., percent	1.00	1.00	1.00	1.00
Calculated drawdown	s2, ft	**6.4**	**1.8**	**0.7**	**0.3**

ERROR in any column indicates that the calculation is out of range; that is, the calculation indicates that there would be no effect at that distance.

SUBSIDENCE IMPACTS

Subsidence from groundwater pumping occurs when an aquifer and/or the surrounding sediments are dewatered (*e.g.*, pumping is greater than recharge). There is no evidence that subsidence is occurring in this area (see map at https://sgma.water.ca.gov/CalGWLive/#subsidence).

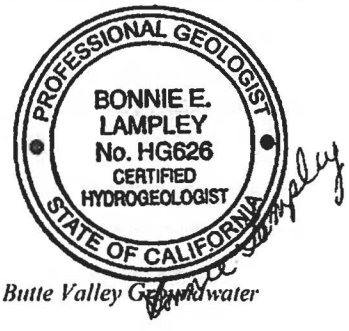
Additionally, according to the Groundwater Sustainability Plan for the Butte Valley Basin "Land subsidence…is not known to be currently or historically significant in the Basin. The maximum observed subsidence is approximately 0.15 ft…between June 2015 to September 2019 in an area west of the City of Dorris. The change in land elevation was likely the result of localized land leveling."[4]

Subsidence attributable to pumping the new well is unlikely to occur in this area.

Please do not hesitate to contact me at (530) 275-4800 or blampley@lwrnc.com if you have any questions regarding this plan.

Sincerely,

Bonnie E. Lampley
Principal Hydrogeologist



[4] Siskiyou County Flood Control & Water Conservation District, December 2021, *Butte Valley Groundwater Sustainability Plan*,.