LINDBERG GEOLOGIC CONSULTING
David N. Lindberg, CEG
Post Office Box 306
Cutten California 95534
(707) 442-6000

November 15, 2022 Project No: 0491.00

Mr. George Petrov
Kurnishon, LLC
699 13th Street
Fortuna, California 95540

Subject: Hydrologic Isolation of Existing Well from Surface Waters
West River Road, near Dinsmore, APN: 208-221-006, Legacy #e0353406

To Whom It May Concern:

As requested, Lindberg Geologic Consulting has assessed an existing permitted well on the above-referenced parcel to estimate its potential for hydrologic connectivity with adjacent well, wetlands and or surface waters, and if pumping this well might affect surface waters in nearby water courses. Tributaries in the vicinity of this well drain to the Mad River (Figure 1). A California-Certified Engineering Geologist visited this site on August 23, 2022, to observe the subject well and local site conditions. Based on our research, observations, and our professional experience, it is our opinion the subject well has a low likelihood of being hydrologically connected to nearby surface waters in any manner that could affect adjacent wells, wetlands and or surface waters in the vicinity. We define the "vicinity" as the area within a 1,000-foot radius of the subject well, an area of approximately 72 acres. We understand that the applicant wishes to use water from this well to irrigate cannabis. At the time of our visit there was a pump installed in this well. We are not aware of the volume of water to be extracted or what the pumping schedule might be but expect that that information is provided elsewhere in the application.

Based on the Humboldt County WebGIS and the Assessor's Parcel Map (Figure 2), parcel 208-221-006 (Figure 2) encompasses approximately 40 acres. Our GPS located the subject well at latitude 40.53012° north, and longitude 123.60847° west (±9'). This well is in Section 28, T2N, R5E, HB&M, and is 150 feet deep with the wellhead at an elevation of approximately 3,270 feet (Figure 1).

The Humboldt County WebGIS shows one unnamed ephemeral tributary of Mad River, located less than 700 feet west of the well. Mad River is southwest of the well more than 3,600 feet, while the nearest ephemeral tributary of Pilot Creek is more than 3,800 feet east of the well (Figure 1). As stated, based on interpolation from the USGS "Blake Mountain, Calif." (1979), topographic quadrangle map (Figure 1), and the Humboldt County WebGIS, the well site elevation is 3,270 feet. The elevation of the proximal ephemeral tributary of Mad River, to the west, is approximately 3,200 feet. The elevation of the Mad River is 2,240 feet and the elevation of the unnamed ephemeral tributary of Pilot Creek is 3,560 feet. The well bottom elevation is 3,120 feet, making the nearest ephemeral tributary 30 feet higher than the total depth of the well.

Well location is shown approximately on the attached figures, and was drilled by 3D Drilling, of Rock Springs, Wyoming, in September 2017, under Humboldt County well permit #17/18-0014. 3D Drilling is a licensed well-drilling contractor (C-57 #10015033). They submitted their well completion report (DWR 188) on September 12, 2017 (attached). The driller did not estimate the yield. Total drawdown during the pump test was also unreported.

Again, the total drilled depth of this well is 150 feet. The borehole diameter is 5 9/16-inches from grade to 150-feet. From grade to 140-feet a 5 9/16-inch diameter low carbon steel blank (unslotted) casing was installed. Exceeding County requirements, a bentonite seal was installed from the surface to 140 feet. The well is cased and sealed through any potential shallow subsurface aquifers in the upper 140 feet. Depth to first water was reported to be at 60 feet below the surface, and depth to static water in the completed developed well was reported as 105 feet bgs when this well was drilled on September 12, 2017.

Per the USGS topographic map and the WebGIS From the well, the nearest mapped spring is approximately 1,600 feet northwest of the subject well at an elevation of 3,200 feet, in Section 21 (Figure 1). The next nearest spring is in Section 33, more than 5,350 feet south of the well at an elevation of 2,560 feet. There is a lined catchment pond on parcel 208-221-008 approximately 1,500 feet west-northwest of the subject well; this pond may be associated with the mapped spring in Section 21 mentioned above.

This parcel is located within California's Coast Range Geomorphic Province, in the Central Belt of the Franciscan Complex (McLaughlin et at., 2000), a seismically active region in which large earthquakes are expected to occur during the economic life span (70 years) of any developments on the subject property. Geologic mapping by the State of California shows that the site is underlain by Franciscan Formation, as shown in Figure 4.

The near-surface soils are generally gravelly loam, loam, and clay loam to a depth of approximately 6 feet according the USDA-NRCS Web Soil Survey. Soils, based on our explorations, are interpreted to be uniformly distributed across the well site portion of the subject parcel. Soil profiles exposed in nearby roadcuts included abundant gravel and sandstone. In the locations observed, the soil profile included less than 1 foot of gravelly loam topsoil.

Materials reported on the geologic log of the driller's well completion report (attached) include a 20-feet of "Brown silt" above 40-feet (20-feet to 60-feet) of "Grey Shell". Beneath the grey shell lies 5-feet of "Grey Quartz" (60 to 65-feet), which was the first water bearing unit. In the final 85-feet, (65 to 150-feet) "Dark Grey Quartz/Shell" was logged. We interpret the general lithologies reported by the driller to be shale ("shell") and metasandstone ("quartz").

We interpret the upper section of the lithologic profile in this well, from grade to 20 feet, to be an aquitard, a material of lower permeability and transmissivity. Rock materials below 60 feet are expected to be fractured, porous and permeable. The "dark grey quartz/shell" at 65 feet appears to

be the primary water-bearing aquifer material tapped here between 140- and 150-feet bgs. Interbedded, fractured metasandstone and shale rock should have a higher transmissivity and permeability than would be typical of an unfractured shale interbedded with fine sandstone. At the location of the subject well, the elevation of the water-bearing aquifer unit is thus between approximately 3,210 feet and 3,120 feet, based on the reported lithologies, and the completion zone, in the driller's report.

Below the surface soils, the earth materials encountered in the boring are interpreted by us to be mélange of the Central Belt Franciscan Complex, as mapped by McLaughlin et al., (2000), a few miles to the south. Sheared, fractured, and folded metasedimentary rock materials can have variable hydraulic conductivity and can constitute significant aquifers. We interpret the sequence of sandstone and shale (etc.) described by the driller as lithologies within the central belt mélange formation (cm1) of the Franciscan Complex. The "dark grey quartz and shell" section of the boring, from 65 to 150 feet, apparently has favorable hydraulic conductivity, making it, in our interpretation, the primary aquifer, or water bearing unit, in this well.

A geologic cross section of the area after Irwin, (1997) shows the structural and stratigraphic relationships between the regional geologic units (Figure 5). The Franciscan assemblage is shown dipping easterly and bounded by a thrust fault contact with the Schist of South Fork Mountain. On-site, no dip of the rock units could be observed because they are mantled with soil and colluvium and obscured by vegetation. We interpret the faults in the subsurface to be hydrologic boundaries of reduced permeability (due to grinding and shearing along the fault planes), effectively separating units of the Franciscan Complex from each other hydrologically and limiting groundwater flow between these fault-bound units.

Based on our observations, review of pertinent and available information, and our professional experience, it is our opinion that this well has a low potential of having any direct or significant connection to proximal wells or surface waters. First water was reportedly encountered at 60 feet and fell to a static level at 105 feet bgs. This well is sealed through 140 feet of any potential unconfined, near-surface aquifers with which it might communicate hydraulically via the borehole. The 140-feet of bentonite-sealed casing isolates the well bore from all water infiltration above 140 feet into the deeper water-bearing aquifers.

When considered with the stratigraphy and the underlying geologic structure, plus the distances (horizontal and vertically) from the nearest surface waters, and the depth of the producing zone of this well (~140 to 150 feet), as well as its position relative to the nearest adjacent ephemeral watercourses and surface waters in the vicinity, we conclude that the 140-foot bentonite seal, is sufficient to preclude the potential for hydraulic connectivity with surface waters, of which there are none closer than 700 feet in the ephemeral tributary of Mad River. Thus, the water source from which this well draws appears to be a confined subsurface aquifer not demonstrably connected to any surface waters or unconfined, near-surface aquifer(s). This well appears, in our professional opinion, likely to be hydraulically isolated from nearby wells, surface waters, springs or wetlands.

The driller did not estimate the yield of this well. If any pump testing was conducted, total drawdown was not reported. Estimating one gpm, this well would potentially produce 1,440 gallons per day. This capacity estimate is unlikely representative of the long-term yield. Drawdown and recovery testing would be necessary to estimate a sustainable long-term yield of this site well.

This subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the local ephemeral tributary to Mad River to the west, Mad River to the southwest, or the ephemeral tributary of Pilot Creek to the east. The local ephemeral tributaries are typically dry by late spring or early summer when the cultivation season (and water demand) occurs. Nor does this well appear to be hydrologically connected to any local springs or ephemeral wetlands; the nearest spring is 70 feet higher in elevation than the producing zone of this well. There do not appear to be any wetlands in the vicinity. Given the horizontal distances involved, and the elevation differences between the water-producing zone in the subject well, and the surface waters of the nearest watercourses, springs, and ponds, the potential for significant hydrologic connectivity between surface waters and groundwater in the deeper bedrock aquifer appears low. Further, given the apparently limiting condition of 140 feet of sealed casing above the water-bearing interbedded sandstone and shale units, this aquifer is likely sufficiently isolated from, and not significantly hydraulically connected to, other aquifers.

As mentioned, on the Blake Mountain, Calif., USGS topographic quadrangle map, there is one spring mapped in Section 21, almost 1,600 feet north of the subject well, at an elevation of 3,200 feet. There is another spring to the south, across Mad River in Section 33 at an elevation of 2,560 feet. There do not appear to be any other significant springs or wetlands mapped within a mile of this subject well. There is a lined pond on an adjacent parcel, approximately 1,500 feet to the west of the well on APN 208-221-008. We interpret the pond to be sufficiently sealed by its liner to preclude significant seepage, and as such it could not be connected hydrologically to the aquifer tapped by well e0353406.

We researched the California Department of Water Resources (DWR) database to determine if there were wells within 1,000 feet of the subject well. Based on the information available at the present time there are no wells that meet that criterion. There are multiple wells that are more than 1,000 feet from the subject well e0353406:

- WCR2014-006790 in Section 28, on parcel APN 208-221-008, is ~1,250 feet west of the subject well, at elevation 3,000 feet (120 feet lower than the subject total depth).
- WCR2016-005788 in Section 21, on parcel APN 208-211-005, is more than 1,500 feet to the northwest, elevation 3,000 feet (120 feet lower than the subject well bottom).
- To the southwest, well WCR2017-004911, in Section 28 on parcel 208-221-016, is within 1,800 feet, elevation 2,800 feet (320 feet lower than the subject well bottom).
- Well number WCR2017-004912, in Section 28 on parcel 208-221-009, is more than 2,400 feet west, elevation 2,700 feet (420 feet lower than the subject well bottom).

As groundwater mimics topography and responds to the force of gravity, in general it will flow down slope in a direction subparallel to topography. The ground surface slopes to the southwest and the unconfined groundwater surface likely does the same and flows to the southwest, toward Mad River. At the time of our visit the site well was ready for use.

In our professional opinion, it appears that the aquifer tapped by the subject well is recharged by water infiltrating through the soil from upslope source areas distal to the well site. Ephemeral streams in the vicinity of the well contribute to recharge when they flow during runoff generating storm events in the wet winter season.

The Natural Resources Conservation Service's (NRCS), online Web Soil Survey, shows the subject well within soils of the Pasturerock-Coyoterock-Maneze complex, on slopes of 15 to 50 percent, (#4426, Figure 7), which the NRCS describes as well-drained. The Web Soil Survey unit description is attached to this report. Mean annual precipitation in the area is listed by the NRCS as 56 to 80 inches per year. Capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately high (0.20 to 0.60 in/hr), with a depth to the water table of greater than 80 inches. If, during the wet season, just ten percent of the "low end" 56 inches of precipitation is absorbed by the soils, then approximately 19 acre-feet, or 6 million gallons of water per year (MGPY), may be expected to recharge the local aquifer below this 40-acre subject property. Given the same amount of precipitation (56") and the same 10 percent partitioned to recharge, then within a 1,000-foot radius of the subject well, recharge can be estimated. Recharge within the 72 acres enclosed by a circle having a 1,000-foot radius, would be 33 acre-feet, and more than 10 MGPY. Our estimates are conservative; United States Geological Survey (USGS) researchers estimate that in northwest California, 33 percent of precipitation goes to recharge (Flint, et al., 2103).

On March 28, 2022, Governor Newsom issued an executive order (N-7-22) relating to the ongoing drought in California. In executive order N-7-22, the governor outlined measures the state will undertake to avoid and ameliorate the negative impacts of the current drought. Among these measures, it was ordered that counties, cities, and other public agencies have been prohibited from approving permits for new groundwater wells (or alteration of existing wells) in basins "*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*". This well on West River Road, near Dinsmore, is not within a basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where this permitted well is sited.

The order states that counties, cities, and other public agencies are prohibited from issuing permits for new groundwater wells (or alteration of existing wells) "*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*". Note that this Order, and that cited in the preceding paragraph, are not applicable to "*wells that provide less than two acre-feet per year*

(650,000+ gallons) *of groundwater for individual domestic users, or that will exclusively provide groundwater to public water supply systems*."

Based on our observations, research, and professional experience, it is our professional opinion that the well on APN 208-221-006, on West River Road, has a low likelihood of being hydrologically connected to nearby surface waters or wells in any manner that might significantly impact or affect adjacent wells, surface waters, or wetlands in the vicinity.

Please contact us if you have questions or concerns regarding our findings and conclusions.

Sincerely,

David N. Lindberg, CEG
Lindberg Geologic Consulting

DNL:sll

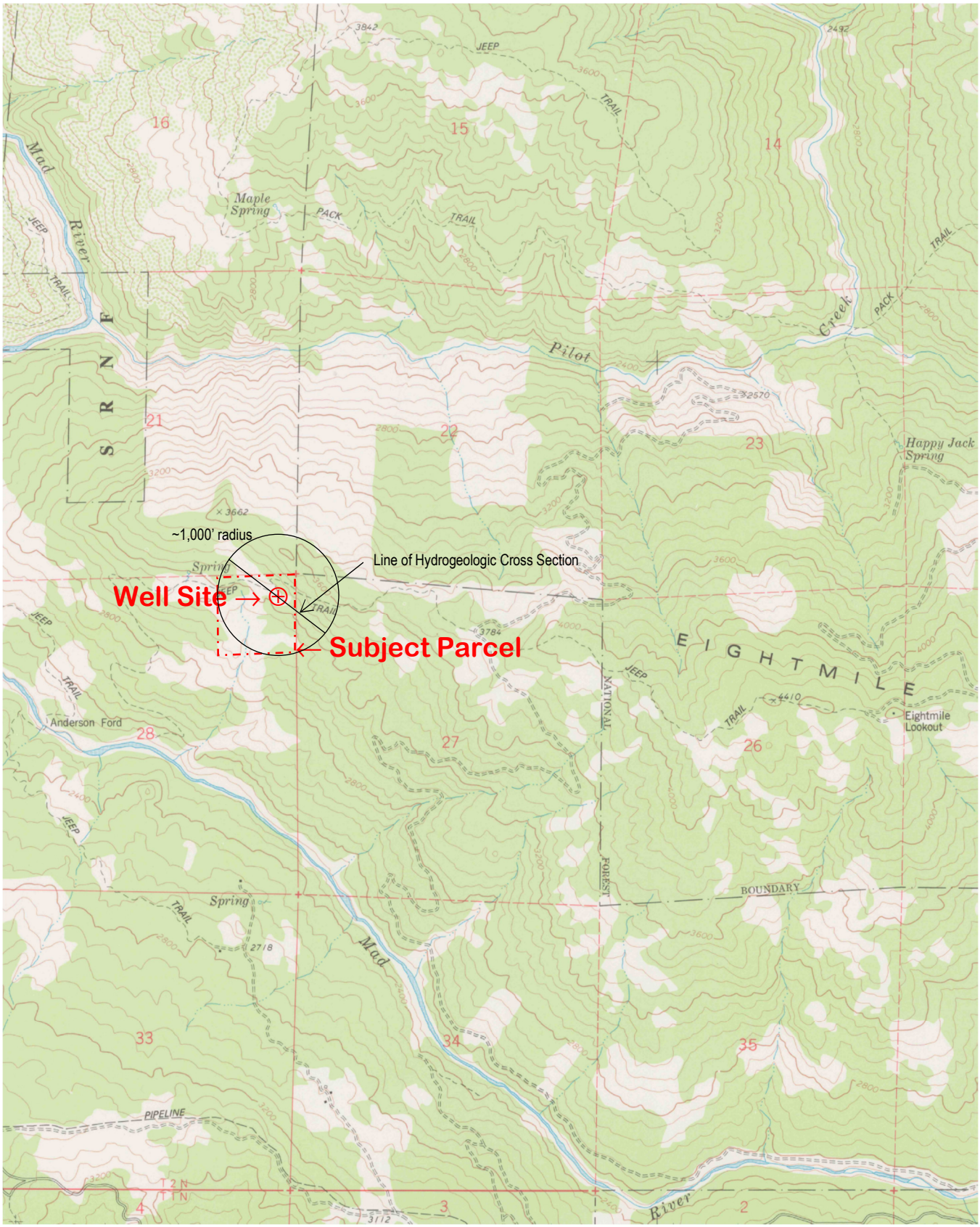
Attachments:
Figure 1: Topographic Well Location Map
Figure 2: Humboldt County Assessor's Parcel Map
Figure 3: Satellite Image of Well location
Figure 4: Geologic Map
Figure 4a: Geologic Map Explanation
Figure 5: Generalized Geologic Cross Section
Figure 6: Hydrogeologic Cross Section
Figure 7: USDA-NRCS Soils Map

State of California Well Completion Reports Attached:
WCR2017 e0353406, APN: 208-221-006 (Subject Well)
WCR2014-006790, Legacy No. e0231717, APN: 208-221-008 (~1,250 feet to the west)
WCR2016-005788, APN: 208-211-005 (>1,500 feet northwest)
WCR2017-004911, APN: 208-221-016 (>1,800 feet southwest)
WCR2017-004912, APN: 208-221-009 (>2,400 feet to west)

Web Soil Survey, NRCS Map Unit Description Attached:
Pasturerock-Coyoterock-Maneze complex, #4426, 15 to 50 percent slopes.

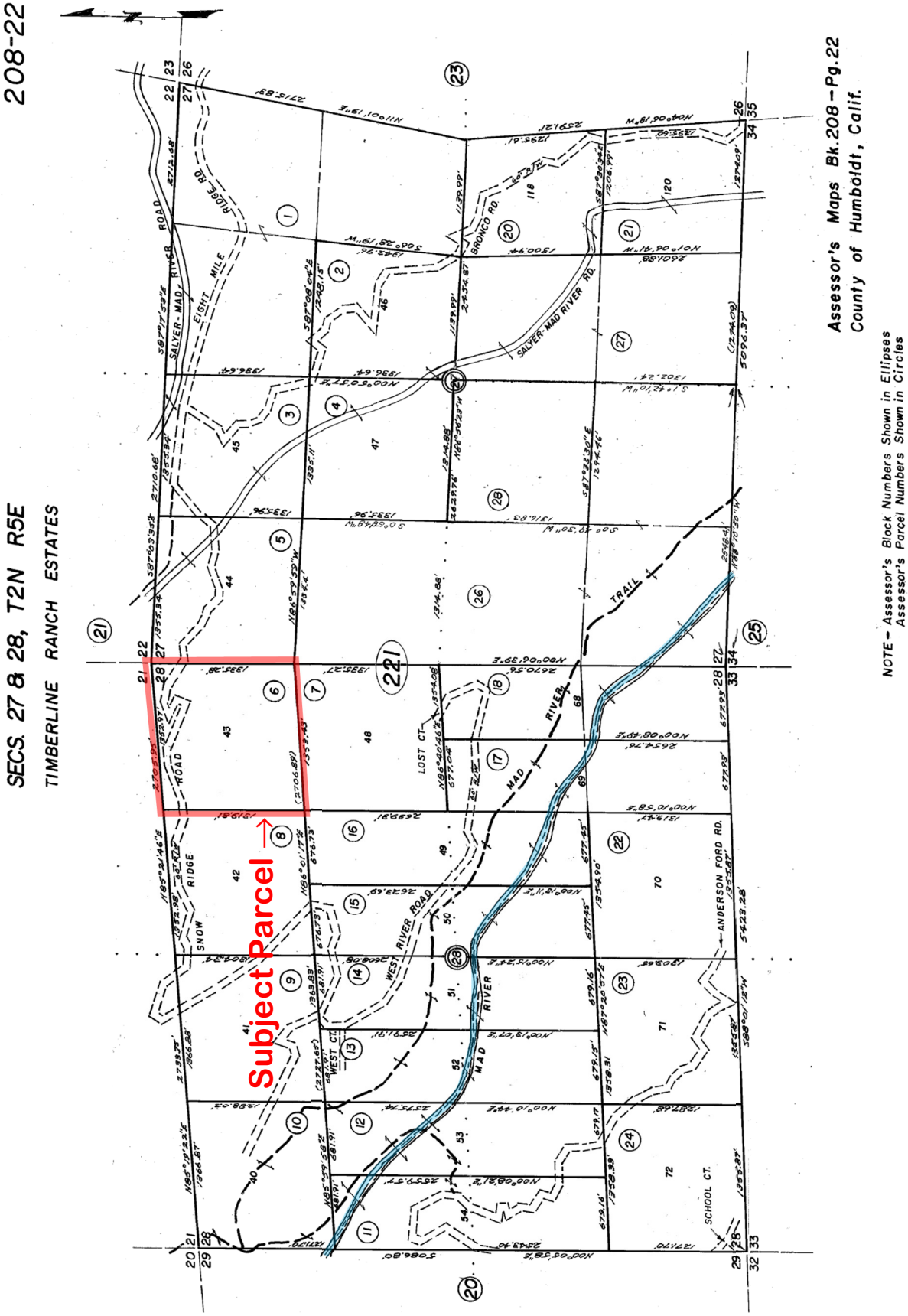
Reference:
Flint et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	Topographic Well Location Map (locations approximate)	1" = 2,300'



Modified from: USGS "Blake Mountain, Calif." 7.5' Quadrangle Map. (1979) N ≅

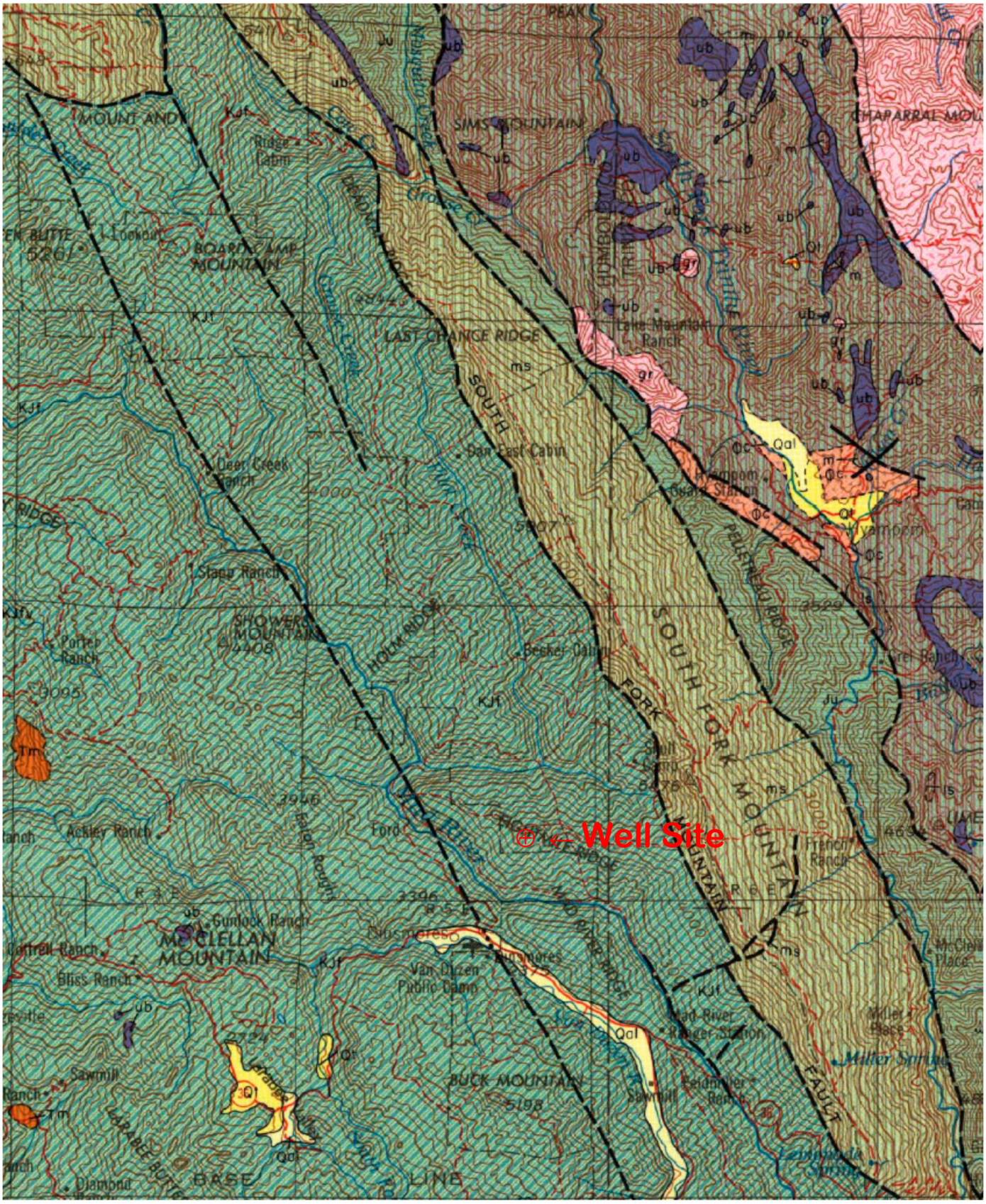
Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 2
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	Humboldt County Assessor's Parcel Map (locations approximate)	Scale as Shown



Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	Satellite Image of Well Location (locations approximate)	1" ≈ 520'

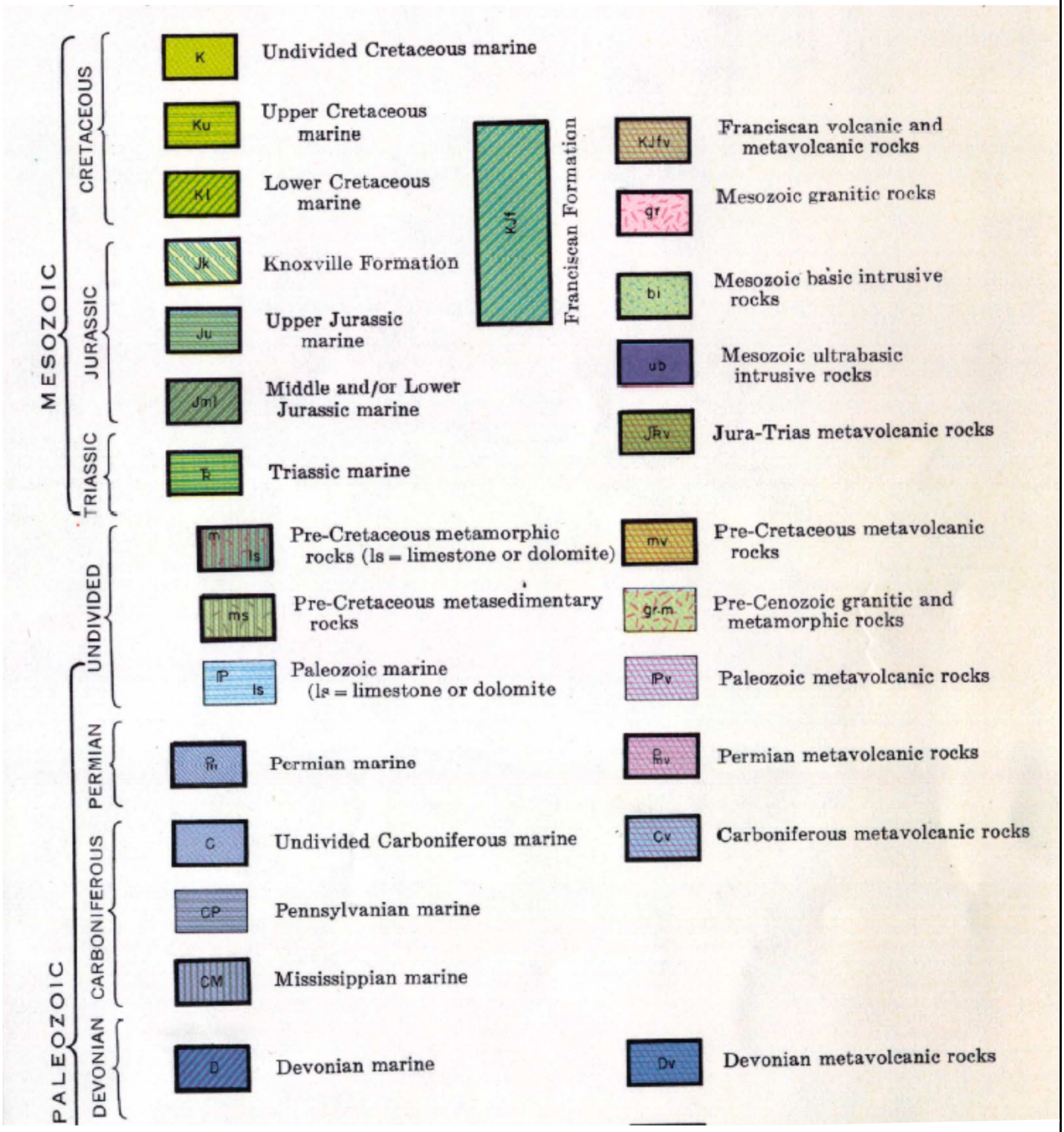
Modified from: Google Earth Imagery of July 17, 2022. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	Geologic Map (locations approximate)	1" = 14,400'



Modified from: Geologic Map of California, Redding Sheet, California Division of Mines and Geology, 1962. N ≅

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4a
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	Geologic Map Explanation	No Scale



GEOLOGIC MAP OF CALIFORNIA, OLAF P. JENKINS EDITION, REDDING SHEET, COMPILATION BY RUDOLPH G. STRAND, 1962, SECOND PRINTING, 1969

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 5
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	Generalized Geologic Cross Section (locations approximate)	Not to Scale

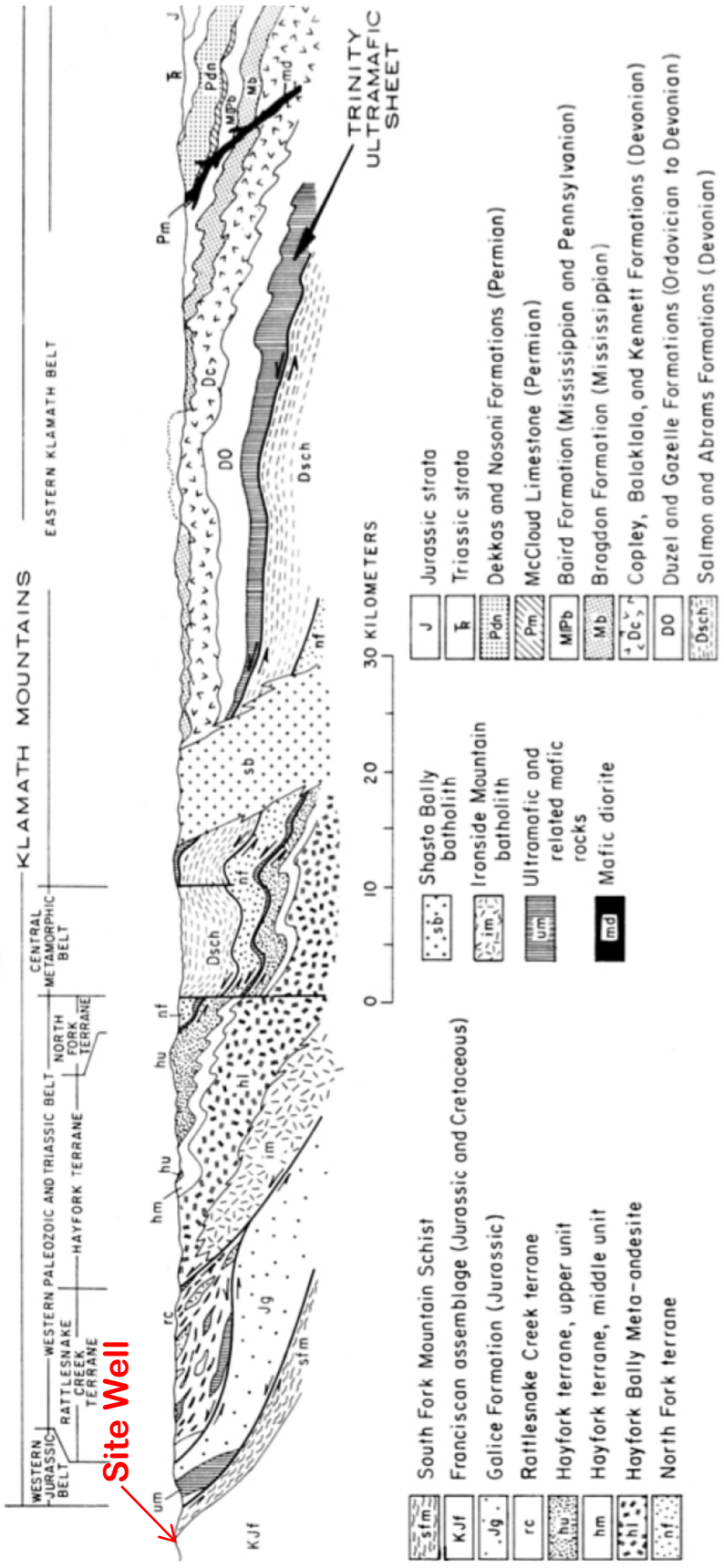


Figure 5 -Geologic section across the southern part of the Klamath Mountains

Modified from: "Review of Paleozoic Rocks of the Klamath Mountains", W. P. Irwin, 1997.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 6
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	Hydrogeologic Cross Section (locations approximate)	V.E. = 2X

In this vertically exaggerated (~2x) cross section, the view is looking up slope and toward Eightmile Ridge, to the northeast. Groundwater flow in this cross section is southwest, toward the viewer, or out of the page. Groundwater is presumed to flow from recharge areas in the higher ground to the northeast on Eightmile Ridge, to the southwest toward Mad River. Bedrock subgrade was mapped by the state of California as Franciscan Formation. To the southeast along strike, McLaughlin, et al., (2000) mapped Central Belt Mélange (cm1) of the Franciscan Complex. Central Belt Mélange is one of several component lithologies of the Central Belt Franciscan Complex. Groundwater is envisioned to likely be flowing through fractured sandstone and shale in the mélange. Fractures in the sandstone, plus sandstone's inherent porosity, are interpreted to be the primary permeability, providing preferential flow paths for the local groundwater. The driller noted first water at 60 feet below the surface and static water at 105 feet. The spring on the adjacent parcel suggests the potential presence of a shallow groundwater aquifer separate and distinct from the deep aquifer below 105 feet. This well is developed from the bottom, with no well screen, rather the borehole is open below 140 feet, so this well is drawing groundwater from the 140- to 150-foot interval.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	West River Road, Dinsmore, California	November 15, 2022
Cutten, CA 95534	Well WCR-e0353406, APN 208-221-006, Kurnishon LLC, Client	Project 0491.00
(707) 442-6000	USDA-NRCS Soils Map (locations approximate)	Scale Not Specified

Modified from: USGS-NRCS Web Soil Survey, November 14, 2022. N ≈

*The free Adobe Reader may be used to view and co e this form. However, software must be purchased to comple ve, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0353406

RECEIVED SEP 27 2017

HUMBOLDT CO. DIVISION OF ENVIRONMENTAL HEALTH

Page 1 of 1

Owner's Well Number

Date Work Began 09/11/2017 Date Work Ended 9/12/2017

Local Permit Agency

Permit Number 17/18-0014 Permit Date

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Drilling Fluid

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	20	BROWN SILT
20	60	GREY SHELL
60	65	GREY QUARTZ
65	150	DARK GREY QUARTZ/SHELL

Total Depth of Boring 150 Feet

Total Depth of Completed Well 150 Feet

Well Owner

Name GEORGE PETERSON

Mailing Address PO BOX 50

City FORTUNA State CA Zip 95540

Well Location

Address COUNTY LINE ROAD

City MAD RIVER County Humboldt

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

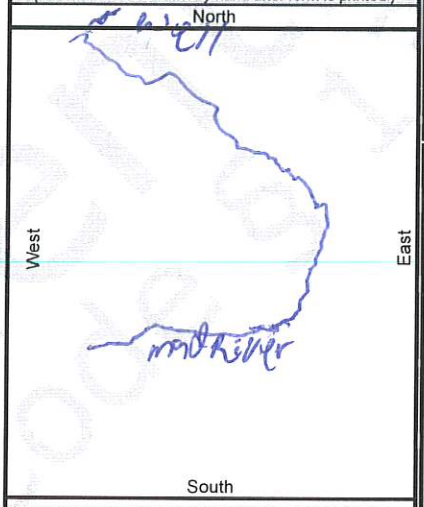
Datum Dec. Lat. Dec. Long.

APN Book 208 Page 221 Parcel 006

Township Range Section

Location Sketch

(Sketch must be drawn by hand after form is printed.)



Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water 60 (Feet below surface)

Depth to Static Water Level 105 (Feet) Date Measured 09/12/2017

Estimated Yield * (GPM) Test Type

Test Length (Hours) Total Drawdown (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	140	5 9/16"		Low Carbon Steel	1/4"	5 9/16"		

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	140	Bentonite	Bentonite Chips

Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☐ Other

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name 3D Drilling
Person, Firm or Corporation

PO Box 1285 Address Rock Springs City WY State 82902 Zip

Signed Clay Parker
C-57 Licensed Water Well Contractor

09/12/2017 Date Signed

10015033 C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ENTERED

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR SEP 1 2 2014

Page 1 of 2

Owner's Well Number 1

Date Work Began 08/29/2014 Date Work Ended 9/2/2014

Local Permit Agency Humboldt County E.H.D.

Permit Number 13/14-0340 Permit Date 5/14/14

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0231717

DWR Use Only – Do Not Fill In

State Well Number/Site Number

Latitude N Longitude W

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Air

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	4	Top Soil
4	18	Brown Sandstone
18	43	Weathered Brown Sandstone43
43	82	Shale/Sandstone Mix
82	134	Blue/Brown Sandstone
134	260	Hard Shale/Sandstone Mix

Total Depth of Boring 260 Feet

Total Depth of Completed Well 260 Feet

Well Location

Address #42 Timberline Ranch Rd.

City Mad River County Humboldt

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

Datum Dec. Lat. Dec. Long.

APN Book 208 Page 221 Parcel 008

Township 02N Range 05E Section 28

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North / West / East / South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

◉ Water Supply
☑ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water 115 (Feet below surface)

Depth to Static Water Level 105 (Feet) Date Measured 08/29/2014

Estimated Yield * 5 (GPM) Test Type Air Lift

Test Length 4.0 (Hours) Total Drawdown 249 (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	100	10	Blank	PVC Sch. 80	CL200	5		
100	260	10	Screen	PVC Sch. 80	CL200	5	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	20	Bentonite	Sanitary Seal
20	260	Filter Pack	3/8" Pea Gravel

Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Location Map

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name FISCH DRILLING (Person, Firm or Corporation)

3150 JOHNSON ROAD (Address) HYDESVILLE (City) CA (State) 95547 (Zip)

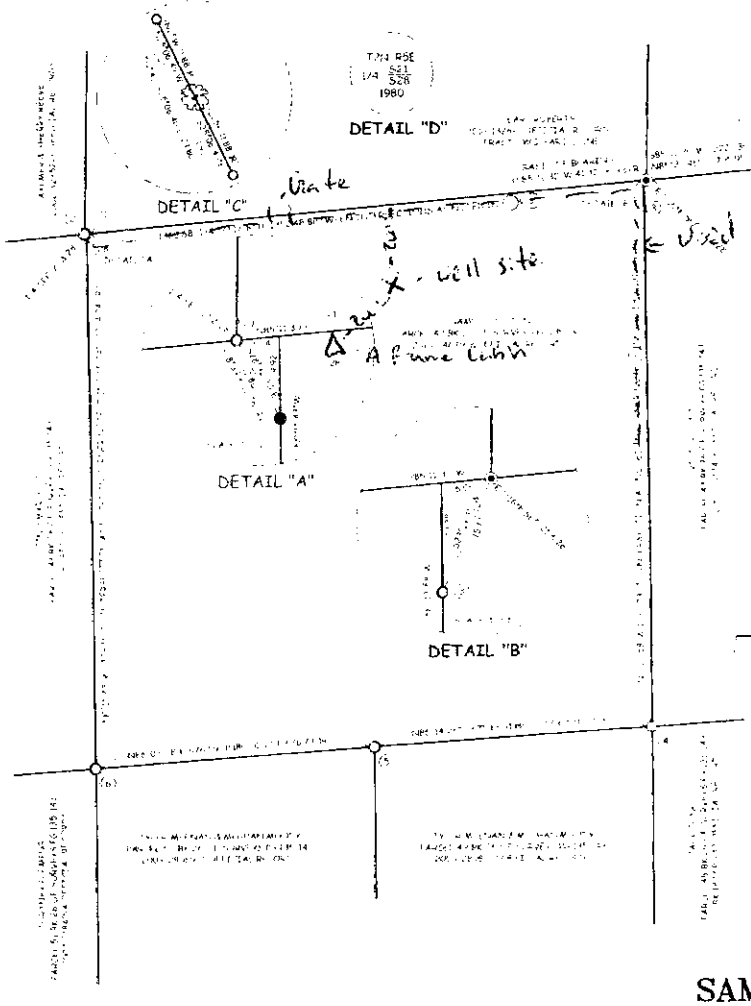
Signed (C-57 Licensed Water Well Contractor) 09/10/2014 (Date Signed) 683865 (C-57 License Number)

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

CORNER NOTES:

SURVEYOR'S NOTES:



RECORD

SAMUEL DEYTON

SECTION 28, TO
HUMBO
AND L
THE UNINCO
HUMBO
STATE

DATE:

A.M. BARE ENGINEERING & SURVEY
1207 MAIN STREET
P.O. BOX 596 FORTUNA CALIFORNIA
(707) 725-5182

COUNTY SURVEYOR'S STATEMENT:

9TH DAY NOVEMBER 12

2012-027700-1

COUNTY RECORDER'S STATEMENT:

94 NON. 12 4:20 PM

70 OF SURVEYS PAGE 29

FEE 13.00

SURVEYOR'S STATEMENT:

11-2-2012

BASIS OF BEARINGS:

REFERENCES:

BOOK 70

100	260	10	Screen	PVC Sch. 80	CL200	5	Milled Slots	0.032	20	200	Filter Pack	3/8 Pea Gravel

Attachments

- ☐ Geologic Log
- ☐ Well Construction Diagram
- ☐ Geophysical Log(s)
- ☐ Soil/Water Chemical Analyses
- ☑ Other Location Map

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name FISCH DRILLING
Person, Firm or Corporation

3150 JOHNSON ROAD (Address) HYDESVILLE (City) CA (State) 95547 (Zip)

Signed _____ (C-57 Licensed Water Well Contractor) 09/10/2014 (Date Signed) 683865 (C-57 License Number)

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

State of California

Well Completion Report

Form DWR 188 Complete 8/17/2016

WCR2016-005788

Owner's Well Number 1 | Date Work Began 08/04/2016 | Date Work Ended 08/15/2016

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency | Permit Number 15/16-0504 | Permit Date 03/15/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 0 River RD

City Mad River Zip 95552 County Humboldt

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

Dec. Lat. 40.5312300 Dec. Long. -123.6142100

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 208-211-05

Township 02 N

Range 05 E

Section 21

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Other - Under-Ream Down-Hole Hammer Drilling Fluid Air

Total Depth of Boring 160 Feet

Total Depth of Completed Well 120 Feet

Water Level and Yield of Completed Well

Depth to first water 31 (Feet below surface)

Depth to Static Water Level 16 (Feet) Date Measured 08/09/2016

Estimated Yield* 20 (GPM) Test Type Air Lift

Test Length 4.0 (Hours) Total Drawdown 117 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	4	Top Soil
4	17	Silty Clay
17	109	Silt Stone Sandstone Mix
109	160	Shale

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	40	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			
1	40	115	Screen	Low Carbon Steel	Grade: ASTM A53	0.188	6	Milled Slots	0.05	
1	115	120	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			
1	120	160	No Casing Installed	Other	N/A					

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	160	Filter Pack	Other Gravel Pack	3/8 in	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	160	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: FISCH DRILLING (Person, Firm or Corporation)

3150 JOHNSON ROAD (Address) | HYDESVILLE (City) | CA (State) | 95547 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 08/16/2016 (Date Signed) | 683865 (C-57 License Number)

Attachments

SiteMap.pdf - Location Map

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 11/9/2017

WCR2017-004911

Owner's Well Number 1 | Date Work Began 10/10/2017 | Date Work Ended 10/13/2017

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency | Permit Number 16/17-0196 | Permit Date 09/19/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 16 West River RD

City Mad River Zip 95552 County Humboldt

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

Dec. Lat. Dec. Long.

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 208-221-016

Township 02 N

Range 05 E

Section 28

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Other - Casing Advance Drilling Fluid Air

Total Depth of Boring 180 Feet

Total Depth of Completed Well 180 Feet

Water Level and Yield of Completed Well

Depth to first water 65 (Feet below surface)

Depth to Static Water Level 70 (Feet) Date Measured 10/13/2017

Estimated Yield* 30 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	20	Brown Clay
20	65	Brown Sandstone with Clay
65	180	Brown Sandstone

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	20	Blank	Low Carbon Steel	N/A	0.188	8.625			
2	0	60	Blank	Low Carbon Steel	N/A	0.188	6.625			
2	60	140	Other: Knife Cut	Low Carbon Steel	N/A	0.188	6.625		0.25	
2	140	160	Blank	Low Carbon Steel	N/A	0.25	6.625			
2	160	180	Other: Knife Cut	Low Carbon Steel	N/A	0.25	6.625		0.25	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Non Hydrated Bentonite		3/8 Hole Plug
20	180	Other Fill	See description.		No Annular Fill

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	20	13
20	180	7.44

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: WATSON WELL DRILLING, INC. (Person, Firm or Corporation)

500 Summer Street (Address) | Eureka (City) | CA (State) | 95501 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 11/01/2017 (Date Signed) | 1014048 (C-57 License Number)

Attachments

/WellReport_20171109_152623.pdf - WCR Final

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Complete 11/13/2017

WCR2017-004912

Owner's Well Number 1 | Date Work Began 10/14/2017 | Date Work Ended 10/17/2017

Local Permit Agency Humboldt County Department of Health & Human Services - Land Use Program

Secondary Permit Agency | Permit Number 16/17-0207 | Permit Date 09/19/2016

Well Owner (must remain confidential pursuant to Water Code 13752)

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 9 West River RD

City Mad River Zip 95552 County Humboldt

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

Dec. Lat. Dec. Long.

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 208-221-009

Township 02 N

Range 05 E

Section 28

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Other - Casing Advance Drilling Fluid Air

Total Depth of Boring 140 Feet

Total Depth of Completed Well 140 Feet

Water Level and Yield of Completed Well

Depth to first water 30 (Feet below surface)

Depth to Static Water Level 22 (Feet) Date Measured 10/17/2017

Estimated Yield* 40 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	20	Brown Clay with Sandstone
20	140	Black Shale with Sandstone

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	20	Blank	Low Carbon Steel	N/A	0.188	8.625			
2	0	20	Blank	Low Carbon Steel	N/A	0.188	6.625			
2	20	100	Other: Knife Cut	Low Carbon Steel	N/A	0.188	6.625		0.25	
2	100	120	Blank	Low Carbon Steel	N/A	0.25	6.625			
2	120	140	Other: Knife Cut	Low Carbon Steel	N/A	0.25	6.625		0.25	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Non Hydrated Bentonite		3/8 Hole Plug
20	140	Other Fill	See description.		No Annular Fill

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	20	13
20	140	7.44

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: WATSON WELL DRILLING, INC. (Person, Firm or Corporation)

500 Summer Street (Address) | Eureka (City) | CA (State) | 95501 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 11/01/2017 (Date Signed) | 1014048 (C-57 License Number)

Attachments

/WellReport_20171113_141251.pdf - WCR Final

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

Humboldt County, Central Part, California

4426—Pasturerock-Coyoterock-Maneze complex, 15 to 50 percent slopes, dry

Map Unit Setting

National map unit symbol: 2pt36
Elevation: 520 to 3,160 feet
Mean annual precipitation: 56 to 80 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 200 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Pasturerock, dry, and similar soils: 40 percent
Coyoterock, dry, and similar soils: 25 percent
Maneze, dry, and similar soils: 15 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pasturerock, Dry

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium derived from sandstone and mudstone

Typical profile

A - 0 to 10 inches: gravelly loam
A2 - 10 to 24 inches: loam
Bt1 - 24 to 35 inches: clay loam
Bt2 - 35 to 47 inches: gravelly clay loam
Bt3 - 47 to 71 inches: gravelly clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BX114CA - Oregon white oak/perrenial and annual grasses, mountain slopes, sandstone and mudstone, clay loam
Other vegetative classification: Oak Woodland (RNPOW001CA)
Hydric soil rating: No

Description of Coyoterock, Dry

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from sandstone and mudstone

Typical profile

A - 0 to 14 inches: loam
ABt - 14 to 24 inches: loam
Bt1 - 24 to 31 inches: clay
Bt2 - 31 to 37 inches: clay
Cg - 37 to 71 inches: clay

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.06 in/hr)
Depth to water table: About 28 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F004BX114CA - Oregon white oak/perrenial and annual grasses, mountain slopes, sandstone and mudstone, clay loam
Other vegetative classification: Oak Woodland (RNPOW001CA)
Hydric soil rating: No

Description of Maneze, Dry

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium derived from sandstone and mudstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 11 inches: very cobbly loam
AB - 11 to 24 inches: very cobbly loam
Bw1 - 24 to 37 inches: extremely gravelly clay loam
Bw2 - 37 to 55 inches: very gravelly clay loam
Bw3 - 55 to 79 inches: very gravelly clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 39 to 63 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BX114CA - Oregon white oak/perrenial and annual grasses, mountain slopes, sandstone and mudstone, clay loam
Other vegetative classification: Oak Woodland (RNPOW001CA)
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Other vegetative classification: Oak Woodland (RNPOW001CA)
Hydric soil rating: No

Airstrip, dry

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R004BX101CA - Upper prairie, mountain slopes, sandstone and mudstone, clay loam
Other vegetative classification: Prairie (RNPP001CA)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, Central Part, California
Survey Area Data: Version 9, Sep 1, 2022

Soil Survey Area: Six Rivers National Forest Area, California
Survey Area Data: Version 17, Sep 7, 2022