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

May12, 2023

Project No: 0500.00

Mr. James Patterson
83 Wildflower Lane
Benbow, California 95542

Subject: Assessment of Hydrologic Isolation of Well from Surface Waters
Well WCR2020-002739, 1520 Wood Ranch Road, Redway, APN: 214-233-002

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 any adjacent wells, wetlands and or surface waters, and if pumping well WCR2020-002739 might impact nearby wells or surface waters. The well is in the South Fork Eel River watershed (Figure 1). On the USGS Miranda topographic map, the nearest named stream is Coon Creek. Coon Creek drains the northwest portion of this property. Hooker Creek drains the southeast part of the parcel. Both creeks are ephemeral near this parcel, and both flow to the South Fork Eel River.

A California-Certified Engineering Geologist visited this site on April 26, 2023, 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, springs, 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 (Figure 1), an area of approximately 72 acres. The proposed use of this well is to irrigate cannabis. 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 Humboldt County's WebGIS and the Assessor's Parcel Map (Figure 2), parcel 214-233-002 encompasses approximately 192 acres. Our GPS located the subject well at latitude 40.1853° north, and longitude 123.81425 west (±9'). This well is in Section 23, T3S, R3E, and is 310 feet deep. The wellhead is at an elevation of approximately 1,760 feet and the elevation of the bottom of the well is therefore 1,450 feet, however, the well is screened to 300 feet, or elevation 1,460 feet.

The Humboldt County WebGIS shows three watercourses within approximately one mile of the subject well. Nearest is the uppermost ephemeral reach of Coon Creek, more than 2,000 feet north northwest in parcel 214-232-009. To the south more than 2,200 feet is the uppermost ephemeral reach Hooker Creek in parcel 214-233-007. The uppermost ephemeral reach of Leggett Creek is

greater than 4,300 feet southwest of the well in parcel 214-234-007. Based on interpolation from the "Miranda, Calif." (1970) quadrangle topographic map and the Humboldt County WebGIS, the well site elevation is estimated to be 1,760 feet. The elevation of the uppermost ephemeral reach of the nearest watercourse, Coon Creek, is approximately 1,480 feet. The bottom elevation of the well screen in WCR 2020-002739 is 1,460 feet, making Coon Creek, more than 2,000 feet to the northwest, only 20 feet higher than the total depth of the well screen.

The well location is shown approximately on the attached figures, and was drilled by Vics Well Drilling, of Acton, California, in February 2020, under Humboldt County well permit #214-002-233-000. Vics Well Drilling is a licensed well-drilling contractor (C-57 #886439). Vics Well Drilling submitted their attached well completion report (DWR 188) on February 26, 2020. The driller estimated a yield of 15 gpm on February 15, 2020, based on a 4-hour air lift pump test. Zero feet of drawdown was reported.

While the the total drilled depth of this well is 310 feet, it is only screened to 300 feet. The borehole diameter is 10-inches. From the surface to 180 feet, a 4.5-inch diameter blank PVC casing was installed. From 180 to 300 feet a 4.5-inch slotted (0.032-inch slots) PVC well screen was installed. From 300 to the total depth, 4.5-inch blank PVC casing was installed. Per County requirements, a bentonite surface sanitary seal was installed from surface to 21-feet. From 21 to 310 feet the annulus was filled with #6 silica gravel filter pack. The well is cased and sealed through any potential shallow subsurface aquifers in the uppermost 20 feet as required by county regulation. Depth to first water was reported at 205 feet (elevation 1,555 feet), and depth to static water in the completed developed well was 185 feet (elevation 1,575 feet), when the driller conducted the pump test on February 15, 2020.

There are five springs mapped on the Miranda Creek California, USGS topographic map (Figure 1) within one mile of the subject well. The nearest spring is on the subject parcel, approximately 1,870 feet east northeast of the subject well, at an estimated elevation of 1,560 feet. The next closest spring is approximately 3,750 feet east of the subject well at an estimated elevation of 1,450 feet. Another spring is mapped approximately 2,775 feet south southeast of the subject well at an approximate elevation of 1,120 feet. More than 4,300 feet south of the subject well, there are two springs within 300 feet of each other at an approximate elevation of 1,360 feet.

This parcel is 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 McLaughlin shows that the site is underlain by mélange (cm1) of the Central Belt of the Franciscan Complex, as shown in Figure 4.

According to the NRCS Web Soil Survey, the near-surface soils consist of loam to 3-inches, clay loam from 3 to 11 inches, clay to 56 inches, and gravelly clay to 71 inches. Soils are interpreted to

be uniformly distributed across that portion of the subject parcel underlain by the Central Belt mélange on slopes from 15 to 50 percent.

Materials reported on the geologic log of the driller's well completion report (attached) include 8 feet of "Top Soil", described as "Dark Brown and Sand Stone Dark Brown Dry No Water". From 8 feet to 65 feet, "Sandstone Brown Dry No Water" was logged. From 65 to 205 feet "Blueshale Stone Clay Hard and Dry No Water" was logged, followed by 20 feet (205 to 235 feet) of "Blueshale Stone w/ Basalt Stringers, Water Bearing Zone". From 235 to 295 feet "Basalt Water Bearing Multi Color Formation" was logged. In the final 15-feet (295 to 310-feet) the driller logged "Blueshale Stone Clay Dry and Hard". First water was logged at 205 feet, and aquifer materials continued for 90 feet. In the subject well, the elevation of the first water-bearing aquifer unit was approximately 1,555 feet, based on the driller's report. Elevation of static water was 1,575 feet, so water rose 20 feet in the well, when it was completed.

Below the surface, the earth materials encountered in the boring are likely mélange of the Central Belt Franciscan Complex, as mapped by McLaughlin et al., (2000). Sheared, fractured, and folded metasedimentary rock materials can have variable hydraulic conductivity, but can also, under favorable conditions, constitute significant aquifers. We interpret the lithostratigraphic sequence described by the driller to be representative of the central belt mélange (cm1) of the Franciscan Complex. The section of the profile from approximately 205 feet to 295 feet apparently has favorable hydraulic conductivity, making that the primary water bearing unit(s) in this well.

A geologic cross section of the area after McLaughlin et al., (2000) shows the structural and stratigraphic relationships between the regional geologic units (Figure 5). The central belt mélange is shown dipping east and bounded by thrust fault plane contacts. 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 from each other hydrologically, and limiting groundwater flow between the fault-bound units.

Based on observations, review of pertinent and available information, and our experience, it is our professional opinion that this well has a low potential of having any direct or significant connection to proximal surface waters. First water was reportedly encountered at 205 feet. This well is sealed through the upper 21 feet of any potential unconfined, near-surface aquifers with which it might communicate hydraulically through the borehole.

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 (~180 to 300 feet), as well as the position of the well relative to the nearest surface waters in the vicinity, we conclude that the depth of the surface seal is sufficient to preclude the potential for hydraulic connectivity with perennial surface waters, of which there are none closer than Coon Creek, more than 2,000 feet away at an estimated elevation of 1,480 feet. Thus, the water source

from which this well draws appears to be a 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 wells, surface waters, springs or wetlands in the vicinity.

According to the driller, the estimated yield of this well was 15 gallons per minute (gpm) on February 15, 2020. Zero drawdown was reported after Vic's Well Drilling's four-hour air-lift pump test. At 15 gpm, this well would potentially produce 21,600 gallons per day. As noted in the well completion report, this capacity may not be representative of this well's long-term yield. Additional drawdown and recovery testing would be necessary to estimate a sustainable long-term yield of the site well.

Due to the distances and elevations involved this subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in Coon Creek, or Hooker Creek. Nor does this well appear likely to be hydrologically connected to any local springs or ephemeral wetlands. Given the horizontal distances involved, and the elevation differences between the subject well, and the surface waters of the nearest watercourses, springs, and ponds, the potential for significant hydrologic connectivity between surface water and groundwater in the Franciscan aquifer(s) appears unlikely.

As mentioned, on the Miranda USGS topographic quadrangle maps there are springs mapped in the area. The closest spring is on the subject property, 1,870 feet east of well WCR2020-2739. The next closest spring is more than 2,775 feet to the south, at an elevation of 1,120. The next closest spring is more than 3,700 feet east at estimated elevation 1,450 feet. There are two springs located approximately 4,350 feet south of the subject well at an estimated elevation of 1,360 feet, no other significant (mapped) springs or wetlands were in the vicinity of this subject well.

We researched the California Department of Water Resources' database to find permitted wells within 1,000 feet of the subject well. Based on the information available at the present time, there is only one well that meets that criterion. The closest well is on the subject parcel 214-233-002, approximately 950 feet southwest of the subject well. The closest well's number is WCR2018-010668. This well was drilled to a depth of 200-feet. Well WCR2018-010668 is at an elevation of approximately 1,730 feet. Other wells are more than 3,000 feet from this subject well.

As groundwater mimics topography and responds to the force of gravity, in general any near surface unconfined aquifer will flow in a down slope direction subparallel to topography. The ground surface slopes primarily to the southeast; thus, the near surface unconfined aquifer flows to the southeast, toward the ephemeral headwaters of Hooker Creek. When we visited, there was a pump installed in the subject well.

In our professional opinion, it appears that the aquifer tapped by the subject well is recharged by water infiltrating through the soil and mélange bedrock from upslope source areas both proximal

and distal to the well site. Ephemeral streams in the vicinity of the well may also contribute recharge when they flow during runoff generating storm events.

The United States Department of Agriculture's (USDA), Natural Resources Conservation Service's (NRCS), online Web Soil Survey, shows the subject well within soils of the Coyoterock-Yorknorth complex, on slopes of 15 to 50 percent, (#647, Figure 7), which the NRCS describes as a moderately well-drained soil. The Web Soil Survey's unit description is attached to this report. Mean annual precipitation is listed by the NRCS as 60 to100 inches per year. The capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately low to moderately high (0.06 to 0.20 in/hr) with a depth to the water table of about 20 to 39 inches.

If only ten percent of the "low end" precipitation estimation of 60 inches is absorbed by the soils/bedrock and does not flow across the ground surface and into local watercourses (or be lost to evapotranspiration), then approximately 96 acre-feet, or more than 31.2 million gallons of water per year (MGPY), may be expected to recharge the local aquifers below this 192-acre subject property. Given the same amount of precipitation and the same percentage partitioned to recharge, then within a 1,000-foot radius of the subject well (~72 acres), recharge would be 36 acre-feet, and more than 11.7 MGPY. Our estimates are conservative; United States Geological Survey (USGS) researchers estimate that in northwest California, approximately 33 percent of precipitation goes to recharge (Flint, et al., 2103).

On February 13, 2023, Governor Newsom signed Executive Order N-3-23 which, in part, extended a previous executive order (N-7-22) relating to the ongoing drought in California which the Governor had issued on March 28, 2022. 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 at 1520 Wood Ranch Road, Redway, 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 Governor's order states that counties, cities, and other public agencies are prohibited from issuing permits for new groundwater wells (or altering 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*". The conditions in the Order are not applicable to "*wells that 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.*"

Based on our observations, research, and experience, it is our professional opinion that the well WCR2020-002739, located at 1520 Wood Ranch Road, Redway, on parcel 214-233-002, has a low likelihood of being hydrologically connected to nearby surface waters or neighboring wells in any manner that might significantly have a negative impact or effect on proximal wetlands, wells, and or surface waters.

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

Sincerely,

David N. Lindberg, CEG
Lindberg Geologic Consulting

CERTIFIED ENGINEERING GEOLOGIST
DAVID N. LINDBERG
No. 1895
EXP. 02/29/24
STATE OF CALIFORNIA

DNL:sll

Attachments:

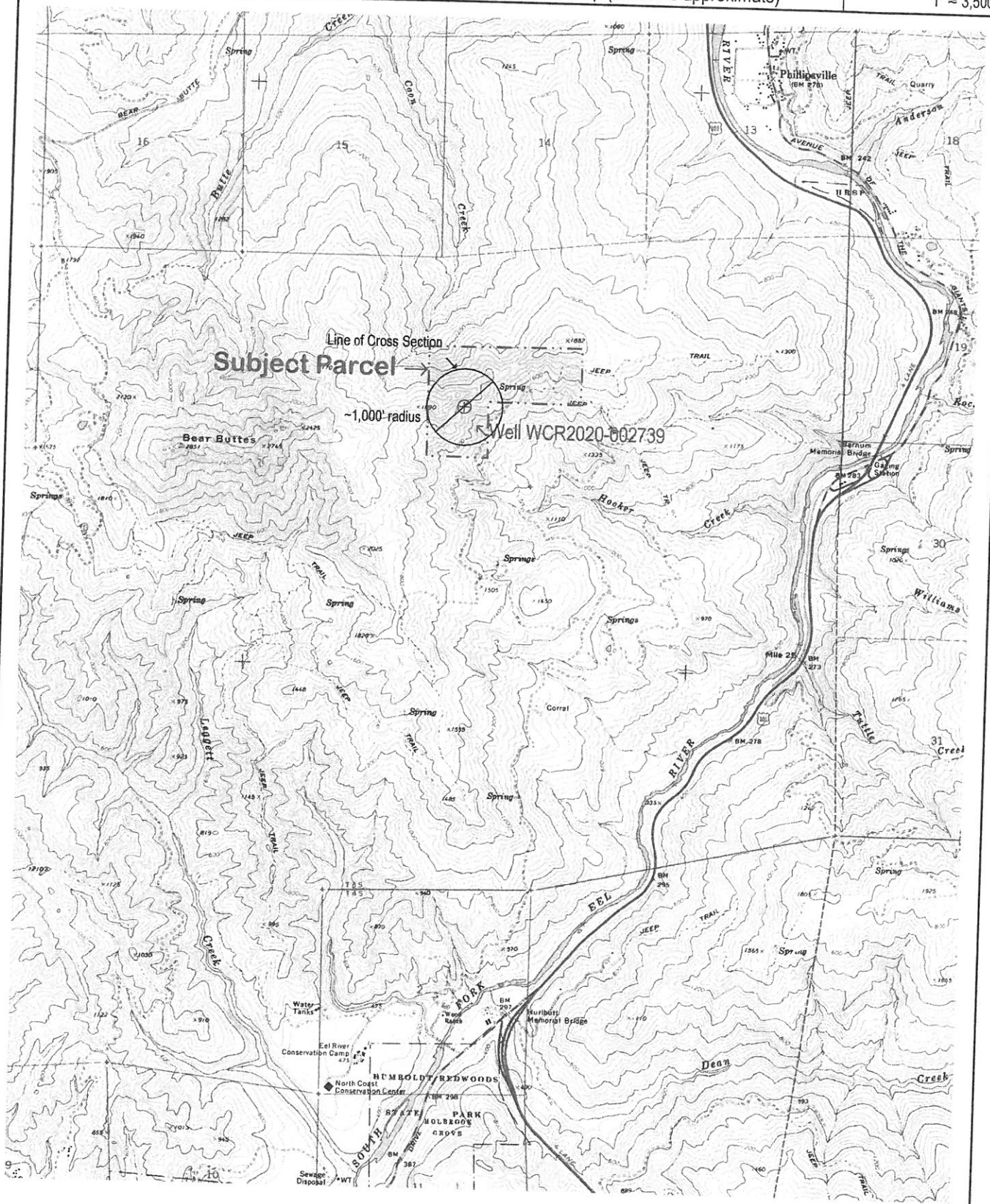
Figure 1:	Topographic Well Location Map
Figure 2:	Humboldt County Assessor's Parcel Map
Figure 3:	Satellite Image of Well location
Figure 4:	Geologic Map
Figure 4a:	Geologic Map Explanation
Figure 5:	Generalized Geologic Cross Section
Figure 6:	Hydrogeologic Cross Section
Figure 7:	USDA-NRCS Soils Map

State of California Well Completion Report:
WCR2020-002739, APN: 214-233-002 (Subject Well)
WCR2018-010668, APN: 214-233-002, same property as the subject well

Web Soil Survey, NRCS Map Unit Description:
Coyoterock-Yorknorth complex, #647, 15 to 50 percent slopes.

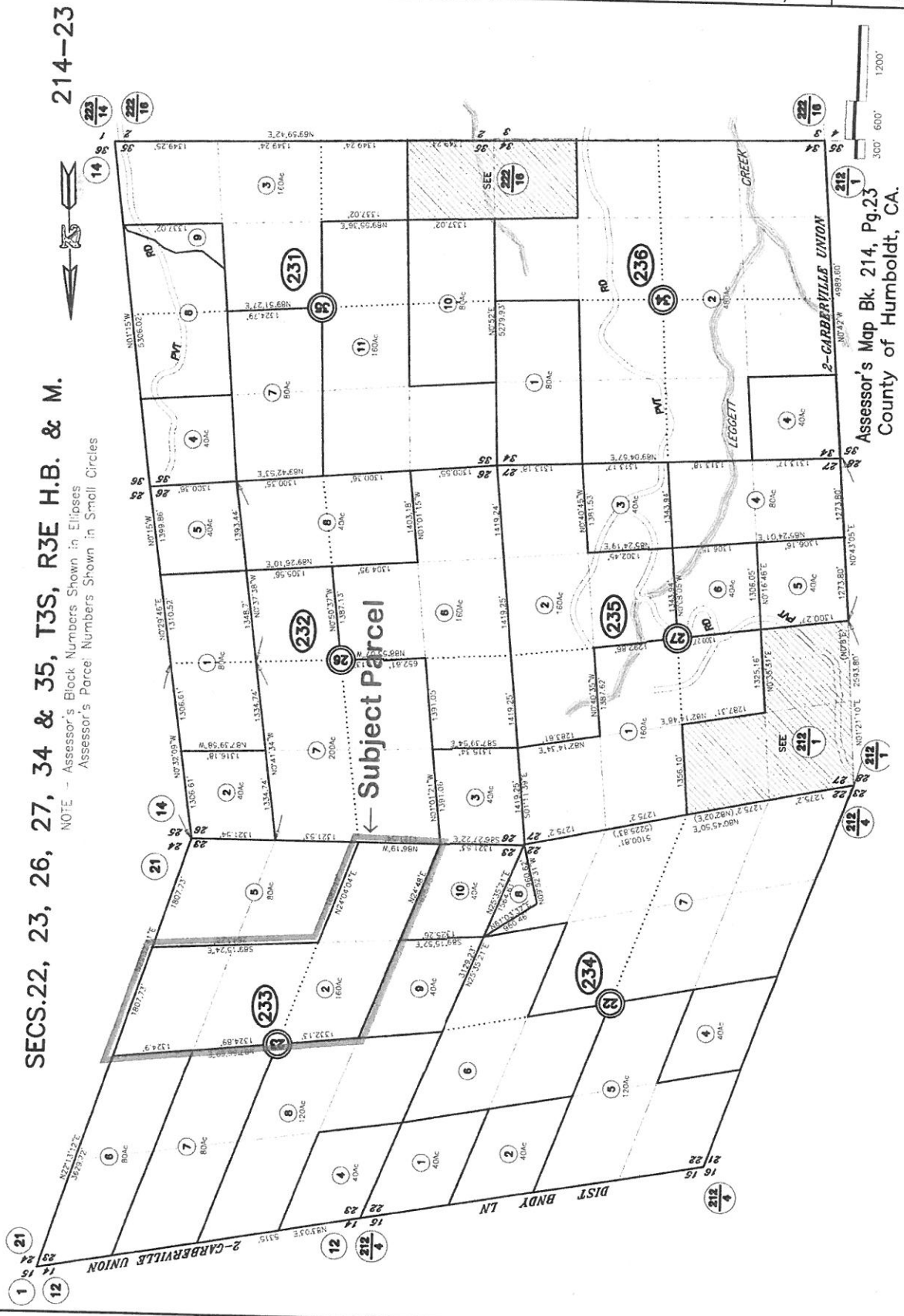
Reference:
Flint et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	Topographic Project Location Map (locations approximate)	1" ≈ 3,500'

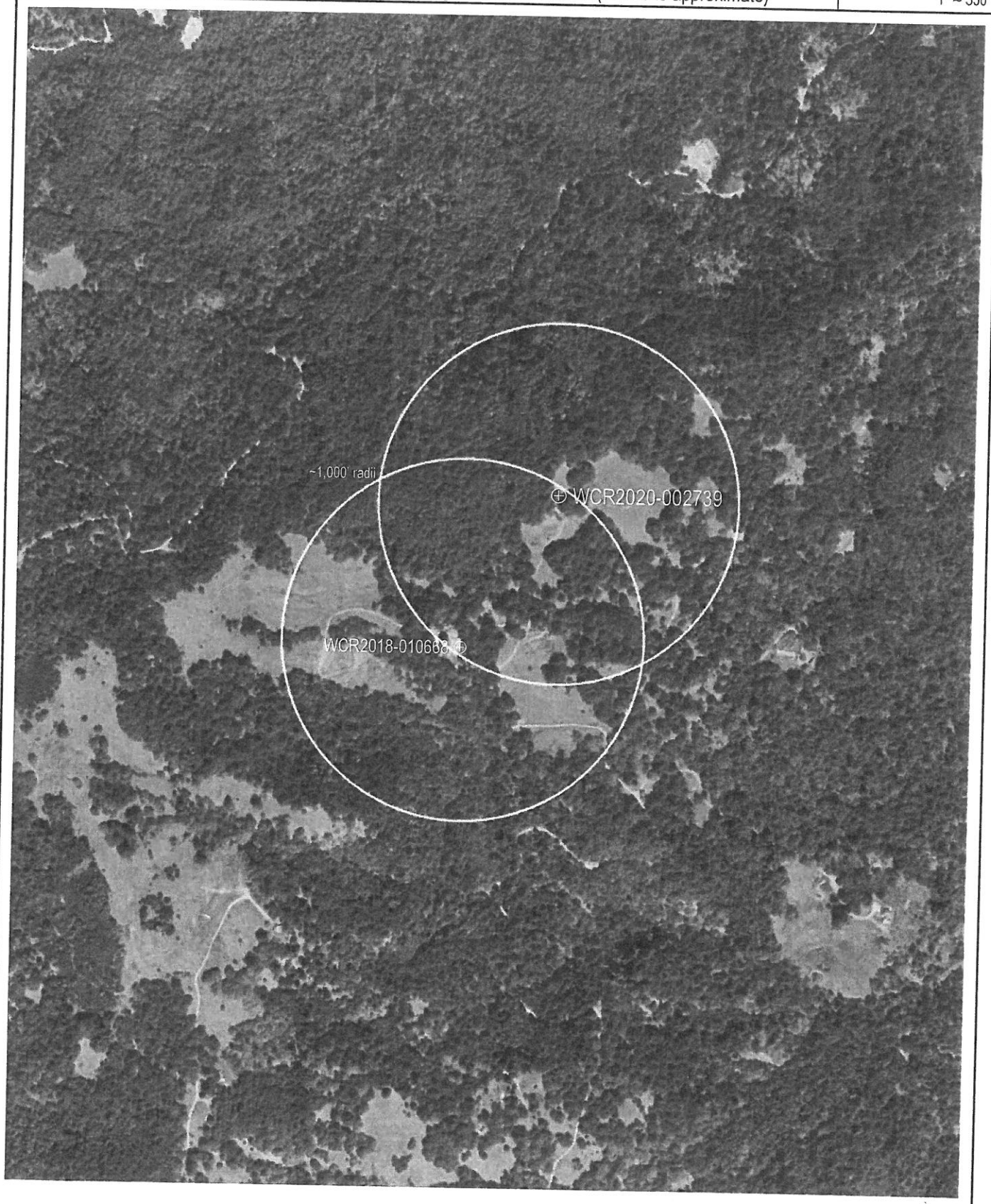


Modified from: USGS "Miranda, Calif.", 7.5' Quadrangle Map (1970). N ≅

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 2
Post Office Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	Humboldt County Assessor's Parcel Map (locations approximate)	Scale as Shown

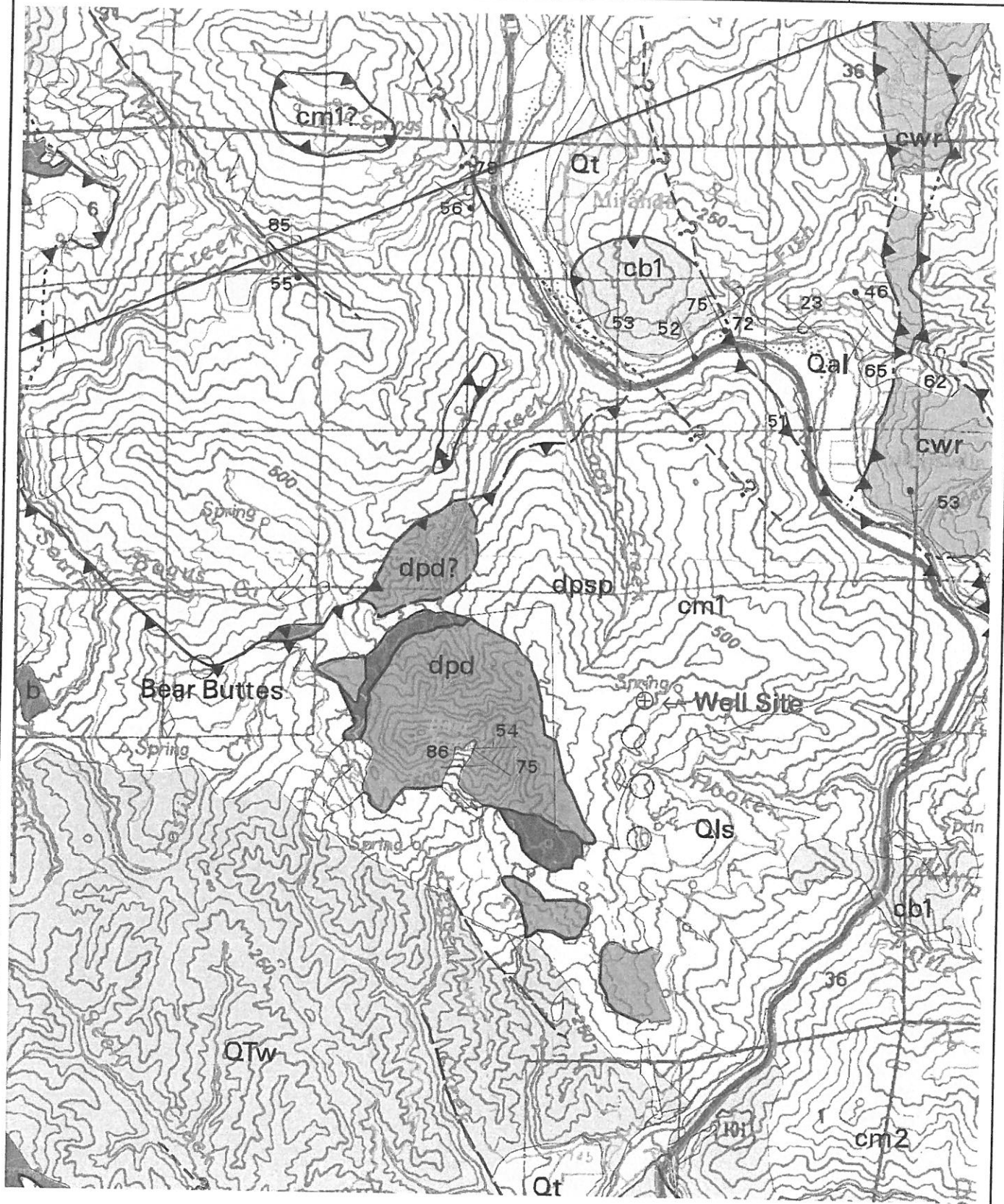


Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	Satellite Image of Well Locations (locations approximate)	1" ≈ 350'



Modified from: Google Earth Imagery of April 21, 2019, N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	Geologic Map (locations approximate)	1" ≈ 4,800'



Modified from: McLaughlin, et al., (2,000). N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4a
P. O. Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	Geologic Map Explanation	No Scale

DESCRIPTION OF MAP UNITS

QUATERNARY AND TERTIARY OVERLAP DEPOSITS

- Qal — Alluvial deposits (Holocene and late Pleistocene?)
- Qm — Undeformed marine shoreline and aolian deposits (Holocene and late Pleistocene)
- Qt — Undifferentiated nonmarine terrace deposits (Holocene and Pleistocene)
- Qls — Landslide deposits (Holocene and Pleistocene)
- QTog — Older alluvium (Pleistocene and [or] Pliocene)
- QTw — Marine and nonmarine overlap deposits (late Pleistocene to middle Miocene)
- Tv — Volcanic rocks of Fickle Hill (Oligocene)

COAST RANGES PROVINCE

FRANCISCAN COMPLEX

-- Coastal Belt --

Coastal terrane (Pliocene to Late Cretaceous)

Sedimentary, igneous, and metamorphic rocks of the Coastal terrane (Pliocene to Late Cretaceous):

- co1 — Melange
- co2 — Melange
- co3 — Broken sandstone and argillite
- co4 — Intact sandstone and argillite
- cob — Basaltic Rocks (Late Cretaceous)
- cols — Limestone (Late Cretaceous)
- m — Undivided blueschist (Jurassic?)

King Range terrane (Miocene to Late Cretaceous)

- Krp — Igneous and sedimentary rocks of Point Delgada (Late Cretaceous)
- m — Undivided blueschist blocks (Jurassic?)

Sandstone and argillite of King Peak (middle Miocene to Paleocene(?)):

- krk1 — Melange and (or) folded argillite
- krk2 — Highly folded broken formation
- krk3 — Highly folded, largely unbroken rocks
- krl — Limestone
- krc — Chert
- krb — Basalt

False Cape terrane (Miocene? to Oligocene?)

- fc — Sedimentary rocks of the False Cape terrane (Miocene? to Oligocene?)

Yager terrane (Eocene to Paleocene?)

Sedimentary rocks of the Yager terrane (Eocene to Paleocene?):

- y1 — Sheared and highly folded mudstone
- y2 — Highly folded broken mudstone, sandstone, and conglomeratic sandstone
- y3 — Highly folded, little-broken sandstone, conglomerate, and mudstone
- Ycgl — Conglomerate

-- Central belt --

Melange of the Central belt (early Tertiary to Late Cretaceous):

Unnamed Metasandstone and meta-argillite (Late Cretaceous to Late Jurassic):

- cm1 — Melange
- cm2 — Melange
- cb1 — Broken formation
- cb2 — Broken formation
- cwr — White Rock metasandstone of Jayko and others (1989) (Paleogene and [or] Late Cretaceous)
- chr — Haman Ridge graywacke of Jayko and others (1989) (Cretaceous?)
- cfs — Fort Seward metasandstone (age unknown)
- cls — Limestone (Late to Early Cretaceous)
- c — Chert (Late Cretaceous to Early Jurassic)
- bs — Basaltic rocks (Cretaceous and Jurassic)
- m — Undivided blueschist blocks (Jurassic?)
- gs — Greenstone
- c — Metachert
- yb — Metasandstone of Yolla Bolly terrane, undivided
- b — Melange block, lithology unknown

-- Eastern Belt --

Pickett Peak terrane (Early Cretaceous or older)

Metasedimentary and metavolcanic rocks of the Pickett Peak terrane (Early Cretaceous or older):

- ppsm — South Fork Mountain Schist
- mb — Chinquapin Metabasalt Member (Irwin and others, 1974)
- ppv — Valentine Springs Formation
- mv — Metabasalt and minor metachert

Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?)

Metasedimentary and metalgneous rocks of the Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?):

- ybt — Taliaferro Metamorphic Complex of Suppe and Armstrong (1972) (Early Cretaceous to Middle Jurassic?)
- ybc — Chicago Rock melange of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic)
- gs — Greenstone
- c — Metachert
- ybh — Metagraywacke of Hammerhorn Ridge (Late Jurassic to Middle Jurassic)
- c — Metachert
- gs — Greenstone
- sp — Serpentinite
- ybd — Devils Hole Ridge broken formation of Blake and Jayko (1983) (Early Cretaceous to Middle Jurassic)
- c — Radiolarian chert
- ybi — Little Indian Valley argillite of McLaughlin and Ohlin (1984) (Early Cretaceous to Late Jurassic)

Yolla Bolly terrane

- yb — Rocks of the Yolla Bolly terrane, undivided

GREAT VALLEY SEQUENCE AND COAST RANGE OPHIOLITE

Elder Creek(?) terrane

- ecms — Mudstone (Early Cretaceous)

Coast Range ophiolite (Middle and Late Jurassic):

- ecg — Layered gabbro
- ecsp — Serpentinite melange

Del Puerto(?) terrane

Rocks of the Del Puerto(?) terrane:

- dpms — Mudstone (Late Jurassic)

Coast Range ophiolite (Middle and Late Jurassic):

- dpt — Tuffaceous chert (Late Jurassic)
- dpb — Basaltic flows and keratophyric tuff (Jurassic?)
- dpd — Diabase (Jurassic?)
- dpsp — Serpentinite melange (Jurassic?)
- sp — Undivided Serpentinized peridotite (Jurassic?)

KLAMATH MOUNTAINS PROVINCE

Undivided Great Valley Sequence:

- Ks — Sedimentary rocks (Lower Cretaceous)

GREAT VALLEY SEQUENCE OVERLAP ASSEMBLAGE

Hayfork terrane

Eastern Hayfork subterrane:

- eh — Melange and broken formation (early? Middle Jurassic)
- ehls — Limestone
- ehsp — Serpentinite

Western Hayfork subterrane:

- whu — Hayfork Bally Meta-andesite of Irwin (1985), undivided (Middle Jurassic)
- whwg — Wildwood (Chanchelulla Peak of Wright and Fahan, 1988) pluton (Middle Jurassic)
- whwp — Clinopyroxenite
- whji — Diorite and gabbro plutons (Middle? Jurassic)

Rattlesnake Creek terrane

- rcm — Melange (Jurassic and older)
- rcls — Limestone
- rcc — Radiolarian chert
- rcis — Volcanic Rocks (Jurassic or Triassic)
- rcic — Intrusive complex (Early Jurassic or Late Triassic)
- rcp — Plutonic rocks (Early Jurassic or Late Triassic)
- rcum — Ultramafic rocks (age uncertain)
- rcpd — Blocky peridotite

Western Klamath terrane

Smith River subterrane:

- srs — Galice? formation (Late Jurassic)
- srv — Pyroclastic andesite
- srgb — Glen Creek gabbro-ultramafic complex of Irwin and others (1974)
- srpd — Serpentinized peridotite

MAP SYMBOLS

- Contact
- Fault
- Thrust fault
- Trace of the San Andreas fault associated with 1906 earthquake rupture

Strike and dip of bedding:

- Inclined
- Vertical
- Horizontal
- Overturned
- Approximate
- Joint
- Strike and dip of cleavage

Shear foliation:

- Inclined
- Vertical

Folds:

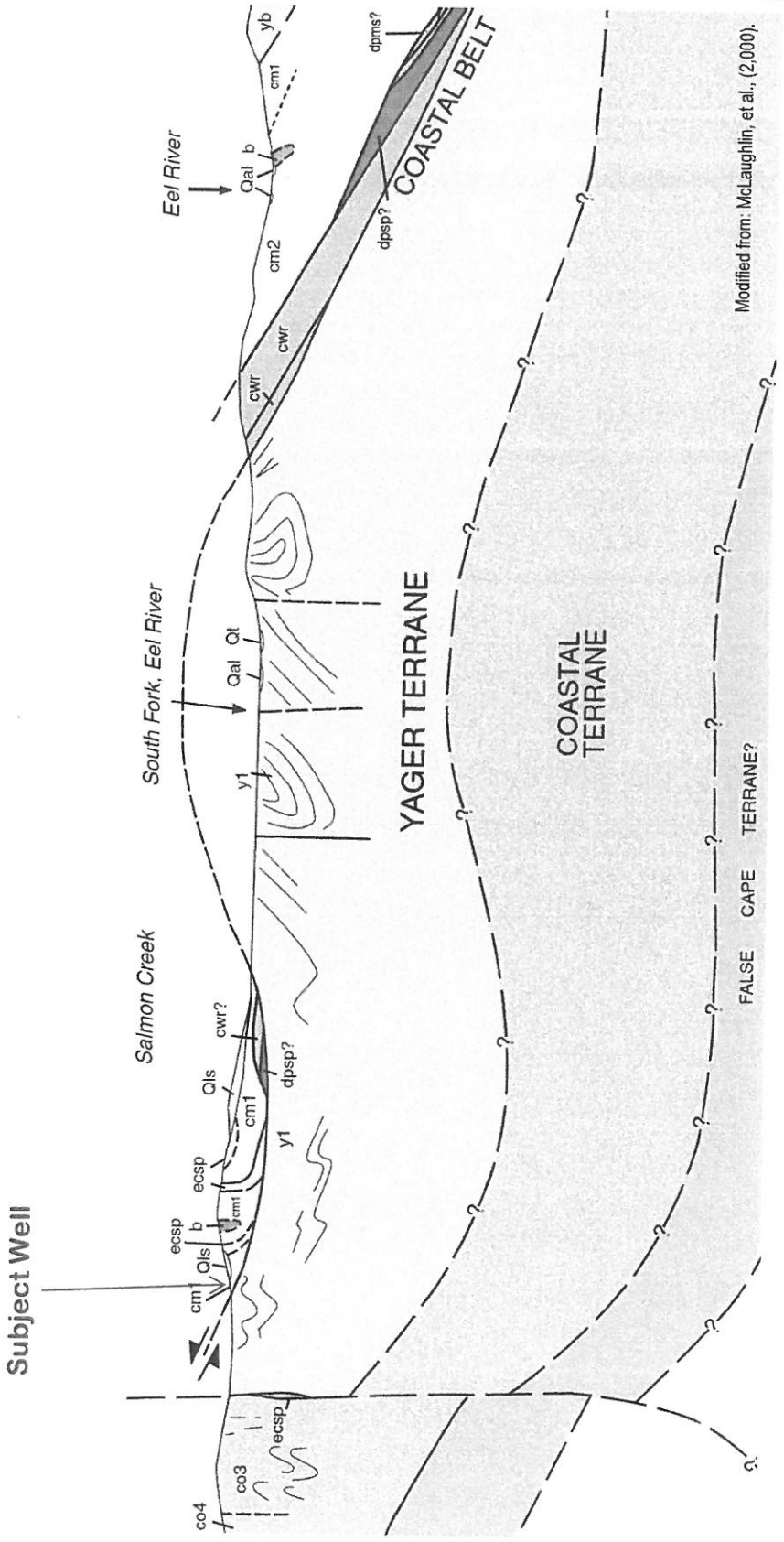
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide (Qls)

Melange Blocks:

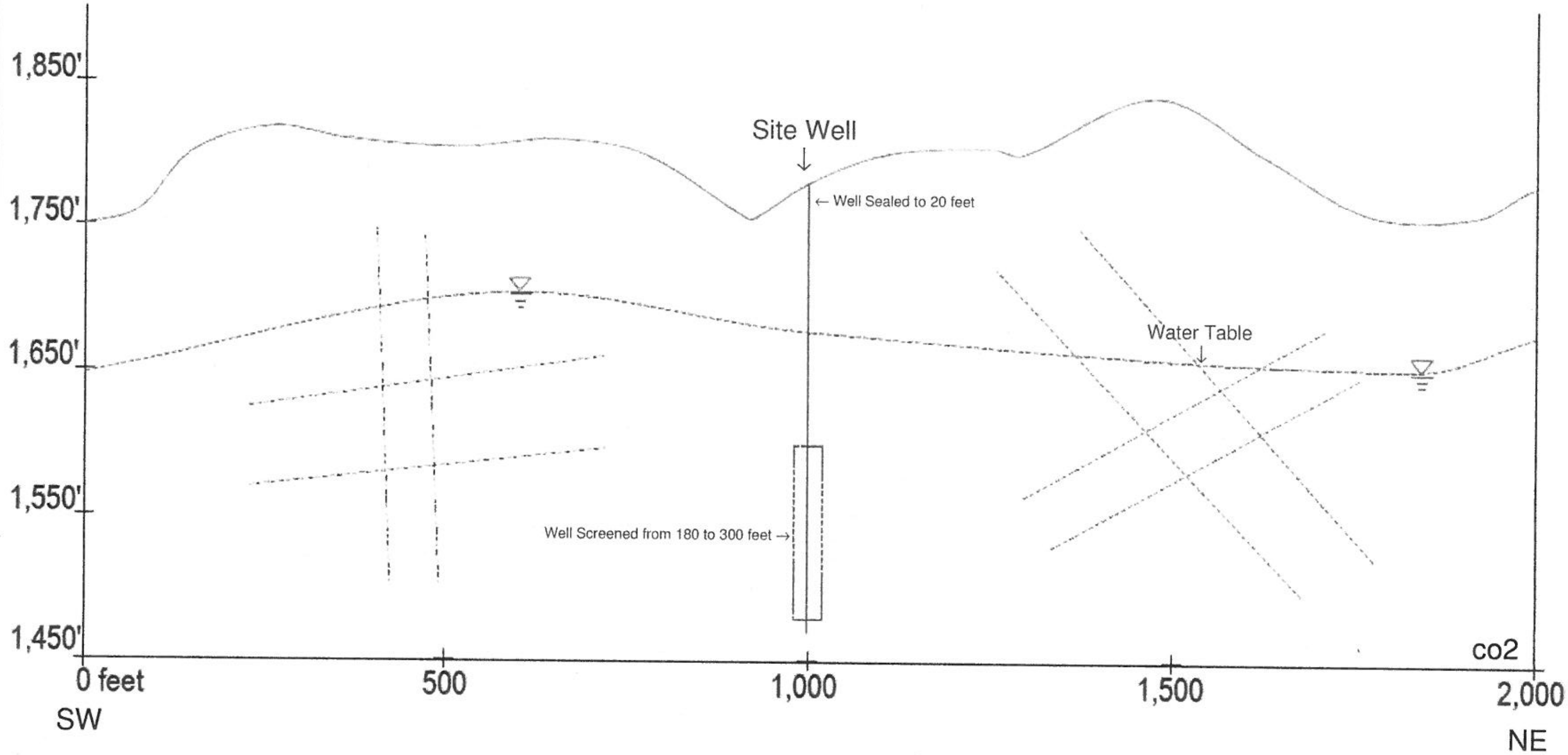
- Serpentinite
- Chert
- Blueschist
- Greenstone
- Fossil locality and number

GEOLOGY OF THE CAPE MENDOCINO, EUREKA, GARBERVILLE, AND SOUTHWESTERN PART OF THE HAYFORK 30 X 60 MINUTE QUADRANGLES AND ADJACENT OFFSHORE AREA, NORTHERN CALIFORNIA (McLaughlin et al., 2000)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 5
Post Office Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	Geologic Cross Section (locations approximate)	Not to Scale

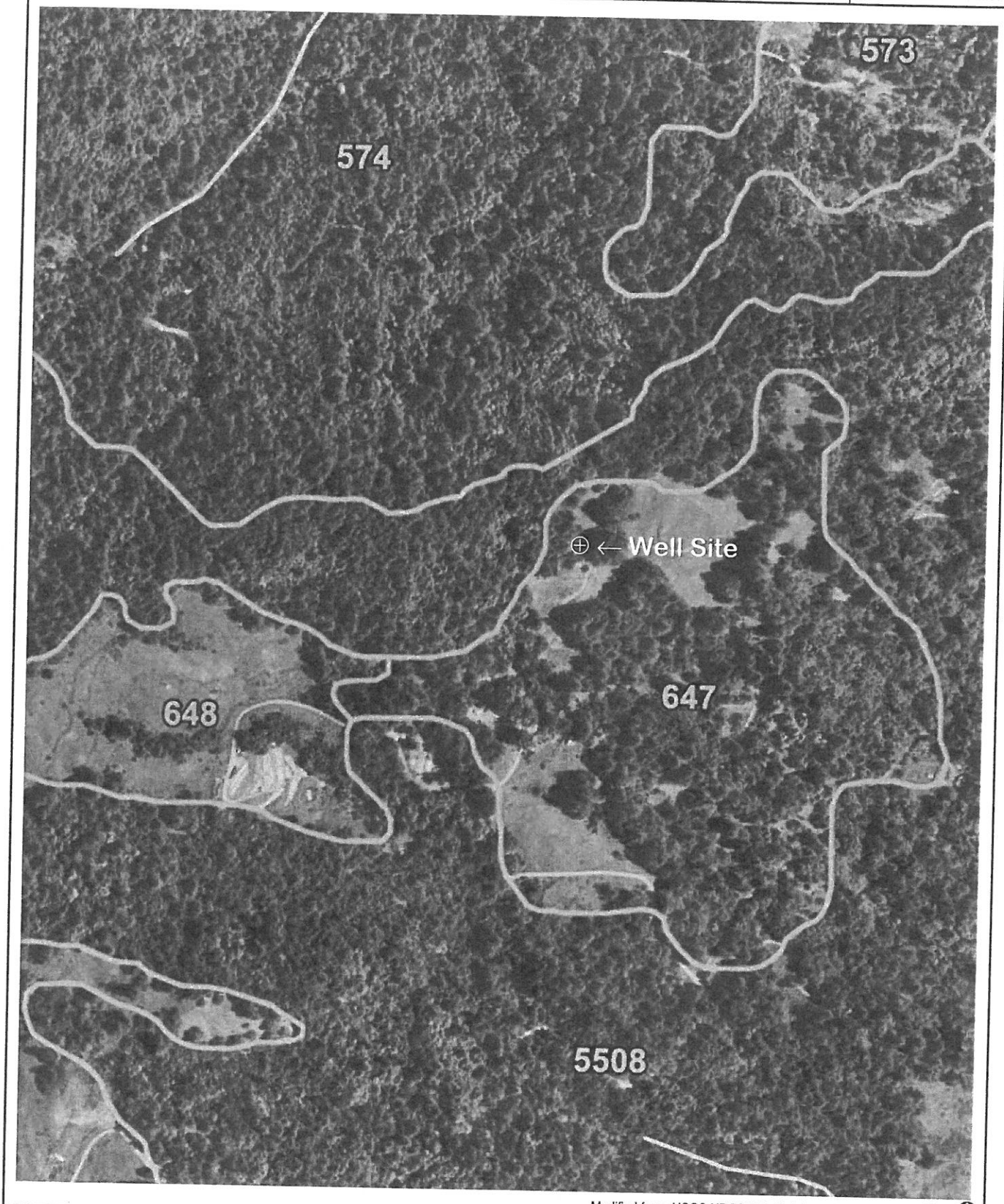


Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 6
Post Office Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	Hydrogeologic Cross Section (all locations approximate)	2x V.E.



In this vertically exaggerated (~2x) cross section, the view is looking to the northwest toward Bear Buttes. Groundwater flow in this cross section is east-southeast, or toward the viewer, out of the page. Groundwater is presumed to flow from recharge areas in the higher ground to the northwest. This well is sited high above the South Fork Eel River valley. Subgrade is composed of mélange; scaly argillite and blocks of meta sandstone, of the Central Belt of the Franciscan Complex. Groundwater is envisioned to flow through bedrock fractures. Fractures are interpreted to be the primary permeability, providing preferential flow paths for the local groundwater. The driller noted that first water encountered 205 feet below the ground surface. Static water level was reported to be 185 feet below the surface. A bentonite seal was installed from the surface to the 21-foot depth. This well is cased to 180 feet below the ground surface and screened from 180 feet to 300 feet. This well thus draws groundwater from a 120-foot portion of the profile from 180 feet to 300 feet below the surface. Bedrock mapping (Figure 4) is from McLaughlin et al., (2000).

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	WCR2020-002739, 1520 Wood Ranch Road, Redway, California	May 12, 2023
Cutten, CA 95534	APN: 214-233-002, Mr. James Patterson, Client	Project 0500.00
(707) 442-6000	USDA – NRCS Soil Map (locations approximate)	Scale not determined



Modified from: USGS-NRCS Web Soil Survey, April 27, 2023. N ≈

State of California

Well Completion Report

Form DWR 188 Complete 4/19/2020

WCR2020-002739

Owner's Well Number: 2 | Date Work Began: 02/10/2020 | Date Work Ended: 02/15/2020

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

Secondary Permit Agency: | Permit Number: 214-233-002-000 | Permit Date: 01/29/2020

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 Irrigation - Agriculture

Well Location

Address: 1520 WOOD RANCH RD

City: REDWAY | Zip: 95560 | County: Humboldt

	Deg.	Min.	Sec.	
Latitude	40	11	6.9824	N
Longitude	-123	48	51.9483	W

Dec. Lat.: 40.1852729 | Dec. Long.: -123.8144301

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: 5 Ft | Location Determination Method: GPS

APN: 214-233-002

Township: 03 S

Range: 03 E

Section: 23

Baseline Meridian: Humboldt

Ground Surface Elevation: 1774

Elevation Accuracy: 10 Ft

Elevation Determination Method: GPS

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Downhole Rotary Hammer | Drilling Fluid: Air

Total Depth of Boring: 310 Feet

Total Depth of Completed Well: 310 Feet

Water Level and Yield of Completed Well

Depth to first water: 205 (Feet below surface)

Depth to Static Water Level: 185 (Feet) | Date Measured: 02/15/2020

Estimated Yield*: 15 (GPM) | Test Type: Air Lift

Test Length: 4 (Hours) | Total Drawdown: 0 (feet)

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

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	8	TOP SOIL DARK BROWN AND SAND STONE DARK BROWN DRY NO WATER
8	65	SANDSTONE BROWN DRY NO WATER
65	205	BLUESHALE STONE CLAY HARD AND DRY NO WATER
205	235	BLUESHALE STONE W/ BASALT STRINGERS WATER BEARING ZONE
235	295	BASALT WATER BEARING MULTI COLOR FORMATION
295	310	BLUESHALE STONE CLAY DRY AND HARD

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	180	Blank	PVC	OD: 4.500 in. | Thickness: 0.337 in.	0.337	4.5			
1	180	300	Screen	PVC	OD: 4.500 in. | Thickness: 0.337 in.	0.337	4.5	Milled Slots	32	MILLED SLOTS .032
1	300	310	Blank	PVC	OD: 4.500 in. | Thickness: 0.337 in.	0.337	4.5			BLANK WITH CAP INSTALLED

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	21	Bentonite	Other Bentonite	3/8" BETONITE CHIPS W/ CEMENT CAP	WATER ADDED WHILE DUMPING CHIPS
21	310	Filter Pack	Other Gravel Pack	#6 3 BAGS SILCA GRAVEL	3 YARDS

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	310	10

Certification Statement

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

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

3807 SIERRA HWY UNIT #6 (Address) | ACTON (City) | CA (State) | 93510 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 02/26/2020 (Date Signed) | 886439 (C-57 License Number)

Attachments

VINCENT WELL WOODRANCH 2020 PAPERWORK.pdf - Other

vincent well woodranch permit 2020.pdf - Permit

DRILLERS REPORT VINCENT 2020.pdf - Other

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 1/30/2019

WCR2018-010668

Owner's Well Number 1 | Date Work Began 10/09/2018 | Date Work Ended 11/12/2018

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

Secondary Permit Agency | Permit Number 17/18-1327 | Permit Date 01/18/2017

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 Irrigation - Agriculture

Well Location

Address 0 WOODRANCH

City REDWAY | Zip 95560 | County Humboldt

Latitude 40 Deg. 10 Min. 56.3015 Sec. N | Longitude -123 Deg. 49 Min. 8.31 Sec. W

Dec. Lat. 40.182306 | Dec. Long. -123.818975

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 214-233-002

Township 03 S

Range 03 E

Section 27

Baseline Meridian Humboldt

Ground Surface Elevation 1775

Elevation Accuracy 10 Ft

Elevation Determination Method GPS

Borehole Information

Orientation Vertical | Specify

Drilling Method Downhole Rotary Hammer | Drilling Fluid Air

Total Depth of Boring 200 Feet

Total Depth of Completed Well 200 Feet

Water Level and Yield of Completed Well

Depth to first water 135 (Feet below surface)

Depth to Static Water Level 128 (Feet) | Date Measured 10/12/2018

Estimated Yield* 5 (GPM) | Test Type Air Lift

Test Length 5 (Hours) | Total Drawdown 0 (feet)

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

Geologic Log - Lite

Depth from Surface Feet to Feet		Material Type	Material Color	Material Texture	Material Description
0	6	Soil or Organic	Brown	Organic	TOP SOIL ORGANIC DARK BROWN
6	35	Siltstone	Brown	Hard	SILT STONE HARD ND DRY
35	115	Claystone	Blue	Very Hard	BLUE SHALESTONE VERY HARD AND DRY
115	135	Rock	Blue	Layered	BASALT
135	200	Rock	Blue	Layered	MULTI COLOR WATER BEARING BASALT

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	120	Blank	PVC	OD: 4.950 in. | SDR: 17 | Thickness: 0.291 in.	0.291	4.95			
1	120	180	Screen	PVC	OD: 4.950 in. | SDR: 17 | Thickness: 0.291 in.	0.291	4.95	Milled Slots	32	.032 SLOT
1	180	200	Blank	PVC	OD: 4.950 in. | SDR: 17 | Thickness: 0.291 in.	0.291	4.95			SUMP W/ 4.5\\\" CAP INSTALLED

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	22	Bentonite	Other Bentonite	3/8	BENTONITE CHIPS DUMPED WHILE ADDING WATER
22	200	Filter Pack	Other Gravel Pack	3/8" PEA GRAVEL	6 YARDS 3/8\\\\\" PRE WASHED PEA GRAVEL

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	200	10

Certification Statement

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

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

3807 SIERRA HWY UNIT #6 (Address) | ACTON (City) | CA (State) | 93510 (Zip)

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 11/27/2018 (Date Signed) | 886439 (C-57 License Number)

Attachments

DRILLERS REPORT.docx - Other

VINCE PERMIT.pdf - Permit

VINCE PLOT PLANS.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:

Humboldt County, South Part, California

647—Coyoterock-Yorknorth complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2qds3
Elevation: 200 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Coyoterock and similar soils: 45 percent
Yorknorth, moist, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Coyoterock

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Colluvium derived from sandstone and/or mudstone and/or residuum weathered from schist

Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material
A - 0 to 3 inches: loam
BAt - 3 to 11 inches: clay loam
Bt1 - 11 to 20 inches: clay
Bt2 - 20 to 56 inches: clay
C - 56 to 71 inches: gravelly clay

Properties and qualities

Slope: 15 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 20 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 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F004BI106CA - High precipitation mountain slopes
Hydric soil rating: No

Description of Yorknorth, Moist

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Colluvium derived from sandstone and/or residuum weathered from schist and/or earthflow deposits derived from mudstone

Typical profile

A1 - 0 to 7 inches: silt loam
A2 - 7 to 11 inches: silt loam
Bt1 - 11 to 20 inches: silty clay loam
Bt2 - 20 to 39 inches: silty clay loam
C - 39 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
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 20 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: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R004BI201CA - Fine-loamy Uplands
Hydric soil rating: No

Minor Components

Crazycoyote

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Devilshole

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 12, Sep 2, 2022