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

July 25, 2022 Project No: 0471.00

Healing Sun, MBC
Attention: Mr. Leif Stafslien
Post Office Box 331
Whitethorn, California 95589

Subject: Hydrogeologic Isolation of Existing Well from Surface Waters
Healing Sun MBC, 1000 Eubanks Road, Whitethorn, California
APN: 220-082-020, WCR2020-014622

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 wetlands and or surface waters, and if pumping this well could affect surface waters in nearby water courses. Creeks in the vicinity of this well drain to Painter Creek and an ephemeral tributary of Eubank Creek (Figure 1). A California-Certified Engineering Geologist visited this site on June 13, 2022 to observe the subject well and local site conditions. Based on our professional experience, our observations, and research, 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 wetlands and or other surface waters in the vicinity. We understand that water from this well will be used 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 the applicant can supply that information.

According to the Humboldt County WebGIS, this parcel 220-082-020 (Figure 2) encompasses approximately 110 acres. Based on our on-site GPS measurements, the subject well is located approximately at latitude 40.08557° north, and longitude 123.96578° west (±9'). As reported by the driller, this well is in Section 28, T4S, R2E, HB&M (Figures 1 and 2). A circle around the well, with a radius of approximately 1,000 feet is presented on Figures 1 through 3.

Based on the Humboldt County WebGIS mapping, this well is more than 650 feet northwest of Painter Creek, the nearest mapped surface waters. The site well is more than 1,500 feet southeast of the ephemeral tributary of Eubank Creek. Painter Creek originates from a spring on the subject parcel approximately 1,500 feet northeast of the site well at elevation 1,240 (Figure 1). Based on interpolation from the USGS Briceland (1969) topographic quadrangle map (Figure 1), and the Humboldt County WebGIS, well elevation is approximately 1,374 feet above sea level. At the nearest point to this well, the elevation of Painter Creek is approximately 1,140 feet and the ephemeral tributary of Eubank Creek is approximately 960 feet. The elevation of the bottom of the well is approximately 1,174 feet which is 37 feet higher than Painter Creek (650' to SE), and 214 feet higher than the ephemeral tributary of Eubank Creek (~1,500' to NW) at their nearest points on the Humboldt County WebGIS map.

Only one spring is mapped in Section 28, and it is located approximately 1,500 feet northeast of the site well, at an elevation of 1,240 feet as discussed above (Figure 1). No other springs are mapped on Section 28 of the Briceland quadrangle map. Beyond Section 28, the nearest mapped spring appears to approximately 2.2 miles southeast in Section 34, at elevation 1,140 feet, on parcel 220-202-002. We observed no other mapped springs in Section 28, or in any other contiguous sections.

This well was drilled by Fisch Drilling, Hydesville, California, in October 2020, under county permit #18/19-1012. Fisch Drilling is a licensed well-drilling contractor (C-57 #683865). Fisch Drilling submitted the well completion report (DWR 188) on October 14, 2020 (attached). Fisch Drilling estimated the yield of the completed well at 6 gallons per minute on October 14, 2020. Based on Fisch's four-hour air lift pump test, the total drawdown was reported at 152 feet. The well location is shown approximately on the attached figures.

Borehole diameter as reported by the driller is 10-inches. Total drilled depth is 200 feet. Blank 5.563-inch PVC well casing was installed from grade to 40 feet. A bentonite surface sanitary seal was installed in the annulus around the 5.563-inch well casing per County regulations from grade to 20 feet. From 40 to 200 feet the well is screened with slotted PVC well screen (0.032" slots). From 20 feet to 200 feet the annulus was backfilled with 3/8-inch pea gravel. Depth to first water was reported as 48 feet below grade, and depth to static water in the completed and developed well was reported to be 45 feet bgs when the driller conducted the pump test on October 14, 2020.

On the geologic map (Figure 4), by McLaughlin et al., (2000), this area is underlain by the early Tertiary to late Cretaceous, rocks of the Coastal belt of the Franciscan Complex. Rocks at the well site are identified as "co2", mélange; "Subequal amounts of shattered sandstone and argillite with much clayey, penetratively sheared rock that exhibits generally irregular topography lacking well-incised sidehill drainages". Mélange is underlain by "co4", intact sandstone and argillite; "Exhibits sharp crested topography with a regular, well-incised system of sidehill drainage." Age range of the Coastal belt is late Eocene to late Cretaceous based on the paleontologic and isotopic age range of rocks in the mélange and on inferred range in age of penetrative shearing. Components of the Central belt mélange include: cm2 mélange-subequal amounts of metasandstone and meta-argillite. Exhibits irregular topography that lacks well incised sidehill drainages but is less lumpy than unit cm1". Shear foliation n the greenstone is mapped as striking northwest and dipping northeast. East of the subject parcel an "approximately located" fault traverses from south to north.

Materials reported on the geologic log of the driller's well completion report (WCR2020-014622 attached) include three feet of "top soil" over 13 feet of "soft brown sandstone". From a depth of 16 to 34 feet, the driller logged "shale". The shale was in turn underlain by 54 feet (34' to 88') of "blue sandstone", which appears to be the water bearing unit in this well. From 88 feet to 157 feet the driller logged "sandstone shale mix", and from 157 feet to total depth, "soft shale" was logged.

We interpret the "shale" section of this profile from 16 to 34 feet to be an aquitard; a material of low permeability and transmissivity. Materials below 43 feet, the blue sandstone, and "sandstone shale mix" appear to be the water-bearing aquifer materials, having higher permeability and transmissivity. At the location of the subject well, the elevation of the water-bearing aquifer unit is thus approximately 1,329 feet.

Below the three feet of topsoil, the earth materials encountered in the boring are likely the sandstone and argillite mélange, and the intact sandstone mapped by McLaughlin et al, (2000). Sheared and folded sandstone materials may be expected to have a moderate to high hydraulic conductivity and can constitute a significant aquifer. We interpret the underlying sequence of materials described by the driller (shale and sandstone), as lithologies within the Coastal Belt of the Franciscan Complex. The sandstone is likely to have a significantly higher hydraulic conductivity than the shale in this profile, making the sandstone, in our interpretation, the water bearing unit in this well.

A geologic cross section of the area after McLaughlin et al, shows the structural and stratigraphic relationships between the local geologic units (Figure 5). The coastal belt mélange unit co2 is shown dipping to the northeast; unit co4 is mapped with southwest dipping overturned bedding at a locality in the southeast quarter of Section 28 (Figure 4). Southwest of the well co4 is also shown to dip east northeast on McLaughlin's map. On-site, no attitudes could be observed in the sandstone or mélange because bedrock is mantled with soil and hillslope colluvium and obscured by vegetation. We interpret the faults in the coastal belt Franciscan Complex to be hydrologic boundaries of minimal permeability due to comminution (grinding and shearing along the fault planes) which effectively separate portions of the Franciscan units from each other, and limit groundwater flow between these fault-bound units.

In our professional opinion, based on our experience, observations, and review of pertinent and available information, this well has a low potential of having any direct connection to surface waters. First water was encountered at 48 feet. This well is sealed through the upper 20 feet of any potential unconfined, near-surface aquifers with which it might communicate hydraulically through the borehole because the bentonite-sealed surface casing isolates the topsoil, brown sandstone, and shale materials from the deeper blue sandstone aquifer. When considered with the stratigraphy and geologic structure, distances (horizontal and vertically) from the nearest surface waters, depth of the producing zone of this well (~45 to 157 feet), as well as its position relative to the nearest adjacent watercourses in Painter Creek or the ephemeral tributary of Eubank Creek, we conclude that the depth of the surface seal is sufficient to preclude the potential for hydraulic connectivity with surface waters. Thus, the water source from which this well draws appears to be a confined subsurface aquifer not connected to any 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.

In our professional opinion, it appears the aquifer tapped by the subject well is recharged by rainwater infiltrating in areas proximal to the well. As noted, the "Water Level and Yield of Completed Well" section of the Well Completion Report estimated the yield of this well at 6 gallons per minute (gpm) on October 14, 2020, after a four-hour air-lift pump test. At a rate of 6 gpm, this well might potentially produce 8,640 gallons per day. As noted on the well completion report, this capacity may not be representative of this well's long-term yield. Additional pump testing would be necessary to estimate the sustainable long-term yield of the site well.

In our opinion the subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the nearest streams Painter Creek, or the ephemeral tributary of Eubank Creek. This well appears to be hydrologically isolated from the spring on-site, and any ephemeral wetlands. Given the horizontal and vertical distances between the water-producing zone in the subject well, and the surface waters of the nearest watercourses, the potential for hydrologic connectivity between surface waters and groundwater in the bedrock aquifer appears low. Further, given the limiting condition of 18 feet of low-transmissivity shale above the water-bearing blue sandstone unit, the water-producing zone is likely hydrologically isolated from, and not demonstrably connected to any other aquifer(s) in the surrounding coastal belt Franciscan deposits.

On the Briceland USGS topographic quadrangle map, the nearest mapped spring is northeast at an elevation of approximately 1,240 feet, and no closer than approximately 1,500 feet (Figure 1) on the subject parcel. There do not appear to be any other significant mapped or unmapped natural springs or wetlands within 1,000 feet of parcel containing this subject well.

We researched the California Department of Water Resources (DWR) database to determine if there were other wells within 1,000 feet of the subject well on our client's property. Well WCR2017-1087876 is a domestic well on the same parcel as the subject well, and is shown on Figures 1, 3 and 7. There is also a domestic well (WCR2017-1087875) that is more than 2,700 feet to the north on APN: 220-081-012. On parcel 220-171-002, there is another domestic well WCR2017-005582 (legacy well #01878774), which is more than 3,500 feet southwest of the subject well. Apart from the domestic well on-site, we could not find any other wells, domestic or agricultural, within 1,000 feet of the subject well.

The Natural Resources Conservation Service's, online Web Soil Survey, shows the subject well to be located within the Sproulish-Canoecreek-Redwohly soil complex (#574, Figure 7), which is characterized by the NRCS as well-drained. The Web Soil Survey unit description of the Sproulish-Canoecreek-Redwohly soil complex is attached to this report. Mean annual precipitation in the area is listed as 60 to 100 inches per year. Capacity of the most limiting layer to transmit water (Ksat) is described as moderately low to high (0.060 to 2.00 in/hr). If ten percent of 60 inches of precipitation is absorbed by the soils and does not flow across the surface to local watercourses, then approximately 55 acre-feet, or 18 million gallons, of water per year may be expected to percolate into the regolith, to recharge the aquifer below this 110-acre subject property.

On the 28th of March, 2022, California Governor Newsome issued executive order N-7-22 relating to the ongoing drought in California. In his executive order, the governor outlined several 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*". Your well at 1000 Eubanks Road, Whitethorn, is not within a basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where your permitted well is sited.

Further, order N-7-22 states that counties, cities, and other public agencies have been 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 of groundwater for individual domestic users, or that will exclusively provide groundwater to public water supply systems*." Well WCR2020-014622 is not likely to interfere with the production and functioning of nearby wells, as there are none. Nor is well WCR2020-014622 likely to cause subsidence that might adversely impact or damage nearby infrastructure, as there is no significant public infrastructure nearby.

Based on our professional experience, observations, and research, it is our opinion the well at 1000 Eubanks Road has a low likelihood of being hydrologically connected to nearby surface waters or wells in any manner that might adversely affect wetlands, wells, or surface waters 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

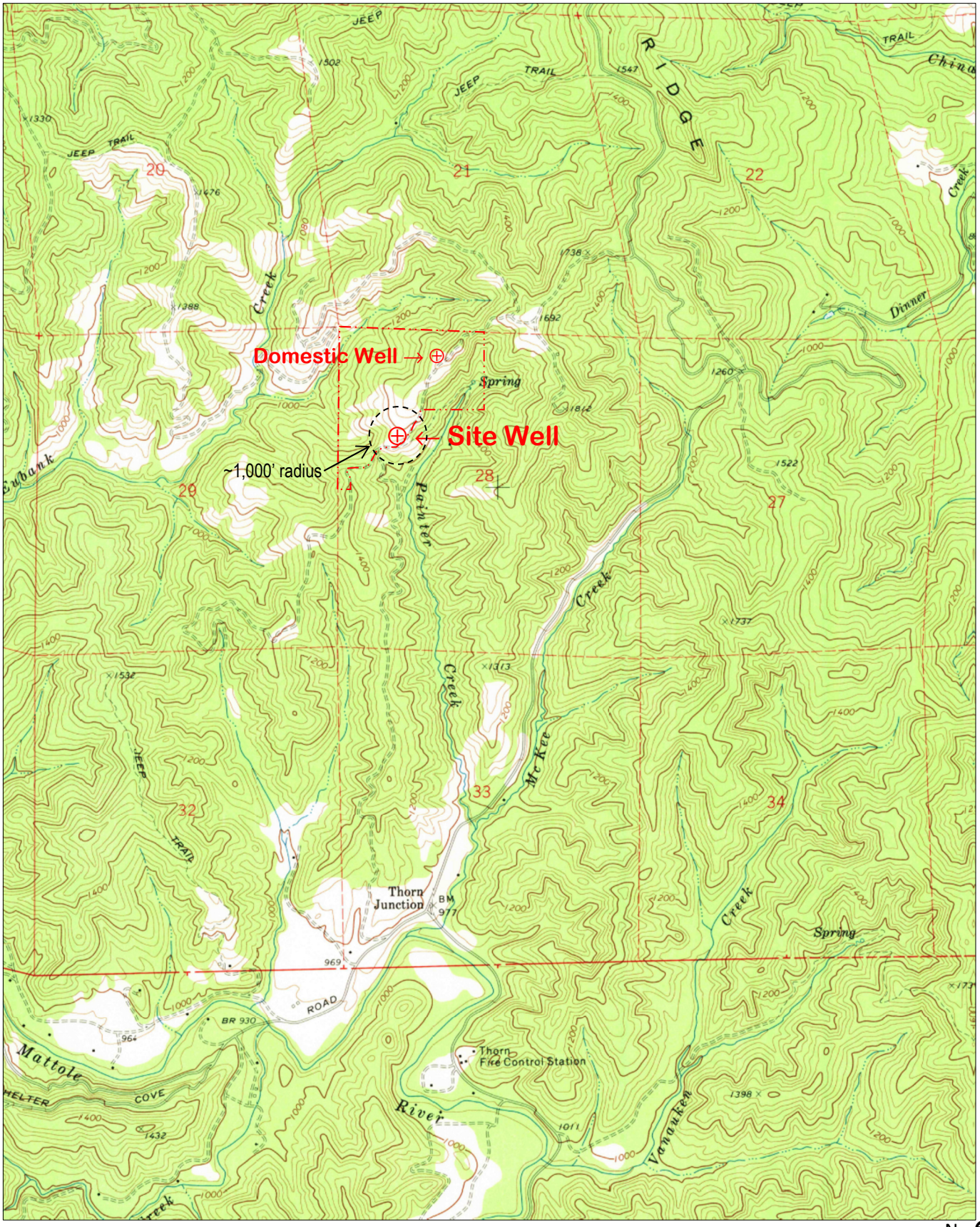
Attachments:

Figure 1: Topographic Map of Well Location
Figure 2: Humboldt County Assessor's Parcel Map
Figure 3: Satellite Image Site Plan
Figure 4: Geologic Map
Figure 4a: Geologic Map Explanation
Figure 5: Geologic Cross Section of Well Location
Figure 6: Hydrogeologic Cross Section of Well Location
Figure 7: Soil Map of Well Location

State of California Well Completion Reports:
WCR2018-014622
WCR #1087876
WCR #1087874
WCR #1087875

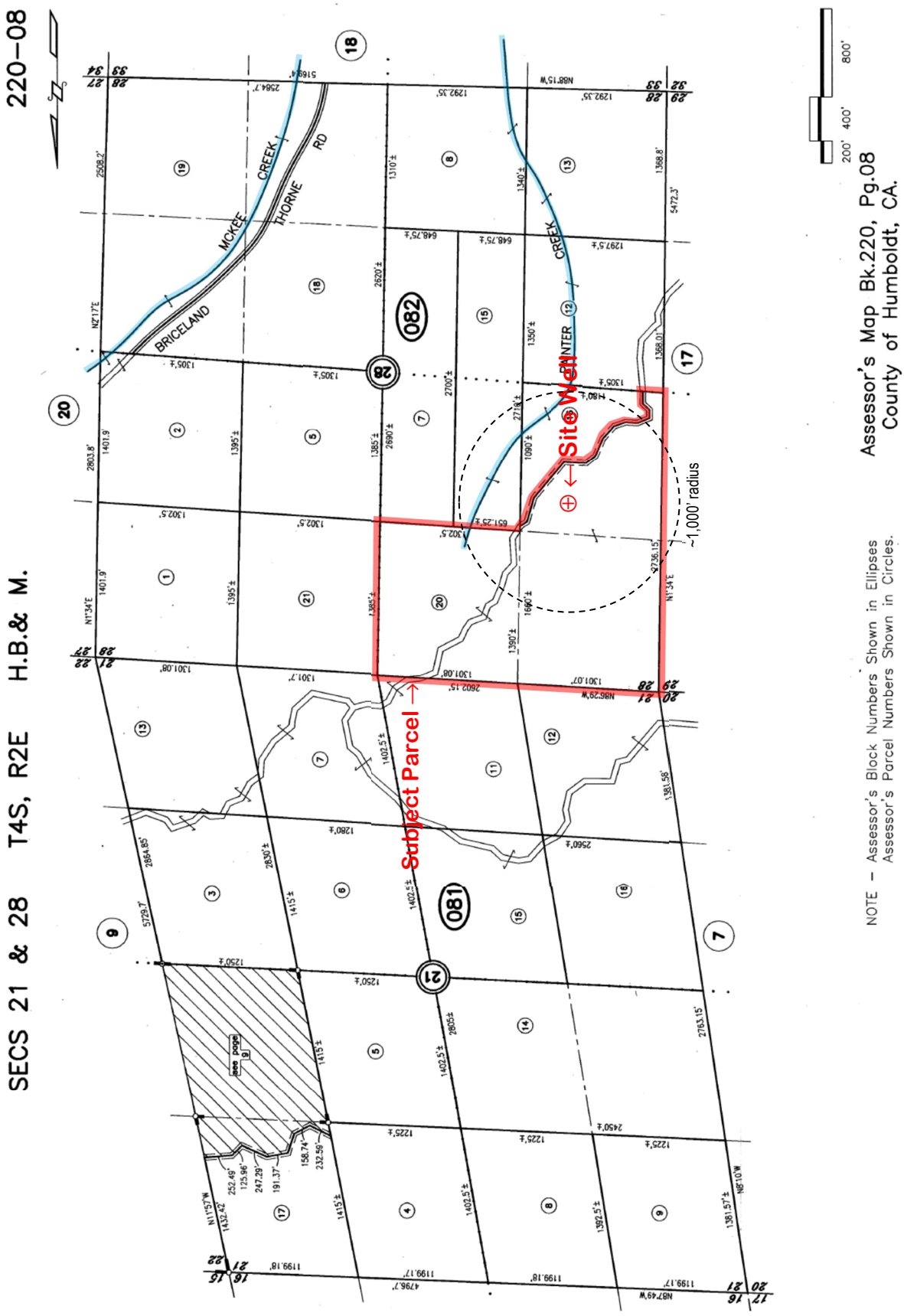
Web Soil Survey, NRCS Unit Descriptions:
Sproulish-Canoecreek-Redwohly complex, 30 to 50 percent slopes.
Canoecreek-Sproulish-Redwohly complex, 50 to 75 percent slopes

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(707) 442-6000	Topographic Map of Well Location (locations approximate)	1" ≈ 2400



Modified from: USGS "Briceland, Calif." 7.5' Quadrangle Map (1969), N ≈

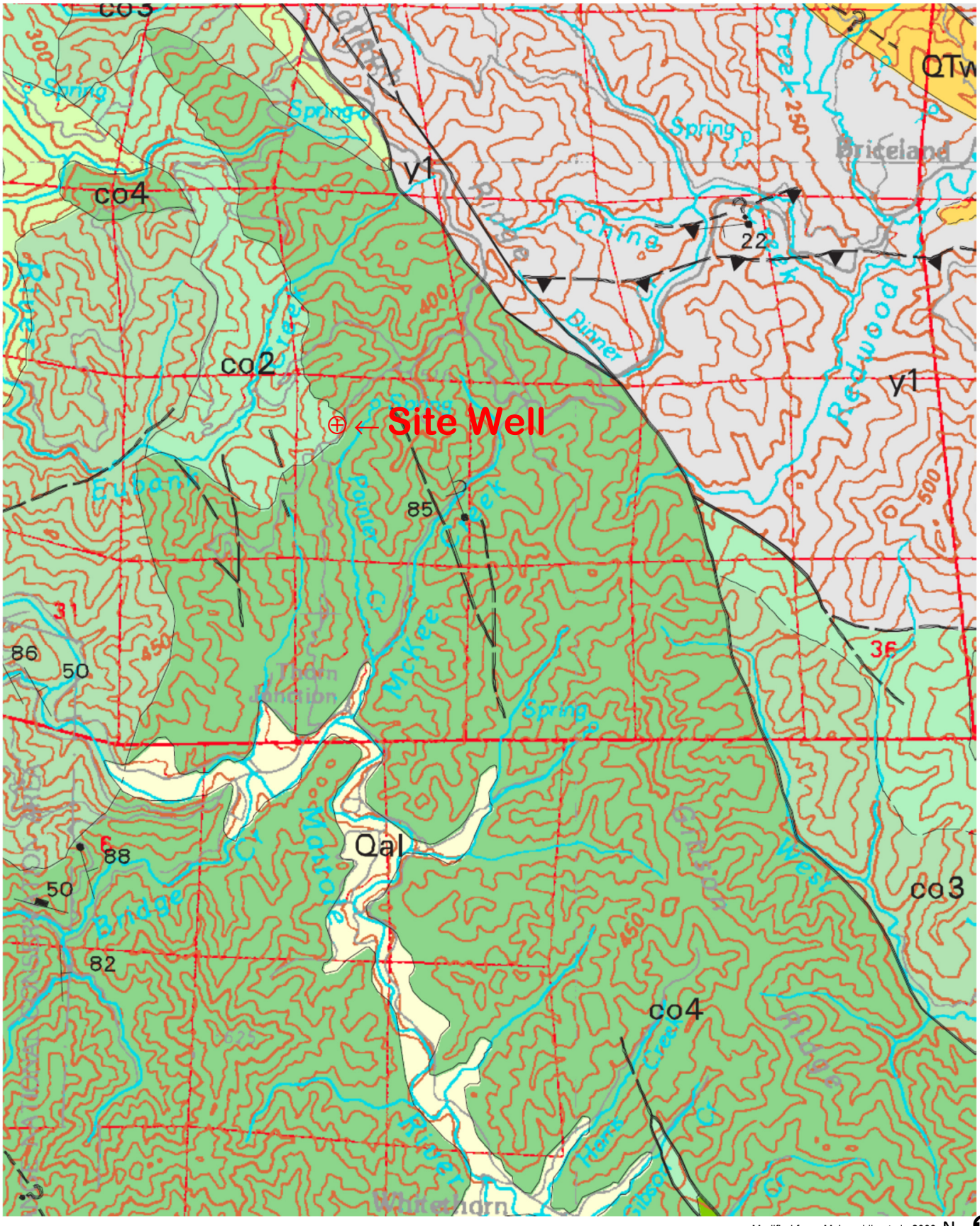
Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 2
Post Office Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(707) 442-6000	Humboldt County Assessor's Parcel Map (locations approximate)	Scale as Shown



Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(707) 442-6000	Satellite Image Site Plan (locations approximate)	1" ≈ 300'

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

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(707) 442-6000	Geologic Map (locations approximate)	1" ≈ 4100'



Modified from: McLaughlin et al., 2000. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4a
P. O. Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(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)
- Ti — 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)
- cc — 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 metaigneous 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:

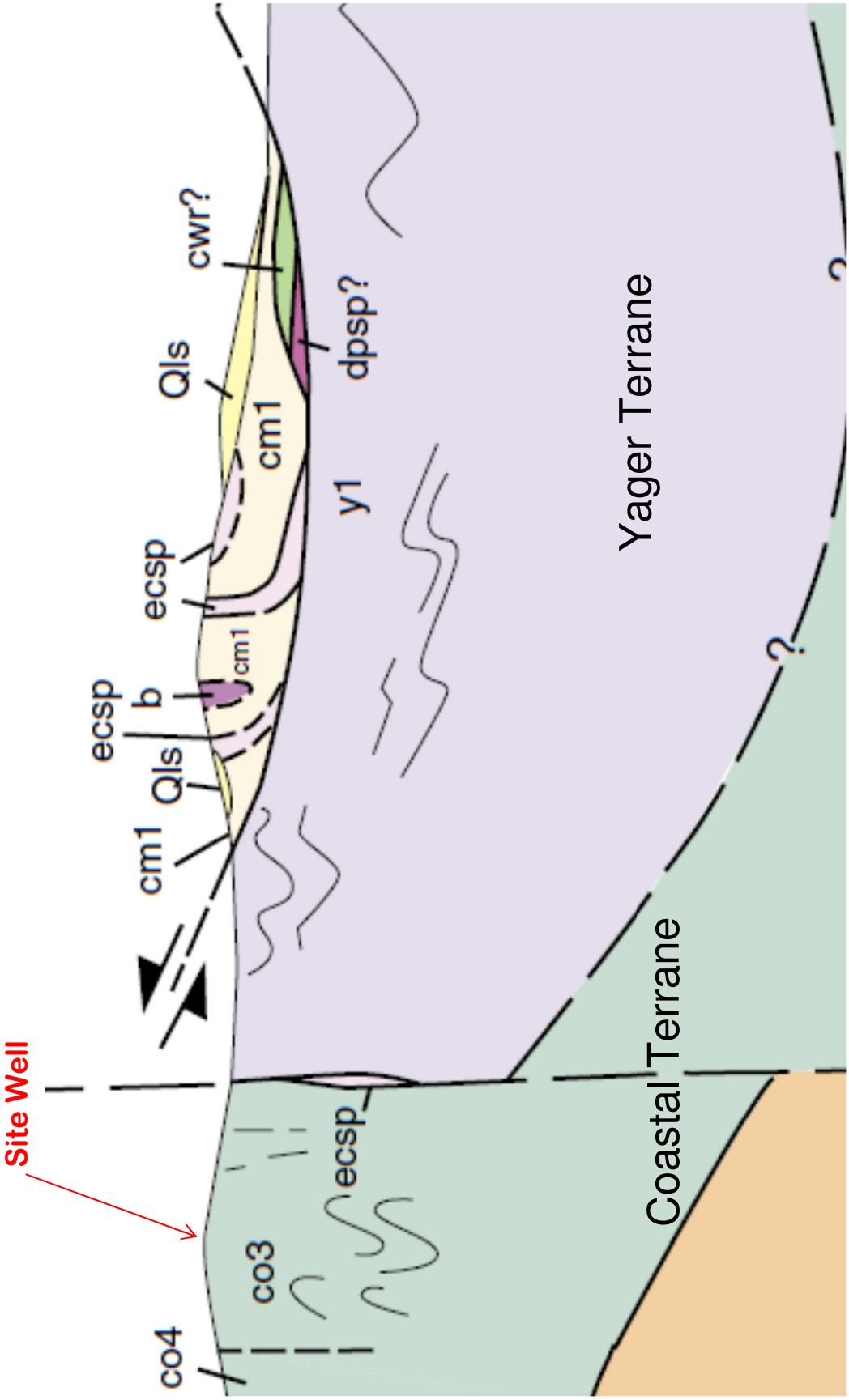
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide (Qls)

Melange Blocks:

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

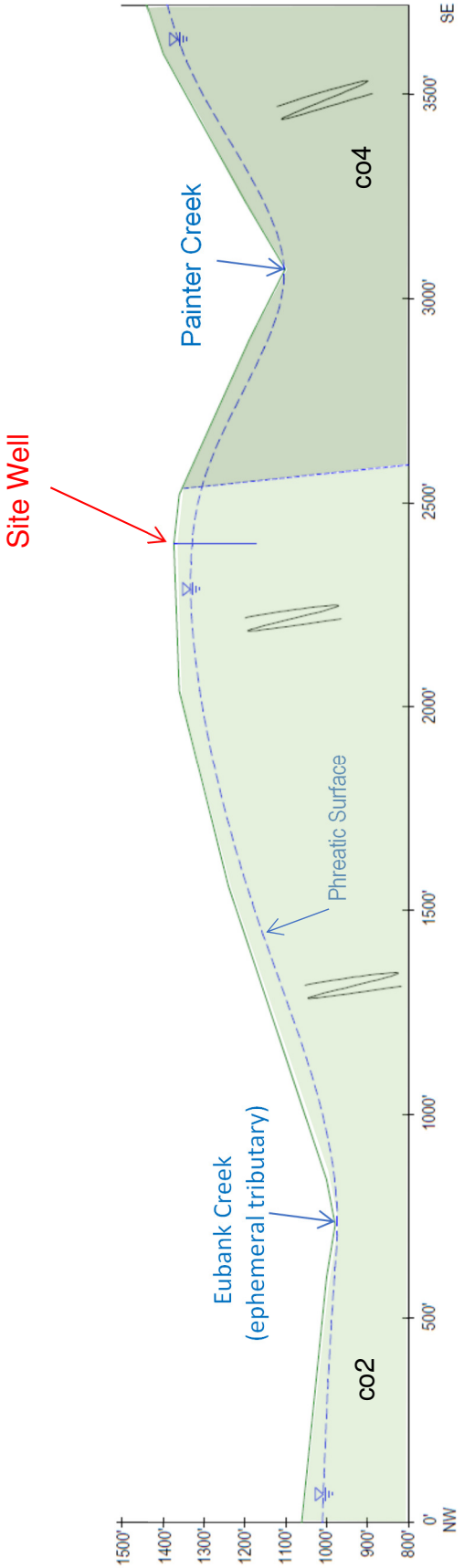
GEOLOGY OF THE CAPE MENDOCINO, EUREKA, GARBERVILLE, AND SOUTHWESTERN PART OF THE HAYFORK 30 X 60 MINUTE QUADRANGLES AND ADJACENT OFFSHORE AREA, NORTHERN CALIFORNIA (McLaughlin et al., 2000)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 5
Post Office Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(707) 442-6000	Geologic Cross Section of Well Location (locations approximate)	Not to Scale



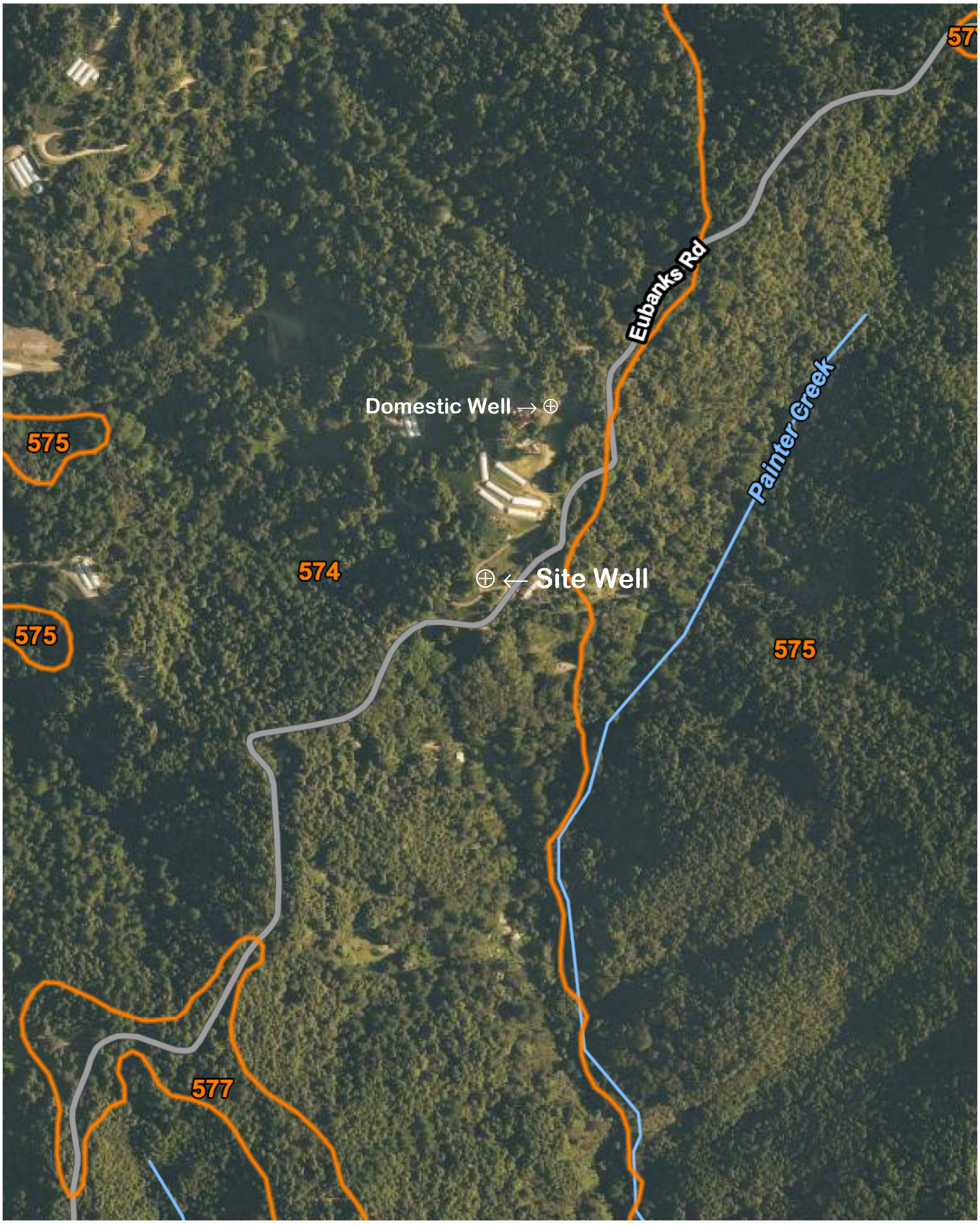
Modified from: McLaughlin et al., 2000.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 6
Post Office Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(707) 442-6000	Hydrogeologic Cross Section of Well Location (locations approximate)	1" ≈ 430'



In this cross section (no V.E.), the view is upstream, or upslope toward the northeast. Surface and groundwater flow in this cross section is toward the reader, or out of the page. Groundwater is presumed to flow from recharge areas in the high ground to the northeast, to the southwest toward the domestic Mattole River (Figure 1). Bedrock subgrade is composed of mélange with subequal amounts of sandstone and argillite (co2) and intact sandstone with argillite (co4). These deposits are one component of the Coastal Belt Franciscan Complex.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	1000 Eubanks Road, Whitethorn, California	July 25, 2022
Cutten, CA 95534	APN 220-082-020, Healing Sun MBC, Mr. Leif Stafslien, Client	Project 0471.00
(707) 442-6000	ISDA-NRCS Soil Map of Well Location (locations approximate)	Not to Scale



Modified from: USG-NRCS Web Soil Survey, July 21, 2022 N ≈

State of California

Well Completion Report

Form DWR 188 Complete 12/13/2020

WCR2020-014622

Owner's Well Number | Date Work Began 10/05/2020 | Date Work Ended 10/14/2020

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

Secondary Permit Agency | Permit Number 18/19-1012 | Permit Date 04/26/2019

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 1000 Eubanks RD

City Whitethorn Zip 95589 County Humboldt

Latitude 40 Deg. 5 Min. 8.0556 Sec. N Longitude -123 Deg. 57 Min. 57.3732 Sec. W

Dec. Lat. 40.085571 Dec. Long. -123.965937

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 220-082-020

Township 04 S

Range 02 E

Section 28

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary 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 48 (Feet below surface)

Depth to Static Water Level 45 (Feet) Date Measured 10/14/2020

Estimated Yield* 6 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 152 (feet)

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

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	3	top soil
3	16	soft brown sandstone
16	34	shale
34	88	blue sandstone
88	157	sandstone shale mix
157	200	soft 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	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			
1	40	200	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	200	Filter Pack	Other Gravel Pack	3/8 inch	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: 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) | 10/14/2020 (Date Signed) | 683865 (C-57 License Number)

Attachments

scan.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:

ORIGINAL
File with DWR

JUN 0 1 2017

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 1087876

DWR USE ONLY — DO NOT FILL IN
04S/02E-28
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Page ___ of ___
Owner's Well No. 1
Date Work Began 4-18-17, Ended 4-18-17
Local Permit Agency Humb
Permit No. 16/17 0837 Permit Date 3-7-17

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Rotary FLUID ___

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	50	Soft BRN Rock
50	90	HRD BRN Shaley Rock
90	150	HRD gry Shale
150	160	HRD BLU Sand Stone
160	200	Blue gry Shale

TOTAL DEPTH OF BORING 200 (Feet)
TOTAL DEPTH OF COMPLETED WELL 200 (Feet)

WELL LOCATION

Address 1000 J BANKS
City Whitethorne
County Humbt
APN Book ___ Page ___ Parcel 220 082 020
Township ___ Range ___ Section ___
Lat ___ DEG. ___ MIN. ___ SEC. N
Long ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH

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 & COMPLETE.***

ACTIVITY (✓)

✓ NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

USES (✓)

WATER SUPPLY
___ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 170 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 170 (Ft.) & DATE MEASURED 4-18-17
ESTIMATED YIELD * 15 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN ___ (Ft.)
** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	160	9	✓				F480	5"	Sch 160	
160	200			✓			"	"	"	.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	20		✓		
20	200				3/8 Pea

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 Bushnell Enterprises (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 649 Bearcreek rd CITY Garb STATE CA ZIP 95542
Signed [signature] C-57 LICENSED WATER WELL CONTRACTOR DATE SIGNED 5-24-17 C-57 LICENSE NUMBER 403708

DWR 188 REV. 05-03

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

OSP 03 78836

ORIGINAL
File with DWR

JUN 0 1 2017

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 1087874

DWR USE ONLY — DO NOT FILL IN
04S/02E-29
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Page ___ of ___
Owner's Well No. 1
Date Work Began April 15, 17 Ended 4-15-17
Local Permit Agency Humbt
Permit No. 16/17 0859 Permit Date March 10, 17

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Rotary FLUID ___

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	10	Top Soil
10	30	Soft Brn Rock
30	80	B/U Shale
80	120	Hrd gry Shale
120	140	B/U Shale

TOTAL DEPTH OF BORING 140 (Feet)
TOTAL DEPTH OF COMPLETED WELL 140 (Feet)

WELL OWNER

WELL LOCATION

Address 575 Ubanks RD
City Ettersburg CA 9
County Humbt
APN Book ___ Page ___ Parcel 220-171-002
Township ___ Range ___ Section ___
Lat ___ DEG. ___ MIN. ___ SEC. N
Long ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH

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 & COMPLETE.***

ACTIVITY (✓)

✓ NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

USES (✓)
WATER SUPPLY
✓ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 120 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 118 (Ft.) & DATE MEASURED 4-15-17
ESTIMATED YIELD * 8 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN ___ (Ft.)
* *May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	120	9	✓				F480	5"	Sch 160	
120	140			✓			"	"	"	.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	20		✓		
20	140				3/8 Pea

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 Bushnell Enterprises (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 649 Bear Creek RD CITY Garb STATE CA ZIP 95542
Signed [signature] C-57 LICENSED WATER WELL CONTRACTOR
DATE SIGNED 5-24-17 C-57 LICENSE NUMBER 403708

DWR 188 REV. 05-03 IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM OSP 03 78836

ORIGINAL
File with DWR

JUN 0 1 2017

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 1087875

DWR USE ONLY — DO NOT FILL IN
04S/02E-21
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Page ___ of ___
Owner's Well No. 2
Date Work Began 4-17-17 Ended 4-17-17
Local Permit Agency Humbt
Permit No. None Permit Date MARCH 10. 17

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Rotary FLUID ___

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	20	Soft Brn Rock
20	80	Hrd Brn Rock
80	120	Blu Shale

TOTAL DEPTH OF BORING 120 (Feet)
TOTAL DEPTH OF COMPLETED WELL 120 (Feet)

WELL OWNER

CITY Eubanks STATE ZIP

WELL LOCATION

Address 575 Ejobank RD
City Whitethorne VP
County ___
APN Book ___ Page ___ Parcel 220 081 012
Township ___ Range ___ Section ___
Lat ___ DEG. ___ MIN. ___ SEC. N
Long ___ DEG. ___ MIN. ___ SEC. W

LOCATION SKETCH

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 & COMPLETE.***

ACTIVITY (✓)

✓ NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

USES (✓)

WATER SUPPLY
✓ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 80 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 80 (Ft.) & DATE MEASURED 4-17-17
ESTIMATED YIELD * 10 (GPM) & TEST TYPE Air lift
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN ___ (Ft.)
** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	80	9"	✓				F480	5"	Sch 160	
80	120	1		✓			11	11	11	032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	20		✓		
20	120				3/8 Pea

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 Bushnell Enterprises (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 649 Bearcreek rd CITY Garb STATE CA ZIP 95542
Signed [signature] C-57 LICENSED WATER WELL CONTRACTOR
DATE SIGNED 5-27-17 C-57 LICENSE NUMBER 403708

DWR 188 REV. 05-03 IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM OSP 03 78836

Humboldt County, South Part, California

574—Sproulish-Canoecreek-Redwohly complex, 30 to 50 percent slopes, warm

Map Unit Setting

National map unit symbol: 2ml27
Elevation: 100 to 3,280 feet
Mean annual precipitation: 60 to 100 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Sproulish, warm, and similar soils: 50 percent
Canoecreek, warm, and similar soils: 20 percent
Redwohly, warm, and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sproulish, Warm

Setting

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

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 6 inches: gravelly silt loam
Bt1 - 6 to 13 inches: paragravelly clay loam
Bt2 - 13 to 21 inches: gravelly loam
Bt3 - 21 to 47 inches: clay loam
Bt4 - 47 to 63 inches: paragravelly silty clay loam
Bt5 - 63 to 79 inches: paragravelly silty clay loam

Properties and qualities

Slope: 30 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 low to high (0.06 to 2.00 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 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F004BJ101CA - Fog-influenced, low elevation slopes and footslopes
Hydric soil rating: No

Description of Canoecreek, Warm

Setting

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

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 9 inches: gravelly loam
Bw1 - 9 to 15 inches: very cobbly loam
Bw2 - 15 to 31 inches: extremely cobbly loam
Bw3 - 31 to 49 inches: very cobbly sandy loam
C - 49 to 71 inches: extremely stony loamy sand

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 1.0 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 to high (0.60 to 2.00 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: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Description of Redwohly, Warm

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and/or residuum weathered from mudstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 5 inches: paragravelly loam
Bt1 - 5 to 16 inches: very paragravelly loam
Bt2 - 16 to 33 inches: extremely paragravelly loam
C - 33 to 63 inches: paragravel

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 20 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 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: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F004BJ101CA - Fog-influenced, low elevation slopes and footslopes
Hydric soil rating: No

Minor Components

Crazycoyote

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Caperidge, warm

Percent of map unit: 4 percent

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Canoecreek

Percent of map unit: 4 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 10, Sep 6, 2021

Humboldt County, South Part, California

575—Canoecreek-Sproulish-Redwohly complex, 50 to 75 percent slopes, warm

Map Unit Setting

National map unit symbol: 2ml28
Elevation: 100 to 3,280 feet
Mean annual precipitation: 59 to 100 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Canoecreek, warm, and similar soils: 45 percent
Sproulish, warm, and similar soils: 25 percent
Redwohly, warm, and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canoecreek, Warm

Setting

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

Typical profile

Oi - 0 to 4 inches: gravelly slightly decomposed plant material
A - 4 to 13 inches: very gravelly loam
Bw1 - 13 to 30 inches: very gravelly loam
Bw2 - 30 to 47 inches: very gravelly loam
Bw3 - 47 to 61 inches: very gravelly loam
Bw4 - 61 to 71 inches: very gravelly loam

Properties and qualities

Slope: 50 to 75 percent
Surface area covered with cobbles, stones or boulders: 1.0 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 to high (0.60 to 2.00 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: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Description of Sproulish, Warm

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 mudstone and/or colluvium derived from sandstone and/or residuum weathered from mudstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 8 inches: gravelly loam
Bt1 - 8 to 16 inches: loam
Bt2 - 16 to 35 inches: loam
Bt3 - 35 to 55 inches: loam
Bt4 - 55 to 79 inches: gravelly loam

Properties and qualities

Slope: 50 to 75 percent
Surface area covered with cobbles, stones or boulders: 0.0 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 to high (0.20 to 2.00 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 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Description of Redwohly, Warm

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and/or residuum weathered from mudstone

Typical profile

A - 0 to 8 inches: gravelly loam
Bt - 8 to 30 inches: very paragravelly loam
C - 30 to 79 inches: paragravel

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 20 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 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: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F004BJ102CA - Dry, steep mountain slopes
Hydric soil rating: No

Minor Components

Crazycoyote

Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Caperidge, warm

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop

Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Rock outcrop
Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 10, Sep 6, 2021