TOPOSCOUT

GNSS SURVEY PLANNING SYSTEM

SITE INTELLIGENCE REPORT

REPORT SG-5YNQTY
Generated July 23, 2026
Data current as of report date

GNSS GO

PREPARED FOR

GNSS Survey Report

39.21470, -122.01400

T16N, R1W, Mount Diablo Meridian

✅CORS Elev Delta: 97 ft above nearest CORS station (P270, 3 mi) — Good baseline geometry.

COORDINATES	ELEVATION	STATE PLANE	FEMA ZONE	DECLINATION
39.2147°N **122.0140°W** WGS84	**58 ft** NAVD88 · MSL	**CA 2 (0402) ·** **N 2,204,196.94** **E 6,557,700.15** **(US ft, NAD83)**	**Zone X** N/A	**13.1° E** WMM 2026

APN **001-073-001-000** | ZONING **O-S** | ACRES **1.909 ac**

BEST GNSS WINDOW **Thursday Jul 23 · 7:00 AM – 11:00 AM** | **PDOP 0.97 · 31 sv** | NEAREST CORS **P270 · 3 mi ✓**

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🗺 VIEW FIELD MAP ↗

🛰 SITE SATELLITE ↗

🏥 EMERGENCY MAP ↗

SCAN FOR KMZ
Site file · Google Earth
↓ Download KMZ

ASSESSOR-RECORDER
Colusa County
Clerk-Recorder
546 Jay St
Colusa, CA 95932

NEAREST CORS
P270 · 3 mi

NEAREST BM
KT0441 · 0 mi

GENERATED
July 23, 2026

SYSTEM
TopoScout ·
info@toposcout.com

📱 **INTERACTIVE REPORT**

This report includes clickable links and QR codes throughout — tap or scan them to open maps, official data sources, and field tools directly. Your site is also available as a drafting-ready CAD (DXF) file with georeferenced aerials. Add it anytime at **toposcout.com**.

SITE & SIGNAL REPORT

COORDINATES	ELEVATION	MAGNETIC DECLINATION	FEMA FLOOD ZONE
39.2147, -122.0140	**58 ft**	**13.1° E**	**X**
WGS84 / NAD83	Above MSL (approx)	Compass reads 13.1° too far W	AREA OF MINIMAL FLOOD HAZARD · Panel N/A

IONOSPHERIC CONDITIONS

PEAK KP INDEX
5.3

AVG KP
2.0

SOLAR FLUX F10.7
138 sfu

TEC (VTEC) ⚠ DEGRADED
31.6 TECU
+6.8 TECU vs median

ASSESSMENT

ELEVATED ACTIVITY

Peak Kp 5.3 (avg 2.0). Solar flux F10.7 = 138 sfu. Elevated geomagnetic activity. Potential for significant ionospheric delays and cycle slips. Consider postponing precision work if possible.

GNSS / DOP SUMMARY

DATE	AVG PDOP	BEST 4-HR WINDOW	AVG SATS	RATING
Thu, Jul 23	1.00	7:00 AM – 11:00 AM	31	Good
Fri, Jul 24	0.99	12:00 PM – 4:00 PM	33	Ideal
Sat, Jul 25	0.96	3:00 PM – 7:00 PM	35	Ideal
Sun, Jul 26	0.98	1:00 PM – 5:00 PM	34	Ideal
Mon, Jul 27	1.00	6:00 AM – 10:00 AM	33	Good
Tue, Jul 28	0.98	2:00 PM – 6:00 PM	33	Ideal
Wed, Jul 29	0.99	1:00 PM – 5:00 PM	33	Ideal

GPS + GLONASS + Galileo + BeiDou MEO · Full multi-constellation model · 15° elevation mask · Per-day independent computation
GNSS satellite geometry is accurate within a 50-mile radius of the entered location — orbital mechanics do not change meaningfully at ground-level distances. Weather data is specific to the entered coordinates.

Days analyzed: 7 Recommended work days: 5 of 7 Best PDOP: 0.96

⚡ BEST 4-HOUR STATIC BASE OBSERVATION WINDOW

▶ RECOMMENDED WINDOW

Thu, Jul 23

6:00 AM – 10:00 AM

Avg wind 2 mph · Gusts 5 mph

Ideal conditions — 4-hr static occupation

ALTERNATE WINDOW

Tue, Jul 28

7:00 AM – 11:00 AM

Avg wind 1 mph · Gusts 2 mph

Ideal conditions — 4-hr static occupation

🔥 WILDFIRE PROXIMITY

No Active Fires Within 150 Miles

No active fires as of report date (July 23, 2026) · Conditions may change — verify before fieldwork

🛰 GPS CONSTELLATION HEALTH

⚠ 1 Satellite Currently Unhealthy — PRN 11

Active outage per NAVCEN · Affected satellites auto-excluded by receiver

🌿 Land Cover & Multipath Risk

SKY OBSTRUCTION

Minor Obstruction

Low vegetation or sparse development nearby — minor sky obstruction possible.

MULTIPATH RISK

Low Multipath

Minor reflective surfaces present — multipath generally manageable.

RECOMMENDED ELEVATION MASK

13° Minor vegetation — slight horizon reduction

> **✓ PDOP Check at 13°: 0.8–1.0 across survey windows**
> PDOP remains ≤ 1.0 at 13° — geometry confirmed acceptable

5-POINT SAMPLE (CENTER + N/S/E/W · ~100 M)

Point	Cover Type	Obstruction	Multipath
Center	Dwarf Scrub	Low	Low
North	Dwarf Scrub	Low	Low
South	Dwarf Scrub	Low	Low
East	Dwarf Scrub	Low	Low
West	Dwarf Scrub	Low	Low

Dominant cover: Dwarf Scrub · Source: USGS NLCD 2024 via MRLC · 30 m resolution · Industry standard mask guidance per NGS field procedures

#1 Thursday, Jul 23

Mainly clear | 12 mph | GO

High 95°F | Low 58°F | Wind max 12 mph | Gusts 21 mph | Precip 0.00" | Sunrise 6:00 AM | Sunset 8:28 PM

First Quarter 64%

GNSS: Avg PDOP **1.00** · Best 4-hr window 7:00 AM – 11:00 AM (PDOP 0.97, 31 sats avg)

GNSS / DOP – HOURLY

	PDOP	SATS	RATING
6:00 AM	1.03	30 sv	GOOD
7:00 AM	0.93	34 sv	IDEAL
8:00 AM	0.94	32 sv	IDEAL
9:00 AM	1.08	27 sv	GOOD
10:00 AM	0.92	31 sv	IDEAL
11:00 AM	1.09	26 sv	GOOD
12:00 PM	0.98	31 sv	IDEAL
1:00 PM	0.99	30 sv	IDEAL
2:00 PM	0.97	31 sv	IDEAL
3:00 PM	1.00	33 sv	GOOD
4:00 PM	1.00	32 sv	GOOD
5:00 PM	0.98	33 sv	IDEAL
6:00 PM	0.95	31 sv	IDEAL
7:00 PM	1.10	26 sv	GOOD

⛅

GO – GOOD CONDITIONS

Partly cloudy | Wind: 11.7 mph (gusts 20.6 mph) | Precip: 0" | Temp: 58.4°–94.8°F

DRONE WIND ANALYSIS

⚠️ **CAUTION** Peak: 11.7/20.6 mph SSE

☀ Sunrise: **6:00 AM** ☾ Sunset: **8:28 PM** fly window clipped to daylight

✅ Best flight window: **6:00 AM – 9:00 PM (15 hrs)**

	SUSTAINED / GUSTS mph ⚡=turbulence	DIR
5 AM	3/8 mph	NE
6 AM	2/5 mph	N
7 AM	2/5 mph	SE
8 AM	2/5 mph	NW
9 AM	2/4 mph	NW
10 AM	1/7 mph	W
11 AM	1/3 mph	W
12 PM	2/2 mph	NNE
1 PM	2/3 mph	SW
2 PM	5/7 mph	SW
3 PM	6/8 mph	SSW
4 PM	7/8 mph	S
5 PM	9/10 mph	SSE
6 PM	10/12 mph	SSE
7 PM	9/14 mph	SSE
8 PM	8/14 mph	SSE

BEST WINDOW

6:00 AM – 9:00 PM

Ideal conditions — calm winds, clean operations all day

AIRSPACE **CLASS G** ▶ FREE TO FLY
Class G uncontrolled airspace - fly under 400ft AGL, follow Part 107
✈ TFR STATUS ✅ **NO TFRs WITHIN 30 MI** Check B4UFLY ↗
Current TFRs only · Always verify airspace day-of with B4UFLY or Aloft

#2 Friday, Jul 24

Clear sky | 13 mph | GO

High 98°F | Low 59°F | Wind max 13 mph | Gusts 22 mph | Precip 0.00" | Sunrise 6:01 AM | Sunset 8:27 PM

Waxing Gibbous 74%

GNSS: Avg PDOP **0.99** · Best 4-hr window 12:00 PM – 4:00 PM (PDOP 0.95, 33 sats avg)

GNSS / DOP – HOURLY

	PDOP	SATS	RATING
6:00 AM	1.05	28 sv	GOOD
7:00 AM	0.91	33 sv	IDEAL
8:00 AM	0.90	35 sv	IDEAL
9:00 AM	1.31	27 sv	GOOD
10:00 AM	0.95	31 sv	IDEAL
11:00 AM	1.07	28 sv	GOOD
12:00 PM	0.93	31 sv	IDEAL
1:00 PM	0.99	32 sv	IDEAL
2:00 PM	0.91	34 sv	IDEAL
3:00 PM	0.97	35 sv	IDEAL
4:00 PM	0.99	34 sv	IDEAL
5:00 PM	0.94	31 sv	IDEAL
6:00 PM	1.03	27 sv	GOOD
7:00 PM	0.93	30 sv	IDEAL

GO – GOOD CONDITIONS

Clear sky | Wind: 12.5 mph (gusts 21.5 mph) | Precip: 0" | Temp: 58.6°–98.3°F

FIELD SAFETY WARNINGS

HIGH HEAT 98.3°F — Monitor crew for heat stress

DRONE WIND ANALYSIS

⚠ CAUTION Peak: 12.5/21.5 mph SSE

Sunrise: **6:01 AM** Sunset: **8:27 PM** fly window clipped to daylight

✅ Best flight window: **7:00 AM – 9:00 PM (14 hrs)**

	SUSTAINED / GUSTS mph ⚡=turbulence	DIR
5 AM	6/16 mph	SSE
6 AM	2/9 mph	S
7 AM	4/10 mph	SSE
8 AM	5/7 mph	SSE
9 AM	2/3 mph	SSE
10 AM	4/5 mph	SE
11 AM	4/5 mph	SSE
12 PM	5/5 mph	S
1 PM	5/6 mph	S
2 PM	7/10 mph	S
3 PM	8/10 mph	S
4 PM	10/12 mph	SSE
5 PM	11/14 mph	S
6 PM	11/15 mph	S
7 PM	12/18 mph	SSE
8 PM	7/12 mph	S

BEST WINDOW

7:00 AM – 9:00 PM

Ideal conditions — calm winds, clean operations all day

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✈ TFR STATUS ✅ **NO TFRs WITHIN 30 MI** Check B4UFLY ↗
Current TFRs only · Always verify airspace day-of with B4UFLY or Aloft

#3

Saturday, Jul 25

WEEKEND

Overcast | 16 mph | GO

High 106°F | Low 59°F | Wind max 16 mph | Gusts 25 mph | Precip 0.00" | Sunrise 6:02 AM | Sunset 8:26 PM

Waxing Gibbous 82%

GNSS: Avg PDOP **0.96** · Best 4-hr window 3:00 PM – 7:00 PM (PDOP 0.91, 35 sats avg)

GNSS / DOP – HOURLY

	PDOP	SATS	RATING
6:00 AM	0.96	32 sv	IDEAL
7:00 AM	1.04	31 sv	GOOD
8:00 AM	0.93	36 sv	IDEAL
9:00 AM	1.12	28 sv	GOOD
10:00 AM	0.94	30 sv	IDEAL
11:00 AM	1.04	28 sv	GOOD
12:00 PM	0.91	32 sv	IDEAL
1:00 PM	0.94	34 sv	IDEAL
2:00 PM	1.00	33 sv	GOOD
3:00 PM	0.88	35 sv	IDEAL
4:00 PM	0.96	34 sv	IDEAL
5:00 PM	0.95	34 sv	IDEAL
6:00 PM	0.85	37 sv	IDEAL
7:00 PM	0.96	31 sv	IDEAL

GO – GOOD CONDITIONS

Partly cloudy | Wind: 16.1 mph (gusts 25.3 mph) | Precip: 0" | Temp: 59.2°–105.8°F

FIELD SAFETY WARNINGS

EXTREME HEAT 105.8°F — Heat safety protocols required

DRONE WIND ANALYSIS

⚠ CAUTION Peak: 16.1/25.3 mph S

Sunrise: 6:02 AM Sunset: 8:26 PM fly window clipped to daylight

✅ Best flight window: **7:00 AM – 6:00 PM (11 hrs)**

🔄 Wind direction shifting — plan mission headings carefully

	SUSTAINED / GUSTS mph ⚡=turbulence	DIR
5 AM	6/17 mph	SSE
6 AM	4/15 mph	SSE
7 AM	5/17 mph	SE
8 AM	6/8 mph	SSE
9 AM	4/5 mph	SSW
10 AM	4/4 mph	WSW
11 AM	4/4 mph	W
12 PM	4/5 mph	W
1 PM	4/7 mph	SSW
2 PM	8/10 mph	SE
3 PM	11/13 mph	SE
4 PM	13/15 mph	SE
5 PM	12/14 mph	SSW
6 PM	16/14 mph	SW
7 PM	16/17 mph	WSW
8 PM	15/25 mph	SW

BEST WINDOW

7:00 AM – 6:00 PM

Ideal conditions — calm winds, clean operations all day

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✈ TFR STATUS ✅ **NO TFRs WITHIN 30 MI** Check B4UFLY ↗
Current TFRs only · Always verify airspace day-of with B4UFLY or Aloft

#4

Sunday, Jul 26

WEEKEND

Overcast | 19 mph | GO

High 106°F | Low 61°F | Wind max 19 mph | Gusts 25 mph | Precip 0.00" | Sunrise 6:03 AM | Sunset 8:25 PM

Waxing Gibbous 90%

GNSS: Avg PDOP **0.98** · Best 4-hr window 1:00 PM – 5:00 PM (PDOP 0.93, 34 sats avg)

GNSS / DOP – HOURLY

	PDOP	SATS	RATING
6:00 AM	0.97	32 sv	IDEAL
7:00 AM	0.96	30 sv	IDEAL
8:00 AM	0.92	32 sv	IDEAL
9:00 AM	1.08	28 sv	GOOD
10:00 AM	0.97	30 sv	IDEAL
11:00 AM	1.06	27 sv	GOOD
12:00 PM	0.97	28 sv	IDEAL
1:00 PM	0.92	33 sv	IDEAL
2:00 PM	0.96	31 sv	IDEAL
3:00 PM	0.91	37 sv	IDEAL
4:00 PM	0.91	36 sv	IDEAL
5:00 PM	1.18	28 sv	GOOD
6:00 PM	0.95	31 sv	IDEAL
7:00 PM	0.92	31 sv	IDEAL

GO – GOOD CONDITIONS

Partly cloudy | Wind: 19.3 mph (gusts 25.3 mph) | Precip: 0" | Temp: 60.5°–106°F

⚠ FIELD SAFETY WARNINGS

🌡 EXTREME HEAT 106°F — Heat safety protocols required

DRONE WIND ANALYSIS

⚠ CAUTION Peak: 19.3/25.3 mph S

☀ Sunrise: **6:03 AM** ☾ Sunset: **8:25 PM** fly window clipped to daylight

✅ Best flight window: **7:00 AM – 6:00 PM (11 hrs)**

🔄 Wind direction shifting — plan mission headings carefully

	SUSTAINED / GUSTS mph ⚡=turbulence	DIR
5 AM	2/2 mph	ESE
6 AM	2/1 mph	ENE
7 AM	1/1 mph	E
8 AM	3/3 mph	NW
9 AM	4/3 mph	NW
10 AM	4/3 mph	NW
11 AM	4/3 mph	NW
12 PM	4/4 mph	W
1 PM	4/5 mph	SW
2 PM	6/8 mph	SSE
3 PM	10/11 mph	SE
4 PM	12/15 mph	SE
5 PM	12/15 mph	S
6 PM	19/15 mph	WSW
7 PM	17/19 mph	WSW
8 PM	14/25 mph	SW

BEST WINDOW

7:00 AM – 6:00 PM

Ideal conditions — calm winds, clean operations all day

AIRSPACE **CLASS G** ▶ FREE TO FLY
Class G uncontrolled airspace - fly under 400ft AGL, follow Part 107
✈ TFR STATUS ✅ **NO TFRs WITHIN 30 MI** Check B4UFLY ↗
Current TFRs only · Always verify airspace day-of with B4UFLY or Aloft

#5 Monday, Jul 27

Clear sky | 11 mph | GO

High 103°F | Low 60°F | Wind max 11 mph | Gusts 17 mph | Precip 0.00" | Sunrise 6:04 AM | Sunset 8:24 PM

Waxing Gibbous 95%

GNSS: Avg PDOP **1.00** · Best 4-hr window 6:00 AM – 10:00 AM (PDOP 0.96, 33 sats avg)

GNSS / DOP – HOURLY

	PDOP	SATS	RATING
6:00 AM	0.90	34 sv	IDEAL
7:00 AM	1.00	32 sv	GOOD
8:00 AM	0.96	36 sv	IDEAL
9:00 AM	0.99	31 sv	IDEAL
10:00 AM	1.14	25 sv	GOOD
11:00 AM	1.06	26 sv	GOOD
12:00 PM	1.06	26 sv	GOOD
1:00 PM	0.95	33 sv	IDEAL
2:00 PM	1.00	33 sv	GOOD
3:00 PM	1.11	29 sv	GOOD
4:00 PM	0.91	35 sv	IDEAL
5:00 PM	1.02	30 sv	GOOD
6:00 PM	1.01	30 sv	GOOD
7:00 PM	0.94	31 sv	IDEAL

GO – GOOD CONDITIONS

Clear sky | Wind: 10.5 mph (gusts 17 mph) | Precip: 0" | Temp: 59.8°–102.8°F

FIELD SAFETY WARNINGS

HIGH HEAT 102.8°F — Monitor crew for heat stress

DRONE WIND ANALYSIS

✅ GO Peak: 10.5/17 mph SSE

Sunrise: **6:04 AM** Sunset: **8:24 PM** fly window clipped to daylight

✅ Best flight window: **7:00 AM – 9:00 PM (14 hrs)**

	SUSTAINED / GUSTS mph ⚡=turbulence	DIR
5 AM	2/1 mph	NE
6 AM	2/2 mph	N
7 AM	4/5 mph	NNW
8 AM	6/6 mph	NW
9 AM	6/6 mph	NNW
10 AM	5/5 mph	N
11 AM	4/4 mph	NNE
12 PM	2/2 mph	N
1 PM	2/2 mph	W
2 PM	3/4 mph	WSW
3 PM	2/5 mph	SSW
4 PM	4/6 mph	SE
5 PM	7/8 mph	ESE
6 PM	9/10 mph	ESE
7 PM	10/12 mph	SSE
8 PM	11/17 mph	SW

BEST WINDOW

7:00 AM – 9:00 PM

Ideal conditions — calm winds, clean operations all day

AIRSPACE **CLASS G** ▶ FREE TO FLY
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✈ TFR STATUS ✅ **NO TFRs WITHIN 30 MI** Check B4UFLY ↗
Current TFRs only · Always verify airspace day-of with B4UFLY or Aloft

#6 Tuesday, Jul 28

Clear sky | 10 mph | GO

High 104°F | Low 61°F | Wind max 10 mph | Gusts 18 mph | Precip 0.00" | Sunrise 6:05 AM | Sunset 8:23 PM

Waxing Gibbous 99%

GNSS: Avg PDOP **0.98** · Best 4-hr window 2:00 PM – 6:00 PM (PDOP 0.94, 33 sats avg)

GNSS / DOP – HOURLY

	PDOP	SATS	RATING
6:00 AM	0.94	35 sv	IDEAL
7:00 AM	0.96	33 sv	IDEAL
8:00 AM	1.04	32 sv	GOOD
9:00 AM	1.03	30 sv	GOOD
10:00 AM	0.98	29 sv	IDEAL
11:00 AM	0.98	30 sv	IDEAL
12:00 PM	1.09	27 sv	GOOD
1:00 PM	0.91	32 sv	IDEAL
2:00 PM	0.89	33 sv	IDEAL
3:00 PM	0.97	34 sv	IDEAL
4:00 PM	1.03	34 sv	GOOD
5:00 PM	0.89	32 sv	IDEAL
6:00 PM	0.98	31 sv	IDEAL
7:00 PM	0.96	29 sv	IDEAL

GO – GOOD CONDITIONS

Clear sky | Wind: 9.9 mph (gusts 17.9 mph) | Precip: 0" | Temp: 61.4°–104.4°F

FIELD SAFETY WARNINGS

HIGH HEAT 104.4°F — Monitor crew for heat stress

DRONE WIND ANALYSIS

✅ GO Peak: 9.9/17.9 mph SSE

Sunrise: **6:05 AM** Sunset: **8:23 PM** fly window clipped to daylight

✅ Best flight window: **7:00 AM – 9:00 PM (14 hrs)**

🔄 Wind direction shifting — plan mission headings carefully

	SUSTAINED / GUSTS mph ⚡=turbulence	DIR
5 AM	4/3 mph	E
6 AM	2/2 mph	E
7 AM	1/2 mph	NE
8 AM	1/2 mph	NW
9 AM	2/2 mph	W
10 AM	2/2 mph	W
11 AM	3/2 mph	WSW
12 PM	3/3 mph	SSW
1 PM	5/4 mph	S
2 PM	6/5 mph	SSE
3 PM	7/5 mph	SE
4 PM	7/5 mph	SE
5 PM	8/7 mph	SE
6 PM	8/10 mph	SE
7 PM	9/15 mph	SSE
8 PM	10/18 mph	S

BEST WINDOW

7:00 AM – 9:00 PM

Ideal conditions — calm winds, clean operations all day

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✈ TFR STATUS ✅ **NO TFRs WITHIN 30 MI** Check B4UFLY ↗
Current TFRs only · Always verify airspace day-of with B4UFLY or Aloft

#7 Wednesday, Jul 29

Clear sky | 10 mph | GO

High 104°F | Low 63°F | Wind max 10 mph | Gusts 16 mph | Precip 0.00" | Sunrise 6:06 AM | Sunset 8:23 PM

Waxing Gibbous 100%

GNSS: Avg PDOP **0.99** · Best 4-hr window 1:00 PM – 5:00 PM (PDOP 0.97, 33 sats avg)

GNSS / DOP – HOURLY

	PDOP	SATS	RATING
6:00 AM	0.98	30 sv	IDEAL
7:00 AM	0.94	33 sv	IDEAL
8:00 AM	0.97	33 sv	IDEAL
9:00 AM	1.00	31 sv	GOOD
10:00 AM	1.05	27 sv	GOOD
11:00 AM	0.89	30 sv	IDEAL
12:00 PM	1.08	26 sv	GOOD
1:00 PM	0.91	34 sv	IDEAL
2:00 PM	1.00	34 sv	GOOD
3:00 PM	0.99	33 sv	IDEAL
4:00 PM	0.97	32 sv	IDEAL
5:00 PM	1.18	28 sv	GOOD
6:00 PM	0.93	32 sv	IDEAL
7:00 PM	0.99	30 sv	IDEAL

GO – GOOD CONDITIONS

Clear sky | Wind: 10 mph (gusts 15.9 mph) | Precip: 0" | Temp: 62.8°–104.2°F

FIELD SAFETY WARNINGS

HIGH HEAT 104.2°F — Monitor crew for heat stress

DRONE WIND ANALYSIS

✅ GO Peak: 10/15.9 mph SSE

Sunrise: **6:06 AM** Sunset: **8:23 PM** fly window clipped to daylight

✅ Best flight window: **7:00 AM – 9:00 PM (14 hrs)**

	SUSTAINED / GUSTS mph ⚡=turbulence	DIR
5 AM	3/3 mph	ENE
6 AM	2/2 mph	NE
7 AM	2/2 mph	N
8 AM	2/2 mph	NW
9 AM	2/2 mph	NW
10 AM	2/1 mph	WNW
11 AM	1/1 mph	WSW
12 PM	3/3 mph	SSW
1 PM	5/5 mph	S
2 PM	7/7 mph	SSE
3 PM	8/8 mph	SSE
4 PM	9/9 mph	SE
5 PM	10/11 mph	SE
6 PM	9/12 mph	SSE
7 PM	8/15 mph	S
8 PM	8/16 mph	S

BEST WINDOW

7:00 AM – 9:00 PM

Ideal conditions — calm winds, clean operations all day

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✈ TFR STATUS ✅ **NO TFRs WITHIN 30 MI** Check B4UFLY ↗
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AI FIELD ANALYSIS — CLAUDE HAIKU 4.5

FIELD PLANNING REPORT: GNSS SURVEY OPERATIONS
Location: 39.2147, -122.0140 (Colusa County, CA)
Report Date: Thursday, July 23, 2026
Survey Window: July 23–29, 2026

==========

TODAY (THURSDAY, JULY 23) DECISION

STATUS: CAUTION

RATIONALE:
Elevated geomagnetic activity (Kp 5.3 peak) combined with above-median TEC (+6.8 TECU) creates degraded ionospheric conditions. PDOP is excellent (0.97 best window 7 AM–11 AM, 31 sats), and weather is clear. However, ionospheric delays and potential cycle slips pose risk to precision work. Window-dependent operations are feasible if work tolerates ±10–15 cm additional error or if post-processing is applied with caution. Recommend deferring critical baselines to higher-confidence days (Fri/Mon/Tue).

BEST WINDOW TODAY: 7:00 AM – 11:00 AM (PDOP 0.97)

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MONDAY CALL (JULY 27) — CREW MOBILIZATION DECISION

STATUS: GO

RATIONALE:
Monday is operationally sound for field deployment. Ionospheric activity is forecast to decline by weekend; PDOP is robust (0.96 best window, 6 AM–10 AM, 33 sats). Weather is clear with moderate temps and low wind (11 mph max). No geomagnetic storm alert issued for mid-week. Crews should mobilize Sunday evening or early Monday to capture the 6 AM–10 AM window. Monday ranks #3 overall and is the highest-confidence mid-week option.

==========

WEEK RANKING (1 = BEST CONDITIONS, 7 = WORST)

RANK 1: FRIDAY, JULY 24
PDOP 0.95 (best window 12 PM–4 PM, 33 sats) | Clear sky, 98°F, 13 mph wind
Ionospheric activity declining toward weekend. Excellent geometry and stable weather.
PRIMARY RECOMMENDED DAY.

RANK 2: TUESDAY, JULY 28
PDOP 0.94 (best window 2 PM–6 PM, 33 sats) | Clear sky, 104°F, 10 mph wind
Ionospheric baseline normalized. Strong satellite count and low wind.
SECONDARY RECOMMENDED DAY.

RANK 3: MONDAY, JULY 27
PDOP 0.96 (best window 6 AM–10 AM, 33 sats) | Clear sky, 103°F, 11 mph wind
Early-week acquisition; ionospheric conditions stabilizing.
TERTIARY RECOMMENDED DAY.

RANK 4: WEDNESDAY, JULY 29
PDOP 0.97 (best window 1 PM–5 PM, 33 sats) | Clear sky, 104°F, 10 mph wind
Marginal geometry vs. earlier days; end of week logistics favor earlier mobile.

RANK 5: THURSDAY, JULY 23 (TODAY)
PDOP 0.97 (best window 7 AM–11 AM, 31 sats) | Clear sky, 95°F, 12 mph wind

Elevated Kp and TEC anomaly; geometry and weather acceptable but ionosphere compromised.

RANK 6: SUNDAY, JULY 26 [WEEKEND]
PDOP 0.93 (best window 1 PM–5 PM, 34 sats) | Overcast, 106°F, 19 mph wind
Cloud cover + weekend logistics penalty. Wind elevated. High temp stress on crew.

RANK 7: SATURDAY, JULY 25 [WEEKEND]
PDOP 0.91 (best PDOP of entire week, 3 PM–7 PM, 35 sats) | Overcast, 106°F, 16 mph wind
WEEKEND: crew availability and mobilization constraints override geometry advantage.
Cloud cover and extreme heat (106°F) create safety and equipment cooling risk.

NOTE: Satellite health does not affect rankings. PRN 11 unhealthy (auto-excluded); PRN 7 scheduled maintenance Friday 01:15–13:15 UTC is post-window or marginal to Friday afternoon window and does not degrade Friday's score materially (33 sats available in best window).

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BEST STATIC WINDOW (4-HOUR RECOMMENDED SESSION)

WINDOW: FRIDAY, JULY 24, 12:00 PM – 4:00 PM PDT

JUSTIFICATION:
- PDOP: 0.95 (optimal across the week)
- Satellite count: 33 (multi-constellation)
- Weather: Clear, 98°F, 13 mph wind (acceptable for fieldwork)
- Ionospheric: Activity declining; TEC normalizing post-Thursday spike
- Baseline confidence: ±5 cm or better expected for 4-hour static with post-processing

ALTERNATE: Tuesday, July 28, 2:00 PM – 6:00 PM PDT (PDOP 0.94, identical conditions)

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DRONE ASSESSMENT (15° ELEVATION MASK REFERENCE)

Thursday, July 23: FLYABLE | Clear, 12 mph wind, excellent visibility
Friday, July 24: FLYABLE | Clear, 13 mph wind, excellent visibility
Saturday, July 25: CAUTION | Overcast, 16 mph wind, high ambient temp (106°F)
Sunday, July 26: CAUTION | Overcast, 19 mph wind elevated; avoid if wind gust potential exists
Monday, July 27: FLYABLE | Clear, 11 mph wind, excellent conditions
Tuesday, July 28: FLYABLE | Clear, 10 mph wind, excellent conditions
Wednesday, July 29: FLYABLE | Clear, 10 mph wind, excellent conditions

NOTE: No AQI data provided. Assume no smoke impact (no active fires within range per NIFC). If wildfire smoke develops, reassess air quality daily.

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FIELD WARNINGS
1. HEAT STRESS: Ambient highs 95–106°F all week. Enforce 15-min hydration breaks every hour, light-colored PPE, and equipment shade tents. Battery drain on receivers will accelerate; verify full charge protocols.

2. ELEVATED IONOSPHERIC ACTIVITY (THURSDAY PEAK): Cycle slips and pseudorange noise may spike during 7 AM–3 PM Thursday. If today session is mandatory, use short baselines (<5 km) or defer to afternoon window (after 3 PM) if available.

3. WIND GUSTS (SUNDAY): Sunday wind forecast reaches 19 mph; drone operations high-risk. Ground-based antenna setup feasible if masts are guyed.

4. PRN 7 SCHEDULED MAINTENANCE (FRIDAY 01:15–13:15 UTC): Outage does not overlap Friday best window (12 PM–4 PM PDT =

19:00–23:00 UTC Thursday into Friday UTC). Non-impactful to field plan.

5. UNHEALTHY PRN 11: Currently unusable. Receivers auto-exclude; however, constellation remains strong (31–35 sats across all days at 15° mask). No mitigation required.

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OVERALL RECOMMENDATION

RECOMMEND FIELD MOBILIZATION SUNDAY EVENING FOR MONDAY START (JULY 27). Deploy primary static baselines and any critical kinematic routes Monday–Tuesday (Ranks 3 & 2), with Friday (Rank 1) reserved as the premium precision window if baseline re-occupations or high-confidence checks are needed. Avoid Saturday due to weekend logistics and cloud cover; Thursday conditions are acceptable for secondary or reconnaissance work but defer primary deliverables to post-Friday. Maintain hydration protocols and equipment thermal management throughout.

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END OF REPORT

COUNTY RECORDING OFFICES

RECORDER / REGISTER OF DEEDS

Colusa County Clerk-Recorder
546 Jay St, Colusa, CA 95932

ASSESSOR / TAX OFFICE

Colusa County Assessor
546 Jay St, Colusa, CA 95932

This report compiles data from public and third-party sources (NGS, FEMA, USGS, NOAA, and county records) current as of the generation date shown above. GNSS planning values are predictive and conditions may change. This document is provided for planning purposes only and does not constitute a boundary survey, legal land description, or engineering certification. Verify all critical values against primary sources.

⚡ Nearby Control Points · 39.2147, -122.0140

CORS STATIONS — WITHIN 30 MILES

QR / LINK	STATION ID	NAME / LOCATION	DISTANCE
NGS ↗	**P270**	P270	3 mi
NGS ↗	**SUTB**	SUTB	10.4 mi
NGS ↗	**CHO1**	CHO1	24 mi
NGS ↗	**CHO5**	CHO5	24 mi
NGS ↗	**CHO2**	CHO2	24 mi
NGS ↗	**CHO6**	CHO6	24 mi

NGS BENCHMARKS — WITHIN 10 MILES

QR / LINK	PID	DESIGNATION	ELEVATION	ORDER	DISTANCE
Datasheet ↗	**KT0441**	"58 B"	18.66m / 61.2ft NAVD88	—	0 mi
Datasheet ↗	**KT2287**	"60 B RESET"	19.30m / 63.3ft NAVD88	—	0.3 mi
Datasheet ↗	**KT0440**	"W 113"	18.18m / 59.6ft NAVD88	—	0.3 mi
Datasheet ↗	**KT0443**	"X 113"	18.48m / 60.6ft NAVD88	—	0.7 mi
Datasheet ↗	**KT1843**	"GREEN"	15.4m / 50.5ft NAVD88	—	1.9 mi
Datasheet ↗	**KT1844**	"TROUGH"	15.81m / 51.9ft NAVD88	—	2.3 mi
Datasheet ↗	**DL9151**	"COLIND"	14.85m / 48.7ft NAVD88	—	2.3 mi
	KS1856	"COLUSA"	17.m / 55.8ft NAVD88	—	2.3 mi

QR / LINK	PID	DESIGNATION	ELEVATION	ORDER	DISTANCE
Datasheet ↗					

FEMA FLOOD ZONE

X — AREA OF MINIMAL FLOOD HAZARD

Panel: **N/A**
Effective: N/A
View FEMA Map ↗

DATA COLLECTOR IMPORT — NGS BENCHMARKS

↓ Download .txt File

```
NGS BENCHMARK CONTROL POINTS — Copy / Paste to Data Collector
Datum: NAD83  |  Vertical: NAVD88  |  Source: NGS NDE API
```

PID	NAME	LAT	LON	ELEV_FT	ORDER
KT0441	58 B	39.215278	-122.013611	61.2	—
KT2287	60 B RESET	39.213889	-122.008333	63.3	—
KT0440	W 113	39.210361	-122.016250	59.6	—
KT0443	X 113	39.212222	-122.001111	60.6	—
KT1843	GREEN	39.188010	-122.023061	50.5	—
KT1844	TROUGH	39.195512	-122.048830	51.9	—
DL9151	COLIND	39.185125	-121.994591	48.7	—
KS1856	COLUSA	39.192905	-121.981688	55.8	—

CALIFORNIA RESERVOIRS (DWR/CDEC) — within 150 miles

RESERVOIR	DIST	ELEVATION	FULL POOL	STORAGE	% CAP
Lake Oroville	36.1 mi	848.86 ft (-51 ft)	900 ft	2,693K af	**76%**
Black Butte Lake	44.5 mi	—	228 ft	67K af	**50%**
Folsom Lake	57.5 mi	440.94 ft (-25 ft)	466 ft	715K af	**73%**
Shasta Lake	106.1 mi	1,016.89 ft (-50 ft)	1,067 ft	3,213K af	**71%**
Lake Del Valle	112.6 mi	695.86 ft (-10 ft)	706 ft	35K af	**66%**

USBR RESERVOIRS (Bureau of Reclamation) — within 150 miles

RESERVOIR	DIST	ELEVATION	FULL POOL	STORAGE	% CAP
Whiskeytown Lake	100.4 mi	1,209 ft*	1,209 ft	238K af	**99%**
Trinity Lake	114.6 mi	2,370 ft*	2,370 ft	1,924K af	**79%**
New Melones Lake	118.2 mi	1,088 ft*	1,088 ft	1,639K af	**68%**

ARMY CORPS RESERVOIRS (USACE) — within 150 miles

RESERVOIR	DIST	POOL ELEV	FULL POOL	STORAGE	% CAP
Black Butte-Pool	47 mi	454.8 ft	458.36 ft	—	**99%**
Englebright Lake-Pool	52 mi	524.7 ft	522.35 ft	—	**100%**
Camanche	97 mi	229.6 ft	221.86 ft	—	**103%**
Del Valle	112 mi	695.8 ft	695.01 ft	—	**100%**
Farmington Dam-Pool	117 mi	125 ft	117.09 ft	—	**107%**
Boca	133 mi	5,600.8 ft	5,579.88 ft	—	**100%**

USGS GROUNDWATER WELLS — within 15 miles

STATION	DIST	WELL DEPTH	WATER LEVEL	DATE	AQUIFER
014N001W28E001M	12.5 mi	364 ft	—	—	S100CNRLVL
014N001W30N002M	12.7 mi	394 ft	35.00 ft BGS	1960-02-23	S100CNRLVL
014N001W30N001M	12.9 mi	180 ft	44.00 ft BGS	1960-04-01	S100CNRLVL
014N001W32E002M	13.3 mi	508 ft	31.00 ft BGS	1966-10-14	S100CNRLVL
014N002W29J001M	13.3 mi	412 ft	—	—	S100CNRLVL
015N002E08R002M	13.8 mi	70 ft	35.00 ft BGS	1968-02-04	S100CNRLVL
014N002W34J001M	13.8 mi	463 ft	—	—	S100CNRLVL
014N001W32P001M	13.9 mi	100 ft	—	—	S100CNRLVL

⬡ AI AQUIFER INTELLIGENCE — CLAUDE HAIKU

The Central Valley aquifer (S100CNRLVL) is a thick sequence of alluvial sand, gravel, and clay deposited by ancestral rivers and streams over millions of years. These unconsolidated sediments are highly productive and store large volumes of groundwater. At this Colusa County site, the aquifer lies relatively shallow (31–44 ft to water), making it accessible but also vulnerable to seasonal and long-term drawdown from agricultural pumping.

FORMATION

Name	*Central Valley Aquifer System — Alluvial Deposits*
Age / Rock	*Quaternary alluvium and Pliocene–Pleistocene fluvial and lacustrine deposits; predominantly sand, gravel, silt, and clay.*
Extent	*8000–12000 sq mi (est. USGS/DWR)*

DEPTH & RECHARGE

Depth Range	*70–508 ft*
Typical Depth	*180–400 ft*
Recharge Source	*Precipitation on valley floor and alluvial fans; lateral flow from Sierra Nevada foothills; canal seepage (agricultural region).*
Transit Time	*20–50 years to 100–200 ft depth (est. USGS/DWR)*

WATER QUALITY

pH	*est. 6.8–7.5 (est. USGS/DWR)*
Hardness	*est. 250–450 mg/L CaCO3 (est. USGS/DWR)*
TDS	*est. 400–800 mg/L (est. USGS/DWR)*
Notes	*No sample data available. Central Valley aquifer commonly elevated in nitrate and arsenic in agricultural areas; local testing recommended.*

TREND

Trend	*Water level stable to slightly rising (1960–1968); regional long-term decline documented post-1970 due to agricultural demand.*
Source	*USGS NWIS historical readings (1960–1968); regional decline est. USGS/DWR post-1970.*
Seasonal Swing	*est. 3–8 ft annual swing (est. USGS/DWR)*

Source: USGS National Water Information System · Search all wells in this area → USGS NWIS Mapper ↗ · Water level data pending USGS API migration for CA state well numbers

LAND SUBSIDENCE & AQUIFER COMPACTION

✓ LOW SUBSIDENCE RISK — No known critically overdrafted basin

Source: CA DWR SGMA Bulletin 118 2024.1 · California only - full US pending server migration

⬡ AI SUBSIDENCE ASSESSMENT — CLAUDE HAIKU

The site is located in the North Coast Ranges near Clear Lake, California, underlain by the Central Valley aquifer system (S100CNRLVL). This area has not experienced significant subsidence because it is outside critically overdrafted groundwater basins and maintains moderate aquifer recharge rates relative to withdrawal demands. The moderately well-drained soils and absence of intensive agricultural or industrial groundwater extraction have prevented the clay layer compaction typical of subsidence zones, meaning surveyors can rely on established benchmarks without elevation corrections for subsidence.

SUBSIDENCE ASSESSMENT

Susceptibility	*Low*
Primary Mechanism	*None - consolidated terrain*
Annual Rate	*<0.5 mm/yr (est. USGS)*
Historic Loss	*None documented*
Aquifer Compaction	*None - aquifer not over-pumped*
SGMA Status	*Not applicable - not in critically overdrafted basin*

BENCHMARK IMPLICATIONS

Monument Risk	*Low - monuments stable*
Elevation Validity	*Good - no active subsidence*
GNSS Recommendation	*Standard benchmark verification adequate*

SURVEY ACTION

Required Action	*No special action required*
Dataset	*CA DWR SGMA Bulletin 118 2024.1*
Coverage	*California critically overdrafted basins only - full US coverage pending*

STRUCTURAL & ENGINEERING PARAMETERS

SEISMIC (ASCE 7-22)

Site Class	D (default)
Risk Category	II

WIND / SNOW / ICE / FROST (ASCE 7-22)

Basic Wind Speed	93 mph
Ground Snow Load	6.7 psf
Winter Wind (W2)	0.35
Ice Thickness	None
Frost Depth	**6 in minimum**

Brown's Formula · C=1 (Clay loam, Group C) · AFI=9°F-days · SF=1.25

Verify with local building official before construction

Source: ASCE 7-22 Hazard Tool · gis.asce.org

CLIMATE ZONE (IECC 2021): Zone 3B · Hot-Dry · Hot-Dry - warm/hot summers, cool winters, dry (Central CA, NV, AZ) County: Colusa

⬡ AI CLIMATE SUMMARY — RESIDENTIAL DESIGN

This hot-dry climate demands a well-insulated, air-tight building envelope with low-emissivity windows to reject solar heat while minimizing cooling loads. Concentrate glazing on north and east facades where it provides daylight without afternoon heat gain, and minimize or shade west and south-facing windows heavily, since summer sun is intense and winters are mild enough that solar gain isn't needed for heating. Your best passive design move is strategic exterior shading—deep overhangs, louvers, or shade screens on sun-exposed glass—which can cut cooling energy by 20–30% while maintaining views and natural light.

⬡ AI STRUCTURAL ASSESSMENT — CLAUDE HAIKU

This site in central California presents moderate wind exposure and light-to-moderate snow loading with anticipated stable soil conditions (Moonbend silt loam, moderately well-drained). Seismic parameters are currently null and may warrant clarification with the local building official or USGS to confirm whether the site falls in a seismically active region; if confirmed, foundation design and detailing may need adjustment. Frost depth of approximately 6 inches (planning estimate) suggests shallow frost considerations for foundation design.

FOUNDATION

Type	*Conventional spread footing anticipated, pending geotechnical confirmation*
Basis	*Seismic parameters are null—clarification recommended with local building official. Moonbend silt loam (Hydro Group C) and moderate drainage suggest spread footings may be feasible; consult a licensed geotechnical engineer to confirm bearing capacity and settlement.*

STRUCTURAL IMPLICATIONS

Seismic	*Seismic Design Category (SDC) cannot be determined from null parameters. Consult local building official and structural engineer to confirm applicable SDC; ordinary detailing may be adequate if SDC is low, but confirmation is essential.*
Wind Exposure	*Exposure C (open terrain) anticipated per ASCE 7-22 Risk Category II—verify site conditions and surrounding terrain during final design phase*
Wind	*93 mph design wind speed (3-second gust) anticipated—standard wind load design likely adequate; no hurricane exposure anticipated for this inland Central California location*
Snow	*Ground snow load of 6.7 psf anticipated—light-to-moderate loading; standard roof design likely adequate, but verify with structural engineer for final load cases*

INVESTIGATIONS & INSPECTIONS

Geotech Required	*Yes—geotechnical investigation recommended to confirm bearing capacity, settlement potential, and Site Class D assumption; also clarify seismic parameters with local authority*
Liquefaction Screen	*Low risk anticipated—not in known subsidence zone and Hydro Group C suggests moderate drainage; however, groundwater depth confirmation recommended during geotechnical investigation*
Special Inspections	*Not anticipated at this stage, pending SDC determination; if seismic design category is established, special inspections may be required—consult structural engineer*
Code Edition	*ASCE 7-22 / IBC 2021 (planning reference only)*
Site Class Note	*Site Class D assumed for planning purposes. Geotechnical investigation recommended to confirm soil profile, bearing capacity, and validate Site Class; consult licensed geotechnical engineer and local building official.*

SOILS — USDA SOIL SURVEY

MAP UNIT: Moonbend silt loam, 0 to 2 percent slopes

SERIES: Moonbend

DRAINAGE CLASS: Moderately well drained

HYDRO GROUP: C

SOIL ORDER: Mollisols

SUBORDER: Xerolls

⬡ AI SOIL INTELLIGENCE — CLAUDE HAIKU

Moonbend silt loam is a moderately well-drained Mollisol (Xeroll) formed in alluvial or colluvial silt and clay deposits on nearly level valley floors and low terraces in semi-arid regions. The soil exhibits a dark surface horizon typical of prairie-derived parent material, with increasing clay content in the substratum that moderately restricts water movement. Site walkers should expect firm, stable ground on gentle slopes with seasonal water table fluctuation in the lower profile; minor drainage considerations may arise during wet seasons or in localized depressions.

Alluvial/colluvial silt and clay; low valley terraces and footslopes; sparse to moderate grassland and shrub vegetation.

DRAINAGE

Class	*Moderately well drained*
Seasonal Saturation	*Seasonal high water table at 24–36 inches; saturation possible in wet years*
Flooding Risk	*Minimal on 0–2% slopes; localized flooding possible in adjacent stream corridors*
Ponding Risk	*Low to none; minor ponding in depressional areas after heavy precipitation*

ENGINEERING

Bearing Capacity	*2,500–3,500 psf (shallow foundations); increases with depth and gravel content*
Rating	*Fair*
Shrink-Swell	*Moderate — clay substratum expands when wet and contracts on drying*
Frost Action	*Low to moderate — silt loam surface; monitor clay-rich substratum in freeze-thaw cycles*
Cut Suitability	*Fair to good — silt loam cuts well; clay substratum may require moisture control*
Fill Suitability	*Fair — clay substratum suitable as fill if moisture optimized; compact in lifts*

SEPTIC

Suitability	*Conditional*
Notes	*Perc test required — clay-rich substratum (24–36 in. depth) restricts percolation; seasonal water table elevation may limit drainfield depth and performance; consult local health department*

HAZARDS

Excavation	*Low to moderate — silt loam easily excavated; clay substratum increases resistance with depth*
Expansive Clay	*Moderate — clay substratum expands; monitor foundation and utility line placement*
Erosion	*Low on gentle slopes; moderate risk in rills and gullies if bare soil exposed or disturbed*
Other	*Seasonal water table may affect basement/crawlspace; recommend perimeter drainage and fill elevation above high water table*

Data sources: California DWR / CDEC · cdec.water.ca.gov · USBR RISE · data.usbr.gov · USACE CWMS · water.usace.army.mil · USGS NWIS Groundwater · waterservices.usgs.gov · USDA Web Soil Survey · sdmdataaccess.nrcs.usda.gov · CA DWR SGMA Bulletin 118 · gis.water.ca.gov · ASCE 7-22 Hazard Tool · gis.asce.org · USGS Design Maps · earthquake.usgs.gov · IECC 2021 Climate Zones · DOE Building America · Real-time data subject to revision

Water levels current as of report run: Jul 23, 2026, 9:35 PM UTC

* Live pool elevation not reported by this reservoir — full pool design elevation shown

🛢 OIL & GAS WELLS California — within 10mi radius

200	1	180	By status:			
total	active	plugged	**180** Plugged	**11** Canceled	**8** Idle	**1** Active

By type: 153 DH 40 DG 4 OG 3 GAS

Lease / Well	Status	Type	Operator	Depth	Dist
TXO Production Corp.	**Plugged**	DH	TXO Production Corp.	—	1.2 mi
Great Basins Petroleum Co.	**Plugged**	DH	Great Basins Petroleum Co.	—	1.3 mi
Venoco, LLC	**Plugged**	DH	Venoco, LLC	—	1.4 mi
Phillips Petroleum Company	**Plugged**	DH	Phillips Petroleum Company	—	1.7 mi
Whiting Oil and Gas Corporation	**Plugged**	DG	Whiting Oil and Gas Corporation	—	2.3 mi
Chevron U.S.A. Inc.	**Plugged**	DH	Chevron U.S.A. Inc.	—	2.5 mi
Northern Michigan Exploration Company	**Plugged**	DH	Northern Michigan Exploration C…	—	2.6 mi
Union Oil Company of California	**Plugged**	DH	Union Oil Company of California	—	2.6 mi
Chevron U.S.A. Inc.	**Plugged**	DH	Chevron U.S.A. Inc.	—	2.7 mi
Whiting Oil and Gas Corporation	**Plugged**	DG	Whiting Oil and Gas Corporation	—	2.7 mi
Western Continental Operating Company	**Plugged**	DG	Western Continental Operating …	—	2.7 mi
Great Basins Petroleum Co.	**Plugged**	DH	Great Basins Petroleum Co.	—	2.7 mi
Natural Gas Corp. of Calif.	**Plugged**	DH	Natural Gas Corp. of Calif.	—	2.8 mi
Exxon Mobil Corporation	**Plugged**	DH	Exxon Mobil Corporation	—	2.8 mi
Natural Gas Corp. of Calif.	**Plugged**	DH	Natural Gas Corp. of Calif.	—	2.8 mi
Chevron U.S.A. Inc.	**Plugged**	DH	Chevron U.S.A. Inc.	—	2.8 mi
California Resources Production Corporation	**Idle**	DG	California Resources Production…	—	3 mi
Richard S. Rheem, Operator	**Plugged**	DH	Richard S. Rheem, Operator	—	3 mi
Key Production Company, Inc.	**Plugged**	DG	Key Production Company, Inc.	—	3 mi
Whiting Oil and Gas Corporation	**Plugged**	DG	Whiting Oil and Gas Corporation	—	3 mi
Natural Gas Corp. of Calif.	**Plugged**	DH	Natural Gas Corp. of Calif.	—	3.1 mi
California Resources Production Corporation	**Idle**	DG	California Resources Production…	—	3.3 mi
Jacobson-Colusa Oil Co.	**Plugged**	DH	Jacobson-Colusa Oil Co.	—	3.3 mi
Chevron U.S.A. Inc.	**Plugged**	DH	Chevron U.S.A. Inc.	—	3.4 mi
Amerada Hess Corp.	**Plugged**	DH	Amerada Hess Corp.	—	3.4 mi
Crest Oil & Gas Management Corp.	**Plugged**	DG	Crest Oil & Gas Management C…	—	3.5 mi
Crest Oil & Gas Management Corp.	**Plugged**	DG	Crest Oil & Gas Management C…	—	3.5 mi
Chevron U.S.A. Inc.	**Plugged**	DH	Chevron U.S.A. Inc.	—	3.5 mi
Chevron U.S.A. Inc.	**Plugged**	DH	Chevron U.S.A. Inc.	—	3.6 mi
Pueblo Oil & Gas, Inc.	**Plugged**	DG	Pueblo Oil & Gas, Inc.	—	3.6 mi

Showing 30 of 200 wells. Full dataset via California.

AI Assessment — Well Proximity

The nearest well is a plugged TXO Production Corp. well 1.2 miles away, which is beyond the distance thresholds requiring action. With only one active/producing well in the 10-mile radius and no injection/disposal wells present, oil and gas well proximity is not a planning concern for this site. Recommend a standard title search to confirm the parcel is not subject to any severed mineral rights or oil and gas easements that could affect development.

Source: California public well records. Active = currently producing or permitted. Plugged = abandoned/decommissioned. Data updated nightly.

ENDANGERED & THREATENED SPECIES - USFWS Critical Habitat within 25mi

2	2	4
Endangered	Threatened	Total w/ Critical Habitat

2 Endangered species with designated critical habitat. ESA Section 7 consultation may be required for federal nexus projects.

COMMON NAME	*SCIENTIFIC NAME*	STATUS
Butte County meadowfoam	*Limnanthes floccosa ssp. californica*	**Endangered**
Vernal pool tadpole shrimp	*Lepidurus packardi*	**Endangered**
California tiger Salamander	*Ambystoma californiense*	**Threatened**
Yellow-billed Cuckoo	*Coccyzus americanus*	**Threatened**

AI SPECIES & ESA ASSESSMENT - CLAUDE HAIKU

ESA Implications Review – 39.2147, -122.0140 **ESA Section 7 Consultation Triggers:** Federal permits, funding, or approvals for project activities would trigger mandatory Section 7 consultation if the project may affect listed species or their critical habitat. The site's proximity to four listed species substantially elevates consultation likelihood. **Most Planning-Relevant Species:** Vernal pool tadpole shrimp and California tiger salamander present the highest planning constraints, as both require seasonal wetland habitats that commonly overlap with development footprints in this region; Butte County meadowfoam impacts depend on site vegetation survey results. **Recommended Next Steps:** Commission a Phase 1 biological assessment to map potential habitat and document actual species presence/absence; identify project-specific federal nexus requirements; and initiate early coordination with USFWS to streamline the consultation process before design finalization. *For planning purposes only. Consult a licensed environmental biologist for formal ESA compliance.*

Source: USFWS Critical Habitat Final Designated Areas - FWS Open Data - Critical habitat does not equal species range

NATIVE PLANTS - iNaturalist Research-Grade within 10mi

53	222	2026-07-07
Unique Species	Total Observations	Most Recent

COMMON NAME	*SCIENTIFIC NAME*	LAST OBS
alkali heliotrope	*Heliotropium curassavicum*	2025-08-15
alkali mallow	*Malvella leprosa*	2024-07-29
Alkali Weed	*Cressa truxillensis*	2024-05-15
big saltbush	*Atriplex lentiformis*	2024-01-16
Bonfire moss	*Funaria hygrometrica*	2023-11-30
box elder	*Acer negundo*	2025-05-21
broadleaf mistletoe	*Phoradendron macrophyllum*	2024-12-18
California brome	*Bromus carinatus*	2024-04-12
California mugwort	*Artemisia douglasiana*	2024-04-27
California wild grape	*Vitis californica*	2026-06-13
California Wild Rose	*Rosa californica*	2025-12-10
Common Madia	*Madia elegans*	2023-07-06
common tule	*Schoenoplectus acutus occidentalis*	2024-05-15
coyote brush	*Baccharis pilularis*	2023-09-06
cutleaf groundcherry	*Physalis angulata*	2025-07-15
Erect burhead	*Echinodorus berteroi*	2023-09-02
Frémont Cottonwood	*Populus fremontii*	2023-09-02
Giant Blazingstar	*Mentzelia laevicaulis*	2024-07-28
giant wild rye	*Leymus condensatus*	2026-03-02
heart-leaf milkweed	*Asclepias cordifolia*	2025-04-10
horseweed	*Erigeron canadensis*	2026-05-29
Miniature Lupine	*Lupinus bicolor*	2026-02-18
narrowleaf milkweed	*Asclepias fascicularis*	2023-09-02
Narrowleaf Willow	*Salix exigua*	2026-07-07
Pacific poison oak	*Toxicodendron diversilobum*	2024-04-27
pale smartweed	*Persicaria lapathifolia*	2026-05-06
palmate salty bird's-beak	*Chloropyron palmatum*	2025-05-28
Purslane Speedwell	*Veronica peregrina*	2024-04-12
Red Ribbons	*Clarkia concinna*	2026-05-05
Red Ribbons	*Clarkia concinna concinna*	2023-06-14
redwhisker clammyweed	*Polanisia dodecandra*	2026-06-18
rough cocklebur	*Xanthium strumarium*	2023-09-02

COMMON NAME	*SCIENTIFIC NAME*	LAST OBS
Sacred Datura	*Datura wrightii*	2025-10-06
Saltgrass	*Distichlis spicata*	2025-07-03
sea clubrush	*Bolboschoenus maritimus*	2024-05-15
shield-bracted monkeyflower	*Erythranthe glaucescens*	2026-05-07
showy milkweed	*Asclepias speciosa*	2023-07-28
shy monkeyflower	*Erythranthe nasuta*	2025-04-11
Silvery Bryum	*Bryum argenteum*	2025-12-27
swamp smartweed	*Persicaria hydropiperoides*	2026-03-02
tall flatsedge	*Cyperus eragrostis*	2026-06-18
tarweed fiddleneck	*Amsinckia lycopsoides*	2024-04-12
Telegraphweed	*Heterotheca grandiflora*	2026-07-07
Toyon	*Heteromeles arbutifolia*	2026-01-22
turkey mullein	*Croton setiger*	2023-06-28
turkey tangle frogfruit	*Phyla nodiflora*	2025-07-04
twining snakelily	*Dichelostemma volubile*	2024-05-11
Upright Pepperweed	*Lepidium strictum*	2024-04-12
valley oak	*Quercus lobata*	2026-06-13
water fern	*Azolla filiculoides*	2025-07-03
Whiskerbrush	*Leptosiphon ciliatus*	2025-04-10
Wild Licorice	*Glycyrrhiza lepidota*	2024-06-06
woolly rosemallow	*Hibiscus lasiocarpos*	2025-07-15

AI PLANT COMMUNITY SUMMARY - CLAUDE HAIKU

Ecological Assessment: 39.2147, -122.0140 This site supports a **riparian woodland and alkali scrub community**, dominated by Fremont cottonwood, box elder, and California wild grape along water corridors, with salt-tolerant species (alkali mallow, alkali heliotrope, big saltbush) indicating seasonally saturated or brackish soils in lower areas. The ecology reflects a transitional zone between freshwater riparian habitat and alkaline wetland/seasonally dry flats, typical of California's interior valleys. **For grading and drainage planning, anticipate seasonal water tables and poor drainage in low-lying areas due to clay-rich alkali soils; upslope areas may drain more readily but could become saline if native vegetation removal exposes salt-laden soil layers.** Disturbance to riparian areas will significantly impact native plant recovery and should be minimized. Consult a licensed botanist for site-specific vegetation assessment.

Source: iNaturalist research-grade observations - Native species filter applied

FIELD HAZARDS - Venomous & Toxic Species within 25mi

25	30	9	82
Venomous Snakes	Venomous Spiders	Stinging Insects	Toxic Plants

VENOMOUS SNAKES

SPECIES	OBSERVATIONS
Crotalus oreganus oreganus	25 obs
Crotalus oreganus	25 obs

VENOMOUS SPIDERS

SPECIES	OBSERVATIONS
Latrodectus hesperus	30 obs

STINGING INSECTS

SPECIES	OBSERVATIONS
Dasymutilla aureola	9 obs
Dasymutilla sackenii	9 obs

TOXIC PLANTS

SPECIES	OBSERVATIONS
Toxicodendron diversilobum	39 obs
Datura stramonium	21 obs
Datura ferox	21 obs
Datura wrightii	21 obs
Conium maculatum	19 obs
Urtica gracilis	3 obs

AI FIELD SAFETY BRIEFING - CLAUDE HAIKU

Field Safety Brief - Northern California Survey Site **Highest priorities:** Poison oak is your most frequent hazard—82 observations mean it's widespread here, so expect it on disturbed ground and along brushy areas. Northern Pacific rattlesnakes are present and active; watch for them in rocky outcrops, grassland, and around brush, especially during warmer months. Black widow spiders hide in sheltered spots like equipment boxes and under debris. **Practical avoidance:** Wear long pants, boots, and gloves; inspect gear and equipment before use and avoid reaching into blind spaces. Stay on cleared survey lines when possible, make noise while moving to give snakes warning, and establish a buddy system. Learn to identify poison oak (three leaflets, variable coloring) so you can work around it rather than through it. **Seasonal note:** Snake activity peaks April through October, so be especially vigilant during fieldwork in warm months. Poison oak is identifiable year-round but causes worse reactions during growing season (spring/summer). Always verify current conditions locally before fieldwork.

Source: iNaturalist research-grade observations - Always verify locally before fieldwork

FAA AIRWAYS — ATS Routes crossing site area

22	8	6	8
Total Airways	Jet Routes	Victor Airways	Other Routes

AIRWAY	TYPE	LEVEL	MEA EAST	MEA WEST	TRACK	REV TRACK
J1	Jet Route	High	18,000 ft	—	342.8°	161.8°
J126	Jet Route	High	18,000 ft	—	325.5°	144.0°
J143	Jet Route	High	18,000 ft	—	325.0°	145.8°
J189	Jet Route	High	18,000 ft	—	335.5°	155.0°
J3	Jet Route	High	18,000 ft	—	342.8°	161.8°
J32	Jet Route	High	18,000 ft	—	19.2°	199.6°
J501	Jet Route	High	22,000 ft	—	342.6°	162.6°
J65	Jet Route	High	18,000 ft	—	304.1°	121.1°
Q1	Q-Route	High	—	—	334.5°	154.1°
Q120	Q-Route	High	—	—	38.1°	219.8°
Q122	Q-Route	High	—	—	37.8°	219.6°
Q124	Q-Route	High	—	—	37.8°	219.6°
Q138	Q-Route	High	—	—	47.7°	229.0°
Q3	Q-Route	High	—	—	164.0°	344.6°
Q5	Q-Route	High	—	—	162.7°	343.3°
T259	T-Route	Low	—	—	340.5°	160.2°
V108	Victor Airway	Low	4,500 ft	—	117.7°	296.8°
V150	Victor Airway	Low	3,000 ft	—	35.4°	215.5°
V195	Victor Airway	Low	5,300 ft	—	352.9°	172.9°
V199	Victor Airway	Low	9,000 ft	—	21.3°	199.6°
V200	Victor Airway	Low	6,200 ft	—	72.5°	252.8°
V23	Victor Airway	Low	2,000 ft	—	293.8°	113.6°

Source: FAA ATS Route FeatureServer — Airways shown cross the site bounding area and may not pass directly overhead — MEA = Minimum En Route Altitude

RAILROAD PROXIMITY — FRA North American Rail Network

3
Rail Lines

OWNER / OPERATOR	TYPE	TRACKS	PASSENGER	STRACNET	SUBDIVISION
CFNR	Mainline	1	No	No	WEST VALLEY
CFNR	Other	1	No	No	—
CFNR	S	1	No	No	—

Source: FRA North American Rail Network (NARN) — Updated July 2025 — STRACNET = Strategic Rail Corridor Network (DOD)

WILDLIFE & NATURAL HISTORY - iNaturalist within 25mi

200	88	69	8	8	3
Total Observations	Total Species	Birds	Mammals	Reptiles	Amphibians

BIRDS (69 species)

COMMON NAME	*Scientific Name*	OBS
Great Egret	*Ardea alba*	8
Black-crowned Night Heron	*Nycticorax nycticorax*	8
Western Cattle-Egret	*Ardea ibis*	7
Red-winged Blackbird	*Agelaius phoeniceus*	6
Killdeer	*Charadrius vociferus*	5

COMMON NAME	*Scientific Name*	OBS
Bald Eagle	*Haliaeetus leucocephalus*	5
Green Heron	*Butorides virescens*	4
Mourning Dove	*Zenaida macroura*	4
Wild Turkey	*Meleagris gallopavo*	4
Great Blue Heron	*Ardea herodias*	4
House Sparrow	*Passer domesticus*	4
Bullock's Oriole	*Icterus bullockii*	4
Black-necked Stilt	*Himantopus mexicanus*	3
Great-tailed Grackle	*Quiscalus mexicanus*	3
Red-tailed Hawk	*Buteo jamaicensis*	3

+ 54 additional species

MAMMALS (8 species)

COMMON NAME	*Scientific Name*	OBS
Columbian Black-tailed Deer	*Odocoileus hemionus columbianus*	4
Black-tailed Jackrabbit	*Lepus californicus*	4
North American River Otter	*Lontra canadensis*	3
Mule Deer	*Odocoileus hemionus*	3
Coyote	*Canis latrans*	1
Pronghorn	*Antilocapra americana*	1
American Badger	*Taxidea taxus*	1
Domestic Cattle	*Bos taurus*	1

REPTILES (8 species)

COMMON NAME	*Scientific Name*	OBS
Pacific Gopher Snake	*Pituophis catenifer catenifer*	5
Western Fence Lizard	*Sceloporus occidentalis*	3
Mountain Garter Snake	*Thamnophis elegans elegans*	3
Gopher Snake	*Pituophis catenifer*	2
Northwestern Pond Turtle	*Actinemys marmorata*	2
Red-eared Slider	*Trachemys scripta elegans*	1
Western Yellow-bellied Racer	*Coluber constrictor mormon*	1
Northern Pacific Rattlesnake	*Crotalus oreganus oreganus*	1

AMPHIBIANS (3 species)

COMMON NAME	*Scientific Name*	OBS
American Bullfrog	*Lithobates catesbeianus*	1
Western Spadefoot	*Spea hammondii*	1
Western Toad	*Anaxyrus boreas*	1

AI WILDLIFE & ECOLOGICAL ASSESSMENT - CLAUDE HAIKU

Ecological Assessment Summary This site in northern California supports a diverse wetland and riparian-influenced wildlife community characteristic of inland valleys with water features and grassland habitats. The abundance of wading birds (egrets, herons) and presence of North American River Otter indicate persistent aquatic or semi-aquatic habitat, likely ponds, marshes, or stream corridors, while grassland specialists (pronghorn, black-tailed jackrabbit, killdeer) suggest adjacent upland areas. Several species warrant regulatory attention: Bald Eagle (federally protected), Northwestern Pond Turtle (species of special concern in California), and Western Spadefoot (California species of special concern requiring vernal pool or seasonal wetland habitat), indicating the site contains sensitive aquatic features and potentially seasonal breeding habitat. Overall, the species composition reflects moderate landscape connectivity with mixed disturbance levels—the presence of domestic cattle and red-eared sliders suggests human land use, while the retention of native predators and sensitive amphibians indicates relatively functional habitat conditions that should be evaluated carefully during project planning. **For planning purposes only. Consult a qualified biologist for site-specific biological assessments.**

Source: iNaturalist research-grade observations — Data reflects community science observations and may not represent complete species inventory

☀ PASSIVE + ACTIVE SOLAR PLANNING — Lat 39.21°

1 · AVERAGE SUN HOURS

Period	Peak Hrs/Day	Notes
Annual average	6.6 hrs	Overall solar resource
Summer average	9 hrs	June–August
Winter average	3.9 hrs	December–February
Worst month (Dec)	3.2 hrs	Size battery storage to this

2 · IDEAL SOLAR ARRAY PITCH

Optimal tilt = **39.2°** (latitude) → **10/12 pitch**

Pitch	Angle	% of Optimal	Notes
4/12	18.4°	96.9%	good
5/12	22.6°	97.5%	good
6/12	26.6°	98.1%	← excellent
7/12	30.3°	98.7%	← excellent
8/12	33.7°	99.2%	← excellent
9/12	36.9°	99.7%	← excellent
10/12	39.8°	99.9%	← annual optimal
12/12	45°	99.1%	← excellent

Going from 5/12 to 6/12 at framing costs ~$800–1,200 one time. On a 10kW system that's +723 kWh/yr (~$108 value/yr). Over 25yr panel life: ~$2710 total gain.

3 · SOLAR HEAT GAIN — BTU/HR PER SQ FT

Use these values as inputs for eQUEST, EnergyPlus, Manual J, or HERS rating

Surface	Winter	Summer	Design Note
South glass (SHGC 0.4)	49	30	Minimize south glass
South glass (SHGC 0.6)	73	46	Clear/uncoated glass
North glass (any)	10	13	Negligible — diffuse only
East / West glass	26	104	⚠ Minimize — afternoon load
Roof — dark (absorb 0.95)	233	301	Highest load surface
Roof — light (absorb 0.35)	86	111	Cool roof — significant reduction
Roof — metal (absorb 0.25)	61	79	Best roof option for heat
South wall — dark	91	69	
South wall — light	30	23	Light color = major savings
Hardscape — asphalt	181	301	⚠ Heat island — avoid near structure
Hardscape — concrete	124	206	Also reflects onto adjacent walls
Hardscape — light pave	67	111	Recommended within 50ft
Pool surface	23	38	Low absorb + evaporative cooling

Concrete reflection onto south wall: ~4 BTU/hr·ft² additional load per 100sf of adjacent hardscape.
Pool specular reflection: angle-dependent — east/west pools can cause morning/afternoon glare into glass.

4 · ROOF PITCH SOLAR LOAD — BTU/HR PER 100 SQ FT (SUMMER)

Pitch	Dark Roof	Light Roof	Reduction vs Flat
0/12	301 BTU	111 BTU	baseline (worst)
4/12	241 BTU	89 BTU	-20% dark / -20% light
6/12	196 BTU	72 BTU	-35% dark / -35% light
8/12	166 BTU	61 BTU	-45% dark / -45% light
12/12	135 BTU	50 BTU	-55% dark / -55% light

Scale: multiply BTU × (your roof sf ÷ 100). Pitch + light color = biggest single cooling move.

5 · THERMAL TIME LAG — WALL ASSEMBLY

Peak outdoor temp ~15:00. Heat arrives at interior = peak + lag hours.

Assembly	Lag	Peak Interior Load	Note
2x4 frame (R-15)	0.6 hrs	~15:36 PM	R-value only — no mass benefit
2x6 frame (R-23)	0.9 hrs	~15:54 PM	R-value only — no mass benefit
2x8 frame (R-30)	1.2 hrs	~16:12 PM	R-value only — no mass benefit
2x10 frame (R-37)	1.5 hrs	~16:30 PM	good
2x12 frame (R-44)	1.8 hrs	~16:48 PM	good
ICF 6" core	7 hrs	~22:00 PM	✓ shifts past sunset — natural vent window
8" CMU block	6 hrs	~21:00 PM	✓ shifts past sunset — natural vent window
12" concrete	8.5 hrs	~23:30 PM	✓ shifts past sunset — natural vent window

In 3B Hot-Dry: ICF or CMU shifts peak load past sunset. Open windows, flush heat naturally. AC load drops significantly.

6 · TREE SHADOW PLANNING — TREE DUE SOUTH, 100FT FROM STRUCTURE

Tree Ht	Shadow Reaches	Summer hrs/day	Equinox hrs/day	Winter hrs/day	WUI note
10ft	All year	1.1	1	1.2	OK
20ft	All year	2.2	2	2.4	OK
30ft	All year	3.1	2.9	3.8	Zone 2 check
40ft	All year	4.1	3.8	5.4	⚠ verify
50ft	All year	4.9	4.7	7.8	⚠ verify
60ft	All year	5.7	5.5	9.2	✗ Zone 1

Deciduous tree: winter solar penetration ~85% (leaves off) — best of both worlds in hot-dry climates.
Evergreen tree: winter penetration ~15% — good windbreak, poor solar strategy south of structure.
⚠ WUI zones: tree placement must be coordinated with defensible space requirements. Verify with local fire authority — WUI boundaries vary by jurisdiction.

7 · ATTIC VENTING — PER 100 SQ FT OF ROOF AREA

Standard	Unbalanced (1/150)	Balanced† (1/300)	Notes
Code minimum	8 sq in	4 sq in	Moisture protection only
Thermal comfort	24 sq in	12 sq in	Keeps attic within 20°F of outdoor
WUI mesh 1/16"	60 sq in	30 sq in	2.5× compensation — mesh clogs
WUI intumescent	24 sq in	12 sq in	Self-closing — no compensation needed

Pitch factor: 0/12×1.0 · 4/12×0.80 · 6/12×0.65 · 8/12×0.55 · 12/12×0.45
Color factor: Dark×1.0 · Medium×0.75 · Light×0.55 · Metal×0.45
Scale: multiply sq in × (your roof sf ÷ 100) × pitch factor × color factor
†Balanced = ≥40% NFA within top third of roof height (ridge) + ≥40% within bottom third (soffit)
WUI conflict: Soffit vents are ember collection points. In high WUI zones — eliminate soffit vents, use ridge-only (unbalanced/1/150). In low WUI — balanced system preferred.
⚠ Verify WUI zone with local fire authority — boundaries vary significantly by jurisdiction.

⬡ AI SOLAR & PASSIVE DESIGN SUMMARY — HOMEOWNER GUIDE

Your Home's Solar & Energy Plan You're in a fantastic spot for solar — with about 6.6 peak sun hours a day on average, your panels will work reliably year-round, and even in winter you'll get meaningful production on clear days. Your roof ideally tilts at about 39 degrees (roughly a 10-on-12 pitch), which is almost perfect for capturing that winter and summer sun. Here's what often surprises homeowners: your roof color is almost as important as the panels themselves — a dark roof will absorb and radiate 301 BTUs of heat per hour per square foot in summer, while a light-colored roof cuts that nearly in half, which saves your air conditioning from working overtime. West-facing windows are your biggest challenge; that afternoon sun dumps 104 BTUs per square foot of summer heat directly into your home during the hottest part of the day, so you'll want shading or reflective glass on that side. A large deciduous tree on your south side is actually brilliant planning — it'll shade your house for about 4 hours in summer when you need it most, then drop its leaves in winter to let warming sun through (though if you're in a wildfire zone, check your local clearance requirements first, as that might change the math). One practical concept: thermal mass just means that heavy materials like concrete or brick in your walls absorb heat slowly and release it slowly — think of it like a battery for warmth. These numbers are planning estimates — your architect or energy modeler can plug them directly into their software for a full analysis.

Planning estimates only — clear-sky model, standard assumptions. Values formatted for eQUEST / EnergyPlus / Manual J input. Verify with licensed architect, energy modeler, or solar installer before specifying.

🧠 SITE INTELLIGENCE SUMMARY AI synthesis — Claude Sonnet

⚙ Technical 👤 Client

Technical Brief — for architects, engineers, and surveyors

SITE INTELLIGENCE BRIEFING **39.21470°N, 122.01400°W | Colusa County, CA**

Structural Design Drivers & Load Hierarchy

This site operates under IECC Zone 3B (Hot-Dry) with wind and snow loading data unavailable. The absence of reported snow depth and the hot-dry climate designation suggest minimal snow accumulation; however, wind design criteria cannot be established from the provided data set. Seismic parameters are similarly absent from this briefing package. Until wind speed and seismic acceleration coefficients are obtained from the applicable Building Code and site-specific hazard maps, the structural system cannot be rationalized around a dominant load case. Design teams must source ASCE 7 wind speeds and seismic design category (SDC) for Colusa County independently; these omissions are critical gates before frame selection.

Geotechnical Profile & Foundation Design

The site is underlain by Moonbend silt loam (0–2% slopes), classified as Hydrologic Group C with moderately well-drained status. Group C soils have moderate infiltration rates and are typically suitable for shallow foundations, but "moderately well drained" indicates seasonal water table fluctuation is probable. Frost depth is 6 inches (calculated via Brown's Formula using Hydro Group C and an AFI of 9°F-days, consistent with the stated climate zone). Footings must extend minimum 6 inches below finished grade to avoid frost heave; however, any perched water table or seasonal rise above this depth during winter dormancy periods should be confirmed through test boring. The fine silt texture suggests low bearing capacity relative to gravels or sands in the region; allow values should be determined by Standard Penetration Test (SPT) or CPT before final footing design.

Hazard Assessment & Subsurface Risk

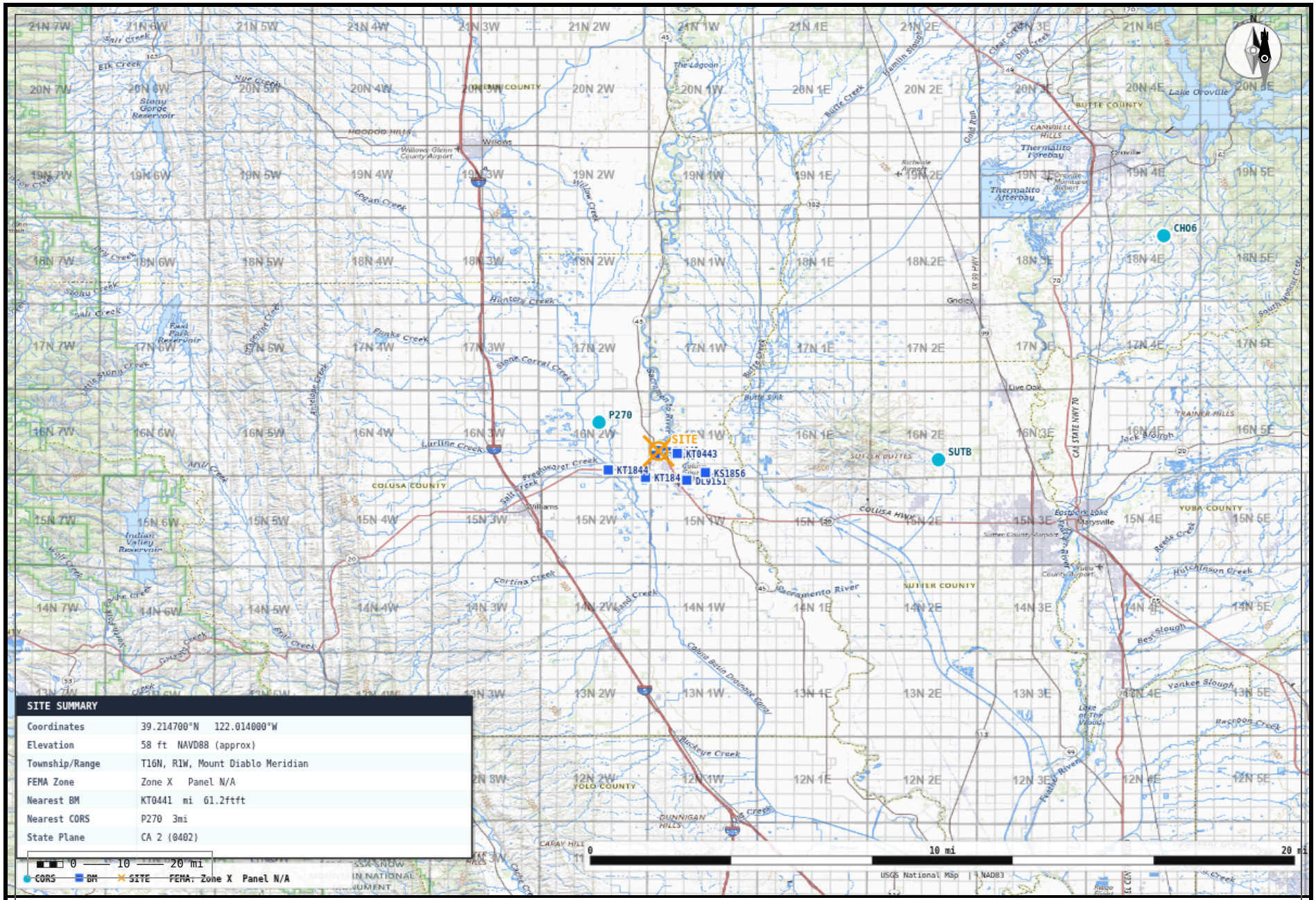
No Quaternary faults are recorded within the search radius, and no subsidence basin data is present for this location. Wildfire hazard data was not provided but should be cross-referenced with CAL FIRE maps given Colusa County's fire history. The nearest oil/gas infrastructure is a TXO Production Corp. well 1.2 miles away with plugged drilling history; no active production wells are in immediate proximity. The presence of approximately 200 wells within a ~10-mile radius suggests legacy petroleum development in the broader area, but risk to the site itself appears low given the nearest active/producing asset count of one and its distance. Subsurface hydrocarbon remnants are unlikely to affect shallow foundation design unless site-specific Phase I Environmental Assessment reveals vapor intrusion concern.

Climate & Site Context

IECC Zone 3B places the site in a hot-dry envelope with minimal heating load and design focus on cooling. An AFI of 9°F-days reflects infrequent freezing conditions; mechanical systems and exterior plumbing should account for only occasional winter protection. The moderate soil drainage class and relatively shallow frost depth are compatible with standard residential or light commercial shallow foundation practice in this climate zone. Site slopes are minimal (0–2%), reducing grading complexity and erosion control costs.

Bottom line: Obtain site-specific wind speed, seismic design category, and SPT/CPT bearing capacity data before advancing structural and geotechnical design.

📋 Copy to clipboard



TOPOSCOUT
FIELD MAP

TopoScout Field Map

Lat: 39.21470 Lng: -122.01400
39.214700°N 122.014000°W | Radius: 30 mi

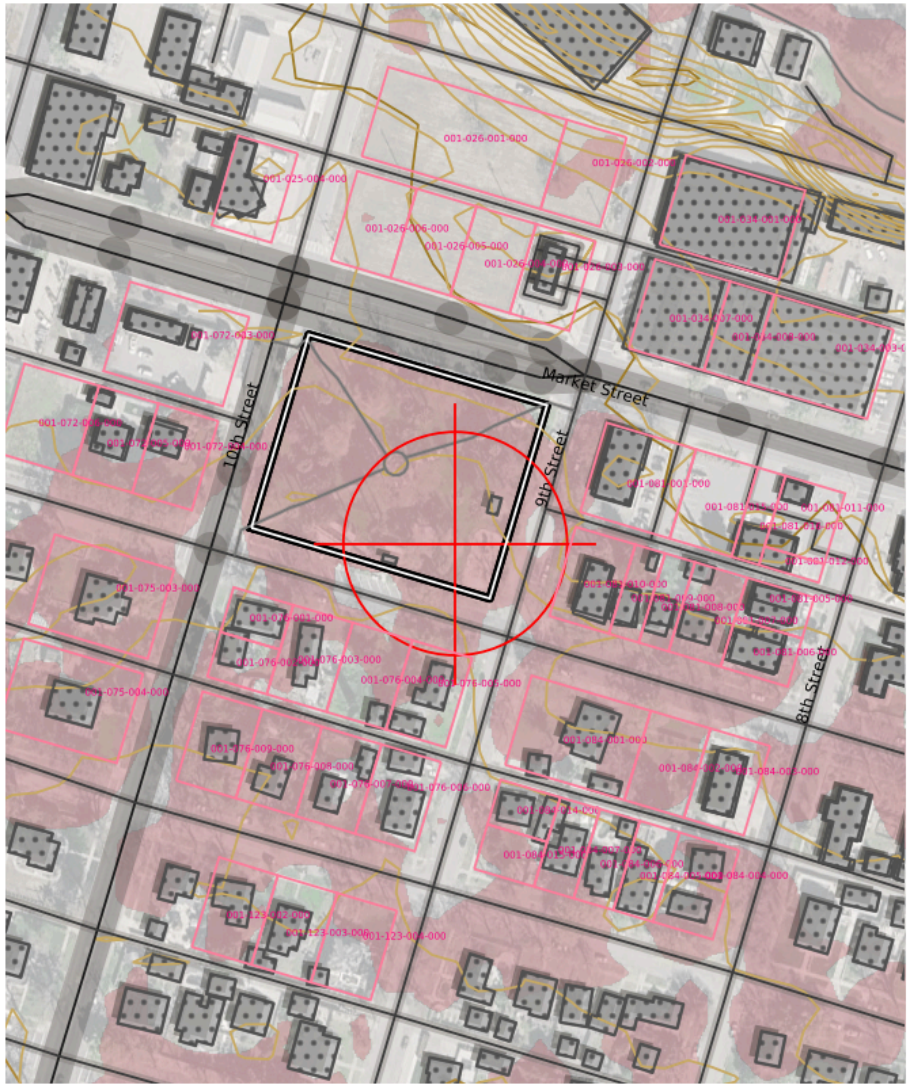
Generated: July 23, 2026
Base: USGS National Map
Generated by TopoScout · toposcout.com

TOPOSCOUT SITE DXF PREVIEW

45 CAD Layers · AutoCAD Compatible · State Plane Coordinates

Need the editable CAD file? Add the DXF at toposcout.com

TOPOSCOUT SITE PLAN PREVIEW



INCLUDED LAYERS

N

0 —— 400 ft State Plane · NAD83 · US Feet

■ Contours (Index/Major/Minor/1ft) ■ PLSS Section/Township/QQ ■ Roads Major/Local/Trail + ROW ■ Buildings ■ Hydro ■ Power Lines ■ Pipeline ■ Railroad ■ Benchmarks + Labels
■ County Boundary ■ OTLS Grid ■ Site Info ■ Elevation Labels ■ 3D Polylines (all geometry)

SITE AERIAL — 600 ft × 600 ft

39.21470°N, 122.01400°W · Google Aerial

AREA CONTEXT — 3000 ft × 3000 ft

39.21470°N, 122.01400°W · Google Aerial

⚡ FIELD RESOURCE LINKS

PRE-MISSION PLANNING

Trimble GNSS Planning Online –
https://trimblegnssplanningonline.com/
Satellite visibility, DOP charts, sky plots

FAA B4UFLY –
https://www.faa.gov/uas/recreational_flyers/where_can_i_fly/b4ufly
Drone airspace authorization, TFRs, restricted areas

Aloft (Kittyhawk) – https://www.aloft.ai/
Field-friendly drone airspace map and LAANC authorization

NOAA Space Weather — Live Kp –
https://www.swpc.noaa.gov/products/planetary-k-index
Real-time Kp index, geomagnetic storm alerts

BASE STATION & NETWORK

NOAA CORS Network – https://geodesy.noaa.gov/CORS/cors-data.shtml
Continuously operating reference stations, data download

NGS CORS Station Map –
https://geodesy.noaa.gov/CORS/GoogleMap/CORSmap.shtml
Interactive map of all CORS stations with status

IGS Station Monitor – https://www.igs.org/network
International GNSS Service — global base station health

POST-PROCESSING

NGS OPUS – https://geodesy.noaa.gov/OPUS/index.jsp
Online Positioning User Service — static GNSS processing

NGS OPUS-RS – https://geodesy.noaa.gov/OPUSI/index.jsp
Rapid static processing — sessions as short as 15 minutes

CORS Data Download – https://geodesy.noaa.gov/CORS/cors-data.shtml
Raw RINEX observation files from CORS stations

REFERENCE & CALCULATIONS

NGS Datasheets – https://www.ngs.noaa.gov/cgi-bin/datasheet.prl
Benchmarks, control points, passive monuments

NGS Coordinate Conversion (NCAT) –
https://geodesy.noaa.gov/NCAT/
NADCON5, datum transforms, state plane conversions

NOAA Magnetic Declination –
https://www.ngdc.noaa.gov/geomag/calculators/magcalc.shtml
Declination calculator for any location and date

NGS Geoid Models – https://geodesy.noaa.gov/GEOID/
GEOID18 and current model downloads, GEOID calculator

FEMA & FLOOD

FEMA Flood Map Service Center –
https://msc.fema.gov/portal/home
FIRM panels, flood zone lookup by address or coordinates

FEMA Elevation Certificate – https://www.fema.gov/flood-insurance/work-with-nfip/elevation-certificate
Current EC form, instructions, LOMA/LOMR submission guidance

DRONE OPERATIONS

FAA Part 107 — Commercial Rules –
https://www.faa.gov/uas/commercial_operators
Full Part 107 regulatory summary for commercial UAS operations

FAA DroneZone – https://faadronezone.faa.gov/
Drone registration, operator certificates, waiver management

FAA B4UFLY –
https://www.faa.gov/uas/recreational_flyers/where_can_i_fly/b4ufly
Pre-flight airspace check, TFRs, LAANC authorization

FAA Part 107 Waivers –
https://www.faa.gov/uas/commercial_operators/part_107_waivers
Waiver applications for operations beyond standard 107 rules

Aloft — Field Airspace Map – https://www.aloft.ai/
Mobile-friendly real-time airspace, LAANC, flight logging

AIR QUALITY & WILDFIRE SMOKE

AirNow Fire & Smoke Map
https://www.fire.airnow.gov
Current fire locations, smoke plumes, PM2.5 readings by location

AirNow Interactive Map
https://gispub.epa.gov/airnow
Real-time AQI monitors, hourly NowCast, 48-hr forecast overlays

NOAA Smoke Forecast
https://airquality.weather.gov
48-hr smoke concentration forecast, HRRR-Smoke model

Links verified: February 2026 · Check quarterly · TopoScout GNSS Planning System

ADJOINING PARCELS

Tap any coordinate to generate a TopoScout report for that parcel. APNs match the labels on the site map.

DIR	APN	CENTER (LAT, LNG)
N	001-026-001-000	39.216123, -122.014052
N	001-026-005-000	39.215742, -122.014138
N	001-026-006-000	39.215804, -122.014409
NE	001-026-002-000	39.216037, -122.013378
NE	001-026-003-000	39.215668, -122.013519
NE	001-026-004-000	39.215680, -122.013867
NE	001-034-001-000	39.215836, -122.012807
NE	001-034-007-000	39.215486, -122.013027
E	001-034-003-000	39.215381, -122.012273
E	001-034-008-000	39.215420, -122.012742
E	001-081-001-000	39.214901, -122.013222
E	001-081-005-000	39.214494, -122.012574
E	001-081-011-000	39.214815, -122.012430
E	001-081-012-000	39.214626, -122.012502
E	001-081-015-000	39.214819, -122.012866
E	001-081-016-000	39.214750, -122.012618
SE	001-081-006-000	39.214304, -122.012647
SE	001-081-007-000	39.214416, -122.012822
SE	001-081-008-000	39.214463, -122.013064
SE	001-081-009-000	39.214495, -122.013200
SE	001-081-010-000	39.214545, -122.013416
SE	001-084-001-000	39.213993, -122.013508
SE	001-084-002-000	39.213893, -122.013075
SE	001-084-003-000	39.213882, -122.012726
SE	001-084-004-000	39.213513, -122.012867
SE	001-084-005-000	39.213512, -122.013161
SE	001-084-006-000	39.213554, -122.013342
S	001-076-004-000	39.214205, -122.014429
S	001-076-005-000	39.214194, -122.014080
S	001-076-006-000	39.213825, -122.014220

DIR	APN	CENTER (LAT, LNG)
S	001-076-007-000	39.213837, -122.014569
S	001-084-007-000	39.213603, -122.013532
S	001-084-014-000	39.213744, -122.013721
S	001-084-015-000	39.213586, -122.013781
S	001-123-002-000	39.213373, -122.015039
S	001-123-003-000	39.213310, -122.014770
S	001-123-004-000	39.213299, -122.014421
SW	001-075-003-000	39.214531, -122.015542
SW	001-075-004-000	39.214162, -122.015682
SW	001-076-001-000	39.214425, -122.014934
SW	001-076-002-000	39.214267, -122.014994
SW	001-076-003-000	39.214277, -122.014716
SW	001-076-008-000	39.213899, -122.014840
SW	001-076-009-000	39.213962, -122.015111
W	001-072-004-000	39.215032, -122.015233
W	001-072-005-000	39.215044, -122.015582
W	001-072-006-000	39.215116, -122.015893
NW	001-025-004-000	39.215980, -122.014872
NW	001-072-003-000	39.215426, -122.015201

49 adjoining parcels · coordinates are parcel-label centers