



Preliminary Ignition Investigation Report

Ignition Database Index:	20240309 (Index 309) 20240309N (Index 309N)
Electric Incident Investigation (EII) Number:	NR240420A – 309 N/A – 309N
Incident Name:	Blackberry – 309 N/A – 309N
PG&E Facility Ignition?	Yes – 309 and 309N
CPUC Reportable Ignition?	Yes - 309 and 309N
Date & Time of Incident:	April 20, 2024 @ approximately 1416 hours
Street Address:	Deer Creek Hwy (HWY 32) & Blackberry Road – 309 Deer Creek Hwy (HWY 32) & Eagle Ridge Drive – 309N
City:	Forest Ranch
County:	Butte
Latitude/Longitude:	39.83563, -121.69607 – 309 39.84403, -121.694526 – 309N
State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)	State Responsibility Area – 309 and 309N
PG&E Division:	North Valley – 309 and 309N
High Fire Threat District (HFTD):	Tier 3 – 309 and 309N
High Fire Risk Area (HFRA):	Yes – 309 and 309N
EPSS Buffer:	N/A
Fire Index Area (FIA):	280 – 309 and 309N
Fire Potential Index (FPI) Rating: FIA	280
Fire Potential Index (FPI) Rating: Circuit	R1
Was there a PSPS event at the time of ignition?	No – 309 and 309N
Suspected Initiating Event:	Contact – 3 rd party – 309 Equipment – PG&E – 309N
Failure Driver:	Contact from object – 309 All types of equipment/facility failure – 309N
Failure Sub-driver:	Other – 309 Fuse failure – 309N
Circuit:	Notre Dame 1104
Circuit Protection Zone:	Fuse 26501 LR 2028
Nominal Voltage:	12kV

Pole SAP Equipment ID:	103320076 – 309 (fire at base of pole) 100331981 – 309 (guy wire pole that was snagged by dozer) 100331947 – (pole with fuses)
Subject to PRC 4292 Veg Pole Clearance:	No. Pole was cleared under the ‘voluntary risk reduction program.’
PG&E Equipment associated with ignition:	Conductor
EPSS enabled at time of ignition?	No – 309 and 309N
Fault Type:	Line to Ground
Wire Down (Primary)?	Yes – 309
Lead Agency/Agency Having Jurisdiction:	CALFIRE
Fire Size:	18’ x 12’ at base of SAP Pole ID 103320076 – 309 6.5’ x 1’ near base of SAP Pole ID 100331947 – 309N
FAS Field Remarks¹:	T006375852 – ASSIST ON OVERHEAD OUTAGE T006375854 – FND WIRE OWN AND NG XARM, SSD FUSES DID NOT OPERATE, #1 WAS BURNED AND I OPENED 2, SIGNS OF EQUIPMENT STRUCK D GUY AT TX POLE, BURNED WIRE DOWN, BROKE XARM, CAL FIRE ONSITE, SMALL BRUSH FIRE STARTED, INC #CABTU7046.
HAWC Summary²:	Blackberry IC reporting fire contained to 0.1-ac and releasing all resources. ILIS comments state “3 RD PARTY EQUIPMENT HIT GUY WIRE, CAUSING WIRE TO GO DOWN. STARTED SMALL VEG FIRE AROUND POLE.” HAWC Ops advised and courtesy call made to DCC voicemail, final update unless conditions change.
Injuries / Fatalities / Property Damage / Media Attention:	No/No/No/No
Weather Conditions³:	At 1430 hours near the Incident Location: Temperature: 73.2°F Relative Humidity: 55% Wind Speed: 4.2 mph Wind Gust: 9.1 mph out of the west-southwest
Red Flag Warning (RFW) / High Wind Warning (HWW):	No/No
911 Standby Relief Time:	48 minutes
OIS #:	2435567
ILIS #:	24-0057189
FAS #:	T006375854 T006375852
TOTL #:	N/A

¹ FAS Field remarks are input verbatim.

² HAWC Summary remarks are input verbatim.

³ Weather Observation Site: PG506 (Elevation 1964 feet approximately 0.1 east of the Incident Location): Mesowest

Assigned Attorney:	N/A
Ignition Investigator & Phone:	[REDACTED]

Executive Summary

On April 20, 2024, at 1425 hours, PG&E dispatched a troubleshooter to the two-phase overhead (OH) segment of the Notre Dame 1104 12kV distribution line in Forest Ranch in response to a wire down. The troubleshooter had been conducting inspections north of the dispatched location when the tag came through. The troubleshooter traveled southbound on Deer Creek Highway (CA-32), stopping at fuse 26501 (SAP Pole ID 100331947) to open/de-energize the OH lines ("Incident Location #1 – Pole #1") associated with the wire down. One of the two fuses had combusted while still secured in the cutout, dropping molten metal on the ground, and igniting a small patch of fine dead fuels just outside the defensible space around the base of the pole (See Figures 7 & 9). The second fuse was still intact in the cutout. Neither fuse had operated.

After opening both of the fuses at Pole #1, de-energizing everything downstream, the troubleshooter patrolled the circuit to SAP Pole ID 103320076 ("Incident Location #2 – Pole #2") and SAP Pole ID 100331981 ("Pole #3"), which are one span apart from each other and approximately .58 mile south of Pole #1. CAL FIRE personnel were already on scene suppressing and containing an ignition at and near the base of Pole #2. There was one wire down between Pole #2 and Pole #3 (See Figures 2 & 3). The troubleshooter noted a small dozer nearby, evidence of recent dozer work, damage marks on the guy wire of Pole #3, and a wide gap between the pole and the soil at the ground level of Pole #3 (See Figures 4 & 5). The conductor was broken nearest to the Pole #3, with the majority of it suspended from Pole #2 and laying on the ground energized until it was de-energized by the troubleshooter when they manually opened both of the fuses (26501). The troubleshooter created EC priority 'A' Tag (#128609398) to replace the crossarm on Pole #2 and sixty feet of 4-aluminum steel conductor reinforced (4-ASCR) conductor between Pole #2 and Pole #3. The tag was completed that same day, and all customers were restored by 2233 hours.

The failed fuses from Pole #1 were collected and sent to Applied Technology Services (ATS) to be further analyzed. The failed connector from Pole #3 was also collected and sent to ATS. The visual and computed tomography (CT) examination of the failed fuse show evidence consistent with boric acid closedown, which likely caused uninterrupted arcing within the fuse. The fuse failure is likely instigated by a reported vehicle contact collision a few spans downstream near Pole #3, which caused a 4-ACSR conductor to fail at the crimp connector. The failed connector showed signs of plastic deformation of aluminum conductor spans.

The incident was reviewed by an Asset Failure Analysis (AFA) engineer, who also concurred that the E-Fuse failed likely due to boric closedown, which is a common failure mode for this fuse.

The Incident Location is in a Tier 3 High Fire Threat District (HFTD), approximately 1.7 miles from the edge of the Camp Fire burn scar to the south. The location is currently slated for undergrounding under PM Notification (#35374200). There is an Advanced Authorization amount \$3,121,600 for planned rebuild of 6.46 miles with level 3 system hardening construction for the Notre Dame 1104 12kV distribution circuit (See Figure 11). The forecasted due date for this project is August 21, 2025.

It was fair and dry on April 20, 2024, near the Incident Location. The high temperature for the day was 75.5 degrees and the low temperature was 59.7°F at 0650 hours. The relative humidity was as high as 71% at 0920 hours and was as low as 40% at 1630 hours. The strongest wind gust was 12.5 miles per hour (mph) at 1240 hours from the west.

The CAL FIRE⁴ report for the incident was received on May 28, 2024. The probable explanation extracted from the CAL FIRE report states: Equipment being operated impacted the power pole which caused the line to snap and cause a small fire under the pole just east of the pole impacted. The responding CAL FIRE captain and author of the report attributes this explanation to witness testimony and personal visual observation of the Incident Location.

System Protection Analysis

The Notre Dame 1104 12kV distribution circuit was not enabled with Enhanced Powerline Safety Settings (EPSS) at the time of the incident due to the fact that the circuit was in a R1 Fire Potential Index (FPI)⁵ and did not meet the expected wind speeds, relative humidity, and/or fuel moisture enablement thresholds. EPSS was not a factor in this incident.

Both Incident Locations were protected by fuse 26501 (E-Fuse), which did not operate as designed. It is designed to open at 124amps in 0.3 seconds, however, the fuse mis-operated and burnt up while staying secure in the cutout. The next upstream protective device after the fuse 26501 is recloser device 2028 (LR 2028), which was set in profile 1 (non-EPSS settings) with an operating time of 36 seconds at 90 amps. For operation, it would have needed to stay at the peak amperage (124amps) for at least 3 seconds, which it did not.

Ignition Impact

The ensuing fires burned at two separate locations approximately .58 miles apart and were reported as two separate incidents. For Index 309, the burn scar was approximately 12-feet x 18-feet in size, burning shrubs and vegetation around the base of Pole #2 (SAP Pole ID 103320076).

For index 309N, the burn scar was approximately 6.5-feet x 1foot in size just outside the defensible space of Pole #1 (SAP ID 100331947), burning dry grassy vegetation just outside the 10-foot defensible space circumference.

There were no reports of property damages or reports of injuries, fatalities, or media coverage in either incident. There was an outage on the Norte Dame 1104 that impacted forty-six customers for a total of 2,435,567 customer minutes.

Sequence of Events

April 20, 2024

- 1416 hours – First No Light (FNL)
- 1424 hours – Troubleshooter dispatched to patrol outage.
- 1445 hours – Troubleshooter reports fuse 26501, 1 of 2 burned (blown). Fuse 2 of 2 did not operate but troubleshooter opened it to make the Incident Location safe.

⁴ CAL FIRE Report #R012923-042224 – The full CAL Fire report, including audio recordings, may be found in the shared folder at the conclusion of this document.

⁵ Utility Fire Potential Index (FPI) Rating: A rating to determine the risk of fire and its likely behavior. Its calculation and scale from “R1” to “R5-Plus” considers fuel moisture, humidity, wind speed, air temperature, and historical fire occurrence. “R1”: Very little or no fire danger.

- 1556 hours – Troubleshooter reports one span 1 phase down (0.58 south of fuse 26501)
- 1719 hours – Crew given ok from Grid Control Center (GCC) to hold their own from fuse 26501 to end of line (EOL) during repairs.
- 2233 hours – Fuse 26501 close and check power okay. All customers restored.

Corrective Notification Associated with Ignition

EC Priority 'A' Tag (#128609398) to replace crossarm and conductor at Incident Location #2, which was completed the same day by a PG&E crew. The fuses were also replaced at Incident Location #1 and closed back in for re-energization of all impacted customers by 2233 hours on April 20, 2024.

Pending Work

Type	Number	Description	Priority	Date Identified	Due Date
PM Notification	35374200	Advanced Authorization amount \$3,121,600 for planned rebuild of 6.46 miles with level 3 system hardening construction for Norte Dame 1104 12kV distribution circuit.	Capital Construction – Planned Project	June 2, 2023	August 21, 2025
EC Notification	N/A				
COE Notification	N/A				
LC Notification	N/A				
Veg Work Order	N/A				

Please note this may not include pending major program or project work at the incident location.

Asset Info & Most Recent Inspections and Tests

Fuse Location Structure	SAP Pole ID 100331947 (Pole #1 – Incident Location #1) – Fuse 26501	
Info / Inspection	Most Recent Date	Findings
Install Date:	2006	Western Red Cedar, Class 4, 40' tall, Penta in Petroleum.
Inspection ⁶ :	May 10, 2022	No equipment damage or compelling abnormal conditions to report. Declaration Items – Minor work performed at this location.
Patrol:	N/A	

⁶ General Order 95 (GO95) – Detailed Enhanced Inspection.

Corrective History:	July 13, 2023 Completion Date	EC Tag # (126602508) - Insulators replaced due to animal chewing on poly-insulator. Damaged non-ceramic dead ends. Completed on July 16, 2023.
Aerial Inspection Records:	N/A	
VM Inspection:	N/A	
EVM Inspection:	N/A	
Equipment Test:	N/A	
Pole Intrusive Test:	December 26, 2007	Wood strength 100%, Pass.
WSIP Inspection:	March 28, 2019	There were no compelling abnormal conditions for the pole, equipment, and its associated spans.

*Incident Location: SAP Pole ID 100331947 – Pole #1

Source Side Structure	SAP Pole ID 103320076 (Pole #2 – Incident Location #2)	
Info / Inspection	Most Recent Date	Findings
Install Date:	October 15, 2013	Wood, Class 4, 45' tall.
Inspection:	May 9, 2022	No damage or compelling abnormal conditions to report.
Patrol:	N/A	
Corrective History:	N/A	
Aerial Inspection Records:	N/A	
VM Inspection:	N/A	
EVM Inspection:	N/A	
Equipment Test:	N/A	
Pole Intrusive Test:	N/A	Installed in 2013, no PT&T test/results on file.
WSIP Inspection:	April 4, 2019	There were no compelling abnormal conditions for the pole, equipment, and its associated spans.

*Incident Location: SAP Pole ID 103320076 – Pole #2

Load Side Structure	SAP Pole ID 100331981 (Pole #3 – Dozer Impact Location)	
Info / Inspection	Most Recent Date	Findings
Install Date:	1983	Douglas Fir, 45' tall, Class 5, Cellon Gas Treatment
Inspection:	May 9, 2022	No damage or compelling abnormal conditions to report. Other Required Data Items: Transformer is suspect of having PCB.
Patrol:	N/A	

Corrective History:	July 18, 2023	EC Tag # (126652652) - Fuses broken – to replace liquid fuse element with approved ELF-LR. Completed by Contractor on April 8, 2024.
Aerial Inspection Records:	N/A	
VM Inspection:	N/A	
EVM Inspection:	N/A	
Equipment Test:	N/A	
Pole Intrusive Test:	November 29, 2007	100% wood strength, pass.
WSIP Inspection:	April 4, 2019	Non-exempt fuse cutouts and/or switches associated with pole. Ground broken or missing or corroded connectors.

*Incident Location: SAP Pole ID 100331981 – Pole #3

Hazard Barrier Analysis:

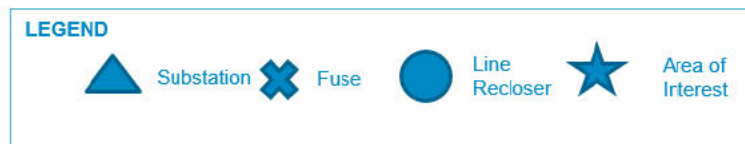
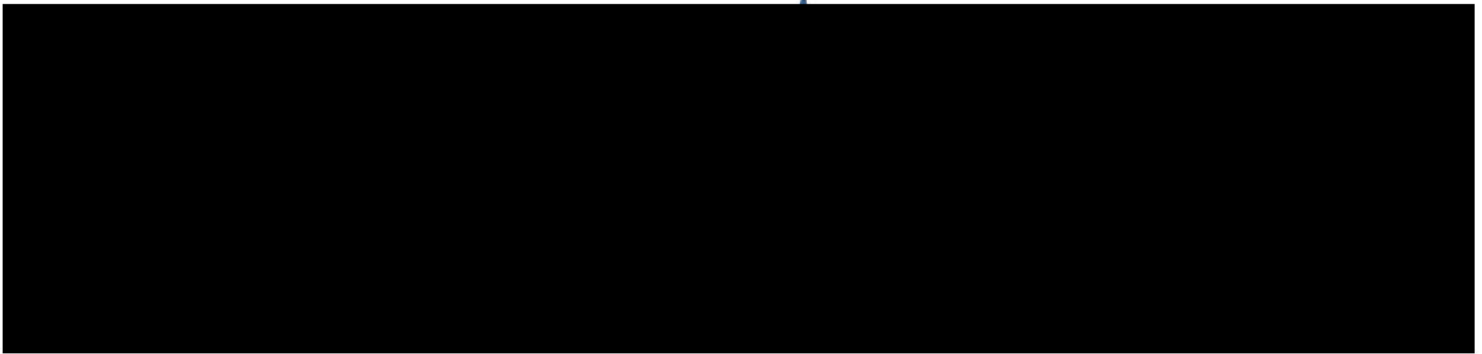
Index 309N

Hazard	Equipment Failure	Sub-Hazard	Fuse Failure (E-Fuse)
Target	To prevent future E-Fuse failures.		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event? (See ICF Codes)	Opportunity
Barriers that Positively Affected Ignition			
Utility Defensible Space	Expected Performance: Reduce the likelihood of rapid-fire development or impact in proximity to PG&E assets Extends pole clearing program to expand vegetation clearance around certain poles in HFTDs to extend firebreak; Observed Performance: Barrier performed as expected	[N/A]	This pole was scoped in under the voluntary risk reduction program for clearing due to its location in a high risk, HFTD zone.

Potential Next Steps / Associated CAP Items:

- AFA is conducting an E-Fuse Root Cause Evaluation, which includes a ‘fuse task force’ that is addressing the following issues:
 - Evaluate moisture ingress and boric acid close-down
 - Handling/storage issues such as removing from the packaging.
 - Open the fuses and hanging them upside down for an extended period of time.

Single Line Diagram



Photos and Diagrams of Events

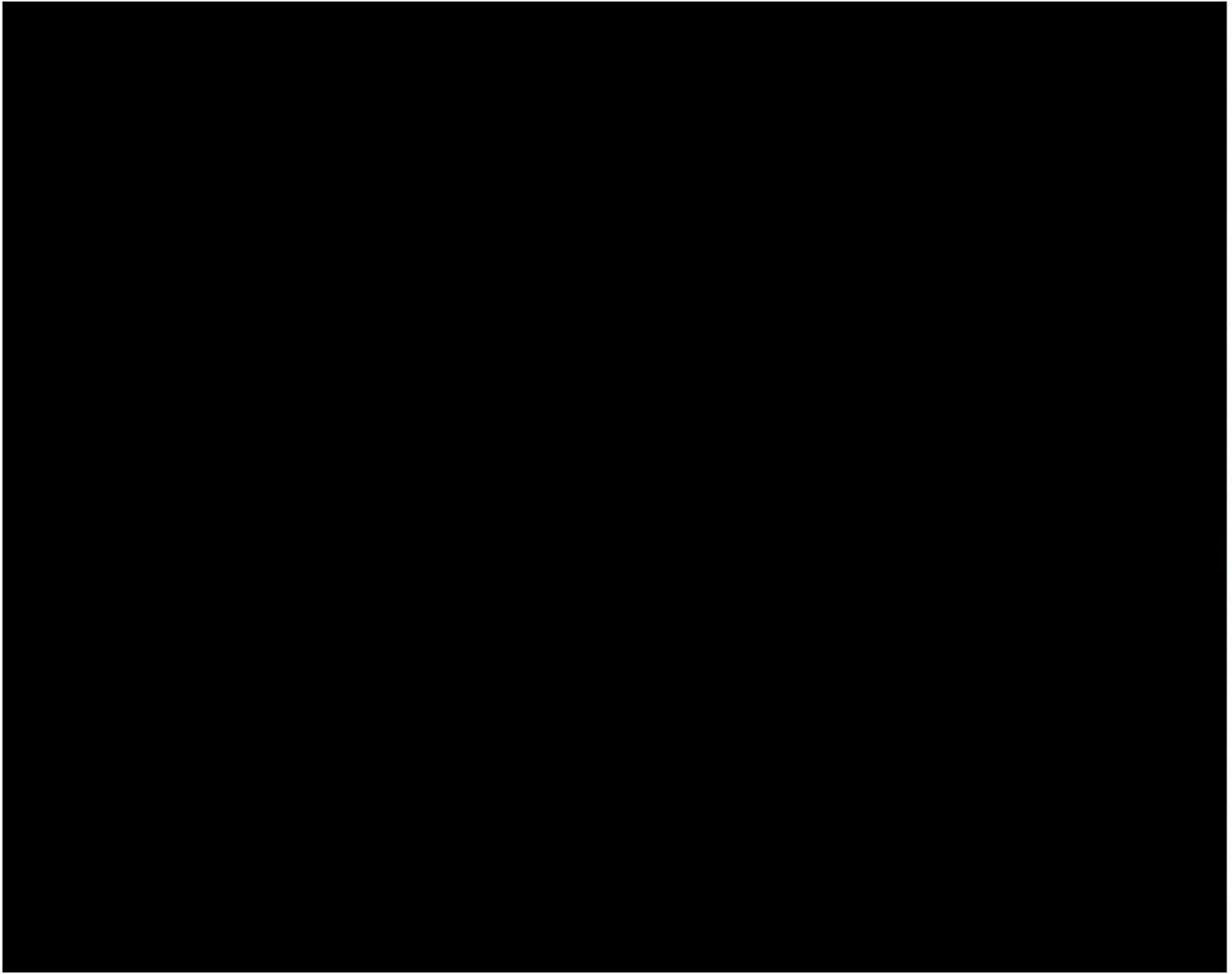


Figure 1 Google Earth Pro map of Incident Locations.



Figure 2 Base of SAP Pole 103320076 - Pole #2 – Incident Location #2. Burn scar was approximately 18' x 12' in size near the base of the pole. Photo taken by ignition investigator on April 22, 2024.



Figure 3 A small section of conductor (footage unknown) still suspended from Pole #2 (behind, to the right in photo). The conductor had melted where it came into contact with the ground. Photo taken by troubleshooter on April 20, 2024.



Figure 4 Base of Pole #3 showing the gap created from the forceful movement of the pole when the dozer snagged the guy wire. Photo taken by ignition investigator on April 22, 2024.



Figure 5 Guy wire from Pole #3 with visible damage and breakage on the plastic shell. Photo taken by ignition investigator on April 22, 2024.



Figure 6 Pole #2 (SAP Pole ID 103320076) - Incident Location #2. Crossarm was damaged when guy wire had been contacted by the dozer, the force pulling the conductor forcibly before it failed. Photo taken by troubleshooter on April 20, 2024.



Figure 7 Aerial view of Incident Location #1 - Pole #1 (SAP Pole ID 100331947, with Fuse 26501), showing the defensible space and burn scar just outside of it. Aerial drone photo taken by Ignition Investigator on April 22, 2024.



Figure 8 Incident Location #1 - Pole #1 with new fuses. Photo taken by Ignition Investigator on April 22, 2024.



Figure 9 Burn scar at Incident Location #1 - Pole #1. Burn scar was approximately 6.5' x 1' in size. Photo taken by Ignition Investigator on April 22, 2024.



Figure 10 E-fuses that were retrieved from Pole #1 - Incident Location #1. The partially burnt fuse and the sister fuse were sent to ATS for further analysis. Photo taken by troubleshooter on April 20, 2024.

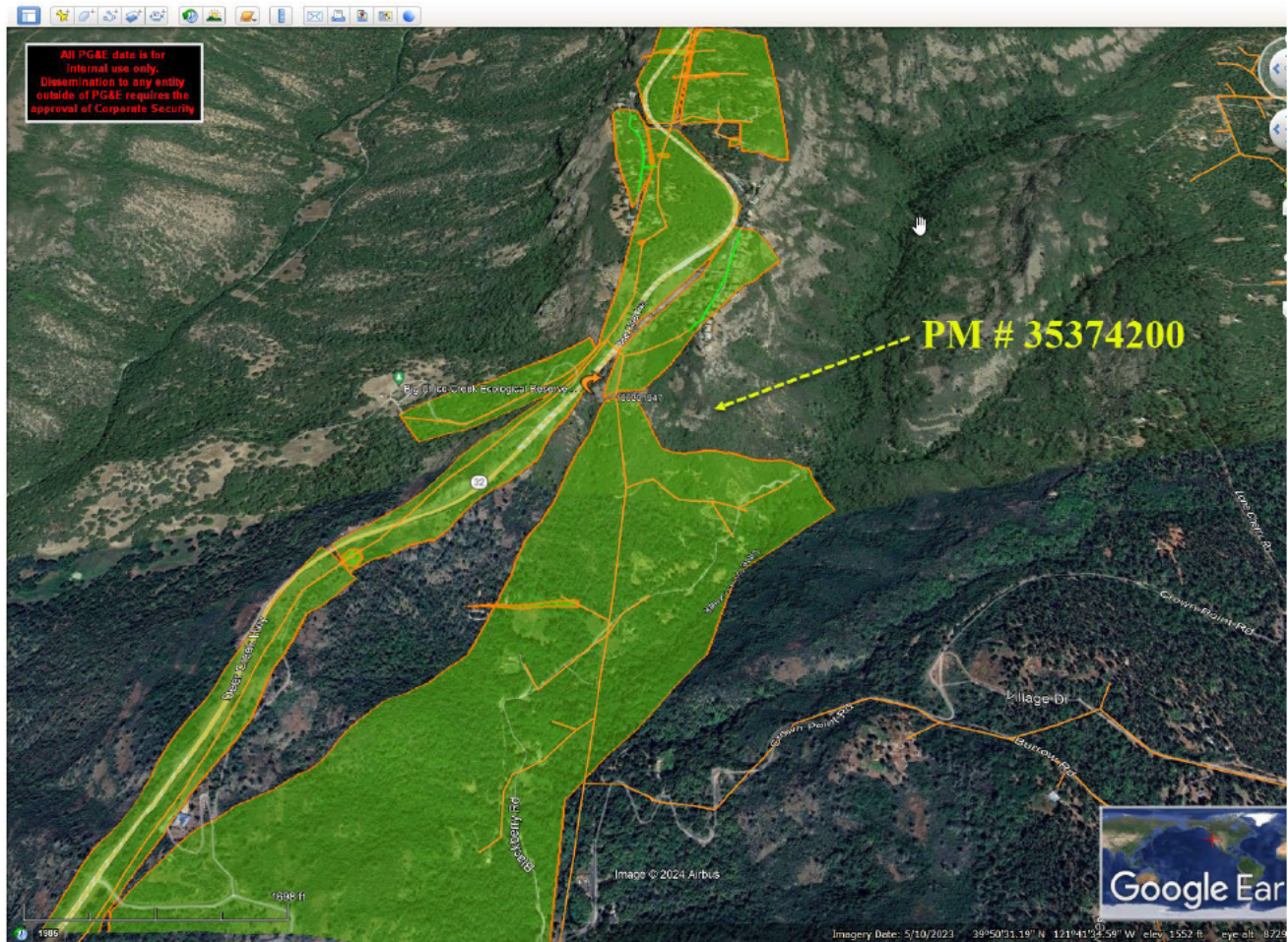


Figure 11 Google Earth Pro Map showing polygons for undergrounding projects. Both Incident Location are scoped into PM # 35374200, with a completion date of August 21, 2025.

Attachments

Attachments and references can be located in the ESA folder, located below:

Index 309

[REDACTED]

Index 309N

[REDACTED]

-----END of REPORT-----