



Preliminary Ignition Investigation Report

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|---|--------------------------------|
| Ignition Database Index: | 20241040N |
| Electric Incident Investigation (EII) Number: | N/A |
| Incident Name: | Hubbard – 26 Jul 2024 |
| PG&E Facility Ignition? | Yes |
| CPUC Reportable Ignition? | Yes |
| Date & Time of Incident: | 2024-07-26 @ 1441 ¹ |
| Street Address: | Hubbard Gulch Rd. |
| City: | Ben Lomond |
| County: | Santa Cruz |
| Latitude/Longitude: | 37.093046/-122.107773 |
| State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA) | SRA |
| PG&E Division: | Central Coast |
| High Fire Threat District (HFTD): | Tier 3 |
| High Fire Risk Area (HFRA): | Yes |
| EPSS Buffer: | No |
| Fire Index Area (FIA): | 520 |
| Fire Potential Index (FPI) Rating: FIA | R3 |
| Fire Potential Index (FPI) Rating: Circuit | R3 |
| Was there a PSPS event at the time of ignition? | No |
| Suspected Initiating Event: | Vegetation |
| Failure Driver: | Contact from object |
| Failure Sub-driver: | Contact – Vegetation |
| Circuit: | Burns 2101 |
| Circuit Protection Zone: | Burns 2101389090 |
| Nominal Voltage: | 21kV |
| Pole SAP Equipment ID: | 101671028; 101801686 |
| Subject to PRC 4292 Veg Pole Clearance: | Yes |
| PG&E Equipment associated with ignition: | Conductor – Primary |
| EPSS enabled at time of ignition? | Yes |
| Fault Type: | Force Out |
| Wire Down (Primary)? | No |
| Lead Agency/Agency Having Jurisdiction: | CAL FIRE |
| Fire Size: | 3 meters – 0.25 acres |
| FAS Field Remarks: | |

¹ Fire discovery time according to IRWIN.

| | | |
|---|---|------------|
| | “tree fell into primary, cleared tree from primary, call for tree crew and grounding crew, started small fire 15' x 15'. Could not complete tag due to inability to enter GPS coordinates. Coordinates are 37.05.581-122.06.441” | |
| HAWC Summary: | “Resources responded to report of vegetation fire with wires down near 1000 Hubbard Gulch Road in Tier 3. Fire had forward progress stopped by single engine unit at unknown size. OMT reported an outage in the area affecting 1,686 customers on BURNS 2101 EPSS-enabled circuit. HAWC Ops advised and EPSS alert sent with incident marked Active for EII. Final update unless conditions change.” | |
| Injuries / Fatalities / Property Damage / Media Attention: | 0 / 0 / 0 / 0 | |
| Weather Conditions: | Temperature: 75.8°F Relative Humidity: 48% Wind Speed: 4.2 mph out of the SSE Wind Gust: 10.6 mph Weather observation site approximately 2.7 miles east of the Incident Location | |
| Red Flag Warning (RFW) / High Wind Warning (HWW): | No / No | |
| 911 Standby Relief Time: | 34 minutes | |
| OIS #: | 2527741 | |
| ILIS #: | 24-0092598 | |
| FAS #: | T006460169 | |
| TOTL #: | N/A | |
| Assigned Attorney: | N/A | |
| Ignition Investigator & Phone: | ██████████ | ██████████ |
| | ██████████ | ██████████ |

Executive Summary

On July 26, 2024, at 1527 hours, CAL FIRE notified PG&E of a small grass fire and trees contacting a powerline near 616 Hubbard Gulch Road (“Incident Location”, Figure 1) in Ben Lomond, California. At 1538 hours,² PG&E dispatched a troubleshooter to the Incident Location adjacent to the EPSS-enabled, three-phase Burns 2101 21kV Distribution Circuit located within a Tier 3 HFTD and HFRA. Upon arrival at 1602 hours, the troubleshooter observed a tree (“Incident Tree”, Figure 2) with an intact branch in simultaneous contact with two phases of primary overhead conductor (“Incident Span”, Figure 2 and Figure 4) between wood pole SAP ID 101671028 (“Incident Pole 1”, source side, supporting structure for Switch (SW) 10777, Figure 3 and Figure 4) and wood pole SAP ID 101801686 (“Incident Pole 2”, load side, Figure 2 and Figure 4), and a single branch on the ground and on fire below the Incident Span next to the smoldering remains of a brush fire along the south edge of the road.

At 1613 hours, the Distribution Control Center (“DCC”) disabled EPSS at Circuit Breaker (CB) 2101/2, Line Recloser (LR) 389090, and LR 10912 (Figure 5). DCC subsequently opened LR 389090 at 1614 hours, deenergizing approximately 1,711 customers, and enabling the troubleshooter to open SW 10777 while deenergized. At 1618 hours, the troubleshooter opened SW 10777, and DCC opened LR 10912 at 1619 hours. At 1622 hours, DCC closed LR 389090, which re-energized the line up to SW 10777 and restored power to approximately 25 customers. The troubleshooter then began to trim the branch in contact with the Incident Span, and at 1655 hours notified DCC that the branch was clear, and the line was ready to be re-energized. At 1700 hours, the troubleshooter closed SW 10777, reenergizing the line up to LR 10912 and restoring power to approximately 40 customers. At 1705 hours, the troubleshooter began to patrol the line downstream of the Incident Location. Meanwhile, at 1707 hours, DCC closed LR 10912, restoring power to all remaining customers, and re-enabled EPSS at CB 2101/2, LR 389090, and LR 10912 at 1713 hours. The troubleshooter completed the line patrol down to LR 10912 at 1714 hours, and, at 1750 hours, created a corrective notification (EC 129297897) for removal of the Incident Tree.³

Prior to the incident, on July 15, 2024, Vegetation Management (“VM”) identified the Incident Tree as non-compliant during an annual inspection, and prescribed for complete removal with priority P2.⁴ Inspection crews noted that the Incident Tree was within the minimum distance requirement to the conductors, and posed a fall-in risk due to “unusual tree architecture.”⁵ The prescribed work was pending at the time of the Incident, and not required to be completed until August 4, 2024. A post incident review confirmed the inspection crew prioritized prescribed work in conformance with TD-7102P-01. The tree was removed by a PG&E crew on July 27, 2024. On July 29, 2024, VM patrolled the Incident Location and observed the remains of the Incident Tree but were unable to determine the failure mode (Figure 6).⁶

A weather station located approximately 2.7 miles east of the Incident Location recorded a temperature of 75.8°F, a relative humidity of 48%, with sustained winds of 4.2 miles per hour (mph), and gusts up to 10.6 mph out of the south-southeast direction at the time of the incident. Meteorology indicated the actual Fire Potential Index (FPI) rating was R3.

² According to call recordings, a PG&E Troubleshooter was first dispatched at 1531 hours, then subsequently cancelled when it was determined that another troubleshooter was closer to the Incident Location.

³ Note: The troubleshooter later confirmed with the Ignition QC team that there was no damage to PG&E assets and no wire down or wire-sag that required repairs.

⁴ VM XoC Patrol Report for ILIS Outage # 24-0092598.

⁵ VM Prescription RX-02440392.

⁶ VM Incident Report Form for ILIS Outage # 24-0092598.

This information is preliminary, and all times, customer numbers, and measurements mentioned in this report are approximate.

System Protection Analysis

EPSS was enabled for the Burns 2101 21kV circuit at the time of the incident. Protective devices upstream of the Incident Location include LR 389090⁷ and CB 2101/2⁸ (Figure 5). At the time of the incident, LR 389090 was in EPSS Mode 3 with Instantaneous and Time Overcurrent settings active for phase and ground,⁹ and has Sensitive Ground Fault (SGF) and Downed Conductor Detection (DCD) capabilities, but they were not enabled since the circuit is a 4-wire system.

Contact to the Incident Span by the Incident Tree caused a high impedance, line-to-line fault that did not meet EPSS minimum trip conditions. No protective devices operated automatically, and no AMI partial voltage alarms were received. On July 26, 2024, at 1614 hours, LR 389090 was forced open via SCADA with a clearing time of 80ms. The EPSS protective devices operated as expected.

Ignition Impact

The incident ignited a 15-foot-by-15-foot vegetation fire underneath the Incident Span. The ignition caused no damage to PG&E equipment or surrounding property, no individuals were injured, and there was no reported media exposure. The outage associated with this event affected 25 customers for a total duration of approximately eight minutes, 40 customers for a total duration of approximately 46 minutes, and 1,646 customers for a total duration of approximately 53 minutes.

Sequence of Events

July 26, 2024

- 1441 hours – IRWIN reports fire discovered.
- 1527 hours – CAL FIRE reports hazardous trees into powerline and small grass fire.
- 1538 hours – PG&E Troubleshooter dispatched.
- 1602 hours – Troubleshooter arrives at the Incident Location.
- 1613 hours – DCC disables EPSS at LR 389090, CB 2101/2, & LR 10912
- 1614 hours – DCC opens LR 389090, deenergizing approximately 1,711 customers.
- 1618 hours – Troubleshooter opens SW 10777.
- 1619 hours – DCC opens LR 10912.
- 1622 hours – DCC closes LR 389090, restoring power to approximately 25 customers.
- 1655 hours – Troubleshooter reports tree branch removed.
- 1700 hours – Troubleshooter closes SW 10777, restoring power to approximately 40 customers.

⁷ LR 389090 controller is a Beckwith Viper Rev 8.1.1.

⁸ CB 2101/2 is an IPAC GE-F60/SEL 351.

⁹ According to the settings file for LR 389090, accessed on July 31, 2024.

- 1707 hours – DCC closes LR 10912, all customers restored.
- 1713 hours – DCC enables EPSS at LR 389090, CB 2101/2, and LR 10912.
- 1750 hours – Troubleshooter creates EC notification 129297897 for removal of tree over primary conductor.

Corrective Notification Associated with Ignition

One EC Notification was created in response to this incident for the removal of the Incident Tree.

| Type | Number | Description | Priority | Date Identified | Due Date |
|-----------------|-----------|-----------------------------|----------|-----------------|--------------|
| EC Notification | 129297897 | Remove tree over conductor. | A | Jul 26, 2024 | Jul 27, 2024 |

Pending Work

| Type | Number | Description | Priority | Date Identified | Due Date |
|------------------|-------------|------------------------------------|----------|-----------------|-------------|
| EC Notification | | | | | |
| COE Notification | | | | | |
| LC Notification | | | | | |
| Veg Work Order | RX-02440392 | Major dismantle – remove to ground | P2 | Jul 15, 2024 | Aug 4, 2024 |

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

Asset Info & Most Recent Inspections and Tests

| | | |
|------------------------------|-------------------------|---|
| Source Side Structure | SAP ID: 101671028 | |
| Info / Inspection | Most Recent Date | Findings |
| Install Date: | 1961 | Douglas Fir wood pole; Class 4; 45-foot-tall; Penta treated |
| Inspection: | May 5, 2022 | No compelling abnormal conditions to report. |
| | Jun 24, 2021 | No compelling abnormal conditions to report. |
| Patrol: | Jul 15, 2024 | None |
| Corrective History: | Aug 7, 2018 | Tighten guy and replace marking (completed Aug 7, 2018) |
| Aerial Inspection Records: | N/A | - |
| VM Inspection: | Jul 15, 2024 | Incident Tree was identified for P2 removal |
| EVM Inspection: | N/A | - |
| Equipment Test: | N/A | - |
| Pole Intrusive Test: | Jun 5, 2017 | Pass |
| WSIP Inspection: | Apr 20, 2019 | Non-exempt solid blade disconnect. |

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| Load Side Structure | SAP ID: 101801686 | |
| Info / Inspection | Most Recent Date | Findings |

| | | |
|----------------------------|--------------|--|
| Install Date: | 1986 | Douglas Fir wood pole; Class 4; 45-foot-tall; Cellon Gas treated |
| Inspection: | May 5, 2022 | No compelling abnormal conditions to report. |
| | Jun 24, 2021 | No compelling abnormal conditions to report. |
| Patrol: | Jul 15, 2024 | None |
| Corrective History: | Nov 4, 2021 | Replace fuse cutouts (completed Sep 19, 2023) |
| | Apr 30, 2019 | Replace decayed crossarm (canceled); Trim and tighten down guy and adjust loose framing (completed Nov 30, 2022) |
| Aerial Inspection Records: | N/A | - |
| VM Inspection: | Jul 15, 2024 | None |
| EVM Inspection: | N/A | - |
| Equipment Test: | N/A | - |
| Pole Intrusive Test: | Mar 28, 2017 | Pass |
| WSIP Inspection: | Apr 30, 2019 | Guy covered in vegetation; auto-splices present; non-exempt fuse |

Hazard Barrier Analysis:

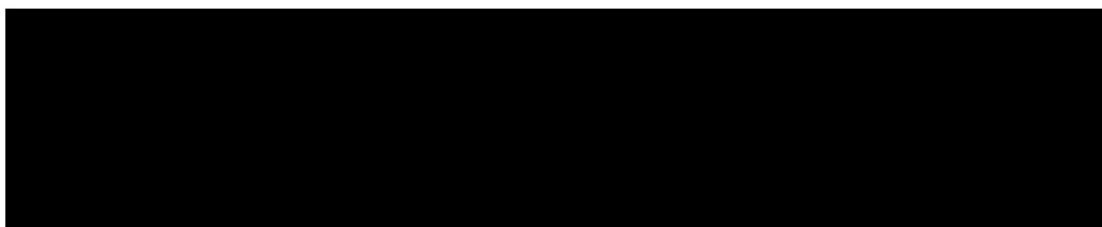
| Hazard | Vegetation Contact | Sub-Hazard | Branch Contact |
|--|---|--|---|
| Target | Branch contact with primary overhead conductors in a Tier 3 HFTD and HFRA resulting in a 15-foot by 15-foot brush fire. | | |
| Barrier | Expected vs. Observed Performance | Why did the barrier not prevent the ignition event? (See ICF Codes) | Opportunity |
| Other Relevant Barriers | | | |
| Distribution Annual Vegetation Patrol | Expected Performance: Identify vegetation within minimum distance requirements Observed Performance: Barrier performed as expected | A3B1C1D3 – Maintenance tag priority ineffective in preventing failure | Tree was identified as non-compliant (P2) and prescribed for removal during annual inspection 11 days before the ignition. Based on the condition described in the work prescription, it appears to have been correctly assigned P2 rather than P1. |
| Barriers that were Assessed as Opportunities | | | |

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|--|---|--|---|
| Covered Conductor on Primary Conductors Document 015195, TD-9100B-009 | Expected Performance: Prevent line-to-line fault and resulting sparks when branch contacted line. Observed Performance: Barrier did not exist. | A4B2C1D2 – Program limited to certain conductors | Covered conductors likely would have prevented fault that led to ignition. |
| Early Fault Detection (EFD) | Expected Performance: Detect and locate line-to-line high-impedance faults. Observed Performance: Barrier did not exist | N/A | Branch caused line-to-line high-impedance fault that was undetected by other systems in-place. EFD may have identified the fault. |
| Distribution Fault Anticipator (DFA) | Expected Performance: Detect equipment problems, such as line-to-line high-impedance faults Observed Performance: Barrier did not exist | N/A | Branch caused line-to-line high-impedance fault that was undetected by other systems in-place. DFA may have identified the fault. |
| Gridscope | Expected Performance: Detect tree branch contacting line and enable faster response. Observed Performance: Barrier did not exist | A4B2C1D2 – Program limited to certain conductors | System may have identified tree contact and enabled faster response and may have limited the ignition. |

Potential Next Steps / Associated CAP Items:

No next steps were identified as a result of this ignition.

Single Line Diagram



LEGEND



Substation



Fuse



Line
Recloser



Area of
Interest

Photos and Diagrams of Events

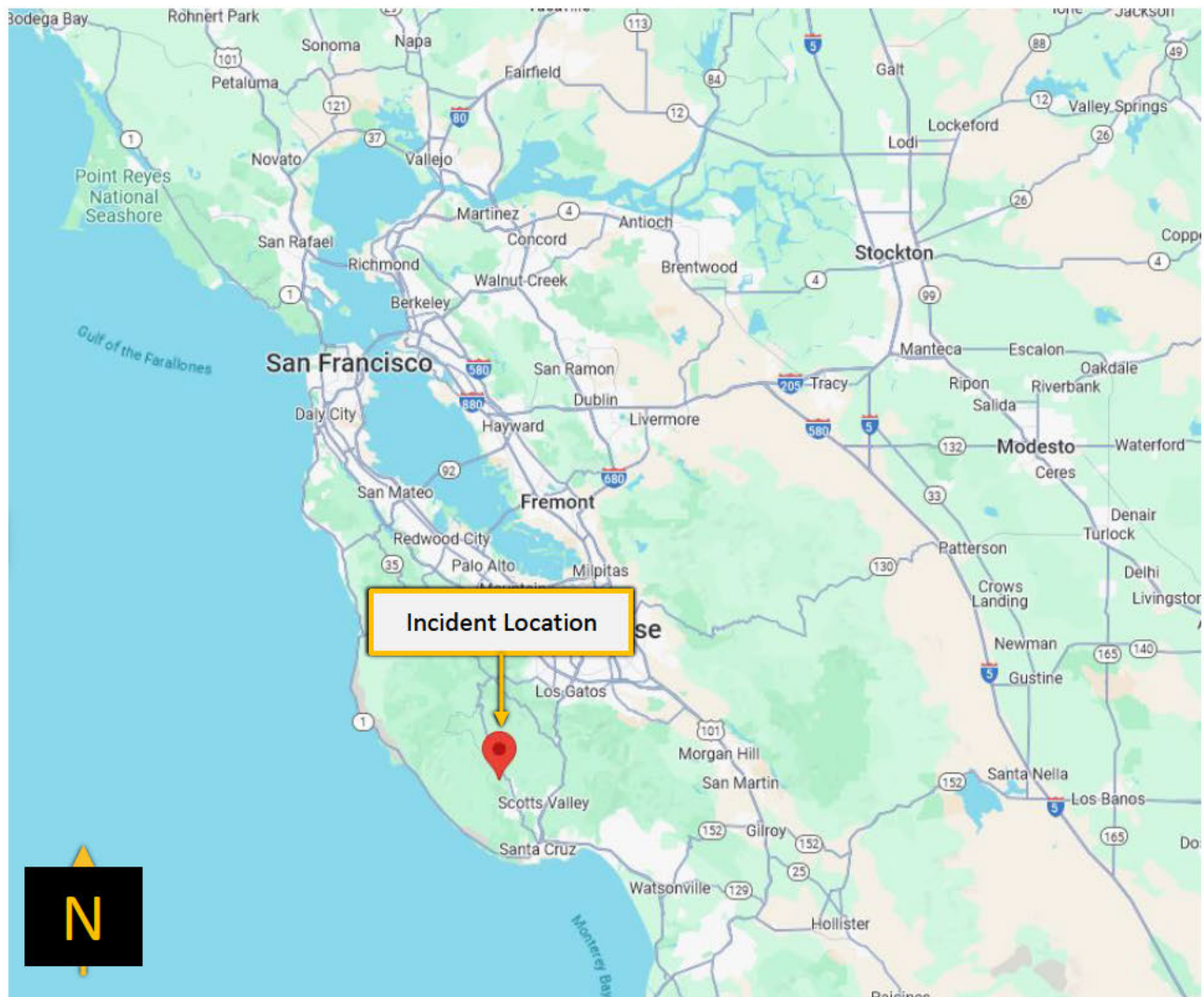


Figure 1. Map indicating the Incident Location (map data provided by Google, accessed September 12, 2024).

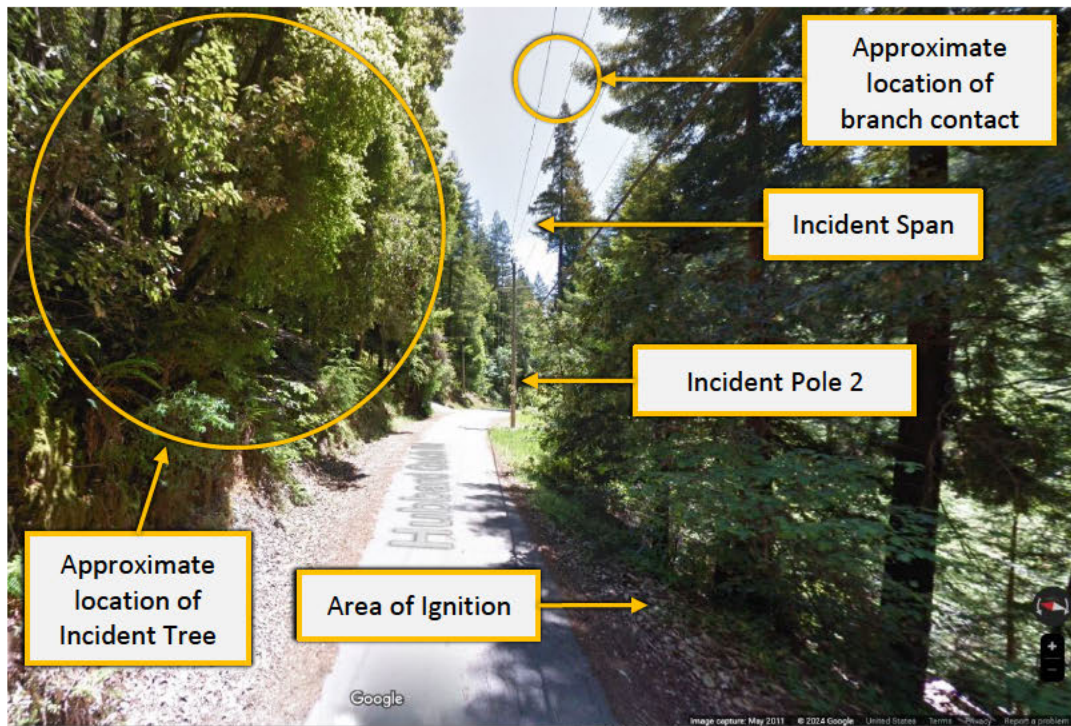


Figure 2. Publicly available image of the Incident Span, Incident Pole 2, Area of Ignition, approximate location of branch contact, and approximate location of Incident Tree before the Incident (eastbound, photo from May 2011, provided by Google Street View, accessed September 13, 2024).

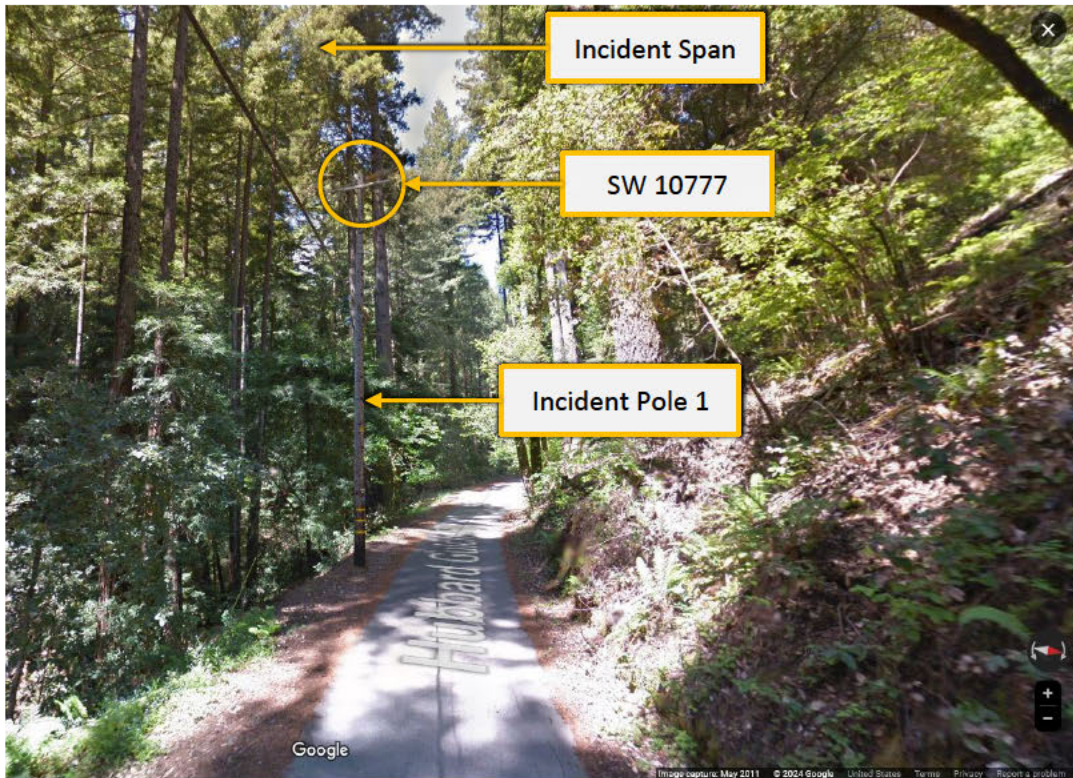


Figure 3. Publicly available image of the Incident Span, Incident Pole 1, and Switch 10777 (westbound, photo from May 2011, provided by Google Street View, accessed September 13, 2024).

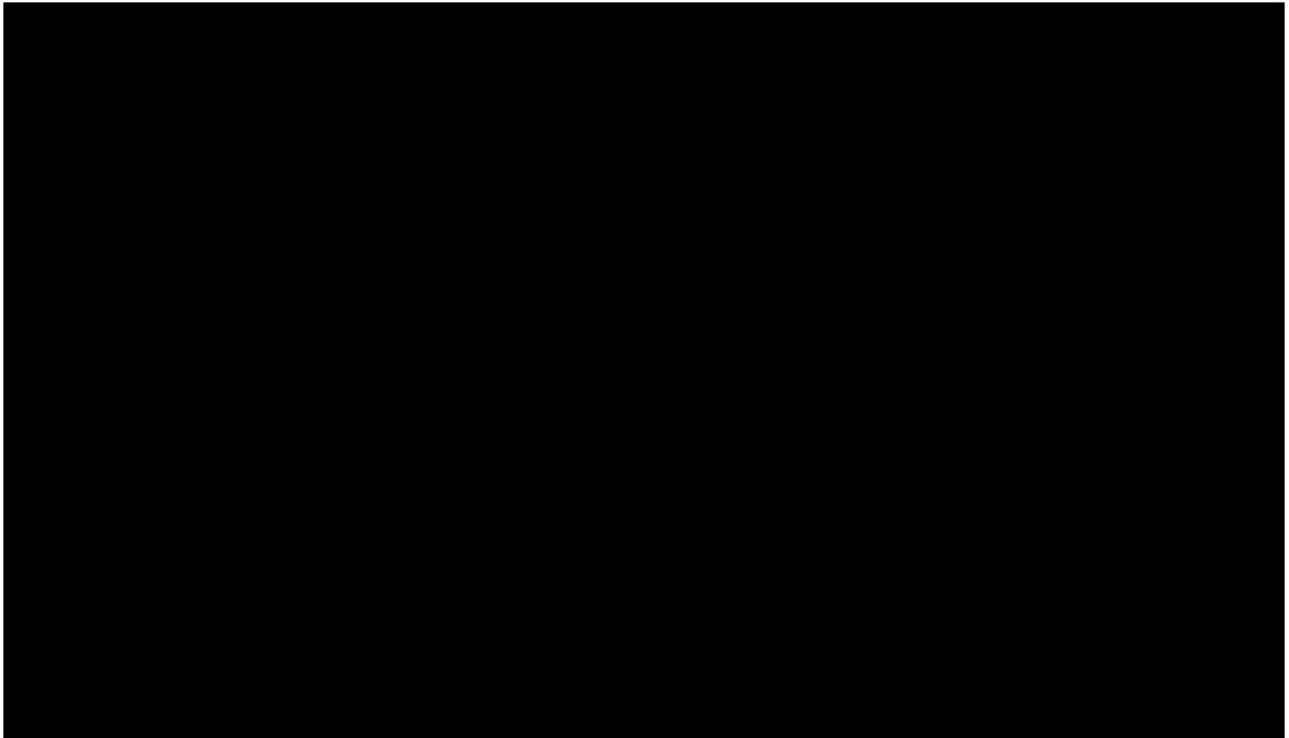


Figure 4. EDGIS map of the Incident Location.

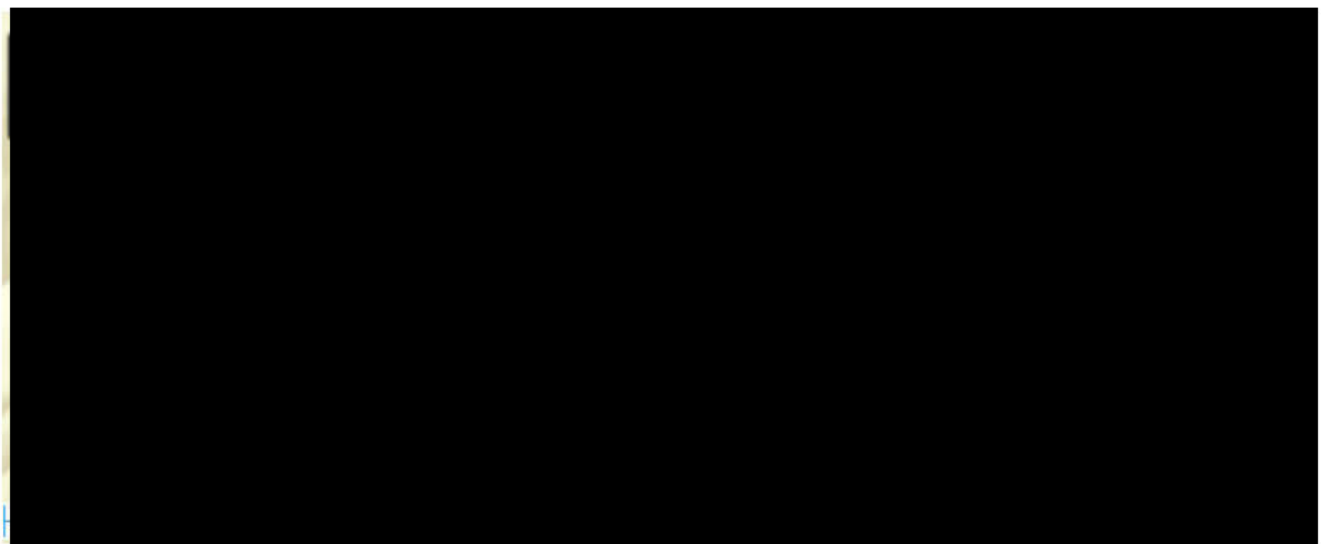


Figure 5. EDGIS trace of Incident Circuit Segment.

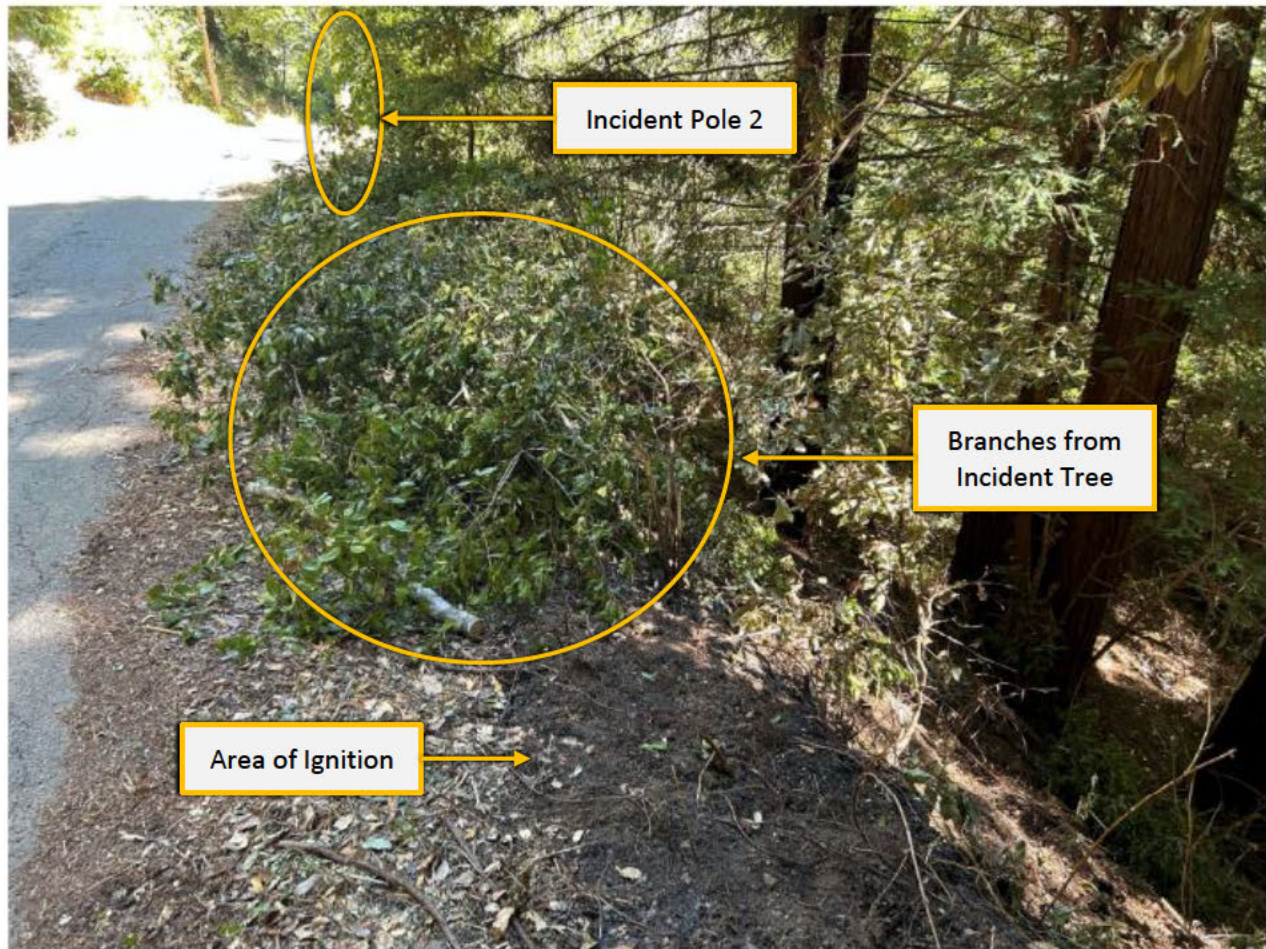
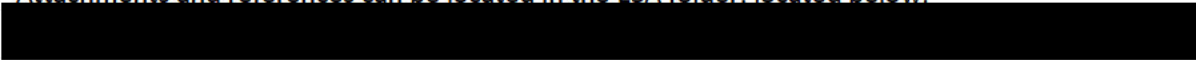


Figure 6. Vegetation Management Incident Report. Photo shows the edge of the area of ignition and a portion of tree canopy from the Incident Tree (eastbound, taken July 29, 2024).

Attachments

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



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