



## Preliminary Ignition Investigation Report

Ignition Database Index:	20240602
Electric Incident Investigation (EII) Number:	NA
Incident Name:	Novato
PG&E Facility Ignition?	Yes
CPUC Reportable Ignition?	Yes
Date & Time of Incident:	June 07, 2024, at 0750 hours
Street Address:	West of Bowman Canyon Rd on Novato Blvd. Nearest address 2756 Novato Blvd. Novato, CA, Marin County.
City:	Novato
County:	Marin
Latitude/Longitude:	38.126218, -122.626308
State Responsibility Area (SRA) / Local Responsibility Area (LRA) / Federal Responsibility Area (FRA)	State Responsibility Area (SRA)
PG&E Division:	North Bay
High Fire Threat District (HFTD):	Tier 2
High Fire Risk Area (HFRA):	Yes
EPSS Buffer:	No
Fire Index Area (FIA):	190
Fire Potential Index (FPI) Rating: FIA	R1
Fire Potential Index (FPI) Rating: Circuit	R1
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:	Stafford 1102
Circuit Protection Zone:	Stafford 1102-361952
Nominal Voltage:	12kV
Pole SAP Equipment ID:	102221971
Subject to PRC 4292 Veg Pole Clearance:	No
PG&E Equipment associated with ignition:	Crossarm
EPSS enabled at time of ignition?	No
Fault Type:	Line to ground
Wire Down (Primary)?	Yes
Lead Agency/Agency Having Jurisdiction:	Novato Fire Protection District
Fire Size:	One acre

<b>FAS Field Remarks:</b>	"Oak tree pinning 3 phase to ground and broken xarm and conductor 2 spans SS of tree contact"
<b>HAWC Summary:</b>	"Fire resources were dispatched to a report of smoke in the area of Mount Burdell. Upon arrival the Novato IC advised that there was a confirmed vegetation fire burning in grassy oak at a slow rate of spread. Once access was gained to the incident, the IC advised forward progress was stopped by locals at approximately 1/2 of an acre. Units 2 units remained on scene for mop up and the balance was canceled. An outage was reported on the EPSS enabled Stafford 1101 OH circuit (OIS# 2478909) affecting approximately 53 customers. T-Man [REDACTED] [REDACTED] contacted the HAWC to report the incident per standard EMER 4102-S. He advised that an oak tree branch had come down striking the 3-phase tap resulting in a broken cross arm and the wires down. 13 customers remain out of service until repairs can be made. An EPSS EB alert sent [REDACTED], and the Ops Supe and PSS were notified. Closing incident barring any significant change in the current conditions as advised."
<b>Injuries / Fatalities / Property Damage / Media Attention:</b>	No/no/no
<b>Weather Conditions:</b>	Temperature: 56.2°F Relative Humidity: 85% Wind Speed: 0.8 mph from the east-southeast Wind Gust: 2.7 mph
<b>Red Flag Warning (RFW) / High Wind Warning (HWW):</b>	No/no
<b>911 Standby Relief Time:</b>	NA
<b>OIS #:</b>	2478909
<b>ILIS #:</b>	24-0074565
<b>FAS #:</b>	T006413765
<b>TOTL #:</b>	NA
<b>Assigned Attorney:</b>	NA
<b>Ignition Investigator &amp; Phone:</b>	[REDACTED]

## Executive Summary

On June 7, 2024 at 0744 hours, Line Recloser (LR) 1202 recorded a high impedance line-to-ground fault and did not open immediately. At the same time PG&E SmartMeters™ downstream of the Incident Location registered a last gasp. At 0745 hours, LR 1202 opened on a line-to-ground fault impacting 53 customers.

As a result of the outage, a PG&E troubleshooter was dispatched at 0759 hours to the Enhanced Powerline Safety Settings (EPSS) enabled Stafford 1102 12kV overhead distribution circuit west of Bowman Canyon Rd. on Novato Blvd. The troubleshooter arrived at approximately 0809 hours to the Incident Location approximately 500 yards northwest of 2756 Novato Blvd. (see Figure 1). The Incident Location is in State Responsibility Area and a Tier 2 HFTD in Marin County.

According to the troubleshooter, a tree fell into the conductors causing the outage along one span of tree wire that was installed over a creek. When the tree came down it did not cause a wire down on the span where the tree made contact with the conductor (potentially due to the resiliency of the tree wire). The tree fell between SAP ID 102221958 (Pole #1) and SAP ID 102221965 (Pole #2) (See Figure 1). When the tree fell, it put tension on the infrastructure and caused a wire down two spans south of the tree at pole SAP ID 102221971 (Pole #3). The tension caused the crossarm to twist perpendicular from its normal direction and one of the conductors came down and started a vegetation fire (see Figure 4). The troubleshooter helped the farmer put out the fire and it was extinguished by the time the fire department arrived. The vegetation fire started on a hillside burning an area of approximately 8,000 square feet and jumped across a dirt road, burning an area of flat grass land next to the top of the creek. The second burnt area was about 2,000 square feet in size (see Figure 1, 2 and 3).

Novato Fire Protection Districts (NFPD) and Marin County Fire Department both responded to the approximately one-acre vegetation fire. The NFPD engine arrived on scene at 0825 hours and reported PG&E on scene with report of wires down.

On June 7, 2024, a PG&E crew replaced Pole #2 and replaced the crossarms and repaired the downed conductor at Pole #3.

It was a cool dry day on June 7, 2024 near the Incident Location. The high temperature for the day was 79.0°F at 1330 hours and the low temperature was 50.9°F at 0610 hours. The relative humidity was as high as 93% at 2350 hours and was as low as 52% at 1350 hours. The strongest wind gust was 17.6 miles per hour (mph) at 2230 hours from the west.

PG&E's Vegetation Management (VM) conducted a Fire Incident Investigation on June 12, 2024. The vegetation management inspector (VMI) identified partial failure of an alive 85-foot high, large diameter at breast height (DBH) California bay laurel (*Umbellularia californica*) "subject tree" (see Figure 7). The subject tree was listed in the OneVM Database as tree number VP-08233705. The subject tree failed at stem union eight feet above ground and impacted PG&E's distribution facilities. The VMI observed the subject tree as hollowed out at its base with extensive rot present (see Figures 5 and 6). The last inspection of the subject tree occurred on March 4, 2024, which prescribed a priority 2 (P2) trim but failed to list the tree for removal warranted by the external defect indicators present. VM work was last performed on the tree on May 7, 2024 to obtain radial clearance for and overhanging limb (work request MANB1032154). The subject tree had never been identified for work by VM's Second Patrol program.

Vegetation Management conducted a post ignition Extent of Condition (XoC) Patrol on June 11, 2024 to assess for similar conditions that lead to the ignition five spans in all direction from the Incident Location. The XoC observed most surrounding spans absent of vegetation and listed four bay trees on the outage span for removal due to overhang with questionable root integrity. All additional tree work was completed by September 18, 2024. VM also noted that the large number of priority 2 (P2) identified trees is concerning, noting that a reinspection would be beneficial.

PGE& is not aware of any injuries, fatalities, property damage or media reports on from incident.

This information is preliminary.

### System Protection Analysis

At the time of the incident the Stafford 1102 circuit was under EPSS protection which operated as designed. Oscillography and sequence of events (SOE) pulled from LR 1202 show there was a high impedance line-to-ground fault that occurred around 0744 hours. The ground amps hovered around the Sensitive Ground Fault (SGF) setting for an undetermined amount of time, but it did not remain above 15A for 21s to trip on SGF. The ground amps increased above LR 1202's minimum to trip of 100A, and the LR opened to clear the fault on 50G. LR 1202 was not downed conductor detection (DCD) capable at the time of the ignition.

As a result of this event analysis, EPSS settings were added to LR 361592 on June 24, 2024, which was previously in "switch mode". Additionally, LR 1202's SGF was lowered to 5A and the controller was replaced with a Beckwith M7679, which is DCD capable, as part of the DCD retrofit program on September 26, 2024.

### Ignition Impact

The wire down ignited a fire that burned approximately one acre in light flashy fuels and an caused an outage impacting 53 customers for a total of 14,051 outage minutes. PG&E is not aware of any injuries, fatalities, property damage or media reports on from incident.

### Sequence of Events

06/07/2024

- 0744 hours: LR 1202 recorded a line-to-ground fault
- 0744 hours: PG&E SmartMeter™ downstream of the Incident Location registered a last gasp
- 0745 hours: LR 1202 opened on a line-to-ground fault
- 0809 hours: Troubleshooter arrived on scene
- 0825 hours: Novato Fire Protection Districts arrived on scene
- 0844 hours: Troubleshooter reported tree into primary wire down
- 0845 hours: LR 361952 opened via Supervisory Control and Data Acquisition (SCADA) by the Distribution Control Center (DCC)
- 0848 hours: 100% Patrol completed beyond LR 1202
- 0853 hours: LR 1202 closed, restoring 40 customers
- 2237 hours: LR 361952 (switch mode) closed, restoring remaining 13 customers

### Corrective Notification Associated with Ignition

Priority A Electric Corrective (EC) tag NOTIF 129034998 was created to replace the broken crossarm. A contract crew installed a new 8-foot tangent crossarm and a center phase tangent bird guard on June 7, 2024.

Priority A Electric Corrective (EC) tag NOTIF 129037397 was created to replace broken pole SAP ID: 102221965 (Pole #2) (New SAP I ID: 104213732) and was completed on June 7, 2024.

### Pending Work

No open or pending work on “incident location” SAP ID 102221971 (Pole #3) at the time of the incident.

Type	Number	Description	Priority	Date Identified	Due Date
EC Notification	NA	-	-	-	-
COE Notification	NA	-	-	-	-
LC Notification	NA	-	-	-	-
Veg Work Order	NA	-	-	-	-

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

### Asset Info & Most Recent Inspections and Tests

<b>Incident Structure (Subject Pole)</b>	Pole #3: 102221971	
<b>Info / Inspection</b>	<b>Most Recent Date</b>	<b>Findings</b>
Install Date:	1972	Class 5, Cellon gas,
Inspection:	06/03/2021	No vegetation issues or compelling abnormal conditions to report for the EC in accordance with GO165, GO95, PRC 4292, PRC 4293
Corrective History:		Nothing significant to report as it relates the ignition
Aerial Inspection Records:	NA	
VM Inspection:	03/04/2024	Incident tree prescribed for radial clearance pruning (work request MANB1032154) performed May 7 <sup>th</sup> , 2024.
EVM Inspection:	NA	Not previously in EVM Scope
Equipment Test:	NA	NA
Pole Intrusive Test:	05/01/2019	Visual sound and pull. Pass. 100% wood strength. Pole top condition: fair; pole bottom condition: fair
WSIP Inspection:	05/11/2024	Nothing significant to report as it relates the ignition

<b>Source Side Structure</b>	Pole #2: SAP ID: 102221965
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	New SAP ID: 104213732 (replaced post incident Notification 35559131)	
<b>Info / Inspection</b>	<b>Most Recent Date</b>	<b>Findings</b>
Install Date:	1971	Douglas fir, cellon gas, class 5
Inspection:	06/03/2021	F Tag for High sign Notification # 121479324
		No vegetation issues or compelling abnormal conditions to report for the EC in accordance with GO165, GO95, PRC 4292, PRC 4293
Corrective History:		Nothing significant to report as it relates the ignition
Aerial Inspection Records:	NA	NA
VM Inspection:	03/04/2024	MANB1032154: Subject tree listed for work P2 12' radial clearance for overhanging limb.
EVM Inspection:	NA	Not previously in EVM Scope
Equipment Test:	NA	NA
Pole Intrusive Test:	05/01/2019	Visual sound and pull. Pass. 100% wood strength. Pole top condition: fair; pole bottom condition: fair
WSIP Inspection:	05/11/2019	EC Notification 117215392 crated for LAPP insulators and change out crossarm. Cancelled 07/27/2019 "Lapp no issue record keeping item only"

\*Incident Location: SAP ID: 102221971 (Pole #3)

<b>Load Side Structure</b>	Pole 1: 102221958	
<b>Info / Inspection</b>	<b>Most Recent Date</b>	<b>Findings</b>
Install Date:	1971	Douglas fir, cellon gas, class 5
Inspection:	06/03/2021	F Tag for High sign Notification # 121479330
		No vegetation issues or compelling abnormal conditions to report for the EC in accordance with GO165, GO95, PRC 4292, PRC 4293
Corrective History:		Nothing significant to report as it relates the ignition
Aerial Inspection Records:	NA	NA
VM Inspection:	03/04/2024	MANB1032154: Subject tree listed for work P2 12' radial clearance for overhanging limb.
EVM Inspection:		Not previously in EVM Scope
Equipment Test:	NA	NA
Pole Intrusive Test:	05/01/2019	Visual sound and pull. Pass. 100% wood strength. Pole top condition: fair; pole bottom condition: fair



WSIP Inspection:	05/11/2019	Nothing significant to report as it relates the ignition
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\*Incident Location: SAP ID: 102221971 (Pole #3)

### Hazard Barrier Analysis:

Hazard	Vegetation Contact	Sub-Hazard	Fallen Tree
Target	Fallen tree on primary lines leading to 1-acre fire in Tier 2 HFTD		
Barrier	Expected vs. Observed Performance	Why did the barrier not prevent the ignition event? (See <a href="#">ICF Codes</a> )	Comments / Opportunity
Barriers that Positively Affected Ignition			
Covered Conductor on Primary Conductors	Expected Performance: Covered conductor should lower the risk of a wildfire.  Observed Performance: Barrier performed as expected	A1B2C3D1 – Ineffective at Reducing All Fault Energy and move this statement into the next column.	Use as validation that tree wire reduced ignition risk. Ignition occurred multiple spans away from the tree strike due to a failed crossarm / wire down. Possible that hardened facilities may have prevented the cross-arm failure.
Enhanced Powerline Safety Settings - Instantaneous Trip Settings	Expected Performance: Deenergize line when fault detected to prevent ignition.  Observed Performance: Barrier performed as expected	A1B2C2D2 – Limited ability to detect high impedance faults	Fault started as high-impedance and then ultimately tripped on instantaneous settings.
Barriers that were Assessed as Opportunities			
Level 2 Basic Tree Assessment	Expected Performance: Arborists walk completely around a tree and look for defects in all visible areas of a tree. This assessment may include use of simple tools for sounding the tree and probe of open cavities.  Observed Performance: Barrier did not exist	N/A	Barrier did not exist. Current veg management guidance would have recommended a Level 2 Assessment for x-stem tree (bulletin # TD-7102P-01-B040 - July 2024)
Distribution Annual	Expected Performance: Identify visually	A4B2C2D4 – Program does not require a	Level 2 assessment was not required at the time of inspection.

This report is preliminary and based on available information as of October 17<sup>th</sup>, 2024; event data is subject to change based upon subsequently discovered information.

Vegetation Patrol	Observed Performance: Barrier performed as expected	360-degree inspection for Strike Trees	
Lower Default Sensitive Ground Fault Thresholds	<p>Expected Performance: Automatically turn off power when a hazard is detected to trip on high-impedance faults. Lower setting on top 50% of risk.</p> <p>Observed Performance: Barrier performed as expected</p>	N/A	<p>The ground amps hovered around the SGF setting for an undetermined amount of time, but it did not remain above 15A for 21s to trip on (SGF). The ground amps increased above LR 1202's minimum to trip of 100A, and the LR opened to clear the fault on 50G.</p> <p>LR 1202's SGF was lowered to 5A post ignition.</p>



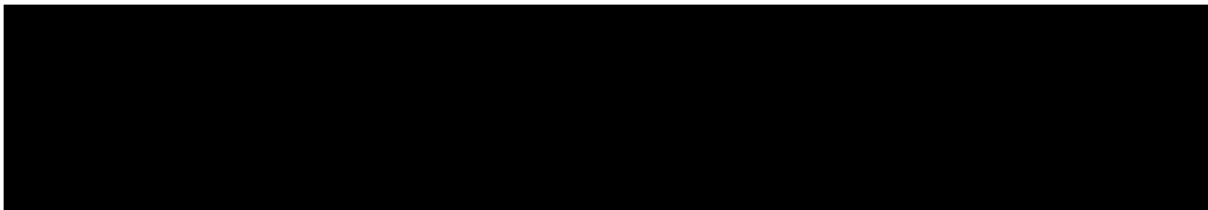
### Potential Next Steps / Associated CAP Items:





- Four California Bay trees on the outage span listed for removal due to overhang with questionable root integrity. All four additional tree work was completed by September 18<sup>th</sup>, 2024.

Corrective Action (If none are identified, put N/A):						
Corrective Action are trees that will be worked due to being currently out of compliance or anticipated to be out of compliance prior to the next patrol cycle. Corrective Action priority assigned shall be in accordance with <a href="#">TD-7102P-17, "Priority Tree Procedure"</a>						
Tree Number	(P1/P2)	Tree Description (Species, DBH, etc.)	Work prescription	Work Request Number	Forecast completion date	Actual completion date (when available)
RX-02113061	RTN	55DBH/60HT Bay	Major Dismantle R5	RX-02113061		09/18/2024
RX-02112836	RTN	24DBH/70HT Bay	Major Dismantle R3	RX-02112836		07/01/2024
RX-02112394	RTN	25DBH/40HT Bay	Major Dismantle R3	RX-02112394		09/17/2024
RX-01498890	RTN	32DBH/40HT Bay	Target Prune R3	RX-01498890		07/01/2024

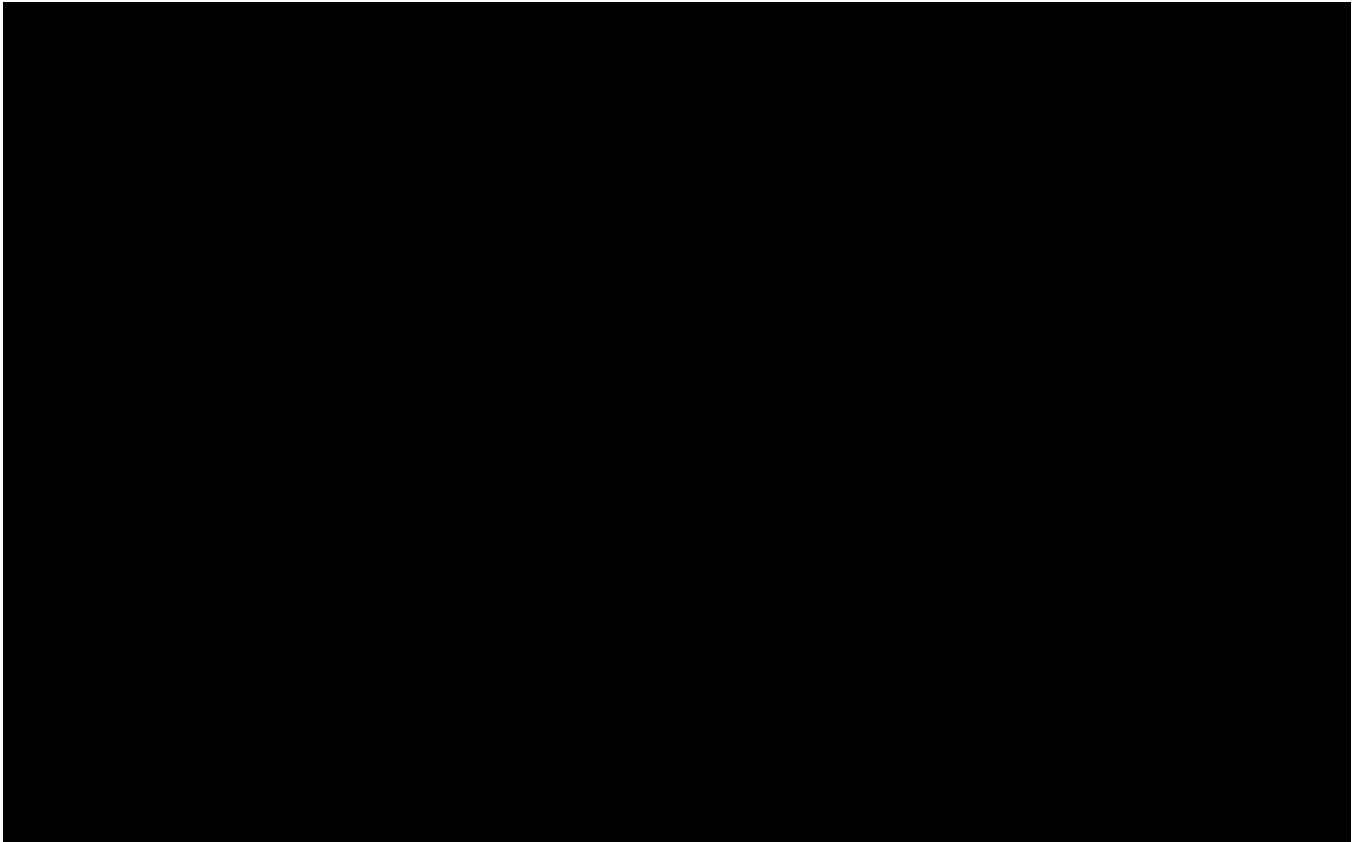
- CAP [129699063](#): Ignition 20240602 Veg P2 Reinspection: Conduct VM reinspection due to the large number of priority 2 (P2s) identified is concerning.

### Single Line Diagram



LEGEND					
	Substation		Fuse		Line Recloser
					Area of Interest

## Photos and Diagrams of Events



*Figure 1: Incident Location*

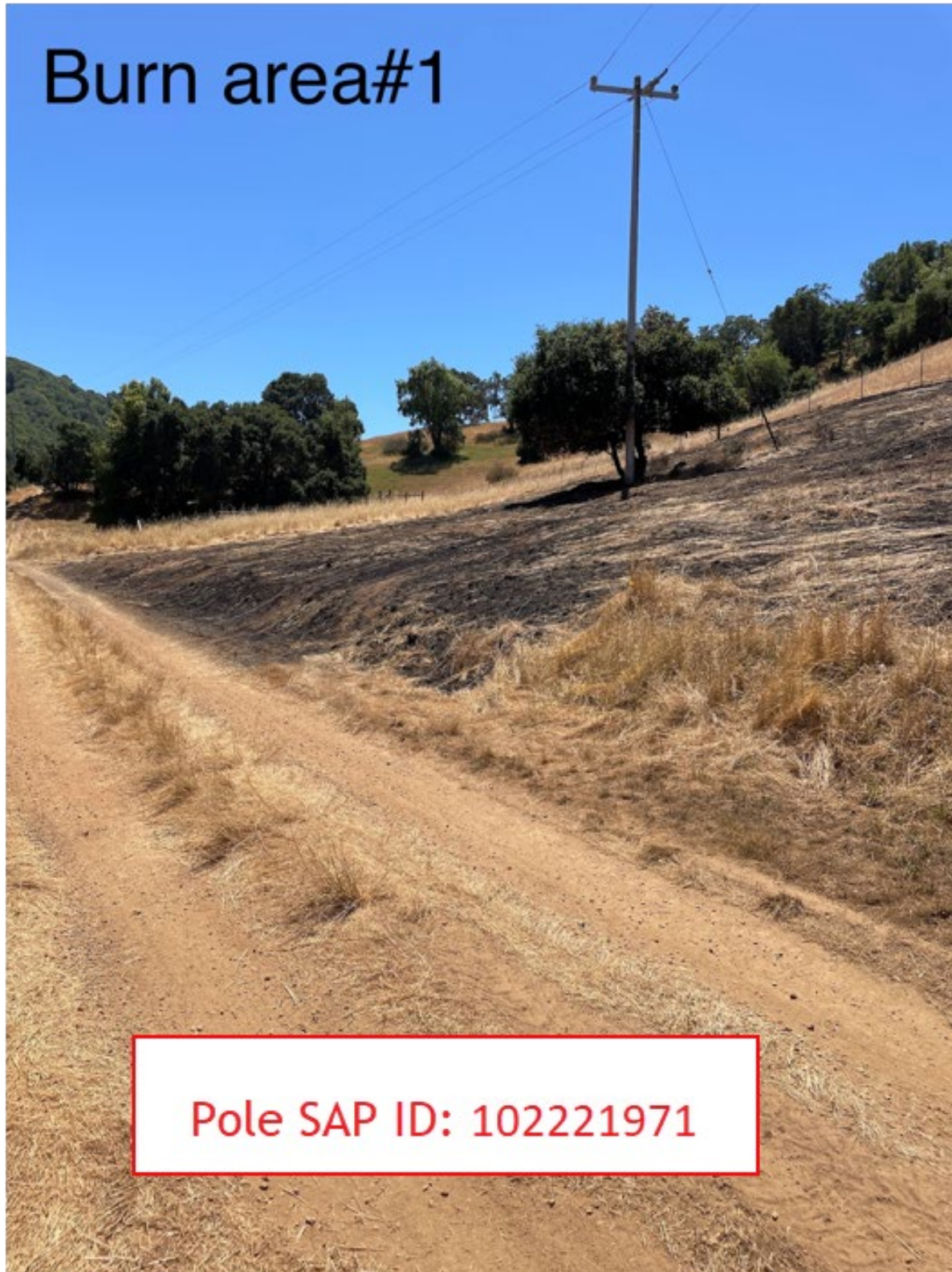


Figure 2: Burn Area #1 - Pole SAP ID: 102221971 (Pole #3) – Photos taken Post Repair



# Burn Area #2



*Figure 3: Burn Area #2*





Figure 4: Damaged facility. Pole SAP ID: 102221971 (Pole #3)



Figure 5: External Defect #1 (VM)



Figure 6: External Defect Indicator #2 (VM)





Figure 7: Subject Tree - California bay tree

## Attachments

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



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