

INTERAGENCY STATE
BURNED AREA EMERGENCY RESPONSE
(BAER) REPORT

THE WITCH FIRE



Affecting watersheds in the
County of San Diego
CALIFORNIA

NON-CONFIDENTIAL

DRAFT

November 17, 2007

**INTERAGENCY STATE
BURNED AREA EMERGENCY RESPONSE
(BAER) REPORT**

**EXECUTIVE SUMMARY
THE WITCH FIRE**

**Affecting watersheds in the County of San Diego
California
November 16, 2007**

The Witch Fire started on October 21, 2007 and was declared fully contained on October 31, 2007. It originated in the Witch Creek Canyon near Santa Ysabel and spread to the communities of Ramona, Rancho Bernado, Poway, Escondido, Lake Hodges, 4S ranch, Del Dios, and Rancho Santa Fe. It burned 197,990 acres, eventually being contained as it met the Poomacha Fire to the north. Approximately 1,125 homes and 500 outbuildings were destroyed. There were 1,721 firefighters assigned to the incident under unified command. There were 40 injuries to fire fighters, and two reported civilian fatalities. The estimated cost of the fire to date is \$16 million. The fire burned chaparral, coastal sage scrub, Oak woodland/forest, grassland, riparian, and other wetland vegetation communities. Aided by the Santa Ana winds it was a quick moving fire with an extremely rapid rate of spread.

A Burn Area Emergency Response (BAER) team consisting of resource professionals from a wide array of disciplines was established to assess effects of the Witch Fire on three primary areas of focus: Life, Property, and Resources. The intent was to perform a rapid assessment of the values at risk and offer recommendations that could help to minimize the potential for further catastrophic impacts of the fire and help to protect human life and property and critical cultural and natural resources. The BAER team did not intend to develop intensive site specific mitigations, but rather, identify areas of concern, risks to life, property, and critical resources on lands in and adjacent to the burned area in accordance with local/regional management policy guidelines. This assessment was done only within State Responsibility Lands (SRA - private lands) affected by the fire.

Due to the large area this fire encompassed, the initial strategy for the assessment was to separate the fire into four smaller units of approximately 40,000 acres. Teams would do assessments on one unit at a time and once complete move to the next unit. The team was also broken up into three distinct working groups. The first was the Geology/Hydrology Group which was responsible for addressing issues related to Lives and Property. This group was comprised of Geologists, Foresters, Civil Engineers, Hydrologists, and Soils Scientists. Utilizing the Burn Area Reflectance Classification (BARC) maps, topographic features, the local knowledge of team geologists, and information from San Diego County the team identified areas of high risk to human lives and property.

Boundaries of jurisdiction were identified with emphasis upon state, county and private lands. The team then went to the field to analyze areas of interest identified on the maps. The second group was the Resources: Cultural Group which was comprised of local archaeologists from the

Department of Parks and Recreation. At the end of each day this group would obtain maps and notes from the Geology/Hydrology Group and the following day evaluate these areas for cultural resources. The third group was the Resources: Biological Group. This group functioned in the same basic manner as the Cultural Group. It differed in that generally two of its members remained in the office gathering species specific information and other data while the other members went to the field. Information gathered from this process by each group was then evaluated to produce the individual Specialist Reports (see Specialist Reports). Additionally, the fire was flown by helicopter to see if there were any holes in the field evaluations or to look at other areas field personnel felt needed further clarification.

When the initial ground work was completed members of each representative group constructed a summary report. These reports contain recognition of potential values at risk, a general description of areas assessed by resource discipline, an explanation of the determination of each threat noted, and recommendations for first response mitigation.

In addition to the BAER Report, continued investigation and monitoring of risks to life, property, and resources by individuals with discipline-specific expertise is also highly recommended. Outreach designed to alert responsible governmental agencies as well as individuals in and immediately adjacent to the burn area to potential hazards and Best Management Practices (e.g., tree removal, drainage clearing, culvert flushing) to reduce those hazards is recommended. Development or tailoring an early warning system to inform these agencies and individuals of immediate threats to life, property, and resources associated with the Witch Fire is recommended.

BAER Team Organization

The planning team support group consisted of a cadre of professionals representing multiple agencies from the State of California. Agencies represented were the California Department of Forestry and Fire Protection (CAL FIRE), California Geological Survey (CGS), Department of Fish and Game (DFG), Department of Parks and Recreation (DPR), California Regional Water Quality Control Board (CRWQCB), and Department of Water Resources (DWR). Team members were:

Kenneth Kendrick	CAL FIRE	John Schlosser	CGS
Al Klem	CAL FIRE	Will Harris	CGS
Nancy Magner	CAL FIRE	Craig Carlyse	CGS
Elsa Hucks	CAL FIRE	Janis Hernandez	CGS
Jeff Calvert	CAL FIRE	Erin Smith	Parks & Rec
Herb Bunt	CAL FIRE	Matt Mandich	Parks & Rec
Nancy Frost	DFG	Don Perez	Parks & Rec
Meredith Osborne	DFG	Mohammed Musazay	CRWQCB
Magdalena Rodriguez	DFG	Dat Quach	CRWQCB
Jeff Brandt	DFG	Steve Cain	CRWQCB
Maurice Cardenas	DFG	Andera Lobato	DWR
Debbie Carlisle	DWR	Ginger Lu	DWR

This cadre of individuals, representing multiple agencies performed their duties in an exemplary manner. All were enthusiastic and quickly became engaged in the project objectives. They each performed tirelessly, respecting the input and occasional differing viewpoints of individual team members. Simply put, it was a group of individuals who continually showed a high degree of integrity and professionalism.

Contacts List

Name	Organization	Phone Number	
Cori Calvert	NRCS	760-745-2061 X 102	Phone contact, attendance at team briefing
Jason Smith	SD Public Works	619-306-8148	Meetings/phone contacts
Cid Tesoeo	SD County	858-694-3672	Messages on voice mail
Jim Bennett	SD County	858-694-3820	Info on Landslides and other GIS
Tim Brownstone	CAL TRANS	619-573-7849	Phone contacts
Erv Gasser	US D of Interior		Fed BAER Team, meetings/phone calls
Darryl Martinez	BIA		Fed Baer Team. Met to exchange information
Chris Holbeck	Parks Service		Fed Baer Team. Met to exchange information
Mike Hale	SD Gas & Elect	562-335-5696	Phone contacts
Alex Ruiz	SD City Water	619-823-9799	Numerous messages, never connected
Mike Scott	Rancho Sanata Fe Fire Protection District		Contacted by phone
Tom Porter	CAL FIRE	619-850445	Provided fire information from personal experience & knowledge of area.

Native American Tribal Contacts

Clint Linton	Diegueno/Kumeyaay	760-803-5694	Phone contact, consultation on cultural issues
Carmen Lucas	Kwaaymii Laguna	619-709-4207	Phone contact, consultation on cultural issues
Mark Romero	Mesa Grande Band	760-782-3818	Phone contact, consultation on cultural issues

SPECIALIST REPORTS

LIFE AND PROPERTY: GEOLOGY/HYDROLOGY

Fire Name: Witch Fire, San Diego County, California
Report Date: November 15, 2007
Authors: John Schlosser, California Geological Survey
Janis Hernandez, California Geological Survey
Steve Cain, CA Regional Water Quality Control Board, Los Angeles
Debbie Carlisle, Department of Water Resources
Nancy Frost, Department of Fish and Game
Will Harris, California Geological Survey
Al Klem, California Department of Forestry and Fire Protection
Andrea Lobato, Department of Water Resources
Ginger Lu, California Department Water Resources
Mike Manson, California Geological Survey
Mohammed Musazay, California Department Water Resources
Dat Quach, CA Regional Water Quality Control Board, San Diego

Summary

This report is a distillation of information collected by BAER Team Nine, Subgroups A-D and reported in their daily reports. Subgroup daily reports are included as Appendices A-D. Photos documenting problematic areas and specific concerns are included as Appendix E. Maps depicting the boundaries and topography of the Witch Fire, inspection areas and sites of particular concern are included as Appendix F.

The Witch Fire burn area contains numerous high to moderate risks to life and property, predominately due to debris flow, rock and tree fall, flooding and sedimentation. Residential structures built on or adjacent to steep slopes and in drainage channels are common and have the greatest risks to life and property. Paved and unpaved roads in and below the burn area that cross drainage channels and that are the sole means of ingress and egress are common, at risk and, in turn, threaten both life and property. Specific structures—including Sutherland Reservoir and Rockwood Canyon Bridge—and utility lines appear to be at risk and merit additional evaluation.

Continued investigation and monitoring of risks to life and property by individuals with discipline-specific expertise is highly recommended. Continued and long-term interagency coordination is also highly recommended. Outreach designed to alert responsible governmental agencies and individuals in and immediately below the burn area to potential hazards and Best Management Practices (e.g., tree removal, culvert cleaning) to reduce those hazards is recommended. Agencies and individuals would benefit from the development or modification of an early warning system for the Witch fire area that would identify potential immediate threats to life or property from storms.

Potential Values at Risk

- Rattlesnake Creek
- Eagle Crest Subdivision
- Sycamore Creek Road
- Fenton Ranch
- Bandy Canyon Road (Several addresses near Fenton Ranch)
- Highland Valley Road (Address reference 16129)
- Old Survey Road (Several addresses)
- Sutherland Reservoir
- Rockwood Canyon Bridge at Highway 78
- Green Valley Truck Road
- Various buildings, including occupied homes
- Culvert and Roads
- Utilities

General Geologic Description of Witch Fire, including Pre-existing Conditions

The 197,990 acre Witch Fire burn area consists of mild to moderately steep granitic bedrock slopes that are drained by small drainages, large steep canyons, and broad alluvial valleys. Elevation of the area ranges from approximately 400 feet in the canyon bottoms to approximately 3100 feet above mean sea level at the highlands, such as Mt. Woodson and Mt. Gower in the San Pasqual and Ramona areas, respectively. The topography reflects historical uplift and erosion of the granitic terrain, and consists of relatively flat alluvial valley areas, and surrounding elevated mountainous bedrock areas with widespread areas covered with large boulders.

The granitic bedrock consists of Cretaceous tonalite and granodiorite plutons of the Peninsular Ranges Batholith, with small outcrops of pre-batholithic metavolcanic rocks. Granitic bedrock is generally light colored to dark gray and generally weathers as residual boulders, surrounded by sandy soils (grus). The alluvium in the valleys and canyons ranges from unconsolidated sand, silt and gravel in the active washes, to slightly consolidated sand and gravel in the broad alluvial valleys. Remnant fluvial deposits of rounded cobbles and boulders cap some of the mountain areas as a result of the ancient Ballena River system.

Granitic bedrock slopes appear grossly stable and large bedrock landslides are not common in the area. However, surficial soils on slopes affected by burn areas appear loose, dry and are likely to be subject to debris flows as well as accelerated slope wash during storm events. Additionally, significant amounts of sediment can be expected to be transported into drainages and low lying areas surrounded by burned slopes during storm events. Debris avalanches and debris flows (both popularly called "mudslides") are shallow landslides, saturated with water, that travel rapidly downslope as muddy slurries. The flowing mud carries rocks, bushes, and other debris as it pours down the slopes (CGS, Note 33).

Average annual rainfall in the Ramona area, near the center of the burn area averages about 16.5-inches annually, occurring mostly in the winter and spring season, with

peaks generally occurring January through March. Review of historical rainfall records from the Ramona Fire Department monitoring station # Z05722800, shows that during the water year period (July 1 through June 30) with severe storm events, such as those in 1906, 1937, 1978, 1980, 1993, 1995 and 1998 water years, that between 27 and 30-inches of annual rainfall occurred, with the maximum rainfall of 45.89-inches during the 1906 water year, and a peak of 19-inches during January of that year.

For the Witch Fire, four days of inspection was performed by 4 teams, including geologists, water quality engineers, water resources engineers, and foresters.

Investigation proceeded across the fire area along public roads and private trails where accessible. Several locations were not able to be inspected due to access restriction.

Individual areas inspected with notable specific comments are identified in attached daily reports.

Follow-up efforts to identify specific issues and to implement remedies are essential to protect the public.

Determinations

The values at risk considered in this assessment include the possible loss of life and property due to landsliding, debris flow, rock fall, debris torrents and flooding from increased surface water runoff. It should be noted that these hazards are part of the natural process in this environment, and that these risks may have been present under pre-fire conditions. The potential for these processes to be exacerbated by fire is primarily dependent upon burn severity and slope steepness, both of which are variable in the Witch fire area. **The magnitude of post-fire damage will be determined by the intensity and duration of storms that impact the area.**

The following locations were identified as high priority status for further evaluation and mitigation:

- Rattlesnake Creek (Numerous homes near/below culvert crossing)
 - High risk to human life(debris flow; mud slide, flooding)
 - High risk to property, culverts and roadways (debris flow, mud slide, flooding)
- Eagle Crest Subdivision
 - High risk to human life and property (debris flow, mud slide, rock fall, flooding)
- Sycamore Creek Road
 - High risk to human life and property (debris flow, mud slide)
- Fenton Ranch (numerous structures at 16351 Bandy Canyon Road)
 - High risk to human life and property (debris flow, flooding)
- Bandy Canyon Road (homes and other structures at 16251, 16486, 16777)
 - High risk to human life and property (debris flow)
- Highland Valley Road (one house at 16129)
 - High risk to human life and property (debris flow, rock fall)
- Old Survey Road (several residences; addresses 16850 thru 16888. High risk to life from debris flow)
- Sutherland Reservoir

- High risk to property and utility infrastructure; moderate risk to water quality and supply(debris flow, mud slide, flooding)
- Note: Ramona Dam, Poway Dam and Hodges Dam not inspected by this team; same conditions possible.*
- Rockwood Canyon Bridge at Highway 78
 - High risk to bridge structure (debris flow; flooding)
- Green Valley Truck Road
 - High risk to culverts and paved roadway (debris flow, flooding)
- Various buildings throughout area, including homes
 - Moderate to low risk to occupants and properties (debris flow, mud slide, flooding)
- Culverts and roads throughout area
 - Moderate to low risk to transportation routes (debris flow, mud slide, flooding)
- Utilities throughout area
 - Moderate to low risk to utility infrastructure, including power and telephone lines (debris flow, mud slide, flooding)

Treatments

Particular treatment strategies need to be based on further analysis of area-specific hydrologic features and likely climatic events. City and County BMP's should be consulted for reference on site-specific treatments.

Recommendations

- Locations assessed as high risk to human life/safety should be followed up with additional site-specific investigations by appropriate licensed professionals.
- Continued and long-term interagency coordination.
- Outreach designed to alert responsible public officials, governmental agencies and individuals in and immediately below the burn area to potential hazards, safety measures and Best Management Practices (e.g., tree removal, culvert cleaning) to reduce or eliminate fire-related hazards.
- Development or modification of an early warning system for the Witch fire that would identify potential immediate threats to life or property from storms.
- The following properties should be reviewed by an engineer/engineering geologist to evaluate hazardous conditions and to develop site-specific mitigation strategies.
 - Rattlesnake Canyon: possible mitigation strategies include debris removal; sandbag upper channel bank
 - Eagle Crest Subdivision: detailed investigation of hazard levels (debris flow, rock fall, mud slide) at 34 homes; develop appropriate mitigation
 - Sycamore Creek Road: evaluate hazard levels (debris flow) behind homes
 - Fenton Canyon Ranch: evaluate hazard levels (debris flow, flooding) at approximately 12 structures; develop appropriate mitigation
 - Bandy Canyon Road: evaluate hazard levels (debris flow) to life and property at the various addresses listed; develop appropriate mitigation

- Highland Valley Canyon Road: evaluate hazard levels (rock fall) at structure; develop appropriate mitigation
- Sutherland Reservoir: possible mitigation strategies include erosion control using Best Management Practices (BMPs)
- Rockwood Canyon Bridge at Highway 78: evaluate hazard levels (debris flow, flooding) at structure; develop appropriate mitigation
- Green Valley Truck Road: possible mitigation strategies include debris removal at culvert
- Highway 78 from Junction 78/79 to Ramona: monitor potential hazard (debris flow, culvert blockage, catch basin failures, flooding)
- Highland Valley Road from Starvation Mt. Road to Eagle Crest Road: monitor potential hazard (debris flow, culvert blockage, catch basin failures, flooding)

Note: Expect higher than normal flows with possible debris flow in all rain events. The higher the rainfall intensity the higher the risk for debris flow and flooding throughout the entire burn area and downstream areas. All county and state roads should be monitored for debris flow, flooding and washout during rain events. Reservoir, catch basins, culverts and similar structures should be monitored during and inspected following rain events.

- Throughout the burn area it will be important to monitor and maintain channels, drainages and catch basins to prevent blockage of culverts and flooding.

References

California State Climatologist (website) http://www.climate.water.ca.gov/climate_data/ftp.water.ca.gov/users/dfmhydro/Monthly%20Historical%20Rain/Z05Ramona.xls

California Geological Survey, Preliminary Geologic Maps – southern region, 1:24,000 scale.

http://www.conservation.ca.gov/cgs/rghm/rgm/Pages/southern_region_quads.aspx
ftp://ftp.consrv.ca.gov/pub/dmg/rqmp/Prelim_geo_pdf/SanPasqual_prelim.pdf
ftp://ftp.consrv.ca.gov/pub/dmg/rqmp/Prelim_geo_pdf/san_vicente_layout_highres.pdf
ftp://ftp.consrv.ca.gov/pub/dmg/rqmp/Prelim_geo_pdf/Ramona_prelim.pdf

California Geological Survey, CGS Note 33 – Hazards From Mudslides...Debris Avalanches and Debris Flows

In Hillside and Wildfire Areas:

http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_33/Pages/index.aspx

California Department of Forestry and Fire Protection (website): www.fire.ca.gov
http://www.fire.ca.gov/master_content/downloads/Statewide_Fires_110607_am.pdf

The California Geological Survey (CGS) Burn Site Evaluation Summaries present the results of our reconnaissance of sites that may be at risk to life and property from geologic hazards such as landslides, debris flows, rock falls, and localized debris torrents, floods, and hyperconcentrated floods. These summaries do not include an assessment of potential risks from increased surface runoff along the major stream channels, and must be used in combination with hydrologists' assessments of those areas to grasp the magnitude of risks to high-value sites. CGS's expedited reconnaissance evaluations were part of the post-fire emergency response activities. As such, there are likely to be areas within the burn perimeter and other locations of potential values at risk that were not observed or assessed, and other areas where the potential risks are either higher or lower than our initial reconnaissance-level reviews.

Appendices A through D

Contain Field Evaluation Forms and Field notes for the areas visited

Appendix E

Photos

Appendix F

Geologic Map
Maps of General Site Locations

Team members: Will Harris, Geologist; Debbie Carlisle, Engineer; Nancy Frost, Wildlife Biologist; Mike Manson, CalFire

Date: 11/07/07

Site: #1A – GPS Reading N 33° 00.645' W 117° 10.522'

Location: Rancho Santa Fe Region

Site Description:

Just west of San Diegito Creek and Lusardi Creek on Zumaque Road
At observation point south of San Diegito Creek looking at North Facing slope

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	None	Moderate/High (Water Quality)

Photos: 2713 – 2718 (5)

Hydrophobic Test:

10 seconds at surface
1 minute 9 seconds at 1 inch depth
7 seconds at 2 inch depth

=====
Site: #2A – N 33° 01.00' - W 117° 10.506'

Location: Rancho Santa Fe Region

Site Description:

East Facing Slope of San Diegito River up river of Luzardi Creek

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	Moderate (Potential Slope Failure under property above)	West Slope- Moderate/High (Sediment load in Stream)

Photos: 2719 – 2729 (11)

Supplemental Lazard Preserve Photos:

2730 – 2733 (4)

No Hydrophobic Test:

=====
Site: #3A – N 33° 01.257' - W 117° 09.991'

Location: Rancho Santa Fe Region

Site Description:

North Draining Tributary to San Diegito River at Road to Eutopia

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	Low - None	Moderate – Water Quality

Photos: 2734 – 2739 (6)

No Hydrophobic Test:

=====
Site: #4A – N 33° 02.66' - W 117° 09.918'

Location: Rancho Santa Fe Region

Site Description:

18300 Calle Ambiente at via Dora – observation looking north facing slope

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	Low - None	Low- Moderate (Sediment load in draw)

Photos: 2740 – 2742 (3)

No Hydrophobic Test:

=====
Site: #5A – N 33° 02.286' - W 117° 10.481'

Location: Rancho Santa Fe Region

Site Description:

Looking West at Southeast Drainage at Ranch Vista Court

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	Low - None	High (for sediment load) (See also Biological Report)*

Photos: 2743 – 2749 (7)

No Hydrophobic Test:

*Gnatcatcher Habitat and contiguous with Site #6A

=====

Site: #6A – N 33° 02.520' - W 117° 10.796'

Location: Rancho Santa Fe Region

Site Description:

Looking at west facing slope at eastern end of Ranch Cello

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	None	High (See Biological Report)*

Photos: 2750 – 2754 (5)

No Hydrophobic Test:

*(See also Biological Report regarding Gnatcatcher Habitat)

=====

Site: #7A – N 33° 02.481' - W 117° 08.541'

Location: Rancho Santa Fe Region

Site Description:

Del Dios Highway– looking south facing slope at two south drainage ravines with exposed water conveyance pipeline traversing ravines

<u>Life</u>	<u>Property</u>	<u>Resources</u>
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None

Moderate to High
(pre-existing debris flow and sediment problem, but fire caused blackening to pipe encasement, therefore, recommend inspection of footings and concrete encased pipeline)

None

Photos: 2755– 2758 (4) and 2764 (1)

No Hydrophobic Test:

=====

Site: #8A – N 33° 02.474' - W 117° 08.544'

Location: Rancho Santa Fe Region

Site Description:

Del Dios Highway– looking north facing slope on San Diegito River

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	None*	Moderate (Water Quality)

Photos: 2759– 2763 (4)

No Hydrophobic Test:

*Burn severity doesn't appear as severe as shown on map

=====

Site: #9A (Supplemental to site #8A for photos and soil testing)– N 33° 04.603' - W 117° 07.197'

Location: Rancho Santa Fe Region

Site Description:

Del Dios – same general location as site # 8A (looking north facing slope on San Diegito Creek) – hydrophobic soil test taken at site #9A's GPS point

<u>Life</u>	<u>Property</u>	<u>Resources</u>
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None

None*

Moderate (Water Quality)

Photos: 2765 (1)

Hydrophobic Test:

Surface – immediate absorption

1 inch depth – immediate absorption

2 inches depth – immediate absorption

3 inches depth – immediate absorption

No Hydrophobic condition at this site

APPENDIX A-2

Resources Specialty: Civil Engineering
Geology
Wildlife Biology

Fire Name: Witch Fire Region (See notes pages 1A-9A for GPS readings)

Month, Day and Year: November 7, 2007

Team Members: Debbie Carlisle, DWR; Will Harris, CGS, Mike Manson, CGS; Nancy Frost, DFG

Potential Values at Risk

- Potential for debris flow, flooding and mudslides above some properties
- Slight potential for damage to houses below steep slopes due to flooding from debris and sediment plugged culverts, erosion of slopes
- Potential damage to concrete aqueduct/pipeline and footings from debris flow during flash floods

Resource Condition Assessment

- Lose, silty soil prone to geomorphic action causing sediment deposits in streambeds
- Debris flows posing threat to water quality of drainages and streams
- Potential for short term displacement of nesting bird species, mammals and reptiles

Recommendations

- Recommend additional assessment by Erosion Control Specialist for BMPs that are appropriate for hydrophobic soils on sites indicated in notes.
- Recommend more extensive hydrophobic soils tests at high intensity burn sites which coincide with sites recorded during today's assessment.
- Recommend additional assessment by wildlife biologist and botanical expert for potential for impacts to listed animals and plants
- Cleaning of culverts at respective sites from debris and sediment deposits

References

- Professional expertise from members of team; 1 Registered Geologists and 1 Registered Civil Engineer

APPENDIX A-3

Team members: Will Harris, Geologist; Debbie Carlisle, Engineer

Date: 11/08/07

Site: #10A – GPS Reading N 33° 05.150' W 117° 01.566'

Location: San Pascal Valley Road Region

Site Description:

South facing draw with driveway to residents on ridge

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	Moderate*	Low (Water Quality) Cactus on slopes burned

***Notes:** Potential for soil erosion to impact San Pascal Road – Granitic Bedrock with Decomposed Granite Soils; Culvert undersized plugging culvert under Pascal Road

Photos:

10A – 3, 10A – 4, 10A – 5 (3)

Hydrophobic Test:

1 + minutes at 1 inch depth (hydrophobic)
Immediate at 3 inch depth

=====

Team members: Will Harris, Geologist; Debbie Carlisle, Engineer;

Date: 11/08/07

Site: #11A – N 33° 06.855' - W 116° 57.277'

Location: Rockwood Canyon

Site Description:

South Draining Rockwood Canyon – Plant Nursery at mouth of canyon covering 10’s of acres; upstream oak and scrub woodland (oaks in drainage, scrub on slopes).

<u>Life</u>	<u>Property</u>	<u>Resources</u>
None	Moderate	None

Notes: Various deep canyon walls with granite exposed prominently. Sediment load in upper reach of canyon appears to consist of mostly cobbles and boulders. Burn in reach adjacent to upper portion of nursery appears moderate with reach above lightly burned. Burn intensity maps show area as high but this may be due to reflection of exposed granite bedrock. Canyon slopes show evidence of numerous rock falls unrelated to fire activity. Any flood or debris flow threat posed by the canyon drainage appears to be related to existing geomorphology. Rockwood Canyon Creek. Recommend inspection under bridge (where it crosses Highway 78) for potential debris flow hazards and sediment build-up (we couldn’t access this area to inspect due to thick brush surrounding bridge piers). Rockwood Canyon’s drainage alignment has been significantly altered (forced to align adjacent to the toe of the west side of canyon) in its lower reach to accommodate agricultural activities. Burnt riparian vegetation may fall and be transported in an amount significant enough to block bridge underpass.

Photos:

0006 – 0012 (7)

No Hydrophobic Test:

Resources Specialty: Civil Engineering
Geology

Fire Name: Witch Fire Region (See notes pages 10A-11A for GPS readings)

Month, Day and Year: November 8, 2007

Team Members: Debbie Carlisle, DWR; Will Harris, CGS

Potential Values at Risk

- Risk of flooding nursery at bottom of Rockwood Canyon draw
- Sediment deposits and Debris Flows posing threat to water quality of drainages
- Potential damage to bridge piers from debris flow during flash floods

Resource Condition Assessment

- Lose, silty soil prone to geomorphic action/debris deposits
- Potential for short term displacement of nesting bird species, mammals and reptiles
- See Biological Report for resource assessment of these two sites.

Recommendations

- Recommend additional assessment by wildlife biologist and botanical expert for potential for impacts to listed animals and plants
- Recommended removal of debris from around Highway 78/Rockwood Canyon bridge piers and streambed upstream and downstream of bridge to remove debris to avoid flooding and structural damage.

References

- Professional expertise from members of team; 1 Registered Geologists and 1 Registered Civil Engineer

APPENDIX B-1

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER #9, 11-07-07)

Notes: RB = Rancho Bernardo, L=low, H=high, M=moderate

Site #	At-Risk Feature	Street Address	GPS location		Hazard	likeli- hood	Risk to lives		Risk to property	
			Lat (North)	Long(West)			Fire	pre-exist	Fire	pre-exist
RB102	Hillside drainage		N33.054449	W117.07526	Debris Flow	M-H	L	L	H	L-M
RB103	Hillside drainage		N33.05436	W117.07511	Debris Flow	L	L	L	L	L-M
RB104	Road/Houses		N33.04213	W117.09159	Debris Flow	M	L	L	M	M
RB105	Houses		N33.03865	W117.09196	Debris Flow	M	M	L	M	L
RB106	Houses		N33.03809	W117.09105	Debris Flow	M	L	L	M	L
RB107	Hillside drainage		N33.03275	W117.09390	Debris Flow	M	L	L	M	L
RB108	Houses/Road		N33.02805	W117.10390	Debris Flow	M	L	L	M	L
RB109	Hillside drainage		N33.04104	W117.00416	Debris Flow	H	M	L	H	L
RB110	Hillside drainage		N33.00529	W117.02352	Debris Flow	M	L	L	M	L
RB111	Hillside drainage		N32.98909	W117.02326	Debris Flow	M	L	L	L-M	L
RB202	Water Resources		N33.00740	W117.02337	Debris Flow	L	L	L	L	L
RB203	Hillside drainage		N33.01922	W117.02863	Debris Flow	H	M	L	H	L
RB204	Road		N33.05151	W117.05145	Debris Flow	L	L	L	L	L

APPENDIX B-2

Nov 7, 2007 Witch Fire BAER#9

800-1300 Team members: Craig Carlisle (Geologist, RWCB), Al Klem (Forester, Cal Fire), Meredith Osborne (Botanist, DFG), Ginger Lu (Engineer, DWR)

Field Notes:

Area: Rancho Bernardo and Poway.

Mission: Flagging the potential threats to life and property with the "California Geological Survey Burn Site Evaluation Summary" sheet.

RB102: Hydrophobic soil test: 1" = moderate, 1/2" = high (see photos: RB102A, RB102B,

RB102C, RB102D, RB102E, RB102F). The local water purveyors for various drinking water reservoirs such as Lake Hodge and Lake Poway appear to be very proactive and efficient about BMP erosion controls and other debris flow control measurements.

RB103: the other of the W. Bernardo Dr. (see photos: RB103)

RB104: Hydrophobic soil test: 1" = high, 2" = low. A network of fire roads and water way need to be installed to have water break (see photos: RB104)

RB105: Additional fire roads and more water break (see photos: RB105, RB105A, slope behind the homes)

RB106: Additional fire roads and more water break (see photos: RB106, slope behind the homes)

RB107: (photos: RB107, drainage structure; RB107A, upstream from the basin)

RB108: Hydrophobic soil test: 1/2" = low. There are brow ditches already in place behind the apartment complex (see photos: RB108, slope behind the apartment complex; RB108A, drainage of hillside)

RB109: The northern end of the Old Coach Drive has a few homes on it, and some parts of this northern stretch have some drainage issues and culvert maintenance problems (see photos:

RB109, RB109A, RB109B, RB109C)

RB110: Slope on the side of the road doesn't have drainage outlets.

RB111: the corner of the two roads of Vali Hai Rd and High Valley Rd t-into Markar Rd/Vali Hai Rd appears to be in lower risk.

RB202: Lake Poway is safe. The burn was minimal, and hydromulching seemed to have taken place already.

RB203: The southern end of the Old Coach Drive appears to be in the same condition.

RB204: This point of Highland Valley Rd (~2miles from Pomerado Rd) can potential have debris flow problem and consequently cause traffic condition. (see photo: RB204)

APPENDIX B-3

Resource Specialty: Botanist
Forester
Geologist
Engineering

Fire Name: **Witch Complex**

Date: November 7, 2007

Author: Meredith Osborne, Dept of Fish and Game
Al Klem, Cal Fire
Craig Carlisle, San Diego Regional Water Quality Control Board
Ginger Lu, Dept of Water Resources

Subarea: Rancho Bernardo and Poway (14 sites: RB102-204)

Potential Values at Risk

- Private properties: homes, office buildings
- Public and private Roads

Resource Condition Assessment

- Because of vegetation loss and fire activities, the undisturbed and covered soil/rocks are now exposed in open. High density suburban residential homes really face the possible danger of debris flow in addition of habitat losses.
- Areas around the Lake Hodge and the Lake Poway appear to be mitigated already because drainage construction and green hydromulching were observed. Drinking water purveyors apparently are pretty proactive.
- Observe various degrees of burn severity. Mostly moderate soil hydrophobic conditions combined with somewhat steep slopes could affect water infiltration ability and consequently introduce potential flood.
- See biological report.

Recommendations

- A network of water breaks and road and culvert maintenance for high risk area.
- Recommended additional assessment by licensed geologist and licensed geotechnical engineer for potential landslides and flood
- Recommend additional assessment by botanical expert and wildlife biologist for potential for impacts to listed plants and wildlife

APPENDIX B-4

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER #9, 11-07-07)

Notes: HLV=Highland Valley, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	likeli-hood	Risk to lives		Risk to property	
			Lat (North)	Long(West)			Fire	pre-exist	Fire	pre-exist
HLV101	Road		N33.04657	W117.04233	Debris Flow	H	L	L	L	L
HLV102	Houses		N33.04152	W117.04080	Debris Flow/mud slide	H	H	M	H	M
HLV103	Office Building		N33.05038	W117.03770	Debris Flow	L	L	L	L	L
HLV104	Office Building		N33.05654	W117.03325	Unable to access office building (locked gate)	?	?	?	?	?
HLV105	Houses		N33.06104	W117.97977	Debris Flow/rock fall	H	H	M	H	M
HLV106	Road				Debris Flow	H	L	L	L	L
HLV107	Ware-house		N33.07537	W116.98613	Debris Flow	H	H	M	H	M
HLV108	House				Debris Flow	H	M	M	H	M
HLV109	Vacation Rental ?		N33.06833	W116.97597	Debris Flow/rocks fall	H	H	M	H	M

HLV110	Road		N33.03881	W116.98424	Debris Flow	H	L	L	L	L
			N33.03929	W116.98496						
HLV111	Residences and road		N33.07398	W116.97930	Debris Flow/rock fall, loss of road access	H	H	M	H	M
HLV112	Residence and road		N33.04644	W116.58396	Debris Flow/rock fall	H	H	L	H	L

APPENDIX B-5

Nov 8, 2007 Witch Fire BAER#9

800-1300 Team members: Craig Carlisle (Geologist, RWCB), Al Klem (Forester, Cal Fire), Meredith Osborne (Botanist, DFG), Ginger Lu (Engineer, DWR)

Field Notes:

Traveling within Rancho Bernardo area toward Poway.

HLV101: It appears that culverts are missing along this road for drainage. There is potential debris flow on and off along the road, water breaks should be placed along the road where steep slopes present on the side (see photos: HLV101, HLV101A).

HLV102: There were 7 houses in this valley before the fire [REDACTED] and three out of seven were saved from the fire. The owner is very proactive about the situation and has already started simple erosion control measurements such as fiber rolls on the slope next to his house. However, two houses need immediate attention because the house sits on the toe of a 60% slope and no major draws nearby to divert debris flow. The hill had a good coverage of vegetation prior to the fire, but now the hill is exposed (see photos: HLV102, HLV102A, HLV102B, HLV102C, HLV102D, HLV102E). It is at high risk for mud slide, debris flow, and flood hazard, and brow ditches (concrete lined diversion ditches) along with fiber rolls should be installed to divert flood/debris flow on the hill next to the houses and other BMP erosion control should be prescribed ASAP for this site.

HLV103: There were three to four draws on the hillside behind the [REDACTED], and the confluence of draws is about 500 yard away from the office and drains about 50 ft out from the building on a very gentle slope (see photos: HLV103, HLV103A). There is no apparent danger to the office building, and the nursery manager mentioned that they had cleared out 250 ft of vegetation in the back of the building not too long ago. The nursery was hit by the 1993 fire.

HLV104: [REDACTED] The gate is locked, and this property appears to be located on San Pasqual Canyon foothill. Maybe the city can take care of its own property without us.

Drive through Starvation Mountain Rd. It appears to be all right.

HLV105: [REDACTED] was saved from the fire, and it appears this house is located on high wind area and seats on toe of 70% slope with rocks and boulders and is at high risk of sediment-debris flow and rock fall. Additional site inspection is needed for recommendation (see photos: HLV105, HLV15A)

Drive through Highland Trails off from HLV road. O.k.

HLV106: This section of [REDACTED] between addresses [REDACTED] appears to be more vulnerable to debris flow/flood and rock fall. Culvert maintenance and water breaks along the road may reduce safety hazard for the traffic.

Drive through Eagle Crest Rd, Sky Valley Rd, Rancho Del Sol, and Sunrise Vista. Ok

HLV107: The [REDACTED] at toe of slope with medium dense vegetation is at moderate to high risk of debris flow although it looks like a [REDACTED] with piles of trash bags around and a dog. Additional site inspection is potentially needed for recommendation (see photos: HLV107)

HLV108: The property is located on the road at [REDACTED], at toe of slope with live stock (dogs, cows, and chicken) around it. It appears to be subject to debris flow and mud slide (see photos: HLV108). Water breaks should be placed for the property, and other BMP erosion control needs to be prescribed.

HLV109: The gate to the property is located at [REDACTED] approximately south of the house on [REDACTED]. There were approximate 12 units of vacation rental located in the [REDACTED], and few got burnt down. The current status of the rental property is unknown, but the remaining rental units are at high risk of debris flow, flood, and rock fall. Some inlets and outlets of existing culverts were damage and appeared to be somewhat blocked. It requires clearing of debris in the culverts and other BMP erosion control measurements. (see photos: HLV109, HLV109A, HLV109B, HLV109C, HLV109D, HLV109E, HLV109F, HLV109G, HLV109H).

HLV110: This section of the road is at high risk of debris flow and flood, and potentially needs road/culvert maintenance for debris flow and flood.

Second site visit—November 11-2007 10:00 to 15:30, Team members Magdalena Rodriguez and Jeff Brandt, Environmental Scientists DFG. Sites visited are HLV108, HLV109 HLV111, and HLV112.

HLV108: The property is located on the road at [REDACTED], at toe of slope with live stock (dogs, cows, and chicken) around it.

HLV109: Access to the property was blocked by a locked gate at [REDACTED]. Site viewed from the bridge over [REDACTED]. DFG team could not verify the description above. However—BMPs are proposed based on similar habitat and damage at HLV111. The site is at risk of significant erosion—and dead trees and brush may be carried downstream to the bridge. The site is upstream of a [REDACTED]—erosion from this site will flow into the [REDACTED] and potentially impact the Arroyo toad. Recommend removing dead trees and brush in stream prior to rains.

HLV111: There are ~ 5 residences on [REDACTED] at top of grade and in burn area. Addresses of residences that appear to be potentially at risk on [REDACTED]. The residences appear to at potential risk of erosion, debris flow, flood, and rock fall. The road may become impassable during debris flow and trap residents.

Significant erosion control work may be required to protect residences—three residences have started placing erosion control—work is not complete and may not be sufficient to mitigate risk.

HLV112: It appears the residence at [REDACTED] could potentially be impacted by debris flow off slopes above [REDACTED] directly above residence. BMP erosion control measures appear to be necessary above the house and within [REDACTED] directly above the house.

APPENDIX B-6

Resource Specialty: Forester
Geologist
Engineering

Fire Name: **Witch Complex**

Date: November 7, 2007

Author: Al Klem, Cal Fire
Craig Carlisle, San Diego Regional Water Quality Control Board
John Schosser, Cal Geological Survey -Sac
Debbie Carlisle, Ginger Lu, Dept of Water Resources

Subarea: Highland Valley Rd area and Ramona (10 sites: HLV101-110)

Potential Values at Risk

- Private properties: homes, office buildings
- Public Roads

Resource Condition Assessment

- Because of vegetation loss and fire activities, the undisturbed and covered soil/rocks are now exposed in open. Some houses, vacation rental, and office buildings really face the possible danger of mud slide, debris flow, rock fall, and flood in addition of habitat losses.
- Observe various degrees of burn severity. Moderate to high soil hydrophobic conditions in severe burn area can affect water infiltration ability and consequently introduce potential road hazard.
- See biological report.

Recommendations

- A network of water breaks and road and culvert maintenance for high risk area.
- Recommended additional assessment by licensed geologist and licensed geotechnical engineer for potential landslides and flood
- Recommend additional assessment by botanical expert and wildlife biologist for potential for impacts to listed plants and wildlife

APPENDIX C-2

Witch Fire, San Diego County, California Team 9, Subgroup B Daily Report November 9-10, 2007

Resource Specialties: CDF
Engineering
Geology
Water Quality

Authors: Al Klem, CDF
Mohammed Musazay, Department of Water Resources
Janis Hernandez, California Geological Survey, Engineering Geologist
Steve Cain, Los Angeles Regional Water Quality Control Board

Location: Rattlesnake Canyon (32.9728N, 117.0089W and 32.9752N, 117.0153W)

- Large watershed with moderate to steep slopes; road with four-box culvert crosses drainage path; homes located above burn area (upper watershed) and immediately next to burn area (adjacent to box culvert). Homes, barns and corrals located both sides of drainage below box culvert and outside burn area. Numerous sandbags along road, suggesting history of poor drainage/flooding. Low to moderate burn. (Photographs 35, 36, 37)

Potential Values at Risk

- Occupants of home immediately adjacent to box culvert
- Property immediately adjacent and below box culvert
- Box culvert and road
- Slopes

Resource Condition Assessment

- Significant potential harm to occupants in home immediately adjacent to box culvert due to debris flow and flooding
- Moderate potential damage to culvert and road due to debris flow and flooding
- Moderate potential damage to slopes due to erosion
- Low potential damage to property below box culvert due to flooding

Recommendations

- Removal of debris in drainage to prevent debris flow, blockage of culvert, flooding, personal harm and damage to property.
- Re-vegetation of slopes, placement of straw mulch, sand and gravel bag berms or other BMPs to prevent erosion

Location: Rattlesnake Canyon, Small Drainage (32.9738N, 117.0162W)

- Narrow drainage with moderately steep slopes emptying into pipe culvert; Slopes vegetated; homes located on both sides of drainage. Fire destroyed one structure on upper slope; other homes outside burn area. Light to moderate burns area located along ridge line and upper portion of slope. One home below grade and adjacent to pipe culvert. Numerous sandbags along drainage, suggesting history of poor drainage/flooding. (Photographs 38, 39)

Potential Values at Risk

- Occupants of home below grade and adjacent to pipe culvert
- Home below grade and adjacent to pipe culvert
- Pipe culvert and road

Resource Condition Assessment

- Moderate potential damage to home below grade due to flooding
- Moderate potential damage to culvert and road due to debris flow and flooding
- Low potential harm to occupants of home below grade due to flooding

Recommendations

- Removal of debris in drainage to prevent debris flow, blockage of culvert and flooding

Location: [REDACTED]

- Gated dirt road leading to large watershed with moderate to steep slopes. Area posted as a plant preserve. Gate locked; observations made from entrance to preserve. Significant portion of watershed appears to be in burn area; Light to moderate burn. Parking area and walkway at entrance to preserve burned; No homes burned.

Potential Values at Risk

- Dirt road leading into preserve
- Pipe culvert and paved road at entrance of preserve
- Parking area and walkway
- Slopes

Resource Condition Assessment

- Moderate potential damage to roads and culvert due to erosion, debris flow and flooding

Recommendations

- Removal of debris in drainage to prevent debris flow, blockage of culvert and flooding
- Re-vegetation of slopes, placement of straw mulch, sand/gravel bag berms or other BMPs to prevent slope erosion

Location: [REDACTED] (33.0605N, 116.9417W)

- Rolling hill-top plain with numerous slightly to moderately sloped channels. Numerous homes in and adjacent to burn area. Light to moderate burn. Numerous homes destroyed. (Photos 40, 41, 42)

Potential Values at Risk

- Culverts and roads
- Slopes

Resource Condition Assessment

- Moderate potential damage to slopes due to erosion
- Moderate potential damage to roads and culvert due to erosion, debris flow and flooding

Recommendations

- Re-vegetation of slopes, placement of straw mulch, sand/gravel bag berms or other BMPs to prevent slope erosion
- Removal of debris in drainage to prevent debris flow, blockage of culvert and flooding

Location: [REDACTED] (33.0729N, 116.9046W)

- Rolling/hilly slope with numerous slightly to moderately sloped channels. Mixture of paved and dirt roads. Dotted with avocado, pomegranate and persimmon orchards. Homes and other structures in and adjacent to burn area. Light to moderate burn. Numerous homes and structures destroyed.

Potential Values at Risk

- Culverts and roads
- Slopes
- Structures

Resource Condition Assessment

- Moderate potential damage to culverts and roads due to erosion, debris flow and flooding
- Moderate potential damage to slopes due to erosion
- Low potential harm to residents and structures

Recommendations

- Removal of debris in drainage to prevent debris flow, blockage of culvert and flooding or roads
- Re-vegetation of slopes, placement of straw mulch, sand/gravel bag berms or other BMPs to prevent slope erosion

Location: [REDACTED] (33.1011N, 116.7892W)

- Reservoir owned by the City of San Diego and used for drinking water supply and limited recreation. Adjacent land characterized by moderate to steep slopes and numerous moderate to steep channels, many of which drain into the reservoir. Single paved road leads to dam, boat docks, concession stand and several remaining residences. Numerous homes destroyed; moderate to high burn area.

Potential Values at Risk

- Culverts and roads; Slopes; Reservoir

Resource Condition Assessment

- Moderate to high potential damage to roads and culvert due to erosion, debris flow and flooding
- Moderate to high potential damage to slopes due to erosion
- Moderate potential damage to boat dock and concession stand due to debris flow and erosion
- Light to moderate potential damage to reservoir due to debris flow and sedimentation
- Light potential damage to homes due to erosion

Recommendations

- Removal of debris in drainage to prevent debris flow, blockage of culvert and flooding
- Re-vegetation of slopes, placement of straw mulch, sand/gravel bag berms or other BMPs to prevent slope erosion

Location: [REDACTED] (33.0644N, 116.8115W)

- Rolling/hilly slope with numerous moderate to shallow channels. Home and structures built in channels and below and adjacent to burn area. Moderate burn area. (Photographs 49, 50, 51)

Potential Values at Risk

- Culverts and roads
- Slopes

Resource Condition Assessment

- Moderate to high potential damage to Highway 78 and Ramona Trails due to culvert blockage, debris flow and flooding
- Moderate potential damage to slopes due to erosion
- Moderate to light potential damage to structures

Recommendations

- Removal of debris in drainage and culvert to prevent debris flow, additional blockage of culvert and flooding
- Re-vegetation of slopes, placement of straw mulch, sand/gravel bag berms or other BMPs to prevent slope erosion

APPENDIX D-1

California Geological Survey Burn Site Evaluation Summary
 Fire Name : **Witch- Woodson Area**
Bold where risks are high

Jon Schlosser
 Andrea Lobato
 Jeff Calvert
 Dat Quach

November 9,
 2007

Site number	At-risk Feature	Street address	GPS location		Hazard	Likelihood	Risk to lives		Risk to property		Recommendations for Infrastructure and Safety	
			Latitude N	Longitude W			fire	pre-exist	fire	pre-exist		
W 101	Concrete Crossing with five 48" Culverts		33.05262	117.30907	Culverts becoming blocked with debris and silt	low	low	low	low	low	low	clean immediately upstream and monitor.

APPENDIX D-2

Witch Fire notes from team 9, Group 1B

Daily Progress report for November 9, 2007

Group 1B Members: Jeff Calvert, CAL FIRE, RPF
 Andrea Lobato, DWR, P.E.
 Dat Quach, CRWQCB, Water Resources Engr.
 Jon Schlosser, DM&G, Geologist

Team 9, Group 1B met at the southern end of the Witch Fire at the overlook of Rattlesnake Creek watershed. Joining us at this point was Group 1A, comprised of Alan, Steve, Mohammed and Janice. We met to “calibrate” our eyes and responses for our assessments as many of the members of the two groups had been previously with Team 10 or had been newly assigned to Team 9 by their respective agencies or departments,

Team 9, Group 1A took the official notes for the sites at Rattlesnake Creek and the subdivision immediately down from the confluence of the tributaries to the creek at that point. We agreed that there could be threat to life to those living immediately adjacent to the creek were it is “funneled” into the major crossing if a sudden and excessive precipitation event were to occur. Please see their daily report for more details.

After discussion and agreement regarding various sites in the subdivision, Group 1B traveled along the south east flank of the burn area assessing conditions in the areas around Woodson Mountain and Woodson Canyon Creek. This area experienced light to moderate burn intensity due to lack of significant fuel density. No immediate threat to life was found in the area that our team assessed. However, there was some concern about a concrete crossing with 5 48” oval culverts on Selida del Sol Street, Site 101, in the Woodson Area. While not an immediate threat it was the groups opinion that in the event of sudden and heavy precipitation the culverts could plug and the water flow over the concrete crossing. It should be noted that the crossing is designed as a spill way in the event that this should happen, but it would temporarily isolate those residents served by the crossing. Please see spread sheet for more information.

APPENDIX D-3

California Geological Survey Burn Site Evaluation Summary
 Fire Name : **Witch- Wolford Area**
Bold where risks are high

Jon Schlosser
 Andrea Lobato
 Jeff Brandt
 Dat Quach
 Jeff Calvert

November 10,
 2007

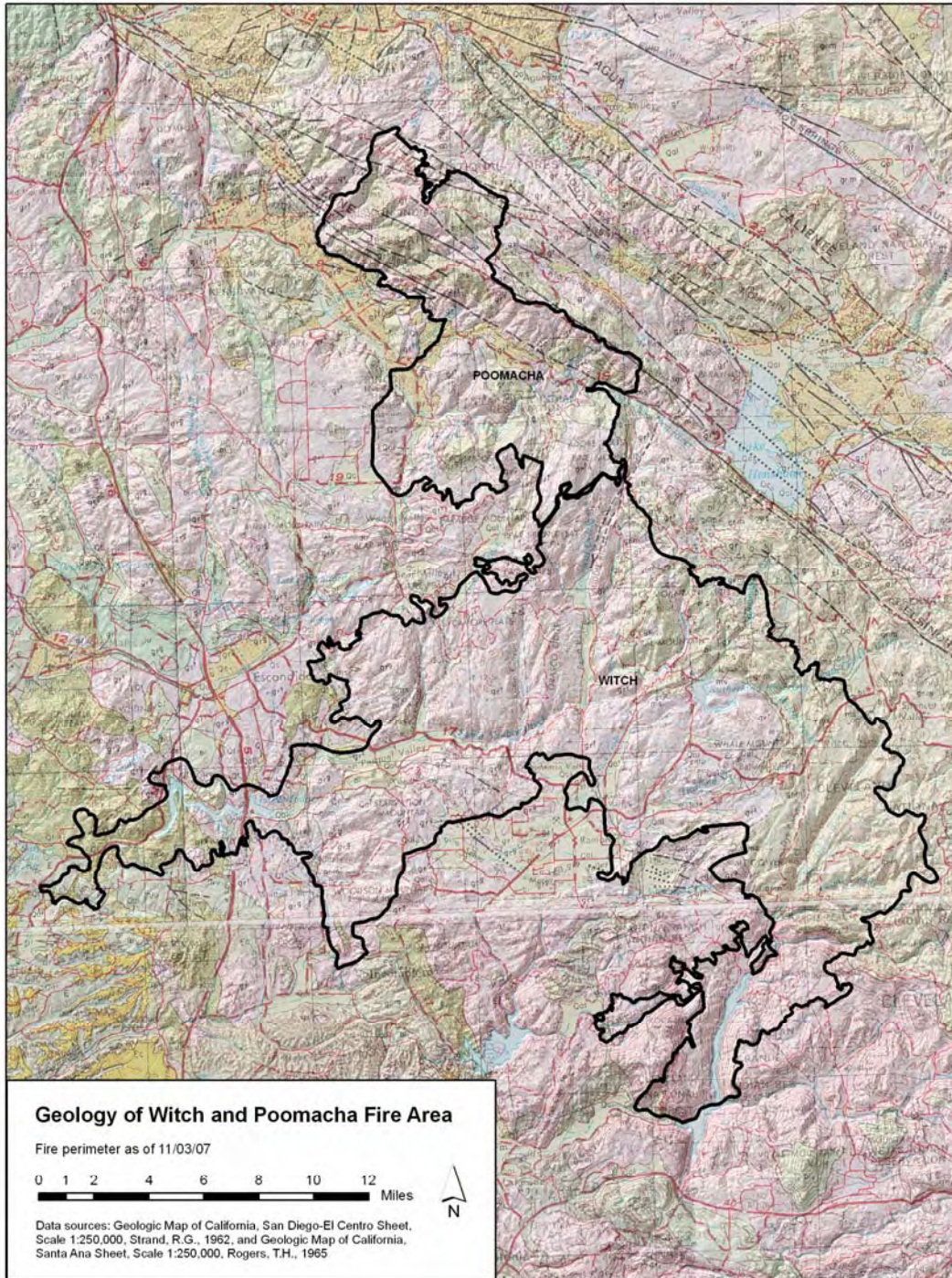
Site number	At-risk Feature	Street address	GPS location		Hazard	Likelihood	Risk to lives		Risk to property	
			Latitude N	Longitude W			fire	pre-exist	fire	pre-exist
Wlfrd 101	3 houses with business		33.14579	116.97480	Flood	Low	Low	Low	Low	Low
comments	Roads in this area (Old Yucca, Old Manzanita) are narrow, incised and mostly unpaved, may have erosion and flooding problems. Numerous draws come in from above, road has poorly maintained inside ditches, culverts and outside berms. Culverts need cleaning, berm needs to be knocked down.									
Wlfrd 102	Nursery, buildings, businesses.		33.15601	116.97456	Flood	Mod	Low	Low	Mod	Low
comments	5 houses in the area generally above draws and swales. The swales coalesce in vicinity of the nursery grounds. See photo 180 for pictures of swales and draws									
Wlfrd 103	Out building /storage		33.15130	116.98717	Flood	Mod	Low	Low	Mod	Low
comments	Near complex of many buildings and grounds for "Self Realization Center" Although houses located out of draws, the road is in the bottom of the drainage with potential for flooding in heavy rain event. Photos 178, 179									

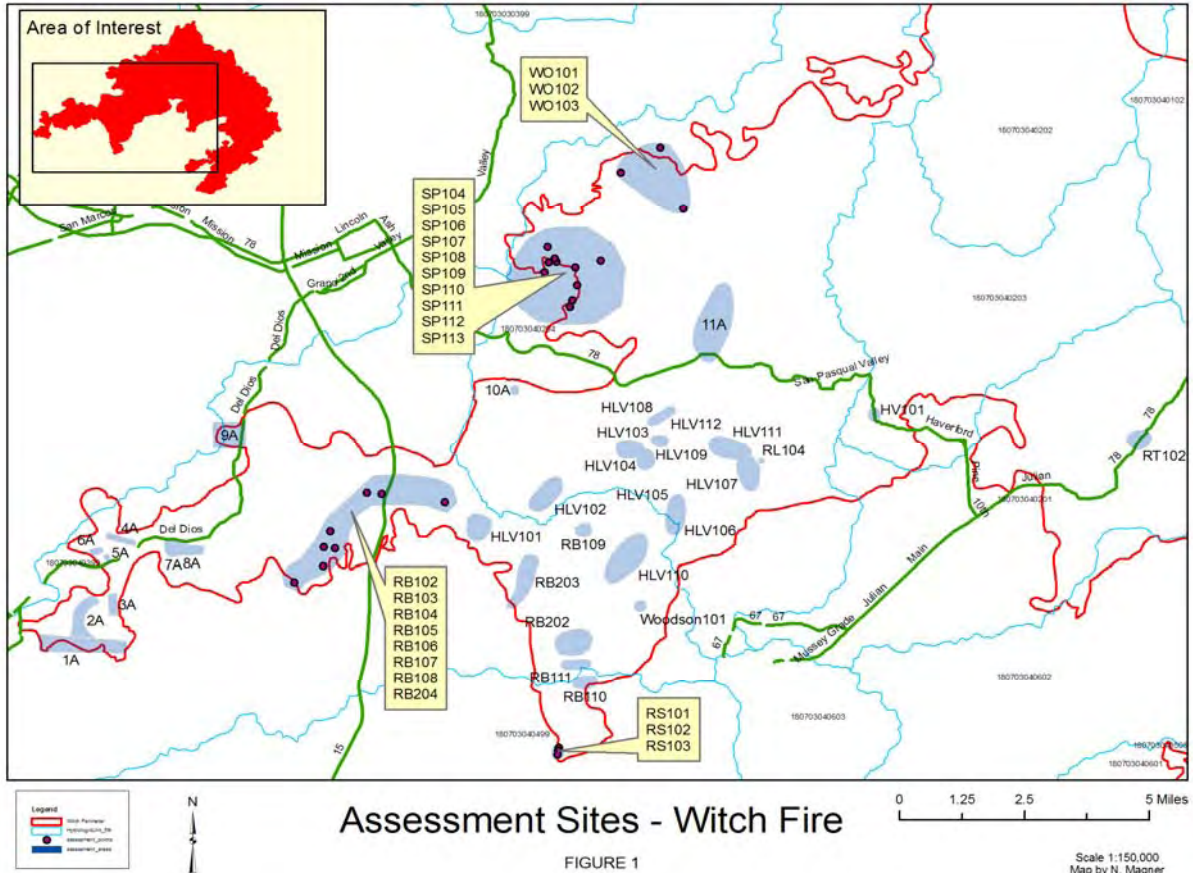
Following is the assessment for the San Pasquel area. The groups collective opinion is the Eagle Crest Golf Course & Subdivision is at a high risk and warrants immediate attention by the County hydrologists, geologists and engineers. Additionally, the area should be monitored through the next few years and residents advised of possible risks.

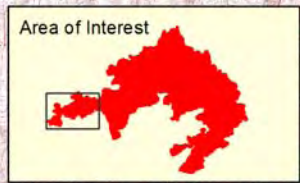
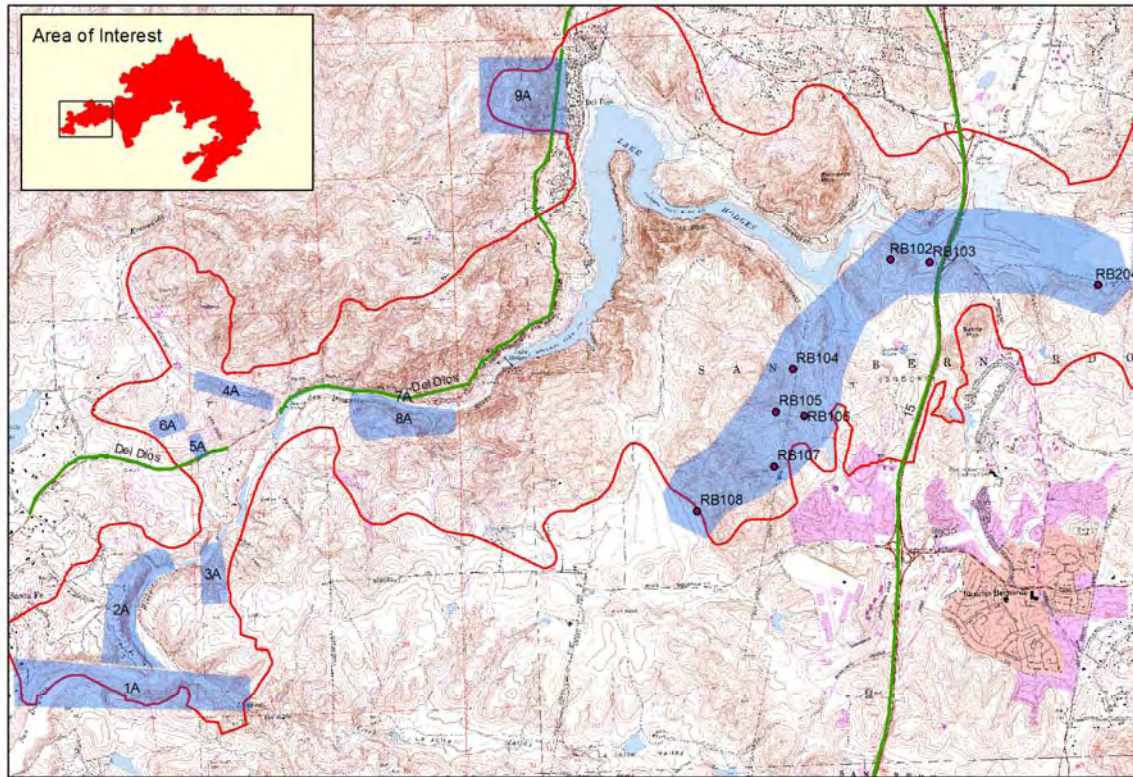
San Pascl	104	28" Culvert for storm drain		33.13094	117.00591	debris from above clogging opening	High	Low	Low	Low	Low
comments		Approximately 15 acre watershed moderately burned above drainage, If culvert plugs drainage will be compromised and water will flow down street. Photos 172, 173.									
San Pascl	105	48" Culvert for storm drain		33.12953	117.00698	debris from above clogging opening	Mod	Low	Low	Low	Low
comments		Approximately 50 acre watershed moderately burned above drainage, If culvert plugs drainage will be compromised and water will flow down street. Photos 174,175.									
San Pascl	106	3 houses		33.13066	117.00589	flood, sedimentation	Mod	Low	Low	Low	Low
comments		Approximately 3 acre watershed moderately burned above houses, slope moderate, chance of sedimentation into house and yards. Photo 171.									
San Pascl	107	6 houses		33.12652	117.00646	flood, debris flow	Mod	Low	Low	Mod	Low
comments		Two watersheds, approximately 3 acre each, moderately burned above houses. Slope moderate, chance of sedimentation into house and yards if concrete brow ditches compromised									

San Pascl	108	houses		33.12619	117.00814	flood, debris flow, rock fall	High	High	Mod	High	Mod
comments		Steep hillside behind these houses has two large draws which drain to storm drain inlets at base of slope. Smaller draws also present. Evidence of recent pre-fire debris slide scars on slope. Various houses at risk of one or more of the following - debris flows, flood, sedimentation. Engineering geologist needed for more detailed evaluation of hazard.									
San Pascl	109	house		33.12273	117.00266	Rockfall, flood, debris flow	Mod	High	Mod	High	Mod
comments		Small watercourse to small 12" culvert/storm intake, upslope and behind house. Potential for plugging, clean out, monitor									
San Pascl	110	houses		33.12230	117.00346	debris flow	Mod	Mod	Low	Mod	Low
comments		Short, steep, moderately burned slope and one small ravine behind house									
San Pascl	111	houses		33.11759	117.00207	rock fall and debris flow	High	High	Mod	High	Mod
comments		Short, steep, moderately burned slope immediately behind houses									
San Pascl	112	house		33.10907	116.99982	Rock fall and debris flow	Mod	Mod	Low	Mod	Low
San Pascl	113	house		33.11094	116.99949	Rock fall	Mod	Mod	Low	Mod	Low

APPENDIX F MAPS







Legend

- assessment_areas
- Witch Perimeter



Assessment Sites - Witch Fire

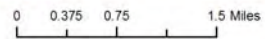
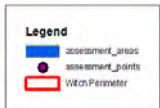
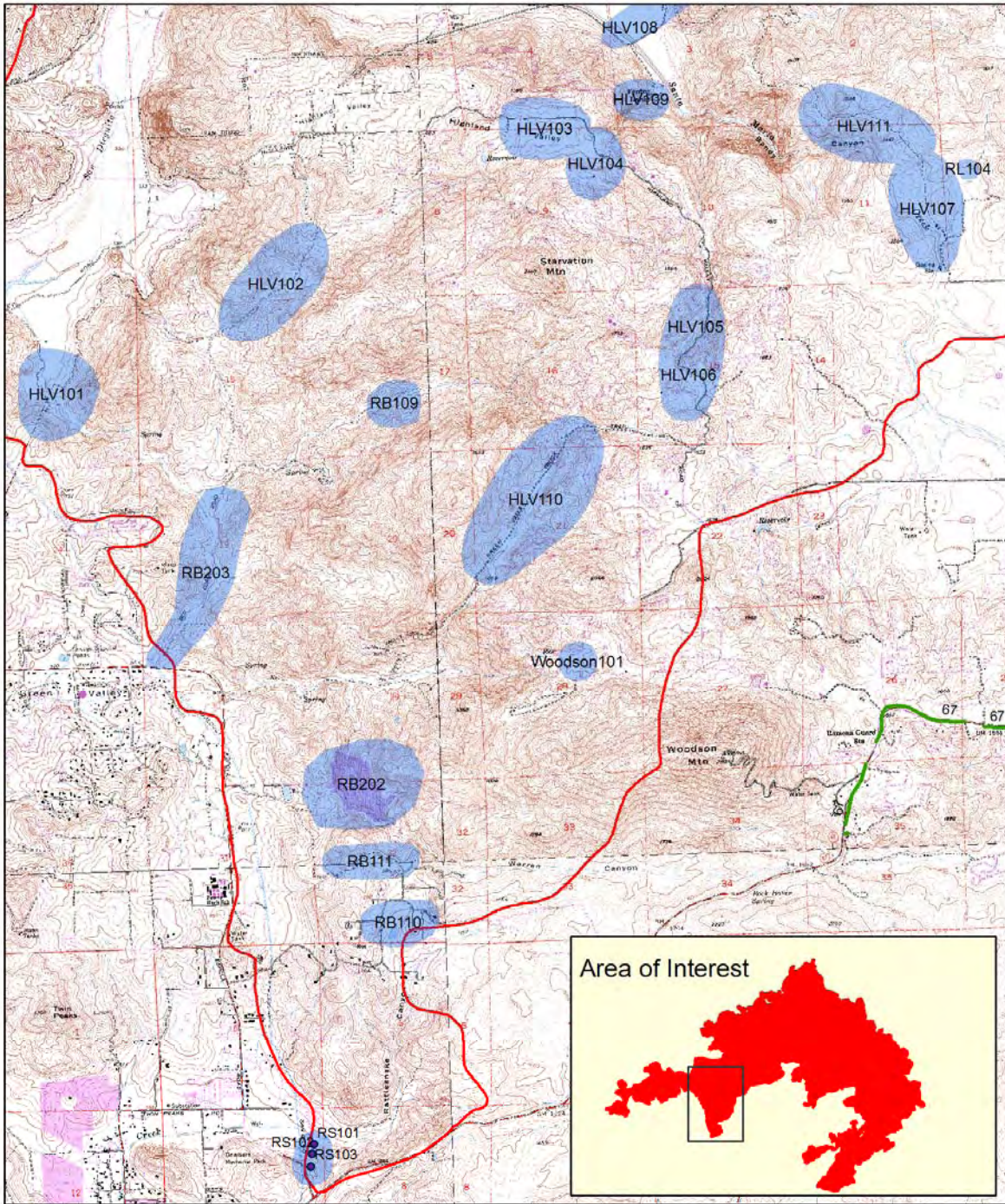


FIGURE 2

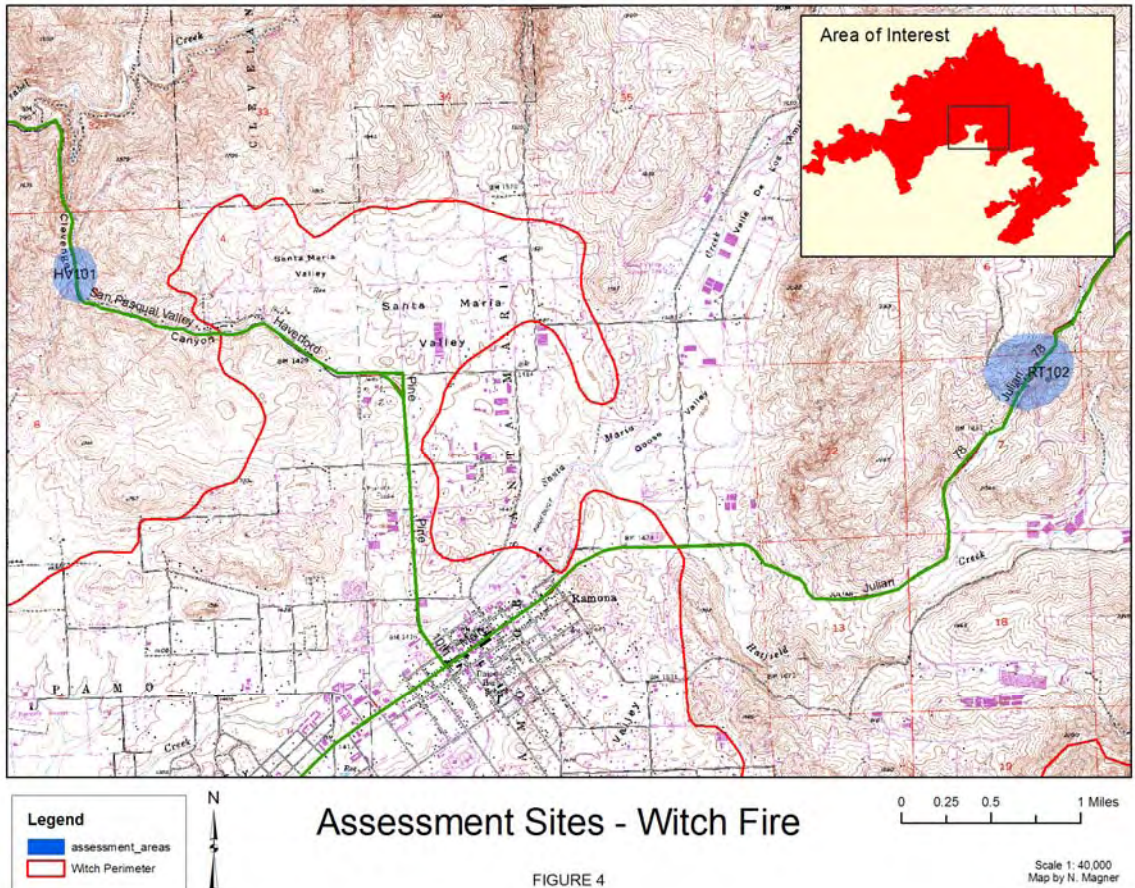
Scale 1:54,000
Map by N. Magner

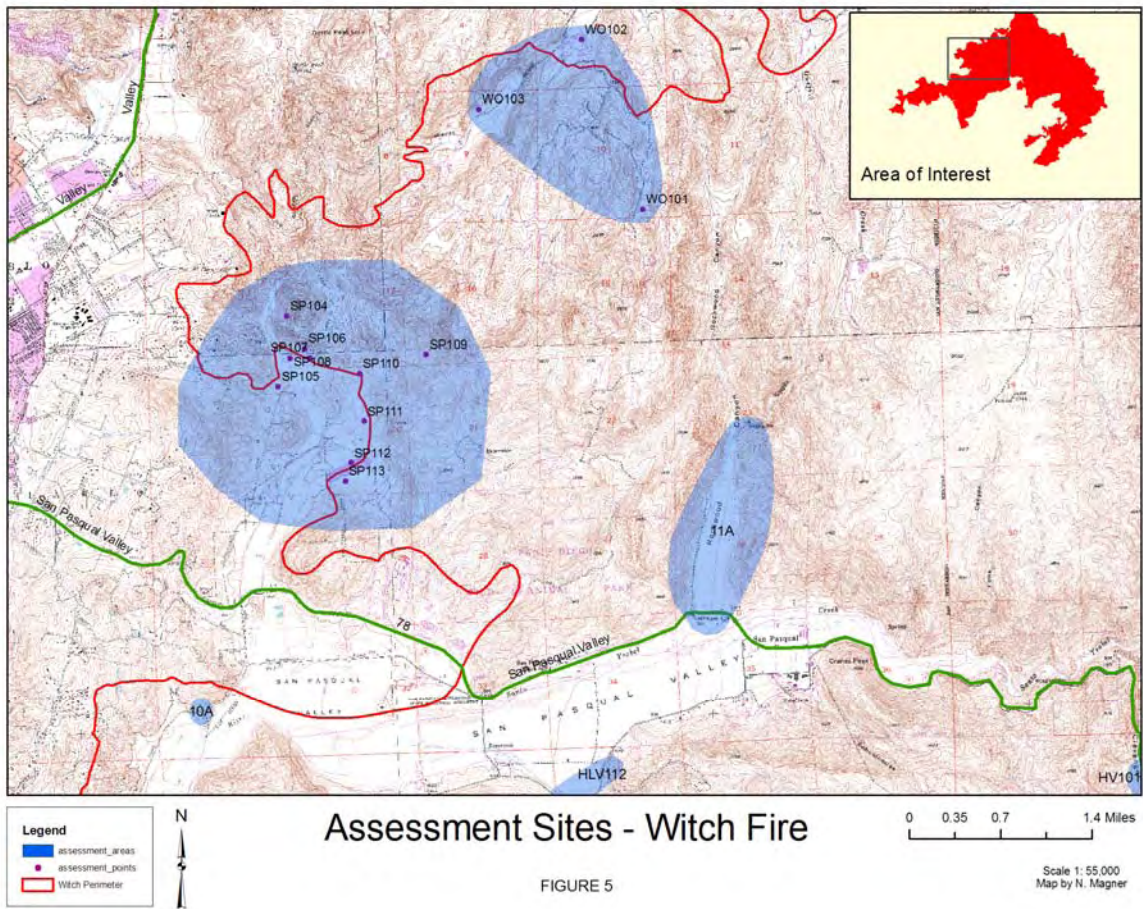


Assessment Sites - Witch Fire

FIGURE 3

Scale 1: 50,000
Map by N. Magner





**SPECIALIST REPORT
RESOURCES: BIOLOGICAL**

BAER TEAM BIOLOGICAL RESOURCES REPORT

Resource Specialty: Biology

Fire Name: Witch

Month and Year: November 2007

Resource Team Lead: Nancy Frost, Associate Wildlife Biologist, California Department of Fish and Game

Resource Team Members: Magdalena Rodriguez and Jeff Brandt, Environmental Scientists, Meredith Osborne, Associate Botanist, and Maurice Cardenas, Associate Fishery Biologist

I. Potential Values at Risk

The focus of the Witch Fire burned area emergency rehabilitation (BAER) team was based on the following ranked values at risk: 1) human life and safety; 2) property; and 3) resources. A complete assessment of fire impacts/suppression activities or list of the sensitive species at risk is not the focus of this report; however, impacts to sensitive species are anticipated. This report assesses the effects of the Witch Fire and those proposed by the BAER for human life and property, to species that are state endangered (SE), threatened (ST), and rare, federally threatened (FT), endangered (FE), and protected by the Bald and Golden Eagle Protection Act (BEPA) (Appendix 1). The aforementioned species with designation as state species of special concern (CSC) are also noted below:

Species	Status	Habitat
California Gnatcatcher (<i>Poliotilta californica californica</i>)	FT/CSC	Coastal Sage Scrub
San Diego Thornmint (<i>Acanthomintha ilicifolia</i>)	FE/SE	Coastal Sage Scrub
San Diego Ambrosia (<i>Ambrosia pumila</i>)	FE	Coastal Sage Scrub
Coastal Cactus Wren (<i>Campylorhynchus brunneicapillus cousei</i>)	FSC/CSC	Cactus Patches in Coastal Sage Scrub
Nevin's Barberry (<i>Berberis nevinii</i>)	FE/SE	Coastal Sage Scrub, Chaparral Coastal Sage Scrub, Chaparral,
Golden Eagle (<i>Aquila chrysaetos</i>)	BEPA/CSC	Grassland
Encinitas Baccharis (<i>Baccharis vanessae</i>)	FT/CE/Rare	Chaparral
Gander's Ragwort (<i>Senecio ganderi</i>)	Rare	Chaparral
Orcutt's Spineflower (<i>Chorizanthe orcuttiana</i>)	FE/SE	Chaparral
Stephens' Kangaroo Rat (<i>Dipodomys stephensi</i>)	FE/ST	Grassland
Thread-leaved Brodiaea (<i>Brodiaea filifolia</i>)	FT/SE	Vernal Pool, Grassland
San Diego Mesa Mint (<i>Pogogyne abramsii</i>)	FE/SE	Vernal Pool
San Diego Fairy Shrimp (<i>Branchinecta sandiegonensis</i>)	FE	Vernal Pool
Arroyo toad (<i>Bufo californicus</i>)	FE/CSC	Riparian
California Red-legged Frog (<i>Rana aurora draytonii</i>)	FT/CSC	Riparian, Aquatic
Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>)	FE/SE	Riparian Woodland
Least Bell's Vireo (<i>Vireo bellii pusillus</i>)	FE/SE	Riparian Woodland
Dunn's Mariposa Lily (<i>Calochortus dunnii</i>)	Rare	Montane Chaparral/Pine Forests

II. Resource Condition Assessment

A. Resource Setting

This fire started in Witch Creek Canyon near Santa Ysabel and spread to Ramona, Rancho Bernardo, Poway, Escondido, Lake Hodges, 4S Ranch, Del Dios, and Rancho Santa Fe. Habitats affected by the burn include chaparral (68,880 acres), coastal sage scrub (31,648 acres), oak woodlands/forests (23,741 acres), grassland (9,148 acres), riparian (4,691 acres), and other wetland (2,911 acres) (Appendix 2; County of San Diego 2007). Approximately 39,700 acres of the Witch Fire overlapped with that burned by the 2003 Cedar Fire, and 14,500 acres of the Witch Fire overlapped with the 2003 Paradise Fire burn area.

B. Findings of the On-The-Ground Survey

1. Biological Resource Condition Resulting from the Fire

Upland species

Coastal sage scrub, including cactus scrub habitats, and grassland generally burned at a low to moderate severity. Chaparral and oak woodlands/forests burned at a low to high severity.

Riparian Habitats

The burn was of moderate to high intensity within riparian woodland/forests and other wetland habitats. The riparian habitat along the San Dieguito River, Lake Hodges, Lake Ramona, Lake Sutherland, and Lake Poway burned at moderate to high severity. In the San Pasqual Valley, the primary concern is the burn on the right bank of the San Dieguito River that extends to Lake Hodges. Anticipated impacts include high sediment load to the San Dieguito River. Burn debris, sediment, and large woody debris will be mobilized from the Lake Hodges area. The Santa Ysabel stream reach at San Pasqual will likely have increased sediment loads and transport downstream. It is also likely that aquatic species will be affected by poor water quality resulting from mobilized debris and sediment. Due to extremely high burn severity within the Lake Ramona reservoir watershed, it is likely that there will be highly mobilized ash and sediment. Possible effects to water quality could extend to other downstream reservoirs. In general, it is likely that the extent of these burn areas will have effects to downstream aquatic biota, as well as an increase in large woody debris throughout and beyond the burn areas. Debris will most likely flow downslope into Sutherland Dam reservoir. Several trees and vegetation are intact at the bottom of the hills near the west edge of the lake. The city of San Diego owns the reservoir and manages it for recreation and should implement erosion control measures and possible active rehabilitation with native flora to avoid water quality issues.

2. Consequences of the Fire on Biological Values at Risk

Upland species

Coastal sage scrub and chaparral species

Coastal sage scrub burned in the slopes around Lake Hodges and San Pasqual Valley, the San Diego River canyon above and around El Capitan Reservoir, and in

Rancho Santa Fe, Rancho Bernardo, Escondido, and northern Poway. While this community is adapted to periodic fires, disturbance from fires may facilitate infestation by non-native, invasive weeds (County of San Diego 2007). Increased fire frequency may convert coastal sage scrub habitat to grassland (Zedler et al. 1983) and reduce California gnatcatcher populations (Bontrager et al. 1995b, Atwood et al. 1998).

Typically, California gnatcatcher populations recover from fire within several years, the time that it takes coastal sage scrub to regenerate post-fire; however, the 2007 San Diego County census found extremely few California gnatcatcher territories had re-established after the 2003 Cedar Fire. The extent of the Witch Fire may have even longer-lasting effects on this species.

While our focus was on listed species, it is important to note that coastal cactus wrens (SSC) may have been severely impacted by the fire, which burned much of their prickly pear (*Opuntia littoralis* and *O. oricola*) and coastal cholla (*O. prolifera*) habitat near Lake Hodges, in Rancho Santa Fe (Lusardi Canyon), and in the San Pasqual Valley. Bontrager et al. (1995a) found that cactus wrens require cactus at least one meter high. Because cactus recovery after a fire is slow, cactus wrens may have difficulty recolonizing burned coastal sage scrub. During the 13 years after the Laguna Fires in Orange County, there was a 58 percent decline in the cactus wren population (Mitrovich and Hamilton 2006). The large unburned and lightly burned prickly pear cactus that remain north of Lake Hodges (County of San Diego 2007) may serve as refugia for this population.

San Diego thornmint is an herbaceous annual species that must regenerate from its seed bank each year. Any of the current year's seeds that may not yet have been released from the dried, above-ground floral structures of the plant, would likely have been burned. Some heat kill of seed bank may have occurred if excess thatch or unusually large amounts of ground fuel were present, but as with most rare annuals and geophytes, the thornmint will probably recover from the effects of the fire over a period of several years if not impacted by repeat burns or post-fire remediation activities.

San Diego ambrosia is an herbaceous perennial arising from a branched system of rhizome-like roots. The aerial stems sprout in early spring after the winter rains and deteriorate in late summer when the species becomes dormant. The underground structures of this species would likely have survived the effects of the fire, and populations within the burn perimeter will probably recover. This species would be adversely impacted by fire remediation activities involving ground disturbance, or repeated mowing or grading if an area containing the population was designated as a permanent fuel break. The previously documented location of San Diego ambrosia one mile north of Lake Hodges may have been impacted by a dozer line. Monitoring should be done to assess this potential impact.

Buildup of high fuel loads in chaparral communities results in unnaturally hot fires that may kill plants and destroy the seed banks of some species. Nevin's barberry is a stump-sprouter after wildfires, but the effects of an altered fire regime on this species are unknown. Seed production is sporadic and fertility has been observed to be low.

Encinitas baccharis is a rare California endemic with a very limited distribution, making it vulnerable to a single natural event, such as fire. Effects of fire on this species are unknown.

Gander's ragwort is an herbaceous perennial endemic, limited to California. This species grows in the understory of mature mixed chaparral, or in open areas of recently burned chaparral. There is potential for impacts to the establishment and reproduction of the species during erosion control measures. A biological monitor should be present to minimize activities to areas that the species is known to occur.

Currently known extant populations of Orcutt's spineflower occur outside of the Witch Fire perimeter in Encinitas and Point Loma. One historic population of the spineflower was described as occurring somewhere in Rancho Santa Fe, possibly within the fire perimeter, but the exact location of this site is not known, nor is it known whether the population still exists. Orcutt's spineflower is thought to be close to extinction. The spineflower is an herbaceous annual species that must regenerate from its seed bank each year. If any as-yet unlocated populations of the spineflower were subject to burning in the Witch Creek Fire, the seed bank may have been adversely affected if there was excess ground-level fuel present. It is impossible to predict the effect of the Witch Creek fire on the survival of the species because it is not known whether any populations were directly affected.

Montane Chaparral/Pine Forests

Dunn's mariposa lily sprouts from a bulb and occurs in dry stony ridges and fire breaks in chaparral and yellow pine forests. In the first post-fire growing season, the plant sprouts from the corm. Ground disturbance activities should try minimizing damage to bulbs that have survived the fire underground. Avoid ground disturbing activities in areas where the species is known to occur.

Grassland species

While grassland habitat typically recovers after fires, weeds may invade where bulldozer lines disturbed the soil, causing a reduction in habitat value (County of San Diego 2007). The golden eagle is a grassland species that also occurs in coastal sage scrub and chaparral. The severity and the extent of the burn likely impacted rodent and rabbit populations upon which golden eagles prey. Golden eagles may rebound as small and medium-sized mammal populations recover.

The Stephens' kangaroo rat lives in underground burrows and prefers open grasslands. To determine if overall impacts to habitat occupied by this species in Rancho Guejito and Ramona were favorable, species monitoring should be done.

Vernal pool species

The Witch fire burned vernal pool habitats in Ramona, the southern portion of Rancho Guejito, and the Santa Fe Valley (County of San Diego 2007). Because vegetative litter tends to be sparse in vernal pools and San Diego fairy shrimp are currently dormant in the soil, direct impacts to this species were likely low. However, the possibility of an ash flurry flowing into the pools necessitates monitoring.

Thread-leaved brodiaea is geophytic plant species (a perennial that is propagated by buds on underground corms) that also reproduces by seed. Vernal moist grasslands and the periphery of vernal pools are the typical habitats where this species has been found. It is likely that the underground corms of this species would have survived the fire. Some reduction of the seed bank may have occurred in areas with excess grassy thatch or unusually large amounts of ground fuel. Thread-leaved brodiaea populations will probably recover from the effects of the fire over a period of several years if not directly impacted by fire remediation activities involving ground disturbance or placement of erosion control objects on the ground surface above the underground corms.

San Diego mesa mint is a small herbaceous annual restricted to vernal pools within grasslands, chamise chaparral, and coastal sage scrub on the mesas of western San Diego County. If significant amounts of non-native grasses and other invasive species were present in vernal pools occupied by San Diego mesa mint, this could have resulted in adverse impacts to the seed bank due to the increased ground-level fuel load. All fire remediation efforts should be directed well away from both vernal pools and their watersheds for the preservation of the mesa mint, as well as other associated vernal pool plant and animal species. Occupied vernal pools should be monitored for at least two years following the fire to determine whether weed control will be necessary. The mesa mint will probably recover from the effects of the fire over a period of several years if non-natives are not allowed to proliferate and if repeated burns are avoided.

Riparian Species

The least Bell's vireo inhabits several willow riparian vegetated reservoir and detention basins within the burn area. Willow riparian habitat in these areas generally burned at moderate severity. Because least Bell's vireo is a spring migrant, no direct impacts to the species occurred during the fire. Indirect impacts will result when least Bell's vireo return in spring 2008 and find minimal or no suitable nesting habitat to produce offspring. There will be similar effects to southwestern willow flycatchers, which have many of the same habitat requirements as least Bell's vireo (County of San Diego 2007).

The survivorship of riparian amphibian species including, arroyo toad and California red-legged frog, depended on the severity of the burn in the riparian drainages. Arroyo toads in Santa Maria Creek and Boden Canyon likely survived the fire but could be impacted by extensive sedimentation after the fire. To determine if overall impacts from the fire were positive for this species, which prefers open riparian areas (County of San Diego 2007), species monitoring should be done.

III. Emergency Determination

The fire burned a significant portion of the habitat identified as important in the approved Multiple Species Conservation Program (MSCP) plan and Multiple Habitat Conservation Program (MHCP) plan and proposed San Diego County North County Multiple Species Conservation Program (NCMSCP) plan. These plans aim for long-term protection of key sensitive and listed species, including most of those discussed in this report. Because much of the approved and proposed preserve areas burned in the Witch Fire, several species are at risk of extirpation or decline within San Diego County.

IV. Treatments to Mitigate the Emergency

A. Treatment Type

Methods of treatments for burn areas include:

- Implement BMPs upstream of sensitive riparian habitats to minimize sediment load.
- Conduct revegetation efforts where appropriate to promote native habitat recovery.
- Conduct post-fire surveys for wildlife species and habitats
- Conduct species monitoring to assess long-term population impacts from the fire.
- Coordinate with local agencies regarding maintenance activities to avoid, minimize, and mitigate additional species impacts.

B. Treatment Objective

The treatments objectives are to monitor wildlife populations and encourage adaptive management through the NCCP process.

C. Treatment Description

1. Erosion Control

- Stabilize slopes over 20 percent and less than 50 percent, where feasible, with biodegradable matting to limit slope erosion.
- Avoid use of hydroseed and hydromulch. Hydromulch and hydroseed are ineffective because of the lack of soil moisture for them to be efficient, they inhibit natural recruitment from the native seed bank, and they introduce exotic weed species into native habitat.
- Vegetation clearing should be limited to the smallest area feasible to accomplish activities safely.

2. Revegetation of Native Habitat

- Revegetate riparian habitats in burn areas where appropriate to encourage habitat regrowth. Riparian vegetation will provide soil stabilization and refugia for wildlife.
- Plant cactus scrub in burn areas of known cactus wren occurrences to promote faster restoration of habitat for the cactus wren.

3. Population surveys and long-term monitoring

- Conduct long-term seasonally appropriate surveys for California gnatcatcher and coastal cactus wren in the burn area to assess direct mortality and habitat loss.
- Conduct long-term seasonally appropriate small mammal surveys throughout the burn area because of high mortality rates anticipated from the fire.

4. Local agency Coordination

- Local agencies and jurisdictions should coordinate activities with the Wildlife Agencies to avoid, minimize, and mitigate impacts to sensitive species during post-fire recovery efforts.
- Coordinate local jurisdiction and private landowner activities within riparian areas and in listed and “covered species” habitat to address wetland permitting (e.g., Department of Fish and Game, Regional Water Quality Control Board, and U.S. Army Corps of Engineers) and California and federal endangered species issues.
- Recommend the above-mentioned government and non-government groups and federal BAER team mutually staff and participate on a Witch Fire recovery and remediation team, commencing with the ending of the BAER Team. This will facilitate coordination, timeliness, and environmental sensitivity of the projects that have been/will be proposed for the burned area’s watershed.

V. Site-Specific Recommendations

See Appendix 3 for the descriptions of the recommendation codes for impact remediation.

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, November 2007)

Notes: RS=Rattle Snake, RL=Range Land, HV=Horizon View, RT=Ramona Trails

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts
			Lat (North)	Long(West)					
RS101	Homes		N32.9752	N117.0153	Debris Flow, flood	Coastal Sage Scrub	L-M	Water quality, erosion, weed invasion	G, W, B-California gnatcatcher, EC, S11, S22, S23,
RS102	Culvert		N32.9752	W117.0162	Debris Flow, culvert blockage	Coastal Sage Scrub	L-M	Water quality, erosion, weed invasion	G, W, B-California gnatcatcher, EC, S11, S22, S23,
RS103	Home		N32.9413	W117.0164	Debris Flow, culvert blockage	Coastal Sage Scrub	L-M	Water quality, erosion, weed invasion	G, W, B-California gnatcatcher, EC, S11, S22, S23,
RL104	Road		N33.0605	W116.9417	Debris Flow, culvert blockage	Coastal Sage Scrub	L	Water quality, erosion, weed invasion	G, W, B-California gnatcatcher, EC, S11, S22, S23,
HV101	House		N33.0729	W116.9046	Rock Slides, Debris Flows	Coastal Sage Scrub	L	Weed invasion	G, W, B-California gnatcatcher, EC,EMP, P
RT102	Road		N33.0644	W116.8115	Debris Flows, road washout	Coastal Sage Scrub	L	Not significant	G, W, B-California gnatcatcher, EC

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: RB = Rancho Bernardo, L=low, H=high, M=moderate

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts
			Latitude	Longitude					
RB102	Hillside drainage		N33.054449	W117.07526	Debris Flow	Coastal Sage Scrub	M	Habitat conversion weed invasion, water quality	G, W, B-California gnatcatcher, EC
RB103	Hillside drainage		N33.05436	W117.07511	Debris Flow	Riparian	M	Water quality	EC, S
RB104	Road/ Houses		N33.04213	W117.09159	Debris Flow	Coastal Sage Scrub	M	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC
RB105	Houses		N33.03865	W117.09196	Debris Flow	Coastal Sage Scrub	M	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC
RB106	Houses		N33.03809	W117.09105	Debris Flow	Coastal Sage Scrub	M	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC
RB107	Hillside drainage		N33.03275	W117.09390	Debris Flow	Coastal Sage Scrub	M	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC
RB108	Houses/ Road		N33.02805	W117.10390	Debris Flow	Coastal Sage Scrub	M	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC
RB109	Hillside drainage		N33.04104	W117.00416	Debris Flow	Coastal Sage Scrub	M	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: RB = Rancho Bernardo, L=low, H=high, M=moderate

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts
			Latitude	Longitude					
RB110	Hillside drainage		N33.00529	W117.02352	Debris Flow	Coastal Sage Scrub	M	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC
RB111	Hillside drainage		N32.98909	W117.02326	Debris Flow	Coastal Sage Scrub	L	Habitat Conversion Weed Invasion	G, W, B-California gnatcatcher, EC
RB202	Water Resource		N33.00740	W117.02337	Debris Flow	Riparian, Coastal Sage Scrub	M	Habitat conversion, weed invasion, water quality	EC, B-California gnatcatcher, S-2, S-9, S-23
RB203	Hillside drainage		N33.01922	W117.02863	Debris Flow	Riparian, Coastal Sage Scrub	M	Habitat conversion, weed invasion, water quality	EC, B-California gnatcatcher, S-2, S-9, S-23
RB204	Road		N33.05151	W117.05145	Debris Flow	Riparian, Coastal Sage Scrub	M	Habitat conversion, weed invasion, water quality	EC, B-California gnatcatcher, S-2, S-9, S-23

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: HLV=Highland Valley, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
HLV101	Road		N33.04657	W117.04233	Debris Flow	Coastal Sage Scrub	L-M	Water quality to Lake Hodges	G, W,B-California gnatcatcher, EC
HLV102	Houses		N33.04152	W117.04080	Debris Flow/mud slide	Coastal Sage Scrub	H	Water quality to Lake Hodges	G, W,B-California gnatcatcher, EC
HLV103	Office Building		N33.05038	W117.03770	Debris Flow	Avocados	L	None	G, W, B, EC
HLV104	Office Building		N33.05654	W117.03325	Unable to access office building (locked gate)	Avocados	L	None	G, W, B, EC
HLV105	Houses		N33.06104	W117.97977	Debris Flow/rock fall	Creek and Avocados upslope	L	Increased debris in creek	G, W, Wet, S4, S6, and S7
HLV106	Road				Debris Flow	Creek and Avocados upslope	L	Increased debris in creek	G, W, Wet, S4, S6, and S-7

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: HLV=Highland Valley, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
HLV107	Ware-house		N33.07537	W116.98613	Debris Flow	Avocados	L	None	G, W, B, EC
HLV108	House				Debris Flow	Coastal sage scrub, chaparral	H	Erosion, water quality, weed invasion, to the San Dieguito River Park.	G, W, B, P, EC, EMP, F, F-Arroyo Toad, S1, 7, 8, 9, 19, 26, 50, 53.
HLV109	Vacation Rental ?		N33.06833	W116.97597	Debris Flow/rocks fall on residences. Dead trees in stream can block flow and damage bridge over stream on Bandy Canyon Road.	Coastal sage scrub, chaparral, riparian woodland	H	Erosion, water quality, weed invasion, impacts to the San Dieguito River Park.	G, W, B, P, EC, EMP, WET, F, F-Arroyo Toad, S1, 2, 3, 8, 9, 11, 12, 19, 25, 26, 28, 29, 30, 32, 33, 34, 35, 36, 37, 39, 40, 47, 52, 53

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: HLV=Highland Valley, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
HLV110	Road		N33.03881 N33.03929	W116.98424 W116.98496	Debris Flow/rocks fall and flow to stream can block flow and damage bridge over stream on Bandy Canyon Road. Possible loss of road access.	Coastal sage scrub, chaparral	H	Erosion, water quality, weed impacts to the San Dieguito River Park.	G, W, B, P, EC, EMP, WET, F, F-Arroyo Toad, S1, 2, 3, 8, 9, 11, 12, 19, 25, 26, 28, 29, 30, 32, 33, 34, 35, 36, 37, 39, 40, 47,52, 53
HLV111	Residence and road		N33.07398	W116.97930	Debris Flow/rocks fall on residences. Dead trees in stream can block flow and damage bridge over stream on Bandy Canyon Road. Possible loss of road access.	Coastal sage scrub, chaparral, riparian	H	Erosion, water quality, weed invasion, impacts to the San Dieguito River Park.	G, W, B, P, EC, EMP, WET, F, F-Arroyo Toad, S1, 2, 3, 8, 9, 11, 12, 19, 25, 26, 28, 29, 30, 32, 33, 34, 35, 36, 37, 39, 40, 47,52, 53
HLV112	Residence and road		N33.04644	W116.58396	Debris Flow/rock fall/erosion	Coastal sage scrub, chaparral	M	Erosion, water quality, weed invasion	G, EC, EMP, S19, 47, 53

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: Rancho Santa Fe Region, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
1A	Creek		N33 00.645	W117 10.522	Erosion	Coastal Sage Scrub	M-H	Erosion, water quality, weed invasion, impacts to documented Cactus wren habitat	G, W, EC, B, B-California gnatcatcher, S1, 7, 8, 9, 19, 26, 50, 53
2A	Creek		N33 01.00	W117 10.506	Erosion, slope failure	Coastal Sage Scrub	M-H	Water quality, erosion, impacts to documented Cactus wren habitat	G, W, EC,P-Orcutt's spineflower, B, B-California gnatcatcher, S1, 7, 8, 9, 19, 26, 50, 53
3A	Ephemeral Drainage		N33 01.257	W117 09.991	Erosion	Ephemeral streambed	M	Water quality, erosion	G, W, EC, B, S1, 7, 8, 9, 19, 26, 50, 53
4A	Drainage and House		N33 02.66	W117 09.918	Sediment load in draw	Coastal Sage Scrub	L	Water quality, erosion, debris flow, impacts to documented CAGN sites impacts to documented Cactus wren habitat	G, W, EC, B, B-California gnatcatcher, S1, 7, 8, 9, 19, 26, 50, 53
5A	Ephemeral Drainage		N3302.286	W117 10.481	Sediment load, debris flow	Coastal Sage Scrub	H	Water quality, erosion, impacts to documented CAGN habitat, impacts to documented Cactus wren habitat	G, W, EC, B-California gnatcatcher, S1, 7, 8, 9, 19, 26, 50, 53

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: Rancho Santa Fe Region, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
6A	Ephemeral Drainage		N3302.520	W117 10.796	Debris flow, erosion	Coastal Sage Scrub	H	Erosion, water quality, habitat conversion, impacts to San Dieguito river, impacts to documented CAGN habitat (3 CAGN observed onsite), impacts to documented Cactus wren habitat	G, W, EC, EMP, B-California gnatcatcher, S1, 7, 8, 9, 19, 26, 50, 53
7A	Culverts		N3302.481	W117 08.541	Debris flow, sediment problem, exposed pipelien	Ephemeral streambed	L	Erosion, water quality, weed invasion, raptor roosts up slope, impacts to San Dieguito river	G, W, EC, P-Orcutt's spineflower, P-San diego ambrosia, B-California gnatcatcher, S1, 7, 8, 9, 19, 26, 50, 53
8A	Culvert and River		N3302.474	W117 08.544	Debris flow	Coastal sage scrub up slope and riparian	M	Water quality, erosion, weed invasion, impacts to documented Southern willow flycatcher habitat	G, W, EC, P-Orcutt's spineflower, P-San diego ambrosia, B-Southern willow flycatcher, S1, 2, 3, 8, 9, 11, 12, 19, 25, 26, 28, 29-37, 39, 40, 47, 52, 53

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER 9, 11-07-07)

Notes: Rancho Santa Fe Region, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
9A	Road and Houses	Del Dios Highway north facing slope on San Dieguito River	N3304.603	W11707.197	Debris flow	Riparian, Coastal Sage Scrub/ Chaparral	M	Water quality, erosion, weed invasion, impacts to documented Encinitas baccharis habitat	G, W, EC, P- Encinitas baccharis, P-Orcutt's spineflower, S
10A	Residence and road	San Pascal road	N33 05.150	W117 01.566	Erosion	cactus scrub	L	Erosion, water quality, weed invasion	G, EC, EMP, S19, S47, and S53
11A	Nursery	Pinery Tree Nursery	N33 06.855	W116 57.277	Debris Flow/rock fall/erosion/dead trees and vegetation in stream can block flow and damage downstream culvert	Coastal sage scrub, oak sycamore woodland, willow riparian	M	Erosion, water quality, weed invasion, impacts to habitat for T&E species Arroyo toad, least bell's vireo, willow flycatcher, impacts to the San Dieguito River.	G, W, B, B-least Bell's Vireo and willow flycatcher, P, EC, EMP, WET, F, F-Arroyo Toad, S1, S2, S3, S8, S9, S11, S12, S19, 25, 26, S28, S29, S30, S32, S33, S34, S35, S36, S37, S39, S40, S47, S52, and S53

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch,BAER Team 9 , 11-10-07)

Notes: W=Wolford, SP= San Pasqual, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
W101	3 houses with business		N33.14579	W116.9748	Flood	Oak and riparian scrub	L-M	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, F, S1, S9, S19, S25, S26, S29, S32, S40, S47, S52, and S53
W102	Nursery, buildings, businesses.		N33.15601	W116.97456	Flood	Oak and riparian scrub	L-M	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, F, S1, S9, S19, S25, S26, S29, S32, S40, S47, S52, and S53
W103	Out building /storage		N33.1513	W116.98717	Flood	Oak and riparian scrub, agricultural areas	L-M	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, F, S1, S9, S19, S25, S26, S29, S32, S40, S47, S52, and S53
SP104	28" Culvert for storm drain		N33.13094	W117.00591	debris from above clogging opening	Coastal sgae scrub and chaparral	L	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53
SP105	48" Culvert for storm drain		N33.12953	W117.00698	debris from above clogging opening	Coastal sgae scrub and chaparral	L	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53
SP106	3 houses		N33.13066	W117.00589	flood, debris	Coastal sgae scrub and chaparral	L	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch, BAER Team 9 , 11-10-07)

Notes: W=Wolford, SP= San Pasqual, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
SP107	6 houses		N33.12652	W117.00646	flood, debris	Coastal sage scrub and chaparral	L	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53
SP108	houses		N33.12619	W117.00814	flood, debris flow, rock fall	Coastal sage scrub and chaparral, riparian veg at culvert	M	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53
SP109	house		N33.12273	W117.00266	flood, debris	Coastal sage scrub and chaparral	M	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53
SP110	houses		N33.1223	W117.00346	debris flow	Coastal sage scrub and chaparral	L	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53

CA Geological Survey Burn Site Evaluation Summary (Fire: Witch,BAER Team 9 , 11-10-07)

Notes: W=Wolford, SP= San Pasqual, L=low, H=high, M=moderate, S=south, N=north, Rd=road

Site #	At-Risk Feature	Street Address	GPS location		Hazard	Pre-existing Habitat Lost	Risk to Resources	Potential future impacts to resources from erosion	Recommendations for remediation from impacts (BMP's)
			Lat (North)	Long(West)					
SP111	houses		N33.11759	W117.00207	rock and debris flow	Coastal sage scrub and chaparral	L	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53
SP112	house		N33.10907	W116.99982	Rock fall and debris flow	Coastal sage scrub and chaparral	L	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53
SP113	house		N33.11094	W116.99949	Rock fall and debris flow	Coastal sage scrub and chaparral	M	Erosion, water quality, weed invasion, habitat degradation	G, EC, EMP, S19, S47, and S53

VI. References

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VI. Appendices

Appendix 1 – California Natural Diversity Database Map

Appendix 2 – Witch Fire Vegetation Impacts (from County of San Diego 2007)

Appendix 3 – Recommendations

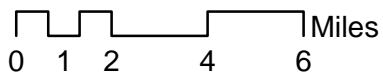
San Diego County Witch Fire & CNDDDB T & E Species

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California Natural Diversity Database

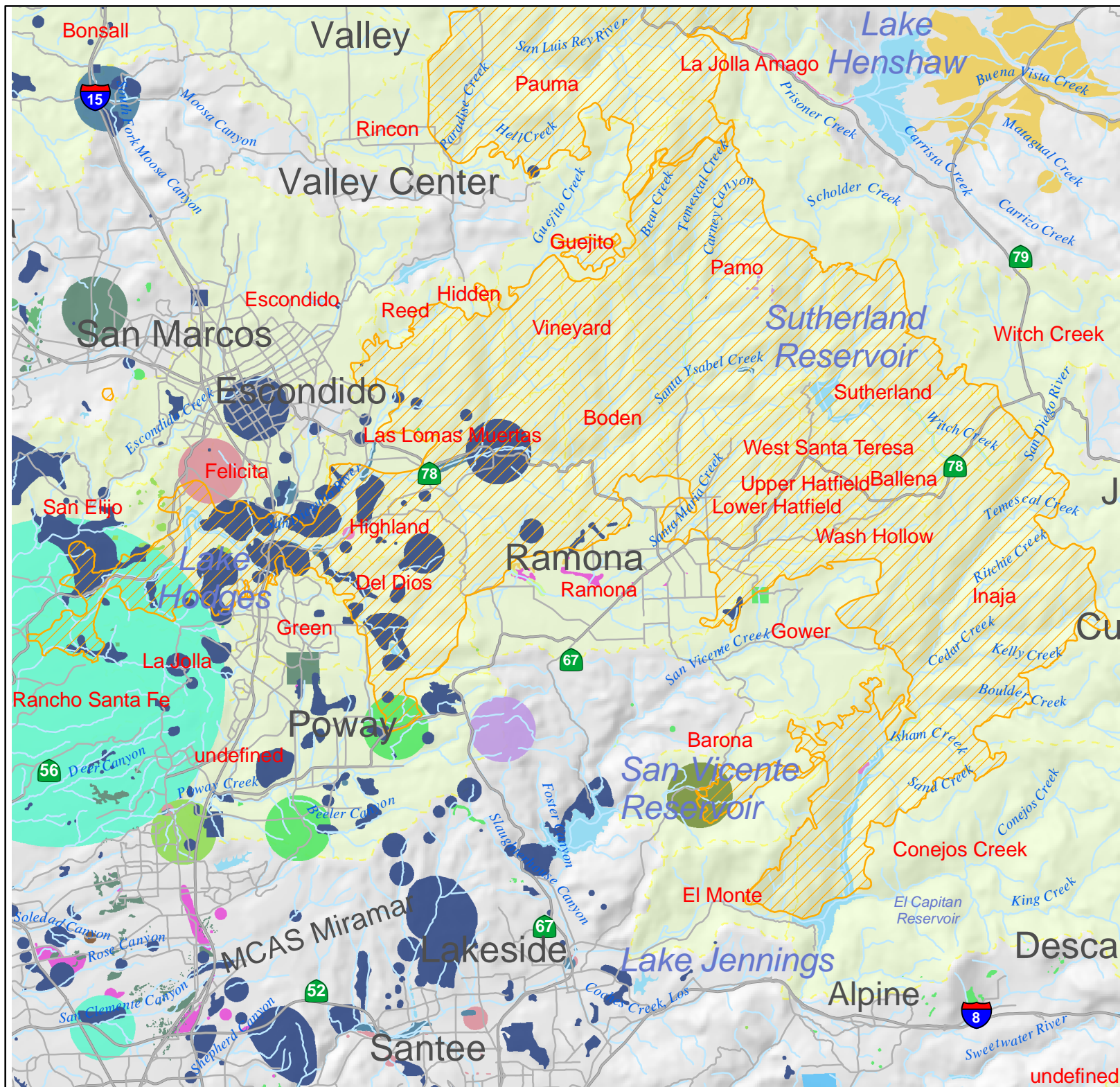
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-  Bank swallow / ST
-  Belding's savannah sparrow / SE
-  Coastal California gnatcatcher / FT
-  Dehesa nolina / SE
-  Dunn's mariposa lily / SR
-  Encinitas baccharis / FT, SE
-  Gander's ragwort / SR
-  Least bell's vireo / SE, FE
-  Mexican flannelbush / FE, SR
-  Nevin's barberry / FE, SE
-  Orcutt's spineflower / FE, SE
-  Otay Mesa mint / FE, SE
-  Otay tarplant / FT, SE
-  San Diego ambrosia / FE
-  San Diego button-celery FE, SE
-  San Diego fairy shrimp / FE
-  San Diego thorn-mint / FT, SE
-  Southwestern willow flycatcher / SE
-  Stephens' kangaroo rat / ST, FE
-  Swainson's hawk / ST
-  Thread-leaved brodiaea / FT, SE
-  Tidewater goby / FE
-  Quino checkerspot butterfly / FE
-  Watersheds (Calwater 2.2.1 - HSNAMES Planning Unit)



SanDiego_2007Wildfire_Watersheds_Witch.mxd

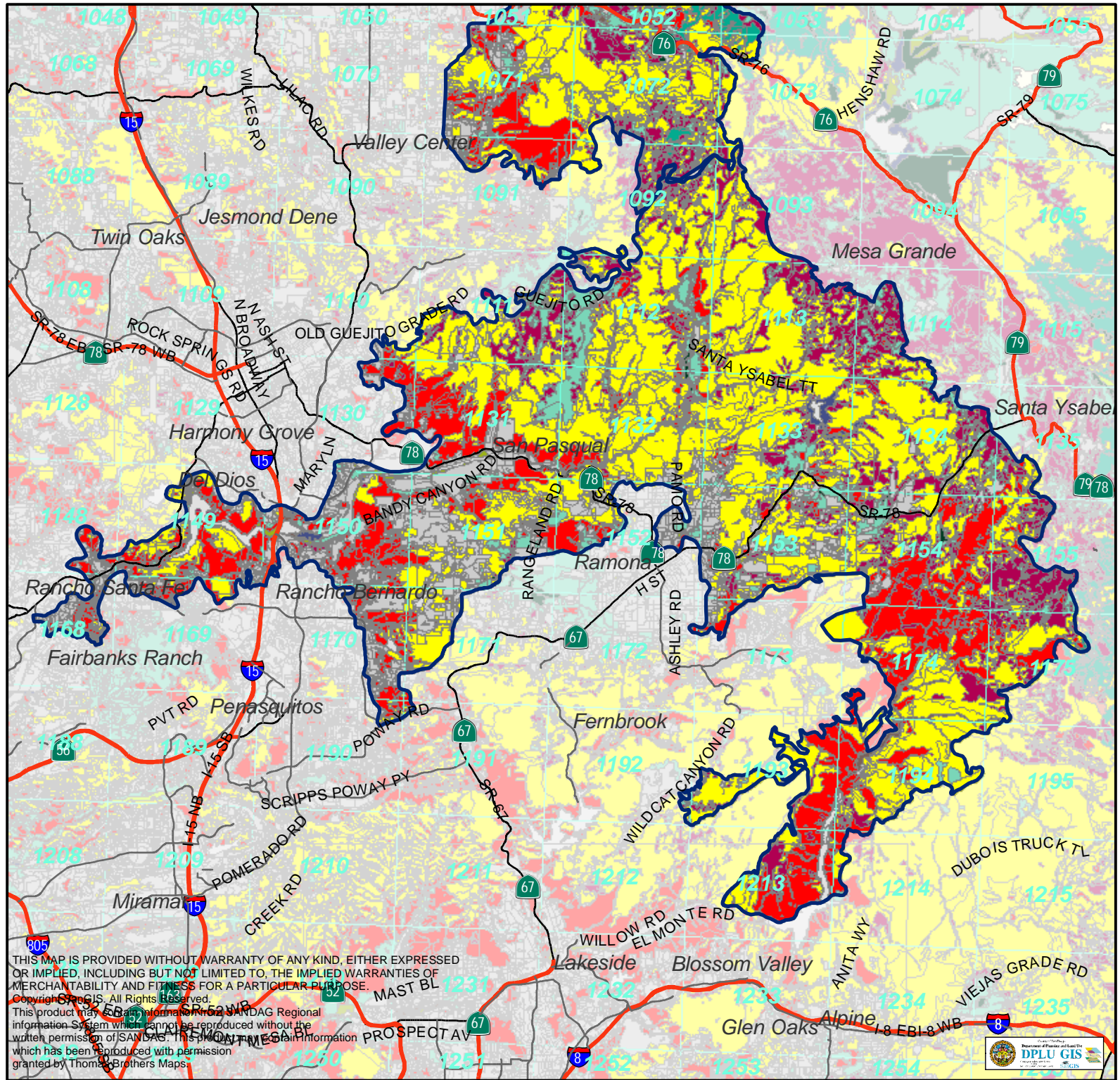
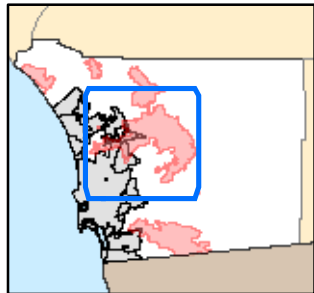
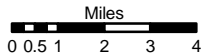
Map prepared by CDGF's South Coast Region GIS
(K. DeVore, 11/2007)



undefined

**VEGETATION IMPACTS
INCIDENT CA-MVU-010432
WITCH FIRE
10/31/2007 0600**

-  Fire Perimeter (071031)
- Vegetation Communities (Holland 95 Classification)**
- HOLLAND**
-  Southern Foredunes, Beach, Saltpan, Mudflats
-  Coastal Sage Scrub
-  Chaparral
-  Grassland
-  Riparian Scrub
-  Riparian Woodland
-  Riparian Forest
-  Pinyon Juniper Woodlands
-  Other Woodlands
-  Oak Forest
-  Meadow and Seep
-  Marsh
-  Coniferous Forest
-  Desert Dunes (22100, 22300)
-  Playas/Badlands/Mudhill Forbs
-  Desert Scrub
-  Desert Chaparral
-  Dry Wash Woodla
-  Water (Including 11200, 13200)
-  Urban, Disturbed Habitat, Agriculture, Eucalyptus Woodland
-  Not Mapped (data gaps)
-  Parcels
-  Thomas Bros. Grid Page
-  Highway



THIS MAP IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
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APPENDIX 3

Post Fire Recommendations, Measures and Best management Practices *(Note some measures are repeated in the different categories)*

Categories

- General (Code: G applies to all projects)
- Wildlife (Code: W)
- Birds (Codes: B, and species)
- Plants (Codes: P, and species)
- Fisheries and Herptiles (Code: F, and species)
- Invertebrates (Species specific)
- Erosion Control General (Code: EC)
- Equipment, Maintenance, Pollution, Litter, and Education (Code: EMP)
- Wetlands CDFG Jurisdictional (Code: Wet)
- Streams and associated habitats (Code: S and associated #)

General—applies to all projects

A qualified biologist (wildlife/botanist) should be present on site for the duration of the project to monitor activities and ensure all practicable measures are being employed to minimize impacts when working in areas with listed plants and animals.

Resource monitoring is recommended in all areas with listed and/or sensitive species to examine the natural rehabilitation.

Construction activities should avoid impacts to any existing stands of unburned native resources in a burned area (e.g. shrubs). Such habitat should be adequately marked.

Removal of native vegetation should be avoided and minimized. Temporary impacts should be returned to pre-existing contours and re-vegetated as appropriate.

Construction footprint should be minimized to maximum extent feasible. Access to sites should be via pre-existing access routes to greatest extent possible.

Oak slash should be left in place if possible/feasible.

Some burned standing trees should remain to provide habitat for cavity nesting bird species.

Conservation of seed bank is critical to survival of many special status plant species.

If any wildlife is encountered during the course of construction, the wildlife shall be allowed to leave the construction/project area unharmed and should be flushed, hazed, or herded in a safe direction away from the project sites or roadways.

The Operator shall ensure that development lighting adjacent to all on- or off-site habitat will be directed away from and/or shielded so as not to illuminate native habitats.

If night work is necessary, night lighting shall be of the lowest illumination necessary for human safety, selectively placed, and shielded and directed away from natural habitats.

Wildlife (Code: W)

If any wildlife is encountered during the course of construction, the wildlife shall be allowed to leave the construction/project area unharmed and should be flushed, hazed, or herded in a safe direction away from the project sites or roadways.

Exotic species that prey upon or displace listed or species of concern should be permanently removed from sites.

Where appropriate based on site-specific survey results, wildlife undercrossings shall be designed and implemented for new roads or road improvement projects that could disrupt wildlife movements or result in increased roadkill. Such undercrossings, along with any necessary wildlife fencing or other facilities, shall be designed based on best available information to maximize use of the undercrossing by species of concern. Undercrossing design shall strive to maximize the openness index ($[\text{width} \times \text{height}] / \text{length}$), minimize traffic noise within the crossing, use appropriate fencing to funnel wildlife into the crossing rather than across the road surface, and screen the undercrossing openings with natural vegetation.

To minimize impacts on **bats**, work at a bridge site should be surveyed for bats by a qualified biologist. If bats are found to be present, avoid working on the bridge from March 1 through October 15. Ensure that roosting areas remain intact for future use and nearby water sources remain available. If the bridge needs to be replaced, it should be removed prior to March 1. The new bridge should be designed to include roosting habitat within the structure.

Where appropriate conduct long-term seasonally appropriate bird surveys for Coastal California gnatcatcher, coastal cactus wren, and Southern California rufous crowned sparrow throughout the burn area because of increased direct mortality and loss of habitat.

Where appropriate conduct long-term seasonally appropriate small mammal surveys throughout the burn area because of high mortality rates anticipated from the fire.

Where appropriate monitor mountain lion, deer, and mesopredator populations and movement patterns to monitor population size and health.

Birds--General (Code: B)

Migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918(50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA).

To minimize impacts on nesting birds on site or in the vicinity during construction, construction (including disturbances to native and non-native vegetation, structures and substrates) should occur outside of the bird breeding season (March 1 -August 31). If construction is proposed during the

breeding season, a qualified biologist should conduct a pre construction survey of the project site and surrounding habitat to determine whether there are active nests within the area. If an active nest is observed, we recommend that a buffer be established (with flagging and stakes) between the construction activities and the nest so that nesting activities are not interrupted. The buffer should be a minimum width of 300 feet and should be in effect as long as construction is occurring and until the nest is no longer active.

To minimize impacts on nesting raptors (birds of prey) on site or in the vicinity during construction, construction (including disturbances to native and non-native vegetation, structures and substrates) should occur outside of the bird breeding season (February 1 - August 30 or July 31 for *Buteo* spp.) a qualified biologist should conduct a pre-construction survey of the project site and surrounding habitat during breeding season to determine whether there are active raptor nests within that area. If an active nest is observed, we recommend that a buffer be established between the construction activities and the nest so that nesting activities are not interrupted. The buffer should be a minimum width of 300 feet and should be in effect as long as construction is occurring and until the nest is no longer active.

Re-vegetate/plant cactus scrub in burn areas of known **cactus wren** occurrence to promote quicker restoration of habitat for the cactus wren.

Birds--Species specific

California gnatcatcher

Habitat: coastal sage scrub

Recommendations: Monitor post burn to assess if coastal sage scrub is converted to less desirable forms of sage scrub or non-native grasslands, that are not suitable for nesting.

-Complete invasive vegetation removal before February 15 or after August 30 to prevent effects to nesting avian species.

Least Bell's vireo

Habitat: Riparian Scrub, Woodlands, Forests. Migratory—nesting season March to September. Primary concerns—nesting season spring/summer breeder, site fidelity, nests typically less than a meter off the ground in dense vegetation, habitat reduced (at least temporarily) by the fires and will not be fully re-established by the spring arrivals of the vireo. *Post Fire concerns:* Forage and breeding habitat in burn areas is likely to be removed or significantly reduced in quality until the riparian vegetation returns to a more closed-canopy growth pattern. Marginal quality habitat becomes more important due to habitat loss.

Recommendations:

1. Avoid impacts to habitats during nesting season from March through September.
2. Avoid nesting areas and habitat with a minimum 300 to 500 foot buffer area.
3. Preserve and enhance existing riparian habitat within the vireo historic range.
4. Remove exotic vegetation and replace with native riparian vegetation.
5. Continue cowbird removal to controlling cowbird parasitism.
6. Management on a community level in order to reduce predation levels.
7. Monitoring and reporting in burn areas and adjacent habitats.

Southwestern willow flycatcher

Habitat: Riparian Woodlands, and Forests. Migratory—nesting season March to September. Primary concerns—nesting season spring/summer breeder, habitat reduced (at least temporarily) by the fires and will not be fully re-established by the spring arrivals of the willow flycatcher. *Post Fire concerns:* Forage and breeding habitat in burn areas is likely to be removed or significantly reduced in quality until the riparian vegetation returns to a more closed-canopy growth pattern. Marginal quality habitat becomes more important due to habitat loss. Requirements are similar to least Bell's vireo, but this species has a more restricted distribution and is more at risk to habitat loss than the LBV.

Recommendations:

1. Avoid impacts to habitats during nesting season from March through September.
2. Avoid nesting areas and habitat with a minimum 300 to 500 foot buffer area.
3. Preserve and enhance existing riparian habitat within the vireo historic range.
4. Remove exotic vegetation and replace with native riparian vegetation.
5. Continue cowbird removal to controlling cowbird parasitism.
6. Management on a community level in order to reduce predation levels.
7. Monitoring and reporting in burn areas and adjacent habitats.

Fisheries and Herptiles--General (Code: F)

Recommendations - The extent and severity of the fire on coastal streams within San Diego County will likely produce an increase in sediment transport and erosion this coming winter. It is likely that there will be an increase in the amount of sediment and debris from previous years. To minimize the streams effects on fishes and herptiles by this years fire, any affected stream should be evaluated when it has been determined that T and E fishes and herptiles have been recently documented within that given stream. With the support of a qualified biologist familiar with local streams, an assessment will be made in the field to determine a best management plan for that stream. The use of hay bails has the benefit of ease of transport, site placement and perhaps more importantly the filtering ash material. Access and placement need to be taken into account.

Fisheries and Herptiles--Species specific

Arroyo Toad

Habitat: riparian habitats with sandy streambeds with riparian areas for breeding. Adults disperse from breeding habitat up to a kilometer (0.6 mile) to forage and up to 2 kilometer to aestivate in adjacent upland habitats in Coastal Sage Scrub and Chaparral. The toad is chiefly nocturnal; breeding season—eggs are laid from March to July--Summer stream flow or the persistence of shallow breeding pools until at least July is essential. Tadpoles develop over an extended period of 65-85 days. The lengthy larval period makes them extremely susceptible to mortality during this time. Primary concerns— the natural fluvial processes that create and maintain toad breeding habitat have been disrupted by altered streamflows and watershed degradation. The remaining breeding habitat in the area have been infested with detrimental exotic species that are difficult to control. Introduced predators include bullfrogs and freshwater gamefish.

Post Fire concerns: Forage and breeding habitat in burn areas is likely to be significantly reduced in quality until debris/sediment flows are normalized. Shallow breeding pools may be inundated with sediment/silt. Marginal quality habitat becomes more important due to habitat loss.

Recommendations:

1. Avoid impacts to habitats during breeding season from March through July.
2. Avoid habitat with a minimum 300 to 500 foot buffer area.
3. Preserve and enhance existing habitats.
4. Avoid night driving adjacent to habitats.
5. Educate public on nocturnal habits of species.
6. Remove exotic species/introduced predators such as bullfrogs and freshwater gamefish from habitats.
7. Monitoring and reporting in burn areas and adjacent habitats.

Invertebrates—Species specific

San Diego Fairy Shrimp

Habitat: Vernal pools

Soils: Clay soils, ponding

Recommendations: If area is known to have vernal pools or soils and hydrology conducive for vernal pools then mitigation should avoid filling in these areas. Avoid using plants to reseed that do not occur in the upland and pool areas. Ensure adequate buffer areas are established to maintain hydrology. Delineate boundaries.

Quino checkerspot butterfly

Habitat: Coastal sage scrub, open chaparral, grassland and open canopy

Soils: Loamy soils with moderate to high amounts of clay

Recommendations: Avoid non-native seed mixture, maintain open-canopy woody communities. Host plants and nectar sources are the preferred mitigation. Monitoring of known population areas in the future by qualified biologist.

Plants—General (Code: P)

Conservation of seed bank is critical to survival of many special status plant species, especially this year because rainfall has largely not been sufficient to date to trigger germination, so most rare annuals currently exist only as seed in the soil. Impacts to the current year's seed production, held in any above-ground biomass that was burned, likely occurred. Some heat kill of seed bank is possible, especially where excess thatch or unusually large amounts of ground fuel occur. Typically we find most rare annuals and geophytes recover from wildfires over a period of several years if further disturbance to the burned areas of interest is controlled and minimized.

In addition to conservation of seed bank for special status plant species, please use RAREFIND; BIOS; or other GIS-based information on reported occurrences to assist in developing recommendation for Impact Avoidance and Minimization. (Please note: RAREFIND has a backlog of records that have not been entered that may go back several years)

Avoid mulching in areas with listed annuals as it may inhibit seed germination. Mulching might be acceptable in areas with listed shrubs or perennials but this depends on the specific species in question (see species specific recommendations).

Avoid any ground disturbing activity such as grubbing, contour tilling, scarification, driving heavy equipment, or other activities that would result in soil compaction or soil disturbance in areas mapped with listed plant species.

In areas with mapped listed plant species, avoid placement of wattles or other erosion control treatments directly on top of listed plant species with intact root crowns.

All straw and mulches should be seed free and should not contain species on the California Invasive Plant Council list (see site at <http://www.cal-ipc.org>).

Department promotes natural recovery without seeding except in situations where 1) risk to downstream property and life adjacent to impacted land is too great, and 2) probability of reducing erosion is high. Seeding is appropriate only if the following criteria are met: there is clear, scientific evidence that a given seeding mix will more effectively establish ground cover than the remaining, viable seeds in the natural seedbank, and 2), seeding has been demonstrated to be an effective restoration technique in relation to that specific incident's conditions (i.e. slope, soil-type, soil and duff damage, etc.). The Department believes that seeding may be appropriate in areas where fire suppression activity has removed or destroyed the natural seedbank (i.e. bulldozing). The Department acknowledges that when human safety is an issue downstream and seeding would protect human safety by better stabilizing an area, seeding is appropriate.

If seeding is carried out a basic seed mix should include the dominant species on-site pre-disturbance. Eight species are recommended in a mix. Annual or perennial ryegrass for erosion control is not recommended.

Do not stage construction activities in areas mapped with listed plant species.

Conduct re-vegetation efforts, where appropriate, to promote more rapid recovery of native habitats

Any planting stock to be brought onto the site for landscaping or ecological restoration shall first be inspected by a qualified pest inspector to ensure it is free of pest species that could invade natural areas, including but not limited to Argentine ants, fire ants, and other insect pests. Any planting stock found to be infested with such pests shall not be allowed on the project site or within 300 feet of natural habitats. The stock shall be quarantined, treated, or disposed of according to best management principles by qualified experts in a manner that precludes invasions into natural habitats.

Invasive exotic plant species should not be planted, seeded or otherwise introduced. Exotic plant species not to be used include those species listed on Lists A & B of the California Invasive Plant Council's list of "Exotic Pest Plants of Greatest Ecological Concern in California as of October 1999." This list includes such species as: pepper trees, pampas grass, fountain grass, ice plant, myoporum, black locust, capeweed, tree of heaven, periwinkle, sweet alyssum, English ivy, French broom, Scotch broom, and Spanish broom. A copy of the complete list can be obtained by contacting the California Invasive Plant Council at 1442-A Walnut St. #462, Berkeley, CA 94709, or by accessing their web site at <http://www.cal-ipc.org>

Plants—Species specific
Encinitas baccharis

Habitat: Chaparral, very limited distributions, 14 known locations with ~2,000 individuals. It is a fire-adapted shrub that is adversely affected by frequent and high-intensity fires. It is a dioecious (i.e. male and female flowers on separate plants) broom like shrub. It is presumably insect pollinated and presumably the seeds are wind-dispersed.

Post fire concerns: too few individuals and populations to risk loss. Given the limited range of this species, edaphic requirements may significantly restrict dispersal. Soil at Encinitas is Corralitos loamy sand while the soil type on Mount Israel is mapped as the quite different Cieneba rocky coarse sandy loam (the Ralphs Ranch and Crest reports are also in Cieneba soils). At inland locales Encinitas *Baccharis* may be associated with large granitic boulders.

Recommendations:

1. Avoid all tilling and ground disturbing activities in known sites.
2. Avoid and preserve known sites and fully protect with viable buffers.
3. Enhance existing sites with nursery grown stock.
4. Reintroduce nursery grown stock to biological open space preserves within its historical range.
5. Monitoring and reporting in burn areas and adjacent habitats.

Dehesa nolina

Habitat: chaparral; wildfire has induced mass flowering in populations.

Recommendations: To assess scale of impact, monitor in the spring for its fire response.

Gander's ragwort

Habitat: mature-mixed or recently-burned chaparral; <12 occurrences reported.

Soils: gabbro

Recommendations: To assess scale of impact, monitor in the spring for its fire response.

Brodiaea filifolia

Habitat: open grasslands, edges of vernal pools, in flood plains.

Soils: clay

Recommendations: Delineate and mark the boundaries of construction areas and areas occupied by this species with orange snow fencing before starting construction, have periodic construction monitoring by a qualified biologist, employ erosion control measures near streams and by native habitats, and implement contractor education.

A biological monitor should be present during grading and construction near known locations of this species to ensure avoidance of this species.

San Diego Thornmint (*Acanthomintha ilicifolia*)

Habitat: Coastal Sage scrub, chaparral, grassland.

Soils: Calcareous marine sediments, clays, gabbro-derived soils.

Life cycle: Herbaceous annual.

Threats: Habitat loss/degradation; fire damage; trampling; soil disturbance; vehicle traffic and road construction; illegal dumping; livestock grazing; invasive exotic plants.

Recommendations: Avoid mulching, soil disturbance, vehicle and foot traffic.

Conduct follow-up monitoring to determine if seed bank survived fire.

Perform post-fire remediation outside of growing season (work from July-December).

San Diego Ambrosia (*Ambrosia pumila*)

Habitat: Creek beds, seasonally dry drainages, and floodplains are the preferred historical habitat; usually on the periphery of willow woodland without a protective tree canopy. Upper terraces of rivers and drainages, also in open coastal sage scrub, grassland, disturbed habitat, several populations in urban areas.

Soils: Riverwash and sandy alluvium.

Life cycle: Herbaceous perennial; rhizomatous; dormant during late summer-winter.

Threats: Development; fire damage; invasive exotic plants.

Recommendations: Perform post-fire remediation outside of growing season (work from September-December).

Conduct follow-up monitoring to determine if rhizomes survived fire.

Conduct follow-up weed monitoring and control efforts if needed.

Orcutt's spineflower (*Chorizanthe orcuttiana*)

Habitat: Weathered sandstone bluffs.

Soils: Weathered sandstone.

Life cycle: Herbaceous annual.

Threats: Trampling; soil disturbance; vehicle traffic and road construction; invasive exotic plants, small population size.

Recommendations: Avoid mulching, soil disturbance, vehicle and foot traffic.

Conduct follow-up monitoring to determine if seed bank survived fire.

Conduct follow-up weed monitoring and control efforts if needed.

Otay tarplant (*Deinandra conjugens*)

Habitat: Mesas, grasslands, coastal sage scrub to 1000'.

Soils: Fractured clay soils.

Life cycle: Herbaceous annual.

Threats: Habitat loss; invasive exotic plants.

Recommendations: Avoid mulching, soil disturbance.

Conduct follow-up weed monitoring and control efforts if needed.

Mexican Flannelbush (*Fremontodendron mexicana*)

Habitat: Closed-cone coniferous forest and southern mixed chaparral (entire known U.S. population restricted to Otay Mountain)

Soils: Usually occurs in alluvium.

Life cycle: Woody shrub.

Threats: Too-frequent fires, small population size.

Recommendations: Avoid soil-disturbing activities and grubbing of rootcrowns in mapped flannelbush areas.

Conduct follow-up monitoring to determine the extent of the surviving population of shrubs and look for seedling recruitment.

Dunn's Mariposa Lily (bulb)

Habitat: Rocky openings in chaparral or grassland/chaparral b/w 1500-1700 m

Soils: Restricted to metavolcanic and gabbroic derived soils.

Recommendations: Avoid use of non-native seed mixture. Avoid mulching in mapped areas with listed species. Avoid compaction of soils during construction. Watch compaction of soils during construction.

Nevin's barberry

Habitat: Chaparral and washes at <650m

Soils: Sandy to gravelly soils

Recommendations: Avoid use of non-native seed mixture, if area reseeded keep habitat type open chaparral.

General Erosion Control (Code: EC)

(also see Erosion under Streams and associated habitats below)

Silt fences should be removed when no longer necessary or, alternatively, they need to be made of biodegradable materials. Fencing should be installed in a manner that does not impact habitats to be avoided.

Any temporary structure should be removed when it is no longer needed.

Erosion control fabric or blankets should not be comprised of inorganic materials.

Avoid mulching in areas with listed annuals as it may inhibit seed germination. Mulching might be acceptable in areas with listed shrubs or perennials but this depends on the specific species in question (see species specific recommendations).

Avoid any ground disturbing activity such as grubbing, contour tilling, scarification, driving heavy equipment, or other activities that would result in soil compaction or soil disturbance in areas mapped with listed plant species.

In areas with mapped listed plant species, avoid placement of wattles or other erosion control treatments directly on top of listed plant species with intact root crowns.

All straw and mulches should be seed free and should not contain species on the California Invasive Plant Council list (see site at <http://www.cal-ipc.org>).

Department promotes natural recovery without seeding except in situations where 1) risk to downstream property and life adjacent to impacted land is too great, and 2) probability of reducing erosion is high. Seeding is appropriate only if the following criteria are met: there is clear, scientific evidence that a given seeding mix will more effectively establish ground cover than the remaining, viable seeds in the natural seedbank, and 2), seeding has been demonstrated to be an effective restoration technique in relation to that specific incident's conditions (i.e. slope, soil-type, soil and duff damage, etc.). The Department believes that seeding may be appropriate in areas where fire suppression activity has removed or destroyed the natural seedbank (i.e. bulldozing). The Department acknowledges that when human safety is an issue downstream and seeding would protect human safety by better stabilizing an area, seeding is appropriate.

If seeding is carried out a basic seed mix should include the dominant species on-site pre-disturbance. Eight species are recommended in a mix. Annual or perennial ryegrass for erosion control is not recommended.

Do not stage construction activities in areas mapped with listed plant species.

Any planting stock to be brought onto the site for landscaping or ecological restoration shall first be inspected by a qualified pest inspector to ensure it is free of pest species that could invade natural areas, including but not limited to Argentine ants, fire ants, and other insect pests. Any planting stock found to be infested with such pests shall not be allowed on the project site or within 300 feet of natural habitats. The stock shall be quarantined, treated, or disposed of according to best management principles by qualified experts in a manner that precludes invasions into natural habitats.

Invasive exotic plant species should not be planted, seeded or otherwise introduced. Exotic plant species not to be used include those species listed on Lists A & B of the California Invasive Plant Council's list of "Exotic Pest Plants of Greatest Ecological Concern in California as of October 1999." This list includes such species as: pepper trees, pampas grass, fountain grass, ice plant, myoporum, black locust, capeweed, tree of heaven, periwinkle, sweet alyssum, English ivy, French broom, Scotch broom, and Spanish broom. A copy of the complete list can be obtained by contacting the California Invasive Plant Council at 1442-A Walnut St. #462, Berkeley, CA 94709, or by accessing their web site at <http://www.cal-ipc.org>

Equipment Use, Maintenance, Pollution and Litter, Education (Code: EMP)
(also see Pollution, Sedimentation, Litter under Streams and associated habitats below)

A qualified biologist shall conduct a training session for all project personnel prior to proposed activities. At a minimum, the training shall include a description of the target species of concern and its habitats, the general provisions of the Endangered Species Acts, the general measures that are being implemented to conserve the target species of concern as they relate to the project, and the access routes to and project site boundaries within which the project activities must be accomplished.

Do not stage construction activities in areas mapped with listed plant species.

Construction equipment and vehicles should be checked and maintained daily in order to prevent leaks of materials.

Spills need to be prevented when fueling vehicles or transferring fluids from one container to another. Use drip pans under spigots, valves and pumps to catch leaks and spills. The clean-up of all spills shall begin immediately upon observation of the spill.

Equipment maintenance should not be done within or near any stream channel or other sensitive resource site as petroleum products or other pollutants from the equipment may enter these areas under flow conditions.

Work sites should be protected from erosion.

Comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the Applicant to ensure compliance. Retrieve any construction debris and litter on a daily basis from the project site. Utilize fully covered trash receptacles with secure lids (wildlife proof) to contain all food, food scrapes, food wrappers, beverage and other miscellaneous trash.

Do not permit pets on or adjacent to the construction site.

No debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products, or any other substances/materials associated with any project-related activity should be allowed to contaminate the soil and/or enter into or be placed where they may be washed by rainfall or runoff into a stream or lake. Any of these substances/materials, placed within or where they may enter a stream or lake, either by the Applicant or any party working under contract, shall be removed immediately upon observation of their presence.

Access to the work site shall be via existing roads and access ramps.

The equipment and vehicles shall be clean and free of any weed seeds.

Wetlands--CDFG Jurisdictional General (Code: Wet)

A water pollution and erosion control plan shall be developed that describes sediment and hazardous materials control, dewatering or diversion structures, fueling and equipment management practices, and other factors deemed necessary by reviewing agencies. Erosion control measures shall be monitored on a regularly scheduled basis, particularly during times of heavy rainfall. Corrective measures will be implemented in the event erosion control strategies are inadequate. Sediment/erosion control measures will be continued at the project site until such time as the revegetation efforts are successful at soil stabilization.

The upstream and downstream limits of projects disturbance plus lateral limits of disturbance on either side of the stream shall be clearly defined and marked in the field and reviewed by the biologist prior to initiation of work.

Projects should be designed to avoid the placement of equipment and personnel within the stream channel or on sand and gravel bars, banks, and adjacent upland habitats used by target species of concern.

When steam flows must be diverted, the diversions shall be conducted using sandbags or other methods requiring minimal instream impacts. Silt fencing or other sediment trapping materials shall be installed at the downstream end of construction activity to minimize the transport of sediments off-site. Settling ponds where sediment is collected shall be cleaned out in a manner that prevents the sediment from re-entering the stream. Care shall be exercised when removing silt fences, as feasible, to prevent debris or sediment from returning to the stream.

Equipment storage, fueling, and staging areas shall be located on upland sites with minimal risks of direct drainage into riparian areas or other sensitive habitats. These designated areas shall be

located in such a manner as to prevent any runoff from entering sensitive habitat. All necessary precautions shall be taken to prevent the release of cement or other toxic substances into surface waters. All project related spills of hazardous materials shall be reported to appropriate and shall be cleaned up immediately and contaminated soils removed to approved disposal areas.

Avoid heli-mulching when in the vicinity of streams or channels.

Trash racks above culverts should be maintained.

Streams and associated habitats (Code: S and associated #)
(The following are standard DFG Code Section 1600 Streambed Alteration Agreement Measures)

Vegetation Clearing:

1. Work areas shall be limited to the smallest area feasible to accomplish the activity safely.
2. Work activities requiring the removal of intact habitat shall clear vegetation from disturbed areas towards intact habitat to allow wildlife to escape into undisturbed areas.
3. In areas of temporary disturbance, with intact native vegetation having DBHs of 3 inches or less, the vegetation shall be cut to ground level with hand operated power tools rather than by grading.
4. Vegetation removed from the stream shall not be stockpiled in the stream bed or on its bank.
5. Vegetation removed from the stream shall not be stockpiled in the stream bed or on its bank. The sites selected on which to push this material out of the stream should be selected based upon least damaging impacts to resources including sensitive uplands resources. Downed woody debris can be retained on upland slopes to hold soils.
6. No living native vegetation shall be removed from the channel, bed, or banks of the stream, except as otherwise provided for in the Notification.
7. If work in a stream/lake is anticipated, the work area shall be flagged to identify its limits within the stream. Vegetation shall not be removed or intentionally damaged beyond these limits.
8. In areas infested with giant reed (*Arundo donax*), salt cedar (*Tamarix spp.*), or other exotic, invasive plant, or non-native plant species, the non-native plants shall be either removed or treated.

Species Protection:

9. The Operator shall not remove or otherwise disturb vegetation from March 1 to August 15 to avoid impacts to breeding/nesting birds; if disturbance must occur, then consult with the Department.

Be advised, migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918(50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA).

10. Prior to any construction during the raptor-nesting season, February 1 to September 1, a qualified biologist shall conduct a site survey for active nests prior to any scheduled activities. If an active nest is located, then consult with the Department.

11. In areas of intact habitat and known occurrences, the Operator shall have a qualified wildlife biologist or botanist survey the area to confirm the presence/absence of threatened, endangered, and/or other species of concern likely to be found in the area during the proposed operations. If evidence exist that listed species are present or likely to be present, consultation with the Department shall occur prior to disturbance activities. The Operator shall be responsible for reporting all observations of threatened/endangered species or of species of special concern to the Departments Natural Diversity Data Base within ten (10) days of sighting.

12. In areas of intact habitat, a qualified biological monitor with all required collection permits shall be on site during operations and shall survey for species prior to activities. If any life stages of any native vertebrate species are found in the path of construction, the monitor shall relocate the species to a safe location. Exclusionary devices shall be erected to prevent the migration into or the return of species into the work site.

13. Place and monitor cowbird traps to minimize cowbird nest parasitism on sensitive bird species.

14. Pump intakes placed in stream/lake water shall be fitted with (1/8) inch or smaller mesh screens for January 1, through March 30, and (1/4) inch or small mesh screens thereafter.

15. If flowing or ponded water is within the proposed work limits, the Operator shall telephone the fishery biologist, Maurice Cardenas at (805) 640-1852, five days prior to commencing activities within the bed, bank, and channel. The Operator shall leave his/her name, date and time called, telephone number, the stream name, county/city, work location, nature of planned activities and proposed schedule.

16. The Operator shall install and use fully covered trash receptacles with secure lids (wildlife proof) to contain all food, food scrapes, food wrappers, beverage and other miscellaneous trash.

17. The Operator shall not permit pets on or adjacent to the construction site.

18. The Operator shall ensure that no guns/or other weapons are on-site during activities, with the exception of the security personnel. No hunting shall be authorized/permitted during activities.

Erosion Control:

19. Projects shall revegetate and stabilize areas of disturbed soils with slopes toward a stream or lake to reduce erosion potential. Stripped or exposed work areas within the banks, bed, and channel of the stream (including construction areas, temporary spoil pile, access roads, or other adjacent uplands work areas, etc.) with native vegetation local to the area by reseeding, planting, hydro-mulch. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such stabilization. Any installation of non-erodible materials not described in the original project description shall be coordinated with the Department.

20. To provide protection from erosion, the Operator may plant willow cuttings (obtained from nearby plants) on 6 ft centers, on the slope and in the streambed of the restored area. Plantings and/or cuttings may require irrigation, when natural moisture is insufficient to sustain growth, for an interval of two years.

21. All planting should be done after the first wetting rains between October 1 and February 1 to take advantage of the winter rainy season, dormancy of foliage, and rooting period to ensure optimum survival of plantings. Should the Operator be required to plant during other times of the year, chances of survival are diminished. The Operator shall provide irrigation when natural moisture conditions are inadequate to ensure survival of plants.

22. Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

23. Erosion control shall include the revegetation of stripped or exposed work areas with vegetation native to the area.

24. Restoration shall include the revegetation of stripped or exposed habitat or mitigation areas with vegetation native to the area.

25. If work in a stream/lake is anticipated, the work area shall be flagged to identify its limits within the stream. Vegetation shall not be removed or intentionally damaged beyond these limits.

Pollution, Sedimentation, and Litter:

26. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products or any other substances which could be hazardous to aquatic life, or other organic or earthen material from any logging, construction, or other associated project related activity shall be allowed to contaminate the soil and/or enter into or placed where it may be washed by rainfall or runoff into, waters of the State. Any of these materials, placed within or where they may enter a stream or lake, by the Operator or any party working under contract, or with the permission of the Operator, shall be removed immediately. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

27. Cement and concrete shall not be poured within 150 feet of a stream if precipitation is predicted within 24-hours. The Operator shall monitor the 7-day forecast. Cement shall not be poured in or near a flowing stream, to reduce the potential for significant adverse impacts to the stream, water, or biota.

28. The clean-up of all spills shall begin immediately. The Department shall be notified immediately by the Operator of any spills and shall be consulted regarding clean-up procedures.

29. The Operator shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the operator to insure

compliance.

30. Any equipment or vehicles driven and/or operated within or adjacent to the stream/lake shall be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

31. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/lake shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as extra boom, absorbent

pads, skimmers, shall be on site prior to the start of activities adjacent to the streambed or lake.

32. No equipment maintenance shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas under any flow.

33. When work in a flowing stream is unavoidable, the entire stream flow shall be diverted around the work area by a barrier, temporary culvert, new channel, or other means approved by the Department. Construction of the barrier and/or the new channel shall normally begin in the downstream area and continue in an upstream direction, and the flow shall be diverted only when construction of the diversion is completed. Channel bank or barrier construction shall be adequate to prevent seepage into or from the work area. Diversion berms shall be constructed of onsite alluvium of low silt content, inflatable dams, sand bags, or other approved materials. Channel banks or barriers shall not be made of earth or other substances subject to erosion unless first enclosed by sheet piling, rock rip-rap, or other protective material. The enclosure and the supportive material shall be removed when the work is completed and removal shall normally proceed from downstream in an upstream direction.

34. Flow diversions shall be done in a manner that shall prevent pollution and/or siltation and which shall provide flows to downstream reaches. Flows to downstream reaches shall be provided during all times that the natural flow would have supported aquatic life. Said flows shall be sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion. Normal flows shall be restored to the affected stream immediately upon completion of work at that location.

35. Operator shall take all necessary steps to contain sediment and reduce stream turbidity when the work area(s) are rewatered. Operator shall install an appropriate sediment control device downstream of the work area to filter sediment. Acceptable materials include silt fence, straw bales, or other appropriate devices to prevent sediment runoff during rewatering activities. Silt control shall remain in place only until the water running through the work area is clear of sediment.

36. Silty/turbid water from dewatering or other activities shall not be discharged into the stream. Such water shall be settled, filtered, or otherwise treated prior to discharge.

37. Upon Department determination that turbidity/siltation levels resulting from project related

activities constitute a threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective Department approved control devices are installed, or abatement procedures are initiated.

38. If an off-stream siltation pond/s is/are used to control sediment, pond/s shall be constructed in a location, or shall be designed, such that potential spills into the stream/lake during periods of high water levels/flow are precluded.

39. When operations require moving of equipment across a flowing stream, such operations shall be conducted without increasing stream turbidity. For repeated crossings, the operator shall install a bridge, culvert, or rock-fill crossing as specified in comments below, and approved by the Department prior to placement.

Equipment and Access:

40. Staging/storage areas for equipment and materials shall be located outside of the stream/lake.

41. Access to the work site shall be via existing roads and access ramps

42. Access to the work site shall be via existing roads and access ramps. If no ramps are available in the immediate area, the Operator may construct a ramp in the footprint of the project. Any ramp(s) shall be removed upon completion of the project.

43. No equipment shall be operated within the dripline of native trees, which are not proposed for removal. Protective fencing shall be placed around the dripline of native trees to prevent compaction of the root zone.

44. Vehicles shall not be driven or equipment operated in water covered portions of a stream or lake, or where wetland vegetation, riparian vegetation, or aquatic organisms may be impacted.

45. Vehicles shall not be driven or equipment operated in water covered portions of a stream or lake, or where wetland vegetation, riparian vegetation, or aquatic organisms may be impacted, except as otherwise necessary to complete authorized work.

46. One vehicle may be driven in wet portions of the stream/lake to accomplish the work authorized by this Notification. This work is only authorized when the vehicle is completely clean of petroleum residue and water levels are below the gear boxes of the equipment in use or lubricants and fuels are sealed such that inundation by water shall not result in leaks.

47. The equipment and vehicles shall be clean and free of any weed seeds.

Fill and Spoil:

48. Fill length, width, and height dimensions shall not exceed those of the original design/installation or the original naturally occurring topography, contour, and elevation. Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Except as otherwise specified in this

Notification, fill construction materials other than on-site alluvium, shall consist of clean silt-free gravel or river rock.

49. All fill materials shall be obtained from upland sources, and must be weed free.

50. Permanent spoil storage sites shall not be located within a stream/lake, where spoil can be washed back into a stream/lake, or where it will cover aquatic/riparian vegetation, intact upland vegetation, and areas documented with sensitive species.

51. Temporary spoil piles may be placed in the streambed during the work day; the quantity of material that is used within one work day period may be placed in the streambed at one time. At the end of the work day all temporary fill material shall be relocated outside of the streambed.

52. Spoil shall not be placed on the stream side slope, or where it could enter the stream. Spoil shall not be placed over vegetation except with prior notice to and authorization by the Department.

Structures:

53. Structures and associated materials not designed to withstand high water flows shall be moved to areas above high water before such flows occur.

54. The Operator shall construct an effective water velocity dissipation device at the outlet structure to minimize erosion.

55. Installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade. Bottoms of permanent culverts shall be placed below stream channel grade.

56. Plans for design of concrete sills and other features that could potentially impede fish migrations shall be approved by the Department.

57. Storm drains lines/culverts shall be adequately sized to carry peak storm flows for the drainage to one outfall structure. The storm drain lines/culverts and the outfall structure shall be properly aligned within the stream and otherwise engineered, installed and maintained, to assure resistance to washout, and to erosion of the stream bed, stream banks and/or fill. Water velocity shall be dissipated at the outfall, to reduce erosion.

58. The Operator shall place structures on properties so that fire clearance activities will not impact vegetation within the stream bed, banks and channel, mitigation areas or associated buffer areas.

SPECIALIST REPORTS

RESOURCES: CULTURAL

Burned Area Emergency Report

Resources: Cultural Resources

Final Technical Specialist's Report

Resources: Archaeology/Cultural Resources

Fire Name: Witch Creek Fire

Month/Year: November 2007

Author Name:

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Office (619)688-6108.

Cultural Crew:

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Office (619)688-3374.

I. Resource Condition Assessment

A. Resource Setting

The 197,990-acre Witch Creek fire burn area includes over 1,200 archaeological sites. Some of the most significant archaeological sites within the county are situated within the burn area. While many portions of the

area have been surveyed previously for cultural resources, there is a significant amount of property that has not. This project focuses on land designated as State Responsibility Areas (SRA).

Thousands of prehistoric and historic sites are situated within the assessed SRA lands effected by the Witch Creek Fire. The prehistoric sites include artifact isolates, artifact scatters, bedrock grinding features, hearths, middens, rock shelters, rock art, and other features associated with habitation sites. There are also areas designated as sacred places and areas of significance by the Native American Heritage Commission. The prehistoric occupation of San Diego County dates as far back as 10,000 years ago.

There are also several historic sites within the SRA lands effected by the Witch Creek Fire. Such historic features and sites include artifact isolates, artifact scatters, trash dumps, camp sites, trails and roads, structural features, as well as other artifacts and features associated with the rich cultural heritage present in San Diego County.

B. Survey Methods

An archaeological site record search was conducted through the South Coastal Information Center (SCIC). The SCIC provided the archaeological team with every known site record within the Witch Creek fire burn area. Additionally, the Native American Heritage Commission was contacted regarding sacred sites and areas of significance within the burn areas.

Once the appropriate archaeological data was gathered, the archaeological crew was able to compare notes with the Burned Area Emergency Recovery (BAER) team specialists conducting erosional evaluations. The BAER specialists conducted fieldwork a day in advance, and assembled evaluation summaries and location maps for the archaeology crew. The archaeologists compared the data to the archaeological information and determined what sites and areas to survey for potential archaeological impacts. Due to time constraints, only areas designated as of high concern or moderate-to-high concern were examined for archaeological resources. From November 6th to November 11th, a team of three State Parks archaeologists participated in a pedestrian survey within these areas of concern. Archaeological sites were relocated and the areas without known sites were superficially combed for archaeological resources.

Recorded archaeological sites were assessed to determine if the cultural resources were affected by the fire. The heat of the fire can damage, break, and destroy artifacts and features. In addition, the fires eliminated vegetation and loosened the top soils making the sites highly susceptible to erosion, flooding, and landslides. An assessment of archaeological site exposure was also a priority since the fires may have created easy access to these sites by removing the thick vegetation cover. Vandalism and pot-hunting were two obvious concerns. Notes were also taken regarding damages that may have ensued during fire suppression activities, such as the cutting of fire breaks by bulldozers.

Archaeological sites and areas of potential sites were surveyed in order to assess potential damages occurring during post-fire disaster treatment methods, such as cleaning out drainages, repairing and replacing culvers, reseeded, placement of soil netting and fiber matting, and other maintenance.

II. Observations

A. General Observations

The primary concerns for this phase of the project was assessing the possibility of damage to sites by erosion, flooding, and landslides. Cultural resources may become displaced, buried, damaged, or destroyed by such factors. A second concern was to assess the locations considered high for unrecorded cultural resources. Other

concerns included potential for vandalism and looting, and site condition due to fire and fire suppression activities.

B. Specific Observations

Thousands of sites are situated in the burned areas of the Witch Creek Fire. Due to the amount of time allocated to this initial phase of the project, the cultural crew devised an archaeological survey triage strategy to assess the areas of high and moderate-to-high concerns. The only sites visited were within the vicinity of drainages and culverts on a BAER high priority list. Most of the sites visited appeared to be in good condition. The condition was based on the level of impact to the sites, and if the site damage was significant enough to be in need of repairs. There is one specific area located near a known archaeological site called "Piedras Pintadas" that has been burned by the fire. The site shows evidence of post-fire vandalism in the form of graffiti.

III. Emergency Determination

In conditions when surface vegetation has been burned away, and the top soils have become loosened, erosion, landslides, and flooding may occur. The extent of such factors becomes more probable in locations with steeper slopes. The sites around the San Dieguito River, especially in the areas east and southeast of Lake Hodges, have the potential to be buried by landslides and alluvial flooding. Sites in Rancho Santa Fe where the San Dieguito and Lusardi Creek meet seem to be highly susceptible to flooding and landslides as well. Though no archaeological sites have been recorded in the areas surveyed along the Del Dios Highway, there is a probability for unknown sites to be at risk.

IV. Treatment to Mitigate the Emergency

A. General Recommendations

1. In areas where post-fire maintenance has been determined, a thorough archaeological survey should be conducted. Known archaeological sites should be updated, and newly identified sites should be recorded. A thorough assessment of archaeological sites was outside of the scope for this phase in the project. No newly identified sites were recorded, nor were there any site record updates, or Archaeological Site Assessment Records (ASCAR) filled out. No archaeological artifacts were collected during this project.
2. Native American contacts provided by the Native American Heritage Commission should be involved in all phases of this project in order to assess the potential effects to sacred sites and other places of significance, as well as to provide input on other general Native American concerns.
3. Once maintenance has been prescribed, archaeological and Native American consultants should be approached regarding treatments that may affect the cultural resources. A qualified archaeological monitor according to State or Secretary of Interior Standards should be present during all ground disturbing activities. Ground disturbances in areas associated with cultural resources should be thoroughly reviewed, assessed, surveyed, and monitored. A Native American Monitor may also be required in some locations.

References

Site records on file at the South Coastal Information Center, San Diego State University, San Diego.

The Secretary of the Interior's Standards and Guidelines, Code of Federal Regulations, 36 CFR Part 61.

Instructions for Recording Historical Resources, Office of Historic Preservation P.O. Box 942896 Sacramento, CA 942196-0001

Native American Heritage Commission, 915 Capitol Mall, Room 364 Sacramento, CA 95814.

California Environmental Quality Act (CEQA). California Code of Regulations, Title 14, Division 6, Chapter 3.

APPENDIX E

Photos

*** Additional photos may be added at a later date.**

RB 102A



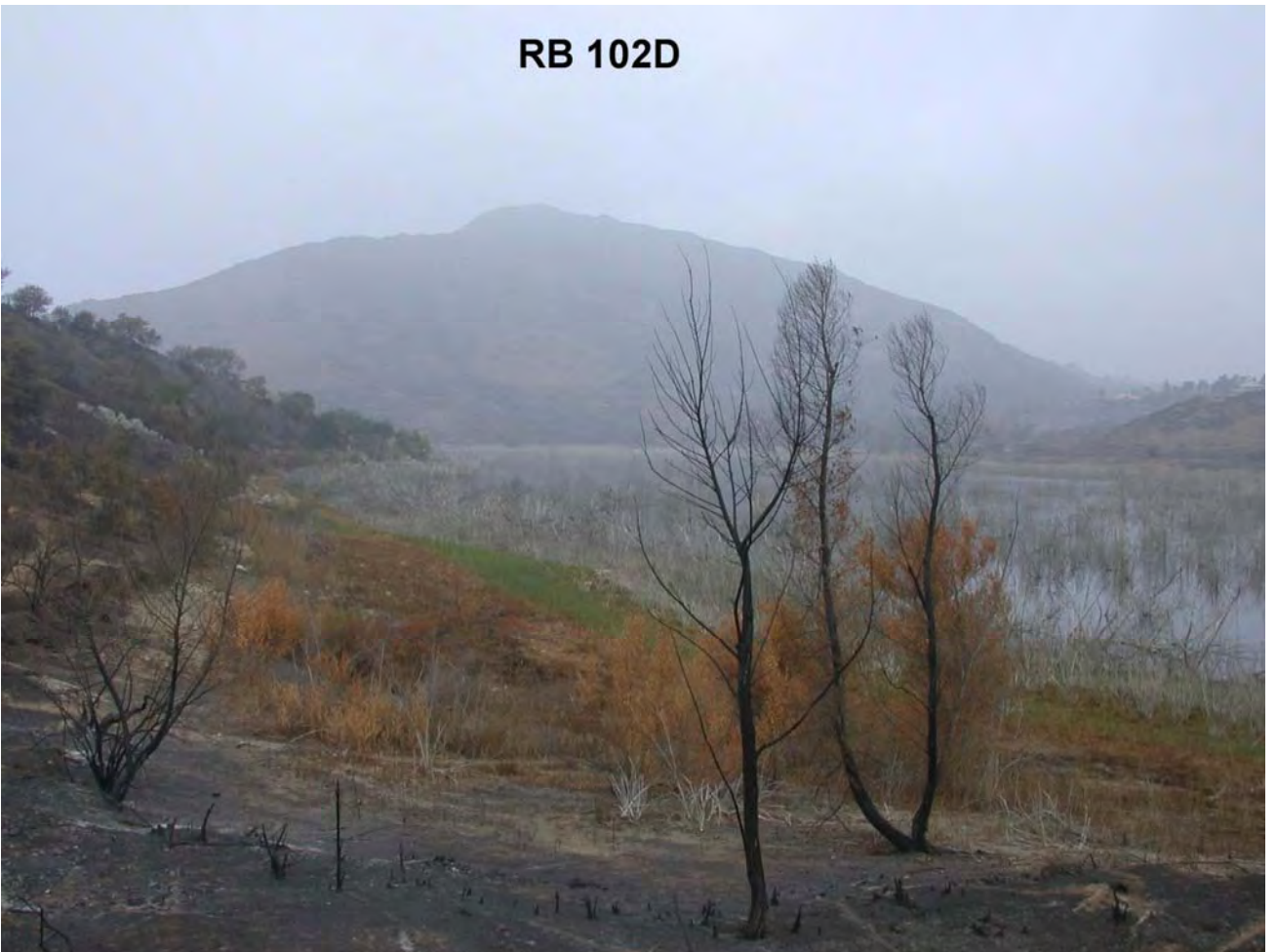
RB 102B



RB 102C



RB 102D



RB 102E



RB 102F



RB 102F



RB 103



RB 104



RB 105



RB 106



RB 107

RB 107A



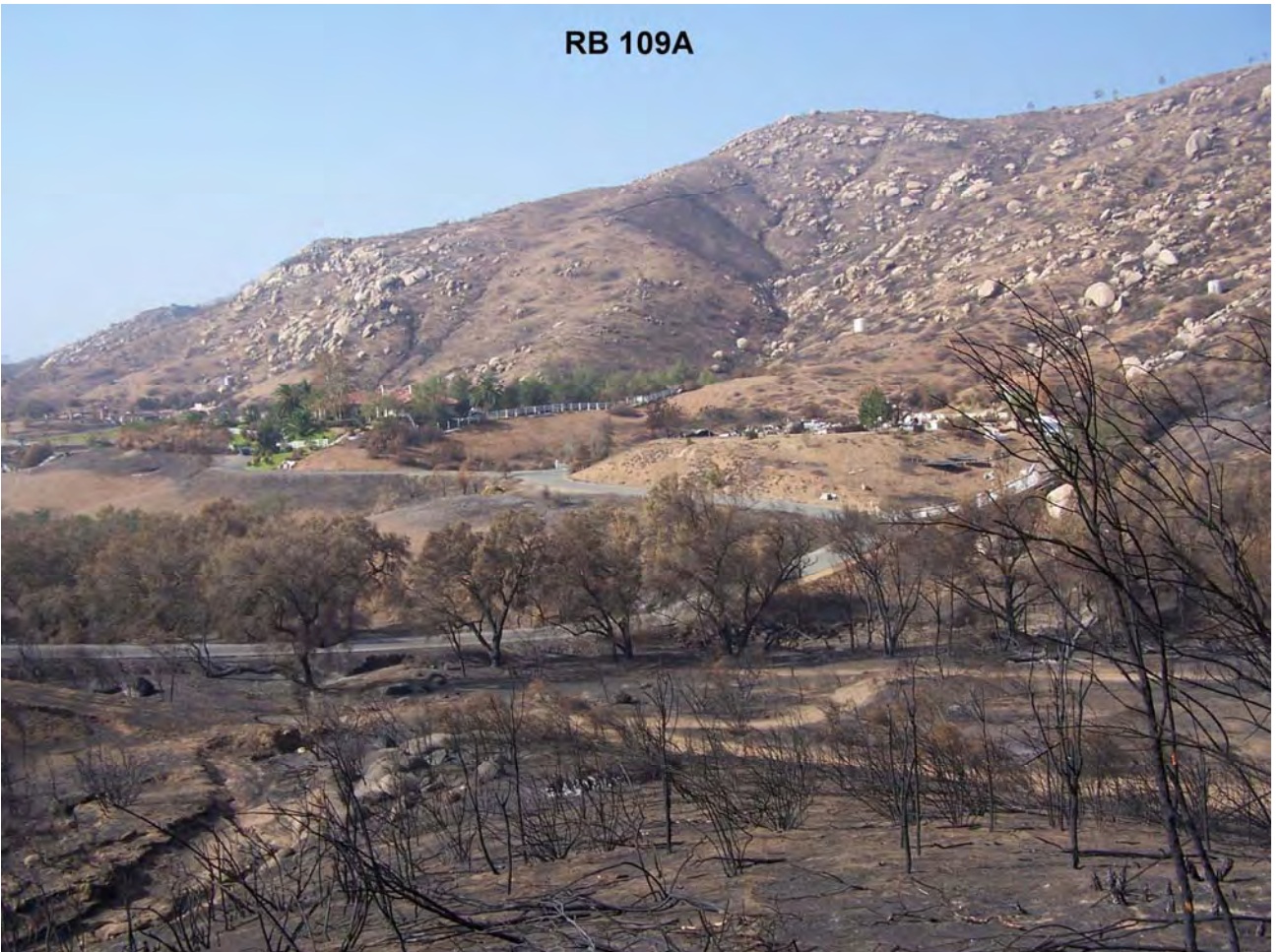
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RB 109



RB 109A



RB 109B



RB 109B



RB 109C



RB 204



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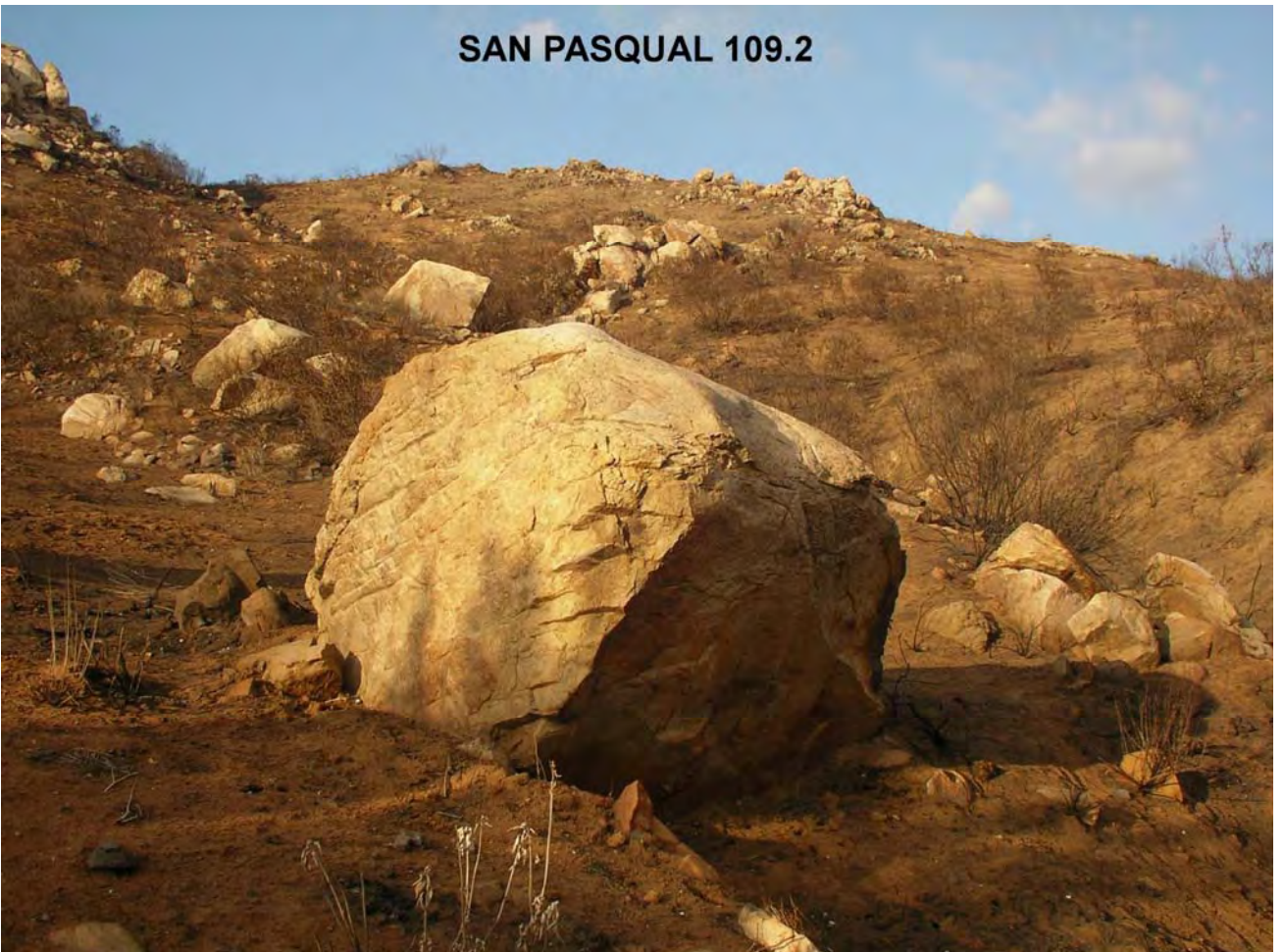


SAN PASQUAL 105.3

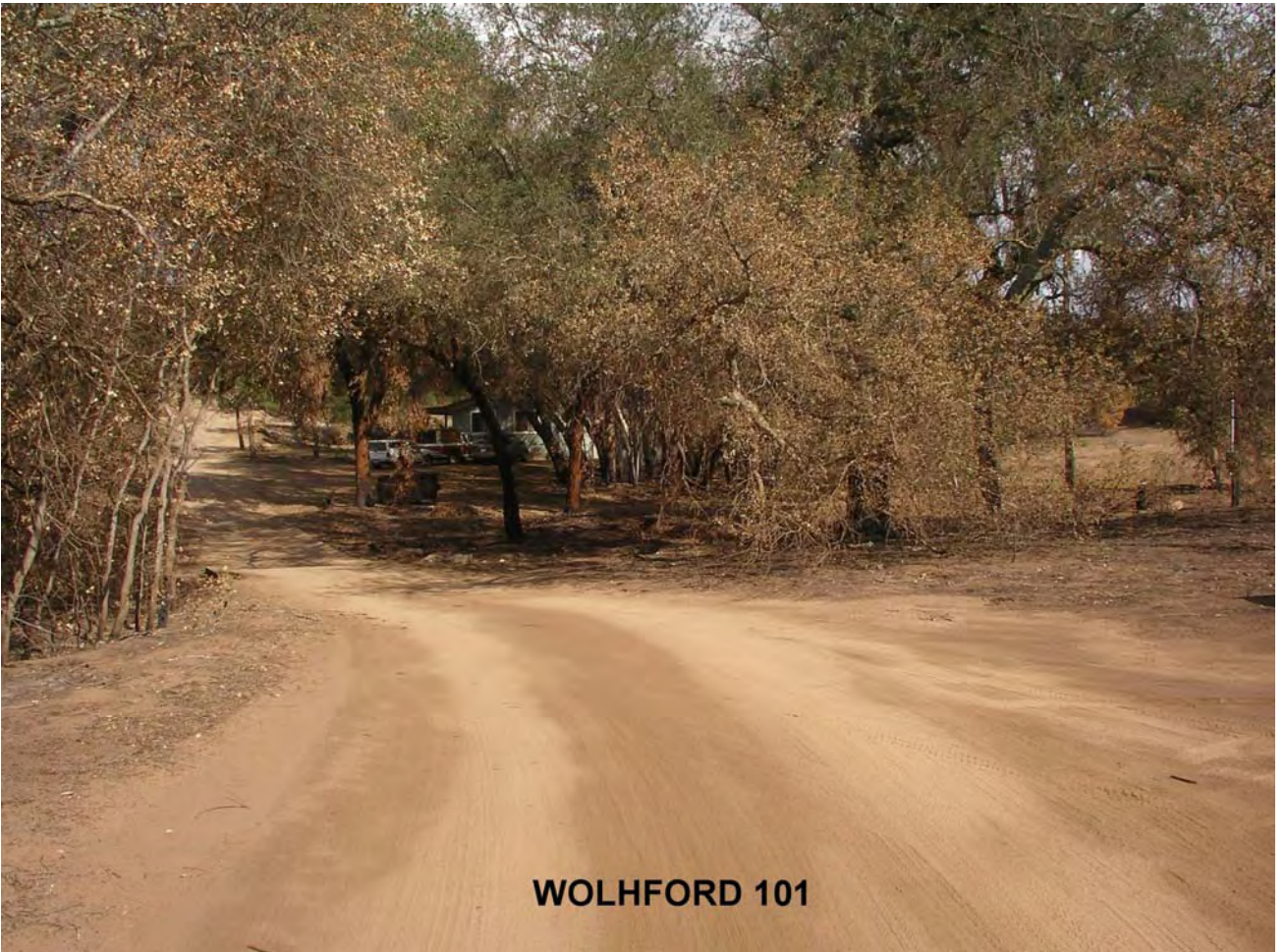
SAN PASQUAL 106



SAN PASQUAL 109.2

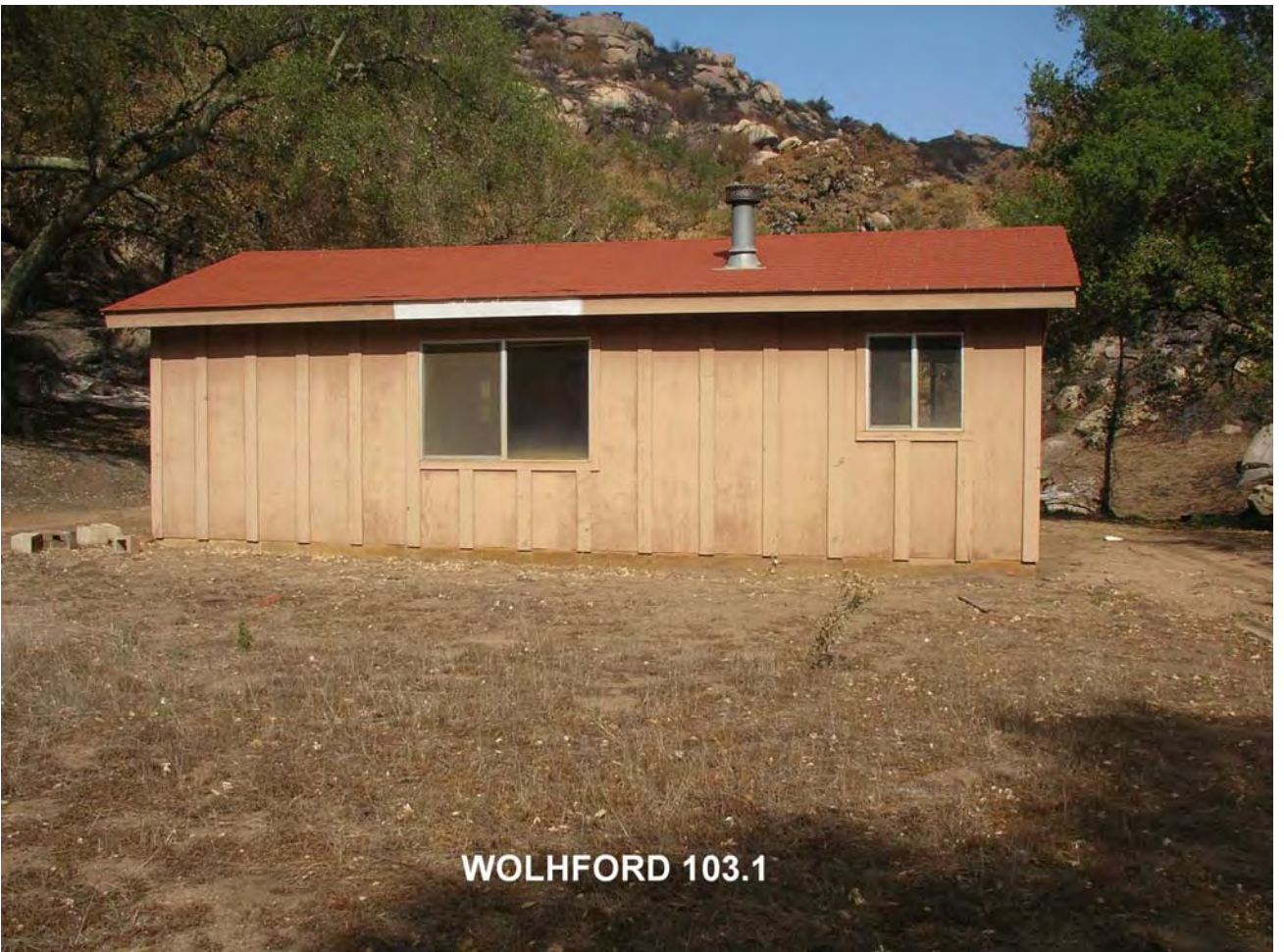
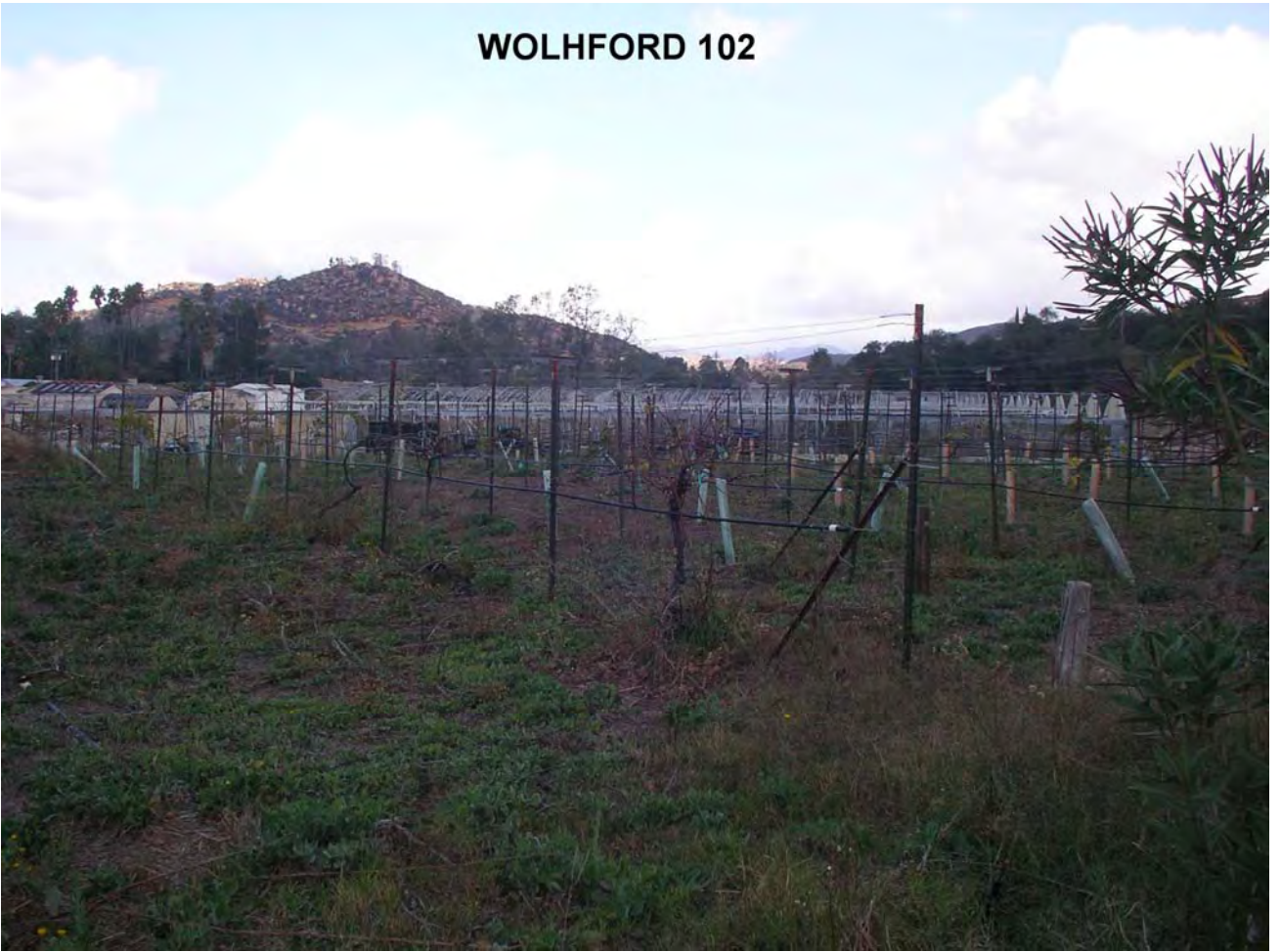


SAN PASQUAL 109

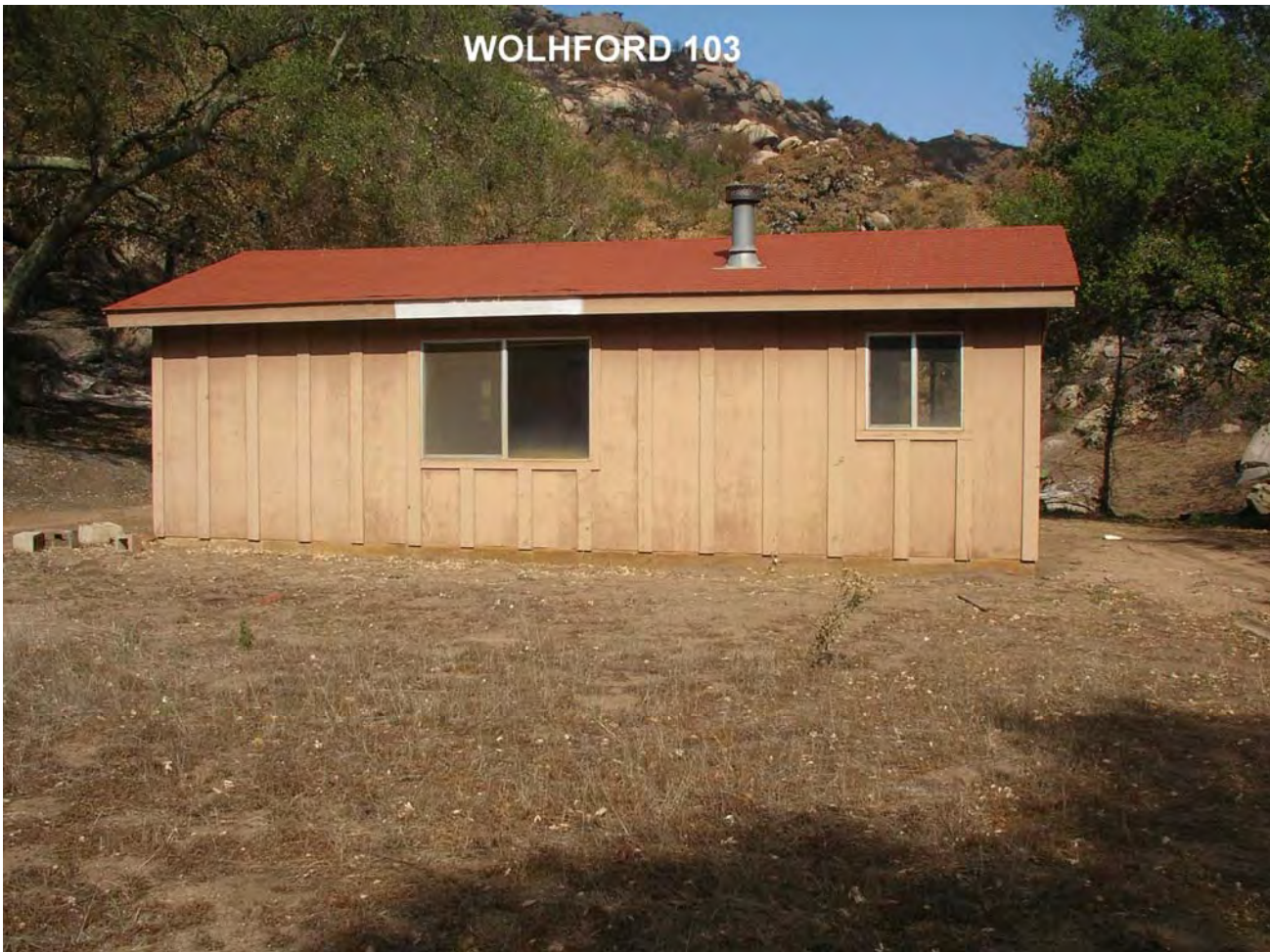
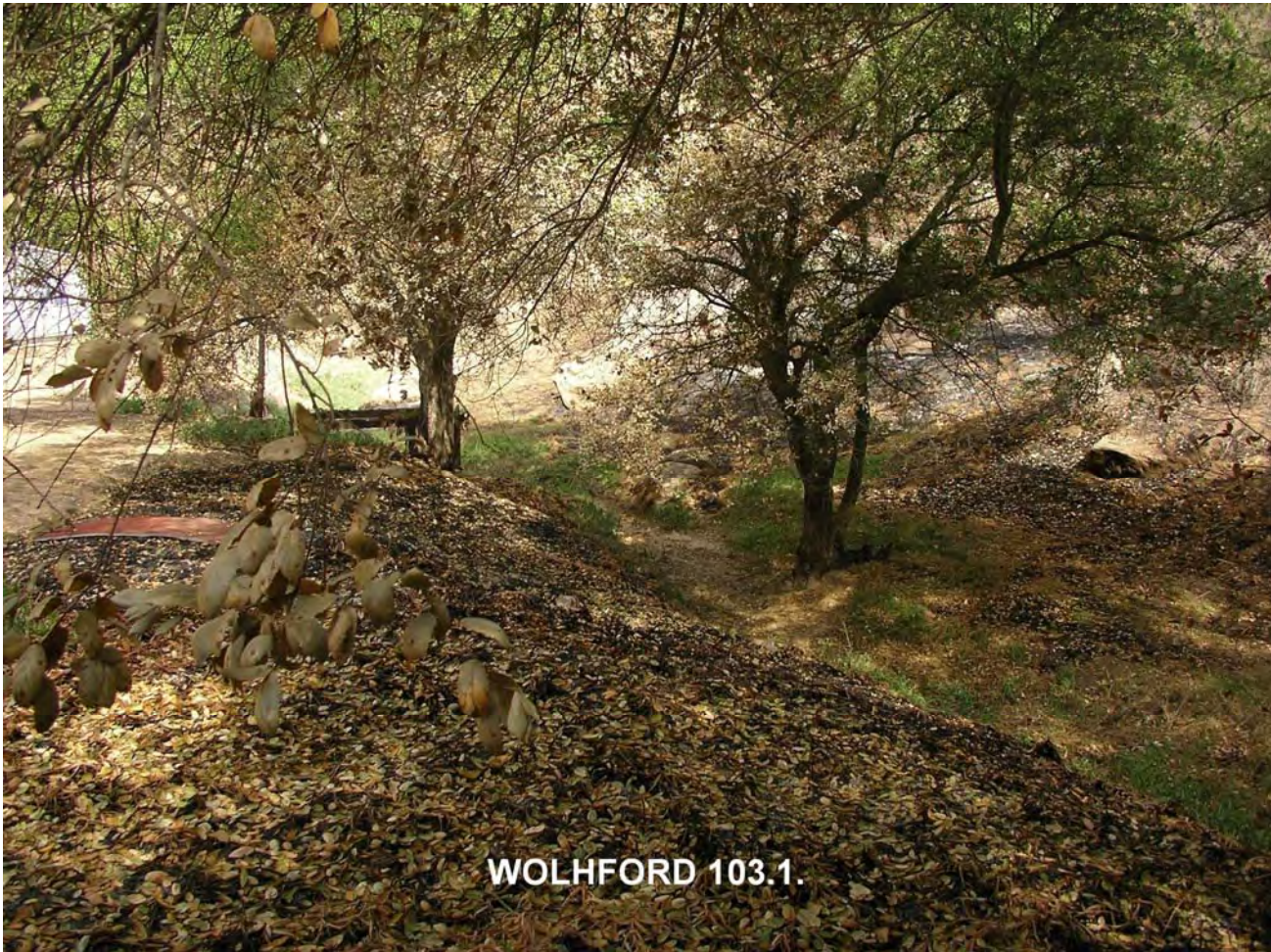


WOLHFORD 101

WOLHFORD 102



WOLHFORD 103.1



SUTHERLAND LK 1



SUTHERLAND LK 2



SUTHERLAND LK 3



SUTHERLAND LK 4



SUTHERLAND LK

