



Orange County Fire Authority

2016 Unit Strategic Fire Plan



Orange County Fire Authority - 2016 Unit Strategic Fire Plan

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Unit Strategic Fire Plan - Developed for Orange County Fire Authority

This plan was collaboratively developed in conjunction with key stakeholders, including Federal, State, County, and City agencies, as well as other community partners, which are listed in the plan.

- Its purpose is to identify and prioritize both pre-fire and post-fire management strategies and tactics, designed to reduce the loss of values at risk within the Unit.
- The Unit Fire Plan is intended as a planning and assessment tool only.
- It is the responsibility of those implementing the projects to ensure that all environmental compliance and permitting processes are met as necessary.

Jeff Bowman
Fire Chief

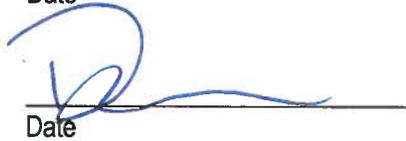


7/12/16
Date

Lori Smith
Assistant Chief / Fire Marshal


Date

Brian Norton
Battalion Chief /Deputy Fire Marshal


Date

George Ewan
Wildland Resource Planner


Date

Executive Summary

Throughout the history of the fire service in Orange County, the Orange County Fire Authority (OCFA), and its predecessor agencies have been recognized as a premier wildland fire agency that effectively manages and provides wildland fire prevention and suppression services. As the County of Orange's fire agency, the Orange County Fire Authority is contracted by the State of California to provide all aspects of wildland fire management for State Responsibility Areas (SRA) within the county.

Consequently, in accordance with the California Fire Plan, Orange County's Unit Strategic Fire Plan was first collaboratively developed as a planning and assessment tool in 2010, in conjunction with key stakeholders and partner organizations, with the goal of reducing total government costs and citizen losses from wildfire in Orange County. This plan addresses such topics as firefighter and public safety, Wildland Urban Interface (WUI) challenges, impactful cost effective solutions, community preparedness, prioritization, collaborative partnerships, evaluation and adaptability.

Guided by this plan, notable progress has been made in terms of pre-fire management planning and program implementation. Compared to 2010, there are now better vegetation management and roads improvement programs, a more collaborative approach to wildfire planning with our partners and the community, and an ongoing forum for discussions about how together, our efforts can help Orange County become even more resilient to wildfire and its associated losses. Among recent key accomplishments are:

- **CWPP Development (2015-2016)** - Funded by an SRA Grant, OCFA hired a consultant, who is now working on producing a CWPP for Orange County's SRA lands.
- **New OCFA GIS Wildland App (2015-2016)** - OCFA's Pre-Fire Management and Information Technology Departments collaboratively developed and are beta testing a multi-faceted tablet application to assist in wildland/field inspections
- **HP WREN Cameras (2015-2016)** - OCFA, in conjunction with COAST and UCSD, secured all approvals to establish an HP WREN backbone in Orange County, to provide remote fire/emergency detection using tower-mounted cameras and sensors
- **Tree Mortality (2015-2016)** - OCFA continues to assist with removal, monitoring and treatment efforts for trees affected by drought and invasive pests
- **Emerging Tree Pests of Orange County Task Force Formation (2015-2016)** - OCFA took the lead to launch a coordinated effort in Orange County to deal with the growing issue of invasive pests (i.e. goldspotted oak borer, polyphagous shot hole borer, etc.) that present a fire hazard
- **Grants** - OCFA was recently awarded three grants, including one for Emerald Bay, for additional clearance, another for East Orange County Canyons, for emergency road clearance, and one for canyon areas signage with interchangeable prevention messages
- **Additional RAWs Station (2015-16)** - In cooperation with SDG&E, installation is underway for a third RAWs station in coastal Southern Orange County
- **New Third Weather Zone for Orange County (2015)** – This is an important decision making tool for resource deployments, facility closures, and activity restrictions
- **Fully Staffed & Reconfigured OCFA Pre-Fire Management Section (2015)** - OCFA's Pre-Fire Management is now comprised of three sub-sections that include Wildland Resource Planning, Community Wildfire Mitigation and Crews & Heavy Equipment, to help ensure Gray Book obligations are fulfilled and to better serve the community
- **Acquisition of Additional Mechanized Equipment (2014-2015)** - A masticator, mower, chipper and an all-terrain skid steer tractor were purchased to improve efficiencies for vegetation management and roads projects
- **Adoption of MOU Between OCFA and OC Parks (2014)** - This is an important step for fuels mitigation and training
- **Formation of COAST (2013)** - A consortium of key organizations who have a vested interest in wildfire prevention and planning in Orange County, with the ability to influence policy and ensure progress continues

With the exception of a few minor updates and amendments, this plan has remained virtually the same since 2010. However, in 2015, OCFA was awarded SRA FPF grant funding to help develop a County-Wide Protection Plan (CWPP) for Orange County, which is now in process. One emerging issue that is increasingly cause for concern in Orange County, and will play a bigger role in this plan in the future, is tree mortality, and the resulting fire danger. Fueled by prolonged drought, stressed trees have become vulnerable to invasive pests, which are killing trees in Southern California at an alarming rate. It's a problem that isn't expected to go away any time soon.

2010 Key Objectives

To evaluate progress to date on the key objectives that were originally outlined in 2010 when this plan was first developed, in 2016, a score of 1-10, with 10 being best, was incorporated for each objective. Generally speaking, there's been meaningful progress on most of the objectives since then, but opportunity still exists for continued improvement.

Progress Report of Key 2010 Objectives

- **Establish any relationships, partnerships and councils necessary to reduce wildfire ignitions, risks and losses by emphasizing community-level resources and solutions. Leverage partners with common interests/or motivations.**
 - **2016 Score: 8.5** – There's been tremendous progress in establishing, and leveraging relationships and partnerships. In particular, the 2013 formation of the County of Orange Safety Task Force (COAST), which is a group of key organizations with a vested interest in wildfire planning and preparedness, and who have the influence to implement change, has proved invaluable. However, more work is still needed, particularly at the community level, such as with establishing additional fire safe councils, and other grass roots initiatives.
- **Develop and sustain a portfolio of high-impact, least-cost, stakeholder-driven solutions for reducing wildfire ignitions, risks and losses by creating and sustaining new solutions, eliminating low-impact solutions, and streamlining high-cost solutions.**
 - **2016 Score: 7.0** – Progress continues as new processes and programs have been suggested, evaluated, and implemented. However, as an ongoing process, there will always be more opportunities for improvement.
- **Develop the Unit Fire Plan, using the key elements identified by CAL FIRE, and support the county and smaller communities with the development of their local CWPP**
 - **2016 Score: 8.0** – As previously mentioned, Orange County was recently awarded a grant to help develop a County-Wide Protection Plan (CWPP), so this objective is in process and is projected to be completed by 2017.
- **Engage collaborative partners to lead and drive the effort to protect communities from wildfire. OCFA's role is transitioned into a support-oriented role, focusing primarily on active participation, facilitation and evaluation of program results.**
 - **2016 Score: 8** – Primarily through COAST, additional collaborative partners continue to be engaged, with OCFA often functioning as a facilitator or evaluator. Another example is the Emerging Tree Pests of Orange County Task Force.
- **Ensure the community understands, accepts responsibility and takes necessary action to mitigate wildfire ignitions and risk, thereby preventing lives and property from being lost or damaged in wildfires.**
 - **2016 Score: 4** – This a long term process that has been, and will continue to be, limited by budget and manpower constraints. Consequently, more creative solutions are still needed.
- **Develop regularly publicized motivational performance measurements in order to facilitate change in cultural attitudes, and implement a systematic mitigation of risk.**
 - **2016 Score: 3** – Regularly publicized motivational performance measurements that monitor the shift in cultural attitudes have not been developed yet, but ongoing vegetation management and roads projects do contribute to systematic risk mitigation.
- **Facilitate change in the local "cultural attitude" about wildfire risks from apathy and unawareness, to alertness and empowerment, through mass marketing and outreach.**
 - **2016 Score: 3** – OCFA uses the "Ready, Set, Go!" message to help facilitate this much needed cultural shift. However, once again, financial and manpower constraints hinder progress on mass marketing and outreach initiatives.

Section I: Unit Overview

Unit Description



Geography

Orange County is Southern California's smallest county, with a total area of 947.98 square miles, of which 789.40 square miles (83.27%) is land, and 158.57 square miles (16.73%) is water.

The Pacific Ocean is its southwest border, with Los Angeles County as its northern border, and San Diego County as its southeastern border. Moving inland, Orange County is bordered on the northeast and east by both San Bernardino County and Riverside County.

While there is no formal geographic division, the county is often divided into north and south, with the 55 Freeway as the informal transition between the generally older established areas closer to Los Angeles County, and the more affluent and recently developed areas to the south.

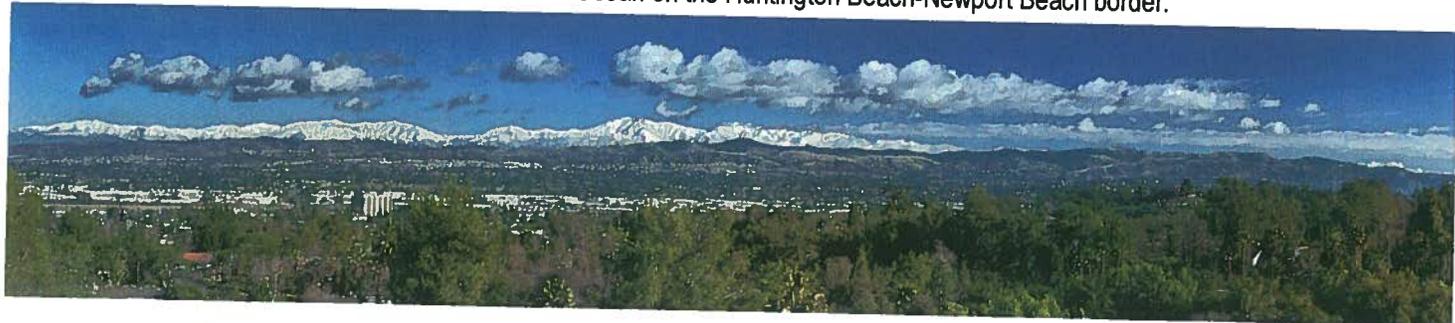
In terms of OCFA's SRA responsibilities, it's important to note that the geography extends beyond Orange County's borders, with OCFA being responsible for protecting designated adjacent SRA lands in both Riverside and San Diego Counties.

Topography

Topographically, Orange County rises from sea level, along the Pacific Ocean, to the Santa Ana Mountains, which are located within the Cleveland National Forest. The highest Santa Ana Mountain peaks are Santiago Peak at 5,689 feet, and Modjeska Peak at 5,489 feet.

Another prominent topographic feature is Loma Ridge, located west and parallel to the Santa Ana Mountains, which runs through the central part of the county. Loma Ridge is separated from the Santa Ana Mountains by Santiago Canyon.

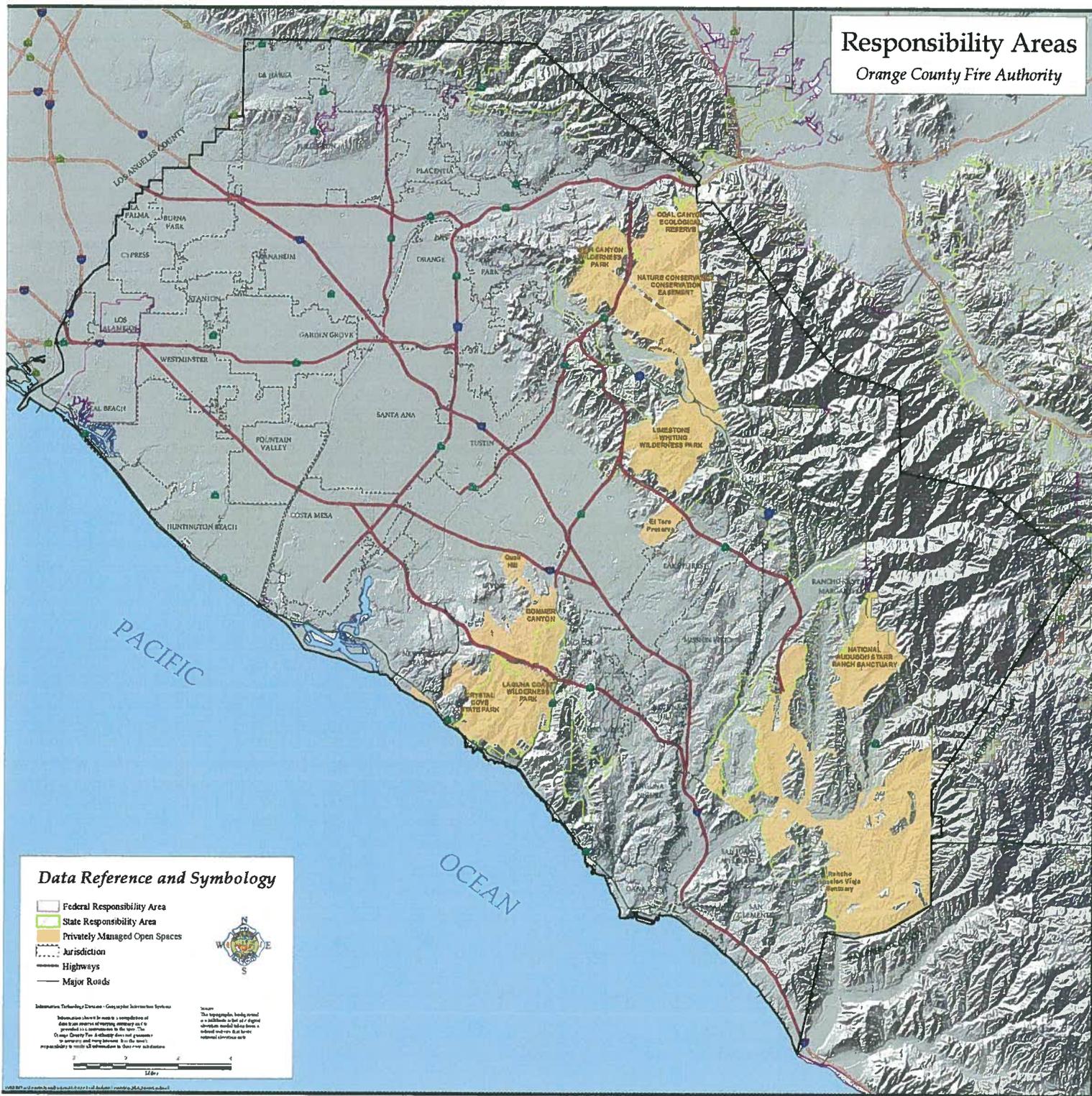
The county's major watercourse is the Santa Ana River, which flows from the Inland Empire, through the middle of the county from northeast to southwest, and terminates at the Pacific Ocean on the Huntington Beach-Newport Beach border.



Public Lands

Public lands within, or adjacent to, Orange County's SRA lands play an important role in the management of natural resources, as well with pre-fire management planning, and include Camp Pendleton Marine Base, Cleveland National Forest, Chino Hills State Park, Crystal Cove State Park, Orange County Transportation Authority (OCTA) and the Transportation Corridor Agency (TCA).

Public Lands Map

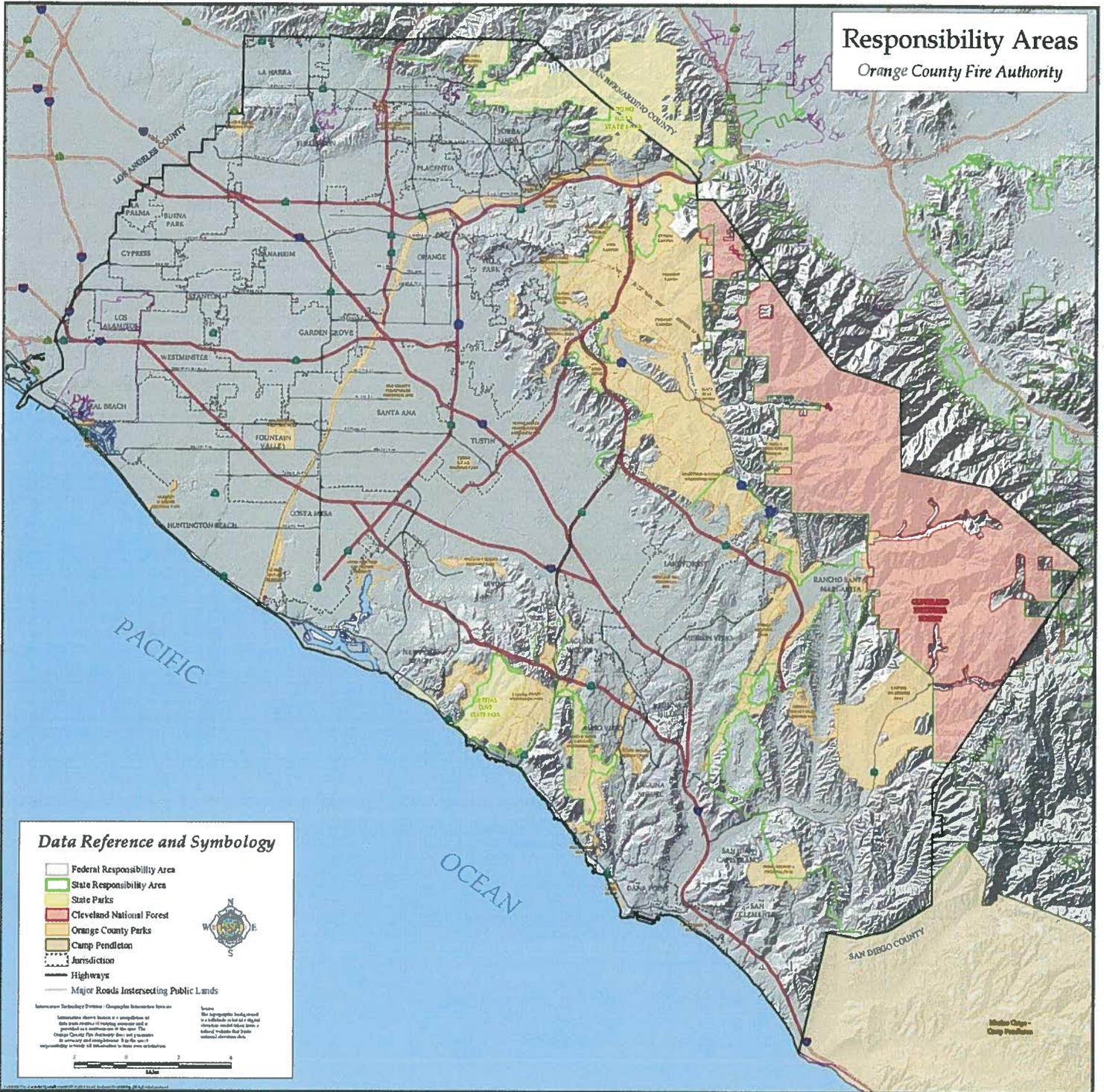


Note: There are several other Federal, State and local government land holdings that do not have a role in this fire plan.

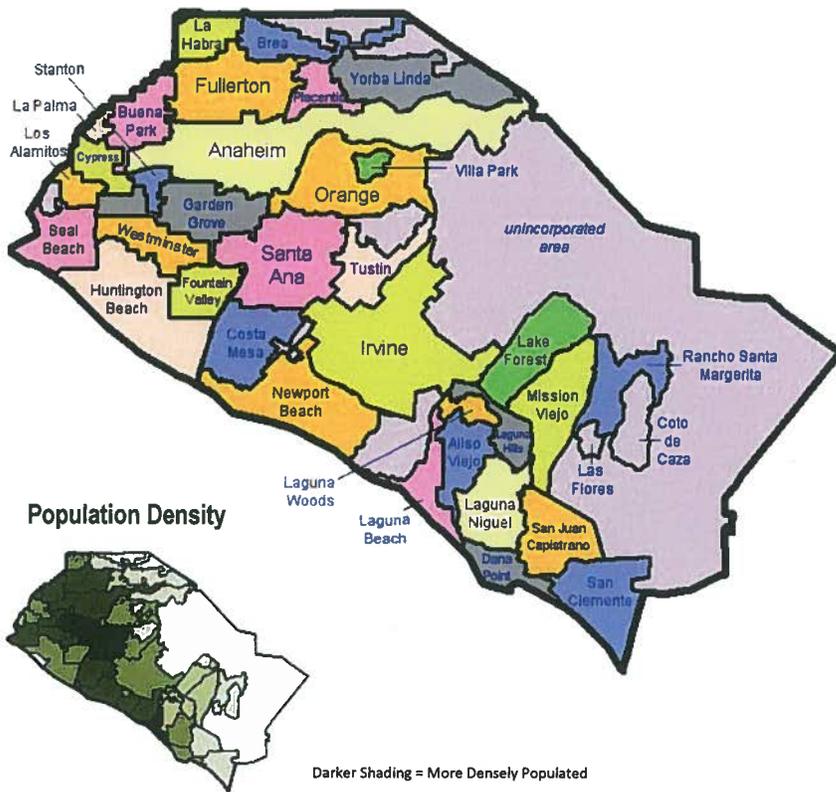
Privately Managed Lands

Similarly, there are also privately owned and/or managed open space lands in, and near, the SRA that play an important role, which include Audubon Starr Ranch, Irvine Ranch Conservancy, Natural Communities Coalition (formerly known as Nature Reserve of Orange County), and Rancho Mission Viejo Land Trust.

Privately Owned/Managed Lands Map



Population



Orange County has 3.1 million residents, who reside in 1.0 million housing units. Orange County also has the distinction of being the second most densely populated county in the state and includes 34 incorporated cities, plus 16 unincorporated areas. Santa Ana is the county seat.

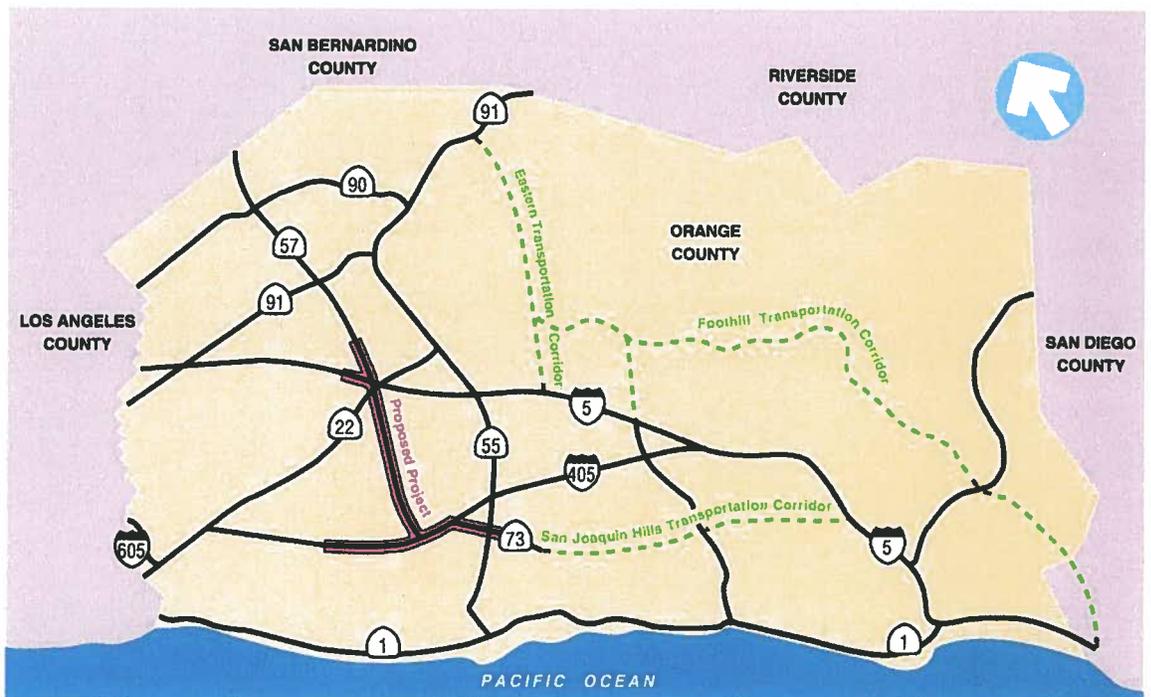
According to the 2010 Census, compared to California overall, Orange County is relatively more educated, affluent and increasingly diverse.

- **Median HH Income:** OC \$75.4K vs. CA \$61.0K
- **Bachelor Degree +:** OC 36.8% vs. CA 30.7%
- **Home Ownership:** OC 58.7% vs. CA 55.3%
- **MDU's:** OC 34.2% vs. CA 31.0%
- **Foreign Born:** OC 30.4% vs. CA 27.0%.
- **Non-English (spoken at home):** OC 45.5% vs. CA 43.7%

Major Transportation Arteries

With so many people and limited public transportation, Orange County roadways are of critical importance in keeping the resident population moving, along with the large daily influx of commuters from outside the county.

However, most of the major roads pass through wildfire prone SRA lands and open space areas, and are often the site of roadside wildfire ignitions, including Interstate 5, CA 57, CA 74 (Ortega Highway), CA 91, and the 73 133 and 241 Toll Roads.





Vegetation Types

Vegetation types dominating the open spaces are annual grasses, woodland, desert brush, riparian, coastal sage scrub and chaparral. The general condition of the vegetation covers a broad spectrum from healthy to decadent and from new growth to old growth. Approximately 60% of the wildland vegetation has experienced at least one catastrophic fire within the last decade. However, as drought conditions worsen, the fuels have become increasingly hazardous.

Consequently, fuel moistures are measured at two locations monthly to help evaluate their potential as a wildfire risk factor. One location is in Black Star Canyon, in the northern part of the county, while the other location is in South County, near CA 74 (Ortega Highway).

Weather

Like most of Southern California, Orange County is considered to have a Mediterranean climate, where precipitation occurs during the winter months and summers are typically hot and dry. The average daily temperature is 70 °F, with average annual rainfall ranging from 10-14 inches. Weather phenomena characteristic of Orange County, includes:

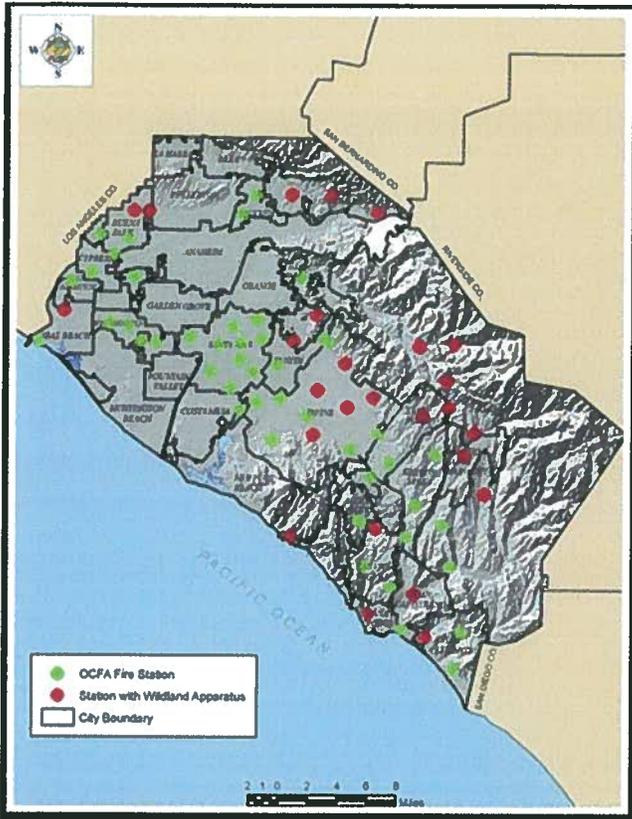
- **Microclimate Conditions** - Where temperatures can vary as much as 18°F from inland areas to the coast, with a temperature gradient of over one degree per mile.
- **May Gray/June Gloom** – Often brings morning overcast skies to the coastal cities that usually give way to sunny skies by noon, during the late spring and early summer.
- **Santa Ana Winds** – Per the National Weather Service (NWS), Santa Ana Winds are "strong down slope winds that blow through the mountain passes in Southern California". They can easily exceed 40 miles per hour, are warm and dry, and can severely exacerbate brush or forest fires, especially under drought conditions.



OCFA uses 2 remote weather stations to help monitor weather conditions and the associated wildfire risk, and will add another one in 2016. Additionally, in late 2014, OCFA, in partnership with COAST and NOAA, was successful in implementing a third weather zone for Orange County. This has proven to be invaluable for OCFA, as well as for other private and public organizations, in helping to make more informed decisions regarding resource deployments, facility closures, and activity restrictions.



Unit Preparedness & Firefighting Capabilities



Note: Full page map available on Page 71

The Orange County Fire Authority

The Orange County Fire Authority operates as a Joint Powers of Authority, and contracts with 23 of Orange County's 34 incorporated cities to provide a full spectrum of fire protection services. Additionally, OCFA is contracted by the County of Orange to protect its 16 unincorporated communities, as well as Orange County Parks. CAL FIRE also contracts with OCFA to protect Orange County's SRA lands, which include 2 State Parks, plus portions of the Cleveland National Forest Trabuco Ranger District.

OCFA is headquartered in Irvine, CA at the Regional Fire Operations Training Center (RFOTC), and has 72 fire stations, all of which are equipped with wildland firefighting capabilities, including 26 with specialized wildland apparatus. Additional OCFA capabilities include:

- Emergency Command Center (at RFOTC)
- Urban Search & Rescue
- Crews & Equipment
- Swift Water Rescue
- Airport Rescue Fire Fighting at John Wayne Airport
- Air Operations with 4 helicopters with water dropping and night vision capabilities, allowing for night operations and 24-hour coverage.

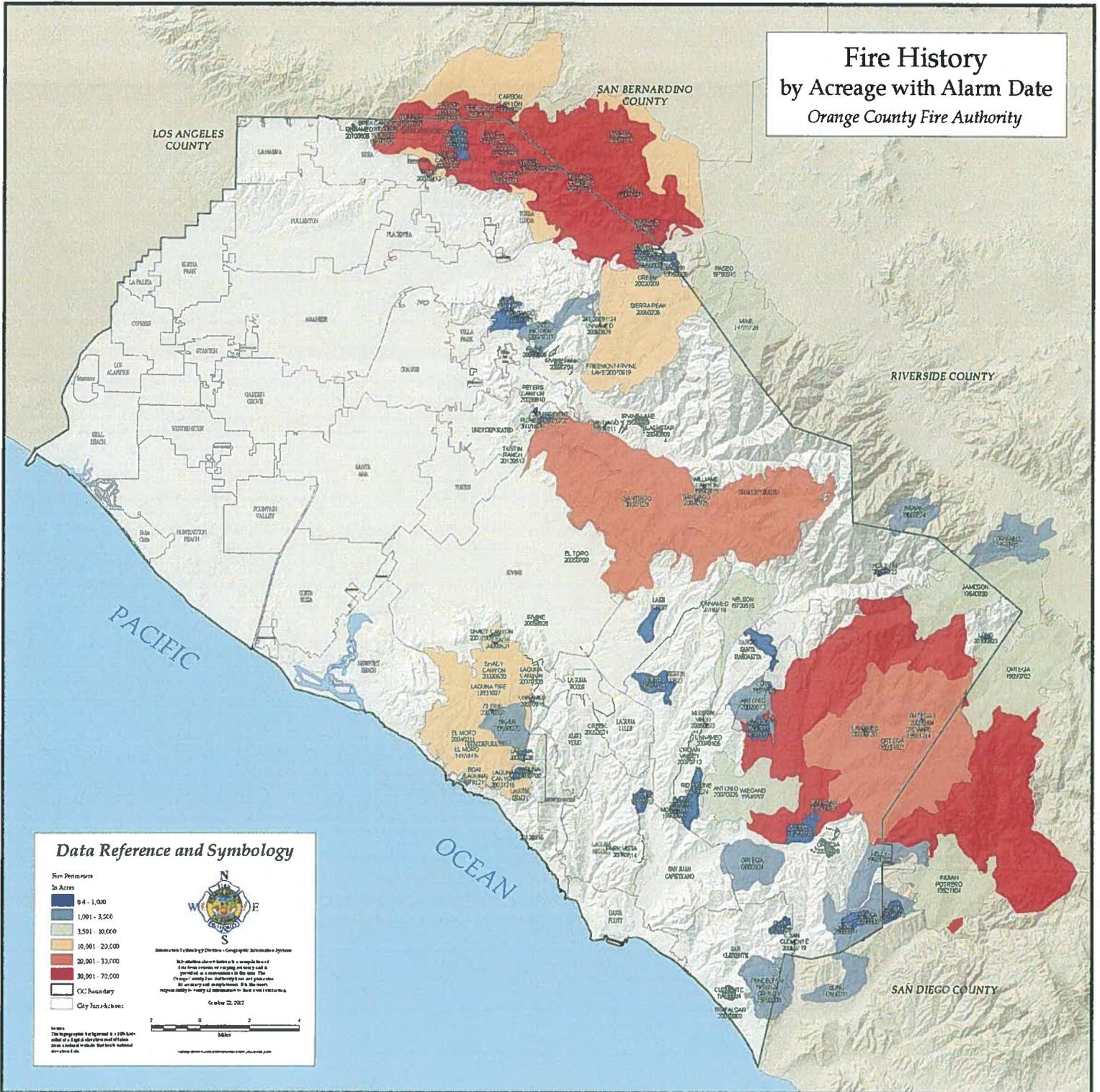
Programs	Apparatus
<ul style="list-style-type: none"> • Permanent Hand Crew & Heavy Equipment Section • Public Education & Outreach • GIS • Reserve Firefighter Program • Fire Explorer Post • Planning & Development Section • Prevention Field Services • Investigations Section • Fire Friends (juvenile arson intervention program) 	<ul style="list-style-type: none"> • Type I Engines – All with wildland capabilities • Type II Engines • Type III Engines • Type VI Engines with CAFS capabilities • Tactical Water Tenders • Support Water Tenders

Orange County Fire History

Recent history illustrates that Orange County is prone to large scale wildfires in, and near the SRA, including the following:

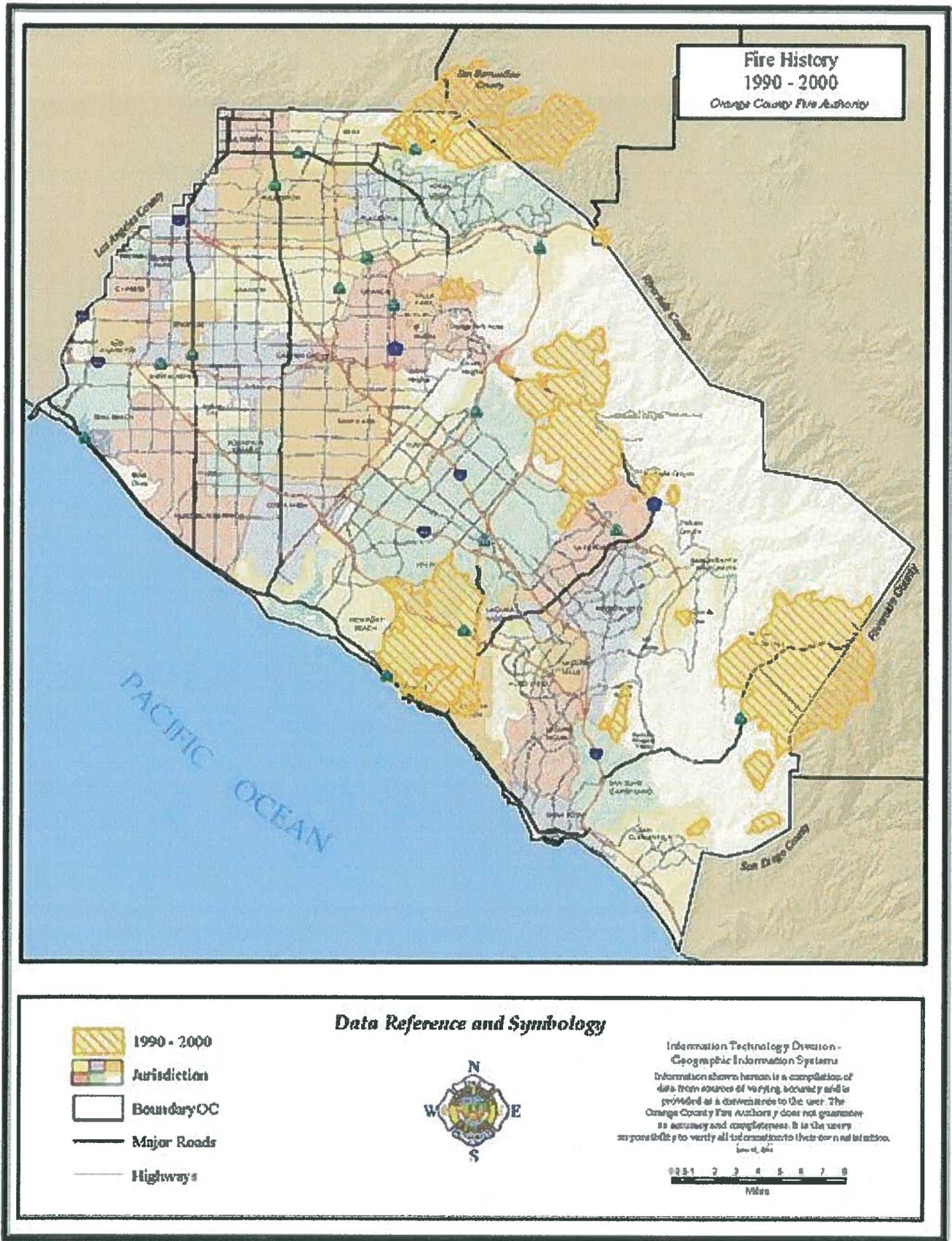
Recent Wildfire History		
<ul style="list-style-type: none"> • Oct. 1978: Soquel Fire (5,428 acres) • Sep. 1979: Paseo Fire (3,644 acres) • Oct. 1980: Owl Fire (18,332 acres) • Nov. 1980: Carbon Canyon Fire (14,613 acres) • Nov. 1980: Indian Fire (28,408 acres) • Oct. 1982: Gypsum Fire (19,986 acres) • Sep. 1987: Silverado Fire (5,988 acres) 	<ul style="list-style-type: none"> • Sep. 1988: Ortega Fire (2,471 acres) • Jul. 1989: Ortega Fire (8,170 acres) • Oct. 1989: Assist #108-Mateo Fire (13,478 acres) • Jun. 1990: Carbon Canyon (6,664 acres) • Jul. 1990: Yorba (7,884 acres) • Oct. 1993: Laguna Fire (14,337 acres) • Oct. 1993: Ortega Fire (21,010 acres) 	<ul style="list-style-type: none"> • Oct. 1997: Baker Fire (4,835) • Aug. 1998: Santiago Canyon (7,760 acres) • Feb. 2002: Green Fire (2,234 acres) • Feb. 2006: Sierra Peak (10,506 acres) • Mar. 2007: 241/Windy Ridge Fire (2,036 acres) • Oct. 2007: Santiago Fire (28,517 acres)

Orange County Fires – Perimeter Acreage



It's not unusual for Orange County's wildfires to have perimeters in excess of 10,000 acres, with some having perimeters of up to 70,000 acres.

Orange County Wildfires: 1990 – 2000



Fire History
1990 - 2000
 Orange County Fire Authority

-  1990 - 2000
-  Jurisdiction
-  Boundary OC
-  Major Roads
-  Highways

Data Reference and Symbology

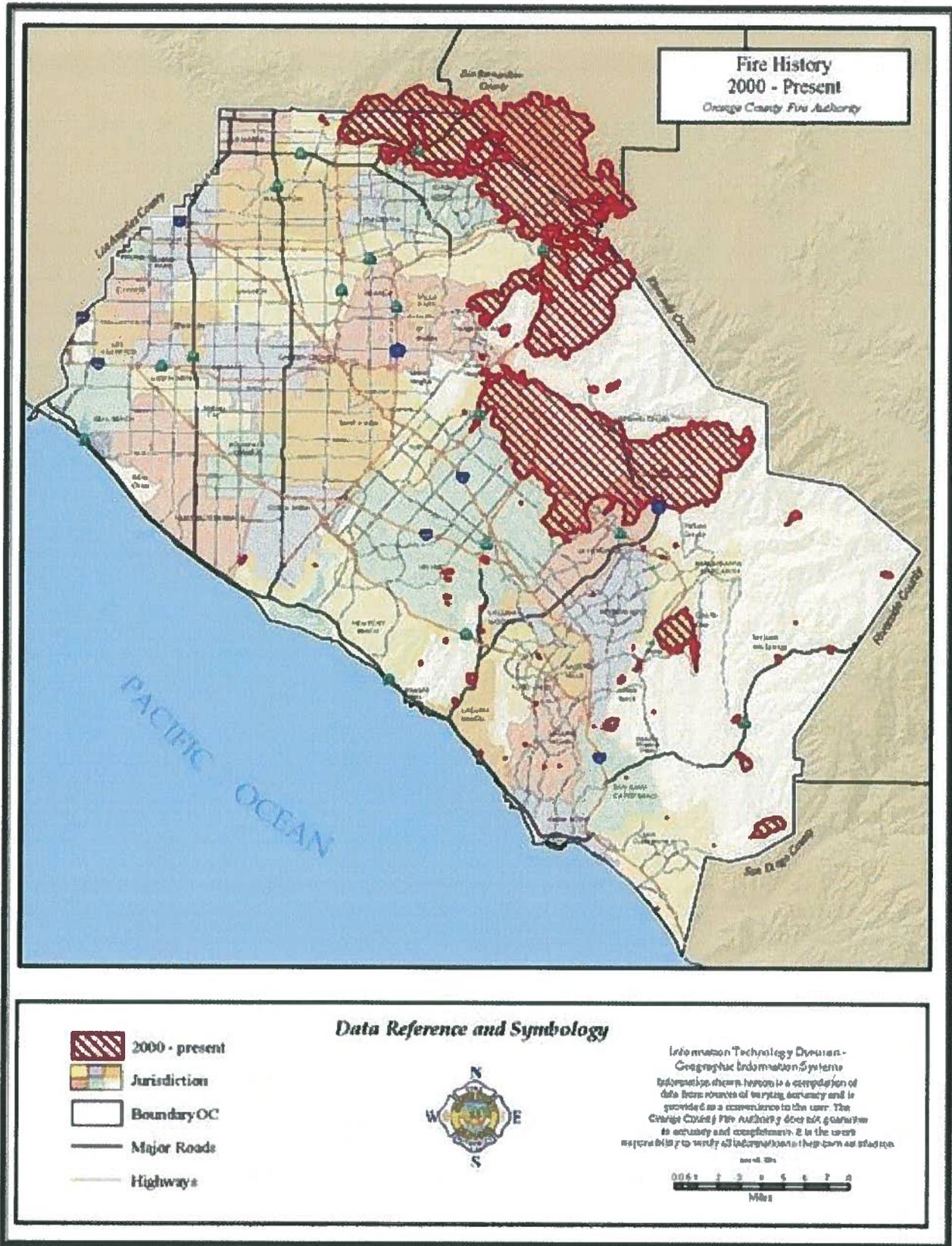


Information Technology Division -
 Geographic Information Systems
 Information shown hereon is a compilation of
 data from sources of varying accuracy and is
 provided as a convenience to the user. The
 Orange County Fire Authority does not guarantee
 its accuracy and completeness. It is the users
 responsibility to verify all data against their own information.
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Orange County Wildfires: 2000 – Present

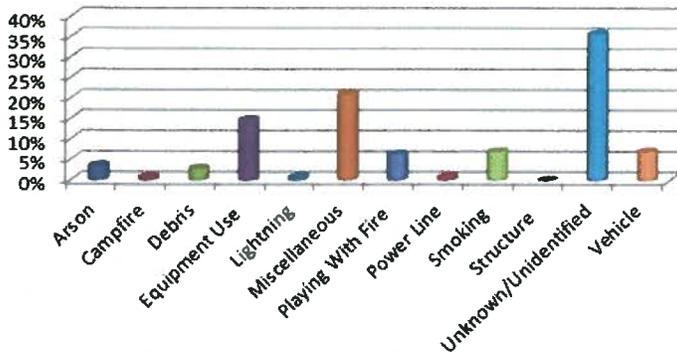
A quick glance at wildfire history reveals what hasn't burned recently, and offers suggestions as to what to be concerned about.



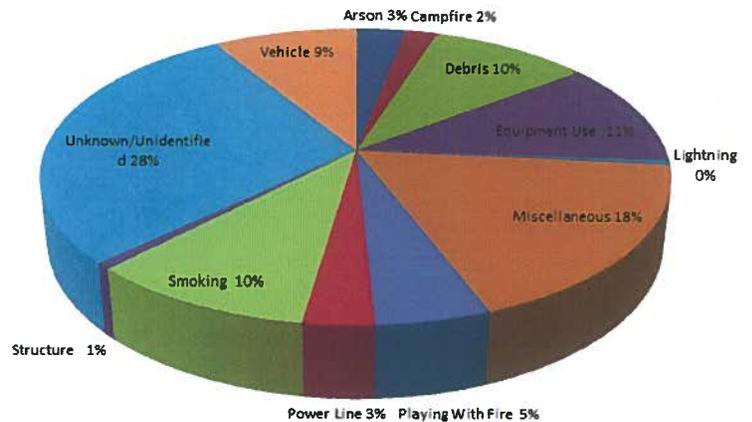
Ignitions

OCFA's Investigations Section attempts to determine the cause of all Orange County fires that are in, or are a threat to SRA areas, but for the vast majority, the cause remains Unknown/Unidentified or Miscellaneous. However, to combat roadside ignitions, which are of particular concern in Orange County, OCFA is partnering with COAST member organizations, including CalTrans, the Transportation Corridor Agency (TCA), and the Orange County Transportation Authority (OCTA) to develop preventive measures to better address this issue.

Orange County - 2015 Ignition Causes

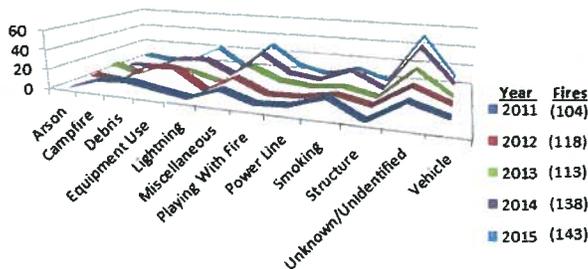


Orange County Cause Totals: 2011-2015

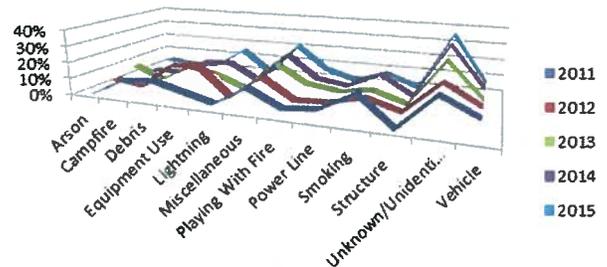


Over the past 5 years, as drought conditions persist, the only definitive trend is that there are more fires, and a corresponding increase in the percentage of Unknown/Unidentified and Miscellaneous ignition causes.

Orange County - Cause Count Annually: 2011-2015



Orange County - Cause By Percent Annually: 2011-2015



Disclaimer: Prior Orange County coding practices have resulted in data inconsistencies with CFIRS and NFIRS. Efforts are underway to correct this issue.

Challenges

In remote and rural areas of the county, firefighters are often faced with a limited water supply and lack of hydrant taps. Rural areas are characteristically outfitted with small diameter pipe water systems, which are inadequate for providing sustained firefighting flows. While not all these issues are within OCFA's control, prevention efforts for the ones that are, such as road clearance, fuels reduction, defensible space inspections and resident education will continue to be incorporated into this plan.

Some of the most difficult fire protection problems encountered in the Wildland Urban Interface are:

- Multiple story, wood frame, high-density developments
- Large contiguous built up areas with combustible roofing materials
- Response times for emergency equipment
- Street structure, such as truck trails, non-surfaced private roads, and/or curvilinear roads, with dead-ends and narrow street widths
- Inadequate and unreliable water supply with poor hydrant distribution



However, perhaps the most pressing problem overall is public apathy and unawareness regarding wildfire risks. The ongoing challenge will be for people to understand that surviving a wildfire may depend on their willingness to accept personal responsibility for protecting their homes, families and communities, by implementing proven preparedness and prevention strategies before fire occurs.

Section II: Collaboration

When this plan was originally developed in 2010, OCFA enlisted input from outside organizations (see Appendix F), including Bon Terra Consulting (restoration ecology), California State Parks, Habitat Restoration Services (HRS), the Fire Safe Council of East Orange County Canyons, Irvine Ranch Conservancy, Orange County Parks, Rancho Mission Viejo Ranch Operations & Land Trust, The Irvine Company Agricultural Operations and The City of Irvine. During that process, the following activities were identified as requiring collaborative efforts from both private and public sector agencies:

Collaborative Programs (Identified in 2010)	Progress to Date (as of 2016)
CWPP Management <ul style="list-style-type: none"> Develop and document partnership(s) with stakeholders to recognize and understand risks from wildland fire and hazardous fuels Develop and document strategies to mitigate risks from wildland fire and hazardous fuels 	OCFA has continued to develop partnerships, as well as strategies, that will help reduce hazardous fuels and mitigate wildland fire risks. In 2015, OCFA was awarded an SRA FPF grant to help develop a CWPP that will enable an even more comprehensive approach, which is currently under development. The CWPP will be completed in 2017.
Fire Hazard Mapping <ul style="list-style-type: none"> Develop a map of all wildland areas that will illustrate the locations of all assets at risk from wildland fire 	Information has been collected, and continues to be updated, but the maps have not been produced yet.
Fuel Break Program <ul style="list-style-type: none"> Develop a fuel break system to identify logical and potential locations Construct new fuel breaks, clear existing old fuel breaks and provide a mechanism for periodic (at least annual) maintenance 	Existing fuels breaks are routinely maintained and others have been added since 2010. Ongoing input is solicited for additional locations.
Fuel Reduction Program <ul style="list-style-type: none"> Have property owners, or agencies having jurisdiction, become more aware of hazardous fuels on their respective properties Have mechanisms in place to assist in the removal of hazardous fuels 	OCFA conducts annual defensible space inspections on private and commercial properties in the SRA, and in other Very High and High Fire Severity Zones. Owners, land managers and residents are issued correction notices when hazardous conditions exist and are re-inspected to ensure compliance. Also, OCFA's Crews & Equipment section often assists in the removal of hazardous fuels on a project basis, and helps with Chipper Days events to assist private residents in SRA and WUI areas.
Prescribed Fire Program <ul style="list-style-type: none"> Re-establish a prescribed fire program as a mechanism for mitigating risks from wildland fire and for hazardous fuel reduction 	Prescribed fire has been an ongoing challenge in Orange County for many years, but recently, OCFA has been able to get the conversation started again, primarily with COAST organizations.
Road Maintenance <ul style="list-style-type: none"> Ensure annual maintenance is completed on all roads and trails prior to the wildland fire season 	OCFA's Crews & Heavy Equipment section are contracted to perform maintenance on SCE roads, most of which are also fire access roads. Other road and trail maintenance is done regularly as time allows.

Source: 2014 ORC Strategic Unit Fire Plan & OCFA Pre-Fire Management

Since 2010, in keeping with the original vision of this plan, collaborative efforts continue, and now regularly include ongoing dialogues and interactions, both within OCFA, and externally, with residents, cities and communities within OCFA's jurisdiction, local fire safe councils, HOA's, other fire agencies, COAST organizations, and with many others. Regular collaborators by category include:

- **OCFA** - Operations, GIS, Crews & Equipment, Wildland Resource, Planning & Development, and Corporate Communications
- **Community** - Residents, volunteers, HOA's, cities and unincorporated communities
- **Fire Safe Councils** – North Tustin FSC, Fire Safe Council of East Orange County Canyons, and the Inter-Canyon League
- **COAST** – Refer to the COAST member list on the following page

COAST Background

In an effort to facilitate a more comprehensive, and effective approach to addressing wildfire issues for Orange County, the County of Orange Area Safety Task Force (COAST) was formed in 2013. COAST members include large open space land owners and managers, city, county, state and federal government organizations, utilities, road agencies, OCFA, and other fire agencies, as well as others, all who have a vested interest in preventing wildfire ignitions and limiting the associated losses. Member organizations have the ability to influence policy and ensure progress is made.

Among other accomplishments, COAST, with special help from meteorologist Pete Curran, can be credited with helping to institute a new NWS third weather zone for Orange County. Additionally, discussions with the transportation agencies are underway about possible barriers and/or treatments to help prevent roadside ignitions. Another current endeavor is working toward implementing HPWREN cameras for Orange County

Furthermore, COAST has been instrumental in helping to champion the CWPP process, which resulted in SRA FPF grant funding to help complete the project, which is currently underway.

The ultimate goal of collaboratively developing a more comprehensive, and inclusive fire protection plan, through a CWPP, is to reduce the losses from wildfire (i.e. people, property, possessions, critical infrastructure and services, ecology, Threatened & Endangered Species, commerce, etc.) by helping to reduce ignitions and limit the impact, which in Orange County, requires a concentrated effort in, and around, SRA and open space lands.

The CWPP objectives are to:

- (1) Better identify impactful, yet cost effective projects
- (2) Analyze and prioritize them
- (3) Help secure funding to complete them

Anticipated projects include, but are not limited to, fuels reduction, vegetation management, structure hardening, roads hardening, infrastructure improvements, education, training and equipment purchases/upgrades.

COAST Members

County Organizations

- Orange County Parks (OC Parks)
- OCFA
- County of Orange

State Organizations

- CA Department of Fish & Wildlife
- CA State Parks (Chino Hills & Crystal Cove State Parks)
- CA Fish & Game, South Coast Region

Federal Agencies

- USFS Cleveland National Forest
- US Fish & Wildlife

Other Fire Agencies

- Anaheim Fire
- Laguna Beach Fire
- Newport Beach Fire
- Orange City Fire

Transportation Agencies

- Cal Trans
- Orange County Transportation Authority (OCTA)
- Transportation Corridor Agency (TCA)

Utilities

- Southern California Edison (SCE)
- San Diego Gas & Electric (SDG&E)
- Irvine Ranch Water District (IRWD)
- Metropolitan Water District (MWD)

Large Land Managers

- Audubon Starr Ranch
- Irvine Ranch Conservancy (IRC)
- Natural Communities Coalition (formerly NROC)
- Rancho Mission Viejo Land Trust (RMV)

Other Participants

- UC Irvine
- Dudek & Associates (environmental consultants)
- Pete Curran (meteorologist)
- National Oceanic and Atmospheric Administration (NOAA)
- UC Riverside
- CAL FIRE

Other Collaborative Relationships

SOLAR - An initial attack, communications, and response plan between the counties of San Bernardino, Orange, Los Angeles and Riverside.

PROS - An initial attack, communications, and response plan between Camp Pendleton Marine Base, and the counties of Riverside, Orange and San Bernardino.

Response Agreement with Riverside County Fire Department – To ensure the closest resource responds.

Response Agreement with Cleveland National Forest – To ensure the closest resource responds.

Response Agreement with San Diego County Fire Authority – To ensure the closest resource responds.

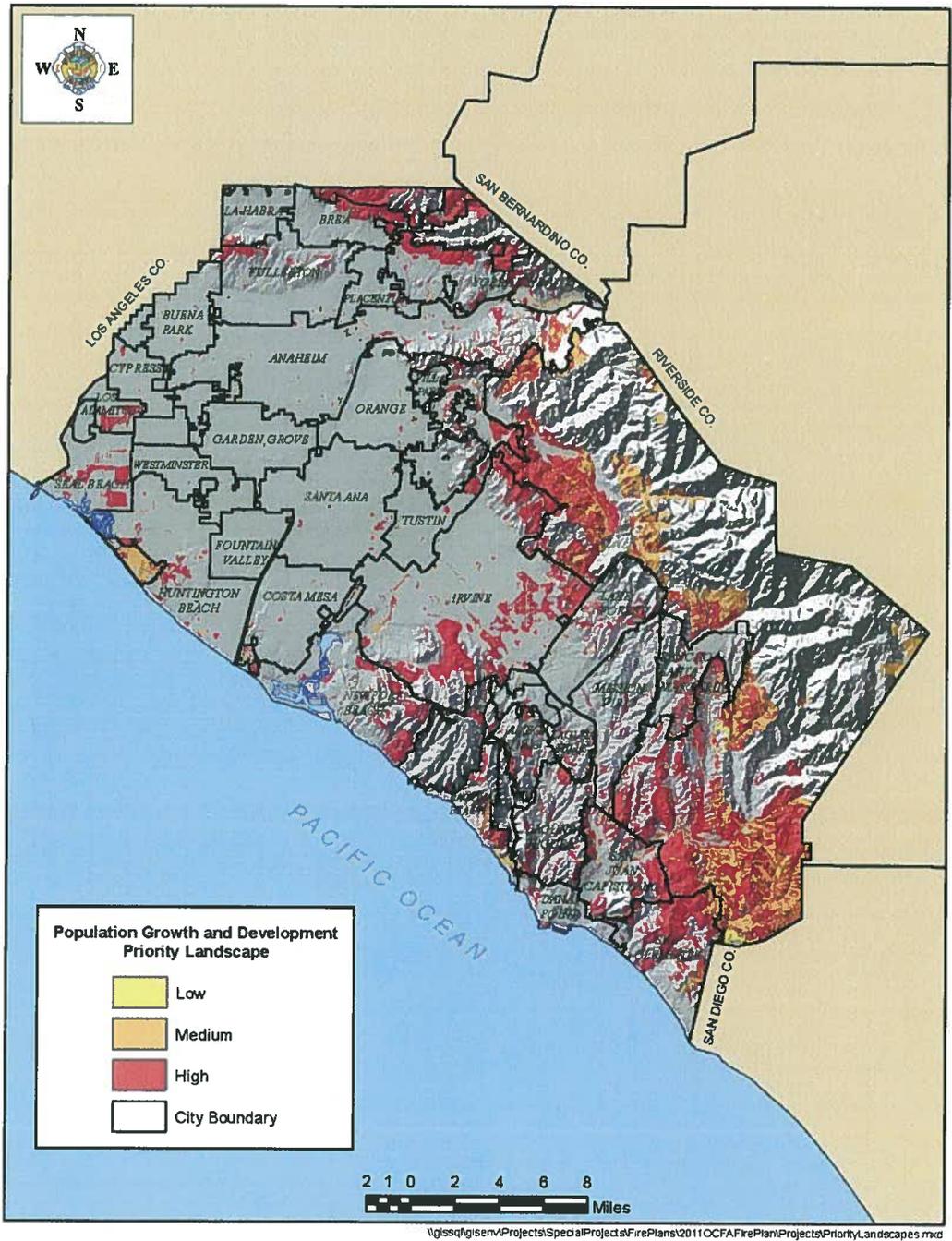
Response Agreement with Camp Pendleton – To ensure the closest resource responds.

Emerging Tree Pests of Orange County Task Force – Formed to address the growing problem of invasive pests, exacerbated by drought, that can increase hazardous fuels and impact the ecosystem. This group includes UC Riverside, most of the COAST organizations, OC Waste & Recycling and various subject experts.

(A) Values at Risk

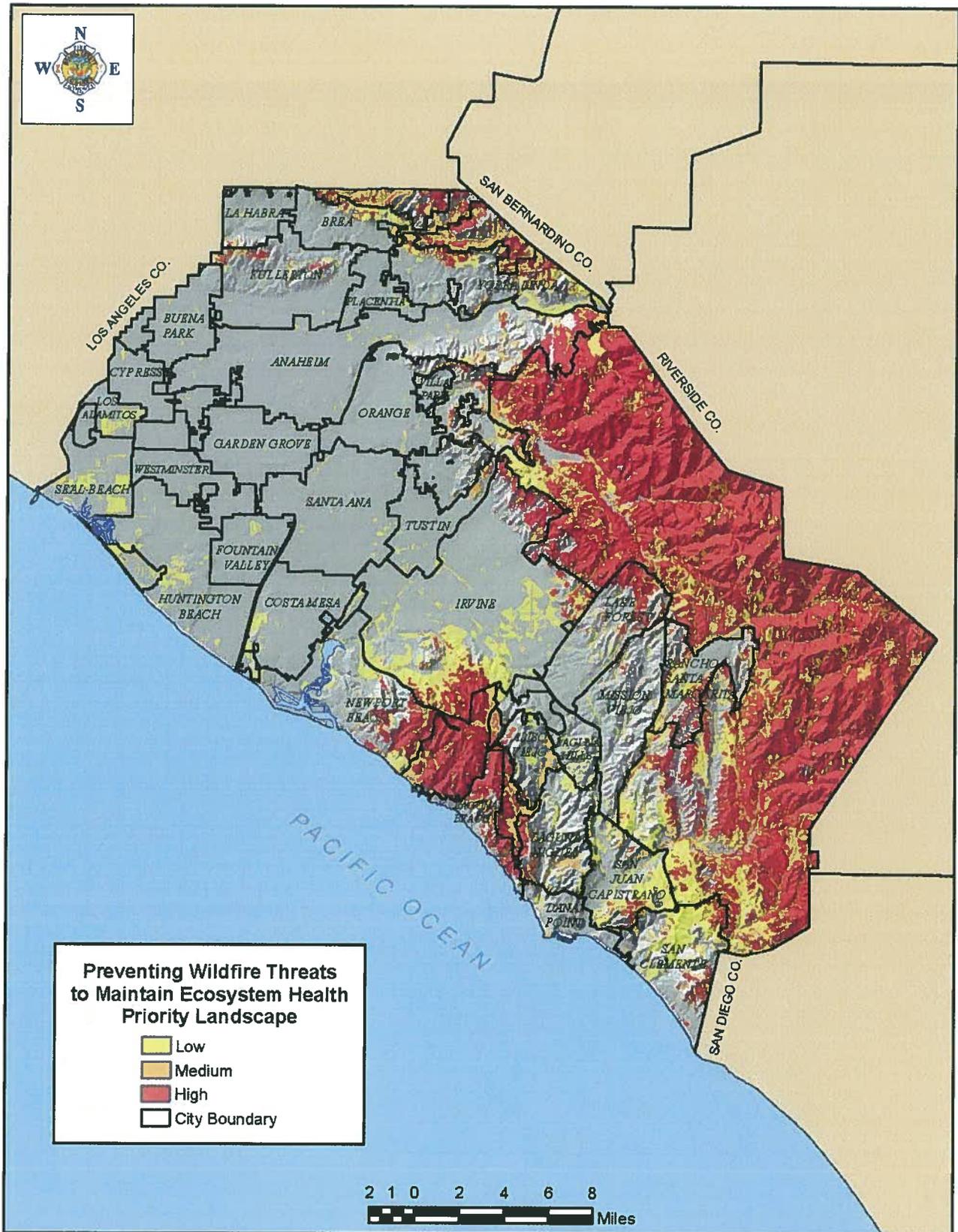
CAL FIRE's California's Forest and Rangeland's 2010 Assessment was developed to identify and address the state's key wildfire risk issues pertaining to community water, ecosystem health, forest and range economics, infrastructure, recreation, open space and wildlife. These areas of concern are spatially categorized as "Priority Landscapes". The 11 types of Priority Landscapes that were determined to be most applicable to Orange County are identified below, with graphic representations regarding where, and to what degree, each one is of particular concern:

Orange County's Priority Landscapes
Priority Landscape 1: Population Growth & Development



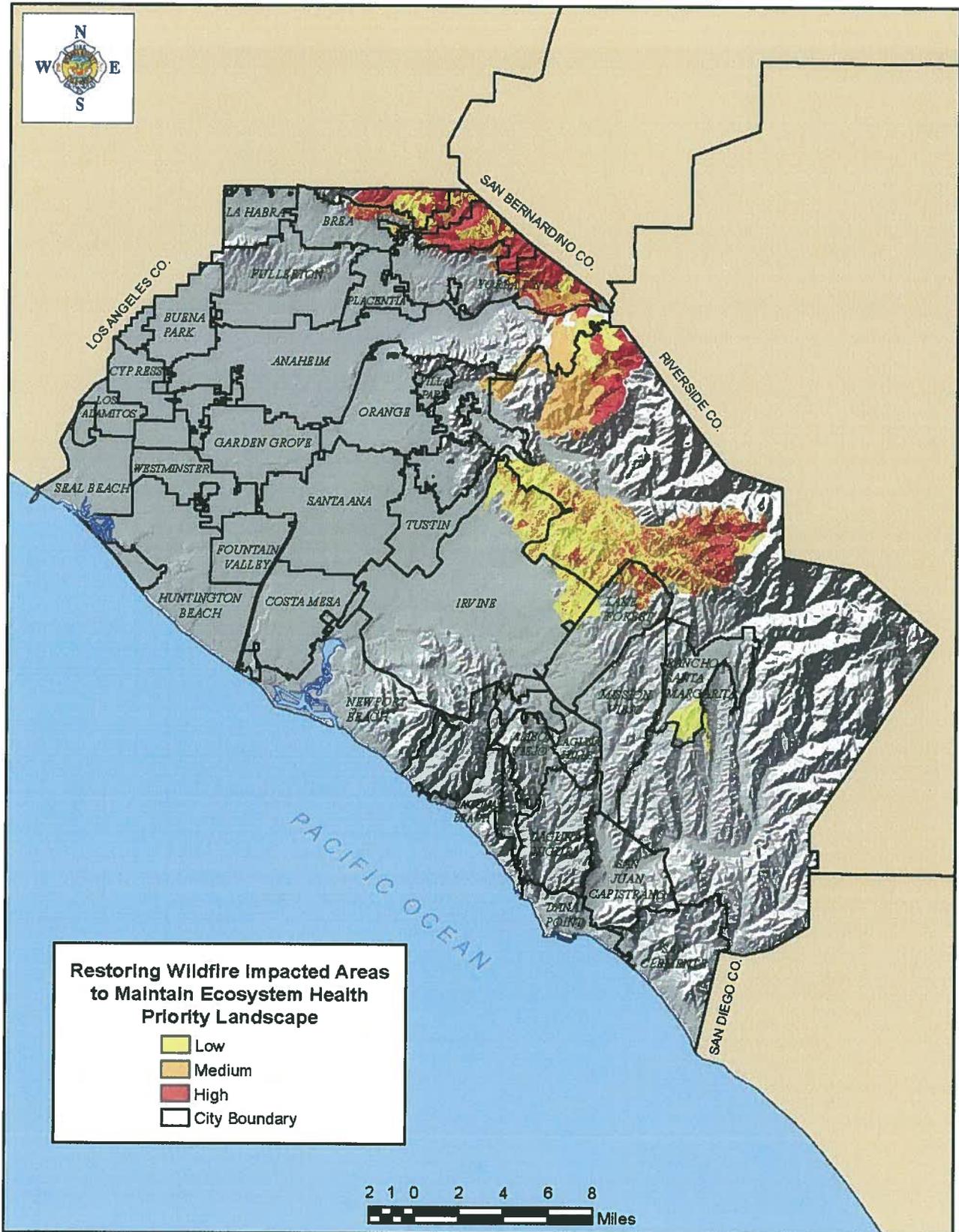
Orange County's Priority Landscapes (continued)

Priority Landscape 2: Preventing Wildfire Threats to Maintain Ecosystem Health

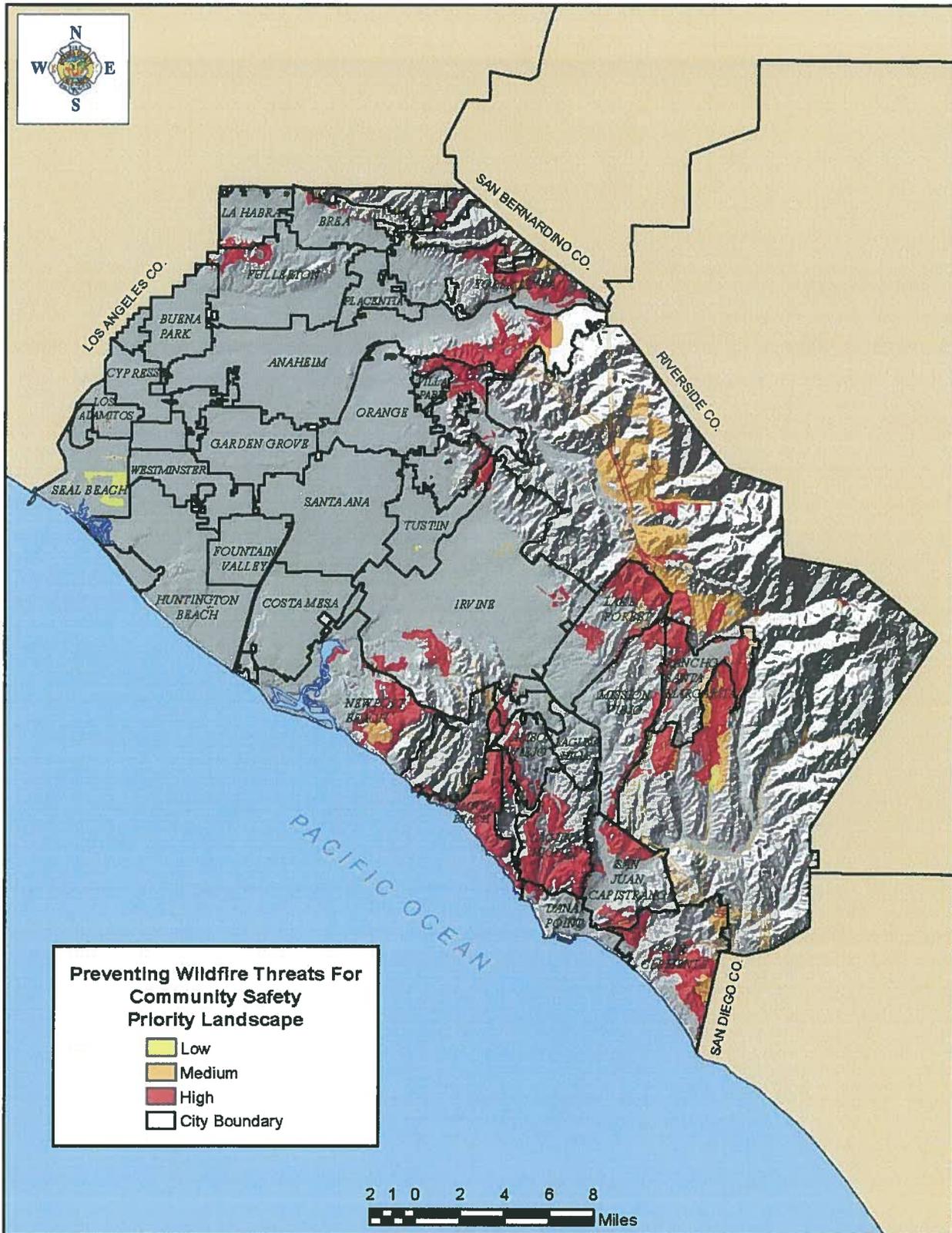


Orange County's Priority Landscapes (continued)

Priority Landscape 3: Restoring Wildfire Impacted Areas to Maintain Ecosystem Health



Orange County's Priority Landscapes (continued)
 Priority Landscape 4: Preventing Wildfire Threats to Community Safety



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Orange County's Priority Landscapes (Continued)

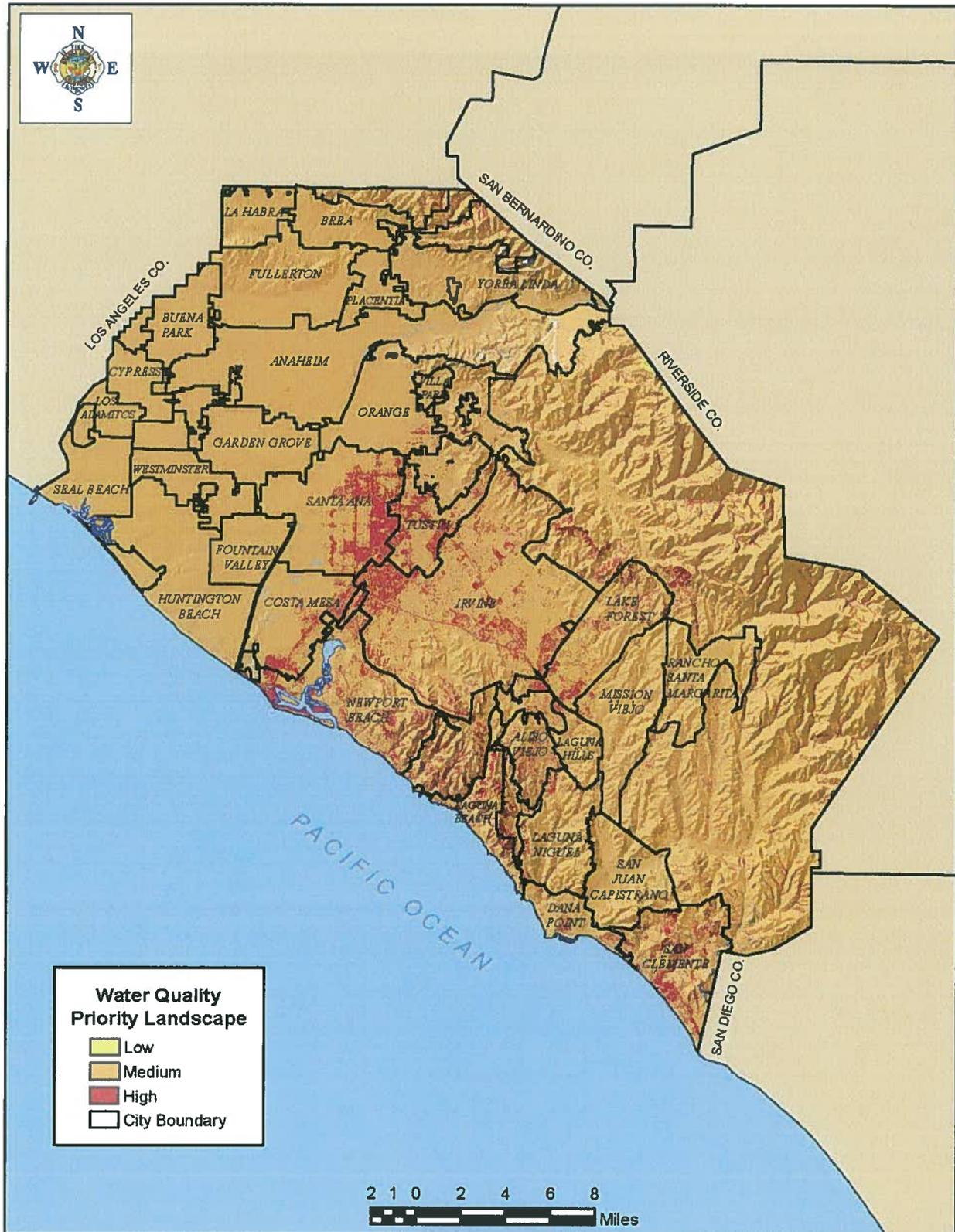
Priority Landscape 5: Water Supply



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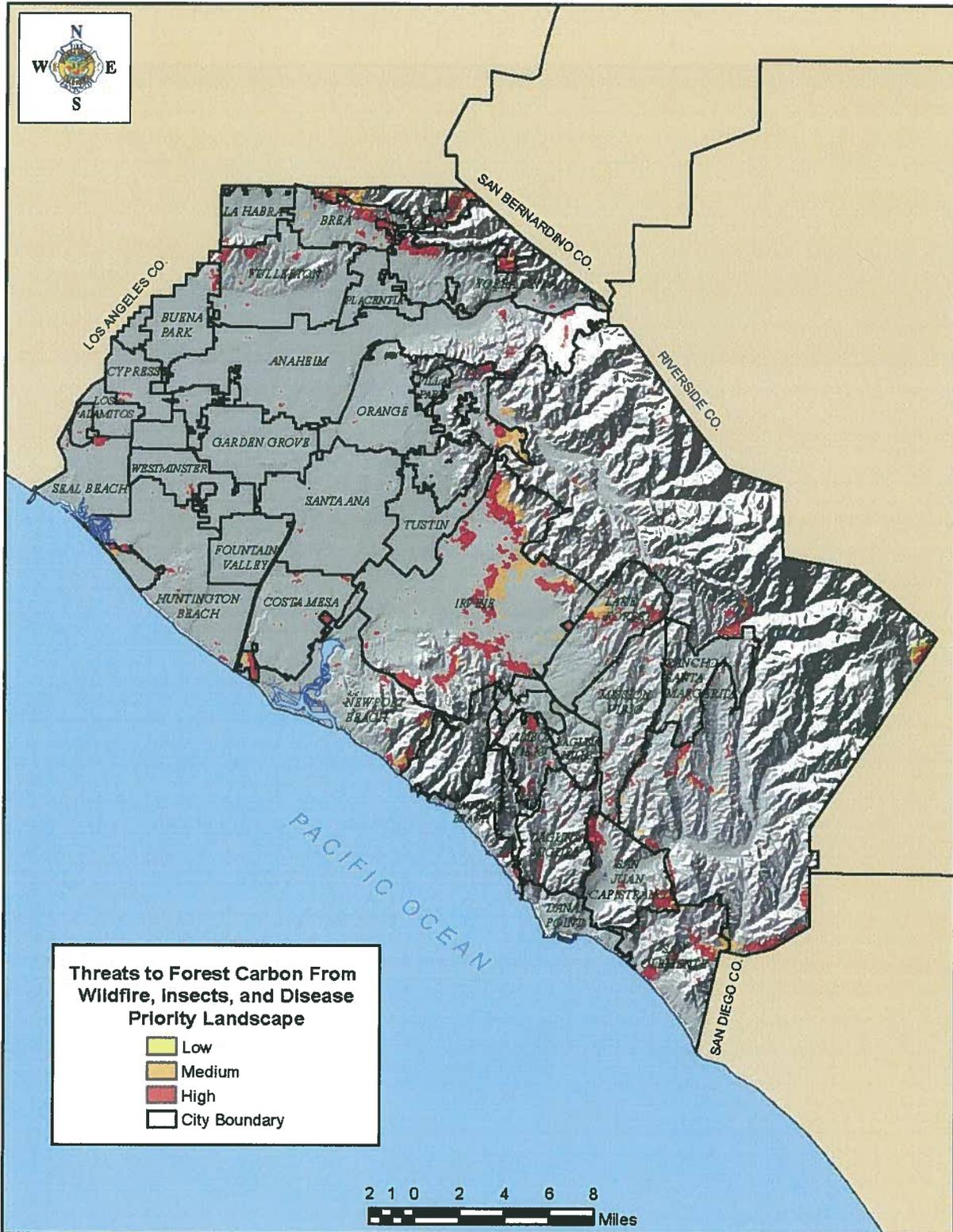
Orange County's Priority Landscapes (continued)

Priority Landscape 6: Water Quality



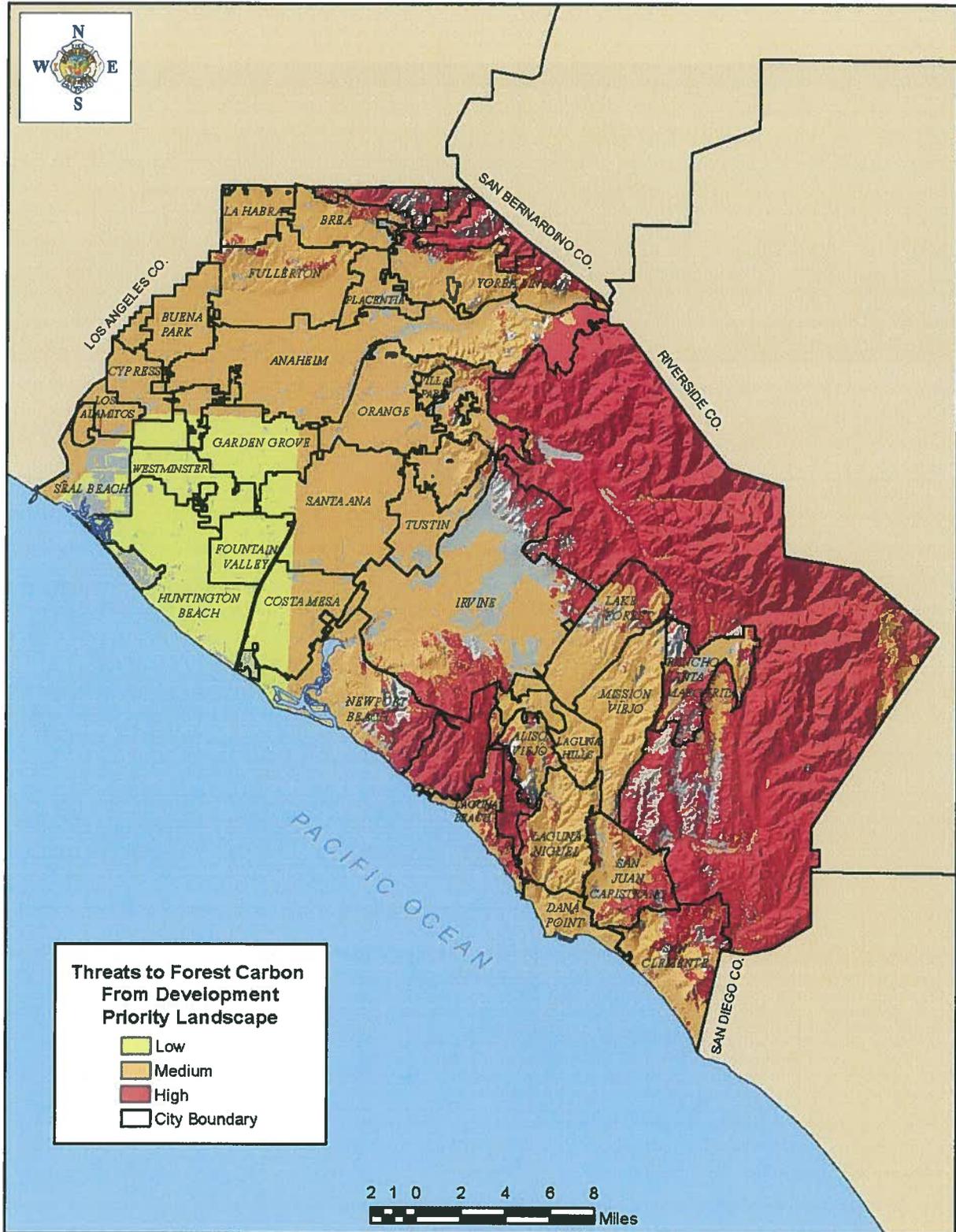
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Orange County's Priority Landscapes (continued)
 Priority Landscape 10: Threats to Forest Carbon from Wildfire, Insect & Disease



Orange County's Priority Landscapes (continued)

Priority Landscape 11: Threats to Forest Carbon from Development



Based on these 11 Priority Landscapes, the following “values” (i.e. assets) at risk were identified as Orange County’s highest concern, and should be addressed first:

Ecosystem - (as threatened by localized development and landscape level development).

- Localized structure and landscape development, and its resulting ecological disruption or damage, can influence the impact of a severe fire event, both in terms of possibly contributing to more frequent ignitions, and also how it can affect the localized development should fire strike. Additionally, altered fuel conditions can promote even further ecological damage (e.g. mortality within larger tree sizes, soil impacts, etc.).

Structures, Major Roads & Transmission Lines - (as threatened from wildfire).

- The value of housing, as it pertains to density, and other infrastructure, are particularly susceptible to damage/loss from exposure to wildfire.
- Power delivery and communications sites are also susceptible to extended loss of service due to fire. Even the simple interruption of these services is a public safety/public welfare issue, which is also the case for major roads.

Water Supply & Water Quality – (as threatened by wildfire, and the effects of wildfire, on soil surfaces, plus threats to and from localized development, watersheds and climate changes.)

- Watersheds can burn in the dry season and then discharge torrents of debris into downstream populated plains during severe storms in following wet seasons. Historically, California’s South Coastal Plain has suffered the worst effects of the flood-fire sequence because it has the greatest concentration of fire prone, high debris producing watersheds that discharge into populated areas. Impacts include damage to downstream values, such as homes, roads, debris basins, and other infrastructure.

(B) Communities at Risk

Expanding on the 2001 National Fire Plan that identified communities near federal lands that are at risk from wildfire, CAL FIRE developed an even more comprehensive list for California that went beyond the federal lands criteria. This list is now managed by the California Fire Alliance and includes 24 Orange County communities as "Nationally Recognized Communities at Risk". Most are within OCFA's jurisdiction, but a few are protected by other fire agencies, as indicated.

In addition, OCFA has identified several other communities as being at risk from wildfire, including:

- Emerald Bay
- Lake Forest
- Lemon Heights/North Tustin
- Santiago Canyon
- Tustin Heights

Nationally Recognized Communities At Risk

Community Name	Jurisdiction	Federal Threat	Federally Regulated
Aliso Viejo	OCFA		
Anaheim	Non-OCFA		
Brea	Non-OCFA		X
Coto de Caza	OCFA		X
Cowan Heights	OCFA		
Dana Point	OCFA	X	
Irvine	OCFA		X
Laguna Beach	Non-OCFA	X	
Laguna Hills	OCFA	X	
Laguna Niguel	OCFA		
Laguna Woods	OCFA		
Mission Viejo	OCFA		
Modjeska	OCFA	X	
Newport Beach	Non-OCFA		
Orange	Non-OCFA		
Rancho Santa Margarita	OCFA		X
San Clemente	OCFA		X
San Juan Capistrano	OCFA		
Silverado	OCFA	X	
Trabuco Canyon	OCFA	X	
Trabuco Highlands	OCFA	X	X
Vila Park	OCFA		
Yorba Linda	OCFA		X

Beyond the previously listed Communities at Risk are a number of other high consequence values that require consideration, but are not included in this plan such as:

- **Commerce:** Various shopping, entertainment, business and restaurant locations
- **Recreation:** Various recreational venues (i.e. Irvine Lake, camp grounds, sports facilities, parks, beaches, etc.)
- **Nature Preserves:** Various ecological and habitat preserves (i.e. wetlands, tide pools, etc.)
- **Historical Sites:** Mission San Juan Capistrano, Richard Nixon Library, and numerous other historically significant places
- **Military:** Seal Beach Naval Weapons, Camp Pendleton, Los Alamitos Joint Forces Training Base, etc.
- **Transportation:** John Wayne Airport, and various railroads, harbors, bridges and roads, etc.
- **Utilities:** Communications infrastructure, oil and gas facilities, water and power facilities, including the San Onofre and UCI nuclear facilities, etc.
- **Educational Facilities:** Universities (i.e. UCI, Cal State Fullerton, Chapman, etc.), community colleges, and K-12 facilities

Section IV: Pre-Fire Management Strategies

(A) Fire Prevention

As mentioned previously, Orange County is the 2nd most densely populated county in the state, with wildfire as its number one fire risk. Consequently, continued residential, commercial and industrial growth presents an ongoing challenge. In the Wildland Urban Interface, efforts to prevent ignitions and limit wildfire losses hinge on hardening structures and creating defensible space through a multi-faceted approach, sometimes referred to as the "4-E's", which includes Engineering, Enforcement, Education and Evaluation.

Engineering & Ignitions

It's interesting to note that much of Orange County has adopted regulations that are actually more stringent than the California's regulations. To engineer effective defensible space into the development process, Pre-Fire Management uses proven vegetation management practices when reviewing and approving all landscaping and fuel modification zone plans. For structures, ignition prevention efforts start with OCFA's Planning & Development section, which ensures that comprehensive pre-emergency planning has been done, and that fire protection measures are engineered into the design of both residential and commercial structures, for both new construction and remodels. Chapter 7-A building requirements are incorporated, as well as Title 24, Title 19, PRC 4290 and PRC 4291, to identify and address potential wildfire hazards, and to help develop mitigation measures that will aid in making the structures more defensible.

Enforcement

For existing structures, OCFA is actively involved in enforcing codes and ordinances, and conducts regular inspections to ensure a reasonable degree of fire protection exists in facilities and occupancies, and that they remain compliant with existing fire codes.

In terms of enforcing vegetation management guidelines, OCFA also conducts annual defensible space inspections for homes and structures within the Very High and High Fire Severity Zones to ensure they remain in compliance. The same is true for Fuel Modification Zones and Homeowners Association properties, which are also inspected. Similarly, OCFA also inspects power poles annually to help prevent ignitions by ensuring that adequate vegetation clearance exists and to help provide to provide defensible space.

Education

OCFA staff participates in ongoing training programs, designed to ensure that they stay current with codes, regulations, current issues and best practices. In addition, OCFA champions the "Ready, Set, Go!" message to promote wildfire education and conduct outreach programs. Based on the premise that during a major wildfire, there may not be enough firefighting resources to protect every home, "Ready, Set, Go!" encourages residents to take personal responsibility for preparing their property and family to become part of a solution for the problem of increasing fire losses during wildfires. Special emphasis is focused on ember intrusion and the actions that homeowners can take to lower their risk, such as retrofitting homes with ignition resistive features, and creating defensible space around their property, such as with trimming and regular maintenance, and planting with ignition resistive plants. This is of particular importance for residents in Wildland Urban Interface (WUI) areas, where wildfire survivability relies more heavily on the landowner's personal initiative to take measures to protect his or her own life and property. Additional information regarding the preparation of family emergency plans and kits, contact phone numbers, and evacuation plans are also discussed.

Additionally, OCFA offers free home consultations that focus on home hardening and improving defensible space, and also conducts community presentations all year long to various groups, such as HOAs, schools, clubs, etc. on wildfire preparedness and a variety of safety topics. All information is available electronically from OCFA.org, ReadySetGoOC.org and related links, as well as from printed materials.

Other actions that contribute to the education and safety of the communities include:

- Developing and testing marketing initiatives, plus education and outreach materials, to obtain intended behavioral change results
- Continued relationship building with local partners and agencies to target and distribute information
- Encouraging community participation with stakeholder groups, and supporting fire safe council formation
- Mapping and risk ranking of communities affected by WUI issues
- Development of an interactive, GIS-based computer model that provides risk information to the public

Additionally in 2013, OCFA, in conjunction with other key emergency related agencies, conducted the first ever Community Evacuation Drill for Cowan Heights, a community with limited access and at risk from wildland fire. Not only was this exercise designed to help educate and prepare residents for an actual emergency, but also to help participating organizations fine tune their response plans. It proved to be a valuable learning and outreach experience that may be replicated in other vulnerable communities in the future.

Evaluation

OCFA works to identify the need for amendments when issues arise, and collaborates with regulatory agencies to improve regulations that will result in maximum effectiveness with minimum environmental impact. Additionally, mapping hazardous fire zone areas is also done to aid in the evaluation and planning process.

(B) Vegetation Management

Since prolonged drought continues to plague California, vegetation management remains at the forefront of fire prevention efforts in Orange County. As watering is increasingly rationed, landscaping and previously irrigated fuel modification zones are drying up, exacerbating the already hazardous conditions. In addition, invasive plant species are proliferating, and drought stressed trees have become more vulnerable to destructive pests, such as the polyphagous shot hole borer and the goldspotted oak borer, which are killing trees, and adding to the fire danger. Consequently, to adapt, OCFA is encouraging a shift towards landscaping and replanting with native species, which are more drought tolerant and fire resistive.

When they are not fighting fires, OCFA's Hand Crew and Heavy Equipment Operators routinely work on hazardous fuels reduction projects for a variety of organizations, including Southern California Edison, OC Parks, State Parks and large land owners/managers. They also assist with targeted community initiatives, such as Chipper Days, sponsored by local fire safe councils, etc.

OCFA's Pre-Fire Management section works with developers and homeowners associations to engineer and re-engineer fuel modification zones and landscaping that reflects the new reality of less water, and the need to return to a native species plant palate to help reduce hazardous vegetation. They also conduct annual defensible space inspections in high risk areas help ensure vegetation management guidelines are maintained.

Residents can refer to a number of online and printed resources, including OCFA.org for tips on fire resistive plants, plus proper spacing and maintenance.



Section V: Pre-Fire Management Tactics

The Orange County Fire Authority (OCFA) has a wide variety of programs and plans that have been, or are in the process of being, developed to help mitigate wildfire ignitions and limit the losses for communities in, and adjacent to, the county's SRA and open space lands. The plans and programs are either tactical or strategic in nature, are typically developed collaboratively with OCFA's Pre-Fire Management and/or Emergency Planning and Coordination (EPAC) sections, and are available upon request from EPAC. Examples include:

- **OCFA Tactical Fire Suppression Plans** – Tactical response plans
- **Outside Organization Fire Plans** – Provided to OCFA by outside organizations, and often developed with OCFA's input
- **County of Orange Area Safety Task Force (COAST) Plans** - Proposed by COAST member organizations for the planned CWPP development, usually with input from OCFA
- **OCFA Division/Battalion Recommendations** - Generated by annual battalion inspections of 1st due areas near SRA and open space lands

Tactical Fire Suppression Plans

Developed by OCFA for key high risk areas, which include:

- **Silverado Fire Plan:** Includes Silverado Canyon, Ladd Canyon, Baker Canyon and Williams Canyon. The plan is intended to guide fire and law enforcement agencies during major wildfire occurrence. Within the plan, sections identify the needs for local residents to evacuate, and the safest means of evacuations and potential rendezvous sites.
- **Modjeska Fire Plan:** Includes Modjeska Canyon, Santiago Canyon and the Modjeska Grade. This is identical in nature to the Silverado Fire Plan, with the differences being locations, numbers of resources and evacuation sites.
- **Trabuco Fire Plan:** Includes Live Oak Canyon, Trabuco Oaks, O'Neill Regional Park, Rose Canyon, Holy Jim Canyon and Robinson Ranch. The significant difference of this plan, as compared to the Silverado and Modjeska Fire Plans, is Robinson Ranch. Robinson Ranch is a large modern residential area within the City of Ranch Santa Margarita that is nestled up against the Cleveland National Forest. Otherwise, the plans are somewhat identical to the previous fire plans.
- **Newport/Laguna Coast Fire Plan:** Developed for a very large area of intermingled open spaces and densely populated residential and commercial developments that lie within the incorporated cities Laguna Beach, Newport Beach and Irvine, plus the coastal areas of Newport Beach and Crystal Cove State Park, and any unincorporated areas under the jurisdiction of the County. This plan was a collaborative effort between Orange County Fire Authority, and the Laguna Beach and Newport Beach Fire Departments.
- **Tustin-Orange Foothills Fire Plan:** Developed for a very large area of intermingled open spaces and densely populated residential and commercial developments that lie within the incorporated cities Tustin and Orange, plus Peters Canyon Regional Park. This plan was a collaborative effort between Orange County Fire Authority and Orange City Fire Department.

Outside Organization Fire Plans

Developed by outside agencies, with technical assistance from OCFA. Plans are available upon request from each organization. Examples include:

- [Natural Communities Coalition \(formerly known as NROC\) Tactical Fire Suppression Plan and the NROC Strategic Plan](#): The Tactical Plan addresses pre-suppression, suppression and post-suppression tactics. The suppression tactics identify desired actions and locations, while the post-suppression tactics identify the actions and responsibilities for fire suppression repair. The Strategic Plan is near completion, noting that NROC hired a consultant to work with OCFA and all stakeholders to complete the plan. This plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment and suppression costs.

- **The Southern Sub-Regional Wildland Fire Management Plan – Rancho Mission Viejo:** Developed by a consultant firm for the Rancho Mission Viejo Land Trust, it's designed to manage the natural resources of the ranch lands of Rancho Mission Viejo. OCFA, California Department of Fish and Game, U.S. Fish and Wildlife, the RMV Land Trust and a variety of other regulatory agencies were involved in the development. This plan addresses suppression tactics by identifying desired actions and locations, plus post-suppression tactics for actions and responsibilities for fire suppression repair. This plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment and suppression costs.
- **The Irvine Ranch Conservancy Wildland Fire Ignition Reduction Strategy:** A collaborative effort between the Irvine Ranch Conservancy (IRC) and OCFA, this plan focuses on actions that will reduce the probability of wildland fire ignitions, particularly during Santa Ana Wind conditions. The plan highlights five (5) major action areas: Fire Watch Network, Fire-Hardening Roadways, Power line Safety, Wildland Access and Urban-Wildland Edge. Once again, this plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment and suppression costs. However, emphasis on ignition reduction for environmental concerns is the highest priority.
- **The Cowan Heights – Peters Canyon Project:** This recently completed project was a collaborative effort between Orange County Public Works, Orange County Fire Authority and Orange County Parks and Recreation. The intended result was to reduce hazardous fuels to a minimum of 50% of the current available hazardous fuels (responsible agency – OCFA) and the restoration of the Lower San Diego Creek riparian area (responsible agency – OC Public Works). OCFA conducted outreach and education activities on the necessities of vegetation clearance and maintenance, plus home improvements that will add to survivability during a wildfire.

COAST Plans

In 2014-15, SRA FPF grant funding became available, so COAST organizations submitted 20 project proposals that had been earmarked to be included as part of Orange County's planned CWPP.

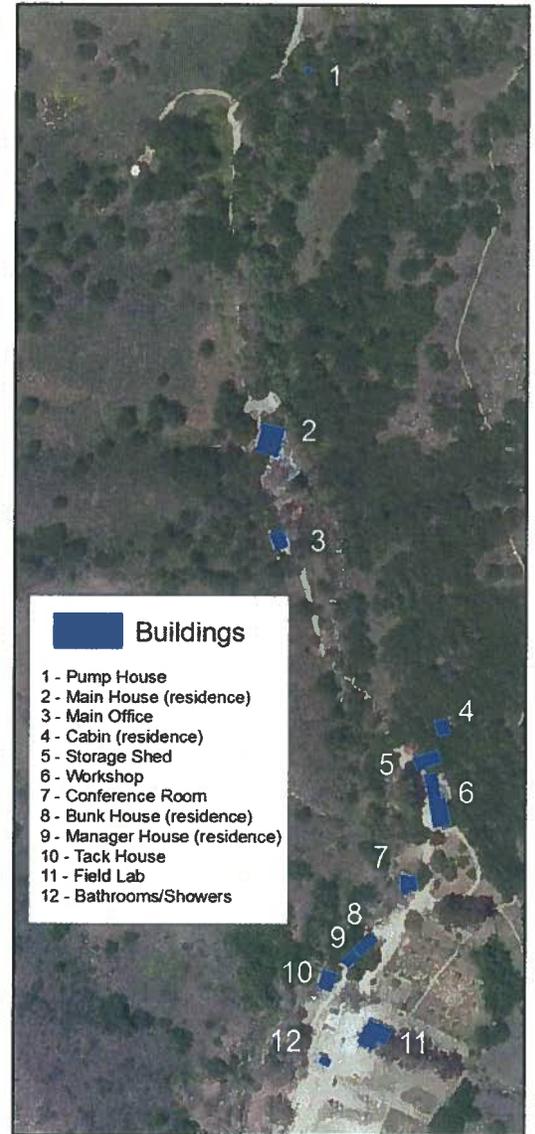
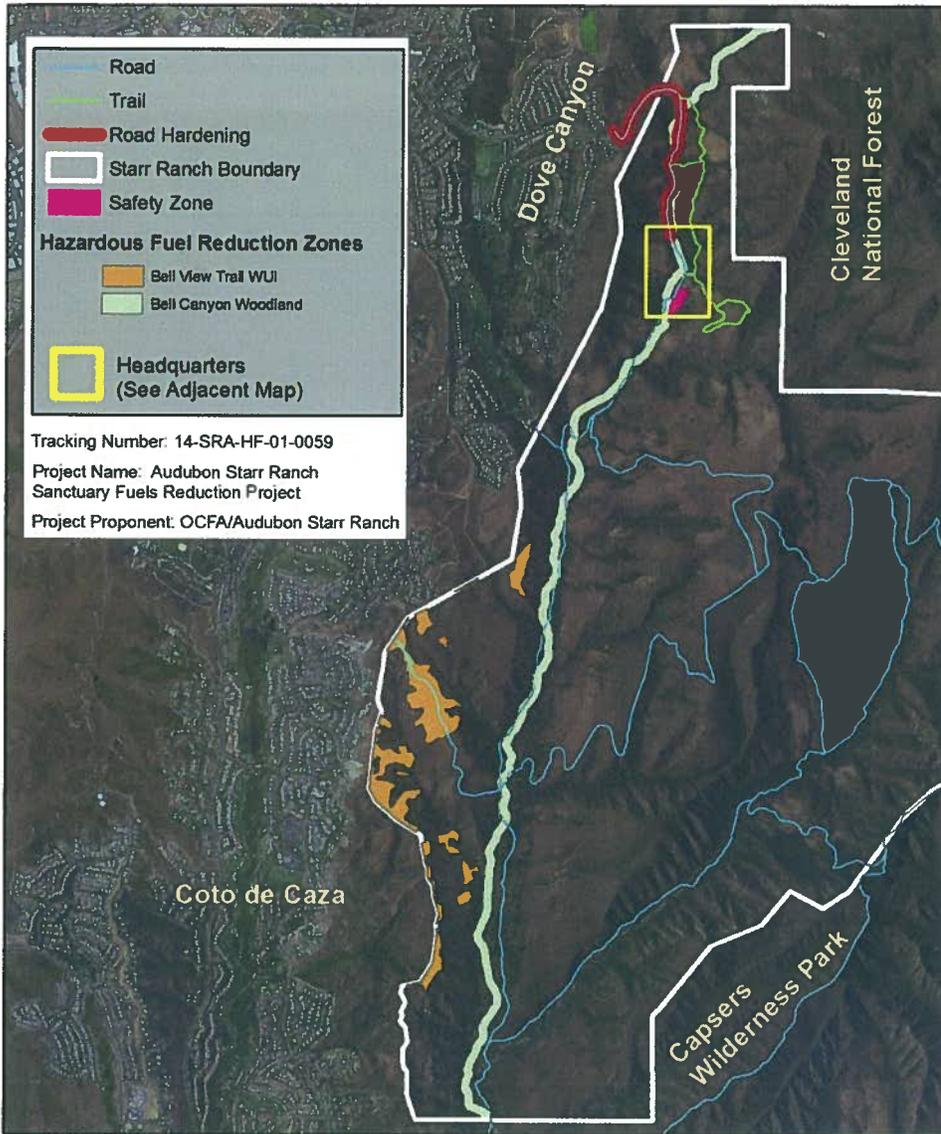
The CWPP itself was actually submitted as a grant proposal and was the only project approved for the current funding cycle. The State approved most of the other proposals in concept, but had to defer them due to lack of funds.

However, regardless if grant funds are ultimately available, these high priority projects were all incorporated into OCFA's 2015 and 2016 Unit Fire Plan, which is serving as the basis for the CWPP development. These projects will be completed as resources become available. In fact, 7 of them have been/are scheduled to be completed in the near term and are highlighted in green, along with the CWPP, for reference.

Each of the 20 grant project proposals are listed below by their primary sponsor organization:

Planning Projects	CAL FIRE Concept ID
IRC - Primary Roads	14-SRA-HF-01-0293
OCFA - COAST/CWPP	14-SRA-HF-01-0262
Outreach & Education Projects	CAL FIRE Concept ID
IRC - OC Firewatch - Red Flag Patrol	14-SRA-HF-01-0275
IRC - OC Firewatch - Smokey The Bear Signs	14-SRA-HF-01-0242
OCFA - Roadside Message Board	14-SRA-HF-01-0266
OCFA - Wildfire Education	14-SRA-HF-01-0155
Fuels Reduction, Fuel Breaks & Roads Projects	CAL FIRE Concept ID
Audubon Starr Ranch Fuels Reduction	14-SRA-HF-01-0059
OC Parks - East Ridge/Oso Trails	14-SRA-HF-01-0241
OC Parks - Live Oak Trail	14-SRA-HF-01-0247
OC Parks - San Juan Creek	14-SRA-HF-01-0210
OC Parks - West Ridge & Bell Ridge	14-SRA-HF-01-0215
OCFA - Coto Fuels Reduction	14-SRA-HF-01-0252
OCFA - Emergency Road Clearance	14-SRA-HF-01-0141
RMV - Bell Canyon-Bull Pasture	14-SRA-HF-01-0143
RMV - Chiquita Ridge Fuel Break	14-SRA-HF-01-0191
RMV - Color Spot	14-SRA-HF-01-0157
RMV - Dead & Dying Trees	14-SRA-HF-01-0182
RMV - Narrow Canyon -Ross Road	14-SRA-HF-01-0175
RMV - Oso & Burma Roads	14-SRA-HF-01-0153
RMV - RDOC Back Roads	14-SRA-HF-01-0165

Audubon Starr Ranch



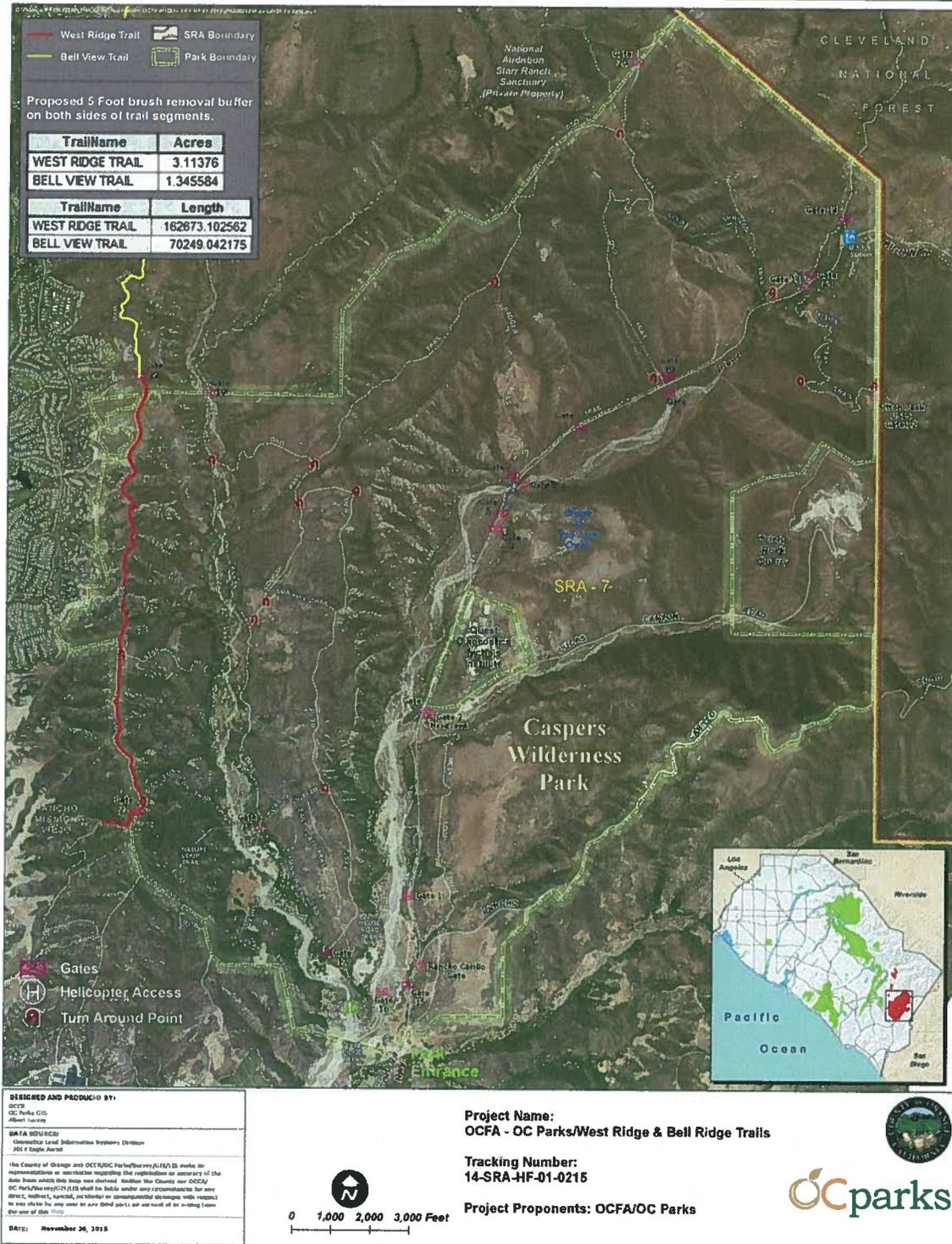
Audubon Starr Ranch Sanctuary

Hazard: Surrounding flammable and drought stressed vegetation within the 4,000 acre Audubon preserve in southeast Orange County threatens the 12 historic structures (i.e. built in the 1930s), including four residential buildings for ten staff, and also the communities of Coto de Caza, a designated Community-At-Risk, and Dove Canyon.

Suggested Mitigation - Vegetation clearance along the main access road for firefighter and fire vehicle access, and in other critical locations, including a 125 acre riparian woodland, to reduce wildfire intensity and rate of spread.

- The proposal is to treat the highest priority 158 acres, which are a mix of oak and riparian woodland, chaparral, and coastal sage scrub

OC Parks - West Ridge & Bell Ridge Trails



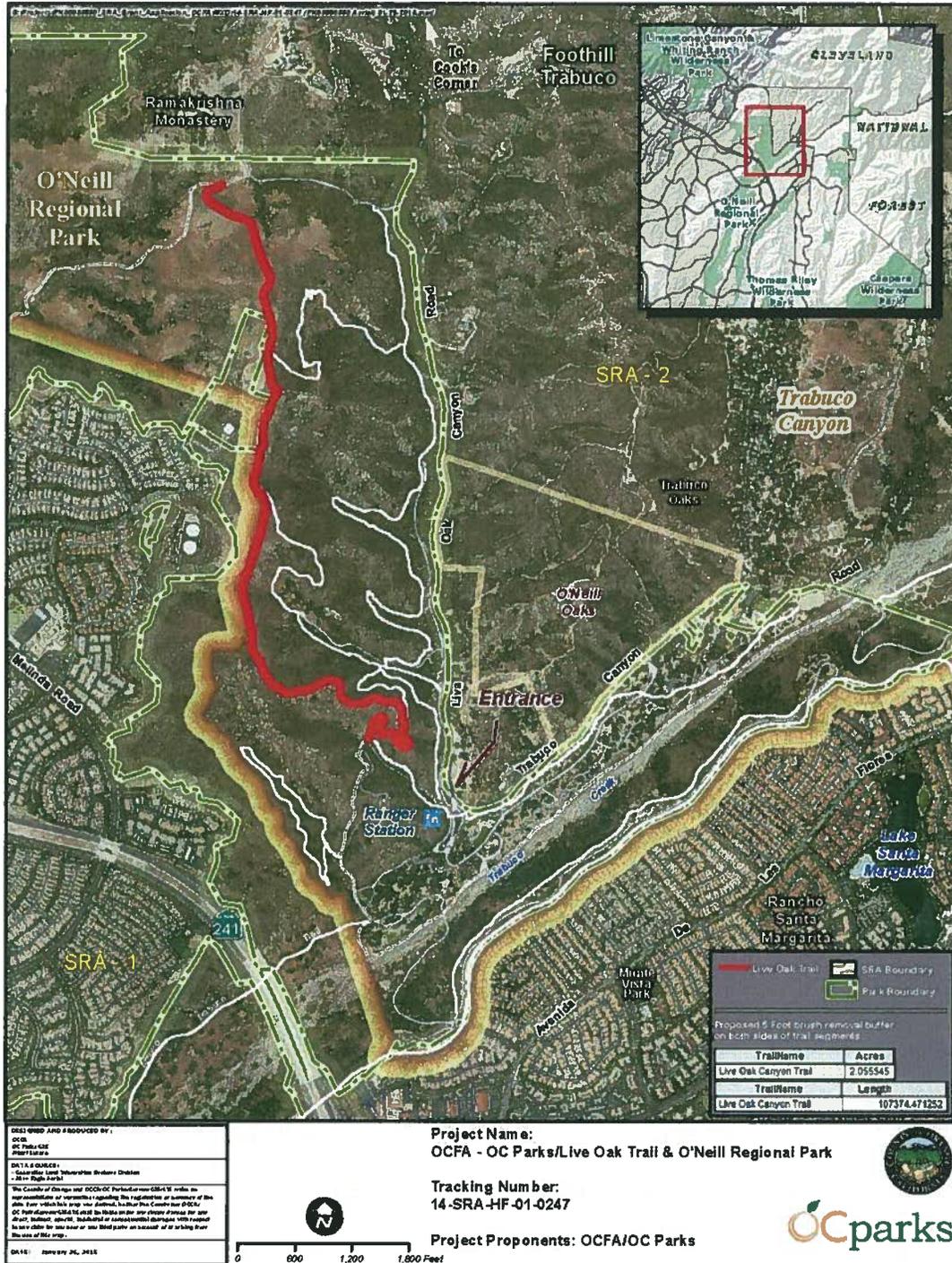
OC Parks - West Ridge & Bell Ridge Trails

Hazard: Hazardous fuels and road accessibility.

Suggested Mitigation: Reduce hazardous fuels, widen the trail to a standardized width to improve ingress/egress and drivability for firefighting resources during suppression efforts, and improve safety for firefighters. Establish it as a line of defense.

- The project area that is not fuels treatment related, includes The West Ridge Trail, which is 2.46 miles long, and lies on the western boundary of Casper's Wilderness Park, which joins the Bell Ridge Trail, which is 3.13 miles long, at the northern boundary that it shares with Audubon Starr Ranch, for a total length of 5.59 miles.
- Fuels Treatment Acres = 29 and Total Project Acres = 29.

OC Parks - Live Oak Trail & O'Neill Regional Park



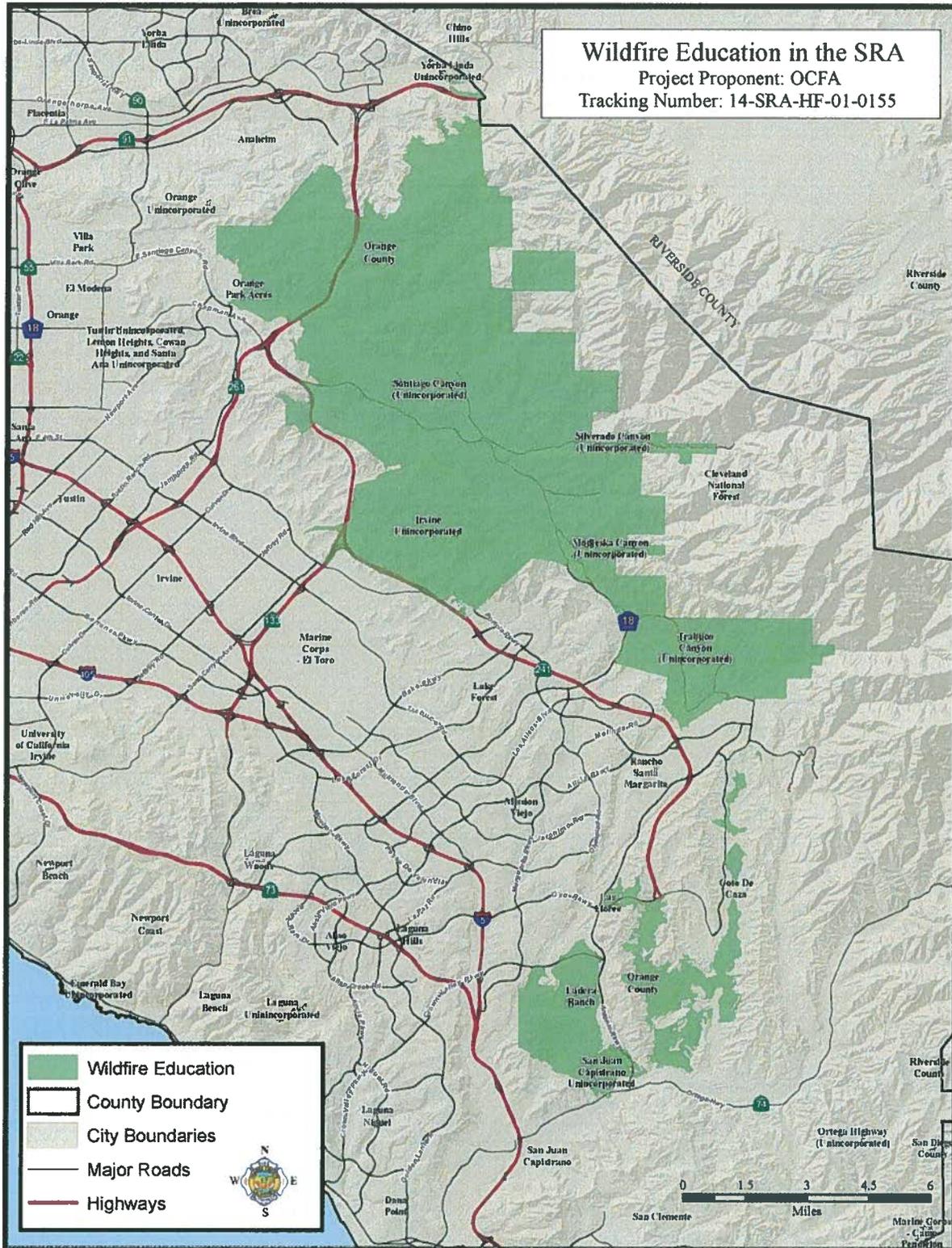
OC Parks - Live Oak Trail & O'Neill Regional Park

Hazard: Hazardous fuels and road accessibility.

Suggested Mitigation: Reduce hazardous fuels, widen the trail to a standardized width to improve ingress/egress and drivability for firefighting resources during suppression efforts and improve safety for firefighters, plus establish it as a line of defense.

- Situated near Rancho Santa Margarita, the 1.77 mile-long Live Oak Trail traverses the ridge on the western boundary of O'Neill Regional Park, between two communities and Live Oak Canyon Road, and helps to protect the area from wildfire.
- Fuels Treatment Acres = 11 and Total Project Acres = 13.

Orange County Fire Authority – Wildfire Education

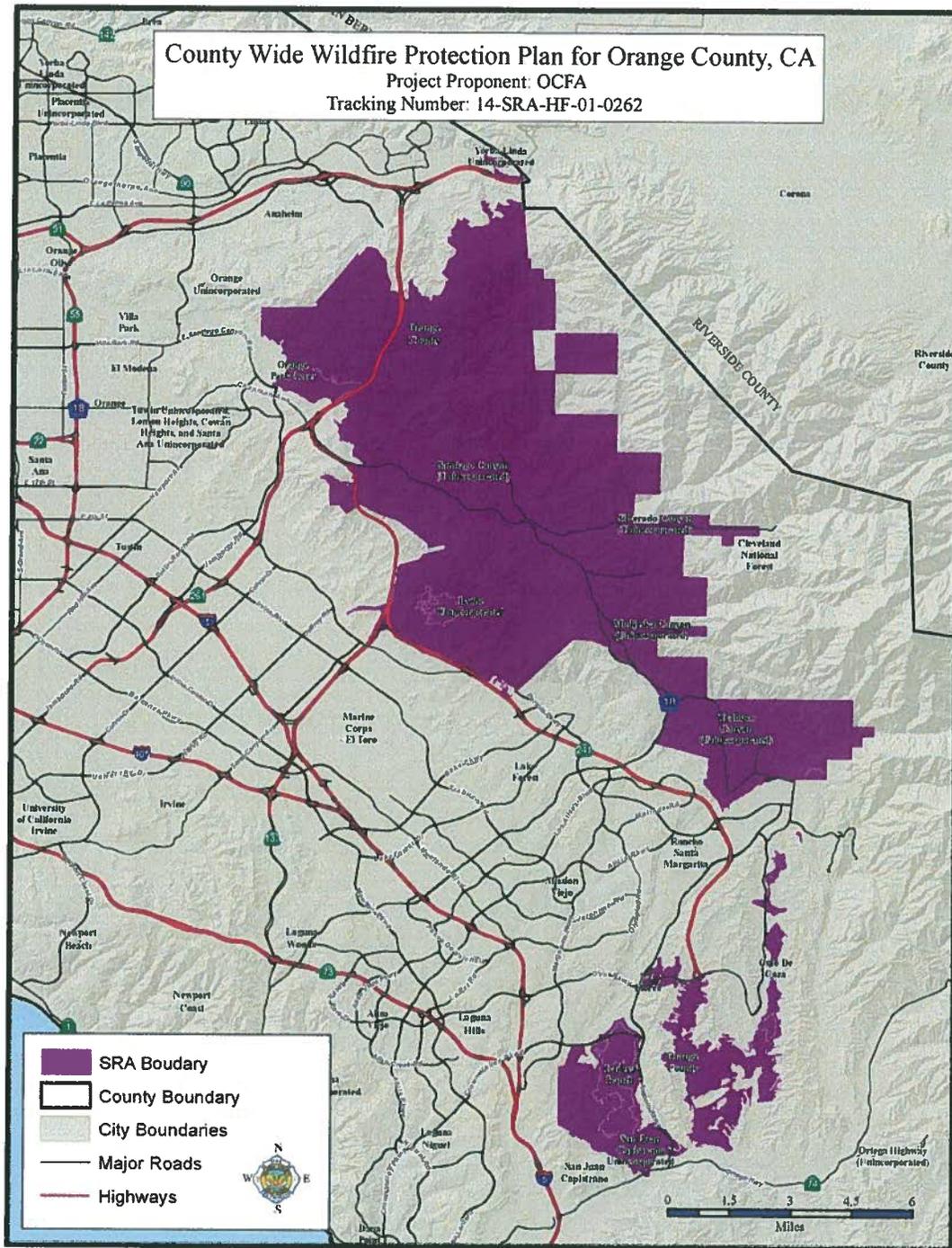


Wildfire Education

Hazard: Resident apathy and negligence toward wildfire risk and prevention.

Mitigation: Several outreach methods will target multiple SRA communities to help heighten awareness, and prompt action regarding wildfire hazards. Topics include fire prevention, vegetation management, wildfire safety and home hardening.

Orange County Fire Authority – CWPP

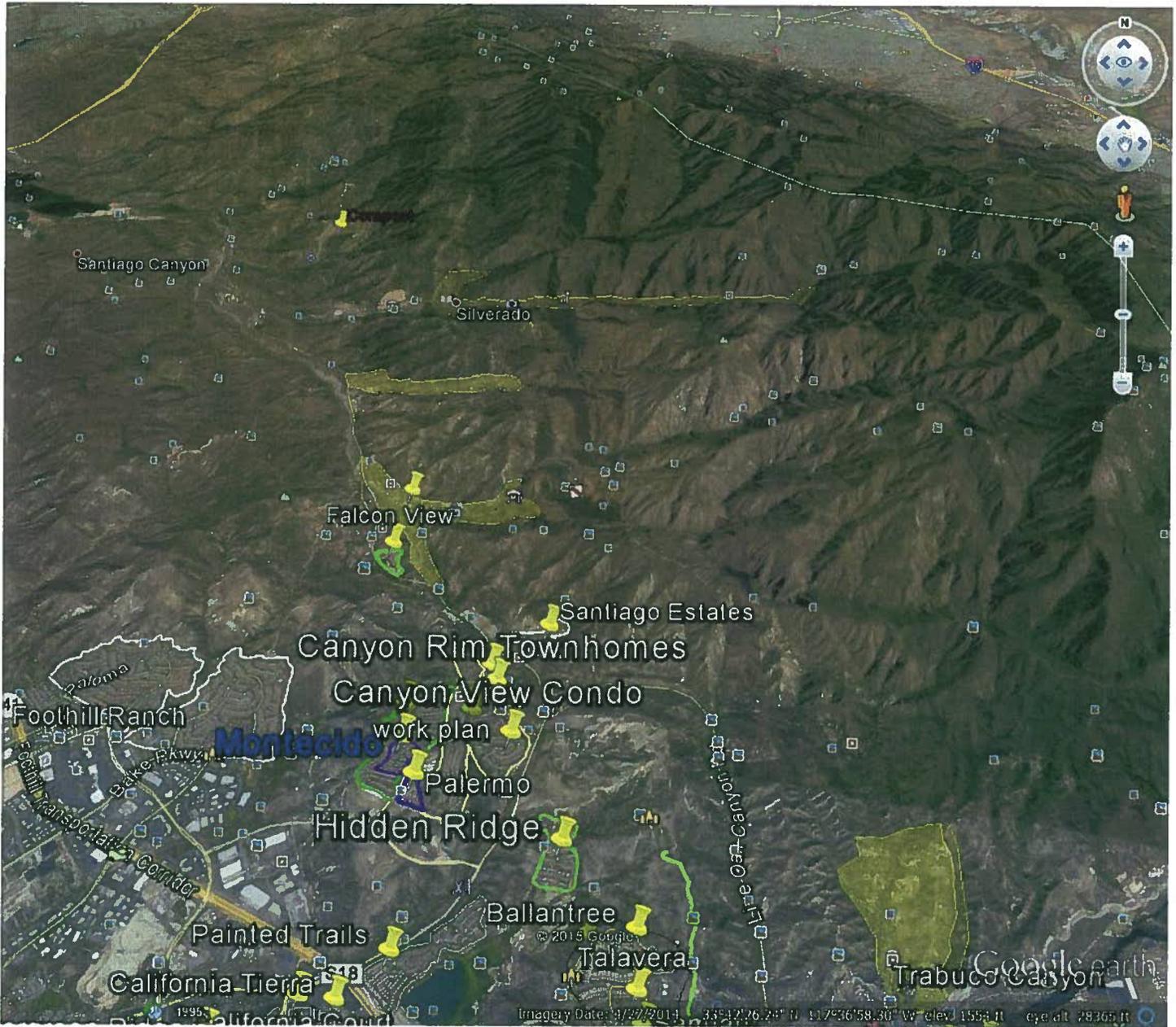


County-Wide Protection Plan (CWPP)

Hazard: Wildfire prone SRA/Open Space lands threaten densely populated WUI communities, ecosystems and wildlife habitats, critical infrastructure and commerce.

Suggested Mitigation: Collaboratively develop a more comprehensive fire plan for Orange County, with a particular focus on SRA and open space lands.

Orange County Fire Authority – Emergency Road Clearance

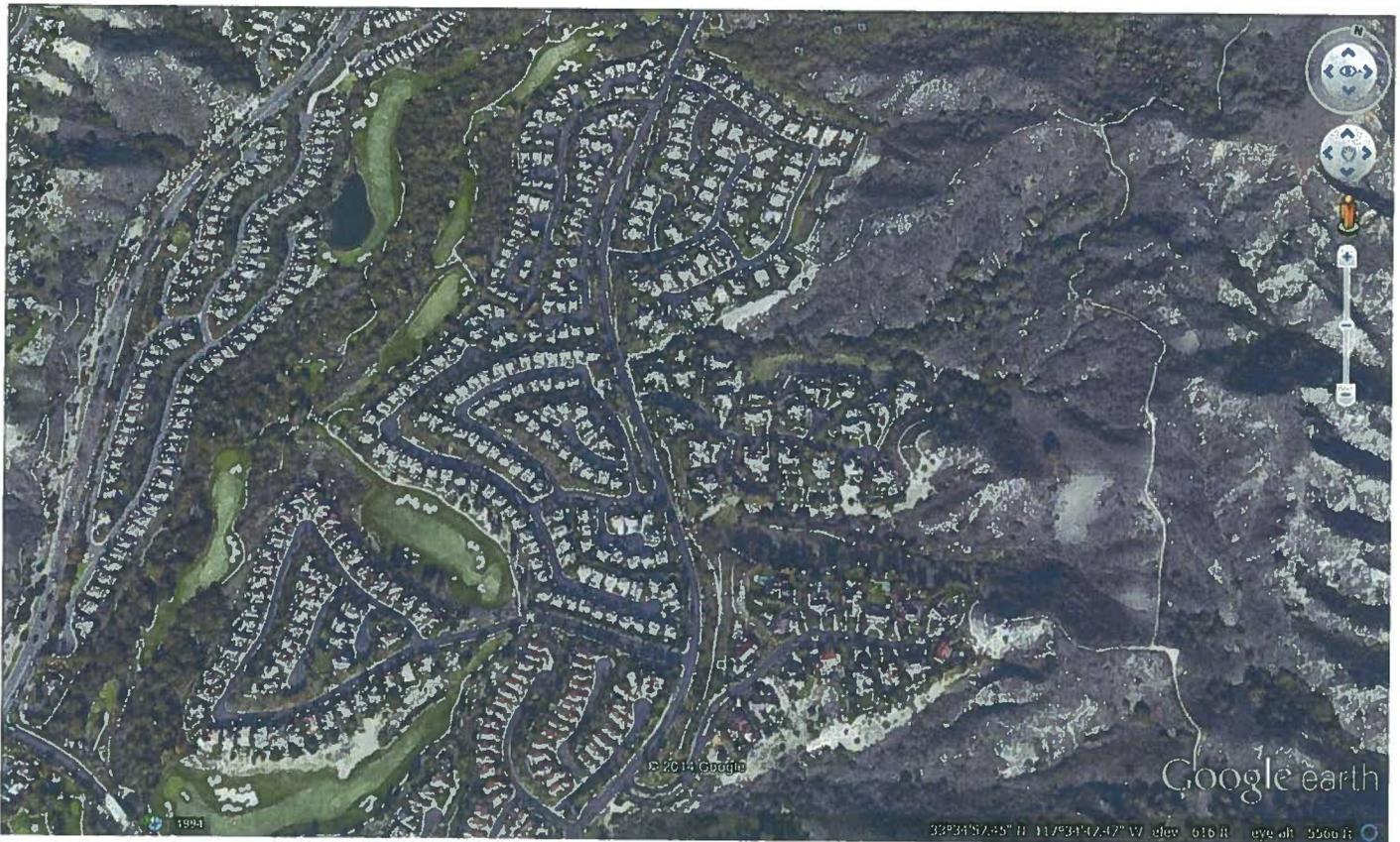


Emergency Road Clearance

Hazard: Most of the canyon private roads have non-conforming street widths, which create emergency access issues.

Mitigation: The roadside clearance project is located within the SRA canyons of Orange County. OCFA is partnering with East Orange County Fire Safe Council to conduct roadside clearance on private roads within Silverado, Modjeska and Trabuco Canyons. Anticipated projects include, but are not limited to, raising canopies to 14 feet and brushing back vegetation 5 ft. from the end of the road surface on both sides of the private roads, to use for emergency access and/or public evacuation.

This project will also reduce the fuel load and increase defensible space within the populated SRA areas of the canyons.



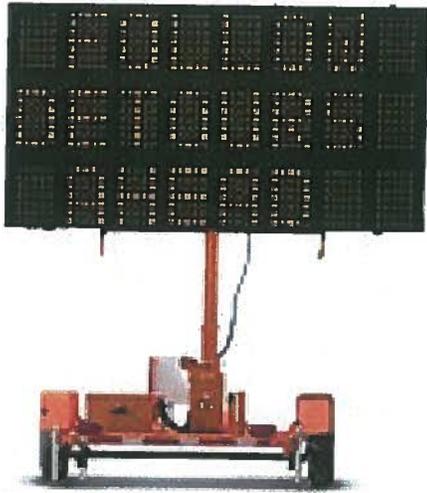
Coto Fuels Reduction

Hazard: Drought stressed hazardous vegetation in non-routine, hard to access vegetation management areas. It impacts stream bed drainage within 100 feet of homes, blocks access to crucial trails needed for emergency use, plus threatens ignitable interior slopes in between habitable structures.

Suggested Mitigation: Reduce hazardous fuels and clear and/or widen obstructed emergency access trails and drainage areas. Extend the width of Coto's defensible space areas.

- Fuels Treatment Acres = 3 and Total Project Acres = 20

Orange County Fire Authority – Roadside LED Message Board

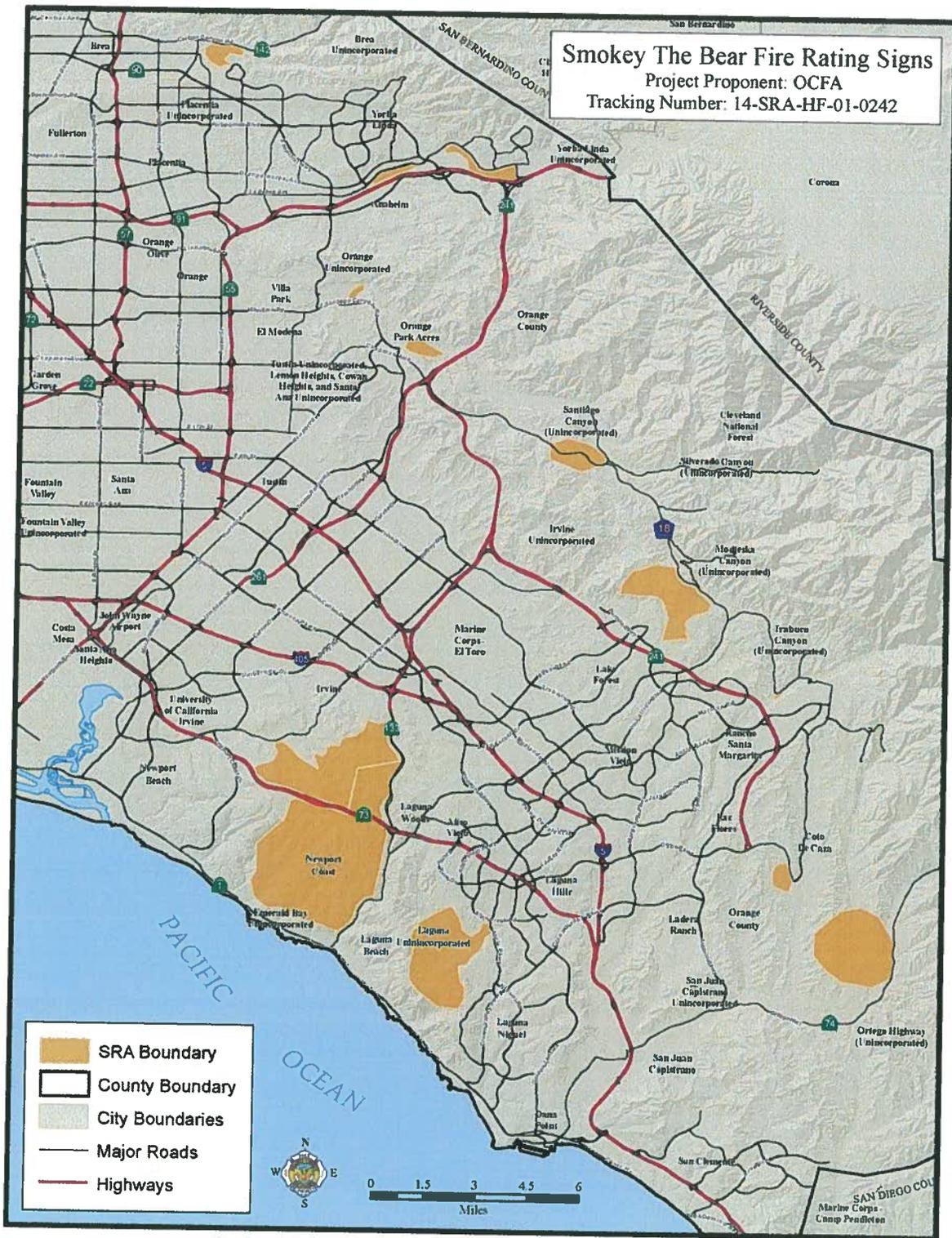


Roadside LED Message Board

Hazard: Wildfire prevention information is needed in risk prone areas where some forms of emergency communications gaps exist.

Suggested Mitigation: Solar/battery powered LED portable roadside message sign to communicate both wildfire prevention information and emergency messaging. The message can be changed at a moment's notice, as conditions change.

Irvine Ranch Conservancy - Smokey The Bear Signs

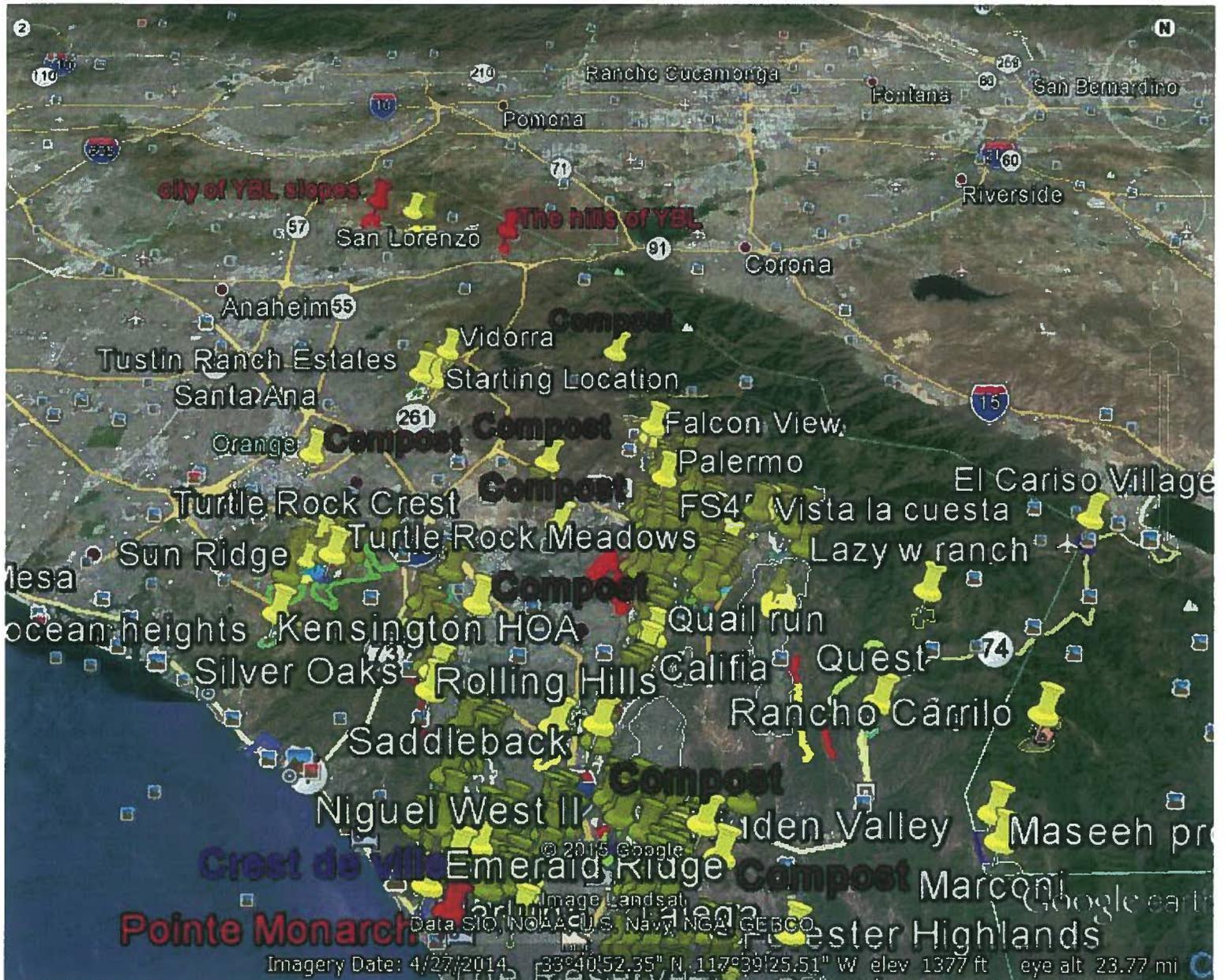


Smokey The Bear Signs

Hazard: Public apathy, negligent behavior and unawareness toward wildfire risks

Mitigation: Fabrication and installation of Smokey The Bear "Fire Rating" signs at OC Parks and local open space areas. 8 of the 13 locations are in the SRA, while the other 5 locations are near the SRA, which would threaten SRA lands and structures should fire occur.

Irvine Ranch Conservancy - Orange County Fire Watch / Red Flag Patrol Coordination

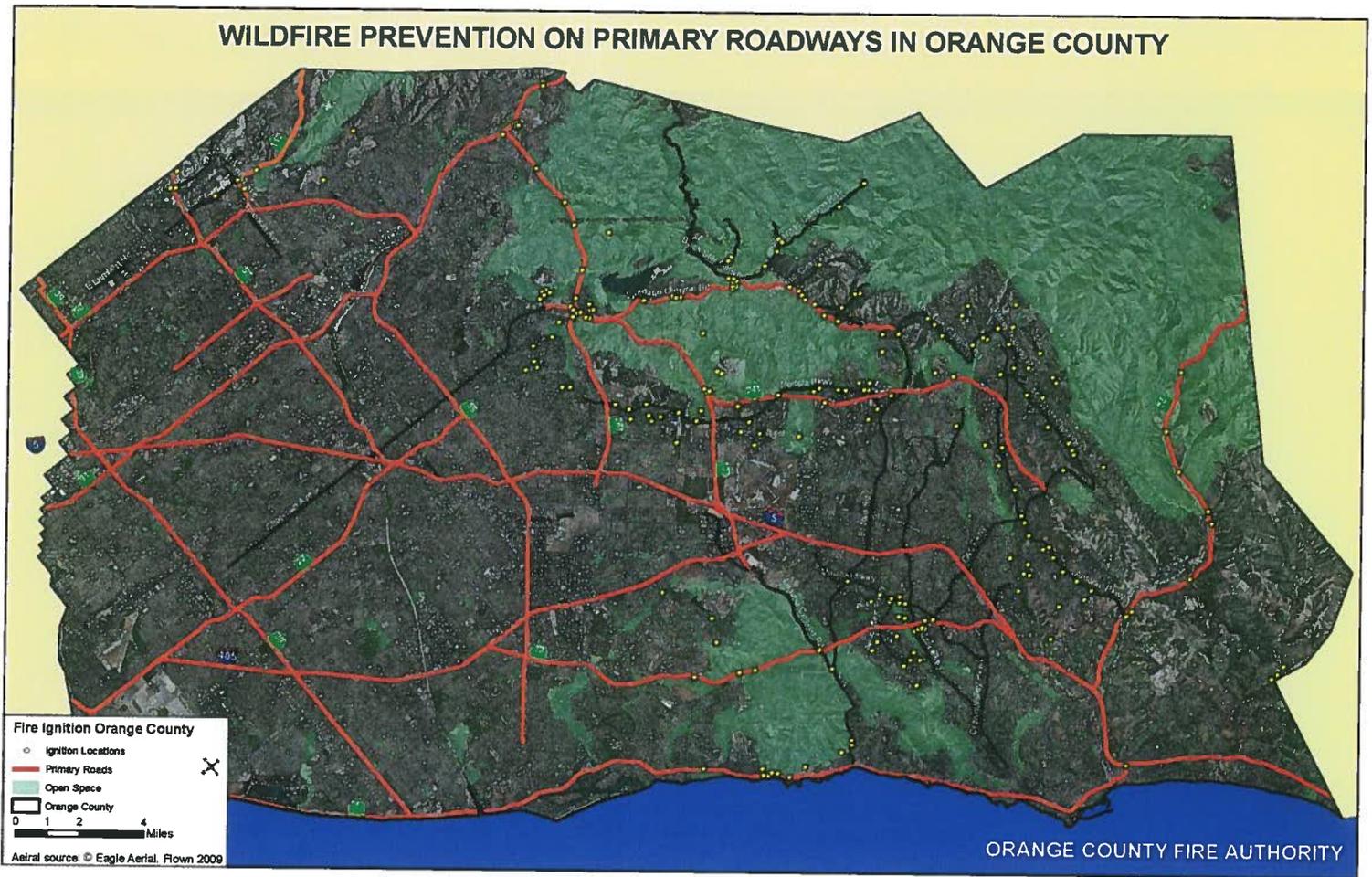


Orange County Fire Watch - Red Flag Patrol Coordination

Hazard: Currently, there are 10 independent groups that deploy Fire Watch volunteers as part of the Red Flag Program, but different instructors with different presentations and training, have led to conflicting messages.

Mitigation: Standardize and outsource the Fire Watch training and coordination for Orange County Fire Watch volunteers.

Irvine Ranch Conservancy - Wildfire Prevention on Primary Roadways in Orange County



IRC-Wildfire Prevention on Primary Roadways in Orange County

Hazard: Orange County's primary highways through the SRA/open space lands are where 80%+ of wildland fire ignitions start, including the 91 Freeway, the 241, 73, and 261 Toll Roads, as well as Santiago Canyon Road and Ortega Highway. Fires start in a number of identified ways off these roads, including vehicle fires, catalytic converter combustion and sparks from dragging automobile parts. These roads are also often the primary means of access for arsonists.

Suggested Mitigation: Analyze in detail the roadside ignition problem in Orange County, then create and begin the implementation of initiatives to significantly curtail wildfires off roadways. Project components include, but are not limited to:

- (1) Conducting the field and remote sensing assessments
- (2) Risk mapping
- (3) Developing site-based intervention plans
- (4) Initiating project development and implementation
- (5) Developing proposals for capital funding

Rancho Mission Viejo - Bell Canyon & Bull Pasture



Rancho Mission Viejo - Bell Canyon & Bull Pasture

Hazard: Hazardous fuels and road accessibility.

Suggested Mitigation: Reduce hazardous fuels and widen the trail to a standardized width to improve ingress/egress and drivability for firefighting resources during suppression efforts, and to improve safety for firefighters

- The non-fuels treatment area is 4,400 linear feet of road, at the northeast corner of Bell View Canyon and Bull Pasture, in the SRA/ open space lands of Rancho Mission Viejo. This area was chosen because of its proximity to populated areas and its ability to serve as a solid line of defense to protect the SRA and nearby communities, once the improvements are made.
- Fuels Treatment Acres = 4 and Total Project Acres = 5.

Rancho Mission Viejo - Chiquita Ridge Fuel Break



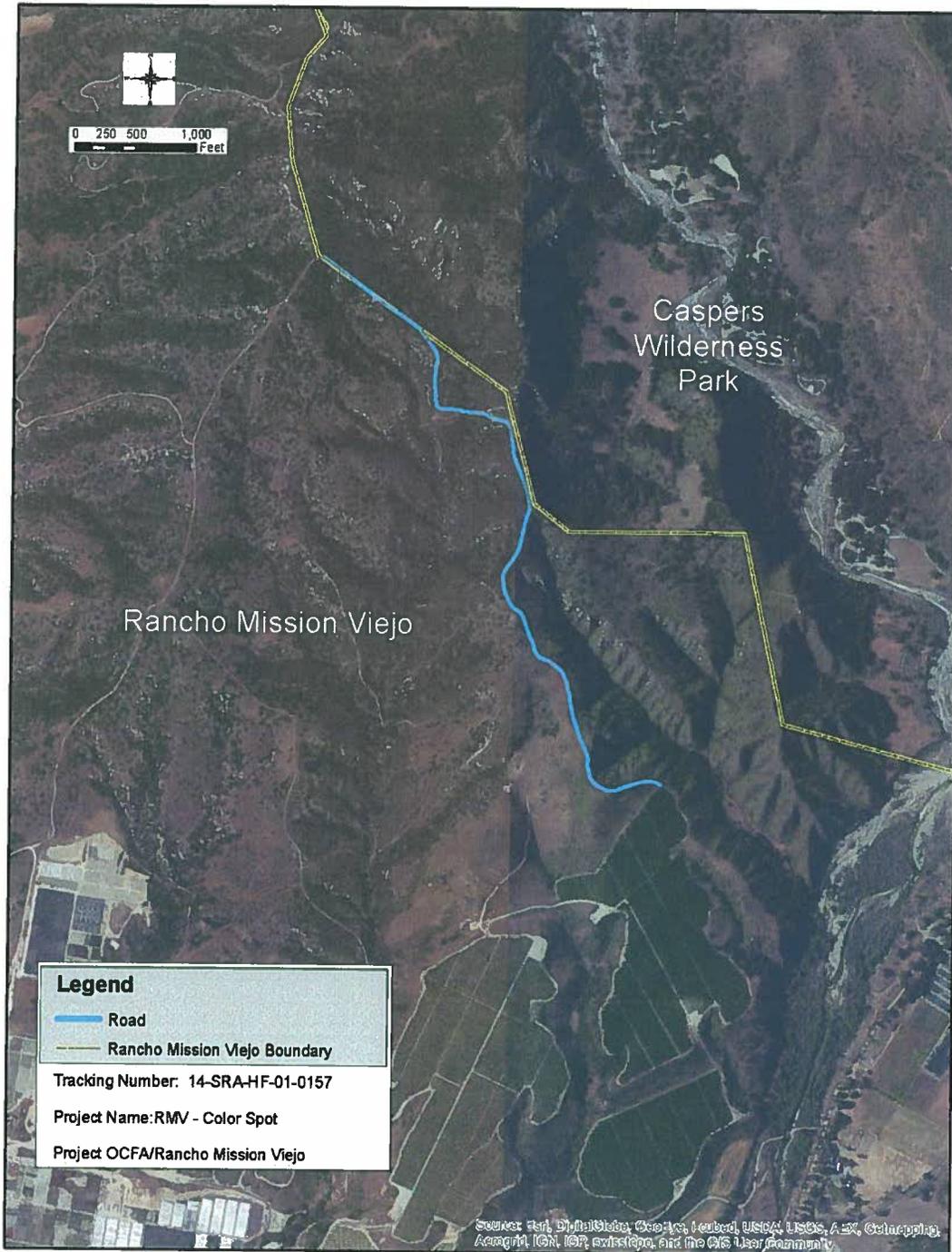
Rancho Mission Viejo - Chiquita Ridge Fuel Break

Hazard: Threatened populated area that could benefit from a fuel break.

Suggested Mitigation This project will create a fuel break between Rancho Mission Viejo and O'Neill Regional Park, and the community of Las Flores, It will be located on Chiquita Ridge, stretching from Ross Road to Oso Parkway on the SRA/open space lands of Rancho Mission Viejo

- Fuels Treatment Acres = 17 and Total Project Acres = 22.

Rancho Mission Viejo - Color Spot Road



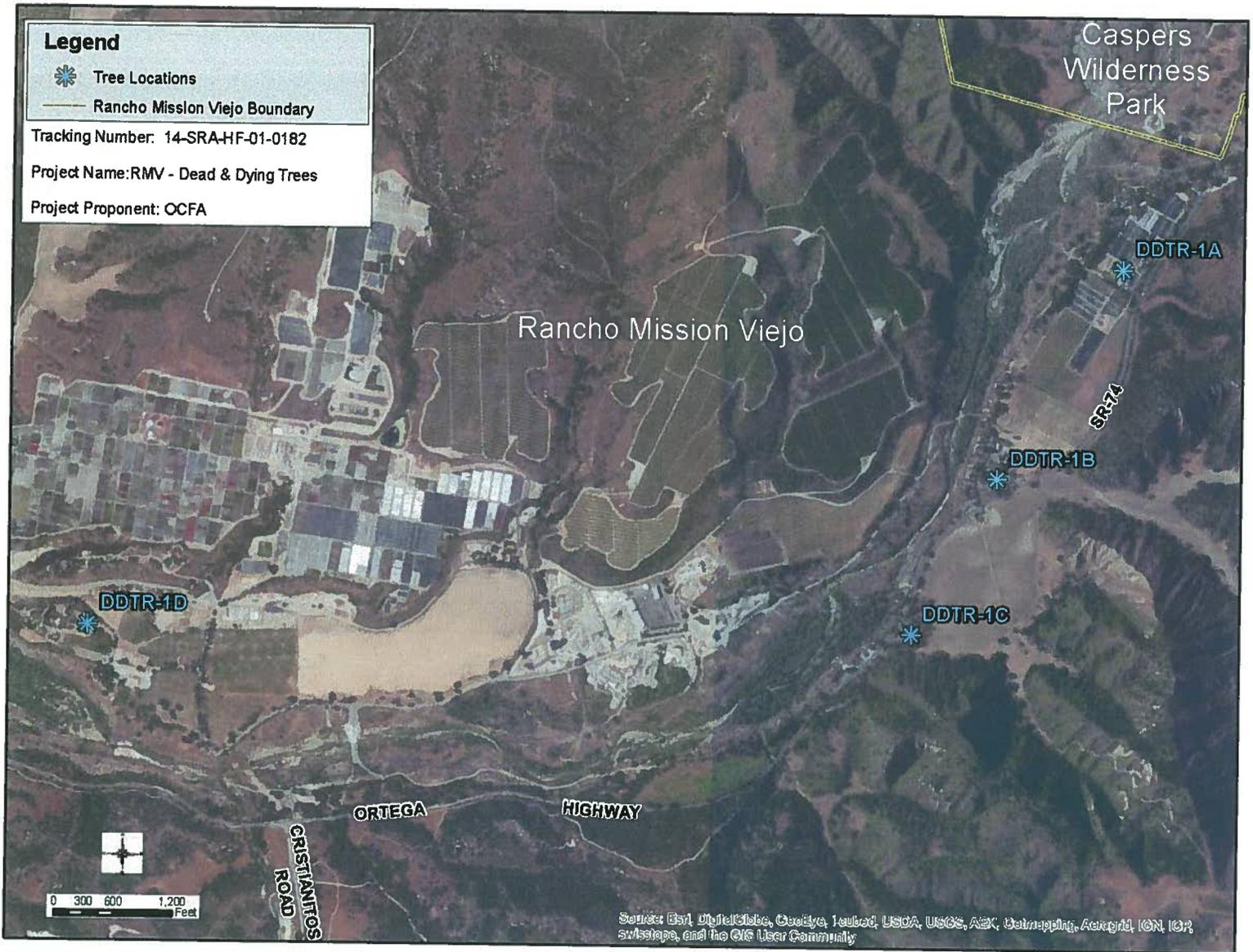
Rancho Mission Viejo - Color Spot Road

Hazard: Hazardous vegetation and road accessibility.

Suggested Mitigation: Reduce hazardous fuels and widen the trail to a standardized width to improve ingress/egress and drivability for firefighting resources during suppression efforts and to improve safety for firefighters.

- The non-fuels treatment area is 6,300 linear feet of road at the northeast corner of Color Spot, at Nick's Pasture and the Caspers Park boundary in the SRA/open space lands of Rancho Mission Viejo. This area was chosen because of its proximity to populated areas and its ability to serve as a solid line of defense to protect the SRA and nearby communities, once the improvements are made.
- Fuels Treatment Acres = 6 and Total Project Acres = 7.

Rancho Mission Viejo - Dead & Dying Trees



Rancho Mission Viejo - Dead & Dying Trees

Hazard: Hazardous vegetation.

Suggested Mitigation: This project involves the removal of dead and dying trees, plus mowing and stacking brush in four locations, including Tree of Life, Horse Ranch, South 40 and Cow Camp on the open space lands of Rancho Mission Viejo in order to reduce hazardous conditions in/near the SRA, and to protect the adjacent communities from the threat and associated losses from wildfire. Tree species include, pine trees, eucalyptus, oak and others.

- Fuels Treatment Acres = 15 and Total Project Acres = 30.

Rancho Mission Viejo - Narrow Canyon-Ross Road



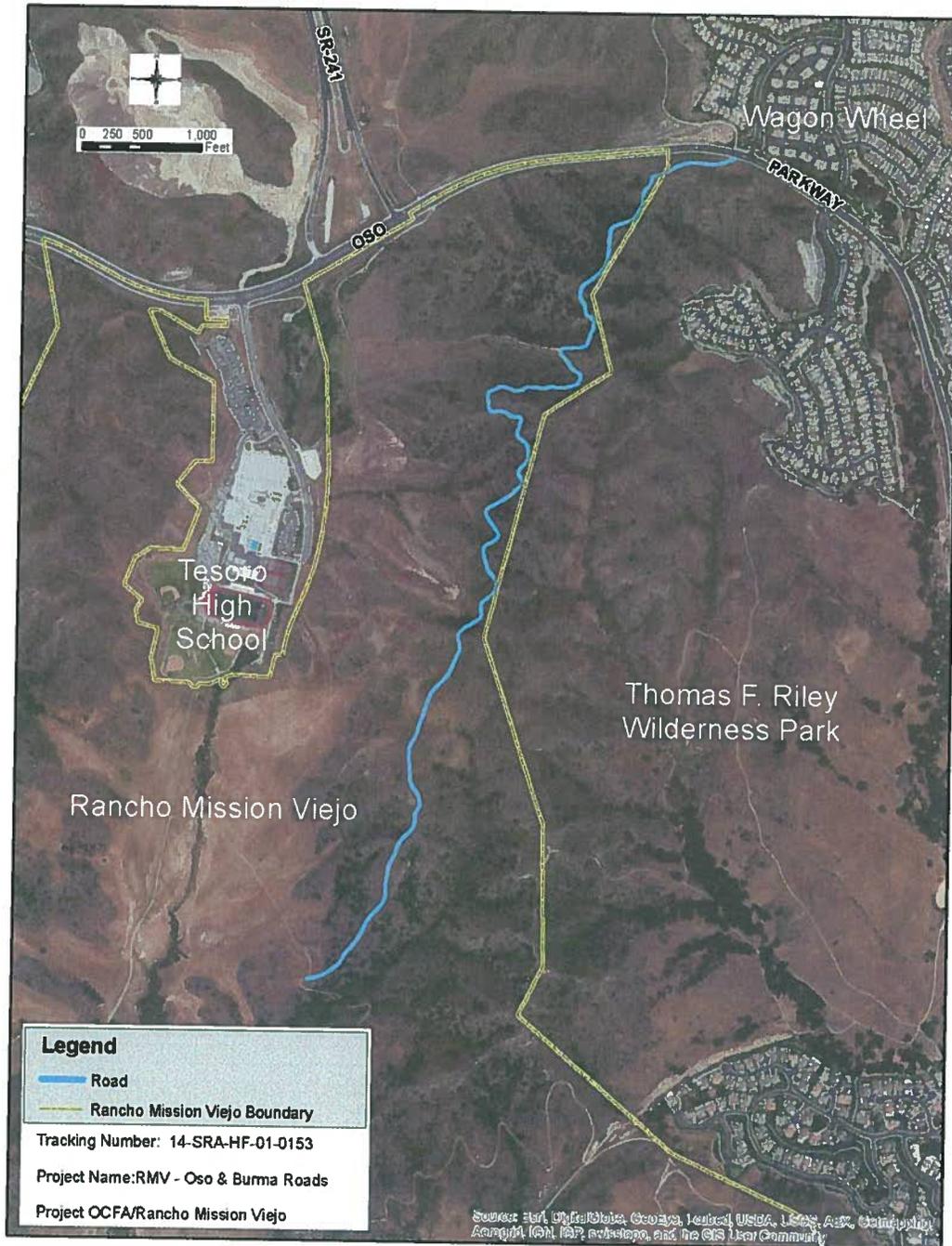
Rancho Mission Viejo - Narrow Canyon-Ross Road

Hazard: Hazardous vegetation and access

Suggested Mitigation: Reduce hazardous fuels and widen the trail to a standardized width to improve ingress/egress and drivability for firefighting resources during suppression efforts and to improve safety for firefighters.

- The non-fuels treatment area is 16,800 linear feet of road at Chiquita Ridge, from Narrow Canyon to Ross Road in the SRA/open space lands of Rancho Mission Viejo. This area was chosen because of its proximity to populated areas and its ability to serve as a solid line of defense to protect the SRA and nearby communities, once the improvements are made.
- Fuels Treatment Acres = 15 and Total Project Acres = 19.

Rancho Mission Viejo - Oso & Burma Roads



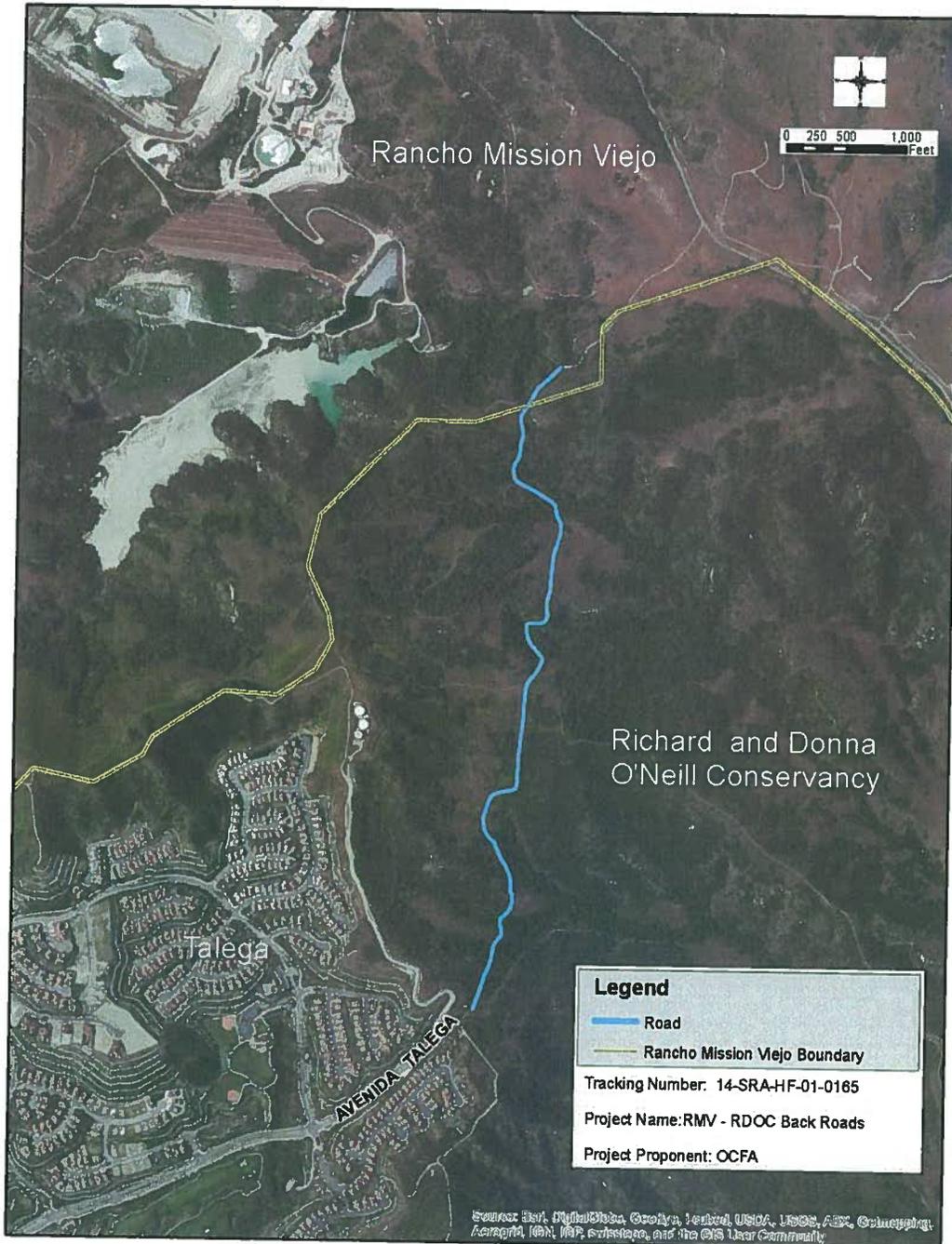
Rancho Mission Viejo - Oso & Burma Roads

Hazard: Hazardous fuels and road accessibility

Suggested Mitigation: Reduce hazardous fuels and widen the trail to a standardized width to improve ingress/egress and drivability for firefighting resources during suppression efforts and improve safety for firefighters.

- The non-fuels treatment area is 7,800 linear feet of road at the northeast corner of Oso and Burma Roads in the SRA/open space lands of Rancho Mission Viejo. This area was chosen because of its proximity to populated areas and its ability to serve as a solid line of defense to protect the SRA and nearby communities, once the improvements are made.
- Fuels Treatment Acres = 7 and Total Project Acres = 9.

Rancho Mission Viejo - Richard and Donna O'Neill Conservancy Back Road



Rancho Mission Viejo – Richard and Donna O'Neill Conservancy Back Road

Hazard: Hazardous fuels and road accessibility

Suggested Mitigation: Project involves reducing hazardous fuels to influence fire behavior and limit fire spread, widening the trail to a standardized width to improve ingress/egress and drivability for firefighting resources during suppression efforts and to improve safety for firefighters, and to establish it as a line of defense.

- The non-fuels treatment area is a 6,300 linear feet of road located at Back Road in RDOC the SRA/open space lands of Rancho Mission Viejo. This area was chosen because of its proximity to populated areas and its ability to serve as a solid line of defense to protect the SRA and nearby communities, once the improvements are made.
- Fuels Treatment Acres = 6 and Total Project Acres = 7

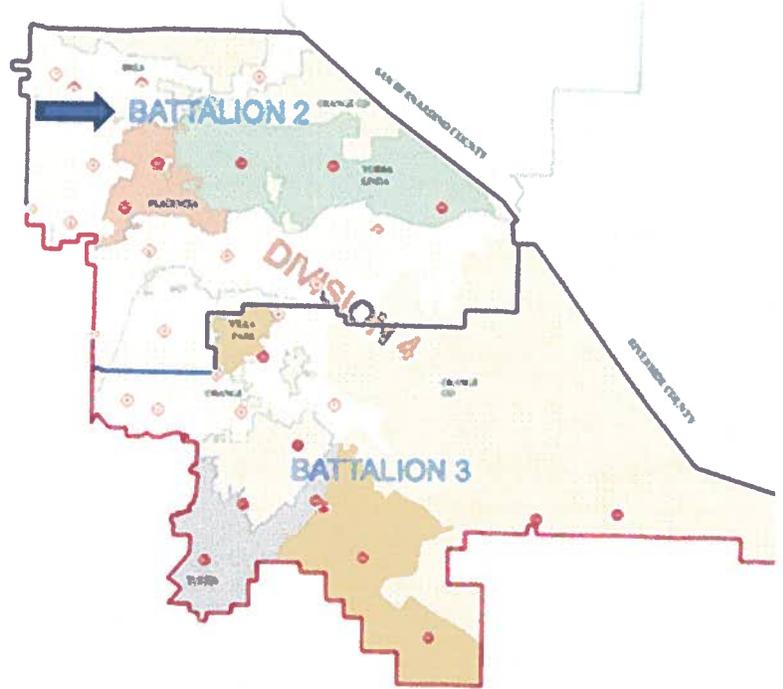
OCFA Division/Battalion Recommendations

Each year, the OCFA Divisions and Battalions that include SRA and open space areas evaluate their territories and make recommendations for pre-fire management projects to help reduce the fire risk. Typically, the projects are vegetation management, or roads and access related. Below are each Battalion's suggested projects:

Battalion 2

Battalion 2 is in the northeast corner of Orange County and borders Los Angeles and San Bernardino Counties, plus a sliver of Riverside County, and includes the cities of Placentia and Yorba Linda. Of particular concern are Chino Hills State Park, plus the following roads/areas:

- Telegraph Road
- CA 57
- CA 71 (not OCFA jurisdiction)
- CA 91
- Carbon Canyon
- Tonner Canyon
- Many access roads and trails for Chino Hills State Park



<p style="text-align: center;">Telegraph Rd & Chino Hills State Park Nature Center</p> <p>Hazard - Natural vegetation throughout canyon; power lines along the east end of the North Canyon</p> <p>Potential -Yorba Linda homes along the South Ridge and the Daimer Water Plant & Pump Station are at risk</p> <p>Suggested Mitigation - Improve / reconstruct North Ridge Trail to re-establish access to Chino Hills State Park Visitor Center area. Also, minor soft limb trimming is needed for overhead clearance; improve Diemer Trail for access from Telegraph Canyon</p>	<p style="text-align: center;">Lambert - 57-Carbon Canyon-71/Tonner North & South</p> <p>Hazard - Natural vegetation; power lines</p> <p>Potential - Sleepy Hollow is problematic in a mega-fire scenario due to density, no hardening, and tight access (not OCFA jurisdiction, but probable OCFA involvement)</p> <p>Suggested Mitigation - Sleepy Hollow early evacuation is a must; brush back county roads; construct additional safety zones on existing roads</p>	<p style="text-align: center;">End of Casino Ridge Road</p> <p>Hazard - No access to Gas County Road; vegetation</p> <p>Potential - Loss of fuel break and connection to Chino Hills State Park</p> <p>Suggested Mitigation - Improve/create access to Gas County Road; fuel modifications and brush clearance needed</p>
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Battalion 2 (Continued)

<p style="text-align: center;">Brush Canyon (Single Track) Road</p> <p>Hazard - Access problem; vegetation</p> <p>Potential - Loss of existing fire break</p> <p>Suggested Mitigation - Improve/maintain existing track</p>	<p style="text-align: center;">Slaughter Canyon Road (from Bane Canyon)</p> <p>Hazard - Chino Hills State Park is overgrown/impassable</p> <p>Potential - Loss of existing road/fire break</p> <p>Suggested Mitigation - Clear brush and maintain road</p>	<p style="text-align: center;">Scully Ridge (lower portion from Lower Aliso Road)</p> <p>Hazard - Erosion; vegetation</p> <p>Potential - Loss of fire break and access to Chino Hills State Park if erosion continues</p> <p>Suggested Mitigation - Road improvement/maintenance; vegetation clearance</p>
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<p style="text-align: center;">Wire Springs Spur Trail</p> <p>Hazard - Access; vegetation</p> <p>Potential - Loss of control line if vegetation growth continues</p> <p>Suggested Mitigation - Maintenance; vegetation clearance</p>	<p style="text-align: center;">Telephone Line Road</p> <p>Hazard - Access; vegetation</p> <p>Potential - Loss of fire break and access to Soquel Canyon</p> <p>Suggested Mitigation - Improve road; clear vegetation</p>	<p style="text-align: center;">Telephone Line "Spur Road"</p> <p>Hazard - Access; vegetation</p> <p>Potential - Loss of fire break and access to Carbon Ridge</p> <p>Suggested Mitigation - Improve road; clear vegetation</p>
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<p style="text-align: center;">Hollydale Mobile Home Estates</p> <p>Hazard - Vegetation</p> <p>Potential- High volume of structural loss</p> <p>Suggested Mitigation - Needs brush clearance and fuel modification around community</p>

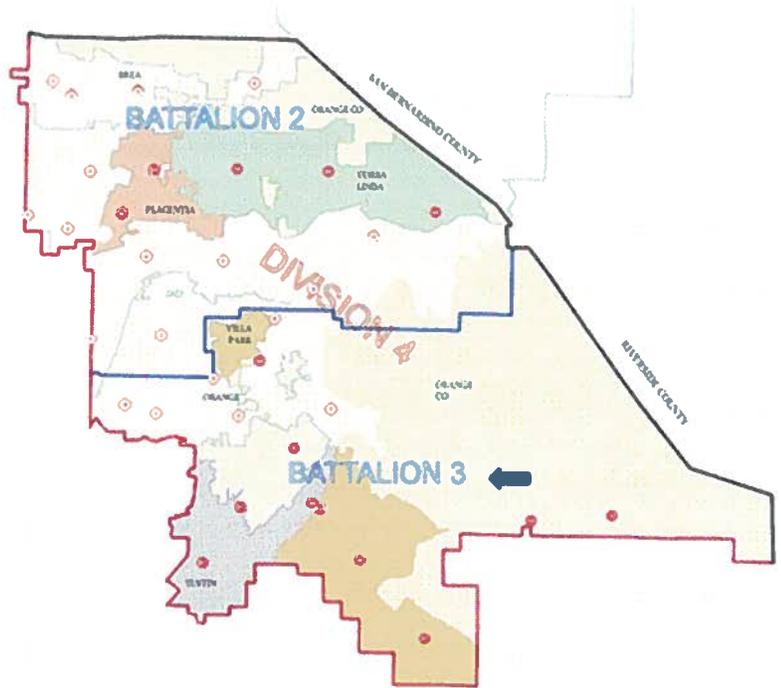


Battalion 3 - Southern

Battalion 3: Southern - Borders Riverside County and encompasses the communities of Villa Park, Tustin, Cowan/Lemon Heights, portions of Irvine, plus:

- Silverado Canyon
- Williams Canyon
- Baker Canyon
- Limestone Canyon
- Loma Ridge

Major roads that pass through or near the SRA include the 241 and 261 Toll Roads and Santiago Canyon Road



Silverado Canyon	Williams Canyon	Major "PAVED" Roads and Highways That Intersect the SRA
<p>Hazard - Limited defensible space within box canyon, which has a heavy home inter-mix</p> <p>Potential - Major structure losses and potential loss of life due to poor access in/out of canyon; limited defensible space; no firefighter safety zones</p> <p>Suggested Mitigation - Community prevention and education efforts (RSG, inspections, media campaigns, etc.) to increase awareness, harden the community, and improve defensible space</p>	<p>Hazard - Limited defensible space within box canyon, which has a heavy home inter-mix</p> <p>Potential - Major structure losses and potential loss of life due to poor access in/out of canyon; limited defensible space; no firefighter safety zones</p> <p>Suggested Mitigation - Community prevention and education efforts (RSG, inspections, media campaigns, etc.) to increase awareness, harden the community, and improve defensible space</p>	<p>A. Santiago Canyon Road B. 241 & 261 Toll Roads C. State Highway 133 D. Silverado Canyon Road E. Black Star Canyon Road</p> <p>Hazard - Excessive road side fuels are a receptive bed for starts (vehicle fires, arson, etc.)</p> <p>Potential - Fires could move into large open space and push into nearby communities</p> <p>Suggested Mitigation - Develop graduated road side fuel modification zones to eliminate ladder and ground fuels</p>

Battalion 3 - Southern

Major "UNPAVED" Fire and Access Roads In/Adjacent to SRA	Baker Canyon	Limestone Canyon Wilderness Area
<p>A. Main Divide B. Black Star C. Harding Truck Trail D. Maple Springs E. Limestone Canyon and Ridgeline F. Chinon Wash</p> <p>Hazard - Roads in poor condition, which limits access (overgrown, washed out, etc.)</p> <p>Potential - Small fires can turn into large ones due to poor access and no compartment control zones</p> <p>Suggested Mitigation - Maintain fire and access roads with grading and shaded fuel breaks or fuel modifications</p>	<p>Hazard - Industrial mulching operation, retreat center and RV park in box canyon with limited defensible space, as well as poor access in/out of the canyon</p> <p>Potential - Fire starts from mulching operation could spread to RV park and nearby communities</p> <p>Suggested Mitigation - Community prevention and education efforts (RSG, inspections, media campaigns, etc.); limit mulching operation and protect with fire prevention enforcement; use fuel modification and fuel breaks around the property to prevent fire escape</p>	<p>Hazard - Large open space with no compartment control zones</p> <p>Potential - Small fires could turn into large ones with no compartment control zones; potential for high volume structural loss, both business and residential, west, in Irvine, or east, in Silverado, Williams or Modjeska Canyons</p> <p>Suggested Mitigation - Shaded fuel breaks to help create compartment control zones for large non-wind driven fires</p>

Loma Ridge

Hazard - Large open space with no compartment control zones

Potential - Small fires can turn into large ones due to the absence of compartmental control zones

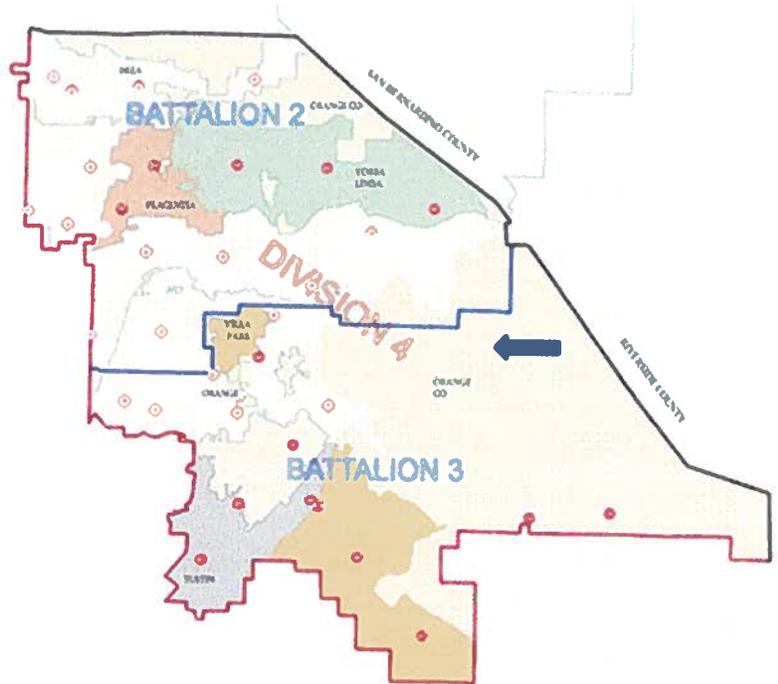
Suggested Mitigation - Shaded fuel break to help create compartment control zones for large non-wind driven fires



Battalion 3 - Northern

Battalion 3: Northern - Is responsible for the following wildfire prone areas, including:

- Gypsum Canyon
- Coal Canyon
- Fremont Canyon
- Weir Canyon
- Cowan/Lemon Heights
- Irvine Park
- Irvine Lake
- Blackstar Canyon
- Santiago Landfill



<p style="text-align: center;">East/Corona South (Sierra Peak, Gypsum Canyon, Coal Canyon, Fremont Canyon)</p> <p>Hazard - Mixed fuel types in heavy concentration; extreme terrain; high voltage transmission lines</p> <p>Potential - Extreme fire behavior; rapid rates of spread; unchecked fire entering the Wildland-Urban-Interface areas in the cities of Orange, Anaheim and unincorporated North Tustin</p> <p>Suggested Mitigation - Update all plans, both Pre-Fire and Suppression, to reflect current fuel conditions; continued communication with Federal partners regarding conditions and plans for Forest Service lands</p>	<p style="text-align: center;">South/Orange/Tustin (Cowan Heights, Lemon Heights, Panorama Hill, Weir Canyon, Irvine Park)</p> <p>Hazard - Limited defensible spaces; dense older home construction in the Wildland-Urban-Interface and SRA</p> <p>Potential - Major structure losses; potential loss of life due to poor access/egress in canyon and hillside areas; limited or no defensible space; limited firefighter safety zones</p> <p>Suggested Mitigation - Community prevention and education efforts (RSG, inspections, media campaigns, etc.) to increase awareness, harden the community, and improve defensible space; update outside agency agreements, training and fire plans</p>	<p style="text-align: center;">East (Blackstar Canyon, Fremont Canyon, Irvine Lake, Santiago Landfill)</p> <p>Hazard - Excessive roadside fuels are a receptive bed for starts (vehicle fires, arson, etc.); fuels consumed in 2006 Sierra Fire are re-established; increased access to the public may result in increased fire activity</p> <p>Potential - Fires could move into the large open space and threaten nearby communities with the potential for a large volume of structure loss</p> <p>Suggested Mitigation - Develop graduated roadside fuel modifications; maintenance of access roads; update fire plans and outside agency agreements</p>
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Battalion 3 – Northern (Continued)

Orange/Tustin - (Cities of Orange - east side, Villa Park, Anaheim and Unincorporated - Orange Park Acres)

Hazard - Overgrown vegetation, both ornamental and natural; older residential construction; ingress/egress issues for fire apparatus, as well as residents; dense Wildland-Urban-Interface mix

Potential - Small fires can turn into large ones with poor access and no compartment control zones

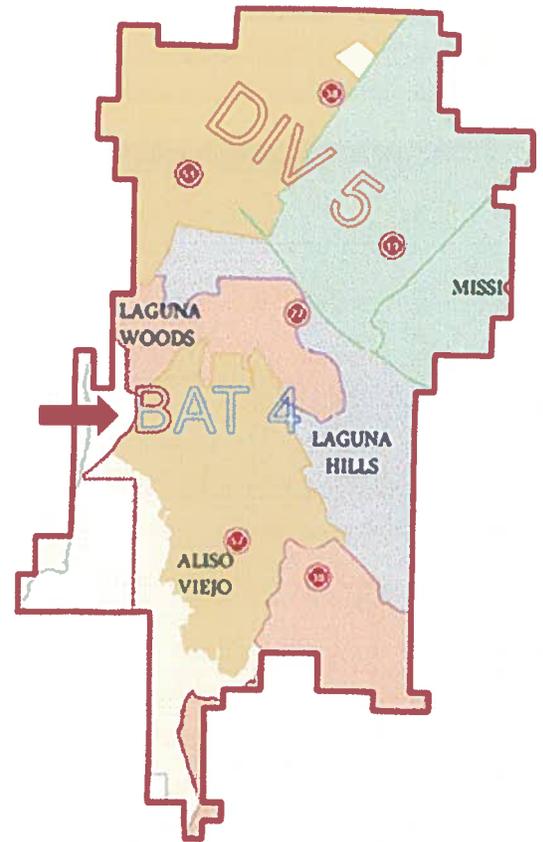
Suggested Mitigation - Maintain fire and access roads with grading and fuel modifications; update fire plans and outside agency agreements



Battalion 4

Battalion 4 – This battalion is in southern Orange County, and includes the communities of Laguna Hills, Laguna Woods and Aliso Viejo. In addition to the 73 Toll Roads and 405 and 5 freeways, primary areas of concern include:

- Laguna Coast Wilderness Park
- Aliso Canyon Wilderness Park
- Wood Canyon Wilderness Park



<p style="text-align: center; color: #0070C0;">Laguna Coast Wilderness Park</p> <p>Hazard - No fuel breaks between Laguna Coast Wilderness Park and City of Aliso Viejo</p> <p>Potential - Significant structure loss in Aliso Viejo</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p style="text-align: center; color: #0070C0;">Laguna Coast Wilderness Park</p> <p>Hazard - No fuel breaks between Laguna Coast Wilderness Park and City of Laguna Woods</p> <p>Potential - Significant structure loss in Laguna Woods</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p style="text-align: center; color: #0070C0;">Aliso & Wood Canyons Wilderness Parks</p> <p>Hazard - No fuel breaks between Aliso and Wood Canyons Wilderness Parks and City of Laguna Beach (Top of the World)</p> <p>Potential - Significant structure loss in Top of The World</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>
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<p style="text-align: center; color: #0070C0;">Aliso and Wood Canyons Wilderness Parks</p> <p>Hazard - No fuel breaks between Aliso and Wood Canyons Wilderness Parks and City of Laguna Beach (South Laguna)</p> <p>Potential - Significant structure loss in South Laguna</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p style="text-align: center; color: #0070C0;">Aliso and Wood Canyons Wilderness Parks</p> <p>Hazard - No fuel breaks between Aliso and Wood Canyons Wilderness Parks and City of Laguna Beach (Laguna Canyon)</p> <p>Potential - Significant structure loss in Laguna Canyon</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p style="text-align: center; color: #0070C0;">Aliso and Wood Canyons Wilderness Parks</p> <p>Hazard - No fuel breaks between Aliso and Wood Canyons Wilderness Parks and City of Laguna Niguel</p> <p>Potential - Significant structure loss in Laguna Niguel</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>
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Battalion 4

Aliso & Wood Canyons Wilderness Parks

Hazard - No fuel breaks between the Aliso and Wood Canyons Wilderness Parks and Aliso Viejo

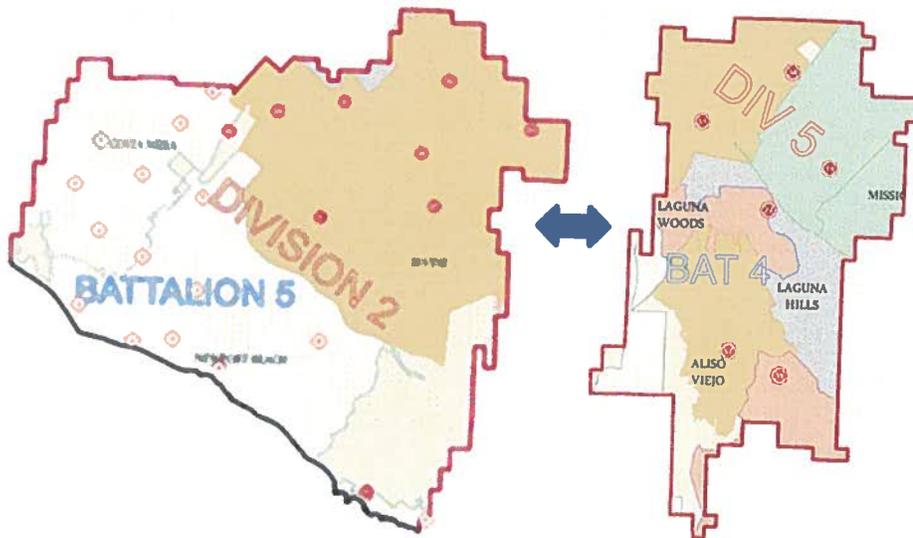
Potential - Significant structure loss in Aliso Viejo

Suggested Mitigation – construct/improve fuel breaks; brush back vegetation



Battalion 4/5 Border

On the border of Battalions 4 and 5 is Laguna Coast Wilderness Park.



<p>Laguna Coast Wilderness Park (Laguna Beach & Canyon)</p> <p>Hazard - No fuel breaks between the Laguna Coast Wilderness Park and City of Laguna Beach and Laguna Canyon</p> <p>Potential - Significant structure loss in Laguna Canyon</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p>Laguna Coast Wilderness Park (North Laguna)</p> <p>Hazard - No fuel breaks between the Laguna Coast Wilderness Park and City of Laguna Beach (North Laguna)</p> <p>Potential - Significant structure loss in North Laguna Canyon</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p>Laguna Coast Wilderness Park (Top of The World)</p> <p>Hazard - No fuel breaks between the Laguna Coast Wilderness Park and City of Laguna Beach (Top of The World)</p> <p>Potential - Significant structure loss in Top of The World</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>
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Battalion 5

Battalion 5 - The 133 Toll Road and Pacific Coast Highway are the major paved roads for this battalion, which encompasses the community of Emerald Bay. Areas of concern include:

- Laguna Coast Wilderness Park
- Crystal Cove State Park



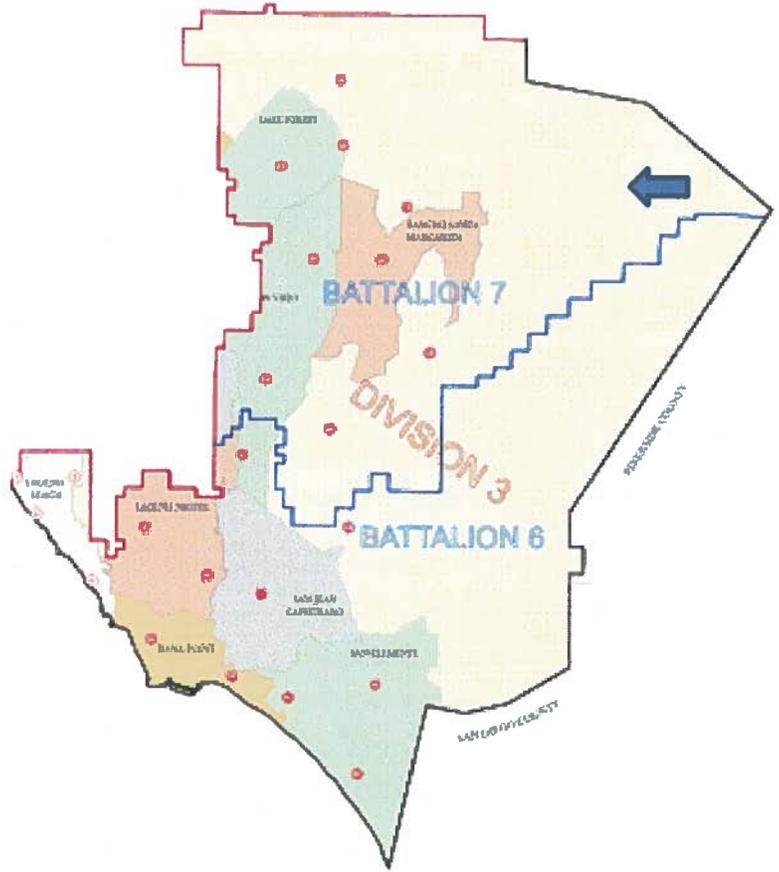
Laguna Coast Wilderness Park (Shady Canyon)	Laguna Coast Wilderness Park (Newport Coast)	Laguna Coast Wilderness Park
<p>Hazard - No fuel breaks between Laguna Coast Wilderness Park and the City of Irvine (Shady Canyon)</p> <p>Potential - Significant structure loss in Shady Canyon</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p>Hazard - No fuel breaks between Laguna Coast Wilderness Park and the City of Newport Beach (Newport Coast)</p> <p>Potential - Significant structure loss in Newport Coast</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p>Hazard - No fuel breaks between Laguna Coast Wilderness Park and the residential area of County-Unincorporated Emerald Bay</p> <p>Potential - Significant structure loss in Emerald Bay</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>

Crystal Cove State Park	Crystal Cove State Park	Crystal Cove State Park
<p>Hazard - No fuel breaks between the Crystal Cove State Park and the City of Newport Beach (Newport Coast)</p> <p>Potential - Significant structure loss in Newport Coast</p> <p>Suggested Mitigation - Construction of fuel breaks; improve fire breaks; brush back vegetation</p>	<p>Hazard - No fuel breaks between the Crystal Cove State Park and the City of Laguna Beach</p> <p>Potential - Significant structure loss in Laguna Beach</p> <p>Suggested Mitigation - Construction of fuel breaks, improve fire breaks and brush back vegetation</p>	<p>Hazard - No fuel breaks between Crystal Cove State Park and the residential area of County-Unincorporated, Emerald Bay</p> <p>Potential - Significant structure loss in Emerald Bay</p> <p>Suggested Mitigation - Construction of fuel breaks, improve fire breaks and brush back vegetation</p>

Battalion 7

Battalion 7 - Serves the cities of Lake Forest, Rancho Santa Margarita, and a portion of Mission Viejo, plus the unincorporated communities of Coto de Caza, Ladera Ranch, Las Flores, Modjeska Canyon and Trabuco Canyon, as well as Williams Canyon and Audubon Starr Ranch.

The major road passing through, and near the SRA is the 241 Toll Road, as well as a stretch of Santiago Canyon Road.



Williams Canyon	Modjeska Canyon	Trabuco Canyon
Hazard - No fuel break between homes and vegetation	Hazard - No fuel break between homes and vegetation	Hazard - No fuel break between homes and vegetation
Potential - Significant structure loss	Potential - Significant structure loss	Potential - Significant structure loss
Suggested Mitigation - Construction of fuel break	Suggested Mitigation - Construction of fuel break	Suggested Mitigation - Construction of fuel break

Starr Ranch Sanctuary	Live Oak Canyon Road
Hazard - No fuel break between homes and vegetation	Hazard - No fuel break between homes and vegetation
Potential - Significant structure and life loss	Potential - Significant structure loss
Suggested Mitigation - Construction of fuel break	Suggested Mitigation - Fuel modification



Appendix A : Priority Pre-Fire Management Projects

High Priority Pre-Fire Management Projects

Battalion Planning Area	Project Number	Project Name	Status	Estimated Completion Year	Project Type	Activity Areas	Net Acres
2010-2013							
2		Olinda Village Fuel Break/Chino Hills State Park	O	Annual			15
3		Cowan Heights/Peter's Canyon Fuels Reduction	C	2013 (Actual 2015)			20
3&7		Canyon Clean Sweep – Hazardous Fuels Reduction	O/M	Annual			100
4		Anneliese's School Hazardous Fuels Reduction	P	2012			UNK
6		Horseshoe Bend Fuel Break	O/M	Annual			10
ALL		READY, SET, GO	A/P/O		Ongoing		
ALL		Fire Safe Council – County Wide	A/P/O				
ALL		Wize Website	A/P/O				
2,3,6&7		Red Flag Patrol	A/O				
2,3 & 7		Fire Safe Council East Orange County Canyons - CWPP	P				
		Rancho Mission Viejo Land Trust	A/P/O		Rx Burn		850
		Loma Ridge EOC	A/P/O	Annual	Hazard Fuel Mitigation		50
		Fire Safe Council-Foothill Communities	A/O				NA
		CWPP Approved Fire Wise Community					
		Grove Hazard Tree Removal	A/P	2014	Tree Removal Training		NA
2014 Updates							
2		Telegraph Rd/Chino Hills State Park-Nature Center	P		Veg Mgmt & Grading		
2		Lambert-57-Carbon Canyon-71/Tonner North & South	P		Veg Mgmt & Grading		
2		End of Casino Ridge Road	P		Veg Mgmt & Grading		
2		Brush Canyon (Single Track) Road	P		Grading		
2		Slaughter Canyon Road (from Bane Canyon)	P	Veg Mgmt & Grading			
2		Scully Ridge (lower portion) from Lower Aliso Road)	P	Veg Mgmt & Grading			
2		Wire Springs Spur Trail		Veg Mgmt & Grading			
2		Telephone Line Road	P	Veg Mgmt & Grading			
2		Telephone Line "Spur Road"	P	Veg Mgmt & Grading			
2		Hollydale Mobile Home Estates	P	Veg Mgmt			
3-5		Silverado Canyon	A/O/M	Education & Veg Mgmt			
3-5		Williams Canyon	A/O/M	Education & Veg Mgmt			
3-5		Major "PAVED" Roads and Highways Intersecting SRA	P	Veg Mgmt			
3-5		Major "UNPAVED" Fire and Access Roads In/Adjacent to SRA	P	Veg Mgmt & Grading			
3-5		Baker Canyon	A/O	Education			
3-5		Limestone Canyon Wilderness Area	P	Education & Veg Mgmt			
3-5		Loma Ridge	P	Education & Veg Mgmt			
3-N		ORC East/Corona South (Sierra Peak, Gypsum Cyn., Coal Cyn., Fremont Canyon)	P/O	Education			
3-N		ORC South/Orange/Tustin (Cowan & Lemon Hts., Panorama Hill, Weir Cyn, Irvine Park)	A/O/M	Education			
3-N		ORC East (Blackstar Canyon, Fremont Canyon, Irvine Lake, Santiago Landfill)	A/O/M	Education			
3-N		Orange/Tustin (City of Orange/ east, Villa Park, Anaheim & Uninc..Orange Park Acres)	A/O/M	Education			
4		Laguna Coast Wilderness Park - Aliso Viejo	A/O/M	Veg Mgmt			
4		Laguna Coast Wilderness Park - Laguna Woods	A/O/M	Veg Mgmt			
4		Aliso and Wood Canyons Wilderness Park - Top of The World	P	Veg Mgmt			
4		Aliso and Wood Canyons Wilderness Park - South Laguna	A/O/M	Veg Mgmt			
4		Aliso and Wood Canyons Wilderness Park - Laguna Canyon	A/O/M	Veg Mgmt			
4		Aliso and Wood Canyons Wilderness Park - Laguna Niguel	A/O/M	Veg Mgmt			
4		Aliso and Wood Canyons Wilderness Park - Aliso Viejo	A/O/M	Veg Mgmt			
5-Apr		Laguna Coast Wilderness Park - Laguna Canyon	A/O/M	Veg Mgmt			
5-Apr		Laguna Coast Wilderness Park - North Laguna Canyon	A/O/M	Veg Mgmt			
5-Apr		Laguna Coast Wilderness Park - Top of The World	A/O/M	Veg Mgmt			
5		Laguna Coast Wilderness Park - Irvine/Shady Canyon	A/O/M	Veg Mgmt			
5		Laguna Coast Wilderness Park - Newport Beach/Newport Coast	A/O/M	Veg Mgmt			
5		Laguna Coast Wilderness Park - Unincorporated/Emerald Bay	A/O/M	Veg Mgmt			
5		Crystal Cove State Park - Newport Beach/Newport Coast	A/O/M	Veg Mgmt			
5		Crystal Cove State Park - Laguna Beach	A/O/M	Veg Mgmt			
5		Crystal Cove State Park - Unincorporated/Emerald Bay	A/O/M	Veg Mgmt			
7		Williams Canyon	P	Veg Mgmt			
7		Modjeska Canyon	P	Veg Mgmt			
7		Trabuco Canyon	P	Veg Mgmt			
7		Starr Ranch Sanctuary	P	Veg Mgmt			
7		Live Oak Canyon Road	P	Veg Mgmt			
2		Olinda Village Fuel break - (Chino Hills St. Park)	O	Annual			15
3		Cowan Heights/Peter's Canyon Fuels Reduction	P	2013			20
3&7		Canyon Clean Sweep – Hazardous Fuels Reduction	O/M	Annual			100
4		Anneliese's School Hazardous Fuels Reduction	P	2012			UNK
6		Horseshoe Bend Fuel break	O/M	Annual			10
ALL		READY, SET, GO	A/P/O				
ALL		Fire Safe Council – County wide	A/P/O				
ALL		Wize Website	A/P/O				

Status Guide: A = Active, P = Planning, C = Completed, O = Ongoing, M = Maintenance

Appendix A-1: Unit Strategic Fire Plan Amendments

High Priority Pre-Fire Management Projects (continued)

Battalion Planning Area	Project Number	Project Name	Status	Estimated Completion Year	Project Type	Activity Areas	Net Acres
2014 Updates							
2,3,6&7		Red Flag Patrol	A/O				
2,3 & 7		Fire Safe Council East Orange County Canyons - CWPP	P				
		Rancho Mission Viejo Land Trust	A/P/O		Rx Burn		850
		Loma Ridge EOC	A/P/O	Annual	Hazard Fuel Mitigation		50
		Fire Safe Council-Foothill Communities	A/O				NA
		CWPP Approved Fire Wise Community					
		Grove Hazard Tree Removal	A/P	2014	Tree Removal Training		NA
2		Telegraph Rd/Chino Hills State Park-Nature Center	P		Veg Mgmt & Grading		
2		Lambert-57-Carbon Canyon-71/Tonner North & South	P		Veg Mgmt & Grading		
2		End of Casino Ridge Road	P		Veg Mgmt & Grading		
2		Brush Canyon (Single Track) Road	P		Grading		
2015 Updates							
		CWPP	P				
		Primary Roads Analysis	P				
		OC Fire Watch – Smokey The Bear Signs	P				
		Wildfire Education	A/O				
		Red Flag Patrol Training	O				
		Roadside Message Board	P				
		Audubon Starr Ranch	A/O				
		OC Parks – East Ridge/Oso Trails	P				
		OC Parks – Live Oak Trails	P				
		OC Parks – San Juan Creek Trail	A/O				
		OC Parks – West Ridge/ Bell Ridge	A/O				
		RMV - Chiquita Ridge Fuel Break	P				
		RMV - Color Spot	P				
		RMV - Dead & Dying Trees	P				
		RMV - Narrow Canyon-Ross Road	P				
		RMV - RDOC Back Roads	P				
		RMV - Coto Fuels Reduction	P				
		Emergency Road Clearance	P				
2016 Updates							
		CWPP	A		Planning		
		HP WREN	P				
		Canyon Emergency Road Clearance	A		Veg Mgmt		
		Emerald Bay Clearance	A		Veg Mgmt		
		Canyon Area Signage	A		Education		
		Fire Road and Truck Trail Annual Maintenance	O		Veg Mgmt & Grading		
		Wildland GIS App	A				
		3 rd RAWS Station	A				
		Fire Cause Code Reconciliation	O				

Status Guide: A = Active, P = Planning, C = Completed, O = Ongoing, M = Maintenance

Appendix B: Unit Strategic Fire Plan Amendments

Fire Plan Amendments

Date	Section Updated	Page Numbers Updated	Description of Update	Updated By
2012 Updates				
6/1/2012	Executive Summary and Key Objectives	i & ii	Amended text to add the necessity of reducing wildfire ignitions	George Ewan
6/1/2012	Section I Unit Overview	1 & 2	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	George Ewan
6/1/2012	Section II Collaboration	3 & 4	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	George Ewan
4/20/2012	Exhibit 3: Division 1, Battalions 1 & 8	20	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	GIS Mapping
4/20/2012	Exhibit 4: Division 2, Battalion 5	21	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	GIS Mapping
4/20/2012	Exhibit 5: Division 3, Battalions 6 & 7	22	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	GIS Mapping
4/20/2012	Exhibit 6: Division 4, Battalions 2 & 3	23	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	GIS Mapping
4/20/2012	Exhibit 7: Division 5, Battalion 4	24	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	GIS Mapping
4/20/2012	Exhibit 8: Division 6, Battalion 9	25	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	GIS Mapping
4/20/2012	Exhibit 9: Unit Preparedness and Fire Fighting Capabilities	26	Reflects updates from the addition of Santa Ana to OCFA Jurisdiction	GIS Mapping
6/15/2012	Appendix A	13	Updates priority projects	George Ewan
2013 Updates				
4/25/2013	Executive Summary and Key Objectives	i	Amended text to add SRA Statement	Tamy Rivers
4/25/2013	Section II Collaboration	4	Reflects updates to plan development team	Tamy Rivers
4/25/2013	Section V Pre-Fire Management Tactics	11&12	Updated formatting	Tamy Rivers
4/25/2013	Appendix A	13	Reflects new and current projects	Tamy Rivers
4/25/2013	Appendix A	14	Removed Blank page, subsequent pages renumbered	Tamy Rivers
2014 Updates				
5/30/2014	Appendix A	13	Updated priority projects; updated formatting; pages renumbered	Kim Gomi
6/10/2014	Appendix D	28	Added Ignitions; pages renumbered	Kim Gomi
2015 Updates				
5/21/2015	Cover	Cover	Reformatted	Kim Gomi
5/21/2015	Table of Contents & Signature Page	i-ii	Reformatted and updated with current information	Kim Gomi
5/21/2015	Executive Summary & Key Objectives	1-2	Reformatted and updated with current information	Kim Gomi
5/21/2015	Section I	3-9	Reformatted and updated with current information	Kim Gomi
5/21/2015	Section II	10-12	Reformatted and updated with current information	Kim Gomi
5/21/2015	Section III	13-15	Reformatted and updated with current information	Kim Gomi
5/21/2015	Section IV	16-17	Reformatted and updated with current information	Kim Gomi
5/21/2015	Section V	18-39	Reformatted and updated with current information	Kim Gomi
5/21/2015	Appendices	40-46	Reformatted; 2013 Supplement now Appendix D	Kim Gomi
5/21/2015	Maps	Deleted	Integrated maps into main plan	Kim Gomi
2016 Updates				
6/9/16	Cover	Cover	Date Change	Kim Gomi
6/9/16	Table of Contents & Signature Page	i-ii	Updated with current information and/or reformatted	Kim Gomi
6/9/16	Executive Summary & Key Objectives	1-2	Updated with current information and/or reformatted	Kim Gomi
6/9/16	Section I	11	Updated with current information and/or reformatted	Kim Gomi
6/9/16	Section II	12	Updated with current information and/or reformatted	Kim Gomi
6/9/16	Section V	25	Updated with current information and/or reformatted	Kim Gomi
6/9/16	Appendices	57-59	Updated with current information and/or reformatted	Kim Gomi

Appendix C: 2016 Unit Fire Plan - Annual Accomplishments

In 2016, major accomplishments included the following:

HP WREN - Secured approval to establish an HP WREN backbone in Orange County, to provide remote fire/emergency detection using cameras and sensors
CWPP - A consultant was hired, and work has started on Orange County's CWPP
Chipper Days Events - Conducted 7 Chipper Days in the SRA communities of Trabuco, Silverado, and Modjeska Canyons
Tree Mortality - OCFA assisted with the continual removal, monitoring and treatment of drought and pest infested trees
RAWS Station - A third RAWS station is being installed in coastal Southern Orange County
GIS Wildland App - OCFA's Pre-Fire Management and Information Technology Departments collaboratively developed and is beta testing a multi-faceted tablet application to assist in wildland and field inspections
Grants - OCFA was awarded three grants, including one for Emerald Bay, for additional clearance, another for East Orange County Canyons, for emergency road clearance, and one for canyon areas signage with interchangeable prevention messages
SCE Annual Roads Project - Completed 119 miles of brushing and grading SCE access roads
Fire Road & Truck Trail Annual Maintenance - Completed annual road maintenance on roads used for fire suppression and prevention
Canyon Area Signs - Ordered and are installing signs with interchangeable prevention messages in high risk canyon areas
Defensible Space Inspections - Completed annual defensible space inspections
SRA Project Tracking - Developed a quick-reference spreadsheet to better track SRA-related project work
Cal Mapper - OCFA, worked with CAL FIRE to analyze and update Cal Mapper data to more accurately reflect OC project/fire data

Appendix D: 2015 Supplement (For Historical Reference)

In 2014 and 2015 year-to-date, some of OCFA's major accomplishments include the following:

Acquisition of Additional Mechanized Equipment - A masticator, mower, chipper and all-terrain skid steer tractor were purchased to improve efficiencies for vegetation management and roads projects
Additional Orange County Weather Zone – OCFA, working in partnership with COAST and NOAA, implemented a new third weather zone for Orange County, which is very helpful for making decisions regarding resource deployments, facilities closures and activity restrictions.
Adoption of MOU Between OCFA and OC Parks - For fuels mitigation and training.
Bell Ridge & West Ridge Roads - Completed Phase I of converting an existing road to a fuel break.
Bent Tree Park – Completed a grant funded project to remove over 75 large eucalyptus trees and other invasive species, then replanted the area with native vegetation, including 50 sycamores and 25 ceanothus plants.
Chipper Days Events - Conducted six Chipper Days events, in conjunction with local fire safe councils, to help reduce hazardous vegetation in the wildfire risk prone areas of Cowan Heights, and the canyon communities of Silverado and Modjeska.
Cleveland National Forest Project - A mutually beneficial prescribed fire project.
Defensible Space Inspections - Completed annual defensible space inspections for structures in SRA areas, and in the Very High and High Fire Severity Zones in LRA areas, and also for power poles.
El Cariso Defensible Space SRA FPF Project – A mutually beneficial and cooperative community based vegetation management project on the border of Orange County and Riverside County
Emerging Tree Pests of Orange County Task Force - OCFA took the lead to launch a coordinated effort in Orange County to deal with the growing issue of invasive pests (i.e. goldspotted oak borer, polyphagous shot hole borer, etc.)
Development of New Pre-Fire Management Section - OCFA's Pre-Fire Management is now comprised of three sub-sections, which include Wildland Defense Planning, Community Wildfire Mitigation and Crews & Heavy Equipment. This new configuration will help ensure that Gray Book obligations are fulfilled and will better serve the community.
Peters Canyon Project - Removed a grove of 75 invasive palm trees in Peter's Canyon
Re-Establishment of Relationship with CAL FIRE - To facilitate improved communications in order to better execute CAL FIRE's mission.
SCE Roads Project - Completed 119 miles of brushing and grading SCE access roads.

Appendix E: 2013 Supplement (For Historical Reference)

The Orange County Fire Authority continues efforts to increase public awareness to the hazards presented by wildland fire due to hazardous and flammable vegetation and older construction standards and associated flammable building materials. OCFA has undertaken an aggressive approach to develop fire prevention cooperation through collaboration and partnerships.

Ready, Set, Go! (RSG) *(Update: Please note that as of 2015, RSG is now considered “the message” vs. “the program”)*

Ready, Set, Go! (RSG), our wildfire mitigation program, is an expanding effort motivating communities, partners and stakeholders to take action. Vegetation management and wildfire preparedness are becoming evident through these partnerships. Whether it is property management, a landowner, a natural resource manager, contractor, construction material supplier, another agency or just someone interested in the program, we have all joined the effort to understand where wildfire hazards exist and educate impacted communities. Community members are proactively identifying hazards and are working to solve community problems as well as publishing and distributing information within their communities. On a larger scale, those parties with direct responsibility for managing issues, lands, and policies related to wildfires are meeting to problem solve and strategize solutions. Additionally, efforts are underway with the building industry, commercial sector, environmental conservancies, and the full range of government agencies ranging from cities up to and including the Federal levels, public utilities and other infrastructure agencies throughout the county.

Fire Safe Councils

OCFA continues to assist in the development of local Fire Safe Councils in the canyon and foothill communities. In CY2012, there were four (4) Fire Safe Councils in Orange County, as of this report two (2) of these councils have upgraded to Firewise Communities. OCFA is in the early developmental stages of forming a countywide Fire Safe Council with the concept of integrating property management companies, landscape companies, HOAs and other valuable partners to become educated on wildland fire mitigation and more readily identify and share fire prevention activities, concerns, issues and solutions on a broad scale. It is OCFA's expectation that this will bring overall public awareness to a greater understanding of potential problems and solutions.

County of Orange Area Safety Taskforce (COAST)

Another endeavor that is being led by OCFA is COAST. Presently, this is in the early stages of development. COAST is a coalition of agencies, jurisdictions, land owners, conservancies, public utilities, transportation authorities and others that can affect policy to insure safety and reduce loss of property and life. The levels of individuals that represent the participating organizations are at the policy level of their respective professions. OCFA's goal is that through this coalition it will become apparent that wildland fire is everyone's problem and that they can play a major role in helping prevent ignitions, protection of life, property natural resources and the economy.

Other Activities

Hazard tree removal, this past year, OCFA has held discussion concerning the removal of hazard trees in an avocado grove. The hazard trees are wind rows of Eucalyptus trees that have an abundant amount of either dead or dying trees. Many of the dead trees are a result of the Santiago Incident of 2007 and pose both a fire hazard should another fire occur and a safety hazard to personnel working in the grove. Efforts to gain approval for the removal are underway with the City of Irvine and The Irvine Company. Hazardous fuels mitigation, a proposal for OCFA to cut and remove hazardous vegetation surrounding the County of Orange EOCC has been discussed. This will become fuel break requiring annual maintenance and surrounding the county's primary emergency communications site.

OCFA and Rancho Mission Viejo Land Trust and Ranch Operations have entered into discussions concerning the use of prescribed fire to start reducing hazardous vegetation in preparation for future community development. These activities are in accordance with the Southern Sub Regional Wildland Fire Management Plan.

Last, OCFA continues to build cooperative efforts with the local Fire Safe Councils and canyon communities in their efforts to reduce the effects of wildland fire.

Appendix F: Priority Goals and Objectives For 2010-2012 (For Historical Reference)

Orange County Fire Authority is undertaking the development of the READY, SET, GO! Program. The Program goals are aligned with the 2010 California Fire Plan and its objectives as listed below: *(Update: Please note that as of 2015, RSG is now considered "the message" vs. "the program")*

State Goal	State Objective	OCFA Goal
State Goal 1 - Improve availability and use of information on hazard and risk assessment	State Goal Objective B - Engage and participate with local stakeholder groups (i.e., fire safe councils and others) to validate and prioritize the assets at risk	OCFA Goal 1 - OCFA will establish any relationships, partnerships and councils necessary to reduce wildfire risks and losses by emphasizing community-level resources and solutions. Leverage partners with common interests/or motivations
State Goal 2 - Land use planning: including general plans, new development, and existing developments	State Goal Objective B - Assist the appropriate governmental bodies in the development of a comprehensive set of wildland and wildland urban interface (WUI) protection policies for inclusion in each county general plan or other appropriate local land use planning documents	OCFA Goal 2 - OCFA will develop and sustain a portfolio of high-impact, least-cost, stakeholder-driven solutions for reducing wildfire risks and losses by creating and sustain new solutions, eliminate low-impact solutions, streamline high-cost solutions
State Goal 3 - Shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans (CWPP)	State Goal Objective B - Emphasize coordination of Unit fire plans with community wildfire protection plans to encourage and support one consistency approach. Develop county or regional fire plans by bringing together community-based groups, such as fire safe councils and affected fire and land management agencies	OCFA Goal 3 - OCFA is developing the Unit Fire Plan, using the key elements identified by CAL FIRE and supporting smaller communities with the development of their local CWPP
State Goal 3 - Shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans (CWPP)	State Goal Objective C - Create and support venues in which individual community member can be actively involved in local fire safe councils, community emergency response teams, FIREWISE and other community-based efforts to develop readiness plans and educate landowners to mitigate the risks and effects of wildland fire	OCFA Goal 4 - OCFA's collaborative partners lead and drive the effort to protect communities from wildfire. OCFA's role is transitioned into a support-oriented role, focusing primarily on active participation, facilitation and evaluation of program results
State Goal 4 - Establishing fire resistance in assets at risk, such as homes and neighborhoods	State Goal Objective A - Educate landowners, residents and business owners about the risks and their incumbent responsibilities of living in the wildland, including applicable regulations, prevention measures and preplanning activities	OCFA Goal 5 - Orange County communities understand, accepts responsibility and takes necessary action to mitigate wildfire risk, thereby preventing lives and property from being lost or damaged in wildfires OCFA Goal 6 - OCFA will develop regularly publicized motivational performance measurements in order to facilitate change in cultural attitudes, systematic mitigation of risk
State Goal 4 - Establishing fire resistance in assets at risk, such as homes and neighborhoods	State Goal Objective C - Increase the number and effectiveness of defensible space inspections and promote an increasing level of compliance with defensible space laws and regulations through the use of CAL FIRE staffing as available, public and private organizations, and alternative inspection methods	OCFA Goal 7 - OCFA will institute a change in local cultural attitude about wildfire risks from apathy and unawareness to alertness and empowerment through mass marketing and outreach

Appendix G: 2010 Unit Strategic Plan Collaborators (For Historical Reference)

Representatives involved in the original development of the Orange County Fire Authority's Unit Fire Plan are included in the following table.

2010 Plan Development Team

Organization	Representative (Title)
Orange County Fire Authority	Wildland Fire Defense Planner
Orange County Fire Authority	GIS
Orange County Fire Authority	Fire Prevention
Orange County Public Works	Projects & Regulatory Permits Unit
BonTerra Consulting	Senior Project Manager – Restoration Ecology
Orange County Parks	Director
Orange County Parks	Environmental Coordination
Orange County Parks	Park Rangers
HRS (Habitat Restoration Services)	Restoration Specialists
Irvine Ranch Conservancy	Director
Irvine Ranch Conservancy	Director, Planning and Field Operations
Irvine Ranch Conservancy	Field Operations Manager
Fire Safe Council Canyons of East Orange County	Ad hoc Committee
California State Parks	District Environmental Scientist
Rancho Mission Viejo Land Trust	VP – Open Space and Resource Management
Rancho Mission Viejo Ranch	Ranch Operations
The Irvine Company – AG Operations	VP – Agricultural Operations
City of Irvine	Open Space Coordinator

OCFA Fire Station Map - With Wildland Apparatus Locations
(Enlarged from Page 9)

