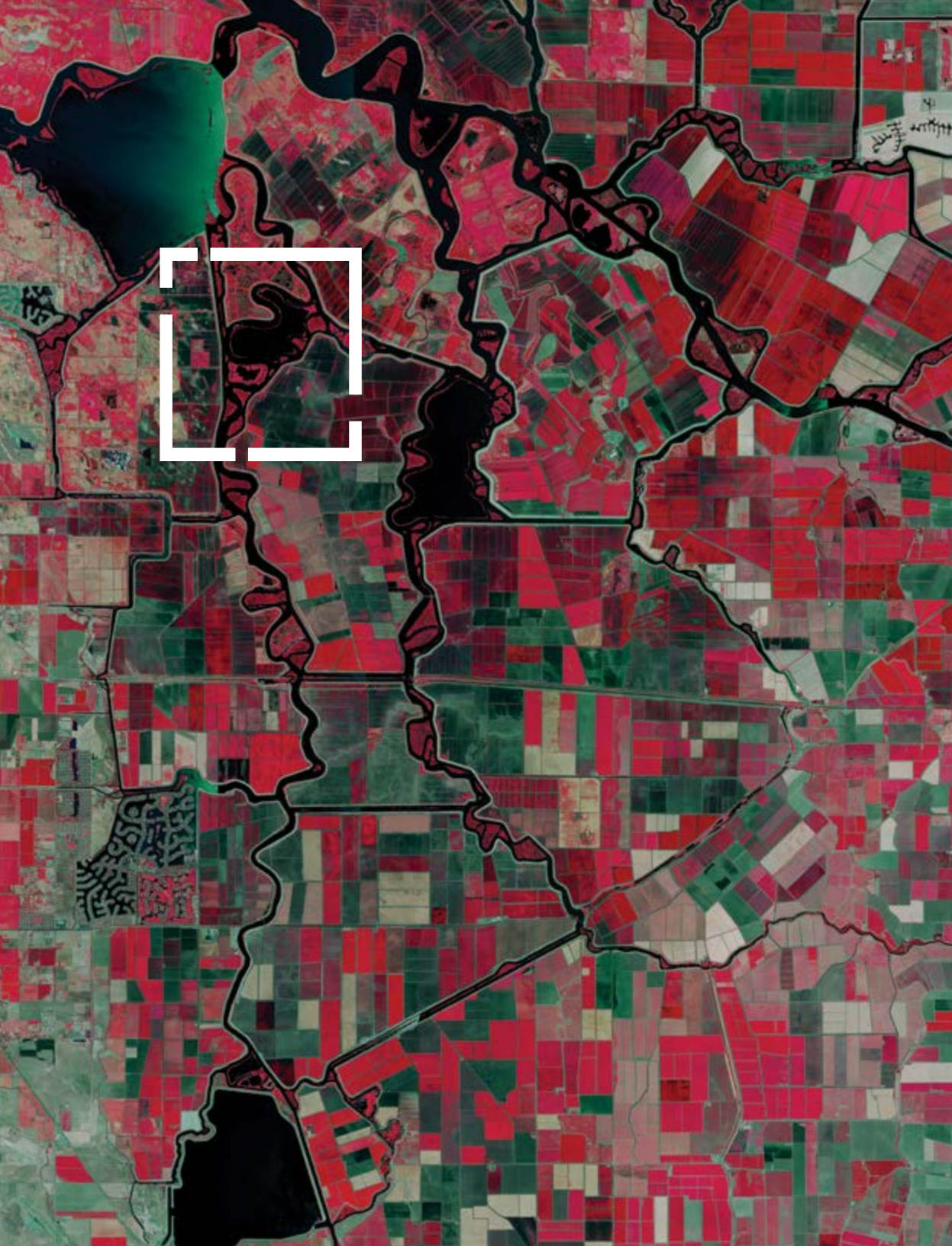




Location Intelligence for Wildland Fire

Understanding the landscape, reducing risk, and
making data-driven decisions





CONTENT

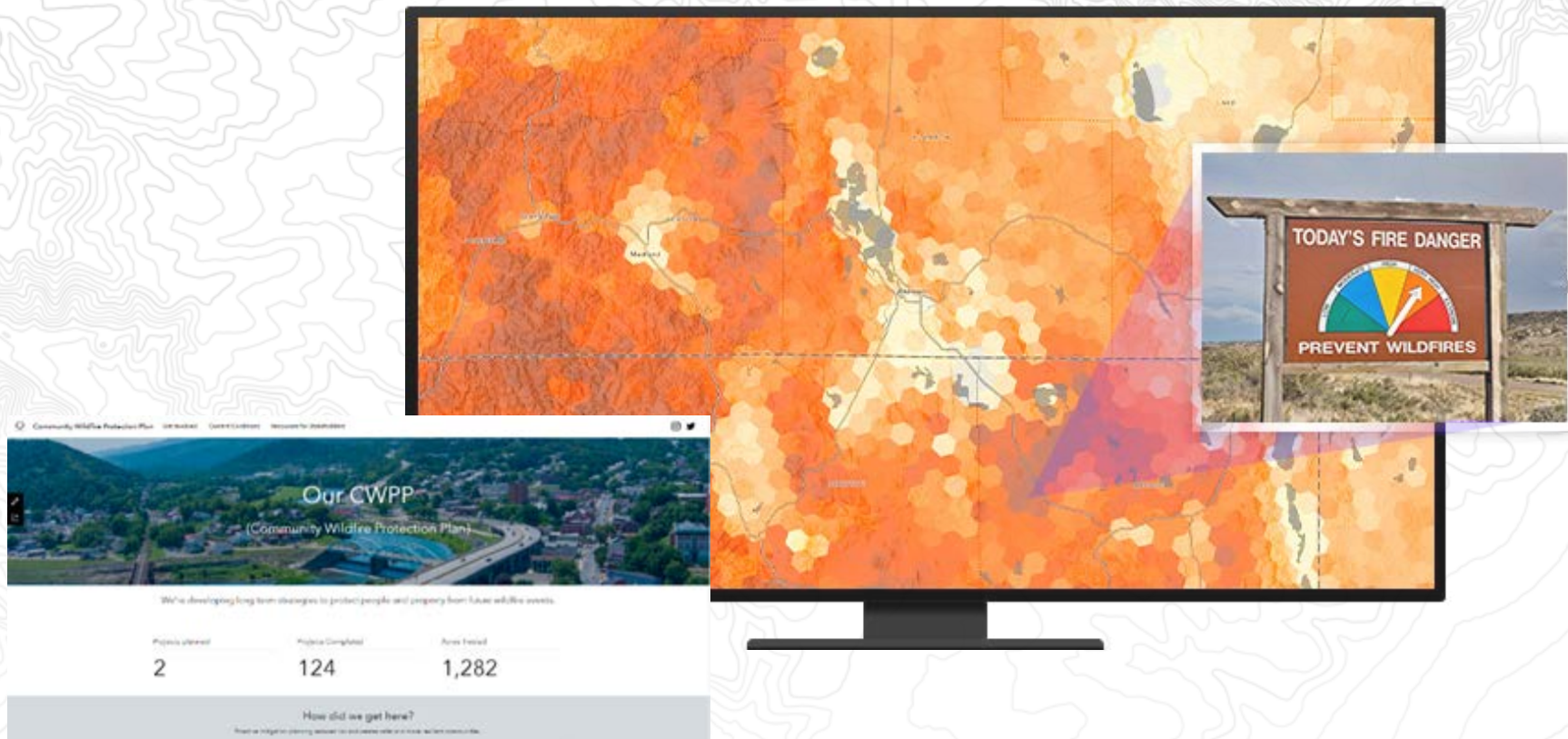
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Introduction

Wildfires are a remarkable force, embodying a dual nature that can be both destructive and revitalizing. As a natural disaster, wildfire can wreak havoc by demolishing homes and livelihoods while also disturbing ecosystems for extended periods. Yet, with proper management, wildland fires can serve as potent tools: they can help mitigate community risks from disastrous wildfire and rejuvenate landscapes that have been deprived of fire or are otherwise compromised. By harnessing the power of geographic information system (GIS) technology, federal, state, and local governments and other organizations can understand their landscapes, identify risk, and plan for and protect against the negative impacts of wildfire. Agencies are utilizing Esri® ArcGIS® technology to respond to wildfire incidents, plot new wildfire

locations and their perimeters, and visualize their potential impact through insightful reports. ArcGIS allows for the real-time tracking of wildland firefighter locations and provides a common operating picture that sets the stage for effective intelligence sharing, interagency communication, and on-scene success. After a fire passes, risks from the negative impacts of wildfire remain. With ArcGIS, gain valuable insights—such as the identification of areas prone to postfire flooding, debris flows, and landslides—through burn severity analysis workflows. These capabilities and more are available to support you across the life cycle of wildland fire through the location intelligence and data analytics available with ArcGIS and Esri's suite of geoenabled tools.



Plan and Prepare

Preparation and planning efforts are important to prevent losses resulting from wildfire. To adequately prepare and plan for potential wildfire, land management agencies, fire departments, and nongovernmental organizations (NGOs) can use ArcGIS to combine variables—such as vegetation type, topography, previous fire history, suppression difficulty indexes, and weather—to help visualize the wildfire risk across the landscape. Once risk has been identified, locations of critical infrastructure, residences,

and important environmental features at the highest levels of risk can be cataloged. By incorporating ArcGIS and geoenabled products into an agency's existing workflows, real-time risk data can be displayed in a digestible format for all stakeholders. This data is often leveraged to inform foundational wildfire planning documents like community wildfire protection plans (CWPPs) and forest action plans.



Reduce Risk and Mitigate

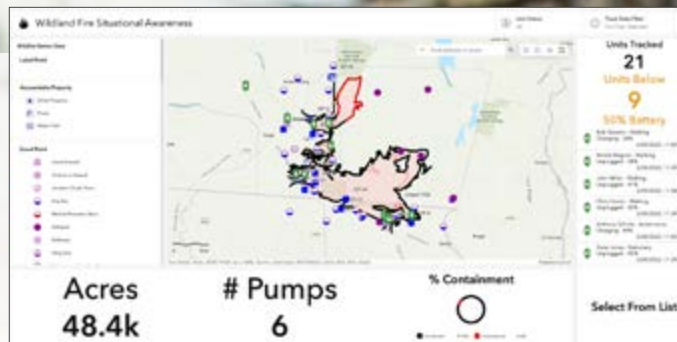
Identifying and quantifying the risks posed by wildfire is only the first step. This understanding can help communities, NGOs, and governments alike plan and implement targeted interagency mitigation actions. For instance, ArcGIS makes it easy to complete planning activities and project layout for hazardous fuels reduction, even if that project crosses boundaries. Communities identified as high risk for wildfire can start planning landscape-scale fuels mitigation projects and coordinate defensible space efforts to protect property, critical infrastructure, and environments. By leveraging ArcGIS, agencies can apply a data-driven approach to securing grant funding. Incorporating GIS can also aid in implementing other important mitigation measures such as prescribed fires. Using ArcGIS, agencies can provide visuals of burn unit boundaries, critical infrastructure, and other critical prescribed fire information to firefighters and land managers in real time for online and offline use.

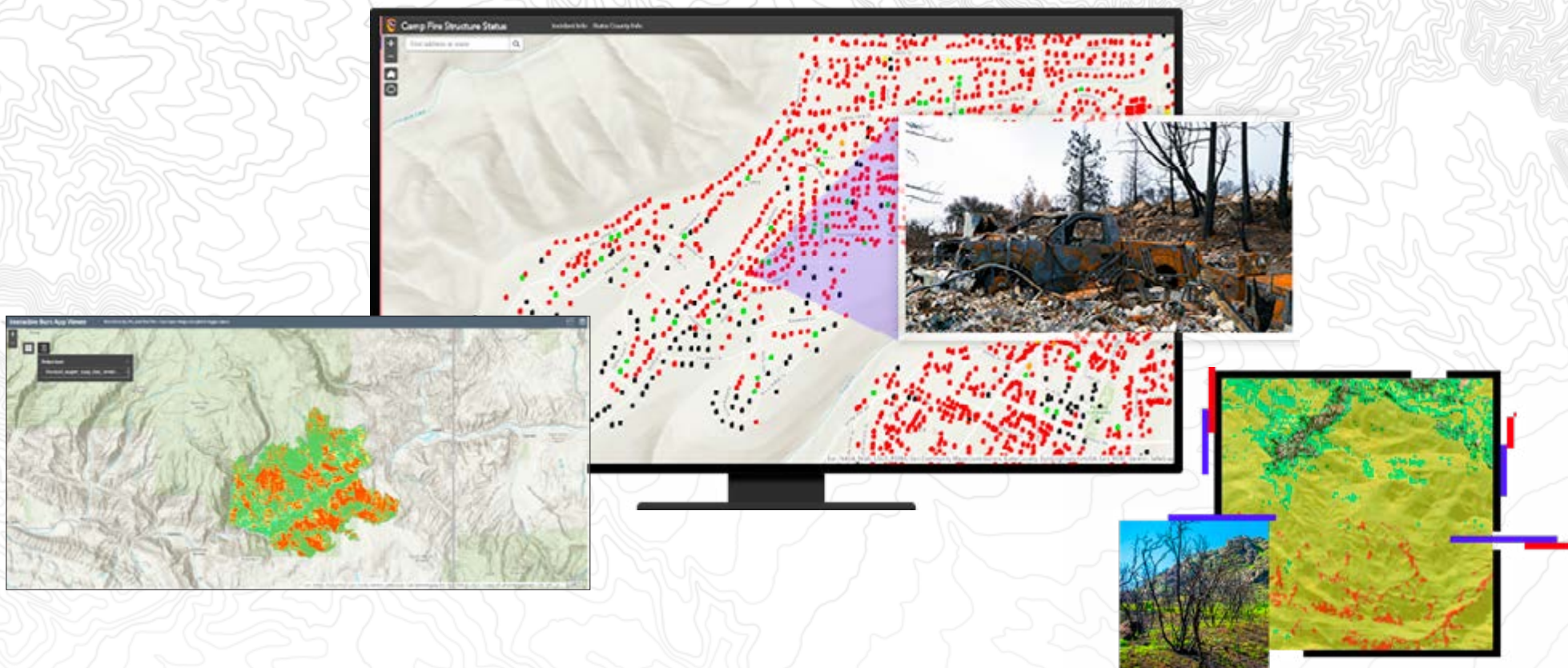


Respond and Suppress

Once a wildfire occurs, there is an immediate need for information. Where is the fire located? What are the quickest response routes? What are the values at risk, and where are the evacuation routes? By embracing ArcGIS, answers to these questions can be at the fingertips of decision-makers and those involved in the response effort, including dispatchers, firefighters, duty officers, agency representatives, and other stakeholders. Real-time field data collection capabilities provide a common operating picture for those managing the incident. Current wildfire perimeters can be mapped and accessed by all of those on an incident; points of interest can be collected and shared; and structure triage can be conducted, allowing responders to better focus efforts on highest-risk areas. Increase wildland firefighter safety with ArcGIS Field Maps

and its tracking capabilities. Firefighters and incident command personnel can see and track the last known location of any responder on-site and determine if the individual is stationary, walking, or riding in a vehicle. This capability is critical for finding responders in distress and safely navigating and communicating their whereabouts in new terrain. During an ongoing wildfire, communication among firefighters is critically important to on-scene success. This is also true for agencies and those managing the incident and communicating about an ongoing fire to the public. Crafting a coherent and digestible public message can be difficult. Bringing the spatial capabilities of GIS and ArcGIS StoryMapsSM to public meetings can help coalesce and share your agency's incident messaging.





Recover and Rehabilitate

Recovering from a wildfire can be difficult. Geoenabled products like ArcGIS Field Maps and ArcGIS Survey123 can be employed to help jurisdictions conduct damage assessments and gain insight into the extent of damage through real-time field data collection. These same tools can be leveraged to help manage the debris removal processes.

After a fire passes, the risk from postfire impacts remains. Simple workflows like burn severity analysis can help identify areas most at risk for flooding, debris flows, and catastrophic landslides, so that communities, NGOs, and governments can conduct emergency stabilization operations and safeguard against a wide range of postfire risks.

Employing ArcGIS in a postfire environment can also help land managers identify areas where other environmental rehabilitation activities need to occur. Hazardous trees can be identified and cataloged. On a larger landscape scale, land managers can identify and mark areas that qualify for salvage logging or reseedling efforts. Additionally, managers and decision-makers can help to quantify impacts to watersheds and streams and monitor changes over the long term.

The results of an agency's hard work can be easily displayed to tell a story to internal partners, public stakeholders, elected officials, and other decision-makers through the use of reports and insightful dashboards.



Case Studies and Examples

Wildland Fire Executive Briefing

Wildfire Aware Website

Article: ArcGIS Online and the National
Interagency Fire Center (NIFC)

Video: Wildfire Case Study in Portugal

Webinar: Leveraging ArcGIS Apps in the Field

LEARN MORE

Whether you're preparing for, mitigating against, responding to, or planning recovery activities after a wildfire, ArcGIS and its suite of geoenabled tools can offer valuable insights and bring efficiency to the entirety of your organization's wildland fire efforts.

Learn more and reach out to our team:

go.esri.com/wf-ebook



Esri, the global market leader in geographic information system (GIS) software, location intelligence, and mapping, helps customers unlock the full potential of data to improve operational and business results.

Founded in 1969 in Redlands, California, USA, Esri software is deployed in hundreds of thousands of organizations globally, including Fortune 500 companies, government agencies, nonprofit institutions, and universities.

Esri has regional offices, international distributors, and partners providing local support in over 100 countries on six continents. With its pioneering commitment to geospatial technology and analytics, Esri engineers the most innovative solutions that leverage a geographic approach to solving some of the world's most complex problems by placing them in the crucial context of location.

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