

# The Utilization of the ArcGIS Platform for Wildfire Response with Associated Data in Real Time: Reducing Risk, Removing Hazardous Waste, and Assuring a Safe Recovery Environment

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OCTOBER 26-28, 2020

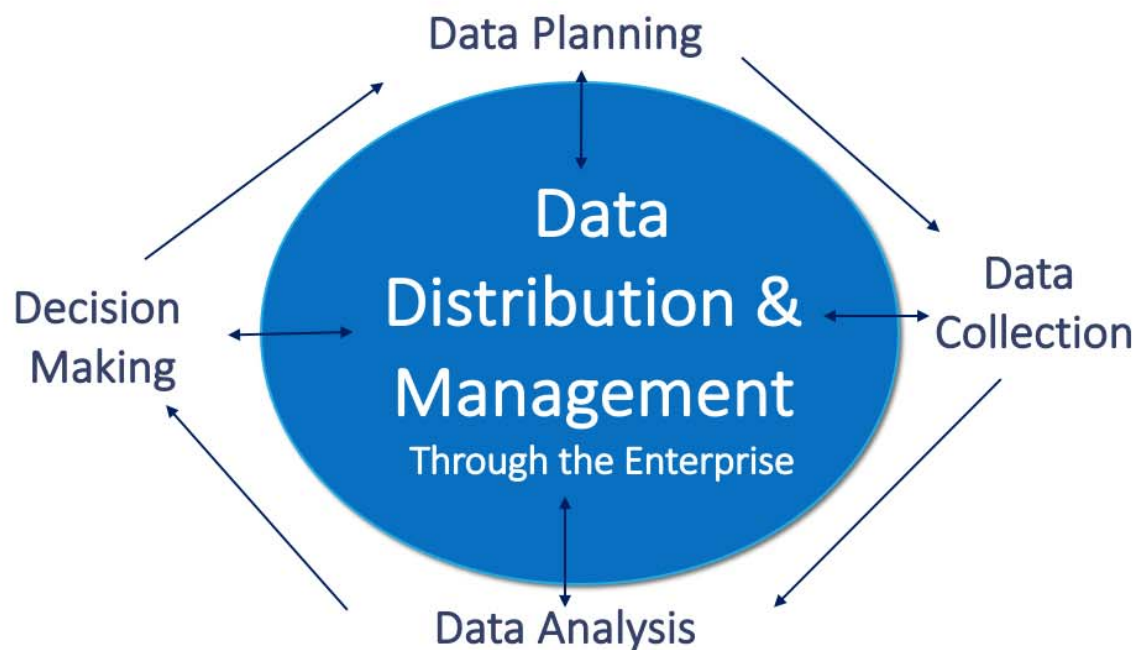
Hurricane Rita  
Hurricane Sandy  
Joplin Tornado  
Hurricane Katrina  
CA 2018 Fires  
Deepwater Horizon  
North CA 2020 Fires  
Hurricane Harvey  
USACE Debris  
Hurricane Maria/Irma  
Gold King Mine  
Hurricane Irene

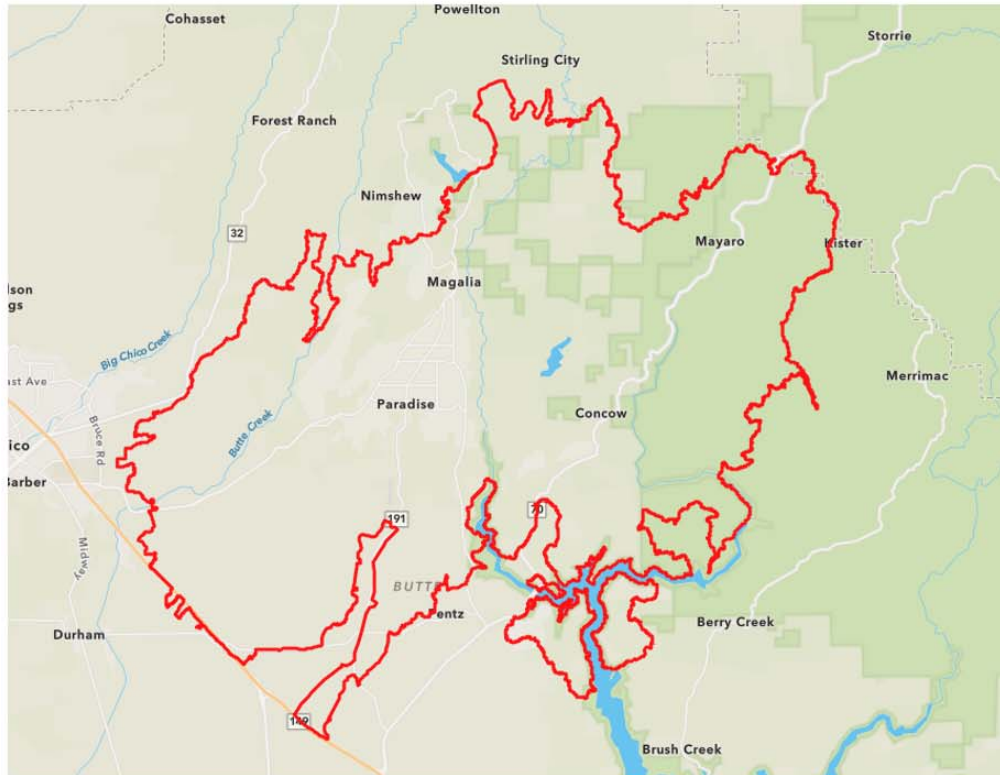
Surf City NJ TCRA  
Hurricane Laura  
PR Earthquake  
Hurricane Isaac  
Hurricane Ike  
Hurricane Matthew  
Northern CA Fires 2017  
ESF-3  
EPA START



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# Enterprise Data Lifecycle

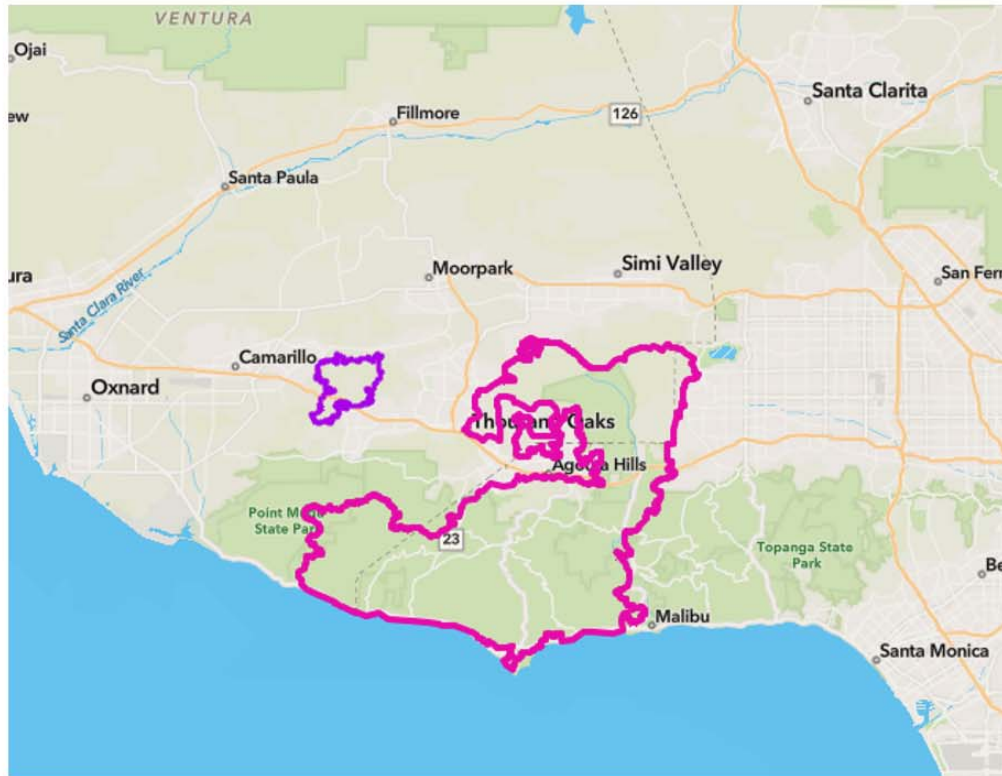




## 2018 California Wildfires

In early November 2018, the Camp, Hill and Woolsey Fires had a devastating impact on the California counties Butte, Ventura, and Los Angeles.

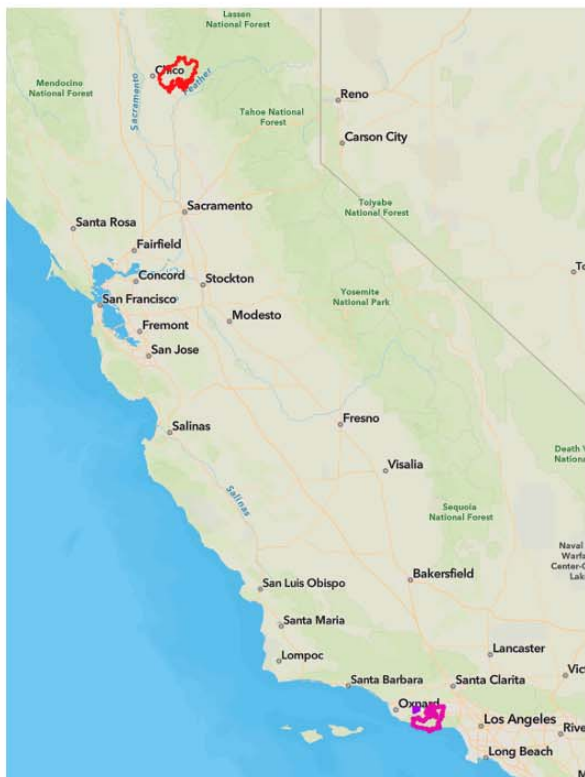
The State of California proclaimed a State of Emergency in Butte County from the Camp Fire ...



## 2018 California Wildfires

....and in Los Angeles and Ventura counties from the Woolsey/Hill Fire on November 8 and 9, 2018, respectively.





## 2018 California Wildfires

Beginning November 11, the Federal Emergency Management Agency (FEMA) activated EPA and issued Mission Assignments (MAs) under ESF-10 to support Household Hazardous Waste (HHW) assessments and removal for both the Camp and Woolsey fires.

The EPA and California Department of Toxic Substances Control (DTSC) worked together on the Phase 1 Assessments for HHW.

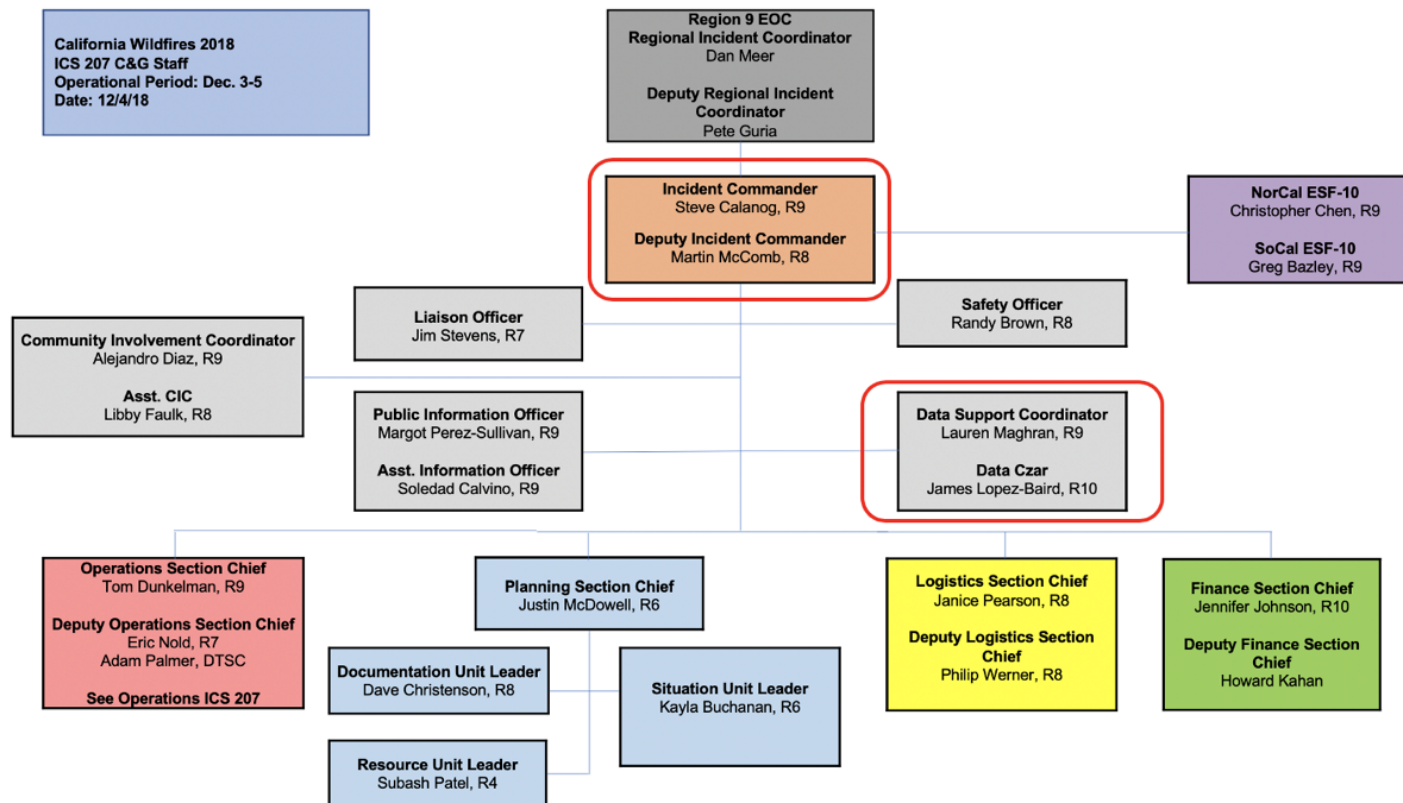
Both Camp and Woolsey Fire Operations coordinated and deployed the same data collection and management approach in support of the common Data Quality Objectives for both responses.

# Lessons Learned Put into Action:

## Coordination, Organization, & Planning

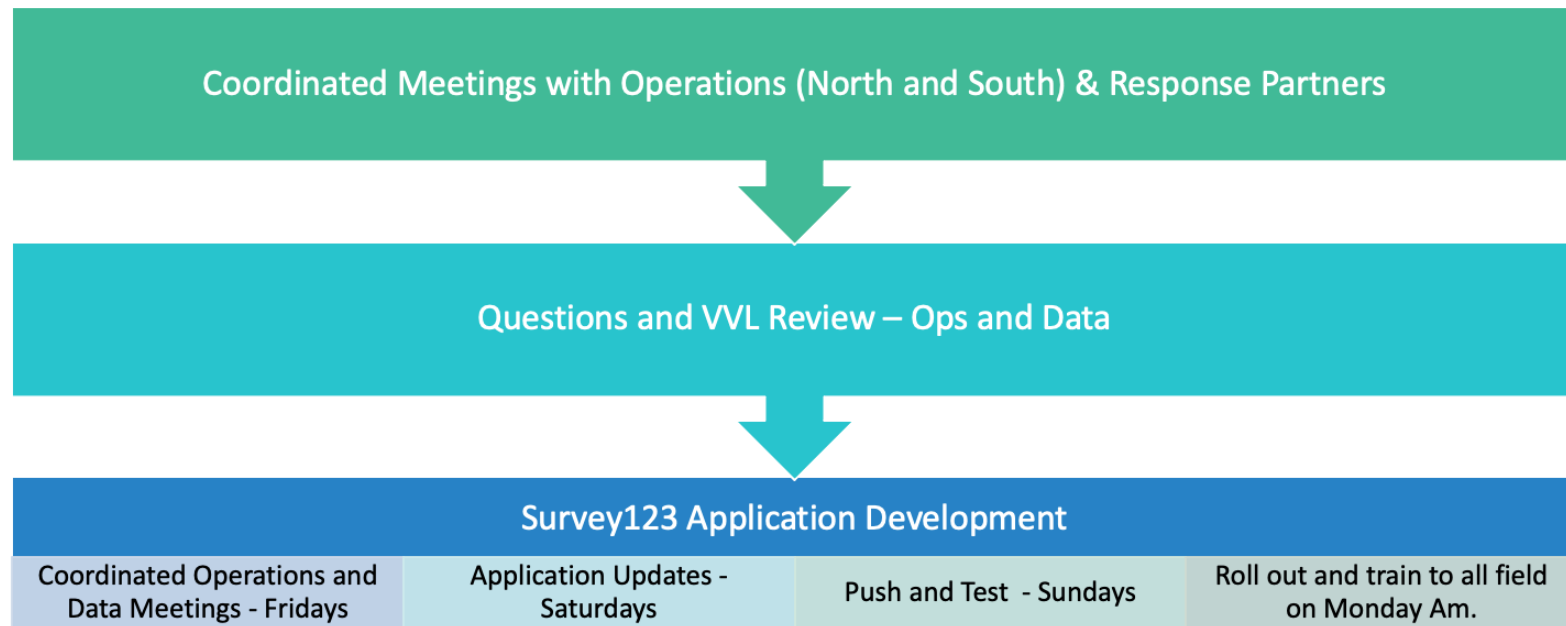
- Good coordination up front among Responding Agencies through GIS Data Management
- Operational Field GIS/Data Management Integration from Day 1
- Hybrid & scalable GIS field data collection tools utilizing the AWS Cloud and EPA Geoplatform
- Data driven Operational Statuses managed and QC'd on AWS Cloud Servers
- Public Communication and Data Sharing through the EPA Geoplatform

# Data in the ICS Organization





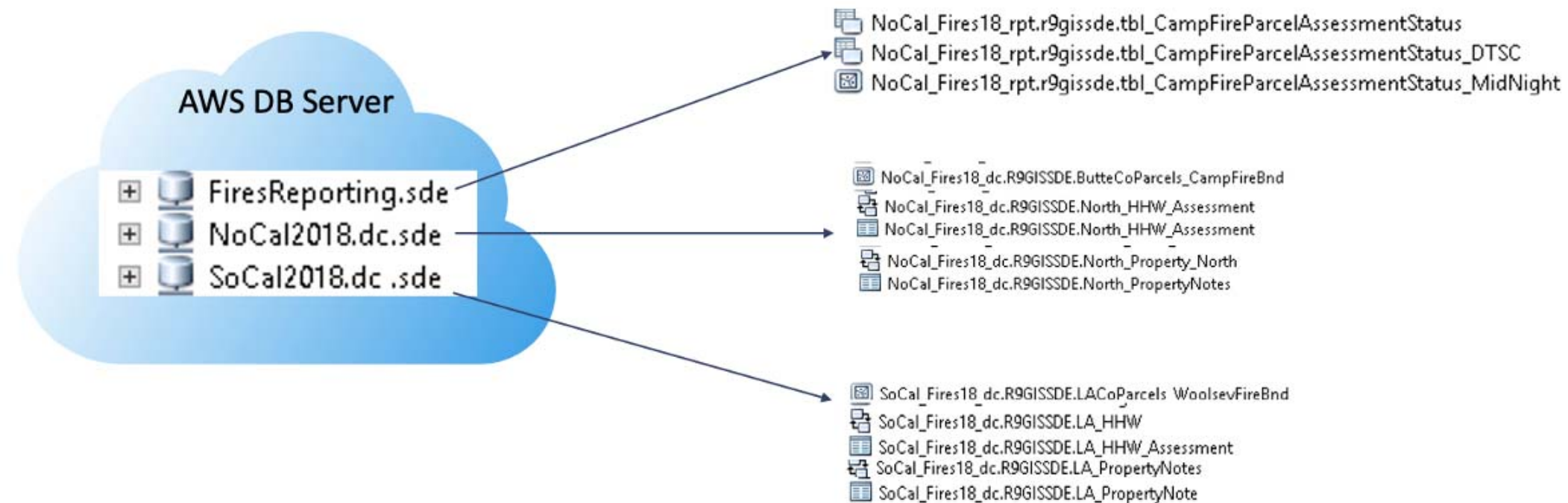
# Data Collection Development & Application Cycles



# Data Collection

- Collector/Survey123 Hybrid Approach
  - Hybrid & Scalable GIS field data collection tools utilizing ArcGIS Enterprise in the EPAs AWS Cloud and EPA Geoplatform
- Situational Awareness
  - Operational Data Layers to help make and track decisions.
- Data Collection: Property Note
  - Initiate Survey123 from Collector
  - Access Issues were tracked and comments in its own form.
- Data Collection: HHW Assessment
  - Initiate Survey123 from Collector
  - HHW Assessment form allowed the field team to track HHW removal from the property as well as document ACM materials.
- Historical Assessment
  - Field Teams could view previous Assessments done at the property within the Application.

# Data Collection Architecture



# Data Driven Status

## Internal Rolling Assessment Status

### North Branch Assessment Status - Internal

- Assessment Needed
- Assessment Needed - Revisit
- No Access - Follow Up Needed
- No Access - No Follow Up Needed
- Phase 1 Complete
- Phase 1 Complete - QC Needed

## Public Status

### Phase 1 Complete



### No Access



### Assessment Needed



Internal Assessment Status - DB	Public Status - DB	Conditions
Phase I Complete	Phase I Complete	Identified = Yes There is an HHW Assessment Latest HHW Assessment with Revisit = No Verification QC Complete
Phase I Complete - QC Needed	Phase I Complete	Identified = Yes There is an HHW Assessment Latest HHW Assessment with Revisit = No Verification QC Not Complete
Assessment Needed - Revisit Required	Assessment Needed	Identified = Yes There is an HHW Assessment Latest HHW Assessment with Revisit = Yes
No Access - Follow Up Needed	Assessment Needed	Identified = Yes No HHW Assessment Latest Property Note with Property Type = Physical Access Issue Bridge Out Physical Access Issue Terrain, Physical Access Issue Gate Locked, Parcel Access Issue No Trespass, Parcel Access Issue Owner Needs to be Contacted Or Resident Coordination Required
No Access - No Follow Up Needed	Phase I Complete Deferred	Identified = Yes No HHW Assessment Latest Property Note with Property Type = Physical Access Issue Bridge Out Physical Access Issue Terrain, Physical Access Issue Gate Locked, Parcel Access Issue No Trespass, Parcel Access Issue Owner Needs to be Contacted Or Resident Coordination Required APN has been added to Deferred database Table from Operations
Assessment Needed	Assessment Needed	Identified = Yes No HHW Assessment Latest Property Note, Property Note Type = Previous Access Issue Resolved

# Operational QA/QC Procedures

## Fieldwork QC

- Perimeter Survey
- Dedicated QC Team performed a perimeter survey of completed parcels.
  - Issues such as visible containers, other HHW that was improperly handled (i.e. not handled IAW the written SOP) were identified
- Documentation was via a paper form developed for that purpose.
- Results of QC surveys compared with initial HHW assessment and removal documentation.

## Site Re-Assessment QC Survey

- Dedicated Team Performed full Re-Assessment of Completed Sites following the written HHW SOP.
- Team composition same as normal HHW team (i.e. EPA/START/ERRS Personnel)
- Re-assessments documented HHW items that were not handled IAW the written SOP.
- Documentation of assessment utilized a separate, modified QC Mobile Form
- QC Data loaded to a separate database table.



# Data QA/QC Procedures

- Daily checks on data collected in previous day/operational period
- Utilized data queries developed to identify fields with incomplete or improperly completed data entries
  - Queries identified missing parcel id's, blank fields, contradictory fields, etc.
- Data Issues rectified daily by field data managers and operational personnel.
- QA/QC Processes Implemented for Data and Field Operations
  - Written SOP Prepared and Distributed to Field Teams for Field Work Procedures and Data Capture
  - Training Conducted on SOP and Data Capture Tools, with hands on training, prior to the start of field work and periodically throughout.

# QA/QC Results

## Data QC

- Provided higher level of confidence of accurate data within the database
- Identified potential areas for re-training or modification of SOPs on the use of the electronic form to prevent re-occurrence.

## Operational QC

- Identified potential training factors, work conditions, or temporal variances that affected the quality of work
- Identified potential areas for re-training or modification of SOPs.
- Use of QC electronic field form during Re-Assessment surveys and database queries allowed for statistical review of overall quality of work

# Public Status Reporting

```
# -*- coding: utf-8 -*-
#
# ExtractR9FiresStatusFeatures.py
# Created on: 2018-12-27 14:09:27.00000
# (generated by ArcGIS/ModelBuilder)
# Description:
# -----

# Import arcpy module
import arcpy

# Local variables:
ButteCoParcels_CampFireBnd = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\CampHillWoolseyFireAss
Delete_succeeded = "false"
tbl_CampFireParcelAssessmentStatus_Archive = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\CampH
Delete_succeeded_2 = "false"
tbl_CampFireParcelAssessmentStatus_MidNight = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\CampH
Delete_succeeded_3 = "false"
tbl_VenturaLAFireParcelAssessmentStatus_MidNight = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\
Delete_succeeded_4 = "false"
SoCal_Fires18_rpt_r9gissde_tbl_CampFireParcelAssessmentStatus_Archive = "Database Connections
tbl_CampFireParcelAssessmentStatus_Archive_2 = SoCal_Fires18_rpt_r9gissde_tbl_CampFireParce
CampHillWoolseyFireAssessmentStatus_gdb = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\CampHillW
NoCal_Fires18_dc_R9GISSDE_ButteCoParcels_CampFireBnd = "Database Connections\\NoCal2018.sde\\
ButteCoParcels_CampFireBnd_2 = NoCal_Fires18_dc_R9GISSDE_ButteCoParcels_CampFireBnd
CampHillWoolseyFireAssessmentStatus_gdb_2 = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\CampH
NoCal_Fires18_rpt_r9gissde_tbl_CampFireParcelAssessmentStatus_MidNight = "Database Connection
tbl_CampFireParcelAssessmentStatus_MidNight_2 = NoCal_Fires18_rpt_r9gissde_tbl_CampFireParc
CampHillWoolseyFireAssessmentStatus_gdb_3 = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\CampH
NoCal_Fires18_rpt_r9gissde_tbl_VenturaLAFireParcelAssessmentStatus_MidNight = "Database Conne
tbl_VenturaLAFireParcelAssessmentStatus_MidNight_2 = NoCal_Fires18_rpt_r9gissde_tbl_Ventura
CampHillWoolseyFireAssessmentStatus_gdb_4 = "E:\\START\\NoCalFires\\Vectors\\ForAGOL\\CampH

# Process: Delete
arcpy.Delete_management(ButteCoParcels_CampFireBnd, "FeatureClass")

# Process: Delete (2)
arcpy.Delete_management(tbl_CampFireParcelAssessmentStatus_Archive, "FeatureClass")

# Process: Delete (3)
arcpy.Delete_management(tbl_CampFireParcelAssessmentStatus_MidNight, "FeatureClass")
```

## Fires18HHWandPropertyNotes\_gdb

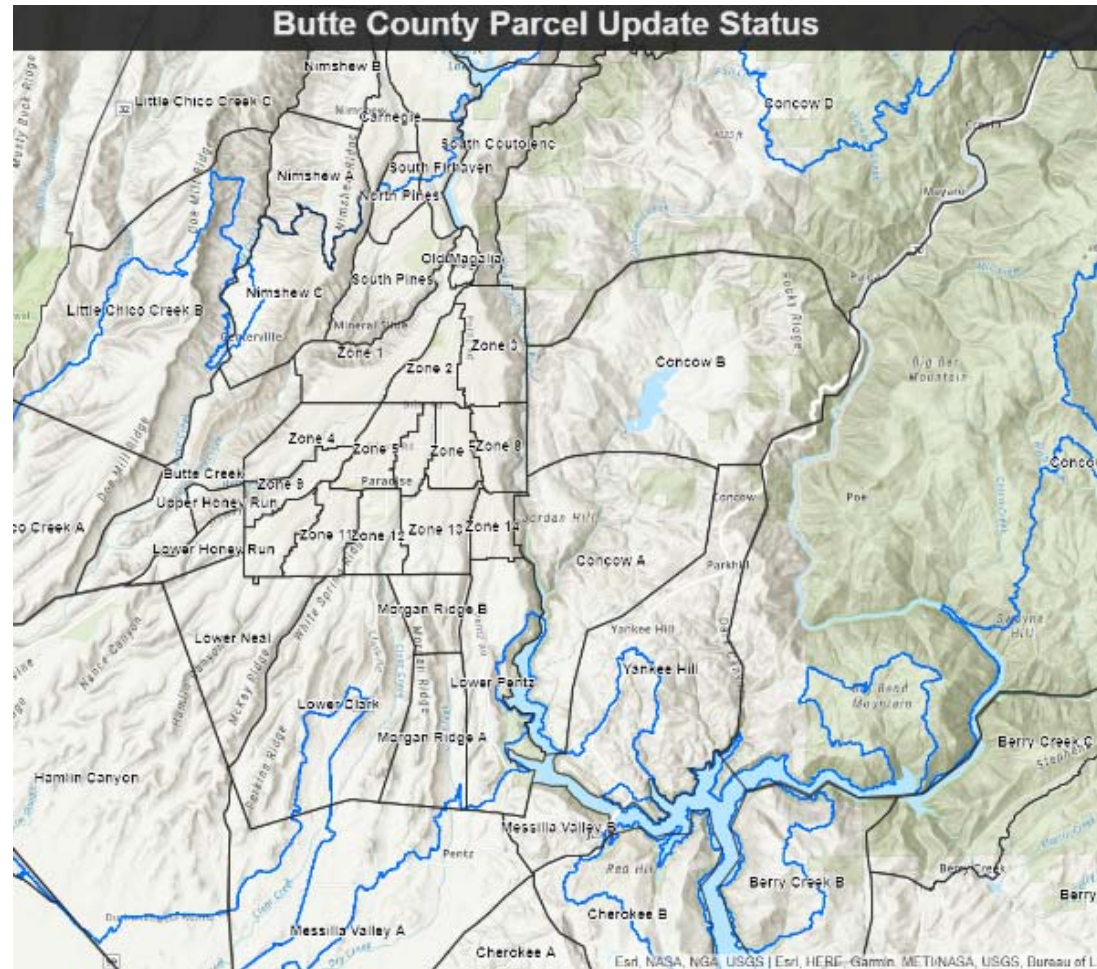
File Geodatabase by R9\_ER\_Admin\_EPAEXT

Created: Jan 2, 2019 Updated: Feb 7, 2019 Number of Downloads: 169



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## Butte County Parcel Update Status



# Data and Operational Transition

- Transition from on AGOL (ArcGIS Online) to Another
  - EPA > DTSC
- Transition from Dedicated Fires ArcGIS Enterprise Server to Legacy Server
  - Internal to EPA



# Public Story Map 2018



# Pushing Forward - 2020

- Operational differences – Consistent Data Approach
- Adaptable Data Driven Status
- Additional Forms for new Operations
- Scalable Story Map – Multiple Counties
- Adaptable for Multiple Regions to collect and reporting data the same way
  - R9 & R10 2020 Fires

# Public Story Map 2020



Edit collection



COLLECTION

## 2020 California Fires

Prepared by U.S. EPA Region 9

Get started



1 2020 California Fires



2 Address and Parcel Lookup Tool



3 Santa Cruz County



4 San Mateo County



5 Monterey County