

Bringing GIS Value to CA High-Speed Rail Using ESRI ArcGIS Enterprise

Presented by Jason Hill and My An Nguy



Topics Of Discussion

- HSR GIS Standards
- Data Transparency
- Systems Integration
- Enterprise Solutions
- Apps and Services
- Moving Forward

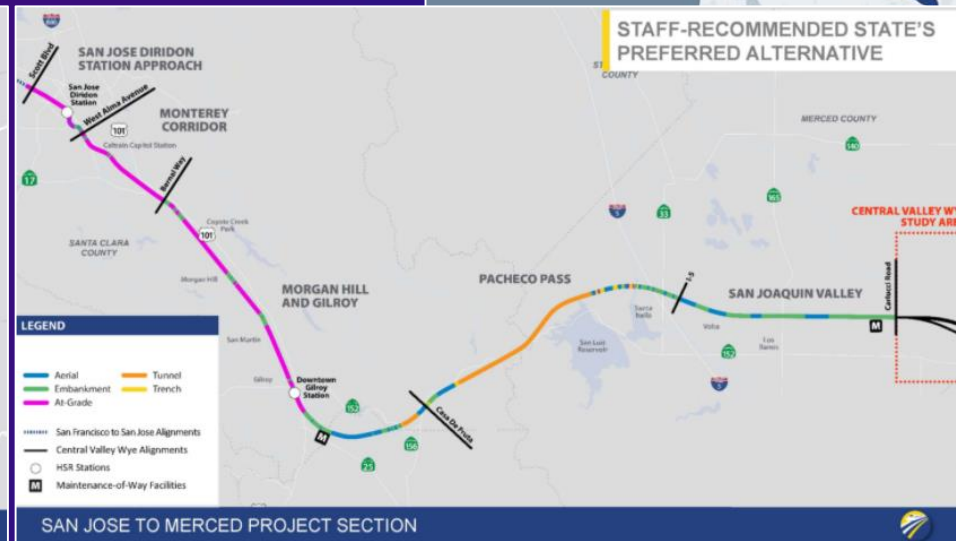
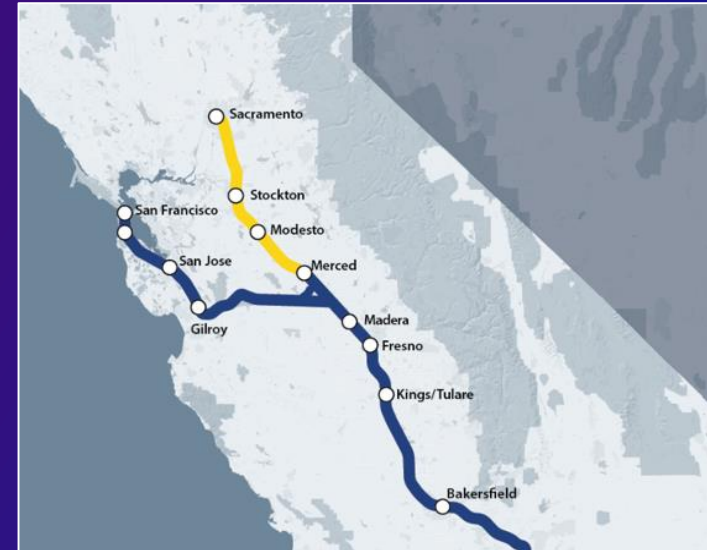


CALIFORNIA
High-Speed Rail Authority



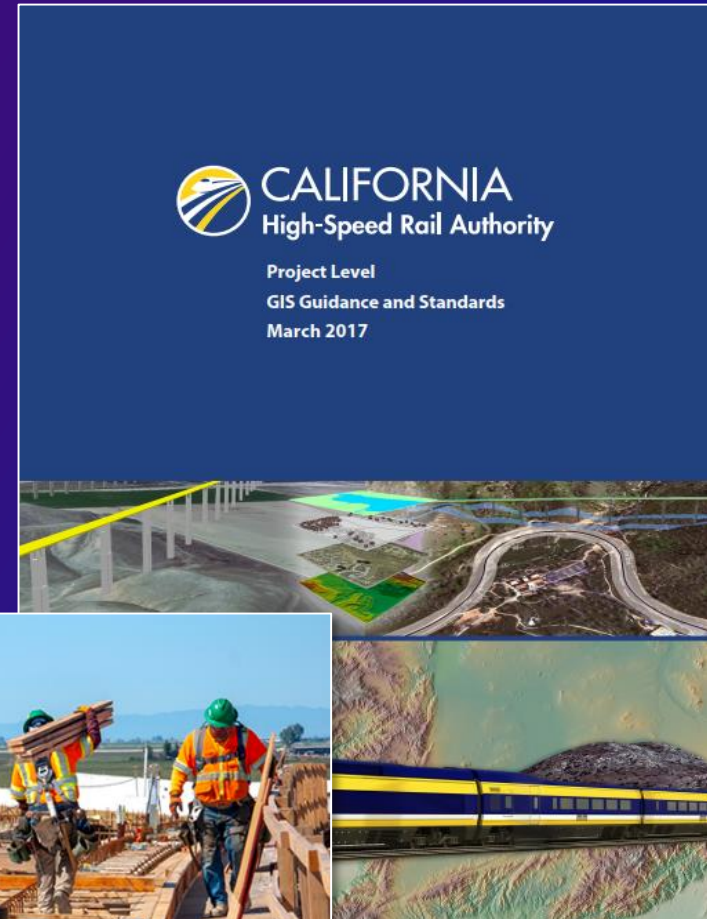
CHSRA Introduction

- First high-speed rail system in America
- Spanning 24 stations over 800 miles of rail
- Mobility, economically, and environmentally




CHSRA GIS Standards

- GIS data being submitted from the field
- Design-build teams and regional consultants
- GIS Requirements Manual for CPs and Sections




CHSRA GIS Standards

 **Data Access**

Request Database Access


My Registered Databases

- San Francisco to San Jose
- San Jose to Merced
- San Jose to Central Valley Wye
- Central Valley Wye

 **Data Reporting**

Reports

All Reports


 **File Management**

Check-out

Check-in

Geo-upload

Geo-download

 **File Conversion**

Design to GIS

Validate

Translate

CALIFORNIA High-Speed Rail Authority

Help/Support

GeoTransit

Welcome, Jason Hill

GeoTransit automates workflows between applications. Use GeoTransit to extract your Microstation Design files, transform them into GIS feature classes, and upload your team's Program geospatial data assets.

FME Number of Jobs in Queue: 0

All Reports

Request Database Access

Design to GIS

Reports

Check-out

Validate

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Translate

GeoDownload

My Registered Databases

- San Francisco to San Jose
- San Jose to Central Valley Wye
- Central Valley Wye
- Merced to Fresno [Release Lock](#)



GIS Data Transparency



Tier III Data

- Federal
- State
- Local



Tier I Data

- Alignment (centerline)
- Environmental Resource Study Area (ERSA)
- Environmental Footprints for Construction
- Permit to Enter (PTE) Parcels (w/Status)
- Property Access Notification Locations
- Right-of-Way (ROW) Acquisition
- Structures (Constructed)
- Parcel Boundaries



Tier II Data

- Noise
- Habitat
- Cultural
- Wetlands
- Etc.



GIS Systems Integration



GeoAMPS

ROW Real Property Acquisition

- Parcels (HST)
- Appraisal Maps (linked)
- Real Property View Online



EMMA

Environmental Mitigation M

- Cultural Resources
- Permits and Packaging
- HAZWAM Module Data
- Important Farm Land (IFL)



MAXIMO

Asset Management Maintenance


- Utilities
- Structures
- Work Orders



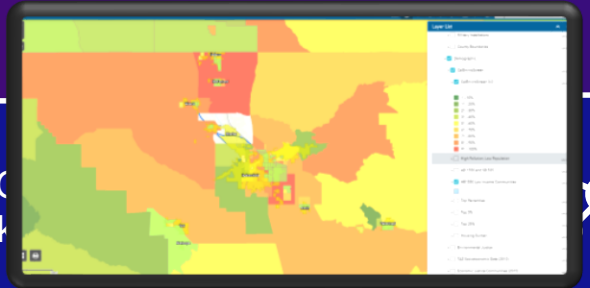

GIS Enterprise Solutions

PlanView

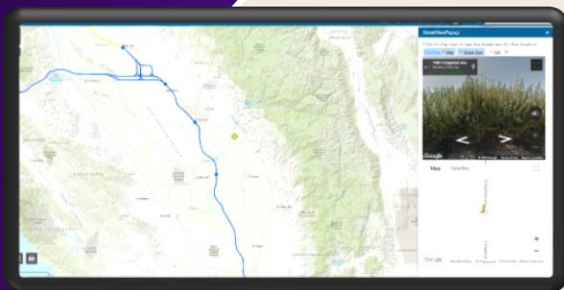
ArcGIS Desktop



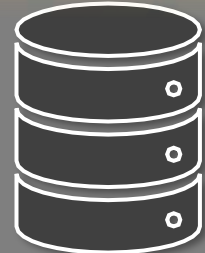
Portal



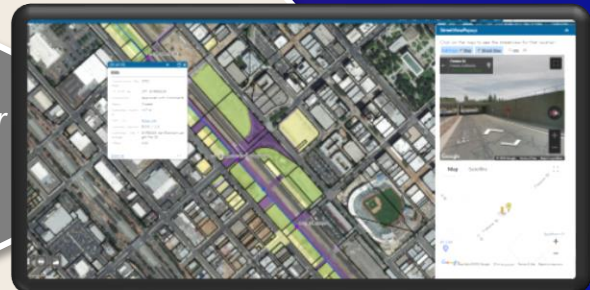
EnviroView



ArcGIS Enterprise



SQL Server Database



Real Property View

FME S



Explorer App



GeoView



GIS Enterprise Solutions

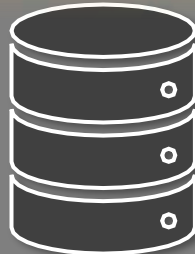
PlanView



EnviroView



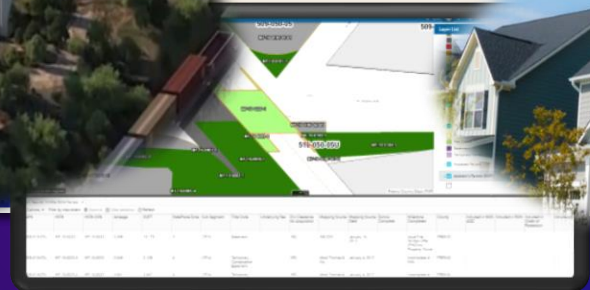
ESRI ArcGIS Enterprise



SQL Server Database



Real Property View



GeoView



Real Property View – For Real Property, ROW, and Property Management

Real Property View (Beta) V.1.0

Find address or place

Enhanced Search

By Shape | By Value | Results

Features selected: 1

- StatePlane Zone: 4
- County: FRESNO
- Sub Segment: CP1A
- Title Code: Easement
- Underlying Fee:
- Env Clearance for Acquisition: YES
- Mapping Source: AECOM
- Mapping Source Date: 01/16/2013
- Escrow Complete:
- Milestone Completed: Issue First Written Offer (FWO) to Property Owner
- Included in MOS AQC:
- Included in RON:

Layer List

- Important Farmland
 - Fermland of Local Importance
 - Fermland of Statewide Importance
 - Prime Farmland
 - Unique Farmland
- Special Status Species Habitat Impacts
 - Fresno to Bakersfield - California tiger salamander upland
 - Fresno to Bakersfield - San Joaquin antelope squirrel
 - Fresno to Bakersfield - San Joaquin kit fox
 - Fresno to Bakersfield - Swainson's hawk
 - Fresno to Bakersfield - Tipton kangaroo rat
 - Merced to Fresno - California tiger salamander aquatic
 - Merced to Fresno - California tiger salamander upland
 - Merced to Fresno - Hairy orcutt grass
 - Merced to Fresno - San Joaquin kit fox
 - Merced to Fresno - San Joaquin kit fox upland
 - Merced to Fresno - Swainson's hawk foraging
- Population Density (per sq. mi.)
 - 0 - 1,000
 - 1,000 - 8,400
 - 8,400 - 15,800
 - 15,800 - 24,000
- Population Density Range of Non-operational Parcels
 - 0 - 1,000
 - 1,000 - 8,400

Legend

- Fresno to Bakersfield - California tiger salamander upland
- Fresno to Bakersfield - San Joaquin antelope squirrel
- Fresno to Bakersfield - San Joaquin kit fox
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- Merced to Fresno - San Joaquin kit fox
- Merced to Fresno - San Joaquin kit fox upland
- Merced to Fresno - Swainson's hawk foraging

Population Density (per sq. mi.)

- 0 - 1,000
- 1,000 - 8,400
- 8,400 - 15,800
- 15,800 - 24,000

Average Household Income

- \$0 - 14,700
- \$14,700 - 60,600
- \$60,600 - 106,400
- \$106,400 - 152,300
- \$152,300 - 386,900

Average Household Income Range of Non-operational Parcels

- \$14,700 - 60,600
- \$60,600 - 106,400
- \$106,400 - 152,300

Zoning

- AG: Agricultural
- BP: Business Park
- C: Commercial
- DT: Downtown
- I: Industrial

Search Results: CHSRA ROW Parcels

Options | Filter by map extent | Zoom to | Clear selection | Refresh

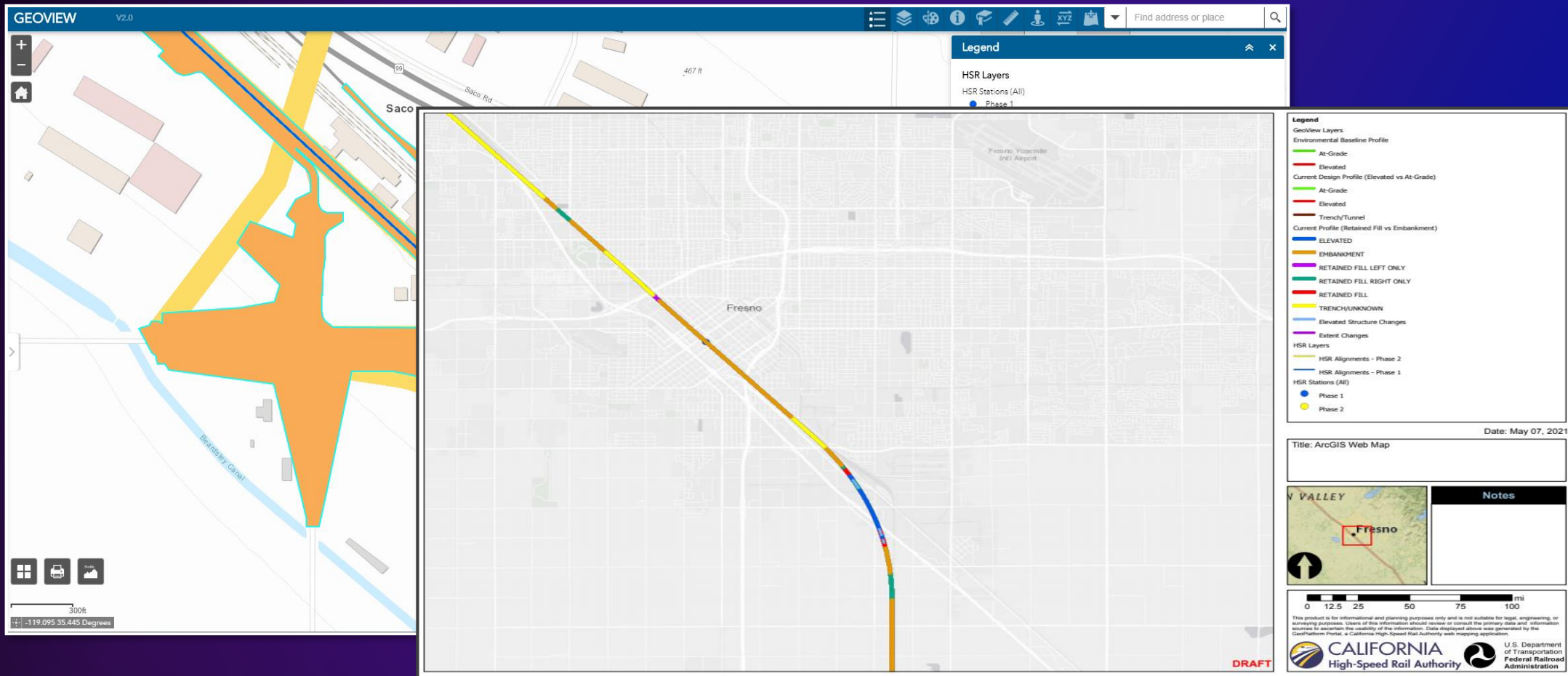
APN	HST#	HST# JOIN	Acreage	SQFT	StatePlane Zone	Sub Segment	Title Code	Underlying Fee	Env Clearance for Acquisition	Mapping Source	Mapping Source Date	Escrow Complete	Milestone Completed	County	Included in MOS AQC	Included in RON	Included in Order of Possession	Included in P
508-010-07U	MF-10-0223-1	MF-10-0223	0.348	15,178	4	CP1A	Easement		YES	AECOM	January 16, 2013		Issue First Written Offer (FWO) to Property Owner	FRESNO				

1 features 0 selected

510-050-31 | 510-050-56



GeoView – For engineering, geotechnical, and infrastructure related information mapping



UtilityView – For accessing and displaying surrounding third-party utilities data

HSR Stations (All)

Stet_Name	Fresno - Mariposa St.
CROSS STREETS	Mariposa St and H St
SECTION	Fresno to Bakersfield
PHASE	Phase 1
LAT	36.73
LONG	-119.79

Layer List

- PGE Electric Transmission Line
- PGE Potential Electric Transmission Line
- PGE Gas Pipeline
- PGE Electric Transmission Line
- PGE Potential Electric Transmission Line
- Comcast SValley Points
- Comcast SValley PolyLines
- Fresno Sewer Lines
- Fresno Water Lines
- Fresno Flood Pipelines
- Bakersfield Sewer Pipes
- Wasco Sewer Lines
- Wasco Storm Drains

OBJECTID	Comply	Plot	WtrDiam	WtrLength	WtrMatl	WtrYear	layer	type_HST	diam	Shape	Shape.STLength()
10694	269396	2653	8	370	TCI	1960	TCI - diam - 8	water	8		369.9753242193273
10695	225060	2653	6	10	TCI	1960	TCI - diam - 6	water	6		10.00131301844748
10696	269395	2653	0.75	45	UNK	1923	UNK - diam - 0.75	water	0.75		44.97334030724208



EnviroView – For reporting and analysis on environmental and species habitat data

The screenshot displays the ENVIROVIEW V2.0 web application. The main interface features a map with various colored overlays representing environmental data. A 'Layer List' panel on the right shows 'South Coast Wildlands' and 'California Essential Habitat Connectivity'. A 'StreetViewPopup' window is open, showing a street view of 1101 G St in Fresno, California. The browser address bar shows 'geo.cloudhrs.com/EnviroView'.



ArcGIS for Environmental Services

- EIR/EIS mapping and analysis
- Species permitting and GIS reporting maps



ArcGIS for Environmental Services – Environmental reexam data

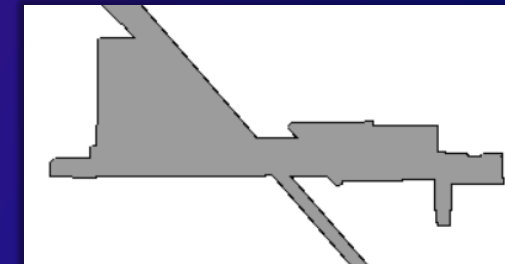
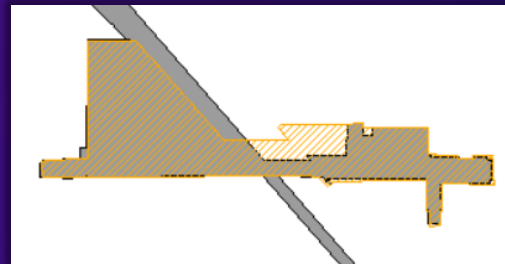
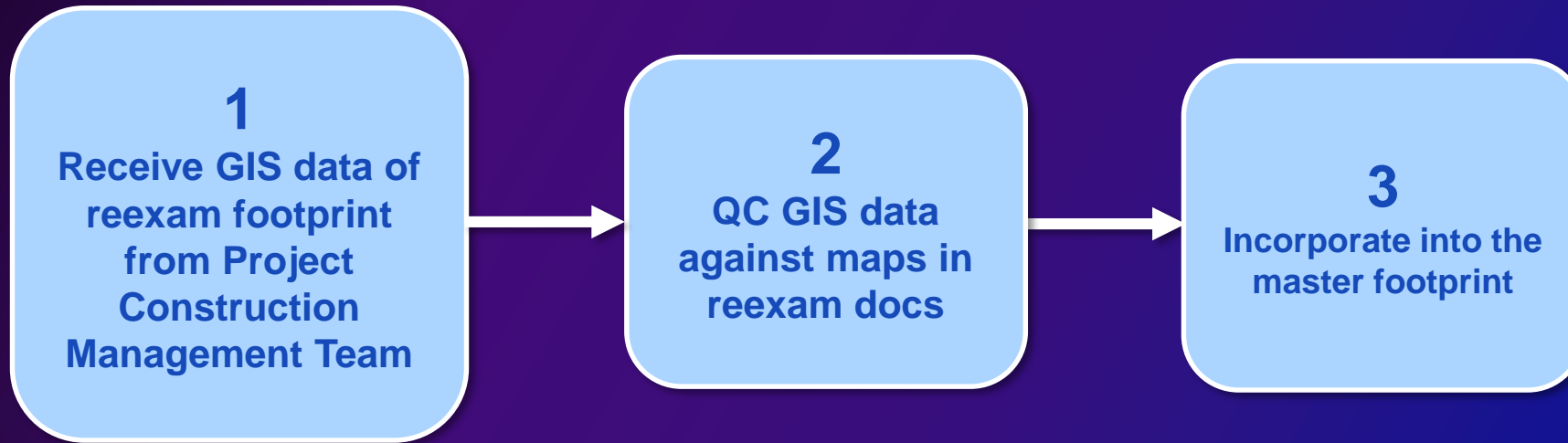
- Environmental Impact Report/Environmental Impact Statement (EIR/EIS)

Draft	Final
San Francisco to San Jose San Jose to Merced Bakersfield to Palmdale Burbank to Los Angeles	Merced to Fresno Central Valley Wye Fresno to Bakersfield Fresno to Bakersfield: Locally Generated Alternative

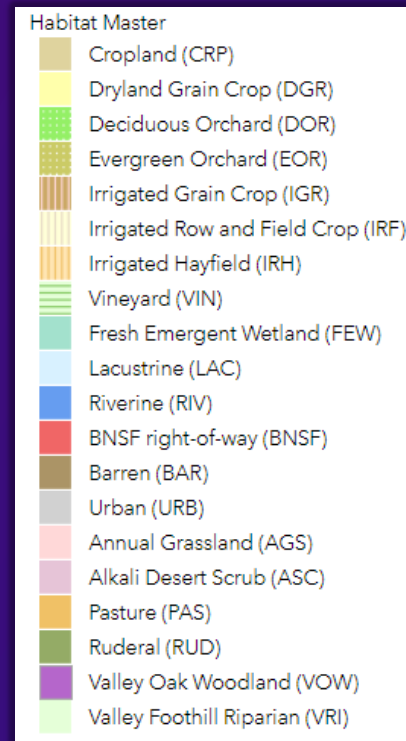
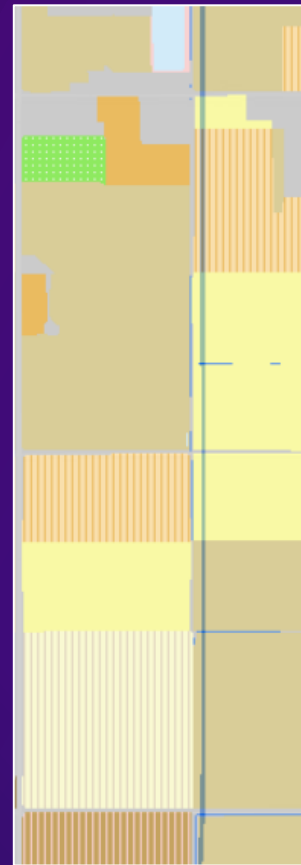
- Design changes or refinements may occur
- Environmental Reexamination (Reexam) addresses/answers if there are:
 - Changes in the environmental impacts from the EIR/EIS
 - Changes to environmental documentation to comply with NEPA and CEQA standards



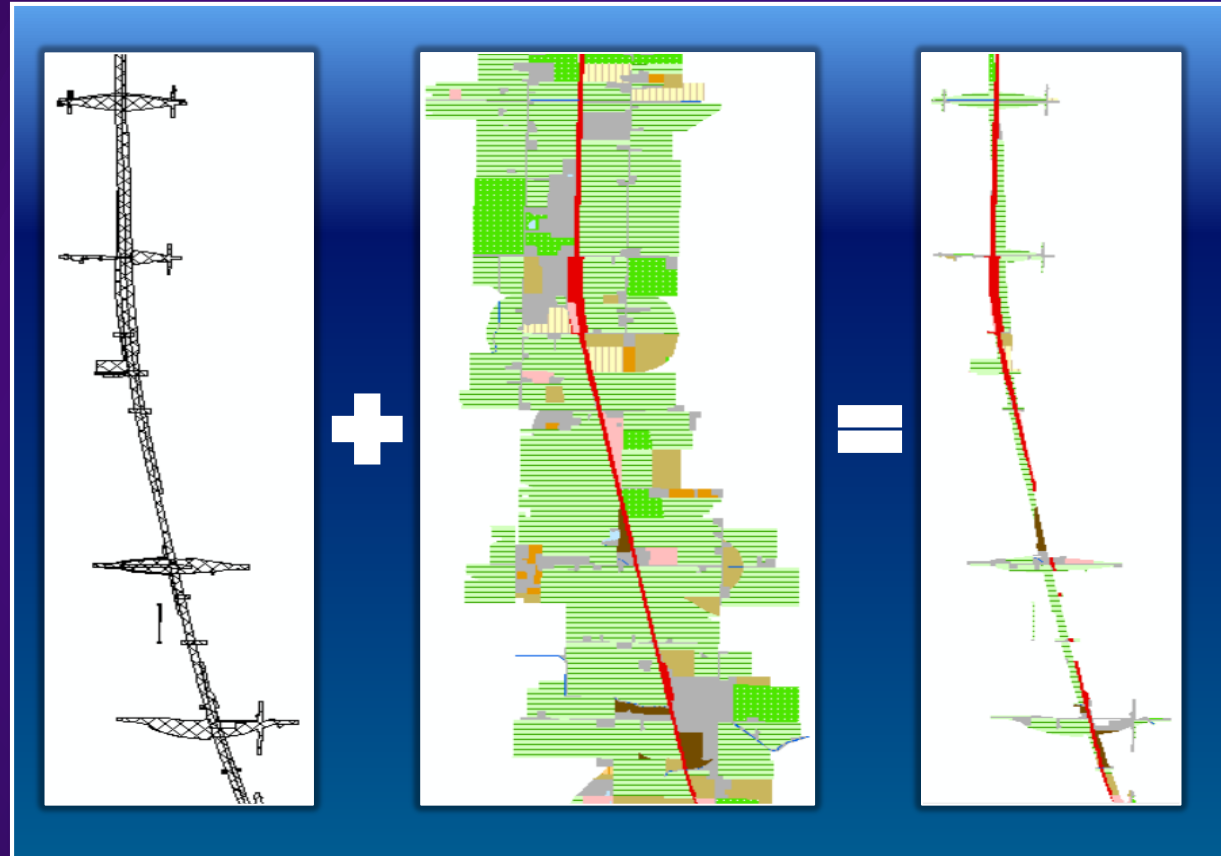
ArcGIS for Environmental Services – Environmental reexam footprint



ArcGIS for Environmental Services – Land cover mapping types



ArcGIS for Environmental Services – Species habitat impact analysis maps



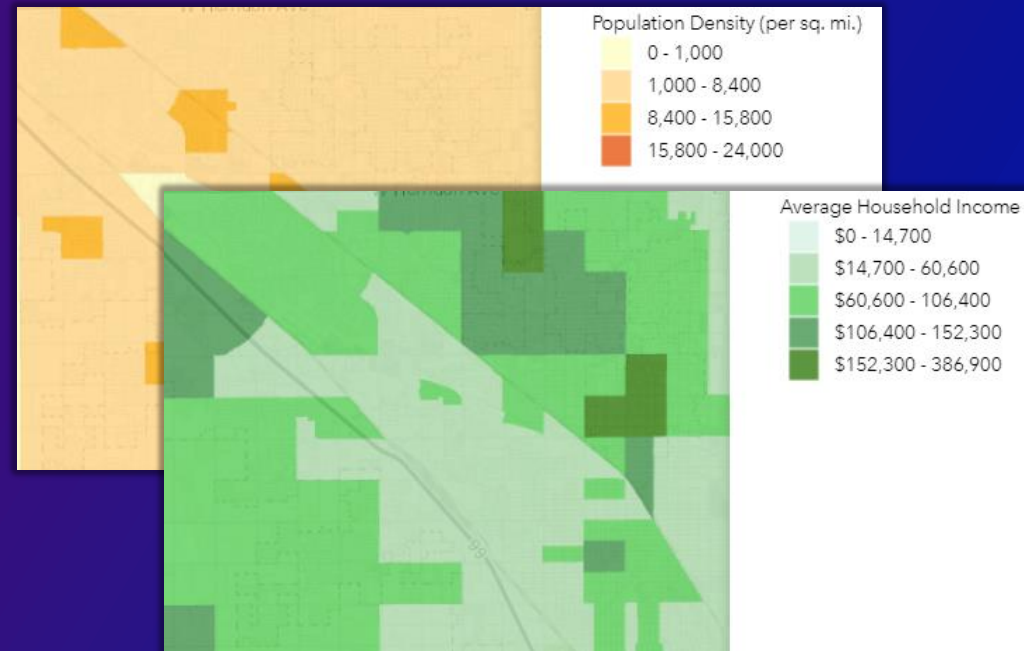
ArcGIS for Environmental Services – Species habitat and impact acreages

Species	Habitat Type	Impact Type
Tipton kangaroo rat	Alkali desert scrub, annual grassland, barren and pasture	Direct
California tiger salamander	AQUATIC: Vernal pools/seasonal wetlands	Direct
	UPLAND: alkali desert scrub, annual grasslands, pasture surrounding vernal pools/seasonal wetlands	Direct
Blunt-nosed leopard lizard	Alkali desert scrub, annual grassland, barren and valley foothill riparian	Direct
Vernal pool fairy shrimp	Vernal pools / seasonal wetlands	Direct
Vernal pool tadpole shrimp	Vernal pools / seasonal wetlands delineated within the geographic range of the species	Direct
Valley elderberry longhorn beetle	Elderberry shrubs (<i>Sambucus</i> spp.)	Direct and Indirect
California jewelflower	Unsurveyed alkali desert scrub, annual grassland, and pasture in Fresno County	Direct
Hoover's spurge	Vernal pools / seasonal wetlands in Tulare County	Direct
Kern mallow	Unsurveyed alkali desert scrub, annual grassland, and pasture in Tulare and Kern Counties	Direct
San Joaquin woolly threads	Unsurveyed alkali desert scrub, annual grassland, and pasture in Fresno, Kings, and Kern Counties	Direct



ArcGIS for Planning and Sustainability – Land-use planning and allocation

- Parcel review to determine additional potential uses
- Analysis inputs/considerations include:
 - Parcel size and shape
 - Traction power sub-stations
 - Important farmland
 - Population density
 - Average household income
 - Zoning / land-use
- Potential parcel land uses:
 - Environmental mitigation
 - Commercial
 - Solar



Raster Warehouse – Raster imagery, 3D LiDAR and surface topography

The screenshot displays the Raster Warehouse web application interface. At the top, the header includes the CALIFORNIA High-Speed Rail Authority logo and the title "Raster Warehouse". Navigation tabs include Dataset, Product, Generate, Output, and Cart. Below the navigation, there are sections for "Available Products" and a table listing individual products.

Available Products

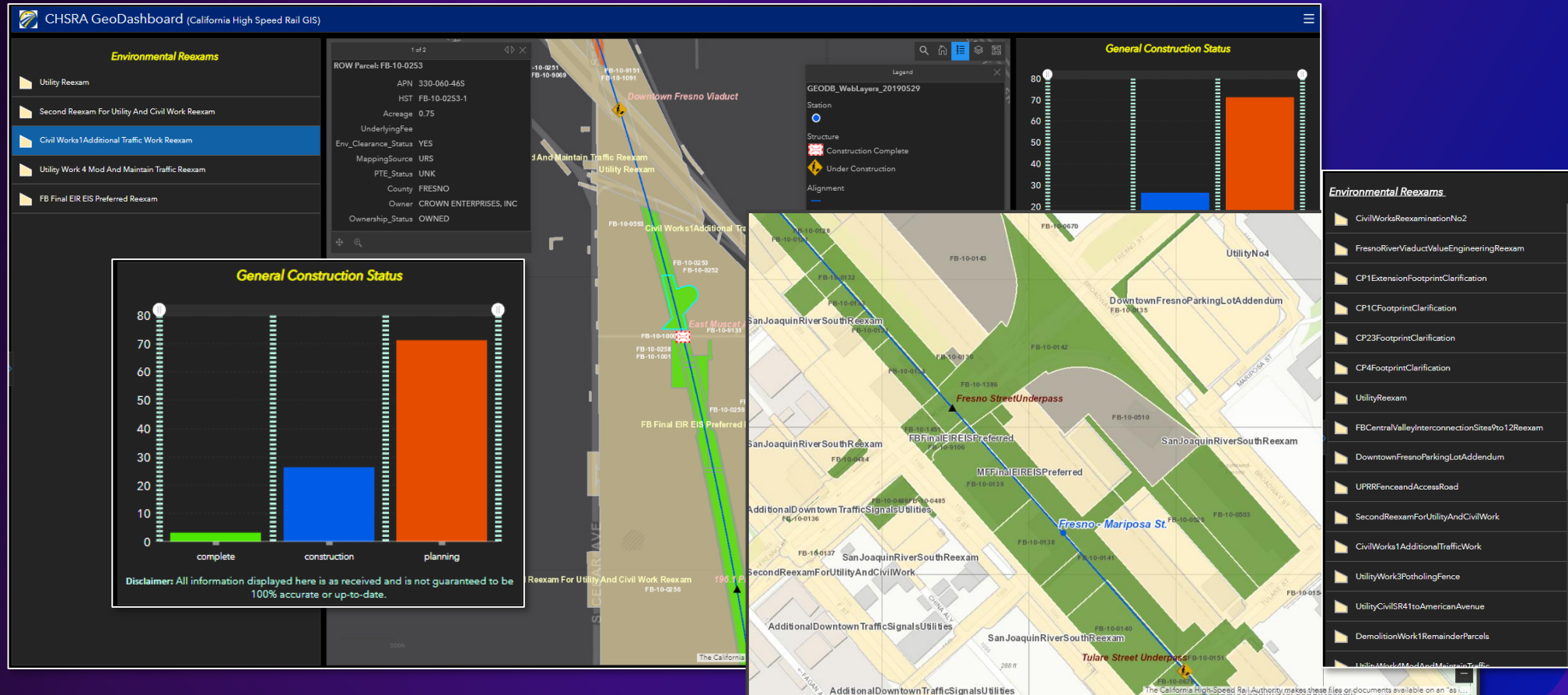
UCSD 2016 Northern California 1.5 Foot Resolution

Preview	Product	Action	Cart
	Title Name: INT_NHSR_01095	Zoom To Remove From Map Download	
	Title Name: INT_NHSR_01096	Zoom To Remove From Map Download	
	Title Name: INT_NHSR_01097	Zoom To Remove From Map Download	
	Title Name: INT_NHSR_01098	Zoom To Remove From Map Download	
	Title Name: INT_NHSR_01099	Zoom To Remove From Map Download	
	Title Name: INT_NHSR_01100	Zoom To Remove From Map Download	
	Title Name: INT_NHSR_01101	Zoom To Remove From Map Download	

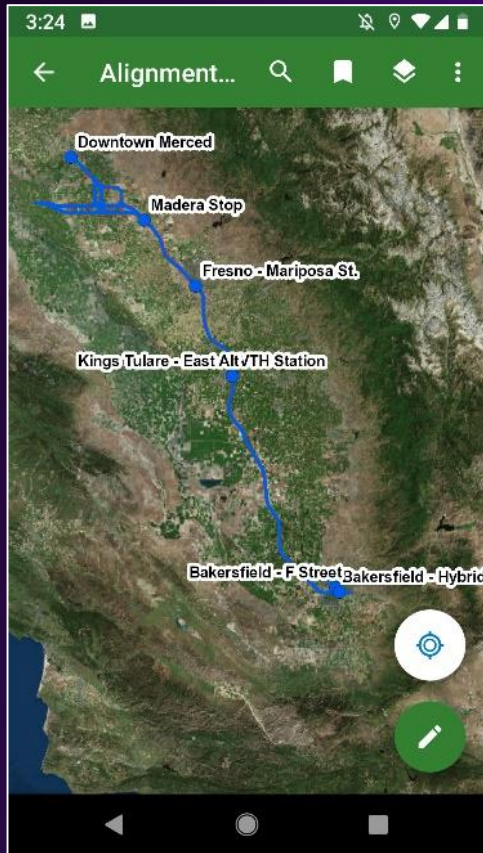
The interface also features a map view with a search bar and a 3D LiDAR viewer. The 3D viewer shows a topographic surface with a color gradient from blue (low elevation) to red (high elevation). It includes a legend for Special Overlays, a toolbar, and a status bar at the bottom with coordinates and metadata.



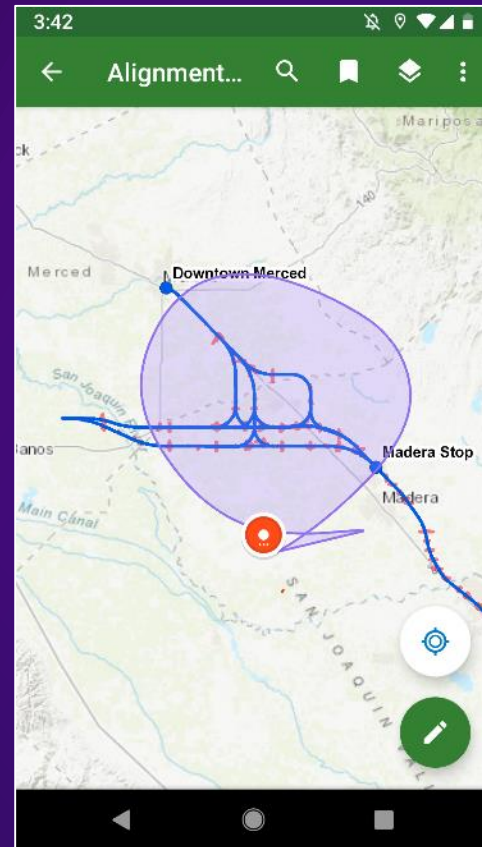
GeoDashboard – Real-time environmental clearance status and design metrics data



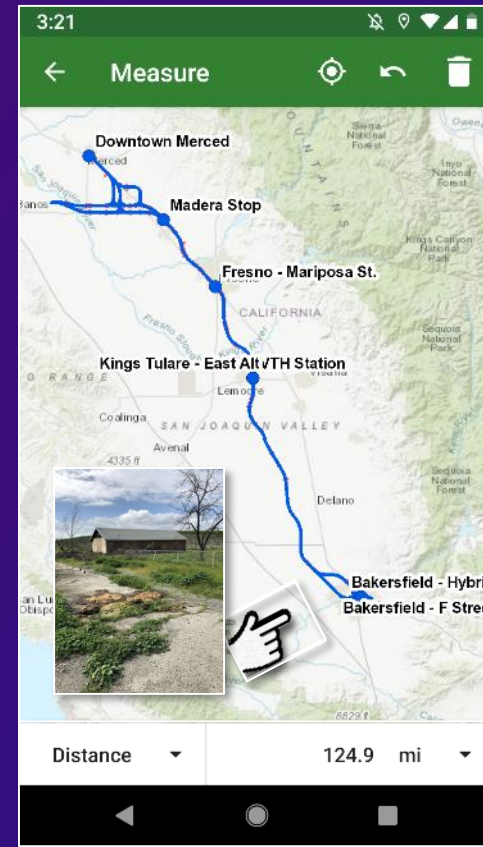
GeoMobile – Real-time property management data capture and analysis from the field



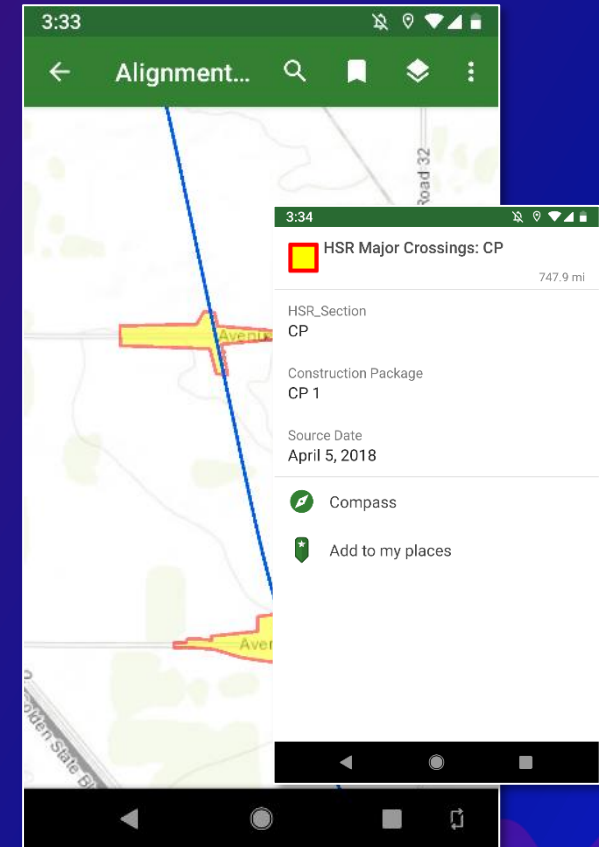
Display Information



Share Mark-Ups



Measure Distances



Show Attributes



HSR GIS Enterprise – Moving forward...

- Standing up an *ArcGIS* for *Sharepoint* site for Configuration Management
- Migrating from *ESRI Explorer* app to *Field Maps* for ROW Property Management



HSR Public Page – BuildHSR.com

- Visit us at: www.buildhsr.com



PROJECTS | ROAD CLOSURES & DETOURS | MAP | GET THE FACTS
CONSTRUCTION PACKAGES | CONSTRUCTION UPDATES | FACES



CONSTRUCTION UPDATE
MARCH 2021

California High-Speed Rail Construction Update- March 2021

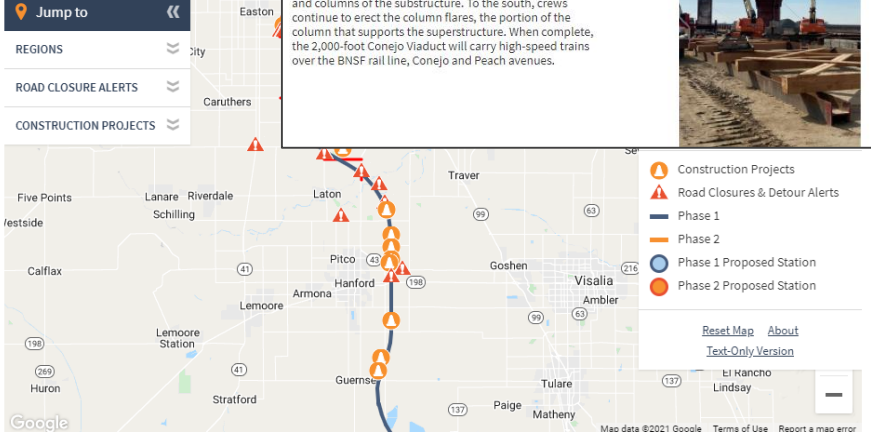
ROAD CLOSURES & DETOUR ALERTS

- Mon May 17, 2021 - Fri Dec 30, 2022
Full Road Closure Along Ventura Street in Fresno
Fresno, CA
- Mon May 10, 2021 - Thu Mar 31, 2022
Road Closures Along Tulare Street and China Alley in Fresno
Fresno, CA
- Sun May 9, 2021 - Thu Jul 8, 2021
Nighttime Lane and Shoulder Closures along Herndon Avenue in Fresno
Fresno, CA
- Wed May 5, 2021 - Tue Feb 28, 2023
Road Closure at Elkhorn Avenue in Fresno County
Fresno County, CA
- Mon Apr 19, 2021 - Thu Jul 8, 2021
Multiple Lane Closures Along Avenue 18 and Tremaine Avenue in Madera
Madera County, CA

INTERACTIVE

Jump to

- REGIONS
- ROAD CLOSURE ALERTS
- CONSTRUCTION PROJECTS



Construction Projects
Road Closures & Detour Alerts
Phase 1
Phase 2
Phase 1 Proposed Station
Phase 2 Proposed Station


Reset Map About
Text-Only Version

Map data ©2021 Google Terms of Use Report a map error

Conejo Viaduct

LOCATION:
From Conejo Avenue to Clarkson Avenue, west of State Route 43 in Fresno County

PHOTOS:



DESCRIPTION:
The 2,000 foot Conejo Viaduct will carry high-speed trains over the existing BNSF rail line, Conejo Avenue, and Peach Avenue.

CONSTRUCTION UPDATE:
At the northern portion of the Conejo Viaduct in Fresno County, crews continue to place concrete to form the bents and columns of the substructure. To the south, crews continue to erect the column flares, the portion of the column that supports the superstructure. When complete, the 2,000-foot Conejo Viaduct will carry high-speed trains over the BNSF rail line, Conejo and Peach avenues.



Thank You

- For more information please contact us...



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