

# DRISI

CALTRANS DIVISION OF RESEARCH,  
INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

# Research

# Notes

Design/  
Construction

## OCTOBER 2023

Project Title:  
Determine Regional Sediment  
Bulking Methods for Northern  
California in Support of Wildfire  
Mitigation

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## Determine Regional Sediment Bulking Methods for Northern California in Support of Wildfire Mitigation

Create regional specific sediment bulking methods to design resilient facilities and performance measures regarding climate change.

### WHAT IS THE NEED?

Currently the California Department of Transportation (Caltrans) is searching for a methodology to determine sediment bulking specific to Northern California. In Southern California, there are specific, existing methods and equations in use by Caltrans. Due to increased wildfire occurrence and severity in northern California, a regionalized sediment bulking method for Northern California watersheds would allow Caltrans to design better hydraulic and stormwater facilities. This prepares Caltrans for climate change and the resulting increase wildfire potential to create a more sustainable roadway design.

### WHAT ARE WE DOING?

Firstly, a literature and scientific review will be performed of current sediment bulking methodologies applied within similar geomorphic and climatological areas to Northern California watersheds. Next, a standardized regionalized method with supporting equations for each region to determine sediment bulking will be developed. The result will be a sediment bulking method that will be applicable in Northern California that will aid in creating better facilities that require less maintenance.



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knowledge that improves  
California's transportation system

## WHAT IS OUR GOAL?

The goal of the project is to create regional specific sediment bulking methods for Caltrans to design resilient facilities and performance measures regarding climate change stated in Streets and Highways Code (SHC) 2030(e).

## WHAT IS THE BENEFIT?

The research will benefit Caltrans by having roadways that are more resilient and safer. The methodology can be used by local and state agencies to create safer and more sustainable infrastructure. Also, this research will provide a defensible justification and method for sizing drainage facilities that account for sediment bulked associated with wildfires.

## WHAT IS THE PROGRESS TO DATE?

- The research team has been working on data layers needed for an improved bulking factors method and looks forward to running through a case study of how district engineers currently identify bulking factors.
- Continue to work on creating a machine learning model to generate a burn severity potential dataset for Northern California.