

# Peach Springs Railroad Grade Separation Team

**By: Breanna Smith, Meshal Alotaiby,  
Verneon Reed and Alex Goodman**

Photograph Provided by: Kevin Davidson

W -113.424585, N 35.527973, 1427.800m, 1,223KM, MS 650



# Project Site

- Peach Springs, AZ
  - Hualapai Indian Reservation
  - Mohave County
  - 1,090 population (2010 Census)



Photograph Provided by: National Online Project



# Project Purpose

- Clients:
  - Kevin Davidson- Hualapai Tribe Planning & Economic Development Director
  - Philip Wisely PE- Public Services Director
- Grade separation for a current at grade road crossing with the railroad
- Issues with current design:
  - Safety
    - Advanced warning signs missing
    - Motor vehicle/train crashes
  - Noise complaint
    - Due to train horn
  - Emergency Vehicle access
    - Block crossing



Photograph Provided by: The Times of Northwest Indiana



# Background Research

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- BNSF Railroad Transportation
  - Height Requirements
- Vehicular Transportation
  - Speed limitations
- ADOT Traffic Analysis Reports LRTP Study
  - Warning signs missing
- Soil Analysis
  - Soil Type

- Environmental Concerns

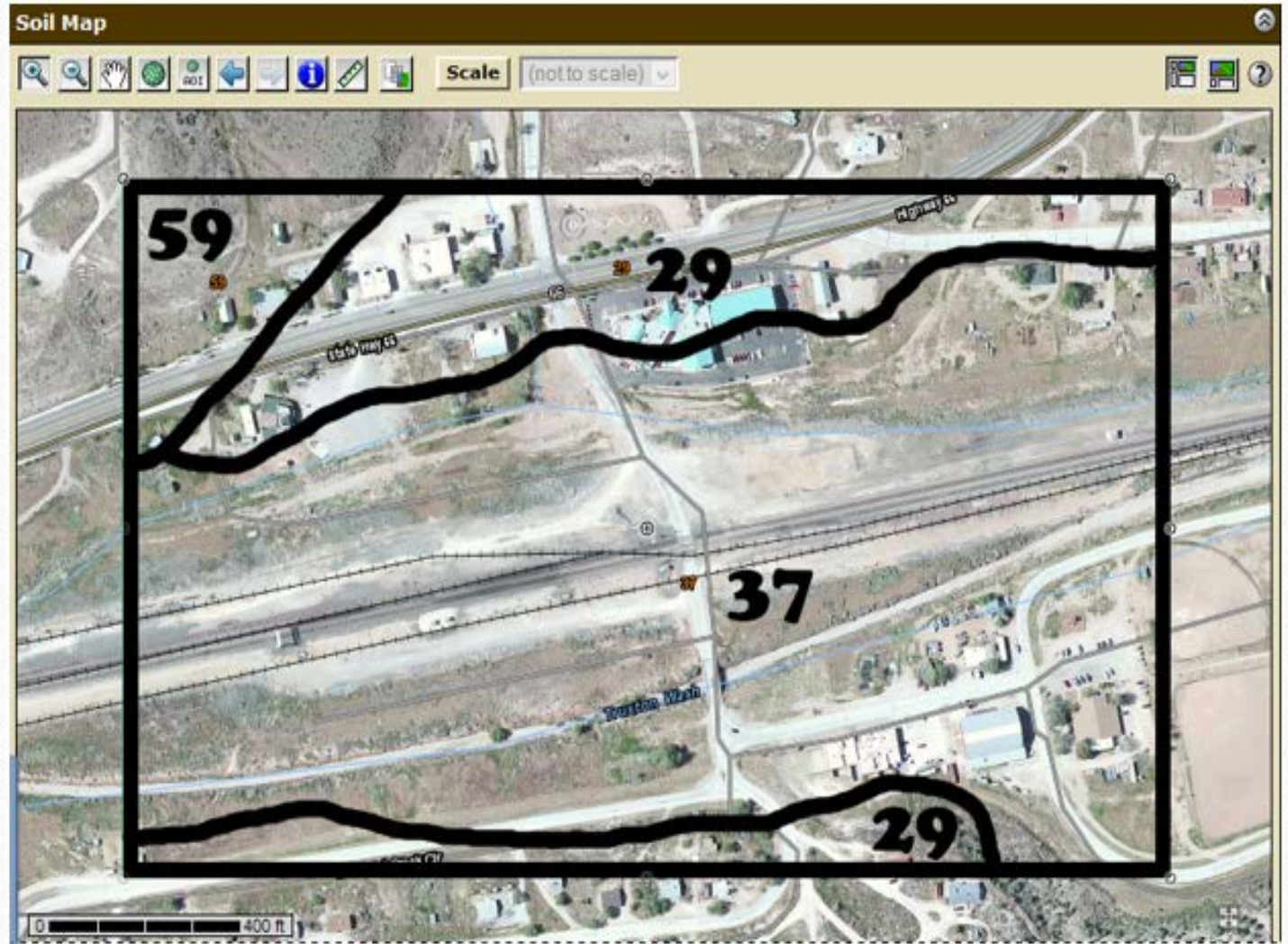


Photograph Provided by: One Earth



# Soil Analysis

| Map Unit Legend   |  |              |                |
|---|--|--------------|----------------|
| Hualapai-Havasupai Area, Arizona, Parts of Coconino, Mohave, and Yavapai Counties (AZ699) |  |              |                |
| Map Unit Symbol   | Map Unit Name  | Acres in AOI | Percent of AOI |
| 29  | Peachsprings-Havasupai complex, 2 to 35 percent slopes   | 16.2         | 24.1%          |
| 37  | Quagwa silt loam, 1 to 3 percent slopes                  | 47.0         | 69.8%          |
| 59  | Wyva family-Rock outcrop complex, 5 to 35 percent slopes | 4.1          | 6.1%           |
| <b>Totals for Area of Interest</b>  |  | <b>67.2</b>  | <b>100.0%</b>  |



Photographs Provided by: NRCS Soil Survey



# Project Understanding

- Technical Considerations
  - Site Survey
  - ADOT LRTP Study
  - Existing hydrology reports
  - BNSF specifications for design
  - Existing under/overpasses
  - NRCS soils reports



**BNSF RAILWAY  
IN EMERGENCY CALL  
1-800-832-5452  
DIAMOND CREEK RD  
M.P. 465.72  
DOT BNSF 025215V**

Photographs Provided by: Kevin Davidson



# Project Understanding Continued...

- Potential Challenges
  - Constraints with BNSF's restrictions
  - Available road length for under/overpass
- Stakeholders
  1. Hualapai Indian Reservation
  2. BNSF
  3. ADOT
  4. Mohave County

Photograph Provided by: Google Maps





# Scope of Work

## Task 1: Site Evaluation

- Railroad
- Roadway
- Hydrology
- Existing Utilities

## Task 2: Standards and Requirements

- Hualapai Indian Reservation
- BNSF Railroad
- ADOT
- Mohave County

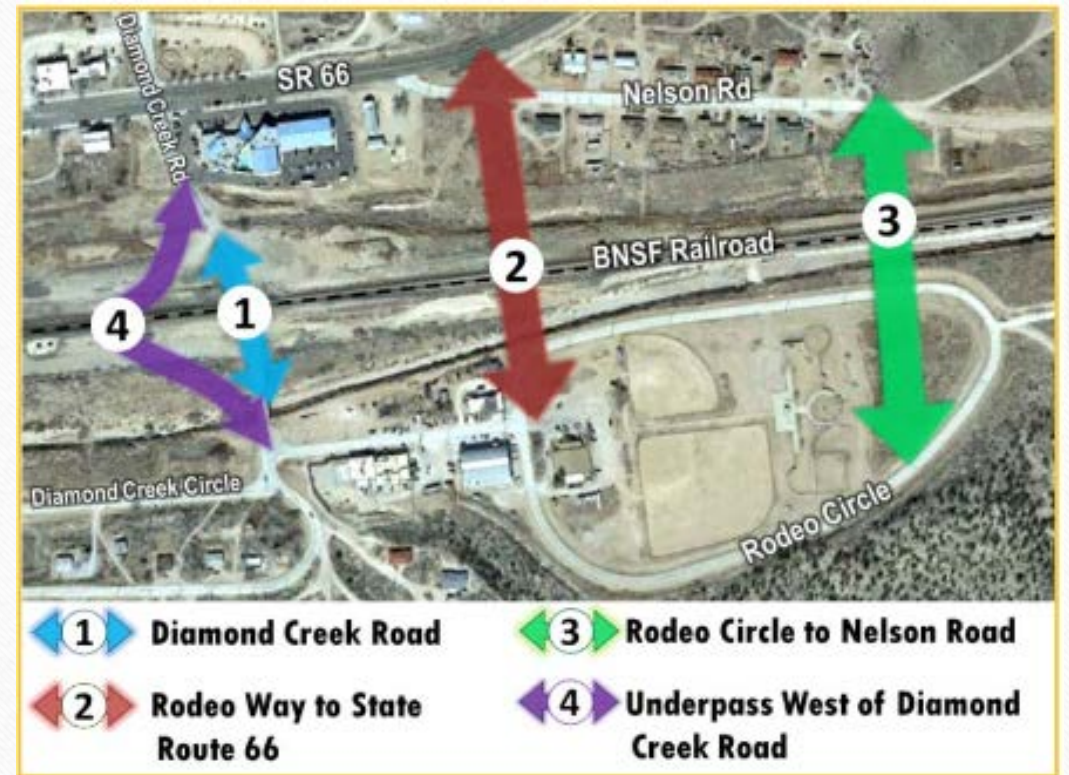


Photograph Provided by: Verneon Reed



# Scope of Work

- Task 3: Design Alternatives
  1. Diamond Creek Rd
  2. Rodeo Way to State Rt 66
  3. Rodeo Way to Nelson Rd
  4. Underpass West of Diamond Creek Rd
- Task 4: Final Design
  - Diamond Creek Rd
  - Underpass West of Diamond Creek Rd



Photograph Provided by: ADOT LRTP Study



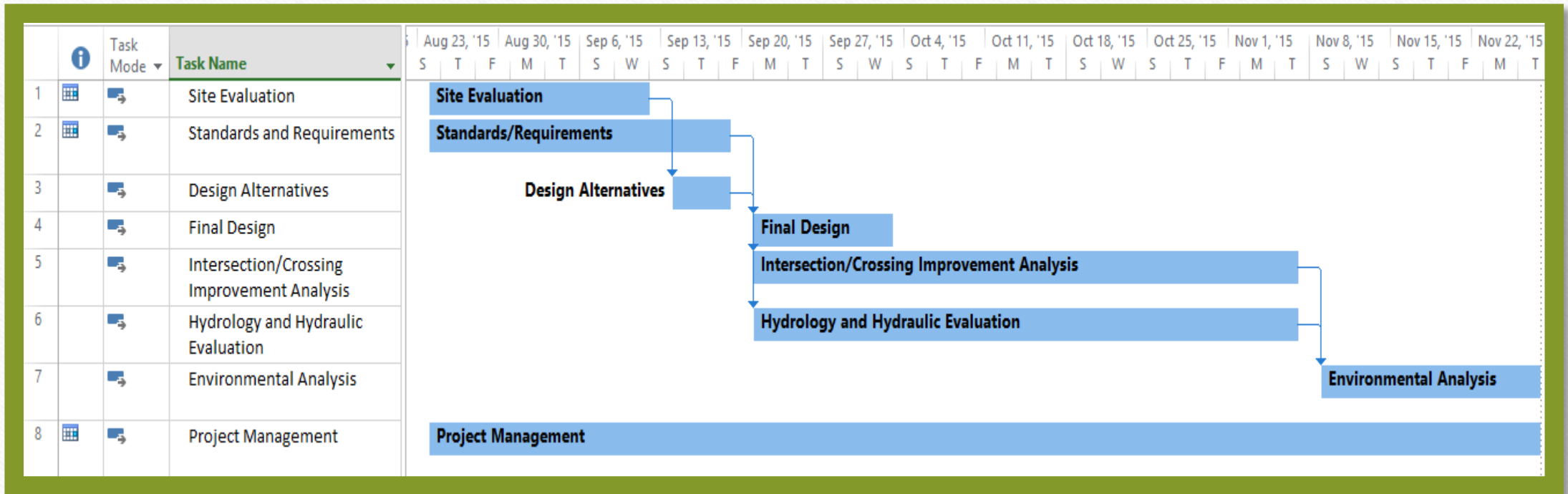
# Scope of Work

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- Task 5: Intersection Crossing Improvement Analysis
  - Railroad Traffic
  - Vehicular Traffic
  - Pedestrian Traffic
  - Safety
- Task 6: Hydrology and Hydraulic Evaluation
  - Hydrology
  - Hydraulic Structure Plan
- Task 7: Environmental Analysis
  - ADEQ
  - Local Endangered Species
- Task 8: Project Management
  - Project Schedule
  - Website
  - 50% Design Report
  - Design Report Final
  - Final Presentation



# Project Schedule: Critical Path





# Staffing and Cost of Engineering Services

| Staffing                       |            |
|--------------------------------|------------|
|                                | Hours      |
| Task 1: Site Evaluation        | 70         |
| Task 2: Standards and          | 55         |
| Task 3: Design Alternatives    | 65         |
| Task 4: Final Design           | 105        |
| Task 5: Intersection/ Crossing | 80         |
| Task 6: Hydrology and          | 70         |
| Task 7: Environmental          | 50         |
| Task 8: Project Management     | 125        |
| <b>Total Hours</b>             | <b>620</b> |

| Engineering Expenses |          |           |         |                |
|----------------------|----------|-----------|---------|----------------|
| Expenses             | Quantity | Unit Cost | Unit    | Sub Total      |
| Mileage              | 226      | \$0.56    | Mi.     | 126.56         |
| Per Diem             | 3        | \$100     | /person | 600            |
| Vehicle Rental       | 3        | \$55      | /day    | 165            |
| Misc. Items          | 20       | \$15.00   | Item    | 300            |
| <b>Total Cost</b>    |          |           |         | <b>1191.56</b> |

| Cost of Engineering Services |                 |          |          |                 |
|------------------------------|-----------------|----------|----------|-----------------|
|                              | Senior Engineer | Engineer | EIT      | Intern          |
| Billable Rate                | \$125/hr.       | \$95/hr. | \$40/hr. | \$20/hr.        |
| Total Hours                  | 60              | 315      | 165      | 80              |
| Total Cost Per Staff         | 7,500           | 29,925   | 6,600    | 1,600           |
| <b>Total Cost of Project</b> |                 |          |          | <b>\$45,625</b> |



# Questions?

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Photograph Provided by: <http://supercycle.org.au/quiz-venue-change/>