Update on the West Fork Carson River Vision Project

an alternative, more flexible approach to addressing water quality impairments

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Special thanks to Cindy Wise, Lahontan Regional Water Quality Control Board

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Overview

- California Water Boards
- Water Quality in the East and West Fork Carson River
- Vision Plan to Address Water Quality Impairments in the West Fork Carson
- Culvert Assessment Methodology
- Next Steps

Mission of State and Regional Water Boards

"… preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations."

Nine CA Regional Water Boards

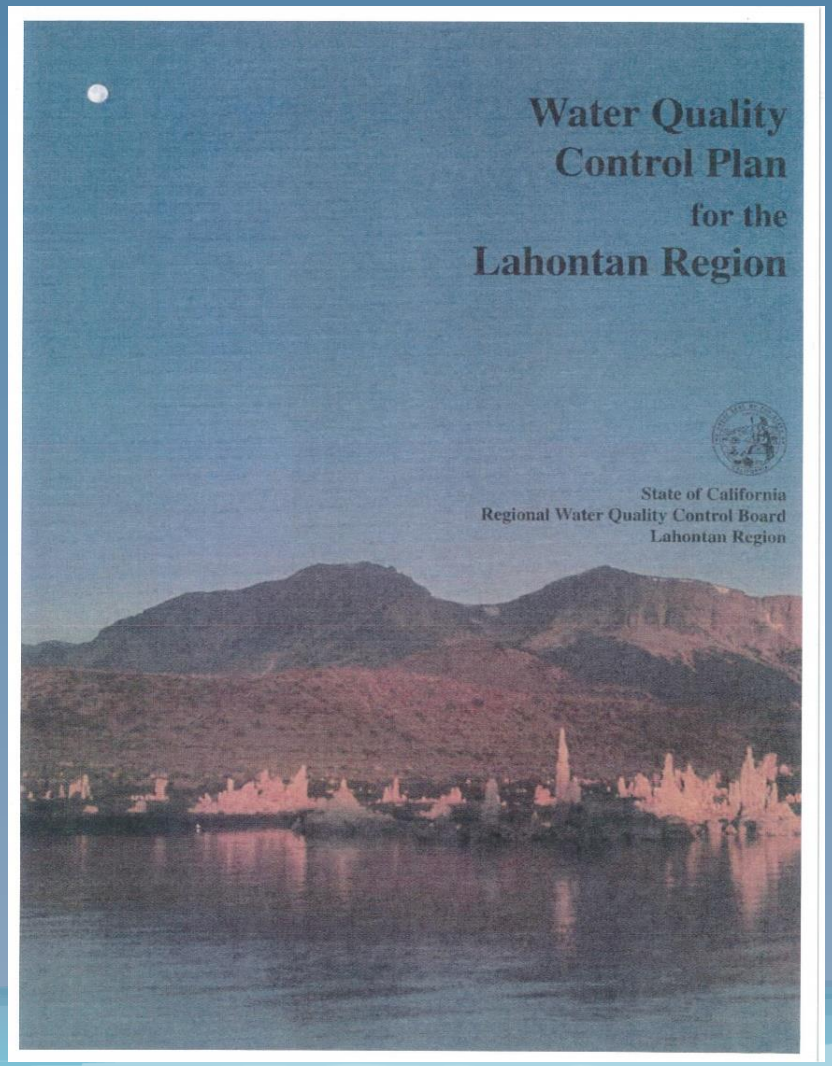
Lahontan Region – R6

- 570 miles long
- 33,131 square miles
- 700+ lakes
- 3,000+ miles of streams
- 1,500+ sq miles of groundwater basins

Lahontan Integrated Report: Overview

- The Clean Water Act requires States to identify surface waters that do not meet water quality objectives (WQOs)
- CA waterbody assessments are conducted in accordance with the State Water Board's *Water Quality Control Policy for Developing California's CWA Section 303(d) List* https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2015/020315_8_amendment_clean_version.pdf
- Waters not attaining WQOs are considered impaired and are identified in the **303(d) List** or "List of Impaired Waterbodies"

Lahontan Region WQOs

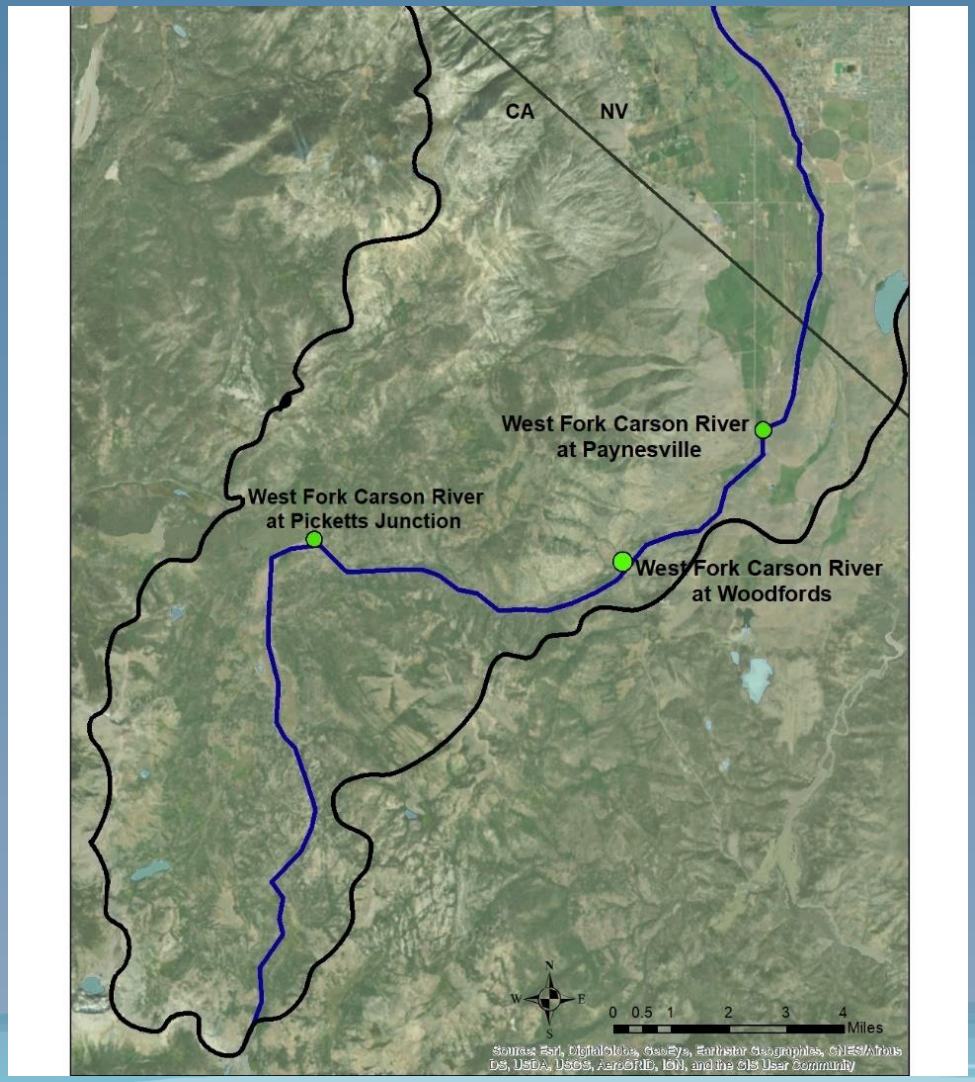


- Basin Plan contains:
  - Narrative WQOs
  - Region-wide WQOs
  - Site-Specific WQOs for many constituents
    - Based on historic water quality data
    - Reflect pristine condition of Lahontan waters

East Fork Carson River 303(d) Listings

- Previous Listings
  - Boron
  - Phosphorus
  - Sulfates
  - TDS
- New 2018Listings
  - Indicator Bacteria
  - Dissolved Oxygen
  - Turbidity

West Fork Carson River Segmentation 2018 Integrated Report



Upper: Headwaters to east end of Hope Valley

Middle: Hope Valley to Woodfords

Lower: Woodfords to Nevada line

W. F. Carson River 2018 updates to 303(d) List

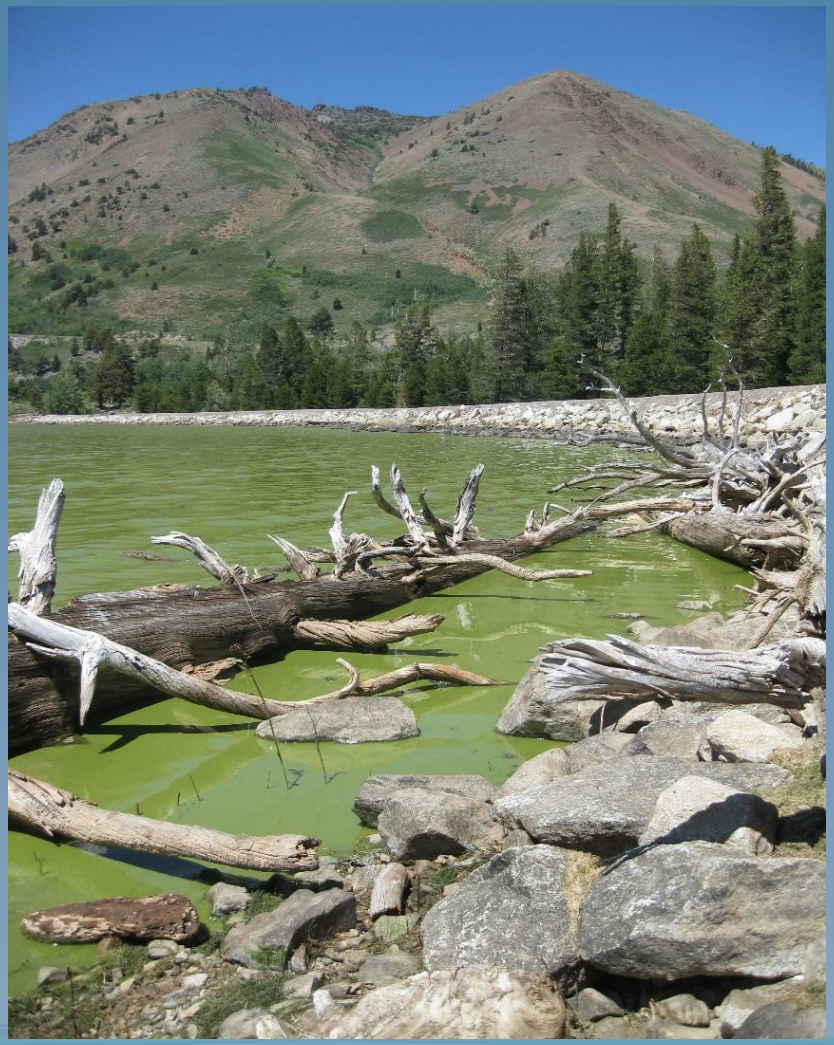
	Headwaters to Hope Valley	Hope Valley to Woodfords	Woodfords to Nevada line
303(d) listings removed	Chloride*, Nitrogen*, TDS*, Turbidity*	Indictor Bacteria (Data indicates WQO attained)	
303(d) listings retained	Nitrate, Phosphorus, Sulfates	Chloride, Nitrogen, Nitrate, Sulfates, TDS, Turbidity	Indicator Bacteria
NEW 303(d) listings	Total Kjeldahl Nitrogen*	Phosphorus*, Total Kjeldahl Nitrogen*	**Iron**, Nitrogen*, Nitrate*, **Sulfates**, **TDS**, **Total Kjeldahl Nitrogen**, **Turbidity**

* - Indicates change due to re-segmentation

BOLD - Indicates new data

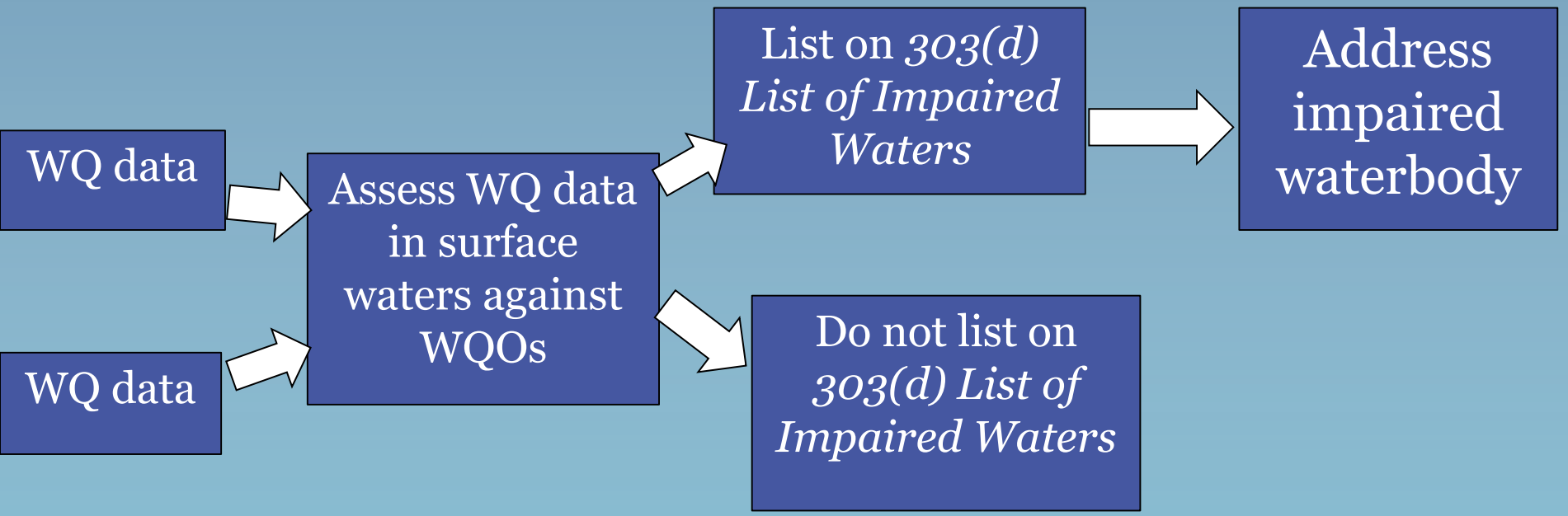
Potential Impacts to Beneficial Uses

- **Excess Nitrogen and Phosphorus**
  - Macrophyte and Algal growth
  - Hazardous Algal Blooms (HABs)
  - Low Dissolved Oxygen
- **Indicator Bacteria**
  - Human Health effects
- **Turbidity**
  - Impacts to Aquatic Life
  - Municipal Use



HAB Event at Red Lake August 2019

Review: Process to Determine Water Quality Impairments



West Fork Carson River: one of two "Vision Watersheds"

What is a Vision Project?

"Long-Term Vision for Assessment, Restoration, and Protection"

- **Watershed-wide planning effort focused on improving water quality**

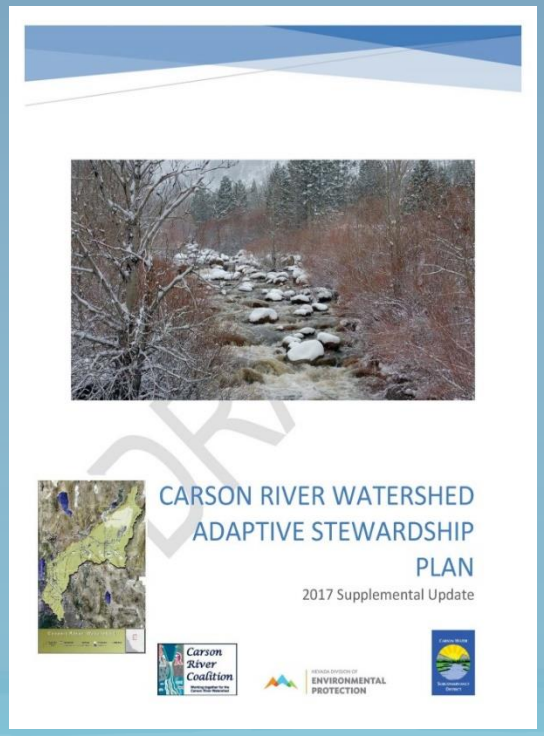
- **Provides flexibility in using available tools beyond TMDLs to improve water quality**

Why was the West Fork Carson River chosen as a Vision Project?

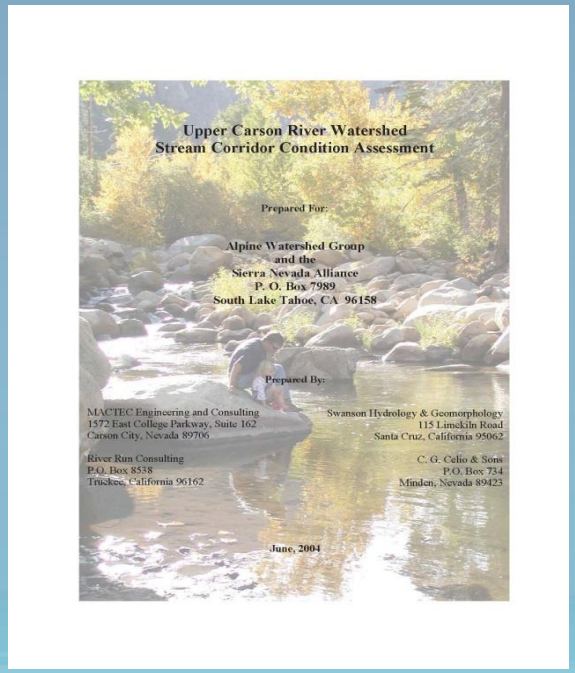
- Robust data set
- Public and stakeholder involvement
- Dynamic restoration projects planned, under way & completed
- And…….

Assessment and planning documents completed

CWSD Carson River Adaptive Stewardship Plan



Upper Carson River Watershed Stream Corridor Condition Assessment



In 2017, a Supplemental Update to the 2007 Carson Watershed Stewardship Plan was developed.

Our "Vision" for West Fork Carson River

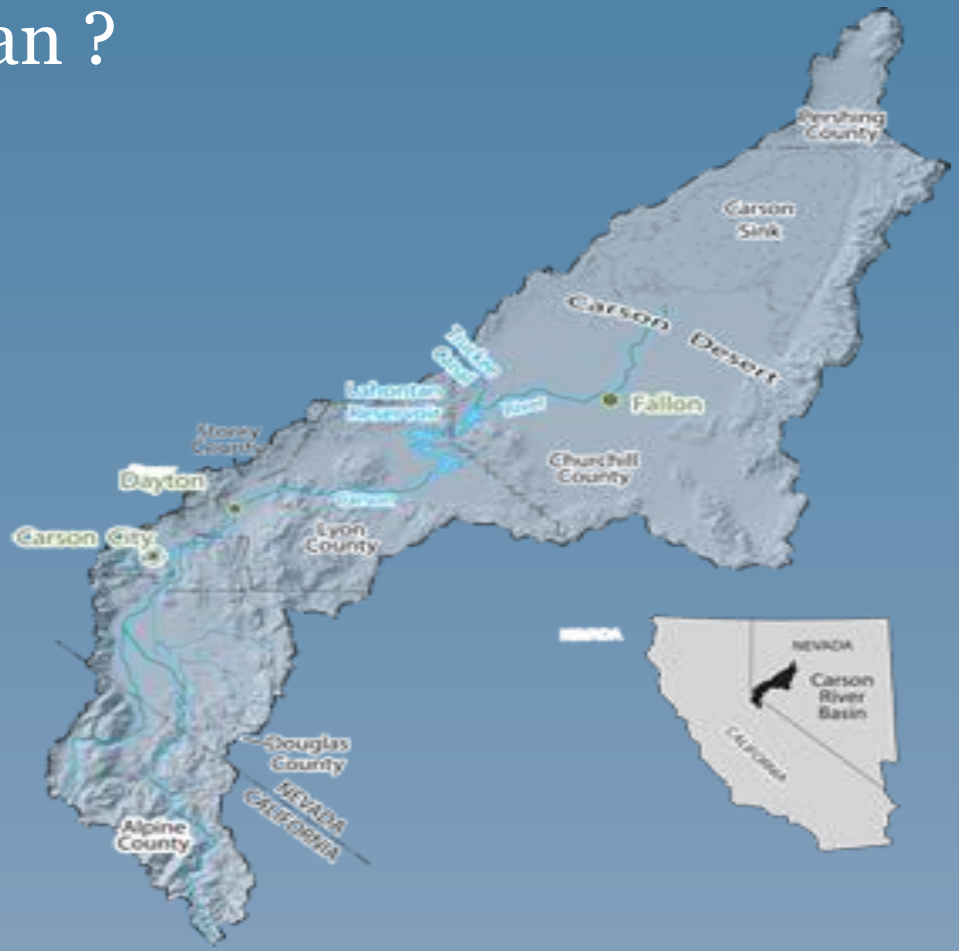
TMDL Alternative:

9-Element Watershed Plan

9 Element Watershed Plan ?

Nevada ☺

California ☹



Vision Plan = 9 Element Watershed Plan

Final Vision Plan will supplement Carson River Watershed Adaptive Stewardship Plan to be a 9-element watershed plan for the West Fork Carson River and is eligible for USEPA 319h grant funding

In California, the West Fork Carson River watershed:

- includes 67,760 acres of land and over 25 miles of river.
- is mainly conifer forest lands , with some shrub and brush rangeland, and small amounts of other uses

The California reaches consist of steep gradient and highly erosive headwater streams.

As well as low gradient streams that have been historically altered for agricultural water use near the California-Nevada Stateline.

Possible Sources of Impairments

Phosphorus eroded sediment, road and highway maintenance, construction sites, forest fires, storm water runoff and atmospheric deposition

Nitrogen septic systems, erosion, storm water, agricultural storm water, historic livestock grazing, treated effluent supplied for irrigation and natural nitrogen fixing by plants and soil bacteria.

Fecal Coliform livestock waste, wildlife, septic systems and recreational users of the watershed

Chloride, Sulfate, TDS, Turbidity - erosion

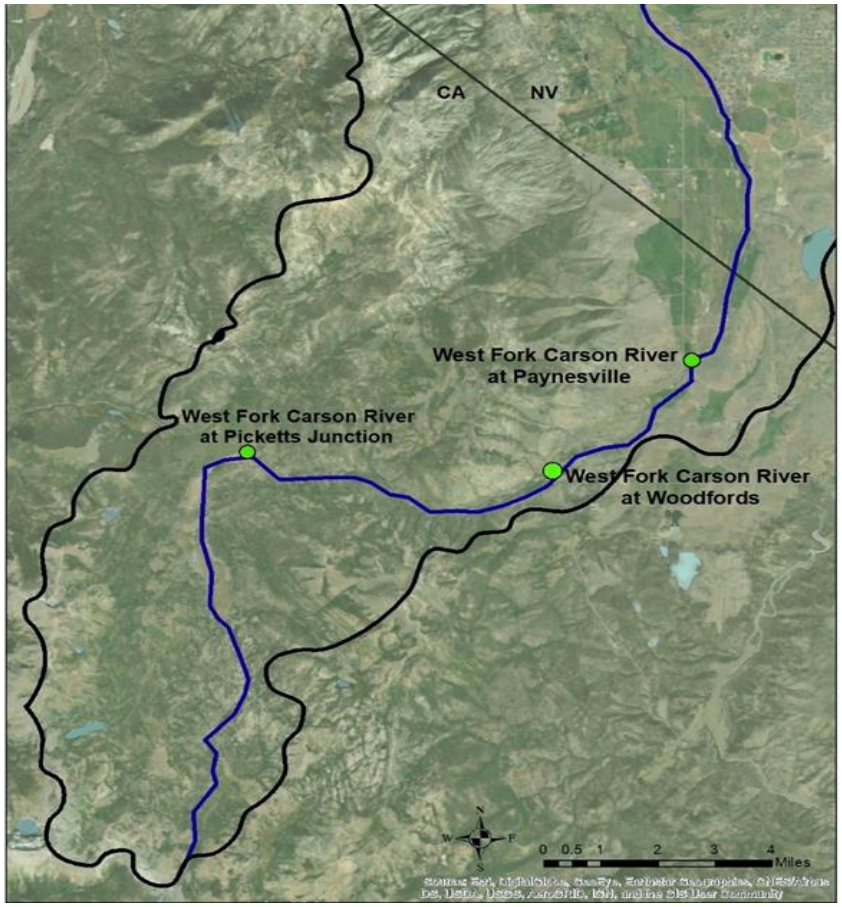
Field Assessment Methodology

- Identify stream crossings through GIS analysis
- Prepare in-office investigations of stream crossings
- Develop Methodology for field assessments
- Conduct field assessments
- Analyze results
- Identify stream crossings with high likelihood of failure

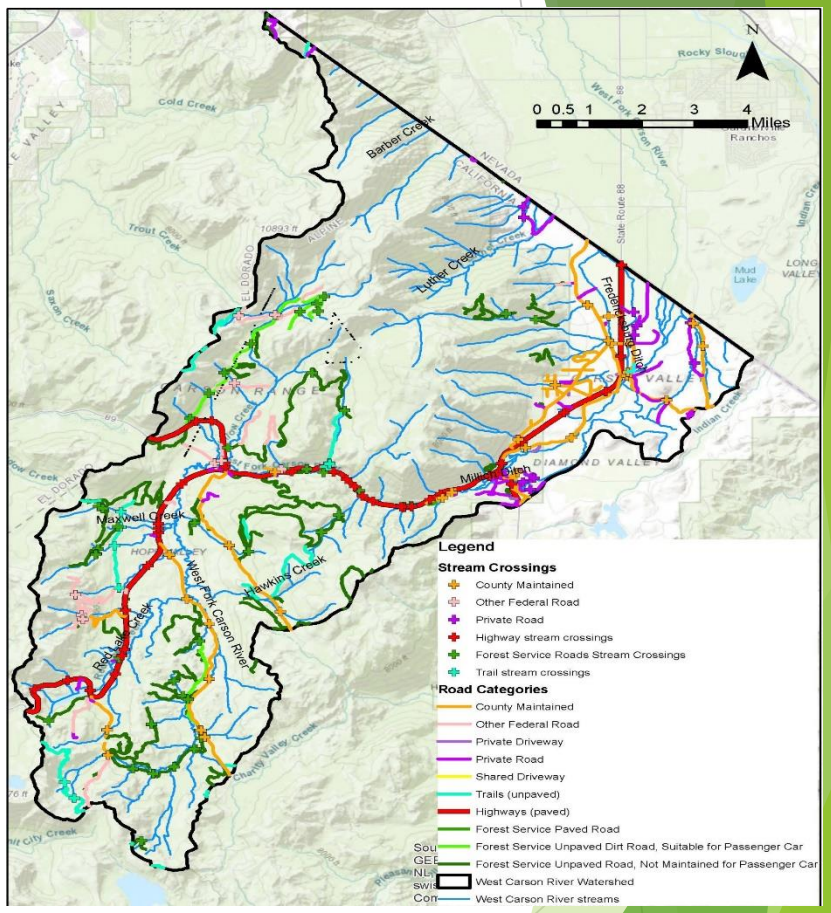
GIS Analysis

Stream Crossings were identified through intersections of roads (Caltrans scenic highways, US Forest Service forest roads and trails, Alpine County Roads) and National Hydrography Dataset Streams

Stream Crossing latitude and longitude uploaded to mobile enabled maps



Re-segmentation of the West Fork Carson River for the 2018 Integrated Report



Road Stream Crossings in the West Fork Carson River

Field Data Sheet

Site Number:	**Location:**
Date:	**Road Type:**
Outlet Shape: Round Culvert Pipe Arch/Elliptical Culvert Open Bottom Arch Bridge/Culvert Box Culvert Bridge with Side Slopes Box/Bridge with Abutments Ford Armored Fill Bride with Side Slopes and Abutments Unknown Removed None	
Structure Material: Metal Concrete Plastic Rock/Stone None/Native Material Combination	
Structure Diameter/Dimensions:	
Outlet Armoring: Not extensive Extensive	
Inlet Condition: Adequate Poor New Clogged Collapsed Submerged Partially Clogged Hydraulic exceedance Wood sediment Wood debris Sediment slug Debris torrent Size of the culvert in comparison to stream channel:	
Outlet Condition: Adequate Poor New Clogged Collapsed Submerged Partially Clogged Hydraulic exceedance Wood sediment Wood debris Sediment slug Debris torrent Size of the culvert in comparison to stream channel:	
Notes:	

Field Assessments

Site Number: 25	**Location:** 38.80564483 -119.802551
Date/Time: 3-22 9/24/19	**Road Type:** County - Carsonview

Outlet Shape: Round Culvert Pipe Arch/Elliptical Culvert Open Bottom Arch Bridge/Culvert Box Culvert Bridge with Side Slopes Box/Bridge with Abutments Ford Armored Fill Bride with Side Slopes and Abutments Unknown Removed None

Structure Material: Metal Concrete Plastic Rock/Stone None/Native Material Combination

Structure Diameter/Dimensions: 4'

Outlet Armoring: None Not extensive Extensive

Inlet Condition: Adequate Poor New Clogged Collapsed Submerged Partially Clogged

Hydraulic exceedance Wood sediment Wood debris Sediment slug Debris torrent

Size of the culvert in comparison to stream channel: Adequate

Outlet Condition: Adequate Poor New Clogged Collapsed Submerged Partially Clogged 25%

Hydraulic exceedance Wood sediment Wood debris Sediment slug Debris torrent

Size of the culvert in comparison to stream channel: Adequate

Notes: inlet is heavily veg, culvert damaged/bent, boulders encroaching into opening

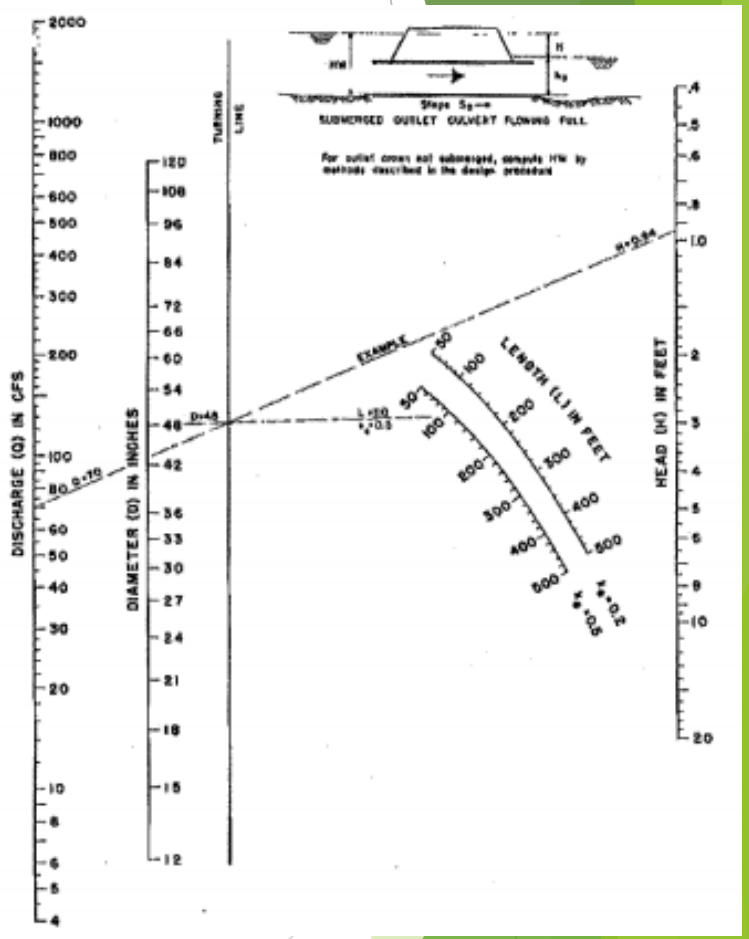
sandy outlet, dry/ephemeral

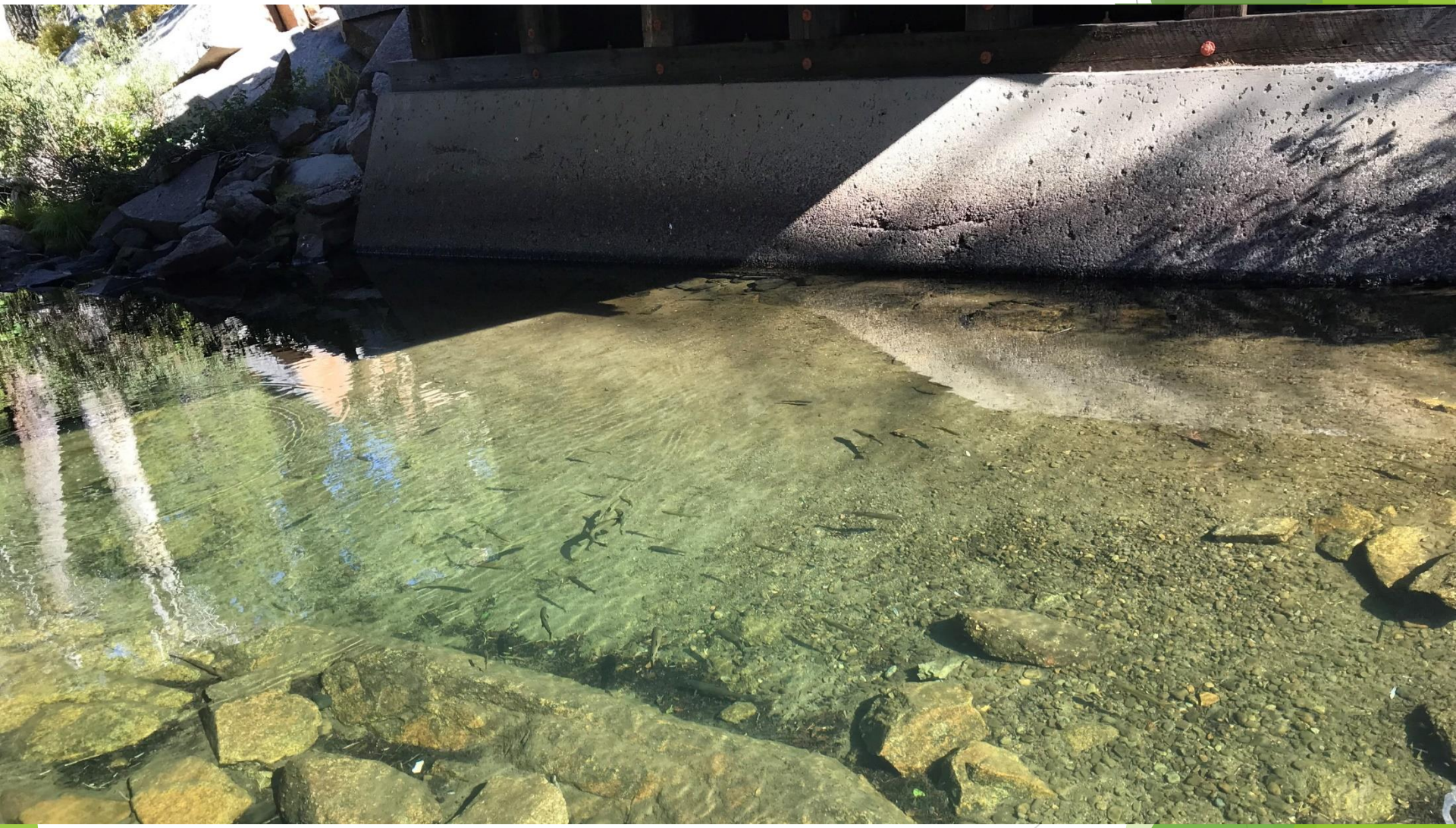
in, out, N, S

Sites are assessed based on qualitative indicators of stream crossing structure failure and sediment loading.

After field sampling is finished, staff will determine appropriate culvert size for 100-year storm events.

Staff will also use qualitative assessments to identify stream crossing that are currently failing or are likely to fail in the future



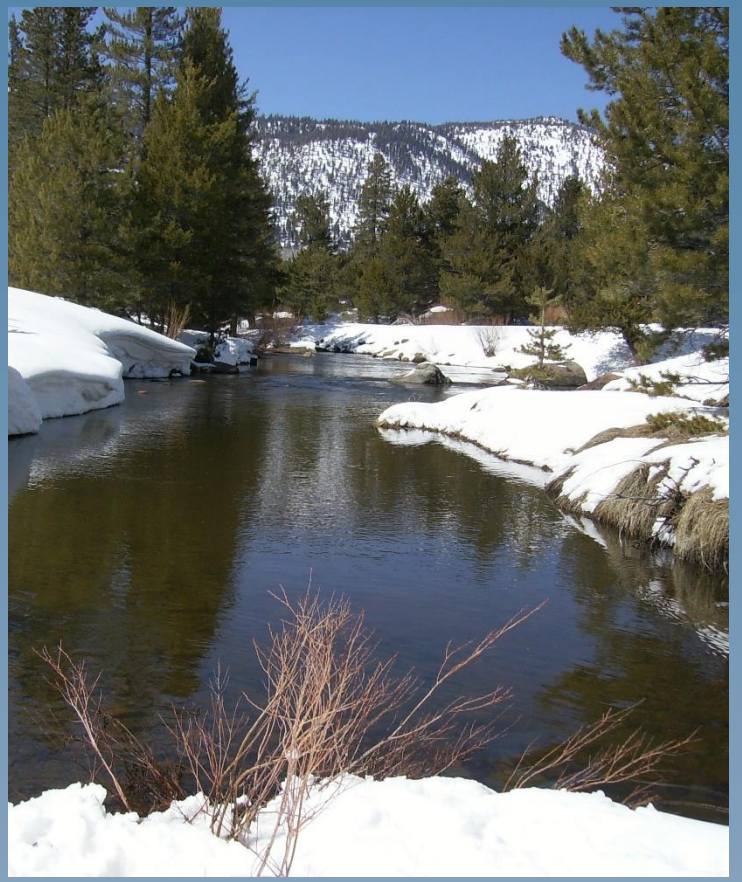


Other Efforts Include

- Land Use Map and Narrative
- Identify Management Measures
- Local Area Management Plan (LAMP) with Alpine County
- River restoration – Alpine Watershed Group, American Rivers, USFS
- Public participation - outreach planned to identify other management measures with focus on roads, recreation, restoration
- Website, Listserv, “launch” presentations at Carson River Forum & Alpine Watershed Group

Next Steps

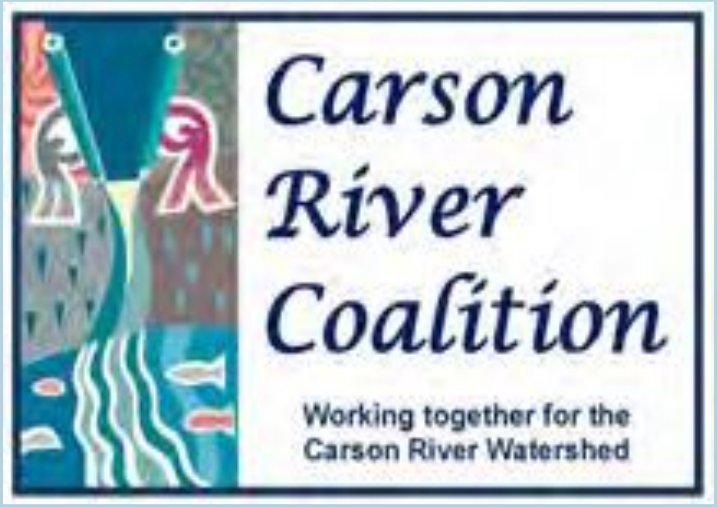
- Complete Culvert Assessment Study
- Evaluate impairments more specific to land use
- Identify potential sources and management measures
- Focused stakeholder involvement
- Draft and Finalize Vision Plan document by September 2022



THANK YOU

TO

OUR HOSTS



NEVADA DIVISION OF
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Website and ListServ

https://www.waterboards.ca.gov/lahontan/water_issues/programs/tmdl/west_fork_carson_river.html