

Agenda

PART 1: Sediment TMDL and Habitat Enhancement Plan

- Water Board's role
- What are TMDLs?
- Sources, loads, and impacts on fish habitat
- Potential implementation actions

PART 2: CEQA Scoping Meeting

- CEQA process for TMDLs
- Scope of environmental review
- Comments



Pescadero and Butano Creeks Sediment Reduction and Habitat Enhancement Plan

June 30, 2015



Setenay Bozkurt Frucht, PE
Water Quality Control Engineer
Planning Division

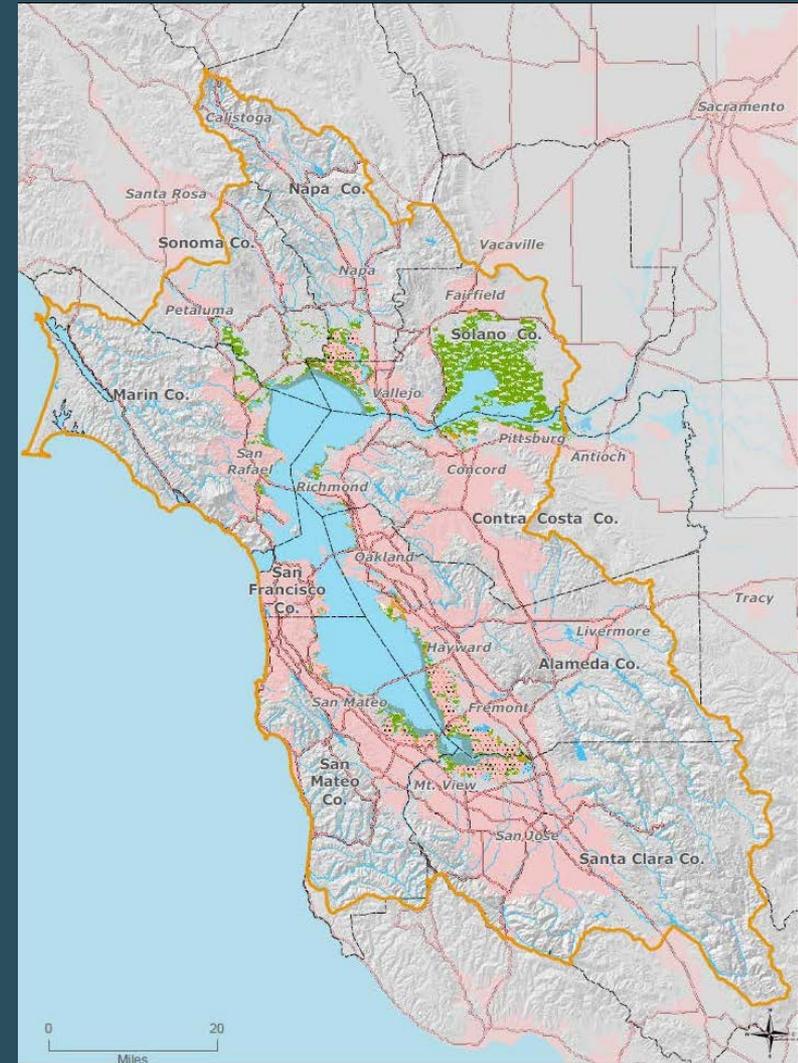
Your Water Board

San Francisco Bay Regional Water Quality Control Board

is the state agency responsible for protecting water quality and beneficial uses of water for the use and enjoyment of its people in the Bay Area

Its authorities come from:

- The federal Clean Water Act
- California's Porter-Cologne Water Quality Control Act
- Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin



Basin Plan

http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml

- Master document that guides Water Board policy
- Beneficial uses in each water body, water quality objectives, and plans and policies to achieve water quality standards
- Pescadero and Butano Creeks are listed as impaired by sediment to support its beneficial uses under the Clean Water Act
- Sediment TMDL



What is a TMDL?

A TMDL is a plan to address water quality impairment

It is mandated by the federal Clean Water Act to:

- Determine pollution sources
- Develop a pollutant budget
- Develop implementation actions to restore and maintain water quality



Sediment reduction and habitat enhancement plan

Amendment of the Basin Plan to include:

- A TMDL for sediment in Pescadero-Butano watershed
- An implementation plan and a habitat enhancement program to address hillslopes and channels to protect salmon and steelhead in the river



Pescadero and Butano Creeks as impaired

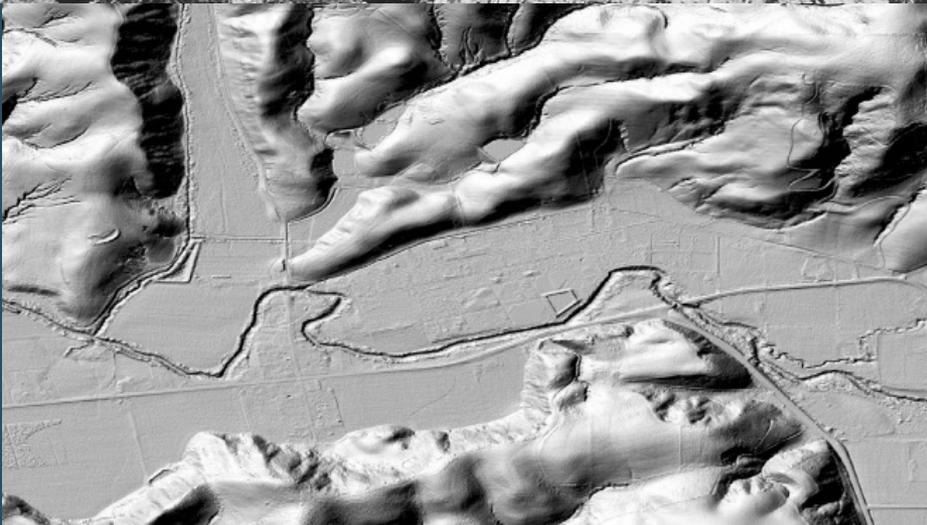
- Water quality impairment identified in 1998
- Evidence of excessive sedimentation
- Concerns regarding impacts of too much fine sediment on fish habitat
- Other factors: lack of LWD, water withdrawals, lagoon water quality

Story of sediment and habitat changes

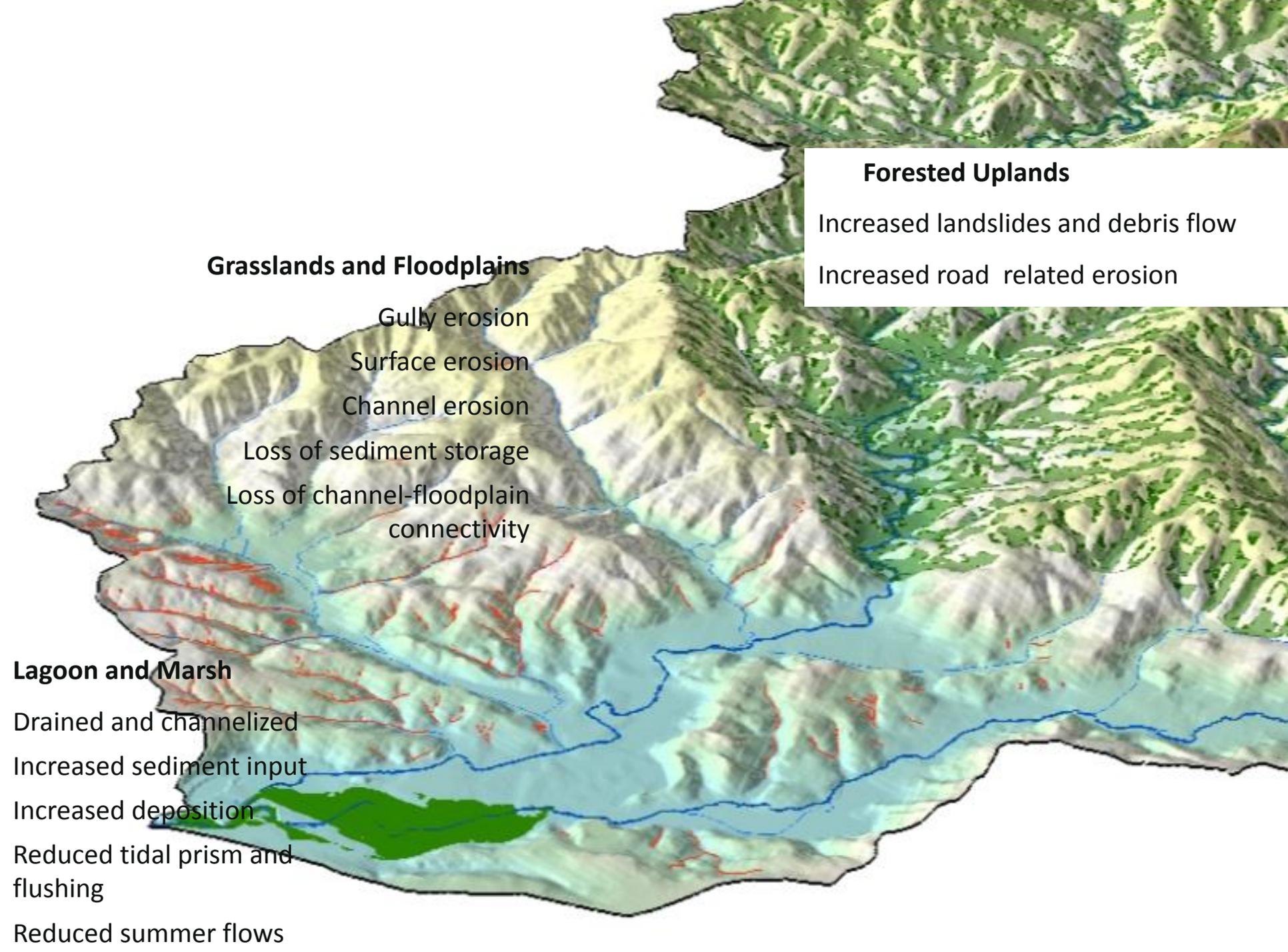


Pescadero Valley in 1855





07.22.2010



Forested Uplands

Increased landslides and debris flow

Increased road related erosion

Grasslands and Floodplains

Gully erosion

Surface erosion

Channel erosion

Loss of sediment storage

Loss of channel-floodplain connectivity

Lagoon and Marsh

Drained and channelized

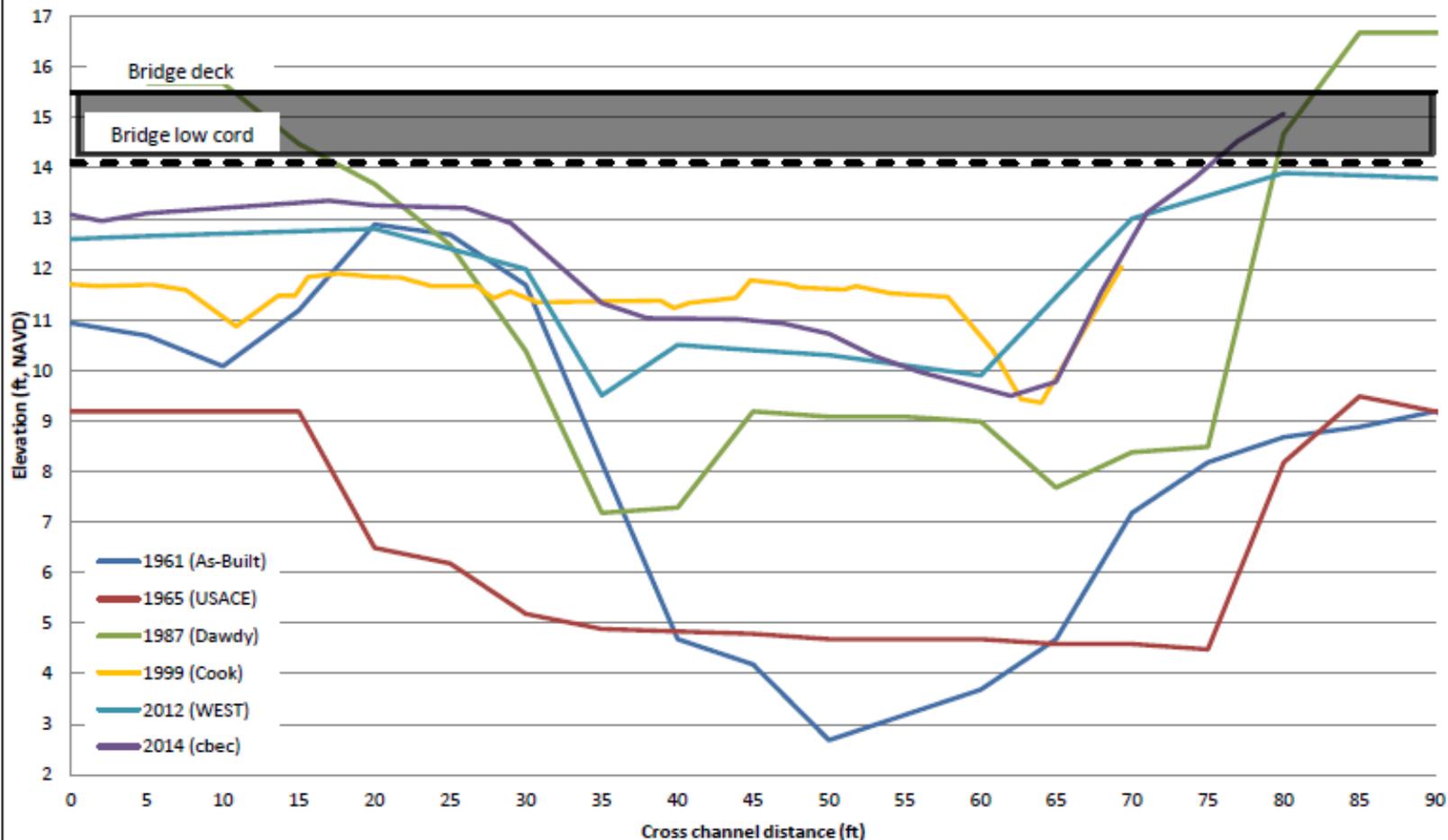
Increased sediment input

Increased deposition

Reduced tidal prism and flushing

Reduced summer flows

Sedimentation along Lower Butano



Notes:



Solutions to Flooding at Pescadero Creek Road

Pescadero Road bridge cross section comparison

Project No. 13-1032

Created By: DST

Figure 5

Marsh and lagoon sedimentation

- 50% reduction in open water area between 1900 and 1960
- Tidal prism is reduced by 75%

Year	Tidal Prism
1854	225 ac-ft
2011	60 ac-ft



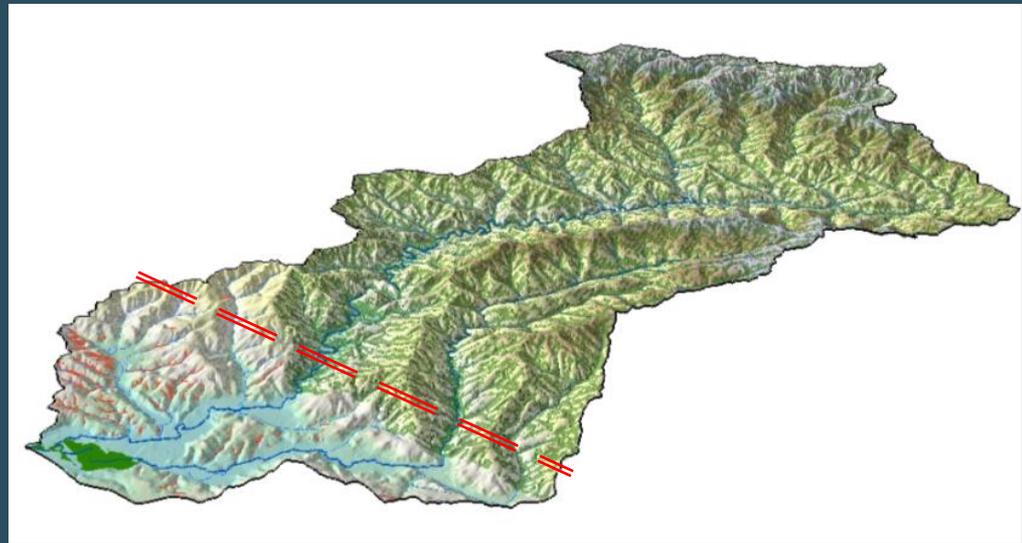
1915



2002

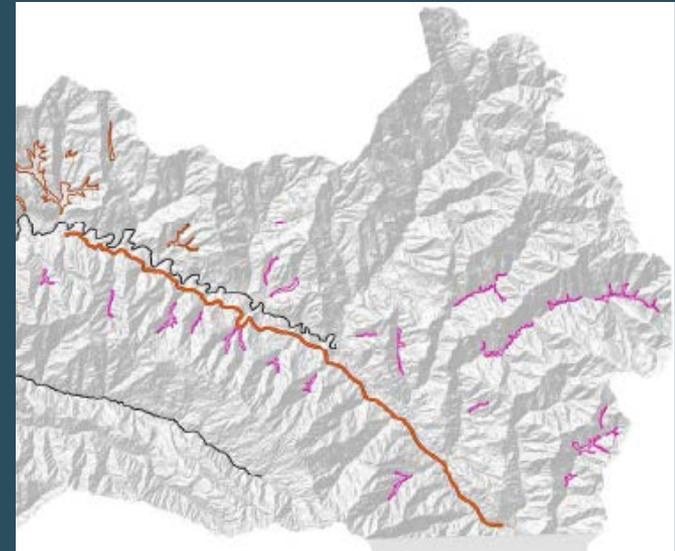
Sediment budget findings

- Sediment delivery to channels has more than doubled in the last 200 years
- 60% of human-caused sediment is generated within the western 25% of the watershed
- Surface erosion and gullies on the agricultural and rangelands contribute the largest amount of sediment, followed by channel incision and roads
- Channel incision is a large source of sediment and is most significant due to direct input and loss of storage



Sediment budget findings

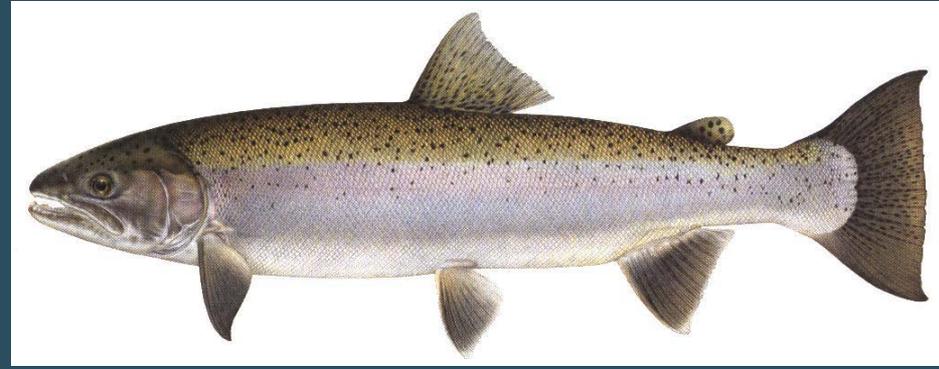
- Old Haul Road significant due to potential to fail
- Lowland contribution significant due to close proximity
- 30,000 tons that used to deposit on floodplains is now transported downstream to the marsh
- ~15 times as much sediment deposits in the marsh and the lagoon
- Elevated sediment loads are expected to continue



Limiting factors for fish habitat



Winter habitat



Summer habitat

Estuarine habitat

Too much fine sediment

Passage barrier in lower Butano

Impacts on fish habitat

1. Channel incision and simplification

- No wood in the channels therefore no cover and high-flow refuge habitat
- Loss of gravel bars, riffles, side channels, and sloughs
- No connection to floodplains

2. Increase in sediment supply

- Too much fine sediment in pools and riffles



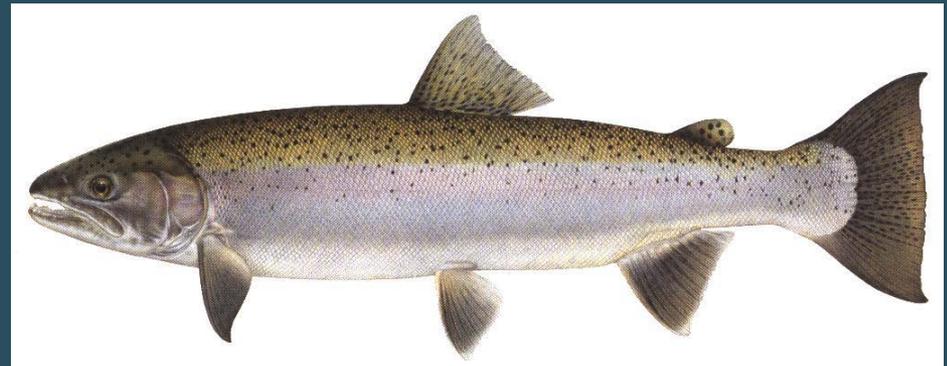
Impacts on fish habitat

3. Shrinking Lagoon

- Lagoon nursery habitat is getting smaller
- Lagoon mouth closing for longer durations and opening later- affecting the migration

4. Fish migration barriers – Butano Creek through the marsh

- Access to upstream habitat



In summary

What's included in implementation plan

- Too much sediment
- Too little storage
- Incised and simplified channels
- Impacts on fish habitat

What's not included in implementation plan

- Shrinking lagoon



Sediment TMDL and habitat enhancement plan will likely call for:

- Reduction by more than half in human-caused sediment input
- Active land uses: sediment control actions
roads, grazing, agriculture, timber harvesting
- Legacy sources: voluntary, cooperative actions
channel incision, gullies



Sources	Goal	Implementation Actions
Roads <ul style="list-style-type: none"> • Timberlands • Parks/open space • Agricultural lands • Rangelands • Private/public 	Reduce erosion	<ul style="list-style-type: none"> • Re-shaping/alignment • Storm-proofing • Reducing hydrologic connectivity • Decommissioning • Dispersing runoff
Agricultural and Rangelands	Reduce surface erosion	<ul style="list-style-type: none"> • Restricting animals from creeks • Mulching • Cover crops/RDM management • Increasing stormwater infiltration
Channel incision	Reduce erosion and restore aquatic habitat	<ul style="list-style-type: none"> • Re-shaping channel • Planting stream banks • Placing large woody debris
Gullies and landslides	Accelerate recovery	<ul style="list-style-type: none"> • Re-vegetating • Biotechnical engineering • Dispersing runoff • Hard engineering

Next steps for the TMDL

- Public workshop
- Public review – winter 2016
- Board adoption – spring 2016



