



Historical Benefits Analysis Update

Purpose

- Develop an updated analysis that evaluated construction and operation of existing projects
 - Nacimiento and San Antonio Reservoirs/Dams
 - Monterey County Water Recycling Projects
 - Castroville Seawater Intrusion Project
 - Salinas Valley Reclamation Plant
 - Salinas Valley Water Project



Purpose

- Evaluate three categories of benefits associated with the Projects
 - **Hydrologic:** groundwater levels and pumping
 - **Flood control:** frequency and severity of flood events
 - **Economic:** monetary benefit to stakeholders stemming from infrastructure or hydrologic and flood control benefits

Some history...

- **April 1998** – Salinas Valley Historical Benefits Analysis (HBA) Final Report was prepared by Montgomery Watson
 - Purpose was to identify and quantify benefits to the Salinas Valley from construction and operation of Nacimiento and San Antonio Reservoirs

Some history...

- **2021** – Public comments received during Agency consideration of an Engineer’s Report for Zone 2D included concerns about reliance on the 1998 HBA because it did not include all present-day projects.
- **April 2023** – Agency initiated an HBA Update, partnering with consultants West Yost and One Water Econ.

Study Background

- Hydrologic and flood control benefits modeling utilized the Salinas Valley Integrated Hydrologic Model (SVIHM)
- Economic benefits analysis relied, in part, on results from the SVIHM
- Study period of October 1967 - September 2018 (Water Year 1967-2018)
- Study area is Agency Zone 2C

Study Background

- Benefits of the Projects are assessed as a comparison between modeling scenarios with the Projects (Historical Scenario) and without the Projects (No Projects).
 - Differences between scenarios are the effect of the Projects.
- Technical approach followed that of the 1998 HBA wherever possible.



Hydrologic Benefits – Groundwater Levels

- Pressure, East Side, and Arroyo Seco Subareas
 - Groundwater levels declined over the study period
- Forebay and Upper Valley Subareas
 - Groundwater levels largely unchanged or have risen
- Without the Projects, the decline would have been more severe and widespread.

Other Hydrologic Benefits

- HBA Update evaluates groundwater and surface water budgets which include:
 - Groundwater recharge from the surface water system
 - Change in groundwater storage
 - Seawater intrusion
- Also looked at impacts to wells from changing groundwater levels.



Flood Control Benefits

- Reservoirs have reduced the:
 - magnitude of peak flows
 - extent of inundation
 - depth of flooding
 - velocity of flows within the inundated area
- Reservoirs have the largest impact during flood events that occur more frequently, such as 10-year or 25-year events

Economic Benefits – Key Findings

- Higher groundwater levels have reduced the need to replace groundwater wells.
 - Avoided \$107.4M in well replacement costs over the study period.
- Higher groundwater levels have reduced the energy required to pump groundwater in many areas.
 - Saved \$67.9M over the study period.

Economic Benefits – Key Findings

- Increase in groundwater storage has decreased seawater intrusion and the acreage of farmland that has been impacted.
 - Benefit has largely accrued since operation of the Castroville Seawater Intrusion Project (CSIP) began.
 - Avoided impacts to crops of \$21.7M - \$86.9M



Economic Benefits – Key Findings

- Reservoirs have reduced flooding along the Salinas River
 - Avoided damages to buildings of \$210.5M over the study period
 - Avoided damages to agricultural crops of \$211M over the study period

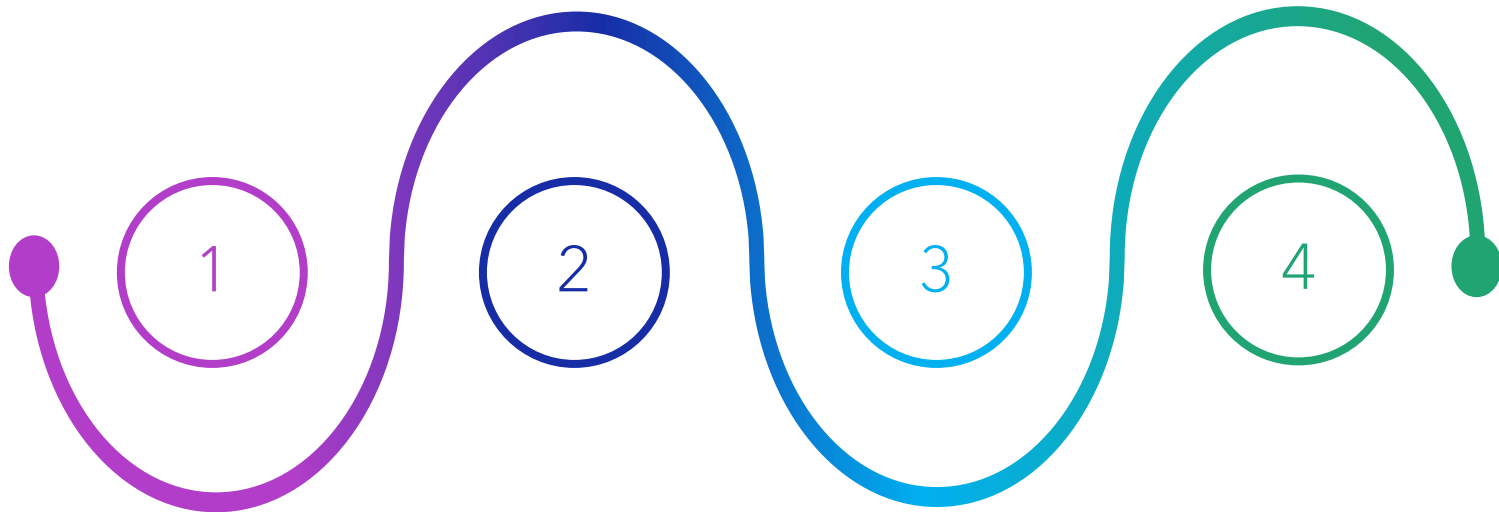
Economic Benefits – Key Findings

- Reservoirs have resulted in recreational benefits
 - Close to \$800M from 1985-2018
- Generation of hydropower at Nacimiento Dam from 1987-2018
 - Generated power valued at \$59.1M
 - Avoided health-related costs resulting from clean hydropower valued at \$16M



Draft Interlake Tunnel and San Antonio Spillway Modification Project Assessment Engineer's Report

Getting to the draft engineer's report



1998 HISTORICAL BENEFITS ANALYSIS

This analysis didn't include all currently constructed and operating Agency projects.

2025 HBA UPDATE

Partnering with two consultants, the Agency developed an updated analysis of historical hydrologic, flood control, and economic benefits of current projects.

MODELING

Modeling results from the Project and HBA Update provided data for the draft Project Assessment Engineer's Report

DRAFT REPORT

Draft Assessment Engineer's Report for the Project available for submittal to DWR

Cost Allocation Options

- The draft Assessment Engineer's Report for the Project presents three methodologies for reasonable ways to allocate Project benefits.
- There may be others to consider also in future discussions about this Project or other Agency projects.



Publication of the Salinas Valley Hydrologic Models

Hydrologic Modeling Tools

- The HBA Update utilized modeling tools developed by the U.S. Geological Survey (USGS) to provide data about groundwater and surface water conditions.
 - The Agency, County of Monterey, and Salinas Valley Basin GSA partnered on development of the models.
- Model data also informed the Draft Engineer's Report for the Interlake Tunnel Project.

Hydrologic Modeling Tools

- The full suite of modeling tools and documentation have been published by the USGS and are available to the public.
- Model data and files:
 - <https://www.usgs.gov/centers/california-water-science-center/news/new-data-salinas-valley-hydrology>
- Model report:
 - <https://eartharxiv.org/repository/view/8900/>