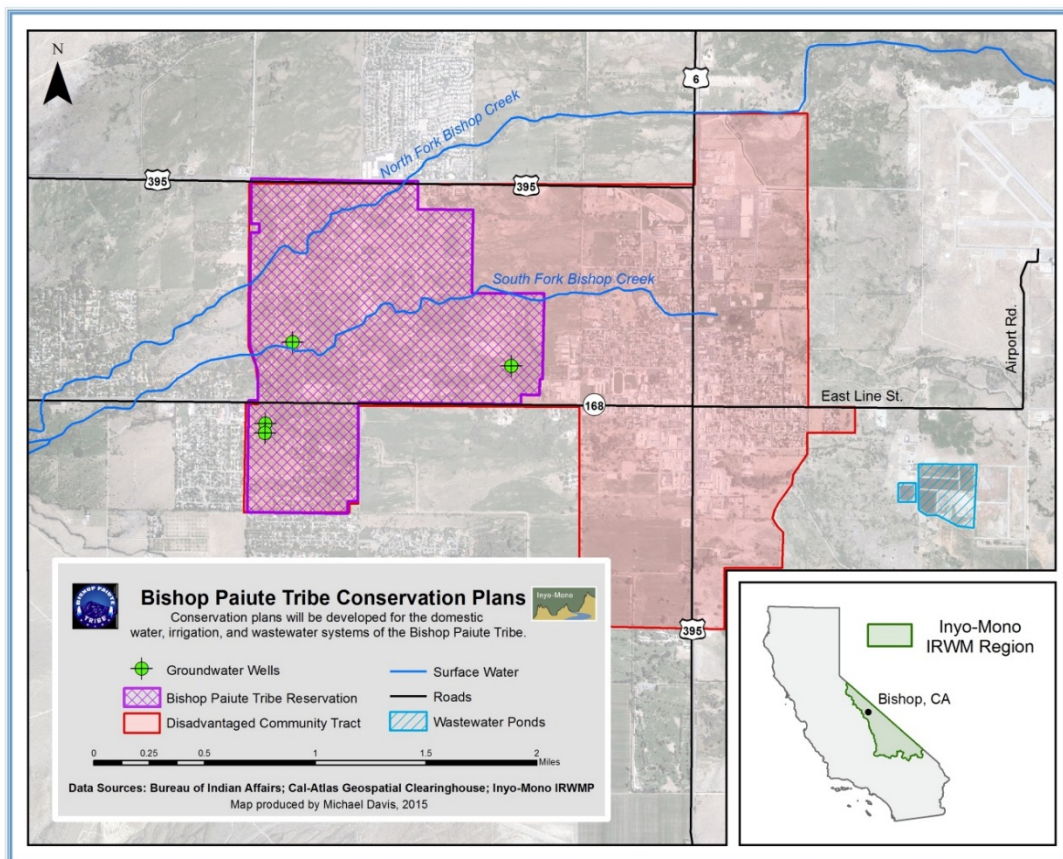


Implementation Grant

PROJECT BRIEFING REPORT

IRWM January 27, 2021

PROJECT NO. 2 Bishop Paiute Tribe domestic water, irrigation, and wastewater conservation plans



2015 Proposition 84 Implementation Grant

DWR Grant Agreement No. 4600011519

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BRIEFING SUMMARY

The term of the agreement is November 3, 2016 to March 31, 2020.

Under this agreement, \$186,712 in grant funds were awarded to the Bishop Paiute Tribe for implementation of Project 2 Bishop Paiute Tribe Domestic Water, Irrigation, and Wastewater conservation plans.

The project consisted of three components:

- *Domestic water conservation plan*
- *Irrigation water conservation plan*
- *Wastewater conservation plan*
- *Including a rate study for Water and Sewer Rates*

Currently, the Bishop Paiute Reservation sustains 620 residential water hook-ups, which include five mobile home parks with one meter each (approximately 60 units), and 31 commercial customers, which include two apartment buildings (38 units with 13 meters), Tribal offices/ departments, two gas stations, a casino, plus leaseholders such as the Owens Valley Career Development Center (six buildings with one meter), Toiyabe Indian Health Project, Inc. clinic and offices, the California Department of Motor Vehicles, and the US Forest Service/Bureau of Land Management federal building. Domestic water is provided via groundwater wells; irrigation water is provided via a ditch and pipeline system fed from the Bishop Creek watershed; and wastewater service is provided through Eastern Sierra Community Services District.

This project developed comprehensive water conservation plans for irrigation, domestic water, and wastewater, as well as a rate study for the Bishop Paiute Tribe.

PROJECT OVERVIEW

The project was to develop a water conservation plan that will guide and prioritize long-term water resource management needs for the Bishop Paiute Tribe (Tribe). The conservation plan will consist of three focal areas within the Tribe's water management system: irrigation, domestic water, and wastewater. The plan will also include a rate study that will facilitate a tiered rate structure to be implemented for the Tribe's long-term management of its water resources. The conclusion of the

conservation plan proposed a series of improvements needed to better manage the Tribe's water resources.

Irrigation:

- **Current systems:**

Sub surface drainage system

Irrigation system (ditches & pipes)

- **Issues:**

Old infrastructure (70+ years)

Blockages, cracks, breaks, seepage

Lack of funding mechanisms for O&M

- **Recommendations:**

Rehabilitation of existing system

New low volume irrigation system for residential use

Develop metering for water entering and leaving Reservation

Maximize surface water use to reduce domestic water demand

- **Rehabilitation of existing systems**

Some of the system has been replaced with PVC

66% of the system is still in need of replacement (approx. 41K LF)

Estimate of Probable Costs: \$4 Million

- **Low Volume Irrigation System**

For single family residential use

Reallocates water from domestic sources to irrigation sources

Limits unnecessary groundwater pumping

Estimate of Probable Costs: \$2,170 per residence

- **Subsurface Drainage Reuse**

Subsurface drainage collects and conveys percolated water

Water could be redirected for irrigation use

Estimate of Probable Costs: \$65,000 per reuse application

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- **Administrative Controls**

- **Flow metering**

Coupled with a revised rate structure can encourage more efficient use

Provides data to create a better understanding of the system and corresponding demand profiles

Water metering allows unaccounted or non-revenue water analysis

Allows for real time water information for leak assessment

- **Geographic Information System (GIS)**

Can be used to implements maintenance schedules

Identify areas of recurring problems

Plan future improvements and expansions

Provides information for management analysis to make informed decisions

Provide Tribal leadership with data and maps

- **Additional duties for Zanjero**

Using tensiometers to measure soil moisture

Identifying areas of tailwater loss

Domestic:

- **Current system:**

In good condition

Contains tanks, pump stations, disinfection system

- **Issues:**

Large per capita use during summer months ~ 1,000 GPD/EDU (2X winter use)

High electrical costs to Tribe ~ \$74K per year

Additional cost for treatment

Residential growth

Old valves and hydrants are no longer serviceable

Low pressure during peak summer usage

- **Recommendations:**

Water efficient fixtures & repair program

Insulate pipes to eliminate water use for freeze protection

Other sources for landscaping irrigation

Water Metering

Study opportunities for electrical solar panels use

Perform pump efficiency evaluation

Review water system modeling to determine excessive friction within

- *the system to determine if there are pipe size restrictions*

- **Leak identification and repair**

Utilizes acoustic leak detection

Improves efficiency of the system

Reduces Non-Revenue Water

Estimate of Probable Costs: \$35,000 per year

- **Fixture replacement program**

Perform water leak assessment of each home and business

Every drop counts – water loss adds up

Reduces water loss due to residential leaks

Opportunity to replace fixtures with high efficiency replacements

Estimate

Estimate of Probable Costs: \$136,500 per year

- **Landscaping**

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*From irrigation conservation plan: low volume irrigation system
Reallocates water from domestic sources to irrigation sources
Estimate of Probable Costs: \$2,170 per residence*

Administrative Controls

- **Metering**
Residential, commercial, and district
Coupled with a revised rate structure can encourage more efficient use
Provides data to create a better understanding of the system and corresponding demand profiles
- **Drought response plan**
Scalable conservation measures for drought conditions
Possibility of intertie with the City of Bishop **or other adjacent CSD's**
Review existing artesian well opportunity for emergency water supply
- **Public information and education**
Conservation initiatives are more successful with community involvement
Social media outreach, flyers, public meetings/forums, etc.
Tribal radio station and newsletter

Wastewater System

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- **Current system:**
All sanitary sewage generated on the Reservation is collected and conveyed to the ESCSD reclamation plant for treatment and disposal.
- **Issues:**
Capacity – currently 324,000 GPD (9,000 unmetered) expanding to 585,000 GPD to accommodate future tribal growth
Capacity increase is expensive
- **Opportunities:**
Inflow and infiltration reduction: manhole sealing, joint repairs
Repair fixture leaks
Reduced domestic water usage = reduced sewerage
Add additional metering stations for unmetered flows
Review/study inflows from surface irrigation

- **Reducing domestic water use**

Sewer flows are largely contributed to by domestic use

Sanitary water conservation is a function of domestic conservation

- **Reducing Inflow and Infiltration (I/I)**

Leak, infiltration and flow survey

Flow survey conducted during high groundwater conditions to determine amount of I/I entering the system

Estimate of Probable Costs: \$14,000

- **Manhole and sewer main rehabilitation plan**

Survey to review status of manholes and sewer mains

Defects such as cracks, root intrusion, pipe deformation, offset joints, occlusions, etc. can be sources of inefficiency or I/I in the system

Estimate of Probable Costs: \$113,000

Administrative Controls

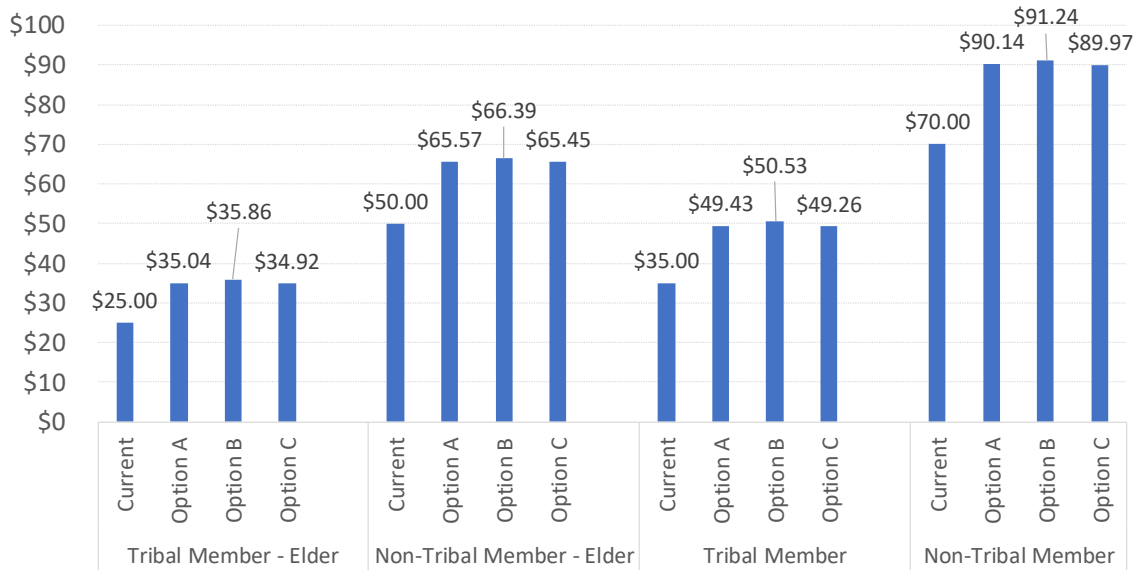
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- **Metering**
 - Additional meters for accuracy
 - Secondary outfall meter for currently unmetered portion of the Reservation
 - Additional meter for contributory??
 - Add meters for non meter ESCSD non metered inflow and outflows
- **Limiting fats, oils, and grease (FOG)**
 - FOG can solidify and cause sanitary backups in the system
 - Limiting the amount of FOG that enters the system can prevent sanitary sewer overflows
 - Reduce maintenance cost
- **GIS**
 - Can be used to implements maintenance schedules
 - Identify areas of recurring problems
 - Plan future improvements and expansions
 - Data management and maps to for management analysis and Tribal leadership to make informed decisions

Rate Study:

The rate study reviewed current structure and costs. This could be a presentation

Below are the summary charts of cost. We are current working on rate increases that may be a high bread.



Sewer Residential Rate options

Customer Category	Current	2018	2019
Residential			
Tribal Member - Elder	\$10.00	\$13.19	\$13.25
Non-Tribal Member - Elder	\$20.00	\$27.31	\$27.44
Tribal Member	\$14.00	\$18.84	\$18.93
Non-Tribal Member	\$28.00	\$37.67	\$37.85
Non-Residential			
Non-Profit Business/Organization Facility	\$24.00	\$32.02	\$32.17
Commercial: Small (5 or less users)	\$32.00	\$43.32	\$43.53
Commercial: Medium (6 to 25 users)	\$48.00	\$64.04	\$64.35
Commercial: Large (26+ users)	\$800.00	\$1,073.68	\$1,078.76

Water Rate Table

FINAL PROJECT SCHEDULE

A final project schedule showing actual progress vs. planned progress as shown in Exhibit B of Grant Agreement.

Project 2: Bishop Paiute Tribe Irrigation, Domestic Water, and Wastewater Conservation Plans		Planned Progress		Actual Progress	
		Start Date	End Date	Start Date	End Date
Category (a): Direct Project Administration		1/1/2016	9/30/2018	1/1/2016	12/31/2018
Task 1	Project Management	1/1/2016	9/30/2018	1/1/2016	4/30/2019
Task 2	Labor Compliance Program	1/1/2016	9/30/2018	7/1/2017	4/30/2019
Task 3	Reporting	4/1/2016	9/30/2018	1/1/2016	4/30/2019
Category (b): Land Purchase / Easement		N/A	N/A	N/A	N/A
Task 4	Land Purchase	N/A	N/A	N/A	N/A
Category (c): Planning / Design / Engineering and Environmental Documentation		1/1/2016	5/31/2018	1/1/2016	4/30/2019
Task 5	Project Data Collection	5/1/2016	9/30/2017	11/1/2017	5/3/2018
Task 6	Environmental Documentation	1/1/2016	2/29/2016	7/1/2017	9/30/2018
Task 7	Planning and Assessment	8/1/2016	2/28/2018	1/1/2018	4/30/2019
Task 8	Rate Structure Analysis	9/1/2017	5/31/2018	5/1/2018	4/30/2019
Category (d): Construction / Implementation		N/A	N/A	N/A	N/A
Task 9	Construction/Implementation Activities	N/A	N/A	N/A	N/A

