MARIN WATER

Kastania Pump Station Rehabilitation Project

April 6, 2021

Overview

- Kastania Pump Station Background and History
- Hydraulic Analysis
- Pump Station Condition Assessment
- Rehabilitation Options, Costs and Schedule
- Next Steps

Kastania Pump Station Background and History

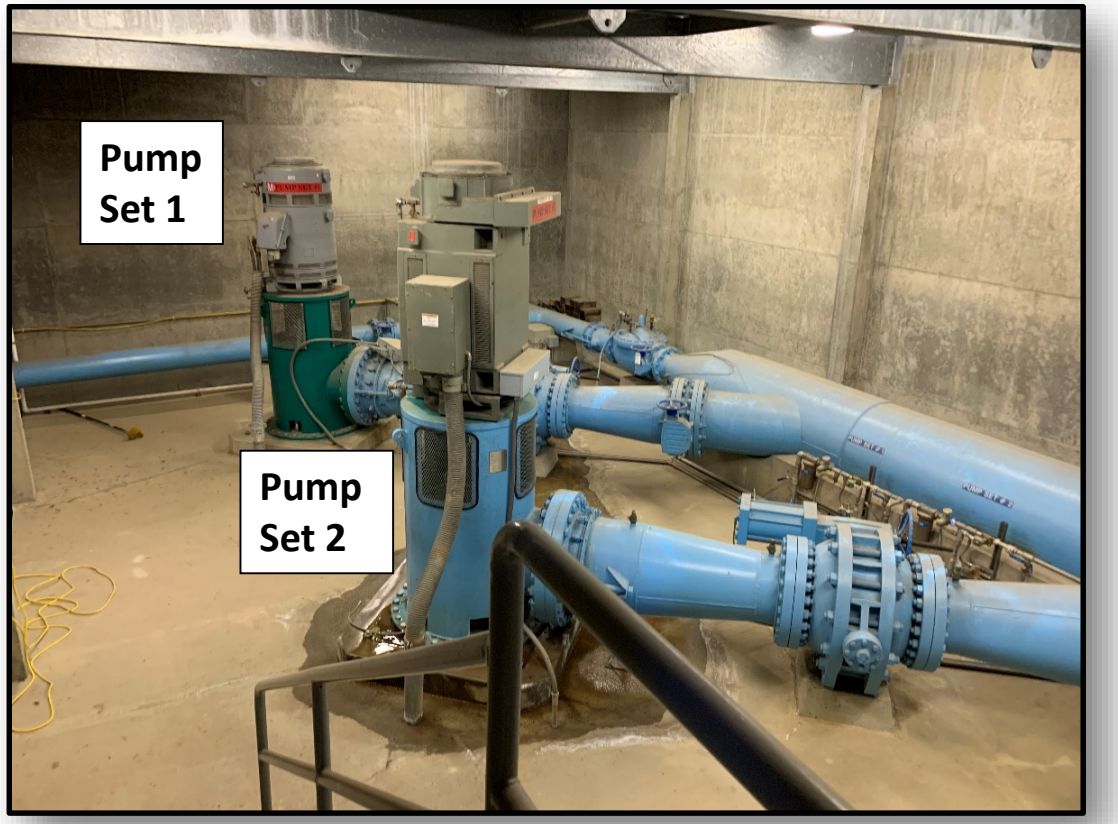
Background and History

- Constructed in 1977 by MMWD
- Increase flow and pressure in North Marin Aqueduct
- MMWD owned/operated 1977 – 1999

Kastania Pump Station, Kastania Rd, Petaluma

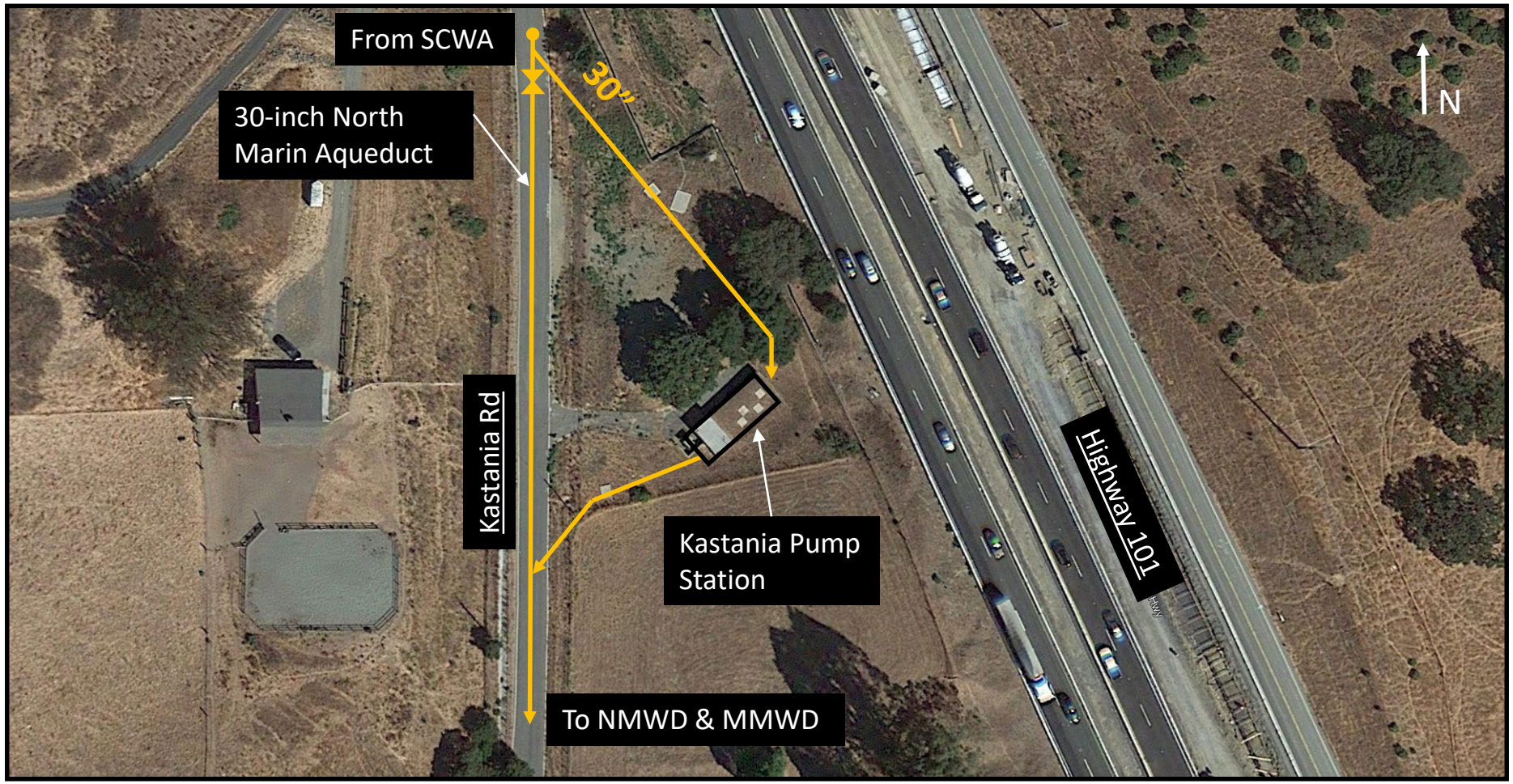
Background and History

- MMWD transferred ownership to SCWA in 1999
- Taken offline in 2015
- Equipment:
  - Two 400 hp pumps
  - Motors, valves, electrical controls



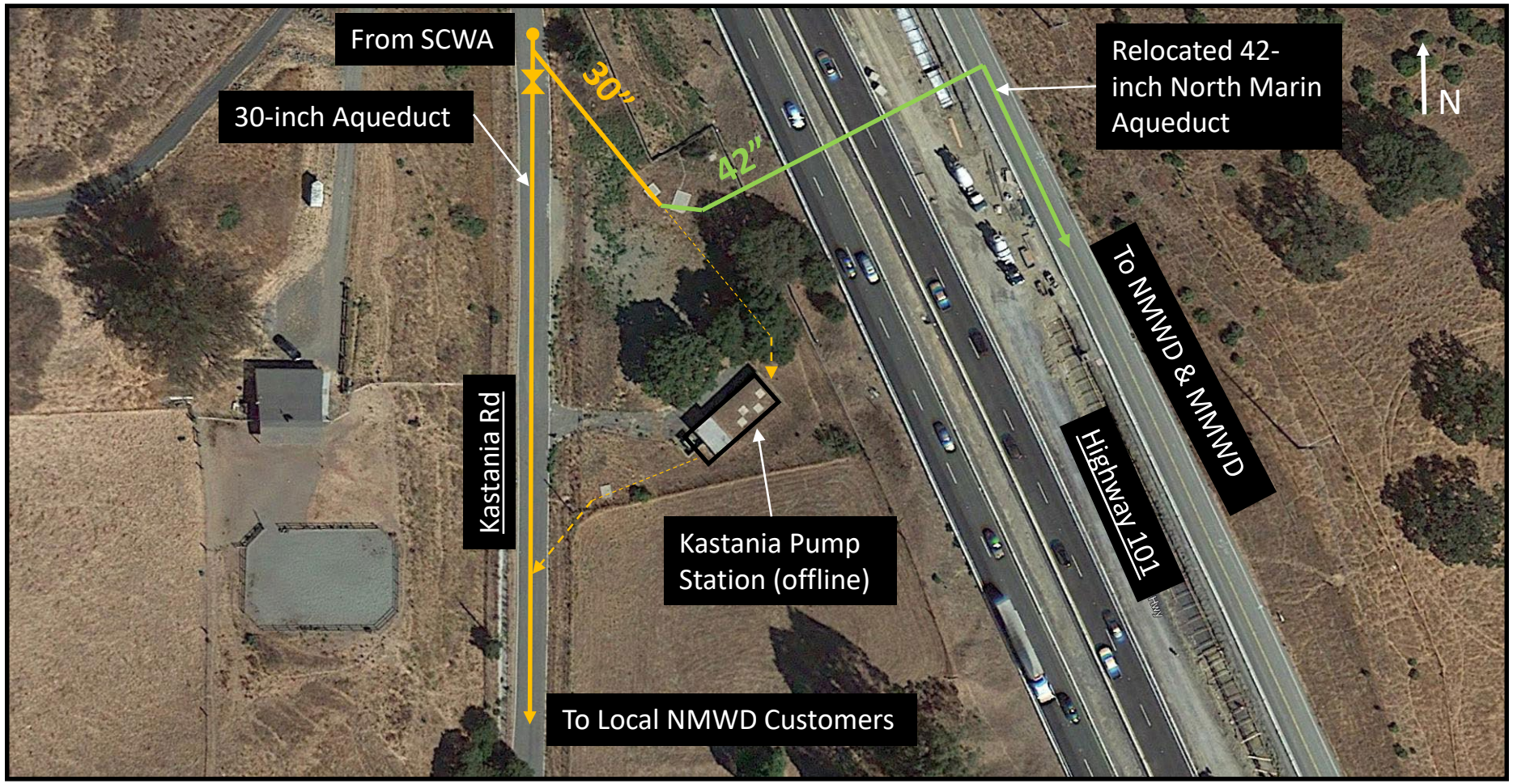
Interior of Kastania Pump Station

Background and History



Configuration of Kastania Pump Station Site, 1977 - 2015

Background and History



Current Configuration of Kastania Pump Station Site

Operational Action Plan - Kastania Pump Station Rehabilitation Project

- January 19: MMWD Drought Action Plan
  - Operational Action – Evaluate Rehabilitation of Kastania Pump Station
- Reviewed documents, SCADA data, coordinated with other agencies
- Investigated site January 19 & March 1
- Developed hydraulic model
- Prepared draft operational test plan

Hydraulic Analysis

Hydraulic Analysis

- Objective: determine if Kastania Pump Station improves operational efficiency of imported water system
- Calculate flows available to North Marin Aqueduct
- North Marin Aqueduct:
  - Runs from Southern Petaluma to Novato
  - Seven miles long
  - Owned by North Marin Water District
  - Conveys imported water to North Marin Water District and MMWD's Ignacio Pump Station in Novato

Flows Available to North Marin Aqueduct – Existing Conditions (w/out Kastania)

Available Flowrate	~15 mgd (17-18 mgd intermittently)

Flows Available to North Marin Aqueduct – Existing Conditions (w/out Kastania)

Flowrate	~15 mgd (17-18 mgd intermittently)
North Marin Demand (current)	~11 mgd
Available to MMWD	4 mgd

Flows Available to North Marin Aqueduct With Kastania Pump Station

Available Flowrate	21.5 mgd

Impact of Kastania Pump Station

Condition	North Marin Demands (mgd)	Available Water to MMWD (mgd)		Limiting Factor	MMWD Capacity (mgd)	Difference, mgd (%)
		Without Kastania	With Kastania			
Current	~11	4	10.5	None	10-12(1)	**6.5** (160%)

Notes:

1. Capacity of MMWD distribution system

Impact of Kastania Pump Station

Condition	North Marin Demands (mgd)	Available Water to MMWD (mgd)		Limiting Factor	MMWD Capacity (mgd)	Difference, mgd (%)
		Without Kastania	With Kastania			
Current	~11[1]	4	10.5	None	10-12[2]	**6.5** (160%)
Summer	8	7	13.5	Contractual Limit	12.8[3]	**5.8** (83%)
April/May	4	11	17.5	MMWD Distribution System	10-14[2]	**1-3** (11-27%)

Notes:

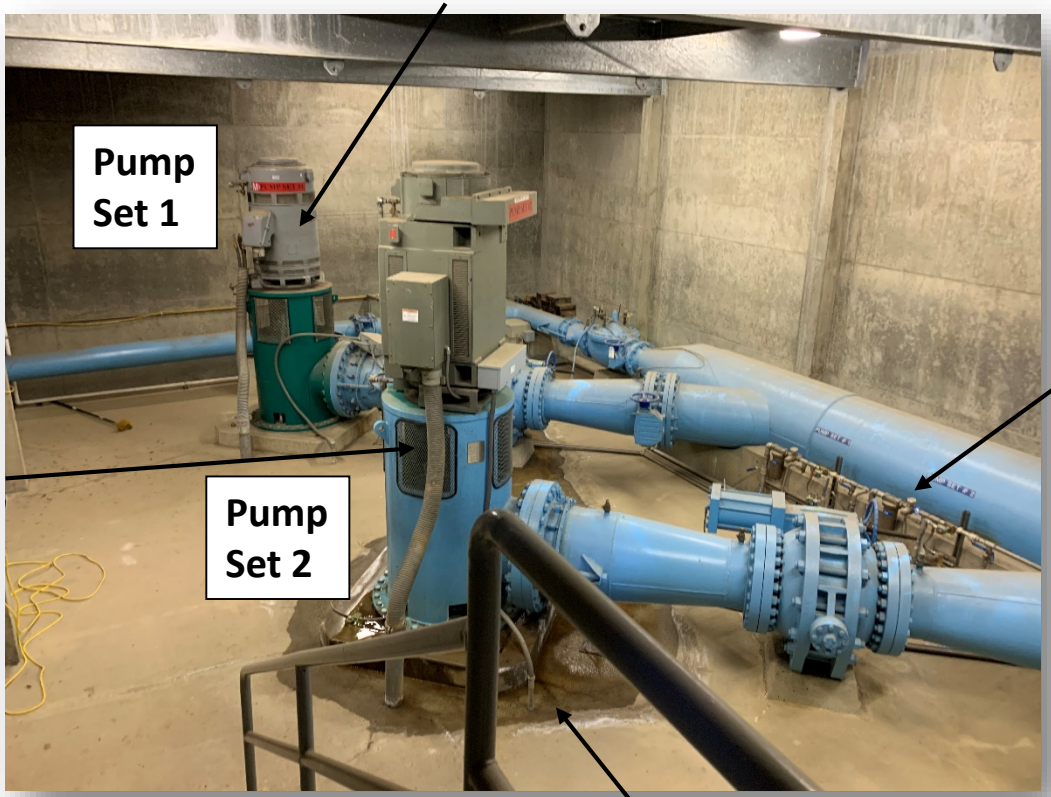
1. **Filling Stafford Lake.**
2. **Capacity of MMWD distribution system.**
3. **Max delivery under agreement with SCWA.**

Pump Station Condition Assessment

Overall the pump station is in good condition

Motor needs to be rewound

Piping and fittings appear in good condition



Missing mechanical seal

Small leak at Pump 2

Missing solenoid valve to hydraulic actuator for Pump Set 2

Flowmeter can be sent for recalibration

Electrical equipment in good condition

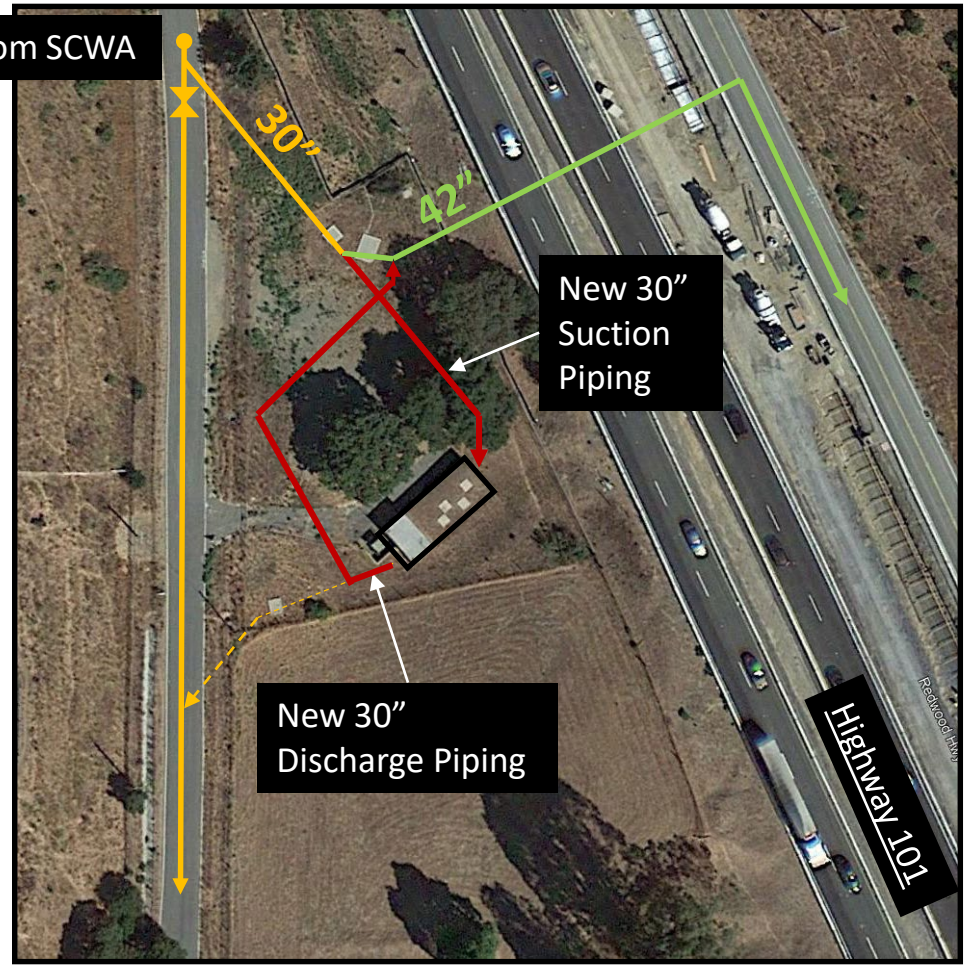
Rehabilitation Options and Costs

Rehabilitation Options and Costs – Option 1: Immediate Recommission

Option 1	
Scope	**Minimum needed to get Pump 2 up and running** • Assumes all other mechanical/electrical equipment functional • Includes new discharge piping to connect to 42” North Marin Aqueduct • New flowmeter vault (recalibrate existing flowmeter) • New RTU dedicated for MMWD • Consider replacing Pump No. 1 • Alternative project delivery method
Schedule	7 months (Nov – Dec 2021)
Cost	~$1 – 1.5M

Rehabilitation Options and Costs – Option 2: Complete Reconstruction

Option 2	
Scope	**Long-term investment** • Includes replacement of all mechanical/electrical equipment • All suction and discharge piping replaced
Schedule	18 months (Dec 2022)
Cost	~$3.52M



Rehabilitation Options and Costs Summary

Option	Scope	Schedule	Cost
Option 1 (Immediate Recommission)	**Minimum needed to get Pump 2 up and running** • Assumes all other mechanical/electrical equipment functional • Includes new discharge piping to connect to 42" North Marin Aqueduct • New flowmeter vault (recalibrate existing flowmeter) • New RTU dedicated for MMWD	7 months (Nov – Dec 2021)	~$1-1.5M
Option 2 (Complete Reconstruction)	**Long-term investment** • Includes replacement of all mechanical/electrical equipment • All suction and discharge piping replaced	18 months (Dec 2022)	~$3.52M

Summary and Recommendation

- Kastania Pump Station is in good condition
- Kastania Pump Station improves operational efficiency
- Proceed with Option 1 – Immediate Recommission

Next Steps

- Prepare environmental documentation
- Conduct on-site operational test of equipment
- Identify and develop most effective project delivery approach
- Pursue actions to return facility ownership to MMWD