COCOPAH INDIAN TRIBE

Cocopah Indian Reservation

Public Works Department

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PH24-W49; WA08-25
EAST COCOPAH IRON AND MANGANESE WATER TREATMENT PLANT PILOT STUDY AND DESGN
REQUEST FOR PORPOSALS

ADDENDUM #1
ISSUE DATE: September 23, 2025

1. **Modify the Request for Proposals to include the Preliminary Engineering Report as Appendix E - East Cocopah Water Treatment Plant Replacement Preliminary Engineering Report**

2. **Modify the Request for Proposals to include the Well No.4 Installation Report as Appendix F – Well No.4 Installation Report**

Appendix E – East Cocopah Water Treatment Plant Replacement Preliminary Engineering Report

Preliminary Engineering Report

East Cocopah Reservation
East Cocopah Water Treatment Plant Replacement
Cocopah Indian Tribe
Arizona
SDS Project No.
AZ14999-2001

PL 86-121

November 2023

Prepared By:
Indian Health Service
Ailyn Brizo, Field Engineer



11-29-2023
EXPIRES: 02-01-2025

East Cocopah Reservation
East Cocopah Water Treatment Plant Replacement
Preliminary Engineering Report

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Chapter 1

Project Planning

1.1 Location

The Cocopah Indian Tribe (Tribe) is located on three separate reservations which together make up the Cocopah Indian Reservation. The project is located on the East Cocopah Indian Reservation, which is 9 miles south of Yuma, AZ and 3 miles east of Somerton, AZ.

Figure 1-1 illustrates the project location.

Figure 1-1. Project Location Map



Source: "Yuma." 32°43'57.09"N 114°37'28.96"W. Google Earth. May 2021.

1.2 Environmental Resources Present

The East Cocopah Reservation is located about 3 miles east of Somerton, AZ. The residential area of the Reservation is located toward the southern end of the East Cocopah Reservation and is adjacent to farmland to its west. The East Main Canal runs through the residential area, which is part of the Yuma Project by the U.S. Bureau of Reclamation (BOR) and provides irrigation water to farmland in the vicinity. The East Cocopah Water Treatment Plant is located at the southwest

corner of the intersection between Salt Cedar Dr and S Park Way on the East Cocopah Reservation, which is adjacent to the East Main Canal.

The climate can be considered hot desert with low humidity with the temperature typically varying from 41°F to 107°F. Historically, the highest and lowest temperature ranges from 122°F to 22°F. Annual precipitation averages approximately 3.36 inches and mostly occurs in the late summer and winter.

The primary environmental consideration within the construction area of the project is the existing 500-year floodplain. The project is in an area designated as Zone X by the Federal Emergency Management Agency (FEMA), which indicates a 0.2% annual flood hazard. The project is listed on FEMA floodplain panel maps 04027C1835E, which is provided as an excerpt of the FEMA FIRM mapping in Appendix A. The project design would have to consider the project elevation in relation to the 500-year floodplain.

U.S. Fish and Wildlife (USFWS) website and mapping indicates that there may be endangered species and migratory birds within the project area. The alternatives analysis will consider the effect of the potential actions on these species and biological study will be conducted if there is a probability that any endangered species or migratory birds will be affected.

Archeological information and reporting for the project area will be completed by the Tribe's archeologist or consultant. The archeological report will be reviewed by Indian Health Service (IHS) and IHS will make the determination, based on the archeological report's findings, if any further action through the Arizona State Historic Preservation Offices (SHPO) is needed. No disturbance of historic sites or critical habitats are anticipated because the project will be on previously disturbed areas.

1.3 Population Trends

The total population for the Cocopah Indian Reservation is estimated to be 1,252 according to the 2021 US Census American Community Survey. This represents an increase of about 2.6% from the 2016 population estimate of 1,220. The Public Works Director estimates the current population of the East Cocopah Reservation to be about 250. There are currently no plans for additional home development projects on the East Cocopah Reservation.

1.4 Community Engagement

The Tribe and its Reservation is governed by the elected Tribal Council, which consists of a Chairwoman or Chairman, vice-chairman or chairman, and three council members. The Council has been aware of the need for this project. The Cocopah Public Works Director provided a letter that confirmed the East Cocopah Water Treatment Plant project as the No. 2 Tribal Priority for the Fiscal Year 2023 Sanitation Deficiency System (SDS) Projects.

Chapter 2

Existing Facilities

2.1 Location Map

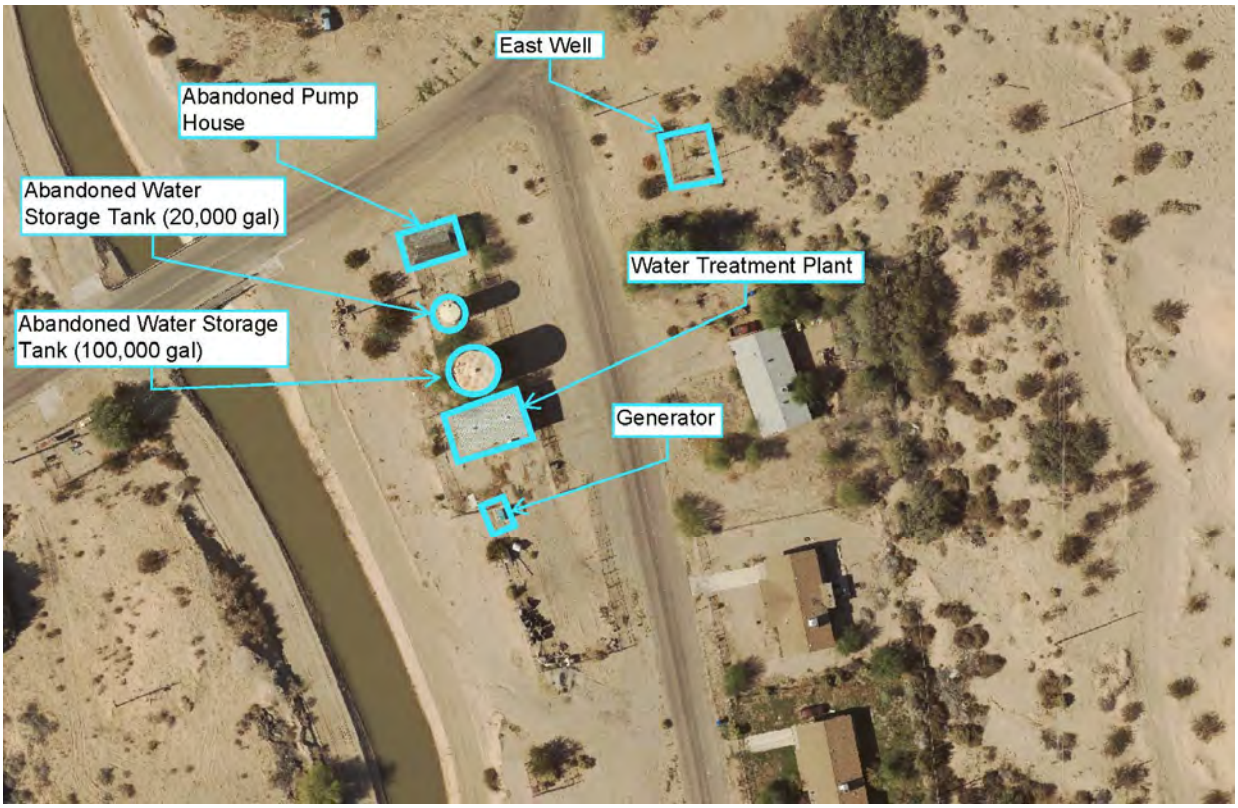
The existing East Cocopah Water Treatment Plant (WTP) is located on the East Cocopah Reservation as illustrated in Figure 2-1. The Plant is located in residential area of the East Cocopah Reservation. The Plant currently is connected to one operational well, known as East Well (GW003). The well is located across South Park Way from the WTP. The WTP consists of one main building, which houses all treatment, a restroom for operators, and water testing equipment. An abandoned pump house and two abandoned water storage tanks are also located within the fenced site area. The Tribe does not currently have plans to either use these facilities or demolish them.

Iron and Manganese Removal Treatment System – Raw well water enters the WTP from a common header from the North and East Well at the south side of the main building.

- A pipe feeds raw water into the Treatment Plant. The water is first treated with the Mixed Oxidant Solution to oxide manganese and iron and then flows through the greensand filters. The raw water headworks, treated water, and backwash supply piping are 4” Sch 80 PVC.
- The treated water is discharged to the distribution system.
- A separate line is used to direct treated water to backwash the system. The backwash water is discharged to the Variable Grade Sewer system.

Other existing water infrastructure throughout the service area includes an elevated storage tank about 0.2 miles north of the plant, one abandoned well (South Well), and one collapsed inactive well (North Well).

Figure 2-1. East Cocopah Water Treatment Plant Aerial Map



2.2 History

The Cocopah Public Works Department serves the Cocopah Indian Reservation, which consists of three reservations known as the East Cocopah Reservation, West Cocopah Reservation, and North Cocopah Reservation. The East Cocopah Water System provides service to 72 residential connections and a Head Start located in the residential area of the East Cocopah Reservation. Water supply is entirely groundwater from one well, known as East Well, located on the east side of S Park Way.

In 1974 water system infrastructure was installed that included two drilled wells now known as North Well and South Well, a 20,000-gallon storage tank, and a pumphouse that housed a hydropneumatics tank. All of these facilities are currently out of operation, but have not been demolished. The two abandoned wells are in the vicinity of the East Cocopah Water Treatment Plant and are known as North Well and South Well. North Well was drilled in 1971 to a depth of 186 ft. It was the primary well and reportedly produced 130 gpm until its collapse in February 2021. The South Well is disconnected from the Water System and the casing was backfilled. The discharge piping is still connected to the distribution system, however all valves have been closed and blind flanged off.

A 100,000-gallon water storage tank was constructed before 1988, which is currently abandoned and plans are not available for its design. The East Cocopah Water Treatment Building was constructed in 1988 as part of PH87-63. The Plant originally was designed to oxidize manganese and iron with potassium permanganate. The existing filters were installed during this project and have not been replaced since. A chlorine and fluoride injection feed

system were part of this construction but are no longer operational. The as-built drawing for this project is provided in Appendix C.

IHS Project PH 97-A76 provided for the upgrading of the community water system including the construction of a 300,000-gallon water storage standpipe, new submersible pumps for the North and South Wells, replacement of water mains, and construction of additional water mains. Additional work included upgrades to motor controls, telemetry, and monitoring.

The Water Treatment Plant was upgraded as part of IHS Project PH03-C29. The upgrade included replacement of the filter media, installation of a MIOX system for Fe and Mn oxidation and disinfection, installation of a water softener, upsizing of pipes, and connection of the backwash line to the community sewer system. East Well (GW003) was drilled as part of this project, which is now the only functioning well for the East Cocopah Water System. No construction drawings have been found for this project, however an excerpt from the Final Report is included as Appendix D and includes a list of facilities installed.

The Tribe funded the replacement of certain components of the Plant in 2021, including the Sch 80 4” PVC for the raw water lines, treated water lines, and backwash lines. Some valves and fittings were replaced. Although these components are relatively new, the Tribe was not satisfied with the quality of the work that was performed.

Table 2-1 provides a list of wells throughout the service area and its status to date. North Well has not been properly abandoned.

Table 2-1. Wells in Service Area

Description	Current Status	Date Constructed	Reason
North Well	Abandoned	1971	Collapsed
South Well	Abandoned	Unknown	Low production
East Well	Active	2004	N/A
East Cocopah Well No. 4	In progress	2024 (Projected)	Funded well drilling project, in construction

Table 2-2 summarizes the existing water storage. The inactive storage tanks are located on the WTP site and the Tribe does not have plans to demolish them. The active Storage Tank 1 is located about 0.2 miles to the north of the WTP and is 66.25 feet in height and 28.25 feet in diameter. The tank has telemetry controls and is set to start at 60.55 feet and stop at 62.58 feet. However, operator have noted that level control has not been reliable.

Table 2-2. Water Storage Facilities

Location	Description	Current Status	Reason
Storage Tank 1 (Standpipe)	300,000 gallons, welded steel standpipe	Active	N/A
Storage Tank 2	20,000 gallons	Inactive	Unknown
Storage Tank 3	100,000 gallons	Inactive	Unknown

The water distribution system currently consists of 6- and 8-inch PVC mains. Asbestos cement pipes are no longer in operation but are still located at the project site and throughout the Reservation. The total length of the active mains is estimated to total 12,00 feet. The majority of the distribution system is looped.

2.3 Condition of Existing Facilities

The East Cocopah water system currently has only one operational well, known as East Well. It has been producing 155 gpm with no reported issues. However, there is no means to provide water if the existing well fails or needs maintenance. The construction of a new water production well was recently funded under IHS project PH21-V99. As part of that project, water consumption data was evaluated against the operation capacity of the existing East Well. Construction of the new well is in the construction stage as of November 2023 and is expected to be completed by the early 2024. Procurement of the well pump and construction of the connection to the system is not included as part of that contract. Once the new well is constructed, the water produced will be sampled to ensure that existing treatment is sufficient. However, it is expected that the new well water quality will be similar to the existing well water quality. The connection of the new well to the WTP has not been constructed but it will likely be combined with the flow from the East Well in a common header before the raw water enters the WTP.

The distribution system consists of 6- and 8-in PVC mains that were installed in 2002. No issues with the condition of the distribution system were noted in the most recent sanitary survey in 2018 or by the Public Works staff since that report. However, the sanitary survey identified the lack of a cross-connection control program and the lack of vacuum breakers on hose bibs as deficiencies with the distribution system. The Public Works Department is working to address those deficiencies. The full Sanitary Survey report is included as Appendix E.

The existing water treatment plant is operational, but there are numerous components that are nearing or exceeding the expected service life. The filter vessels have not been replaced since the original construction of the plant in 1988 and show signs of corrosion and active leaks from the tops of the piping and vessels.

The Tribe funded the replacement of certain components of the Plant in 2021, including the Sch 80 4” PVC for the raw water lines, treated water lines, and backwash lines. Although these components are relatively new, the work was not completed according to IHS standards and the Tribe was not satisfied with the quality of the work that was performed. For example, new butterfly valves were installed before the pressure vessels, but are already significantly corroded. According to Public Works staff this is because the bolts were not properly tightened during installation and began leaking as soon as the valve was put into operation. Another aspect that was not satisfactory was the new piping for the MIOX system which was haphazardly installed and poorly secured.

The WTP building itself is also deteriorating. Numerous rips and holes in the building insulation and corrosion of the metal exterior were identified, which make it difficult to regulate the temperature within the building. The air conditioning unit has not been operational and a swamp cooler was recently installed to provide cooling. The lack of temperature regulation has been both uncomfortable for Public Works staff and possibly detrimental to the operation of the MIOX equipment. Appendix F includes further documentation of the condition of the WTP.

Other deficiencies include lack of an air scouring system and the significantly corroded condition of the air scouring piping. The fluoride injection system is not functioning and has been identified in previous sanitary surveys as a deficiency. The on-site generator has not been functioning according to Public Works Staff and the last servicing of the generator was several years ago.

2.4 Financial Status of any Existing Facilities

The most recent annual O&M budget for the Cocopah Public Works Department is shown in Appendix E. The Tribe is not currently collecting fees for water or sewer services. The Tribe is in

the process of implementing a rate structure for residents, which will be starting by the end of 2023 or early 2024. The monthly charge will be $15 per connection. This will not be sufficient to fully fund the Public Works Department O&M budget.

2.5 Water/Energy/Waste Audits

No audits have been completed in regards to water, energy, and waste.

Chapter 3

Need for Project

3.1 Health, Sanitation, and Security

The most recent sanitary survey was conducted in 2018 for the East Cocopah Water System. The sanitary survey identified deficiencies and recommendations for the system based on the information gathered during the sanitary survey. The deficiencies identified that involve the Water Treatment Plant include general housekeeping of the facilities, non-functioning fluorination equipment, and the need for media replacement.

Reports from Cocopah Public Works staff and a field visit conducted by IHS staff in August 2023 identified further deficiencies including the deteriorating condition of the filter vessels, difficulty with operating the MIOX disinfection system, and lack of an air scour system.

The WTP removes iron and manganese for the drinking water of the East Cocopah Reservation. The treatment is typically sufficient to remove iron to below the EPA secondary maximum contaminant level (SMCL) of 0.3, however the plant is unable to achieve effluent levels for Manganese below the SMCL of 0.05. The MIOX system experiences frequent errors, which can lead to exceedances of the SMCLs. Results from water testing from 2021 is showed in Table 3-1. The analytical report is included as Appendix G.

Table 3-1. Water Quality Results

Contaminant (mg/L)	Raw Water Concentration (mg/L)	Effluent Concentration (mg/L)	Current SMCL (mg/L)
Iron	0.17	ND	0.3
Manganese	0.31	0.057	0.05

Water sampling results from a newly constructed water well for the East Cocopah water system is expected when the well is constructed in late 2023 or early 2024. The water quality results will be used to evaluate the suitability of the existing WTP to treat the new water source and to determine the design requirements for the replacement or rehabilitation of the WTP.

3.2 Aging Infrastructure

The East Cocopah Water Treatment Plant was constructed in 1988. Upgrades to the treatment processes were done in 2003, which included replacing the chlorine and potassium permanganate with a MIOX system. The filter vessels were not replaced and are nearing or exceeding the expected life of that component. Similarly, the building structure itself is 35 years old and is deteriorating.

The concerns with the East Cocopah Water Treatment Plant include: increasing O&M costs, deterioration of the plant building, deterioration of the filters. The plant also has no air conditioning and poor insulation due to the poor condition of the insulation and building structure. This can be dangerous for operators during the summer months when temperatures can reach as high as 120° F and can impact functioning of the MIOX system.

The concerns with the existing iron and manganese removal plant include the following:

- Rising O&M costs, inefficient systems and operational difficulties
- Steady wear and tear on the system that result in media removal being ineffective
- Need for removal and replacement of the greensand filter media
- Inoperable standby power
- Controls are inoperable

3.3 Reasonable Growth

The Tribe does not have plans for new housing in the residential area of the East Cocopah Reservation and there are no significant increases to water consumption anticipated. However, the population continues to grow slowly, so the water system should be able to accommodate further growth.

Chapter 4

Options Considered

Option A - Construct a New Treatment Plant

4.1.A Description

This alternative would involve construction of a new water treatment plant including a new greensand filtration system for the safe removal of iron and manganese present in the current water source. A chlorination system would be installed which will be used for iron and manganese removal pretreatment and disinfection. A SCADA system would be installed to better control and collect data from the water system. A pilot study would need to be completed prior to a full design, which would be funded as part of this project and would be used to establish a process of removing iron and manganese to below target levels and to select media type.

The existing abandoned structures on the East Cocopah WTP site will be demolished as part of this project. This will provide adequate space for the replacement WTP. The new building for the WTP would provide an improved space for O&M activities, including a separate room for routine measurement of iron, manganese, and chlorine levels.

4.2.A Design Criteria

Design criteria for the media type will follow the appropriate requirements, regulations, utilizing the AWWA Iron and Manganese Removal Handbook by Elmer O. Sommerfeld. Current usage data will be reviewed for consideration of the size of filters that will be needed. A pilot test will be completed to determine the amount oxidant that will be required to have the iron and manganese constituents precipitate out of solution to be captured by the media.

Project will be designed as a minimum to meet the Ten States Standard and EPA Safe Drinking Water Regulations (distribution system piping, appurtenances, pump design, etc.).

4.3.A Map

Figure 4-1 show an aerial map of the new water treatment site with possible layouts of facility and buildings.

Figure 4-1. New Water Treatment Plant Site



4.4.A Environmental Impacts

A full environmental review of the location will be completed prior to construction. No other impacts on historical sites, archaeological, critical habitat, floodplain, wetlands, or rangelands are anticipated. Soil borings will be needed to test the soil stability for a new building and plant structures.

4.5.A Land Requirements

This project will be constructed on Tribal land. If any additional land area is required, IHS and Cocopah Public Works Department will coordinate efforts to notify stakeholders and request ROW if needed.

4.6.A Potential Construction Problems

This project is proposed to be constructed adjacent to the existing WTP. The fenced area of the WTP includes a currently unoccupied area that was previously used as a drainfield for the WTP restroom. This area may be a feasible site for the WTP, but a geotechnical investigation should be conducted to determine the suitability for structures and need for imported fill.

The Cocopah Public Works Department expressed interest in keeping the existing WTP building intact for storage purposes. The feasibility of refurbishing the existing structure will need be

evaluated. The amount of space for construction may be limited. No other construction challenges are expected.

4.7.A Sustainability Considerations

4.7.1.A Water and Energy Efficiency

The construction of a new building can allow for new HVAC and insulation to be installed, which may increase energy efficiency. Installing a new SCADA system will allow better control of the pumping assets operated by the Cocopah Public Works Department. Better integration can also provide automated record keeping that can be used to conduct water and energy audits. The upgraded system will also be able to notify operators in case of an emergency or system shutdown.

4.7.2.A Green Infrastructure

No considerations are given for green infrastructure for this specific option.

4.7.3.A Other

No other considerations are needed for this specific option.

4.8.A Cost Estimate

The engineer's cost estimate to implement this option is estimated at $5,770,000. Detailed construction cost estimates are provided in Table 4-1.

Table 4-1. Detailed Construction Cost Estimate for Option A – Construct A New Treatment Plant.

Phoenix Area SDS Cost Estimate Template (Revised 2/2023)						
Project Name: East Cocopah Water Treatment Plant Replacement						
Date:	10/10/2023					
Schedule A: Project Planning & Design (PDP Based)						
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**	
				Planning & Design Total:	**$ -**	
Schedule B: Construction						
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**	
1	A/E Design Consultant (Pilot/Construction Docs)	1	LS	$ 500,000.00	$ 500,000.00	
2	Mobilization/Demobilization	1	LS	$ 300,000.00	$ 300,000.00	
3	Demolition of Existing Structures	1	LS	$ 150,000.00	$ 150,000.00	
4	Abandonment of Collapsed Well	1	LS	$ 50,000.00	$ 50,000.00	
5	Building/Site Work	1	LS	$ 700,000.00	$ 700,000.00	
6	Chlorination System	1	LS	$ 100,000.00	$ 100,000.00	
7	Yard Piping and Valves	1	LS	$ 100,000.00	$ 100,000.00	
8	Well Pump/Equiping	1	LS	$ 150,000.00	$ 150,000.00	
9	Electrical Controls	1	LS	$ 600,000.00	$ 600,000.00	
10	Installation of SCADA	1	LS	$ 150,000.00	$ 150,000.00	
11	Iron and Manganese Media Filtration System	1	LS	$ 950,000.00	$ 950,000.00	
12	Generator	1	LS	$ 130,000.00	$ 130,000.00	
13	Fencing	1	LS	$ 50,000.00	$ 50,000.00	
				Construction Total:	**$ 3,930,000.00**	
Schedule C: Post Construction						
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**	
1	**1-Year Start-Up Assistance (Mechanical Systems Only)**	5	DAYS	$ 500.00	$ 2,500.00	
2	Operator Training	2	DAYS	$ 1,000.00	$ 2,000.00	
3	O&M Materials and Equipment (Project Related)	1	LS	$ 16,800.00	$ 16,800.00	
4	O&M Manual Development	1	LS	$ 11,200.00	$ 11,200.00	
5	Surveying: (As-Built)		LS	$ -	$ -	
6	Computer Aided Drafting (As-Built)		LS	$ -	$ -	
7	Other		LS	$ -	$ -	
				Post Construction Total:	**$ 32,500.00**	
Planning & Design Total (Schedule A)			**$ -**			
Construction Total (Schedule B)			**$ 3,930,000.00**			
Post Construction Total (Schedule C)			**$ 32,500.00**			
Contingency (Schedules A, B, & C)			**$ 594,375.00**	15.00%	FIXED RATE	
			Subtotal	**$ 4,556,875.00**		
TERO/Tribal Tax		0%	**$ -**		VARIES BY TRIBE	
Tribal Procurement 1=YES, 0=NO		1				
Tribal Administrative Support Fee			**$ 93,387.50**			
			Subtotal Tribal Fees	**$ 93,387.50**		
IHS Project Technical Support Fee			**$ 683,531.25**	15.00%	FIXED RATE	
			Subtotal PTS	**$ 683,531.25**		
	Total Project Cost (IHS Funded Project)			**$ 5,333,793.75**		
	Use Total Cost of			**$ 5,334,000.00**	ENTER IN SDS	
BELOW COST ESTIMATE ONLY APPLICABLE TO PROJECTS FUNDED BY OTHER THAN IHS*						
	IHS Engineering Program Support (EPS) Applied to non-IHS Funded Projects: Schedule A			**$ -**	25.00%	FIXED RATE
	IHS Engineering Program Support (EPS) Applied to non-IHS Funded Projects: Schedules B & C			**$ 435,875.00**	10.00%	FIXED RATE
	Total Project Cost (Project Funded by Other Agency)			**$ 5,769,668.75**		
	Use Total Cost of			**$ 5,770,000.00**		

Option B – Rehabilitate, Restore, and Retrofit Existing Treatment Plant

4.1.B Description

This option would involve a complete rehabilitation of the existing treatment plant infrastructure and retrofit existing plant components for efficient iron and manganese removal. The majority of the plant piping was replaced in 2021 by a contractor as part of a Tribally-financed upgrade to the WTP. However, some components of that replacement piping are not up to IHS standards and may need to be replaced or otherwise reconfigured. Other components of existing plant piping such as the air scour piping, and underdrains were not replaced in 2021 and will be replaced as part of this option. The existing automatic control system has not been operating properly and would be replaced by a new control panel. A chlorination system would replace the MIOX system, which has caused issues for the Public Works Department staff. Typically, retrofitting existing iron and manganese removal plants are normally done with the use of the existing pressure filtration vessels. The existing vessels are leaky and corroded in areas and may require replacement to bring the system to a reliable condition.

The building structure would be repaired to the extent possible, including replacement of building insulation and installation of a new air conditioning system.

Renewal of the facility will improve the design life and effectiveness of the treatment process; however, the residual life of the overall system may extend the utilization of the plant for another 10 to 15 years. At that point, a new treatment plant will be needed.

4.2.B Design Criteria

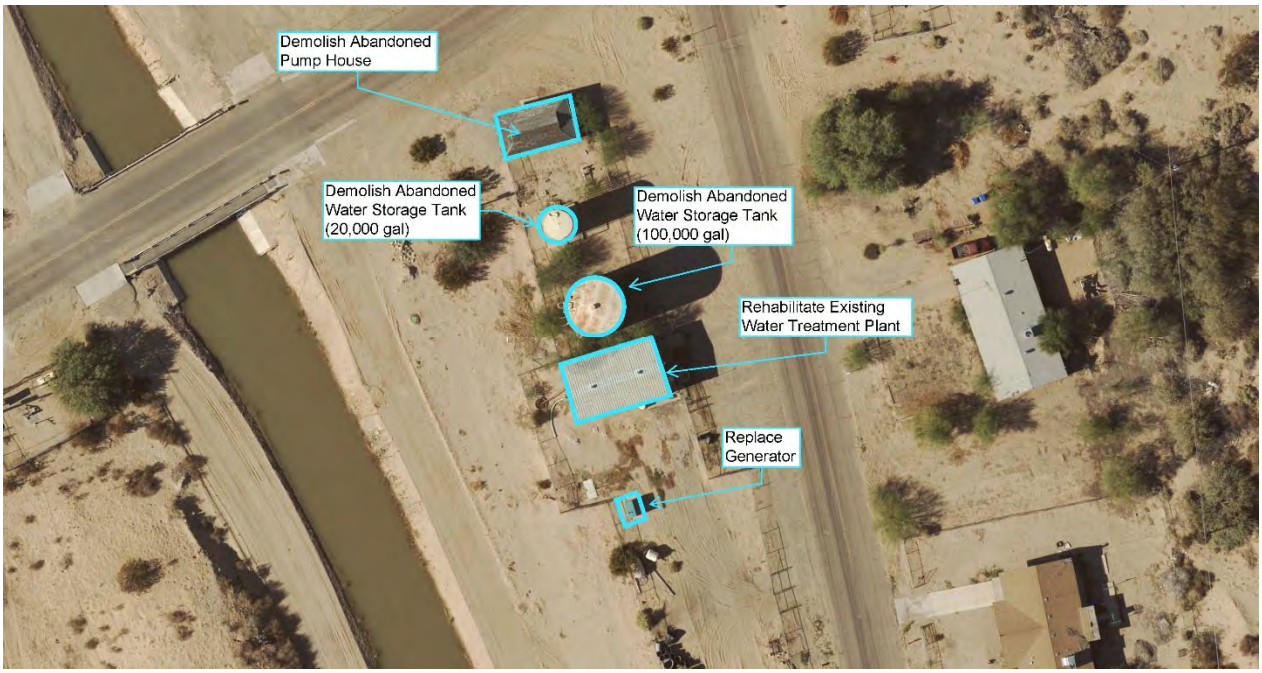
This rehabilitation effort will not require a full design of a completely new system; however, some system analysis and design may be needed to retrofit treatment system for effective removal of the contaminants. The criteria will follow the appropriate requirements, regulations, utilizing the AWWA Iron and Manganese Removal Handbook by Elmer O. Sommerfeld. Disinfection design will be based on the system demand and chlorine breakpoint. The rehabilitation would need to be planned to minimize disruption to operation.

Project will be designed as a minimum to meet the Ten States Standard and EPA Safe Drinking Water Regulations (distribution system piping, appurtenances, pump design, etc.) depending on results of a hydraulic analysis of the system and rerouting of water mains for possible common header tie-in.

4.3.B Map

Figure 4-2 shows an aerial map of the project site noting which facilities may require work necessary to rehabilitate and restore plant to optimal operations.

Figure 4-2. Iron and Manganese Removal Plant Rehabilitation



4.4.B Environmental Impacts

All improvements will be within the area of existing facilities and boundaries. No other impacts on historical sites, archaeological, critical habitat, floodplain, wetlands, or rangelands are anticipated.

4.5.B Land Requirements

No additional land may be needed since existing infrastructures are in place. Existing boundaries of the facility site is large enough to accommodate material storage and any small alteration to the treatment facility during the rehabilitation project.

4.6.B Potential Construction Problems

Retrofitting existing building and plumbing may prove to be challenging due to restricted building access. Due to the current condition of the building, refurbishment efforts may prove to be difficult as well. Due to the age of the treatment facility and equipment, certain portions or parts may be difficult to replace because of outdated equipment and obsolete mechanical parts. The existing system should remain in operation as much as possible during construction, which will require further planning and design efforts.

4.7.B Sustainability Considerations

4.7.1.B Water and Energy Efficiency

Overall current operations of treatment facility remain will as is. Replacement of equipment and components of facility may improve operations and treatment effectiveness.

4.7.2.B Green Infrastructure

No considerations are given for green infrastructure for this specific option.

4.7.3.B Other

No other considerations are needed for this specific option.

4.8.B Cost Estimate

The engineer's cost estimate to implement this option is estimated at $3,333,000. Detailed construction cost estimates are provided in Table 4-2.

Table 4-2. Detailed Construction Cost Estimate for Option B – Rehabilitate, Restore and Retrofit Existing Treatment Plant

Phoenix Area SDS Cost Estimate Template (Revised 2/2023)						
Project Name: East Cocopah Water Treatment Plant Rehabilitation						
Date:	10/10/2023					
Schedule A: Project Planning & Design (PDP Based)						
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**	
				Planning & Design Total:	**$ -**	
Schedule B: Construction						
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**	
1	A/E Design Consultant (Pilot/Construction Docs)	1	LS	$ 500,000.00	$ 500,000.00	
2	Mobilization/Demobilization	1	LS	$ 13,500.00	$ 13,500.00	
3	Demolition of Existing Structures	1	LS	$ 150,000.00	$ 150,000.00	
4	Abandonment of Collapsed Well	1	LS	$ 50,000.00	$ 50,000.00	
5	Building/Site Improvements	1	LS	$ 350,000.00	$ 350,000.00	
6	Plant Piping Replacement	1	LS	$ 80,000.00	$ 80,000.00	
7	Chlorination System	1	LS	$ 100,000.00	$ 100,000.00	
8	Well Pump/Equiping	1	LS	$ 150,000.00	$ 150,000.00	
9	Electrical Controls and Panel (Upgrade)	1	LS	$ 60,000.00	$ 60,000.00	
10	Installation of SCADA	1	LS	$ 150,000.00	$ 150,000.00	
11	Filtration System Renovation	1	LS	$ 500,000.00	$ 500,000.00	
12	Fencing	1	LS	$ 50,000.00	$ 50,000.00	
13	Generator	1	LS	$ 130,000.00	$ 130,000.00	
				Construction Total:	**$ 2,283,500.00**	
Schedule C: Post Construction						
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**	
1	**1-Year Start-Up Assistance (Mechanical Systems Only)**	5	DAYS	$ 500.00	$ 2,500.00	
2	O&M Materials and Equipment (Project Related)	1	LS	$ 1,680.00	$ 1,680.00	
3	O&M Manual Development	1	LS	$ 500.00	$ 500.00	
				Post Construction Total:	**$ 4,680.00**	
Planning & Design Total (Schedule A)			**$ -**			
Construction Total (Schedule B)			**$ 2,283,500.00**			
Post Construction Total (Schedule C)			**$ 4,680.00**			
Contingency (Schedules A, B, & C)			**$ 343,227.00**	15.00%	FIXED RATE	
			Subtotal	**$ 2,631,407.00**		
TERO/Tribal Tax		0%	**$ -**		VARIES BY TRIBE	
Tribal Procurement 1=YES, 0=NO		1				
Tribal Administrative Support Fee			**$ 54,878.14**			
			Subtotal Tribal Fees	**$ 54,878.14**		
IHS Project Technical Support Fee			**$ 394,711.05**	15.00%	FIXED RATE	
			Subtotal PTS	**$ 394,711.05**		
	Total Project Cost (IHS Funded Project)			**$ 3,080,996.19**		
	Use Total Cost of			**$ 3,081,000.00**	ENTER IN SDS	
BELOW COST ESTIMATE ONLY APPLICABLE TO PROJECTS FUNDED BY OTHER THAN IHS*						FIXED RATE
	IHS Engineering Program Support (EPS) Applied to non-IHS Funded Projects: Schedule A			$ -	25.00%	FIXED RATE
	IHS Engineering Program Support (EPS) Applied to non-IHS Funded Projects: Schedules B & C			**$ 251,699.80**	10.00%	
	Total Project Cost (Project Funded by Other Agency)			**$ 3,332,695.99**		
	Use Total Cost of			**$ 3,333,000.00**		

Option C – (Do Nothing-WTP, Equip Wells)

4.1.C Description

This option would continue operating water treatment facility as-is and address O&M repairs needed to maintain a minimum treatment effectiveness as much as possible. This option would not involve any construction.

4.2.C Design Criteria

No design may be required for this option since existing system will continue as-is.

Project will be designed as a minimum to meet the Ten States Standard and EPA Safe Drinking Water Regulations (distribution system piping, appurtenances, pump design, etc.) depending on results of a hydraulic analysis of the system and rerouting of water mains for possible common header tie-in.

4.3.C Map

Refer to Figure 2-1 for an aerial map of the project locations.

4.4.C Environmental Impacts

No impacts on historical sites, archaeological, critical habitat, floodplain, wetlands, or rangelands are anticipated.

4.5.C Land Requirements

No additional land will be needed since no additional facilities will be constructed under this option.

4.6.C Potential Construction Problems

No major construction activities will be required under this option.

4.7.C Sustainability Considerations

4.7.1.C Water and Energy Efficiency

System operating as-is is inefficient in some ways due to the lack of insulation and inoperable controls.

4.7.2.C Green Infrastructure

No considerations are given for green infrastructure for this specific option.

4.7.3.C Other

No other considerations needed for this specific option.

4.8.C Cost Estimate

The engineer’s cost estimate to implement this option is estimated at $0. Routine O&M actions would remain the responsibility of the Tribe.

Chapter 5

Selection of an Option

The three proposed options were evaluated based on a 20-year life cycle cost analysis and non-monetary factors (health & environmental impact, tribal support, and sustainability) were examined as well.

5.1 Life Cycle Cost Analysis

The 20-year life cycle costs are presented for the options below. Construction of a new treatment plant is estimated at $5,770,000 with an annual O&M cost of $37,650. The overall life cycle cost of Option A is $6,397,936.

Option B, rehabilitation and restoration of the facilities, has a lower construction cost compared to Option A, with additional anticipated O&M costs due to the aging of the system. The option to construct a new plant has a higher construction cost and a lower cost for O&M than Options B and C. The life cycle cost of Option B (Rehabilitate, Restore and Retrofit Existing Plant) is $6,272,211 which has an initial construction cost of $3,330,000 with a recurring O&M costs of $179,000 for operating the existing treatment plant for reminder of its life. This option assumes that significant repairs will be needed due to aging infrastructure. Although this option is cheaper than Option A, this option depends on the ability of the structure to be rehabilitated adequately. Option B may also require a new plant to be constructed within the 20-year operating period; however, this cost was not factored in the analysis.

Option C includes recurring O&M costs, major repairs or replacements that may be needed, and media replacements. This option may not be realistic due to the nature and condition of the existing treatment facility. The deterioration of the filter vessels increases the chances for failure before the end of the assumed 20-year life cycle. The reoccurring maintenance will be extremely detrimental to the utility staffing and utility budget. The life cycle cost of Option C (Do Nothing-WTP, Equip Wells) is $1,987,579.

Table 5-1. Life Cycle Cost Analysis of Option C.

Life Cycle Cost					
Discount Rate*	**2.00%**				
Time Period	**20**	yrs			
Initial Cost: Construction (I)					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	(Refer to Table 4-1)	--	--	(Refer to Table 4-1)	---
				Construction Total:	**$ 5,770,000.00**
Replacement Cost: Based on 20 years (Replace)					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	Media Filtration Replacement	1	LS	$ 15,000.00	$ 15,000.00
				Annualized Cost (NPV)	**$ 12,305.00**
Yearly average operating, maintenance, and repair costs (OM&R)					
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**
1	Recurring maintenace	1	LS	$ 37,650.00	$ 37,650.00
				Recurring costs (NPV)	**$ 615,631.47**
Life Cycle Cost	**$ 6,397,936.47**				
*"real" discount rate taken from Appendix C of OMB Circular No. A-94 (revised December 2022)					

Table 5-2. Life Cycle Cost Analysis of Option B.

Life Cycle Cost	**Option B: Rehabilitation**				
Discount Rate*	**2.00%**				
Time Period	**20**	yrs			
Initial Cost: Construction (I)					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	(Refer to Table 4-2)	--	--	(Refer to Table 4-2)	-
				Construction Total:	**$ 3,333,000.00**
Replacement Cost: Based on 20 years (Replace)					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	Media Filtration Replacement	1	LS	$ 15,000.00	$ 15,000.00
				Annualized Cost (NPV)	**$ 12,305.00**
Yearly average operating, maintenance, and repair costs (OM&R)					
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**
1	O&M and Repair Costs	1	LS	$ 179,000.00	$ 179,000.00
				Recurring costs (NPV)	**$ 2,926,906.57**
Life Cycle Cost	**$ 6,272,211.57**				
*"real" discount rate taken from Appendix C of OMB Circular No. A-94 (revised December 2022)					

Table 5-3. Life Cycle Cost Analysis of Option C.

Life Cycle Cost	**Option 3: As-Is**				
Discount Rate*	**2.00%**				
Time Period	**20**	yrs			
Initial Cost: Construction (I)					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	(Refer to Table 4-1)	--	--	(Refer to Table 4-1)	---
				Construction Total:	**$ -**
Replacement Cost: Based on 20 years (Replace)					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total**
1	Media Filtration Replacement	1	LS	$ 15,000.00	$ 15,000.00
2	Media Filtration Replacement (10 yrs)	1	LS	$ 15,000.00	$ 15,000.00
				Annualized Cost (NPV)	**$ 27,011.00**
Yearly average operating, maintenance, and repair costs (OM&R)					
Item	**Description**	**Quantity**	**Units**	**Units Cost**	**Total**
1	O&M and Repair Costs	1	LS	$ 118,250.00	$ 118,250.00
				Recurring costs (NPV)	**$ 1,960,568.00**
Life Cycle Cost	**$ 1,987,579.00**				
*"real" discount rate taken from Appendix C of OMB Circular No. A-94 (revised December 2022)					

5.2 Non-Monetary Factors

Other non-monetary factors are included in this analysis to evaluate the three options to assist in providing a recommended course of action. Table 5-4 summarizes each parameter with a corresponding scoring factor.

Table 5-4. Scoring Factor Summary

Parameter:	Health & Environmental Impact	Tribal Support	Sustainability
Factor:	10	6	8

5.2.1 Health & Environmental Impact (score x 10 factor)

Safe drinking water is the primary goal of any utility program. The time and hard work utility staff commit to the system promotes public health and safety and likewise protects environmental resources.

Option A – Construct a New Treatment Plant - 10

This option would ensure that the water continues to be effectively treated with the addition of a new water source. The treatment effectiveness will be ensured and the plant will no longer have issues with the unreliable MIOX system and the possibility of system failure due to aging components.

Option B – Rehabilitate / Restore Existing Treatment Plant - 7

Restoration of the facilities will improve the overall condition, extend the service life, and most importantly provide safe and reliable water supply to the community. However, the overall condition is unknown and may require a substantial amount of resources and labor intensity to restore the facilities to a reliable operation.

Option C – Do Nothing-WTP, Equip Wells - 2

The Cocopah Public Works Department will continue to operate the system as-is, which includes deteriorated components that may fail. Issues with the MIOX system may cause inadequate treatment.

5.2.2 Tribal Support (score x 6 factor)

Support from the Tribe is an essential factor to the overall success of a project and the input they can provide on employing scarce resources is important.

Option A – Construct a New Treatment Plant - 8

The East Cocopah Reservation is currently served by one well and a second well will be under construction by the end of 2023. The conditions of the plant are a concern for the operating staff and council leaders. Decommissioning the existing plant and constructing a new treatment plant will improve the overall reliability and allow the WTP to meet the needs of the East Cocopah Reservation.

Option B – Rehabilitate / Restore Existing Treatment Plant - 5

The Cocopah Public Works Department will no longer be concerned with any immediate reliability issues of the treatment plant since the facilities will be repaired and restored towards dependable operation. The existing plant is 35 years old, any capital improvements made to the system will extend its service life; however, the extent of the long-term improvements possible is unknown. Restoration efforts most likely will be needed in the future to continue serving the community or perhaps a new treatment plant may be needed instead. Issues such as lack of storage space and lack of a dedicated

water sampling area would continue.

Option C – Do Nothing-WTP, Equip Wells - 2

The Cocopah Public Works Department will continue to operate the system as-is and address any immediate repairs to minimize downtime of the plant. The Public Works Department has concerns about the remaining service life of the plant if key components are not replaced. The Tribe does not support continuing operation as-is.

5.2.3 Sustainability (score x 8 factor)

Sustainability of water infrastructure deserves special attention to be sure there is long-term adaptability and resilience to environmental changes, volatile energy prices, and other predictable changes that may arise. Sustainability of the utility involves not only maintaining its infrastructure but its personnel assets as well.

Option A – Construct a New Treatment Plant - 9

The existing treatment plant has severe holes in the insulation and broken windows which makes regulating the indoor temperature difficult and energy-intensive. Replacing the

entire plant building would allow air conditioning to be operated more efficiently than in the existing building. The new plant would also allow for a SCADA installation, which would help Public Works monitor their system and plan for the future.

Option B – Rehabilitate / Restore Existing Treatment Plant - 5

The existing building is significantly deteriorated. The existing plant has a swamp cooler installed because the air conditioning is no longer functional. Rehabilitation would allow air-conditioning to be installed which may be more effective at cooling the plant; however, the poor condition of the insulation may result in higher energy usage. Rehabilitation efforts may prolong the service life of the plant; however, the current conditions are unknown and perhaps may require more labor and effort to restore to a more dependable operational status.

Option C – Do Nothing-WTP, Equip Wells - 2

The current infrastructure, operation, and maintenance of the facilities may not be sustainable. As tanks continue to age and are left unmaintained the steel structure will continue to corrode, leaving a higher possibility of water supply contamination and possibility of a catastrophic tank failure. Regular O&M actions may help maintain adequate operation, but more extensive replacements will be needed as key components reach the end of their service life.

5.2.4 Scoring Summary for Options

The recommended option based on the non-monetary factors is Option A – Construct a New Treatment Plant. Table 5-5 summarizes the non-monetary scores for each option.

Table 5-5. Scoring Summary for Options

	Parameter:	**Health & Environmental Impact**	**Tribal Support**	**Sustainability**	**Total Score**
Option:	Factor:	10	6	8	
Option A – Construct a New Treatment Plant	Rating	10	8	9	
	Score	100	48	72	**210**
Option B – Rehabilitate / Restore Existing Treatment Plant	Rating	7	5	5	
	Score	70	30	40	**140**
Option C – Do Nothing	Rating	2	2	2	
	Score	20	12	16	**48**

Chapter 6

Proposed Project (Recommended Option)

The recommended option based on the factors above is to construct a new iron and manganese removal treatment plant, refurbish the existing plant if possible, and install a new SCADA system to better manage operations and collect operation data on the system.

6.1 Preliminary Project Design

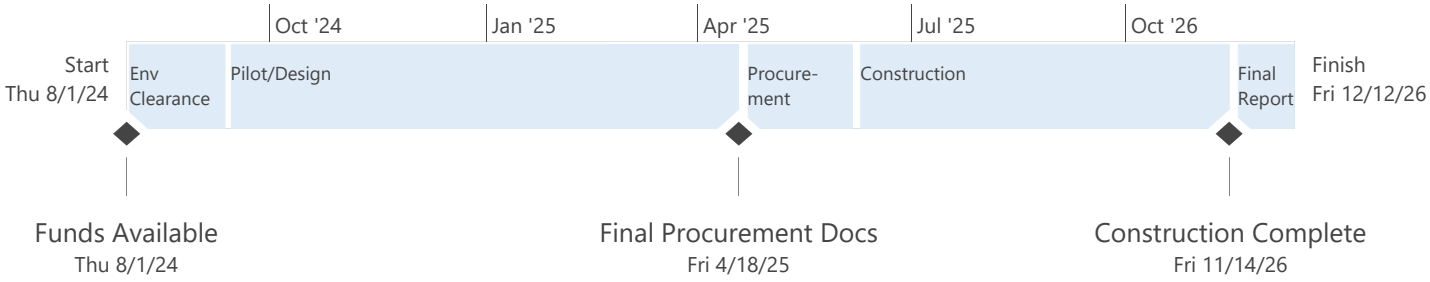
The preferred option will require a full design of the treatment plant. Design criteria for the media type will follow the appropriate requirements, regulations, utilizing the AWWA Iron and Manganese Removal Handbook by Elmer O. Sommerfeld. Current usage data will be reviewed for consideration of the size of filters that will be needed. A pilot test will be completed prior to a full design of the plant. D

Project will be designed as a minimum to meet the Ten States Standard and EPA Safe Drinking Water Regulations (distribution system piping, appurtenances, pump design, etc.).

6.2 Project Schedule

A tentative project schedule in Figure 6-1 is based on funding availability. The project could exceed 400 days based on inadequate as-built drawings, ease of implementing new treatment plant to operation, and any other unforeseen circumstances working in these types of communities.

Figure 6-1. Estimated Project Schedule.



6.3 Permit Requirements

The project would be located on the existing WTP site and there should be no issues with permits to construct a new treatment facility on the Reservation. If any additional land area is required, IHS and the Cocopah Public Works Department will coordinate efforts with stakeholders and request ROW if needed.

6.4 Sustainability Considerations

As stated previously, the construction of a new WTP would allow for better planning and operations to maximize the efficiency of the East Cocopah water system. Installing a new SCADA system will allow better control of the pumping assets operated by the Cocopah Public Works Department. Better integration can also provide automated record keeping that can be

used to conduct water and energy audits. A new building could be designed to be more energy efficient than the deteriorating existing building.

6.5 Total Project Cost Estimate (Engineer's Opinion of Probable Cost)

The estimated cost is $5,770,000. Refer to Table 4-1 for a detailed breakdown of costs.

6.6 Annual Operating Budget

By constructing a new treatment facility, it's anticipated that O&M costs will be reduced due to lower chemical costs, and increased efficiency of cooling the building.

Chapter 7

Conclusions and Recommendations

It is difficult to estimate the cost and the amount of labor needed to rehabilitate the system to a dependable operation because the remaining service life of the existing plant is unknown. There are visible signs of rust on the exterior of the plant, the treatment vessels are deteriorating, and the other treatment components like the air scour system and MIOX system are missing or unreliable. The engineer of record will need to work directly with the Cocopah Public Works Department to assist in locating utilities, identify an appropriate location for a new plant site, minimize service disruption for customers during the transition to a new plant, and decommissioning of the old facility.

The most feasible option based on the factors above is to construct a new treatment plant, refurbish the existing treatment facility for use as a storage facility, and install a new SCADA system. The current water infrastructure is not sustainable for the Cocopah Public Works Department due to the age of the existing infrastructure, lack of functional controls, and unreliable oxidation system.

Decommission of the existing facilities will provide a safe and overall sustainable system. The Cocopah Public Works Department will be able to focus on maintenance of other water and sewer infrastructure needs throughout the Cocopah Indian Reservation.

References

Sommerfeld, Elmer O. *Iron and Manganese Removal Handbook*. (1999). Denver, CO: American Water Works Association

Great Lakes—Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (2012 Edition). *10 State Standards – Recommended Standards for Water Works*. Albany, NY.: Health Research Inc.

Appendix A – FEMA FIRM Mapping

National Flood Hazard Layer FIRMette

FEMA

114°40'39"W 32°34'25"N



114°40'2"W 32°33'55"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/6/2023 at 11:36 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix B – USFWS IPaC Report

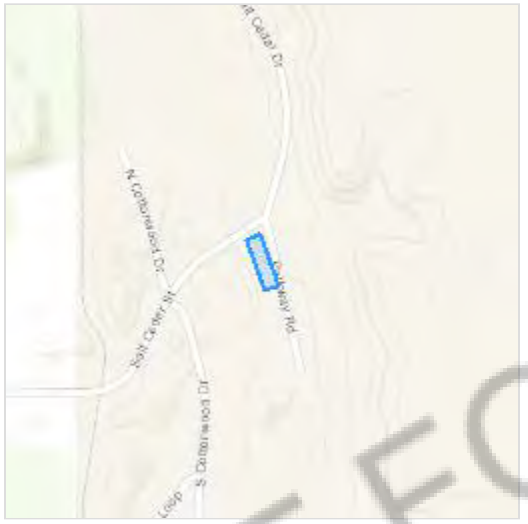
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Yuma County, Arizona



NOT FOR CONSULTATION

Local office

Arizona Ecological Services Field Office

(602) 242-0210
(602) 242-2513

9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

NOT FOR CONSULTATION

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Yellow-billed Cuckoo Coccyzus americanus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened
Yuma Ridgway's Rail Rallus obsoletus yumanensis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3505	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

NOT FOR CONSULTATION

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

NOT FOR CONSULTATION

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The data in this location indicates there are no migratory birds of conservation concern expected to occur in this area.

There may be migratory birds in your project area, but we don���t have any survey data available to provide further direction. For additional information, please refer to the links above for recommendations to minimize impacts to migratory birds or contact your local FWS office.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

NOT FOR CONSULTATION

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

NOT FOR CONSULTATION

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

NOT FOR CONSULTATION

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix C – PH87-63 As-Built

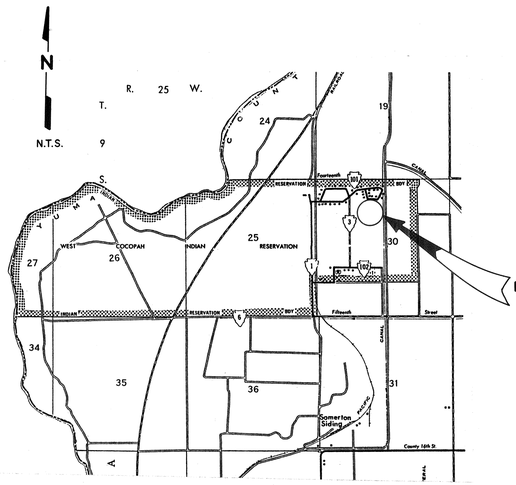
U. S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA
EAST AND WEST COCOPAH COMMUNITIES
"AS-BUILT" WATER TREATMENT FACILITIES
CDBG PROJECT NO. B-86-SR-04-0915
PROJECT NO. PH 87-631

PREPARED BY: Kenneth E. Wilde — PROJECT ENGINEER — 6-22-88

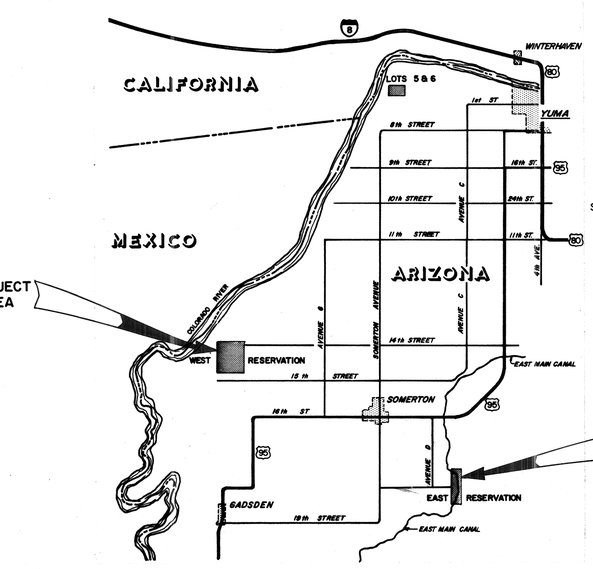
REVIEWED BY: [signature] — DISTRICT ENGINEER — 6-23-88

REVIEWED BY: John R. Hamilton — CHIEF, S.F.C.B. — 6-28-88

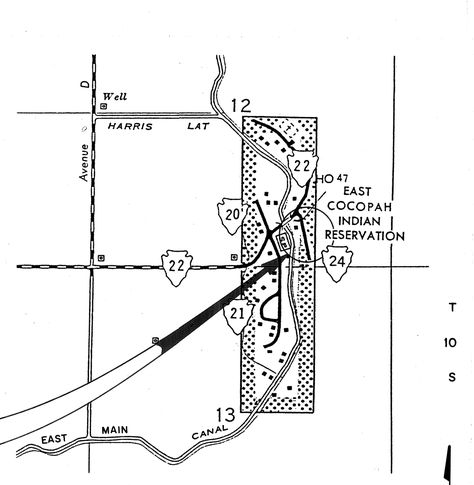
APPROVED BY: Larry Burton — DIRECTOR, O.E.H. — 6/28-88



WEST COCOPAH
VICINITY MAP



LOCATION MAP



EAST COCOPAH
VICINITY MAP

SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET - MAPS & APPROVALS
2	RIGHT-OF-WAY PLAT - EAST COCOPAH
3	RIGHT-OF-WAY PLAT - WEST COCOPAH
4	FLOW DIAGRAM - EAST COCOPAH
5	FLOW DIAGRAM - WEST COCOPAH
6	SITE PLAN & PROFILES - EAST COCOPAH
7	CHANGES TO EXISTING FACILITIES - E.C.
8	SITE PLAN - WEST COCOPAH
9	PIPING & WASTEWATER TANK DETAILS - W.C.
10	FLOOR PLAN & FILTER PIPING DETAILS
11	FILTER PIPING DETAILS
12	FILTER PIPING & MEDIA DETAILS
13	STRUCTURAL PLAN & REBAR DETAILS
14	STRUCTURAL PLAN DETAILS
15	BUILDING ELEVATIONS & CONCRETE SLAB AND SIDEWALK DETAILS
16	ELECTRICAL LAYOUT PLAN
17	EXISTING ELECTRICAL CONTROL SCHEMATIC-E.C.
18	EXISTING PUMP CONTROLS-WEST COCOPAH
19	WATER & SEWER SYSTEM DETAILS

NO.	DATE REVISED	APPR.	DESCRIPTION

DRAWN BY: C.S. DATE: 5-88
CHECKED BY: K.E.W. DATE: 5-88
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION: EAST & WEST COCOPAH COMMUNITIES
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

TITLE: COVER SHEET - MAPS & APPROVALS
"AS-BUILT"
WATER TREATMENT FACILITIES

DISTRICT: WESTERN ARIZONA
SHEET NO. 1 OF 19 TOTAL SHTS
PROJECT NO. PH 87-631
DRAWING NO. 287-10

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985 — 679-164

RIGHT-OF-WAY DESCRIPTION FOR
EAST COCOPAH COMMUNITY
WATER TREATMENT FACILITIES
COCOPAH INDIAN RESERVATION
PH 87-631

All the real property is situated in Sections 12 and 13, Township 10 South, Range 24 West, surveyed land of the Gila and Salt River Base and Meridian, approximately three (3) miles southeast of Somerton, County of Yuma, State of Arizona, more particularly described as follows:

The basis of bearing for all rights-of-way was established between Point 1, a nail and washer in the road pavement, and Point 2, a nail and washer in the road pavement, being South 15° 46' 48" East.

Point 1 is the P.I. of Curve #4, Sta. 41+70.70 of Route 22 and Sta. 0+18.06 of Route 24, and Point 2 is the P.C. of Curve #19, Sta. 2+89.00 of Route 24, both points on the "East Cocopah Indian Reservation Housing Plat" dated May 5, 1971, prepared and approved by the Bureau of Indian Affairs.

For points 1 through 3 reference the right-of-way plat for PL 86-121 Project No. PH 79-364 titled "East Cocopah Community Right-of-Way for Well Site, Storage Site and Water Main".

PARCEL A

For the Water Treatment Facility Site, a parcel within the following boundary containing 0.704 acres, more or less, beginning at the aforementioned Point 2;

Thence N 41° 37' 48" W, 135.20 feet to Point 3, said point being marked by a 1/2" rebar;

Thence N 74° 13' 12" E, 28.95 feet to point a, the True Point of Beginning (Sta. 1+67.33 of Route 24), said point being on the westerly right-of-way line of said route;

Thence S 15° 45' 48" E, 121.67 feet to point b (Sta. 2+89.00 of Route 24), said point being a point of a curve (P.C.) to the right, with delta angle of 1° 51' 00" and radius of 1,115.92 feet;

Thence southerly along the westerly right-of-way line of said route 36.05 feet to point c (Sta. 3+26.00 of Route 24), said point being the point of tangent (P.T.) of said curve;

Thence S 13° 55' 48" E, 44.00 feet to point d (Sta. 3+70.00 of Route 24), said point being on the westerly right-of-way line of said route;

Thence S 76° 04' 12" W, 10.00 feet to point h;

Thence S 76° 04' 12" W, 94.50 feet to point e;

Thence N 15° 46' 48" W, 275.76 feet, more or less, to point f (Sta. 40+19.35 of Route 22), said point being on the southerly right-of-way line of said route;

Thence N 57° 36' 12" E, 111.09 feet, more or less, along the southerly right-of-way line of Route 22 to point g (Sta. 41+30.44), which intersects the westerly right-of-way line of Route 24;

Thence S 15° 46' 48" E, 109.21 feet, more or less, along the westerly right-of-way line of Route 24 to the aforementioned point a, the point of beginning of Parcel A.

The right-of-way will be used to construct and maintain the water treatment facilities for the community of East Cocopah for time without limit as long as they are used for the stated purpose.

PARCEL B

For the Backwash Wastewater Outfall Line, a parcel containing 0.282 acres, more or less, beginning at the aforementioned point h, the True Point of Beginning (Sta. 0 + 00.00);

Thence S 13° 55' 48" E, 544.94 feet to point i (Sta. 5+44.94);

Thence N 76° 04' 12" E, 63.00 feet to point j (Sta. 6+07.94);

Thence N 76° 04' 12" E, 7.00 feet to point k (Sta. 6+14.94), the end of parcel B which lies S 16° 43' 48" E, 626.70 feet from the aforementioned Point 2.

The right-of-way shall be 20.00 feet in width (10.00 feet either side of the described centerline), approximately 614.94 feet in length, and approximately 0.282 acres, more or less.

The right-of-way will be used to construct and maintain the aforementioned outfall line for the community of East Cocopah for time without limit as long as it is used for the stated purpose.

PARCEL C (Within Route 24 R.O.W.)

For the Backwash Wastewater Outfall Line, a parcel containing 0.134 acres more or less, beginning at the aforementioned point d, said point being on the westerly right-of-way line of Route 24 at Sta. 3+70.00;

Thence N 76° 04' 12" E, 5.00 feet to the True Point of Beginning, point m (Sta 0+00.00), said point being 25.00 feet right of centerline of said route at sta 3+70.00;

Thence S 13° 55' 48" E, 529.94 feet to point n (Sta. 5+29.94), said point being 25.00 feet right of centerline of said route at Sta. 8+99.94;

Thence N 76° 04' 12" E, 55.00 feet to point o (Sta. 5+84.94), said point being on the easterly right-of-way line of said route at Sta. 8+99.94 is the end of parcel C which lies S 16° 47' 48" E, 611.72 feet from the aforementioned point 2.

The right-of-way shall be 10.00 feet in width (5.00 feet either side of the described centerline), approximately 584.94 feet in length, and approximately 0.134 acres, more or less.

The right-of-way will be used to construct and maintain the aforementioned outfall line for the community of East Cocopah for time without limit as long as it is used for stated purpose.

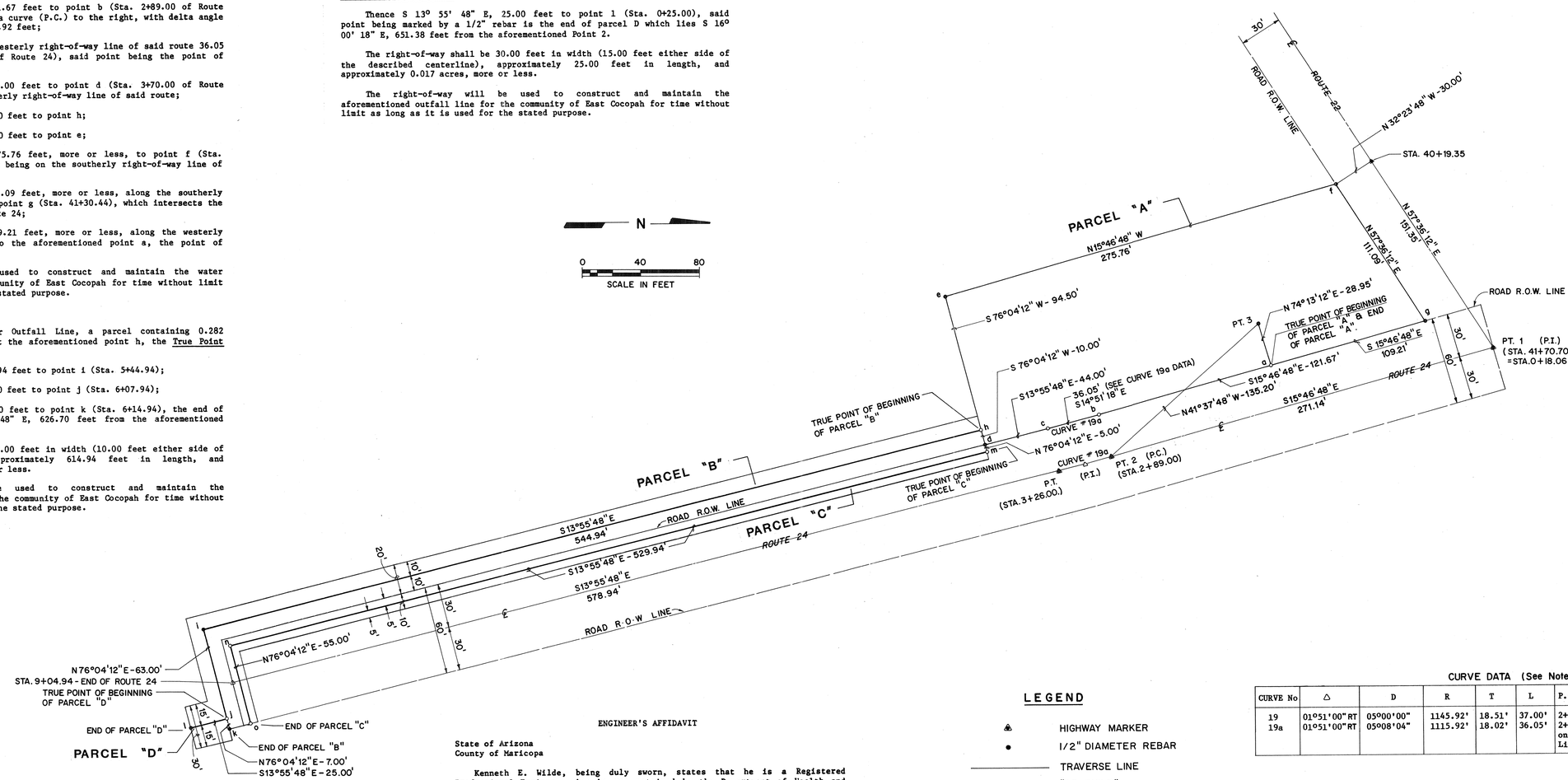
PARCEL D

For the Backwash Wastewater Outfall Line, a parcel containing 0.017 acres, more or less, beginning at the aforementioned point j of Parcel B, the True Point of Beginning (Sta. 0+00.00);

Thence S 13° 55' 48" E, 25.00 feet to point l (Sta. 0+25.00), said point being marked by a 1/2" rebar is the end of parcel D which lies S 16° 00' 18" E, 651.38 feet from the aforementioned Point 2.

The right-of-way shall be 30.00 feet in width (15.00 feet either side of the described centerline), approximately 25.00 feet in length, and approximately 0.017 acres, more or less.

The right-of-way will be used to construct and maintain the aforementioned outfall line for the community of East Cocopah for time without limit as long as it is used for the stated purpose.



ENGINEER'S AFFIDAVIT

State of Arizona
County of Maricopa

Kenneth E. Wilde, being duly sworn, states that he is a Registered Professional Engineer; that he was retained by the Department of Health and Human Services, United States Public Health Service, Indian Health Service; that he requested the survey of a proposed community utility right-of-way as per legal description and described and shown on this map, to be granted to the Department of Health And Human Services, United States Public Health Service, Indian Health Service, hereinafter designated the applicant, and that such survey is accurately represented on this map.

Kenneth E. Wilde
Kenneth E. Wilde, P.E., Design Staff Engineer

REGISTERED PROFESSIONAL ENGINEER No. 4666 KENNETH E. WILDE CIVIL STATE OF ARIZONA

LEGEND

- HIGHWAY MARKER
- 1/2" DIAMETER REBAR
- TRAVERSE LINE
- "AS-BUILT"
- HIGHWAY RIGHT-OF-WAY
- "AS-BUILT" RIGHT-OF-WAY

CURVE DATA (See Note 1, below)

CURVE No	Δ	D	R	T	L	P.C. STA.	P.T. STA.	P.I. STA.
19	01°51'00"RT	05°00'00"	1145.92'	18.51'	37.00'	2+89.00	3+26.00	3+07.51 BK
19a	01°51'00"RT	05°08'04"	1115.92'	18.02'	36.05'	2+89.00 on Rt. R.O.W. Line	3+26.00 AD =3+25.03 BK on Rt. R.O.W.	3+07.02 BK on Rt. R.O.W. Line

NOTE 1:
THE CURVE DATA FOR CURVE NO. 19 WAS GENERATED BY THE BUREAU OF INDIAN AFFAIRS. SEE THE HOUSING PLAT FOR EAST COCOPAH INDIAN RESERVATION DATED APRIL 19, 1973.

NO.	DATE REVISED	APPR.	DESCRIPTION

DRAWN BY: C.S. DATE: 1-88
CHECKED BY: K.E.W. DATE: 1-88
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION: EAST COCOPAH COMMUNITY
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

TITLE: "AS-BUILT" WATER TREATMENT FACILITIES RIGHT-OF-WAY
P.L. 86-121

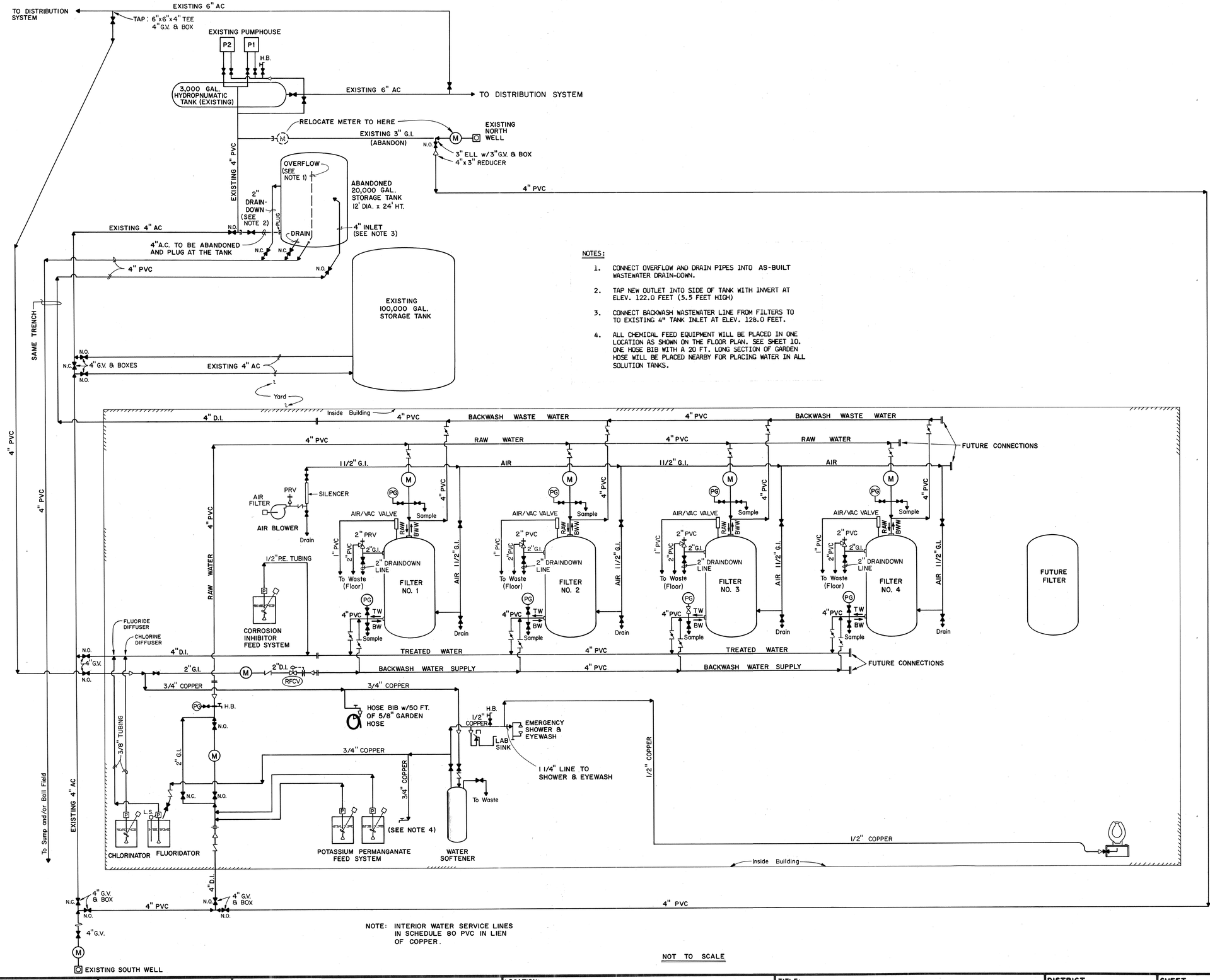
DISTRICT WESTERN ARIZONA
PROJECT NO. PH 87-631
SHEET NO. 2 OF 19 TOTAL SHTS
DRAWING NO. 287-10

057269

GPO 1987-776-363

LEGEND

- AS-BUILT GATE VALVE
- EXISTING GATE VALVE
- REDUCER
- BUTTERFLY VALVE w/MANUAL VALVE OPERATOR
- CHECK VALVE
- (M) FLOW METER
- (RFCV) RATE OF FLOW CONTROL VALVE
- (PG) PRESSURE GAGE
- PRESSURE RELIEF VALVE
- H.B. HOSE BIB
- DIRECTION OF FLOW
- TW TREATED WATER LEAVING FILTER
- BW BACKWASH WATER SUPPLY ENTERING FILTER
- RAW RAW WATER ENTERING FILTER
- BWW BACKWASH WASTE WATER LEAVING FILTER
- P.V.C. POLYVINYLCHLORIDE PIPE
- L.S. LEVEL SWITCH
- N.O. GATE VALVE NORMALLY OPEN
- N.C. GATE VALVE NORMALLY CLOSED
- (P) CHEMICAL FEED PUMP



NOTES:

1. CONNECT OVERFLOW AND DRAIN PIPES INTO AS-BUILT WASTEWATER DRAIN-DOWN.
2. TAP NEW OUTLET INTO SIDE OF TANK WITH INVERT AT ELEV. 122.0 FEET (5.5 FEET HIGH)
3. CONNECT BACKWASH WASTEWATER LINE FROM FILTERS TO TO EXISTING 4" TANK INLET AT ELEV. 128.0 FEET.
4. ALL CHEMICAL FEED EQUIPMENT WILL BE PLACED IN ONE LOCATION AS SHOWN ON THE FLOOR PLAN. SEE SHEET 10. ONE HOSE BIB WITH A 20 FT. LONG SECTION OF GARDEN HOSE WILL BE PLACED NEARBY FOR PLACING WATER IN ALL SOLUTION TANKS.

NOTE: INTERIOR WATER SERVICE LINES IN SCHEDULE 80 PVC IN LIEN OF COPPER.

NOT TO SCALE

NO.	DATE REVISED	APPR.	DESCRIPTION

DRAWN BY: O.T. DATE: 9-87
CHECKED BY: K.E.W. DATE: 11-87
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

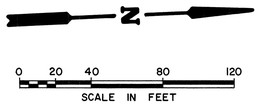
DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION: EAST COCOPAH COMMUNITY
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

TITLE: FLOW DIAGRAM

DISTRICT WESTERN ARIZONA
SHEET NO. 4 OF 19 TOTAL SHTS
PROJECT NO. PH 87-631
DRAWING NO. 287-10

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985 — 679-164



NOTES:

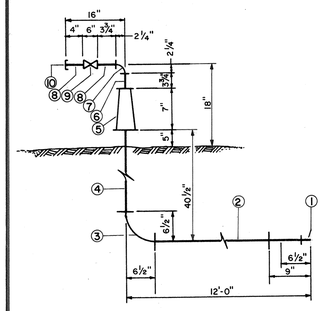
1. REMOVE PLAYGROUND EQUIPMENT FROM SITE, SALVAGE ALL PARTS. ALL PARTS TO REMAIN THE PROPERTY OF THE COCOPAH TRIBES.
2. FENCE 50 FEET x 95 FEET AREA AROUND SUMP. PROVIDE 12 FEET WIDE DOUBLE GATE WHERE SHOWN.
3. VERIFY LOCATION OF WATER AND POWER LINES BEFORE EXCAVATING FOR SUMP, WATER LINES, BUILDING AND FENCE POST HOLES.

LEGEND

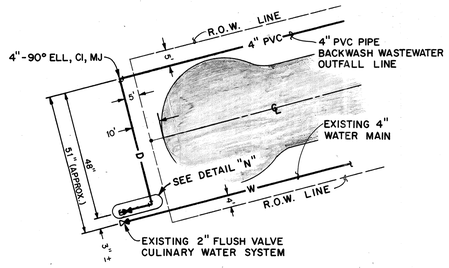
- 4"PVC — W — AS-BUILT WATER MAIN & GATE VALVE w/BOX
- 6"AC — W — EXISTING WATER MAIN & GATE VALVE w/BOX
- RIGHT-OF-WAY LINE, HIGHWAY
- FIRE HYDRANT w/GATE VALVE GATE VALVE & BOX
- FITTINGS & BENDS
- FLUSH VALVE (BLOW-OFF)
- UE — UE — UNDERGROUND ELECTRIC LINE
- WATER STORAGE TANK
- WELL
- 114 — CONTOUR LINE
- B.I.A. ROUTE 24 — ROAD
- 4"PVC — D — DRAIN LINE

NO.	DESCRIPTION
①	WELL #1 - SOUTH WELL
②	BACKWASH WASTEWATER SUMP (EMERGENCY STORAGE)
③	AS-BUILT 24'x40' BLDG.
④	WATER STORAGE TANK 24'Ø x 30' HIGH, 100,000 GALLONS
⑤	ABANDONED WATER STORAGE TANK 12'Ø x 24', 20,000 GALLONS
⑥	WELL #2 - NORTH WELL
⑦	EXISTING PUMPHOUSE

NO.	DESCRIPTION
①	4" - 90° ELL, CI, MJ WITH TRANSITION GASKET
②	4" D.I. PIPE x 10'-11" ± LONG, FL X PE
③	4" 90° ELL, CI, FL
④	4" D.I. PIPE x 40 1/2" ± LONG, FL X FL
⑤	4" x 2" RED, CI, FL
⑥	2" GI PIPE x 4 1/4" ± LONG, FL X TH
⑦	2" - 90° ELL, GI, TH
⑧	2" x 4" GI NIPPLE
⑨	2" GATE VALVE w/HW
⑩	2" CAP, TH



DETAIL "N"
N.T.S.

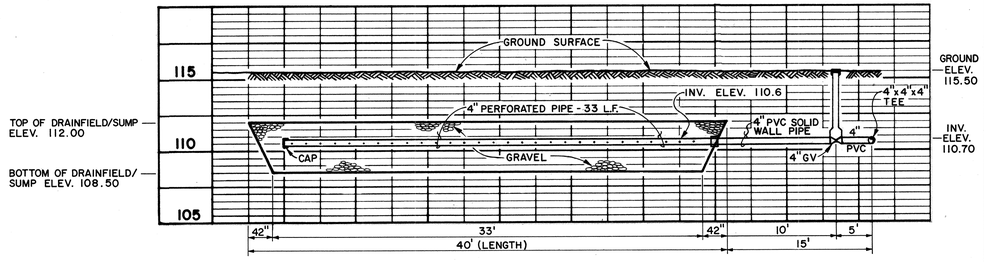


DETAIL "M"
N.T.S.

SECTION A-A

BACKWASH WASTEWATER SUMP (EMERGENCY STORAGE)

PROFILE SCALE: HORIZ. = N.T.S. VERT. 1"= 5'



SECTION B-B

NO.	DATE REVISED	APPR.	DESCRIPTION

DRAWN BY: C.S. DATE: 1-88
CHECKED BY: K.E.W. DATE: 1-88
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

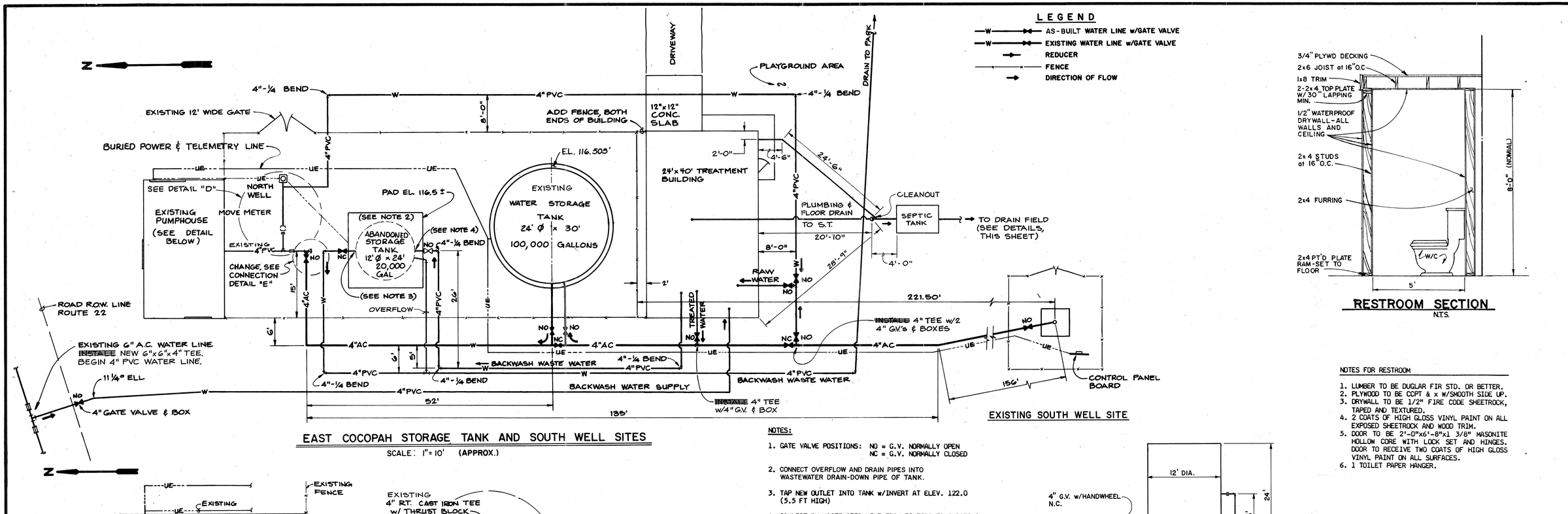
DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION: EAST COCOPAH COMMUNITY
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

TITLE: "AS-BUILT" PLAN & PROFILE DETAILS

DISTRICT WESTERN ARIZONA
SHEET NO. 6 OF 19 TOTAL SHTS
PROJECT NO. PH 87-631
DRAWING NO. 287-10

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985 — 679-164



EAST COCOPAH STORAGE TANK AND SOUTH WELL SITES

SCALE: 1"= 10' (APPROX.)

EXISTING SOUTH WELL SITE

LEGEND

- AS-BUILT WATER LINE w/GATE VALVE
- EXISTING WATER LINE w/GATE VALVE
- REDUCER
- FENCE
- DIRECTION OF FLOW

RESTROOM SECTION

N.T.S.

NOTES FOR RESTROOM

1. LUMBER TO BE DUGLAR FIR STD. OR BETTER.
2. PLYWOOD TO BE CCPT & x W/SMOOTH SIDE UP.
3. DRYWALL TO BE 1/2" FIRE CODE SHEETROCK, TAPED AND TEXTURED.
4. 2 COATS OF HIGH GLOSS VINYL PAINT ON ALL EXPOSED SHEETROCK AND WOOD TRIM.
5. DOOR TO BE 2'-0"x6'-8"x1 3/8" MASONITE HOLLOW CORE WITH LOCK SET AND HINGES. DOOR TO RECEIVE TWO COATS OF HIGH GLOSS VINYL PAINT ON ALL SURFACES.
6. 1 TOILET PAPER HANGER.

NOTES:

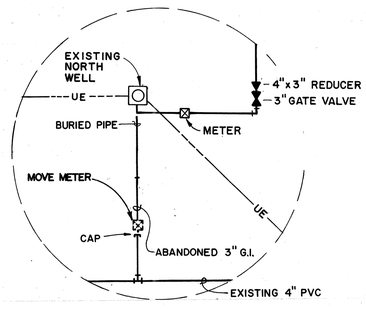
1. GATE VALVE POSITIONS: NO = G.V. NORMALLY OPEN
   NC = G.V. NORMALLY CLOSED
2. CONNECT OVERFLOW AND DRAIN PIPES INTO WASTEWATER DRAIN-DOWN PIPE OF TANK.
3. TAP NEW OUTLET INTO TANK w/INVERT AT ELEV. 122.0 (5.5 FT HIGH)
4. CONNECT BW WASTEWATER LINE FROM FILTERS TO EXISTING 4" TANK INLET AT ELEV. 128.0 FT. (11.5 FT. HIGH).

EXISTING PUMPHOUSE FLOOR PLAN

SCALE: 1"=4'

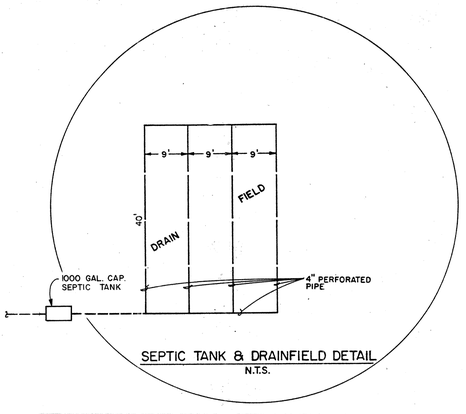
"AS-BUILT" CHANGED TO CONNECTION DETAIL "E"

NO SCALE



"AS-BUILT" CHANGED TO CONNECTION DETAIL "D"

NO SCALE



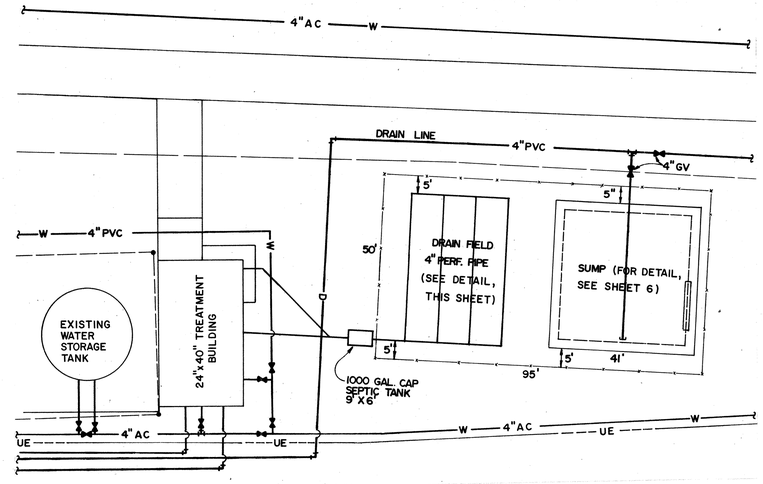
SEPTIC TANK & DRAINFIELD DETAIL

N.T.S.

(PREVIOUSLY ABANDONED TANK)

BACKWASH WASTEWATER TANK

N.T.S.



DRAIN FIELD AND SUMP LOCATION DETAILS

N.T.S.

NO.	DATE REVISED	APPR.	DESCRIPTION

DRAWN BY: O.T. DATE: 3-88 | CHECKED BY: K.E.W. DATE: 6-88

INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

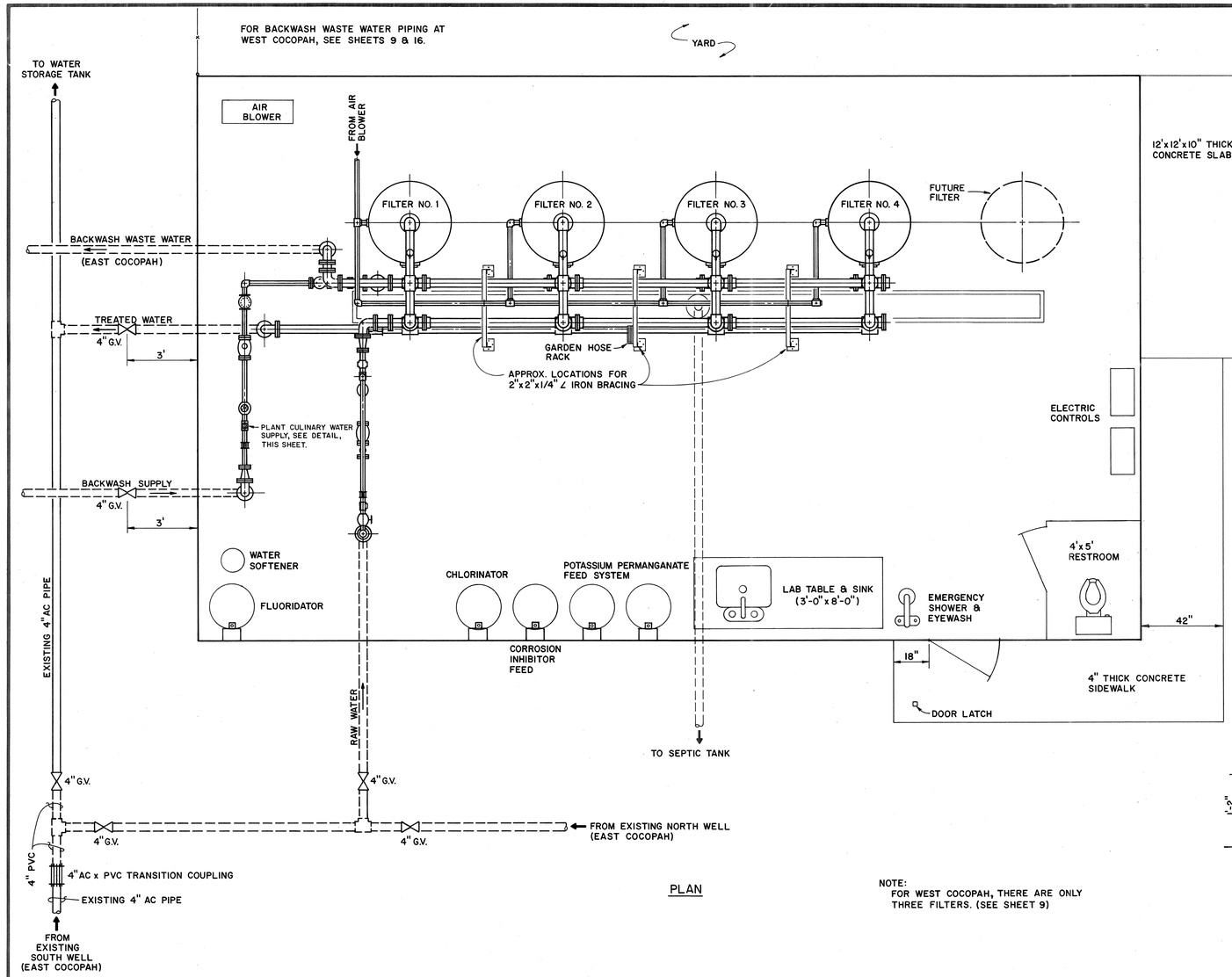
DEPARTMENT OF HEALTH AND HEALTH SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION: EAST COCOPAH COMMUNITY
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

TITLE: CHANGES TO EXISTING WATER STORAGE TANK AND WELL SITES

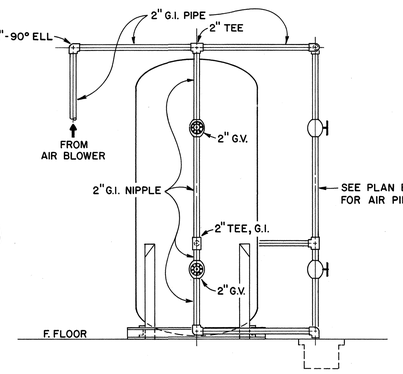
DISTRICT WESTERN ARIZONA
PROJECT NO. PH 87-631

SHEET NO. 7 OF 19 TOTAL SHTS
DRAWING NO. 287-10

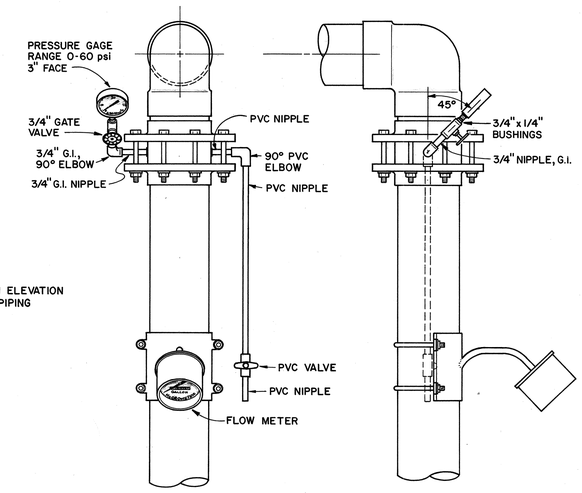


PLAN

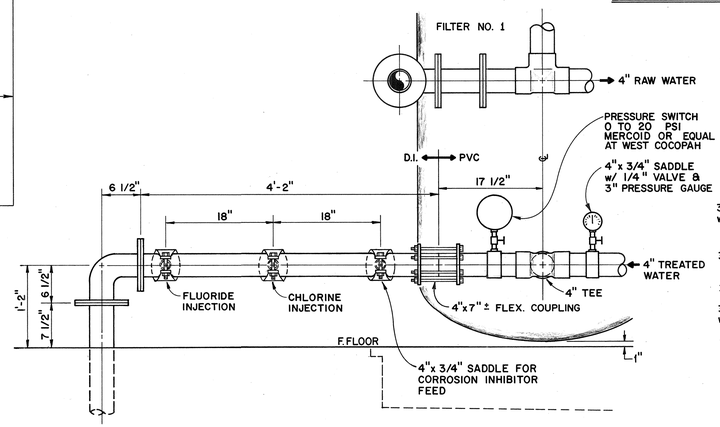
NOTE:
FOR WEST COCOPAH, THERE ARE ONLY THREE FILTERS. (SEE SHEET 9)



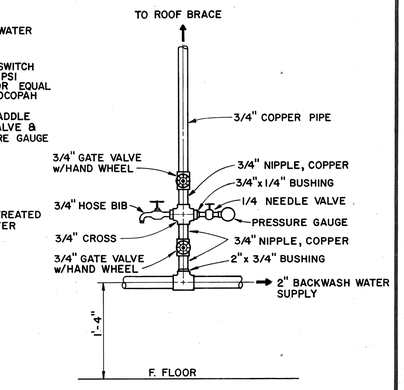
ELEVATION VIEW (OF FILTER NO. 1 ON SIDE OF AIR BLOWER PIPING)
N.T.S.



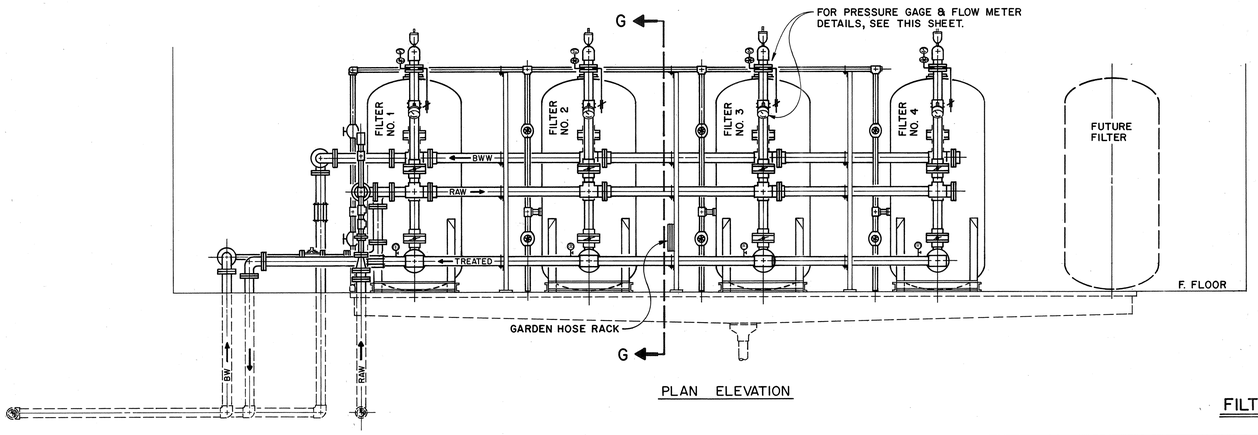
PRESSURE GAGE & FLOW METER DETAILS
N.T.S.



CORROSION INHIBITOR FEED, CHLORINE & FLUORIDE INJECTION LOCATIONS DETAIL
N.T.S.

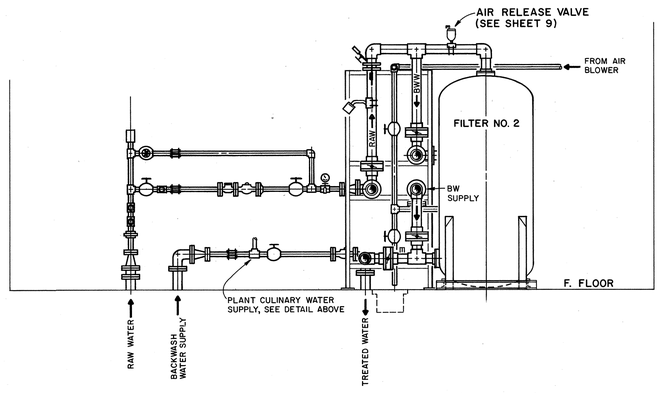


PLANT CULINARY WATER SUPPLY DETAIL
(SEE ALSO DETAIL OF BACKWASH WATER SUPPLY PIPING, SHEET 11)
N.T.S.



PLAN ELEVATION

FILTER PIPING DETAIL
SCALE: 3/8" = 1'-0"



FOR DIMENSIONS OF FILTER PIPING, SEE SHEETS 11 & 12

SECTION G-G

NO.	DATE REVISED	APPR.	DESCRIPTION

DRAWN BY: O.T. DATE: 12-87
CHECKED BY: K.E.W. DATE: 1-88
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

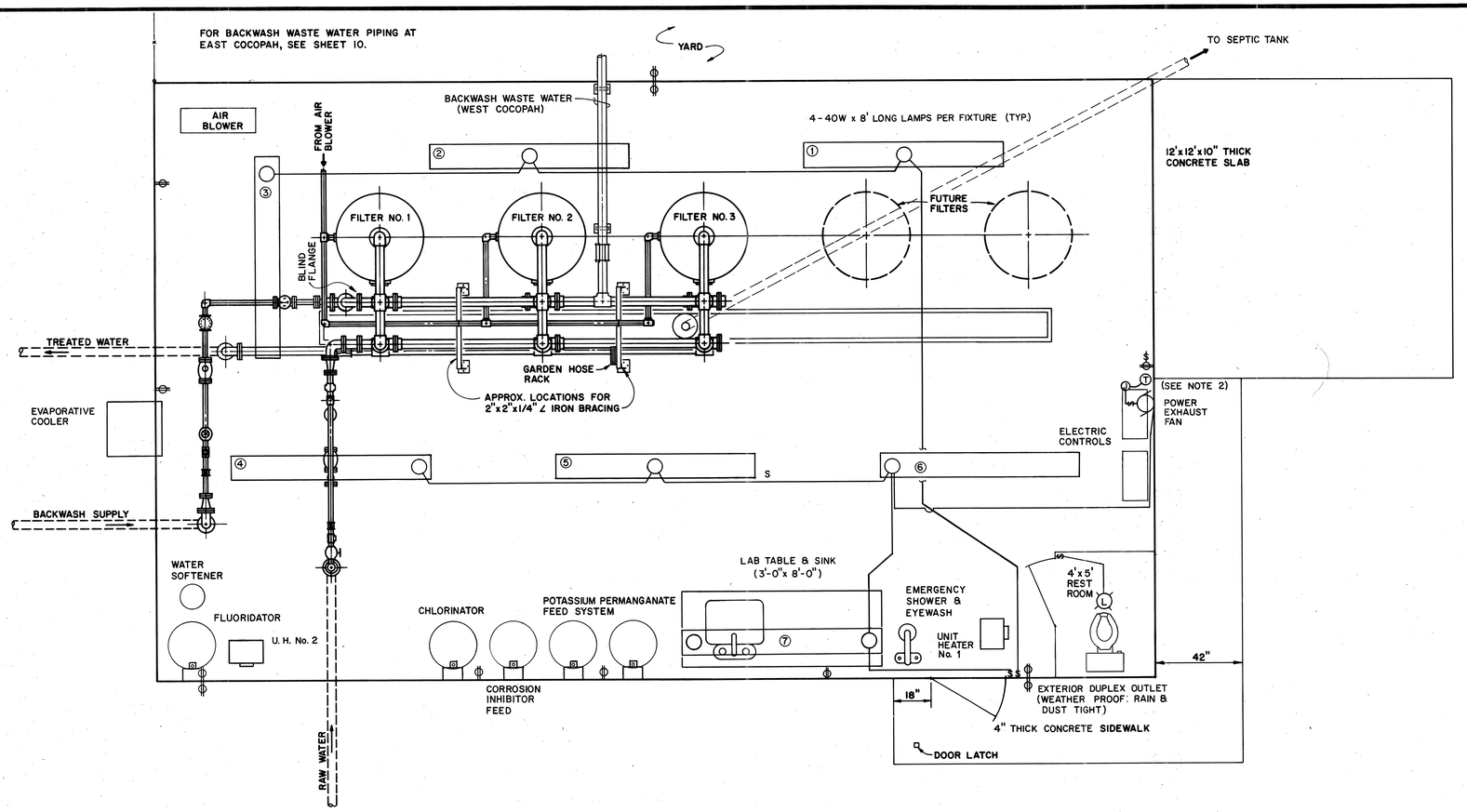
DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION:
EAST & WEST COCOPAH COMMUNITIES
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

TITLE:
FLOOR PLAN AND FILTER PIPING DETAILS

DISTRICT: WESTERN ARIZONA
SHEET NO. 10 OF 19 TOTAL SHTS
PROJECT NO. PH 87-631
DRAWING NO. 287-10

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985 — 679-164



LEGEND

- ⊕ DUPLEX OUTLET
- $ LIGHT SWITCH
- Ⓣ THERMOSTAT

ELECTRICAL LAYOUT PLAN

SCALE: 3/8" = 1'-0"

NOTES:

1. ONLY THE PLACEMENT OF EQUIPMENT, LIGHT FIXTURES, SWITCHES, DUPLEX OUTLETS, FAN AND HEATERS ARE SHOWN.
2. 3-WAY LIGHT SWITCHES SHALL BE PROVIDED FOR THE FOUR (4) FIXTURES IN THE MAIN WORK AREA, ONE AT EACH DOOR.
3. PROVIDE AT LEAST TWO CIRCUITS FOR DUPLEX OUTLETS. SPLIT OUTLETS BETWEEN CIRCUITS.

NO.	DATE REVISED	APPR.	DESCRIPTION

DRAWN BY: O.T. DATE: 12-87
CHECKED BY: K.E.W. DATE: 5-88
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

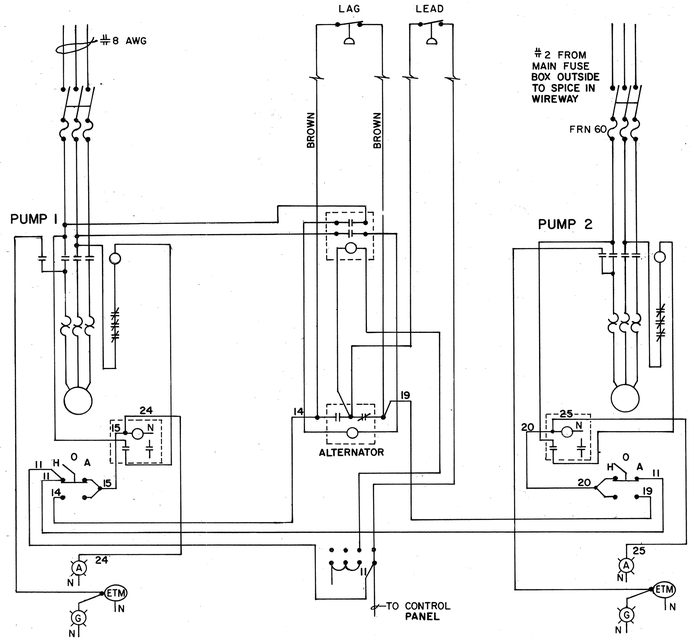
DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION: EAST & WEST COCOPAH COMMUNITIES
COCOPAH INDIAN RESERVATION
YUMA COUNTY, ARIZONA

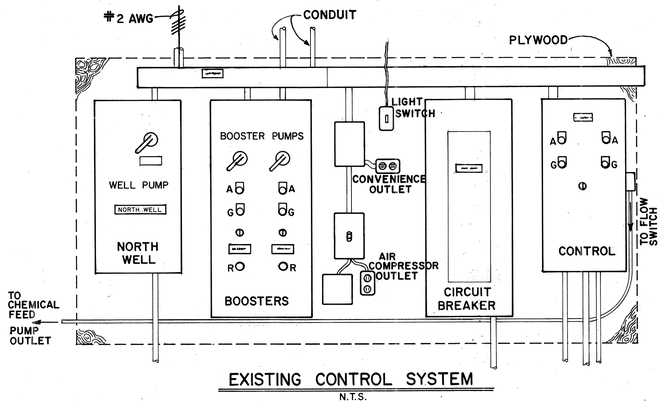
TITLE: ELECTRICAL LAYOUT PLAN

DISTRICT: WESTERN ARIZONA
PROJECT NO.: PH 87-631
SHEET NO. 16 OF 19 TOTAL SHTS
DRAWING NO. 287-10

U.S. GOVERNMENT PRINTING OFFICE: 1985 — 679-164

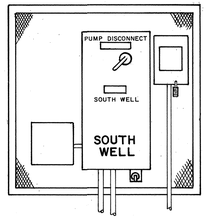


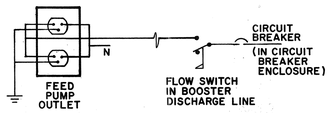
BOOSTER PANEL



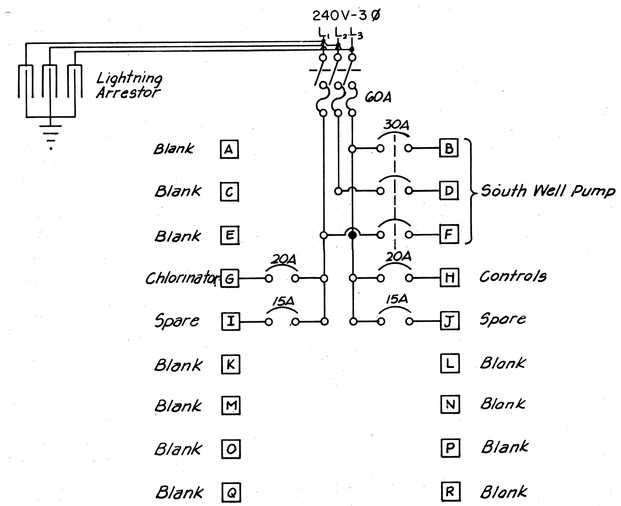
EXISTING CONTROL SYSTEM

N.T.S.



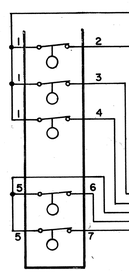


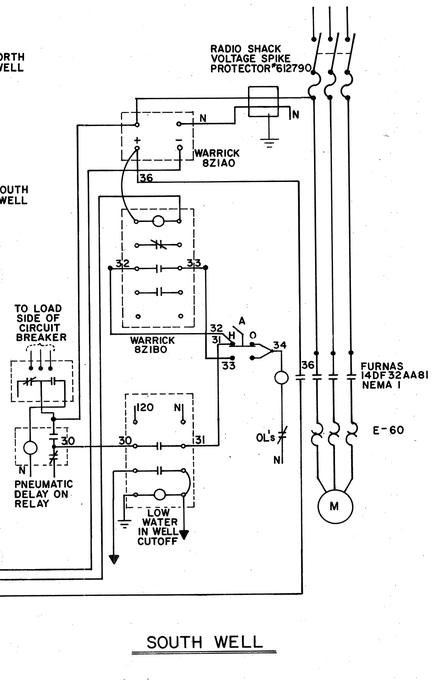
CHEMICAL FEED PUMP ELECTRICAL SYSTEM



NORTH WELL

CONTROL PANEL





SOUTH WELL

NOTE: EXISTING ELECTRICAL CONTROL SCHEMATIC IS ONLY TO PROVIDE CONTRACTOR WITH GENERAL DESIGN AND FUNCTION INFORMATION. THE ACCURACY OF THESE DRAWINGS IS UNKNOWN, AND THE CONTRACTOR MUST VERIFY ACTUAL CONTROL INSTALLATION BEFORE INITIATING DESIGN OF NEW CONTROL INSTALLATION.

NO.	DATE REVISED	APPR.	DESCRIPTION
1	10-23-84	L.L.S	"AS BUILT" DWG. & SHT. NO. CHANGED

DRAWN BY: ERC DATE: 11-10-83
CHECKED BY: L.L.S. DATE: 11-14-83
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE
OFFICE OF ENVIRONMENTAL HEALTH

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE

LOCATION: COCOPAH INDIAN RESERVATION
EAST COCOPAH COMMUNITY
YUMA COUNTY, ARIZONA

TITLE: EXISTING ELECTRICAL CONTROL SCHEM.

DISTRICT WESTERN ARIZ.
SHEET NO. 17 OF 19 TOTAL SHTS
PROJECT NO. PH 87-631
DRAWING NO. 287-10

☆ U.S. GOVERNMENT PRINTING OFFICE: 1979—684-903

Appendix D – PH03-C29 Final Report Excerpt

FINAL REPORT
COCOPAH WATER SYSTEM IMPROVEMENTS
COCOPAH INDIAN RESERVATION
IMPERIAL COUNTY, CALIFORNIA

PROJECT NO. PH 03-C29
PUBLIC LAW 86-121

PREPARED BY: Joshua Sims, E.I.T.
Project Engineer

RECOMMENDED BY:

Director, SFC Program

APPROVED BY:

Director, OEHE

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
INDIAN HEALTH SERVICE
PHOENIX AREA OFFICE

MAY 2010

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SIGNIFICANT PROJECT/CONSTRUCTION EVENTS	3
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OPERATION AND MAINTENANCE (O&M)	3
TRAINING	4
TRANSFER OF FACILITIES	4

APPENDIX
PROJECT SUMMARY
ENVIRONMENTAL REVIEW
MEMORANDUM OF AGREEMENT
TRANSFER DOCUMENT

FINAL REPORT
COCOPAH WATER SYSTEM IMPROVEMENTS
COCOPAH INDIAN RESERVATION
IMPERIAL COUNTY, CALIFORNIA

PROJECT NO. PH 03-C29
PUBLIC LAW 86-121

BACKGROUND

The original project was funded based on a May 2001 engineering report which detailed recommendations for improving the Cocopah water supply system. This project was funded to implement some of these recommendations. The items proposed were as follows:

- Renovations to the East Cocopah Water Treatment Plant including upsizing of the inlet and backwash piping, filter control valves, and filter media;
- Upgrades to the East Cocopah Water Treatment Plant including installation of a mixed oxidant (MIOX) system for manganese/iron removal & residual disinfection, and connection of the backwash waste line to the community sewer system;
- A new West Cocopah Treatment Plant with an office, new filters, backwash recycle tank, automatic electrical controls with SCADA, a water softener, a MIOX system for superior manganese/iron removal & residual disinfection, and a fluoride injection system;
- Construction of a new well for both East and West Reservation sites; and
- Existing well renovations including solar jetting, new pumps for the old wells, and SCADA connection.

The completed project provided for the development of new wells in East and West Cocopah and upgrades to the water treatment plants in East and West Cocopah. The total cost of the project was $323,435.73 and improved community water service for 168 homes. Originally, the project was to be funded by a new United States Department of Agriculture Rural Development (USDA-RD) grant. However, the entire project was funded by old USDA-RD grants (00-05 and 00-08) received by the Tribe.

HISTORY

The Tribe requested IHS assistance in late 2002 to construct water services for houses on the East and West Cocopah Indian Reservations. IHS approved Project PH 03-C29 to aid the Tribe in construction of the proposed facilities.

A Memorandum of Agreement (MOA) between the IHS and Tribe was approved in May 2003. In the MOA, the IHS agreed to provide

technical support and the Tribe agreed to provide project funds and construct the project by Tribal procurement.

Rehabilitation of the East Water Treatment Plant began in July of 2003. Rehabilitation of the East Treatment Plant was finished in February of 2004 and the final inspection was conducted in April 2004. Rehabilitation included piping upgrades, SCADA system installation, MIOX installation, a fluoride injection system, and a filter vessel scrubbing with material refill. Rehabilitation of the West Water Treatment Plant began in April 2004 and was completed by August 2004. Rehabilitation included piping upgrades, SCADA system installation, a fluoride injection system, and filter vessel scrubbing with material refill. With labor, the estimate for the rehabilitation of both plants was $65,000. The actual rehabilitation costs were $152,957.53; subsequently, these costs were paid for by the USDA RD grants 00-05 and 00-08.

The bid opening for the new water wells was held in December 2003. In April 2004, Shuck drilling was awarded the Notice to Proceed. His winning bid was for $164,200. Two tests wells were drilled in May of 2004. One test well was drilled near the existing East Cocopah well site and one test well was drilled near the existing West Cocopah well site. The test well drilled in East Cocopah was during June 2004 and the test well drilled in West Cocopah was in July. The new community wells were completed by August of 2004 and connected to existing infrastructure. The total cost for the new wells was $170,477.20. A contract increase of $6,277.20 was the result of a change order to abandon the existing wells. A total of $166,453.31 for the project was paid through USDA RD grant 00-08.

Table 1 - Chronology of Events

Project Summary	May 2, 2003
Memorandum of Agreement	May 3, 2003
Environmental Review	June 18, 2003
Construction Started	July 1, 2003
Construction Completed	November 30, 2004
Transfer Documentation	April 29, 2010

SUMMARY OF FACILITIES PROVIDED

The following describes the provided facilities:

Table 2 - Facilities Installed

Description	Facilities Installed
1. East Cocopah Water Well	Well drilled and pump installed
2. West Cocopah Water Well	Well drilled and pump installed

Table 2 - Facilities Installed (cont.)

Description	Facilities Installed
3. East Cocopah Water Treatment Plant Renovation & Upgrades	Filter media, upsizing of pipes, superior Fe & Mn removal with residual disinfection through MIOX, water softener, & connection of the backwash line to the community sewers system.
4. West Cocopah Water Treatment Plant Renovation & Upgrades	Filter media, upsizing of pipes, a water softener, a fluoride injection system & connection of the backwash line to the community sewer system.

SIGNIFICANT PROJECT/CONSTRUCTION EVENTS

The lack of an expected new grant from USDA-RD led to a significant portion of the project scope outlined in the original project summary not being completed. IHS and the Tribe are seeking additional funding sources to construct the new water treatment plant in West Cocopah and renovate existing wells to include jetting, new pumps, and SCADA connection.

PROJECT COST SUMMARY - The total cost for the new wells was $170,477.20. The original contract amount was $164,200, but a $6,277.20 change order was issued to abandon two wells that could not produce enough water for the local community (The Housing Subdivision Well on the North Cocopah Reservation and the South Well of the East Cocopah Reservation). The majority of funding was provided by USDA RD Grant 00-08 ($166,453.31) with the remainder being funded by the Tribe ($4,023.89). All project funds were managed by the Tribe.

The total treatment plant rehabilitation cost, for both plants, was $152,958.53 which was provided through USDA RD Grants 00-05 and 00-08.

Item	Description	USDA RD Grant	Payment Amount
1	East and West Well Drilling and Pump Installation	00-05	$31,662.29
1	East and West Well Drilling and Pump Installation	00-08	$121,296.24
2	East and West Treatment Plant Rehabilitation	00-08	$166,453.31
2	Tribal Funding	-----	$4,023.89
		Total Cost	$323,435.73

OPERATION AND MAINTENANCE

In order to keep these systems running properly, the Tribe was supplied with a schedule for maintenance items. Also, the Tribe

was provided with MIOX start-up and maintenance training through Rick Reed at Chemical Feed Technologies.

TRAINING

The Tribe was provided training on how to operate and maintain the plant, valves, and MIOX cell at the end of construction by the suppliers, project engineer and District Utility Consultant.

TRANSFER OF FACILITIES

The Phoenix Area Director signed a letter acknowledging project completion and transferring all IHS vested interests in facilities provided by Project PH 03-C29 to the Tribe in April 2010.

Appendix E – 2018 Sanitary Survey Report

Sanitary Survey Report

Cocopah East
PWSID No. 0400073

Survey Conducted on January 17, 2018

Survey Conducted for the
U.S. Environmental Protection Agency (USEPA)
Region 9

Sanitary Survey Conducted
by

Joe Steiner and Vicki Steiner
Sleeping Giant Environmental Consultants, LLP

for

Emmanuelle Rapicavoli, Environmental Engineer
and
Karly Ho, P.E.
USEPA Region 9 Tribal Drinking Water Team

Cocopah East
(PWSID No. 0400073)

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I. Narrative Report

Sanitary Survey

Cocopah East
PWSID No. 0400073
Survey Performed January 17, 2018

The purpose of a sanitary survey is to determine if sanitary deficiencies are present in a water system and to verify the system's compliance with Safe Drinking Water Act (SDWA) regulations. This information serves as a benchmark with which to gauge the effectiveness of a water system and is valuable in addressing the system's present and future needs.

Sanitary deficiencies are defects in a water system's infrastructure, design, operation, maintenance, or management that cause, or may cause, interruptions to the "multiple barrier" protection system and adversely affect the system's ability to produce safe and reliable drinking water in adequate quantities.

Though the purpose of a survey is to identify deficiencies before they become a problem, there are instances where identifying a serious public health threat may occur. The most serious sanitary deficiencies identified in water systems include, but are not limited to, defects in design, operation, maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that the primacy agency determines to be causing, or has potential to cause, the introduction of contamination into the water delivered to consumers. USEPA may determine these to be "Significant Deficiencies" that water systems must correct in accordance with timeframes established in the National Primary Drinking Water Regulations.

A. Introduction

On January 17, 2018, Joe Steiner and Vicki Steiner of Sleeping Giant Environmental Consultants, LLP (SGEC) conducted a sanitary survey of the Cocopah East Public Water System (PWS). The survey was conducted on behalf of the USEPA Region 9. During the on-site survey, the survey team was assisted by:

- Edmund Domingues, Director, Cocopah Public Works Department (PWD)
- Danny Thomas, Supervisor, PWD
- Daniel Sestiaga, Sr., Operator, PWD
- Marco Aguilera, Operator, PWD
- Mason R. Sundust, Operator, PWD
- Emmanuelle Rapicavoli, Environmental Engineer, USEPA Region 9
- Darren Ausdemore, P.E., District Utility Consultant, Indian Health Service (IHS)
- John P. Kathol, P.E., District Engineer, IHS
- Pablo Figueroa, Regional Environmental Manager, Rural Community Assistance Corporation (RCAC)

The Cocopah East PWS is classified as a community water system. The PWS serves a community located southeast of Somerton, Arizona, and south of Yuma, Arizona, near the intersection of Salt Cedar and Parkway Roads, on the Cocopah Indian Reservation. The water

system has 72 residential/non-transient connections. There is a residential population of 260 per day. The system also serves a non-transient population of 20 per day.

The PWS consists of two active wells, a common header for the wells, one iron and manganese removal facility with disinfection, and one storage tank. The water enters the distribution system through one entry point. There is one abandoned well, an inactive pumping facility, one inactive pressure tank, and two inactive storage tanks. The inactive facilities were reported to be disconnected from the PWS.

Following is a narrative description of the water system components. Deficiencies and recommendations are numbered in order of their priority at the end of the narrative. The sanitary survey form in Section II contains additional information, and photographs of the system are in the final section of the report.

B. Sources

Both the North Well and East Well pumps are controlled by a SCADA system located in the treatment building. The water level in Storage Tank 1 (Standpipe) activates the pumps.

There is a Cummins Power 40-kW/50-kVA generator in the yard of the treatment plant building that can power the wells and treatment plant during a power failure.

North Well (GW001) (Photos 2, 3, and 15)
The North Well is in a fenced, gated, and locked enclosure on the west side of Parkway Road, near the intersection of Salt Cedar and Parkway Roads. This well is the primary well for the PWS. There is no well driller's log for the well. The well development information was obtained from a well scan done on the well in 1990 by Deere and Son Well Drilling, Somerton, Arizona.

The well was drilled in 1971 to a depth of 186 feet. The 8-inch well casing extends from approximately 10 inches above the concrete pad to 165 feet below the ground. At 165 feet, the casing transitions to 6-inch and extends to 186 feet. The casing is screened from 171 to186 feet. The casing is sealed and vented. The vent is downturned and screened.

The well is equipped with a submersible pump of unknown size. Reportedly, the well produces 130 gallons per minute (gpm).

The well discharge header is equipped with a pressure gauge, a hose bib (raw water sample tap), a flowmeter, a check valve, a flush valve, a gate valve, and a second hose bib and pressure gauge. The hose bibs are not equipped with vacuum breakers.

The well has elevated iron and manganese levels.

South Well (GW002) (Photo 6)
The South Well is in a fenced and gated enclosure about 300 feet south of the North Well. The gate was not locked. The South Well is disconnected from the PWS. The well casing has been backfilled, but it was undetermined if the well was properly abandoned. The discharge piping is still connected to the distribution system. All valves have been closed and blind flanged off.

East Well (GW003) (Photos 4, 5, and 15)
The East Well is in a fenced, gated, and locked enclosure on the east side of Parkway Road, near the intersection of Salt Cedar and Parkway Roads. Reportedly, this well is rarely used.

The well was drilled in 2004 to a depth of 300 feet. The 10-inch well casing extends from 24 inches above the ground to a depth of 295 feet. The casing is screened from 175 to 235 feet and from 255 to 275 feet. The casing is sealed but not vented.

The well is equipped with a submersible pump of unknown size. The well capacity was unknown.

The well discharge header is equipped with an air/vacuum release valve (ValMatic dual throttling valve), a flowmeter, a pressure gauge, a hose bib (raw water sample tap), a check valve, a flush valve, and a gate valve. The discharge from the air/vacuum release valve is downturned but not screened. The hose bib is not equipped with a vacuum breaker.

The well has elevated iron and manganese levels.

C. Treatment

The Common Header for North and East Wells and the Iron and Manganese Removal Plant are in a locked building at the same site as the North Well.

Common Header for North and East Wells (CH001)
Both wells combine into a common header as the piping enters the treatment building. The common header is equipped with a pressure gauge, a flowmeter, a mixed oxidant solution (MOS) injection point, an in-line static mixer, and a flow indicator switch. There is a hose bib (sample tap) on the common header. The hose bib is not equipped with a vacuum breaker.

Iron and Manganese Removal Plant (TP001) (Photos 7-13, 15, and 16)
Four vessels containing greensand are used to remove iron and manganese.[1] The MOS is injected into the water to oxidize iron (Fe) and manganese (Mn) to produce iron hydroxide and manganese dioxide. The oxides produced are in solid form (flocs) and are "sieved" from the water by the greensand as the water passes through the filters. In addition, the greensand particles are coated with a thin layer of manganese dioxide that allows unoxidized Fe and Mn to be adsorbed to the greensand surface, providing additional removal. Two times per week the filters are manually backwashed to remove the captured Fe and Mn flocs and regenerate the greensand. The spent filter backwash water is discharged to the wastewater lagoons. The greensand filter media is 15-20 years old.

The MOS is produced by a MIOX-SAL80 on-site generator. The MOS is generated through the electrolysis of salt water. PWS water is passed through a 5-micron (µ) cartridge filter before going through a softener unit. The treated water is piped to a brine tank to produce a saturated sodium chloride solution (salt water). The salt water is then passed through an electrolytic cell where an electric current is applied to the salt water, producing an MOS containing a 0.4 percent sodium hypochlorite solution mixed with other oxidants. The MIOX-SAL80 is designed to produce 12 pounds per day of free available chlorine (FAC). The MOS

[1] Only three of the vessels were in operation at the time of the survey, and the same vessel was out-of-service during the sanitary survey in 2015.

is stored in a 120-gallon chemical vat before being pumped by two Milton Roy 13-gph chemical feed pumps into the common header for both wells.

The MOS is dosed at an adequate rate to oxidize the Fe and Mn, meet other chlorine demand, and provide an FAC residual in the distribution system for disinfection. Only one chemical feed pump is being used, set at 35 percent stroke. The other chemical feed pump is a backup.

The MOS pumps are activated automatically whenever the well pumps operate.

Fluoridation equipment is on-site but not used.

The only chemical used is rock salt to produce the salt water for the MIOX system. The rock salt is Sure Soft 100% Natural Extra Coarse salt and is NSF-approved.

There is an emergency shower/eyewash fountain available in the treatment building.

D. Distribution System

The distribution system consists of 6- and 8-inch PVC mains that were installed in 2002. The length of mains was estimated by the surveyor at 12,000 feet. This estimate is based on the length of wastewater lines installed by IHS in 2000.[2] The majority of the distribution system is looped. The PWD staff flushes the system twice per month and rotates the flushing sites.

There is no formal written cross-connection control program (CCCP). There are several hose bibs that are not equipped with vacuum breakers.

The distribution system pressure and free chlorine residuals measured during the survey are listed in the table below.

Location	Free Chlorine Residual (mg/L)	Pressure (psi)
EP001 at Treatment Plant Building	0.61	
17847 Ballpark Way	0.56	40

E. Finished Water Storage

Storage Tank 1 (Standpipe) (ST001) (Photos 17-22)

The storage tank is within a fenced, gated, and locked enclosure on a hill northeast of the North Well.

The 300,000-gallon welded steel standpipe was built in 1999. The tank is 66.25 feet in height and 28.25 feet in diameter. The roof access ladder is caged, gated, and locked.

The access hatches (manway and instrumentation) have covers that are overlapping and locked and appear to be watertight. The tank's vent is covered and screened. The screen is insect proof and is shrouded to reduce airborne contaminants from entering the tank.

[2] Comprehensive Sanitary Survey of the Cocopah Bend RV and Golf Resort (North), Cocopah East and West Community Water, Wastewater, and Solid Waste Systems – April 2011, completed by IHS.

The water level of the tank is monitored via a SCADA system that receives a signal from a pressure transducer at the base of the tank. The tank is also equipped with a target (water level indicator). The target was not working. The target cable guide opening is sealed.

The overflow pipe discharges to the desert, approximately 100 feet from the tank. The overflow pipe is fitted with a flap gate, but the flap gate is partially buried, preventing proper operation. There were no signs of erosion from overflows.

The interior and exterior coatings of the tank show minimal corrosion.

Storage Tank 2 (North) (ST002) and Storage Tank 3 (South) (ST003)
Both welded steel tanks are at the North Well site, within the fenced, gated, and locked area. The tanks are reported to be disconnected from the PWS.

F. Pumps, Pump Facilities, and Controls

Pumping Facility (PF001) and Hydropneumatic Tank (HP001)
The pumping facility and pressure tank are at the North Well site. These facilities were reported to be disconnected from the PWS and were not visited during the survey.

G. Monitoring, Reporting and Data Verification

Cocopah East is required to monitor for the full range of contaminants required of a community water system. One bacteriological sample per month needs to be taken in accordance with the comprehensive sample siting plan (CSSP). The CSSP was approved by the USEPA Region 9 program manager on June 27, 2017.

Bacteriological samples are collected by the operators and delivered to Fresh Terra Services, LLC, in Yuma, Arizona. Most of the analytical testing is completed by TestAmerica in Phoenix, Arizona.

The USEPA Monitoring Schedule dated January 11, 2018, was reviewed with the PWD staff.

Monitoring compliance was covered by the USEPA Region 9 program manager.

H. Management and Operations

The Cocopah Tribe owns and operates the Cocopah East PWS. The tribe is governed by a chairperson, vice chairperson, and three tribal council members. The tribal administrator manages the day-to-day operation of the tribe. The PWD, which is responsible for the operation and maintenance of the water system, is managed by a director. Under the director, there is a supervisor who manages the employees who work within the water system.

There are policies established by the tribe to operate the water system. The tribe has a user rate for water of $7.50 per month. The revenues generated by the water rate structure do not support the water system; therefore, the budget for the water system is subsidized by the tribal general fund.

There is no formal written safety program.

The facilities are cluttered and in need of some repair. Treatment chemicals are stored together with oils and other chemicals. There are unmarked containers of sodium fluoride, a toxic chemical, stored in the treatment building.

The PWD has no formal written plan for scheduled inspection and maintenance of the storage tanks.

The tribe has an emergency response standard operating procedure (SOP) but not an emergency response plan specific to the water system.

The PWD has no comprehensive operations and maintenance (O&M) manual for the water system. The PWS staff maintains some operation logs at the treatment plant.

I. Operator Compliance

The water system has several certified operators. Certification information for the operators is listed in the table below.

PWS Operator	Certification	Operator #	Cert #	Expiration Date	Certification Authority
Edmund Domingues	WT3	008161		11/30/2020	AZDEQ*
Daniel Sestiaga, Sr.	WT1 WD1	1666 1666	2037 2038	2/10/2018 3/5/2018	ITCA**
Danny Thomas	WT3 WD1	269 269	2444 883	9/17/2019 3/28/2020	ITCA**

*Arizona Department of Environmental Quality
**Inter Tribal Council of Arizona, Inc.

J. Deficiencies and Recommendations for Cocopah East

Following is a list of deficiencies and recommendations for the system based on information gathered during the sanitary survey. Each deficiency is ranked in order of severity and is assigned a **Health Risk Priority** number.

Deficiencies assigned a **Health Risk Priority 1** are deficiencies that present a serious health risk. Health Risk Priority 1 deficiencies should be corrected immediately.

Deficiencies assigned a **Health Risk Priority 2** are deficiencies that present a critical system defect, critical operational defect, or potential health hazard. Health Risk Priority 2 deficiencies should be corrected as soon as possible.

Deficiencies assigned a **Health Risk Priority 3** are deficiencies that present a critical system defect, critical operational defect, or potential health hazard, but are not as significant as Health Risk Priority 2. Health Risk Priority 3 deficiencies should be corrected as workload allows.

Deficiencies assigned a **Health Risk Priority 4** are deficiencies that present a system defect, operational defect, or potential contamination hazard and are costly to correct. Health Risk Priority 4 deficiencies should be addressed in any long-range water system improvement project.

Deficiencies assigned a **Health Risk Priority 0** are suggestions for improvement, though not a health risk.

The following deficiencies have been identified by SGEC, but health risk priorities are established by the USEPA Region 9 program manager.

1. **PWS #0400073 Distribution System – Lack of Cross-Connection Control Program: Health Risk Priority 2** *(DS001 – Code D3)*
   There is no formal cross-connection control program (CCCP) with written documentation of the testing and inspection activities. The director indicated a CCCP was under development but not completed.

   Note: This deficiency was identified in the January 10, 2012, and January 14, 2015, sanitary survey reports and has not been corrected.

   Recommendation: A CCCP, including annual inspection and testing of all backflow prevention assemblies, needs to be developed and implemented. The CCCP needs to include periodic surveillance of the distribution system by an individual familiar with complex plumbing systems and identification of cross-connection and backflow potential. Documentation of all activities needs to be completed.

2. **Hose Bibs – Lack of Vacuum Breakers: Health Risk Priority 2** *(Code D3)*
   There are hose bibs throughout the water system that are not fitted with vacuum breakers (Photos 3 and 5).

   Note: This deficiency was identified in the January 10, 2012, and January 14, 2015, sanitary survey reports and has not been corrected.

   Recommendation: Hose connection vacuum breakers need to be installed on all hose bibs throughout all water system facilities. This will prevent accidental backsiphonage into the water system should a loss in system pressure occur.

3. **Management/Safety – Lack of a Comprehensive Safety Program: Health Risk Priority 2** *(Code M2)*
   There was no formal written safety program to review.

   Note: This deficiency was identified in the January 10, 2012, and January 14, 2015, sanitary survey reports and has not been corrected.

   Recommendation: The Cocopah PWD needs to develop and implement a formal safety program. The PWS management has the responsibility to establish and enforce an effective safety program. The safety program needs to include training to provide the knowledge and skills necessary to prevent and avoid accidents. There are several facilities, operations, and work activities within the PWS that need to have elements within the safety program. There are fall hazards, confined spaces, electrical hazards, and chemical hazards, to name a few, which were viewed during the survey that need to be addressed in a safety program.

4. **East Well – Air/Vacuum Release Valve: Health Risk Priority 2** *(GW003 – Code S1b)*
   The air/vacuum release valve is a ValMatic dual port throttling valve. The discharge pipe is

downturned but not screened (Photo 5).

Recommendation: An insect barrier, screen, or other device, should be loosely fitted to the end of the discharge pipe from the valve.

5. **East Well – Lack of Casing Vent: Health Risk Priority 3** *(GW003 – Code S1b)*
   The well casing is not vented (Photo 4).

   Recommendation: The well casing should be fitted with a u-shaped, downturned, and screened vent pipe (see example below).



Casing Vent – U-shaped, downturned, and screened

6. **Management and Operation – General Housekeeping: Health Risk Priority 3** *(Code M3)*
   The facilities are cluttered and in need of some repair. Treatment chemicals are stored together with oils and other chemicals. There are unmarked containers of sodium fluoride, a toxic chemical, stored in the treatment building.

   Note: This deficiency was identified in the January 14, 2015, sanitary survey report and has not been corrected.

   Recommendation: The facilities need to be decluttered. Non-treatment chemicals and solvents need to be contained in sealed safety cabinets.

7. **Iron and Manganese Removal Plant – Greensand Vessels: Health Risk Priority 3** *(TP001 – Code M4)*
   There are four vessels but only three were in operation due to a broken flange on one of the vessels (Photo 8).

   Note: This vessel was out of service during the January 12, 2012, and January 14, 2015, sanitary surveys and has not been repaired.

   Recommendation: The flange on the vessel needs to be repaired so all vessels are available for treatment.

8. **Iron and Manganese Removal Plant – Fluoridation Equipment: Health Risk Priority 3** *(TP001 – Code M4)*
   The fluoridation equipment is not being operated (Photo 13).

   Note: This deficiency was identified in the January 14, 2015, sanitary survey report and has not been corrected.

Recommendation: If the equipment is not going to be used, it needs to be removed from the system, cleaned, and stored for potential use in the future.

9. **Storage Tank 1 (Standpipe) – Overflow: Health Risk Priority 3** *(ST001 – Code M4)*
   The overflow pipe is fitted with a flap gate, but the flap gate is partially buried, preventing proper operation (Photo 22).

   Note: This deficiency was identified in the January 14, 2015, sanitary survey report and has not been corrected.

   Recommendation: The area around the flap gate should be dug out and the flap gate exercised to ensure it has free movement. It would be best to install either rip-rap or a splash pad around the discharge pipe.

10. **Management and Operation – No Comprehensive Operations and Maintenance Manual: Health Risk Priority 3** *(Code M2)*
    There is no comprehensive operations and maintenance (O&M) manual available for the system. A comprehensive O&M manual provides the operator with procedures and information necessary to operate and maintain the PWS in a consistent and efficient manner. The manual would provide a road map for maintaining compliance with public water supply standards, providing properly operating equipment, and maintaining a safe working environment.

    The O&M manual could also include the water main repair protocol.

    Recommendation: The PWS needs to pursue completion of a site-specific O&M manual.

11. **Storage Tank 1 (Standpipe) – Maintenance Program: Health Risk Priority 4** *(ST001 – Code M5)*
    There is no formal written storage tank maintenance program.

    Note: This deficiency was identified in the January 10, 2012, and January 14, 2015, sanitary survey reports and has not been corrected.

    Recommendation: A formal schedule of tank inspection and rehabilitation needs to be adopted. Funding for tank maintenance needs to be included in the annual budget. The Washington Department of Health has a good reference document that has a section on storage tank maintenance that could be used to develop this program. This document can be found at the following link:

    https://www.doh.wa.gov/Portals/1/Documents/Pubs/331-351.pdf

12. **Iron and Manganese Removal Plant – Media Replacement: Health Risk Priority 4** *(TP001 – Code M5)*
    The media is 15-20 years old.

    Note: This deficiency was identified in the January 14, 2015, sanitary survey report and has not been corrected.

Recommendation: The PWS should inspect and evaluate the condition of the greensand media in the vessels. If the media needs to be replaced, appropriate funds need to be secured and media replacement completed prior to media failure.

13. **Management and Operation – Lack of Management, Funding, and Personnel: Health Risk Priority 4** *(Code M1)*
    The PWS is not a self-sustaining utility. The service charge of $7.50 per month per service connection is low and surely does not fund the water system. It was reported the PWS relies heavily on the availability of IHS funding.

    Note: This deficiency was identified in the January 14, 2015, sanitary survey report and has not been corrected.

    Recommendation: A thorough review of the PWS's financial, technical, and managerial capacity and status needs to be completed. Adequate funding and personnel need to be provided to meet the requirements of the PWS. The PWS can continue to pursue outside sources of funding for improvements but the primary resources for operation and maintenance need to be user charges and fees.

    Continual preventative maintenance of the equipment and good housekeeping needs to be a priority of the PWS.

II. Sanitary Survey Form, Map Schematic, and Hydraulic Schematic

SANITARY SURVEY FORM - INVENTORY

Tribal GW JS 6/2010

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

RESERVATION **Cocopah**

SURVEYOR NAME – **Joe Steiner and Vicki Steiner, Sleeping Giant Environmental Consultants, LLP**

(SYSTEM REPRESENTATIVE) **Edmund Domingues, Director, Cocopah Public Works Department**

(OTHER REPRESENTATIVE) **Danny Thomas, Supervisor**

SYSTEM ADDRESS

Addressee Edmund Domingues, Cocopah Public Works Department

Street 14515 S. Veterans Dr.

City Somerton State AZ Zip 85350

System Phone (928)627-0616 Fax (928)627-3173

SYSTEM OWNER

Addressee Sherry Cordova, Chairperson

Street 14515 S. Veterans Dr.

City Somerton State AZ Zip 85350

Owner Phone (928)627-2102 Fax (928)627-3173

LOCATION OF SYSTEM

Nearest City Somerton, AZ Description or Physical Address Salt Cedar Street and Parkway Road, Somerton, AZ

OPERATOR OF SYSTEM **Paid Position? ☒Yes ☐No**
Name Edmund Domingues

Certified Operator? ☒ Yes ☐ No ☐Not required
Phone 928-627-0616

Number of Employees Full Time 4 Part Time ____

OPERATOR OF SYSTEM **Paid Position? ☒Yes ☐No**
Name Danny Thomas

Certified Operator? ☒ Yes ☐ No ☐Not required
Phone 928-627-0616

Number of Employees Full Time 4 Part Time ____

PWS Operator	Certification	Operator #	Cert #	Expiration Date	Certification Authority
Edmund Domingues	WT3	008161		11/30/2020	AZDEQ*
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	WD1	1666	2038	3/5/2018	
Danny Thomas	WT3	269	2444	9/17/2019	ITCA*
	WD1	269	883	3/28/2020	

*Arizona Department of Environmental Quality
**Inter Tribal Council of Arizona, Inc.

SYSTEM STATUS

☒ **A** = Active ☐ **P** = Pending *(Add New System)*
☐ **I** = Inactive

SYSTEM CLASS

☒ **C** = Community ☐ **NTNC** = Non-Transient Non-Community
☐ **TNC** = Transient Non-Community

Total Service Connections: Residential / Non-Transient: 72
Transient: 0

Total Active Connections:Residential / Non-Transient: 72
Transient: 0

Service Connections Metered? ☒ Yes ☐ No Percent Metered Unk %
Rates and Rate Structure see page 14 of 18 Collection Rate Unk %

Resident Population (Number of permanent residents utilizing PWS daily) Summer: 260 Winter: 260

Non-Transient Population (Number of non-transient persons utilizing PWS daily) Summer: 20 Winter: 20

Transient Population (Number of transient persons served by PWS daily) Summer: 0 Winter: 0

OWNER TYPE

☐ 1 Federal Government
☐ 2 Private Subdivision, Investor, Trust, Cooperative, Water Association, etc.
☐ 3 State Government
☐ 4 Local Government Authority, Commission, District, Municipality, City, etc.
☐ 5 Mixed Public/Private
☒ 6 Native American

SERVICE AREA CHARACTERISTICS LIST

☐ BR Bar
☐ CA Casino
☐ CS Convenience Store
☐ DC Day Care Center
☐ DI Dispenser
☐ HS Head Start
☐ HA Homeowners Assoc.
☐ HM Hotel/Motel
☐ HR Highway Rest Area
☐ IA Industrial/Agricultural
☐ IC Interstate Carrier
☐ IN Institution
☐ MF Medical Facility
☐ MH Mobile Home Park
☐ MU Municipality
☐ OA Other Area
☐ ON Other Non-Transient Area
Service Category Description ____

☐ OR Other Residential Area
☐ OT Other Transient Area
☐ PA Recreation Areas
☒ RA Residential Area
☐ RE Retail Employees
☐ RS Restaurant
☐ RV RV Park
☐ SC School
☐ SI Sanitary Improvement District
☐ SK Summer Camp
☐ SR Secondary Residences
☐ SS Service Station
☐ SU Subdivision
☐ WB Water Bottler
☐ WH Wholesaler (Sells Water)

Comments: The survey was conducted on behalf of the USEPA Region 9. During the on-site survey, the survey team was assisted by:
•Edmund Domingues, Director, Cocopah Public Works Department (PWD)
•Danny Thomas, Supervisor, PWD
•Daniel Sestiaga, Sr., Operator, PWD
•Marco Aguilera, Operator, PWD
•Mason R. Sundust, Operator, PWD
•Emmanuelle Rapicavoli, Environmental Engineer, USEPA Region 9
•Darren Ausdemore, P.E., District Utility Consultant, Indian Health Service (IHS)
•John P. Kathol, P.E., District Engineer, IHS
•Pablo Figueroa, Regional Environmental Manager, Rural Community Assistance Corporation (RCAC)

The PWS consists of two active wells, a common header for the wells, one iron and manganese removal facility with disinfection, and one storage tank. The water enters the distribution system through one entry point. There is one abandoned well, an inactive pumping facility, one inactive pressure tank, and two inactive storage tanks. The inactive facilities were reported to be disconnected from the PWS.

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

Water System Facilities (WSF) numbers are WSF Type Codes plus an assigned number. (i.e. all facility numbering starts with 001).

TYPE CODES: Ground water = G; Surface Water =S, Purchased S = P; Purchased G = W; GWUDI = Y; Purchased GWUDI=Z—STATUS CODES: Active=A, Inactive =I, Emergency=E, Backup=B, Interim=INT, Abandoned=ABD

*A **water source facility** is a well, spring, intake, infiltration gallery or consecutive connections from which a system draws or purchases water:*

Total Number of Source Facilities 2

WATER SYSTEM FACILITIES SUMMARY (WSF)

WSF ID	Facility Name	Type Code	Seller PWSID	Status/Date	Flows To
GW001	North Well	G		A/1971	CH001
GW003	East Well	G		A/2004	CH001
CH001	Common Header for North and East Wells			A/Unknown	TP001
TP001	Iron and Manganese Removal Plant			A/Unknown	EP001
EP001	Entry Point to PWS #0400073 Distribution System			A/Unknown	DS001
ST001	Storage Tank 1 (Standpipe)			A/1999	DS001
DS001	PWS #0400073 Distribution System			A/Unknown	ST001
				/	
Inactive Facilities					
GW002	South Well	G		ABD/Unknown	
PF001	Pumping Facility			I/Unknown	
HP001	Hydropneumatic Tank			I/Unknown	
ST002	Storage Tank 2 (North)			I/Unknown	
ST003	Storage Tank 3 (South)			I/Unknown	

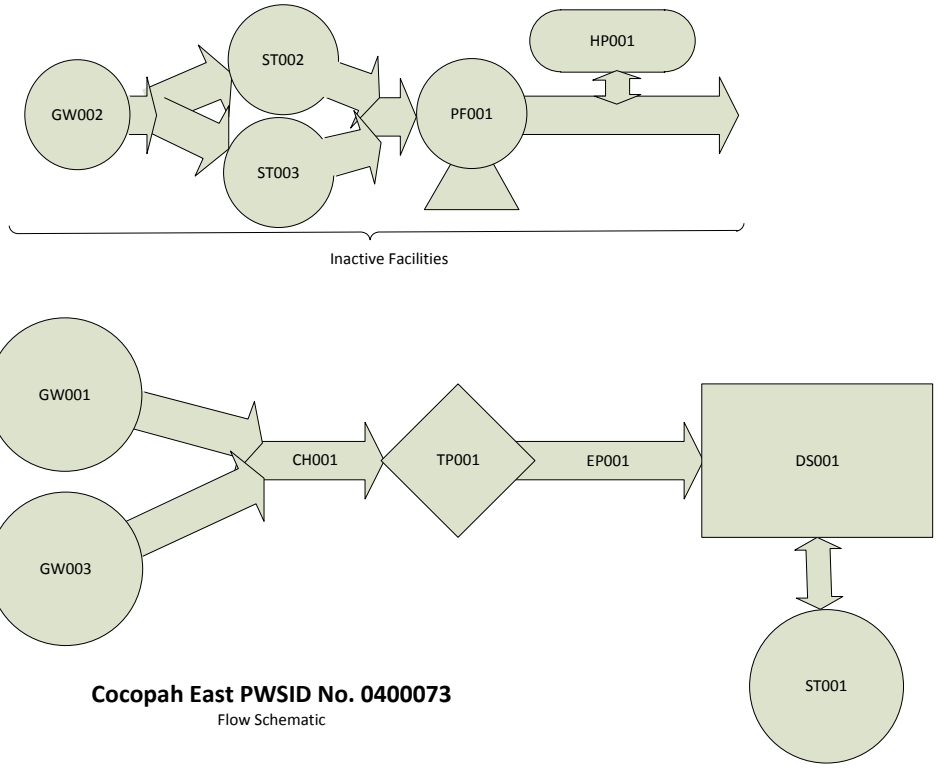
EMERGENCY POWER

Does the system have emergency power? ☒ Yes ☐ No

If yes, what type: Cummins Power 40-kW/50-kVA Frequency of testing: manually 1/week

Record of primary power failures: unknown in last year Switchover: ☐ Automatic ☒ Manual Secondary fuel containment? ☒ Yes ☐ No

FLOW SCHEMATIC:



Cocopah East PWSID No. 0400073
Flow Schematic

SANITARY SURVEY FORM – WELLS & WELL PUMPS

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

(Please copy this sheet for additional wells & pumps)

SOURCE INFORMATION

WSF ID GW001 *Entry Point ID* EP001
These are EPA assigned identification numbers

Source Name North Well
Name of Source – Example: Well 1 or South well, etc.

Location of Water Source (TRS or street address):
On the west side of Parkway Road, near the intersection of Salt Cedar and Parkway Roads.

Entry Point Name Entry Point to PWS #0400073 Distribution System
Name of EP – Example: Entry point for North Well 1 & South Well 2

Location of Entry Point On the discharge header for the filters.

Source Status: ☒ Perm ☐ Inactive ☐ Backup ☐ Emerg ☐ Interim
☐ Abandoned properly ☐ Other
If interim: _____ to _____

WELL LOG AND TEST DATA

Log Available? ☐ Yes ☒ No*

Average Production 130 gpm
indicate units

Maximum Production Unknown
indicate units

Date Drilled 1971
if well. . date drilled

Casing Size 8-inch to 165 feet; 6-inch 165-186 feet
size of casing installed in well

Case Depth 186
depth of casing installed in well

Well Depth 186
depth of well expressed in feet

Grout Depth Unknown
depth of grout used to seal well walls

Log SWL 34 feet on 4/26/1990
(static) expressed in feet below ground elevation

Log PWL Unknown
(pumping) expressed in feet below ground elevation

Test Pump Rate Unknown

Intake Type Screen
type of intake mechanism

Screened Interval 171-186 feet
expressed in feet below ground elevation

Well Yield Unknown
pump tested in gallons per minute

* Well information is from well scan completed on 4/26/1990.

WELLS

	Yes	No	Unk	N/A
Is well site protected from flooding?	☒	☐	☐	☐
Is well protected from potential sources of pollution (includes: surface water, known chemical spills, agricultural use, etc.)?	☒	☐	☐	☐
If no . . explain _____				
Does casing extend at least ☒18 inches above outside ground level; ☐12 inches above finished floor inside well house; and ☐3 feet above 100 year flood elevation? (Check for appropriate distance)	☐	☒	☐	☐
Is top of the well casing properly sealed? (sanitary seal)	☒	☐	☐	☐
Is well vented?	☒	☐	☐	☐
Is well vent properly screened and terminated in a downward position?	☒	☐	☐	☐
Does well have suitable sampling tap? Raw Water	☒	☐	☐	☐
Treated	☒	☐	☐	☐
Are check valves, blow-off valves and water meters maintained and operating properly?	☒	☐	☐	☐
Is upper termination of well protected (housed or fenced)?	☒	☐	☐	☐
Is intake located below the maximum drawdown?	☒	☐	☐	☐
Is there a concrete pad around well head?	☒	☐	☐	☐

PRODUCTION WELL DATA

Type submersible
(example: 30 hp line shaft turbine)

Rated Capacity 140 gpm**

	Yes	No	Unk	N/A
Are pumps operable?	☒	☐	☐	☐
When was pump installed? _____			☒	☐
Does the system have appropriate redundancy?	☒	☐	☐	☐
Is there an appropriate spare parts inventory?	☐	☐	☒	☐
Are controls functioning properly and adequately protected?	☒	☐	☐	☐
Do underground compartments have a drain?	☐	☐	☐	☒
Is facility properly protected against trespassing and vandalism?	☒	☐	☐	☐
Are pump records maintained? Note below if appropriate.	☒	☐	☐	☐
Is the plumbing adequately painted to prevent excessive corrosion?	☒	☐	☐	☐
Are adequate heating, lighting, and ventilation provided?	☒	☐	☐	☐
Is a preventive maintenance program in operation?	☒	☐	☐	☐
Cross connections observed?	☐	☒	☐	☐

Comments: (Such as, detailed information on any items with identified deficiencies)
The well has elevated iron and manganese levels.

The well casing extends approximately 10 inches above the concrete pad. The casing is sealed and vented. The vent is downturned and screened. The well discharge header is equipped with a pressure gauge, a hose bib (raw water sample tap), a flowmeter, a check valve, a flush valve, a gate valve, and a second hose bib and pressure gauge. The hose bibs are not equipped with vacuum breakers.

Explain Controls: The water level in ST001 activates the well pump through the SCADA system.

Comments: (Such as, detailed information on any items with identified deficiencies)
This well is the primary well for the system.
** Information is from previous sanitary survey reports.

SANITARY SURVEY FORM – WELLS & WELL PUMPS

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

(Please copy this sheet for additional wells & pumps)

SOURCE INFORMATION

WSF ID GW002 (Abandoned) *Entry Point ID* NA
These are EPA assigned identification numbers

Source Name South Well
Name of Source – Example: Well 1 or South well, etc.

Location of Water Source (TRS or street address):
About 300 feet south of the North Well.

Entry Point Name NA
Name of EP – Example: Entry point for North Well 1 & South Well 2

Location of Entry Point NA

Source Status: ☐ Perm ☐ Inactive ☐ Backup ☐ Emerg ☐ Interim
☐ Abandoned properly ☒ Other
If interim: _____ to _____

WELL LOG AND TEST DATA

Log Available? ☐ Yes ☒ No

Average Production NA
indicate units

Maximum Production NA
indicate units

Date Drilled Unknown
if well. . date drilled

Casing Size NA
size of casing installed in well

Case Depth NA
depth of casing installed in well

Well Depth NA
depth of well expressed in feet

Grout Depth NA
depth of grout used to seal well walls

Log SWL NA
(static) expressed in feet below ground elevation

Log PWL NA
(pumping) expressed in feet below ground elevation

Test Pump Rate NA

Intake Type NA
type of intake mechanism

Screened Interval NA
expressed in feet below ground elevation

Well Yield NA
pump tested in gallons per minute

REMOVED LAT/LONG INFO

WELLS

	Yes	No	Unk	N/A
Is well site protected from flooding?	☒	☐	☐	☐
Is well protected from potential sources of pollution (includes: surface water, known chemical spills, agricultural use, etc.)?	☐	☐	☐	☒
If no . . explain _____				
Does casing extend at least ☐18 inches above outside ground level; ☐12 inches above finished floor inside well house; and ☐3 feet above 100 year flood elevation? (Check for appropriate distance)	☐	☐	☐	☒
Is top of the well casing properly sealed? (sanitary seal)	☐	☐	☐	☒
Is well vented?	☐	☐	☐	☒
Is well vent properly screened and terminated in a downward position?	☐	☐	☐	☒
Does well have suitable sampling tap? Raw Water	☐	☐	☐	☒
Treated	☐	☐	☐	☒
Are check valves, blow-off valves and water meters maintained and operating properly?	☐	☐	☐	☒
Is upper termination of well protected (housed or fenced)?	☐	☐	☐	☒
Is intake located below the maximum drawdown?	☐	☐	☐	☒
Is there a concrete pad around well head?	☐	☐	☐	☒

PRODUCTION WELL DATA



Comments: (Such as, detailed information on any items with identified deficiencies)
The well casing has been disconnected from the PWS. The well casing has been backfilled.
The discharge piping is still connected to the distribution system. All valves have been closed and blind flanged off.

Explain Controls: NA

Comments: (Such as, detailed information on any items with identified deficiencies)
The well site is fenced and gated but not locked.

SANITARY SURVEY FORM – WELLS & WELL PUMPS

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

(Please copy this sheet for additional wells & pumps)

SOURCE INFORMATION

WSF ID GW003 *Entry Point ID* EP001
These are EPA assigned identification numbers

Source Name East Well
Name of Source – Example: Well 1 or South well, etc.

Location of Water Source (TRS or street address):
On the east side of Parkway Road, near the intersection of Salt Cedar and Parkway Roads.

Entry Point Name Entry Point to PWS #0400073 Distribution System
Name of EP – Example: Entry point for North Well 1 & South Well 2

Location of Entry Point On the discharge header for the filters.

Source Status: ☒ Perm ☐ Inactive ☐ Backup ☐ Emerg ☐ Interim
☐ Abandoned properly ☐ Other
If interim: _____ to _____

WELL LOG AND TEST DATA

Log Available? ☒ Yes ☐ No

Average Production Unknown
indicate units

Maximum Production Unknown
indicate units

Date Drilled 7/20/2004
if well. . date drilled

Casing Size 10-inch
size of casing installed in well

Case Depth 295 feet
depth of casing installed in well

Well Depth 300 feet
depth of well expressed in feet

Grout Depth Unknown
depth of grout used to seal well walls

Log SWL 42 feet on 7/20/2004
(static) expressed in feet below ground elevation

Log PWL Unknown
(pumping) expressed in feet below ground elevation

Test Pump Rate Unknown

Intake Type Screen
type of intake mechanism

Screened Interval 175-235 feet; 255-275 feet
expressed in feet below ground elevation

Well Yield Unknown
pump tested in gallons per minute

REMOVED LAT/LONG INFO

WELLS

	Yes	No	Unk	N/A
Is well site protected from flooding?	☒	☐	☐	☐
Is well protected from potential sources of pollution (includes: surface water, known chemical spills, agricultural use, etc.)?	☒	☐	☐	☐
If no . . explain _____				
Does casing extend at least ☒18 inches above outside ground level; ☐12 inches above finished floor inside well house; and ☐3 feet above 100 year flood elevation? (Check for appropriate distance)	☒	☐	☐	☐
Is top of the well casing properly sealed? (sanitary seal)	☒	☐	☐	☐
Is well vented?	☐	☒	☐	☐
Is well vent properly screened and terminated in a downward position?	☐	☐	☐	☒
Does well have suitable sampling tap? Raw Water	☒	☐	☐	☐
Treated	☒	☐	☐	☐
Are check valves, blow-off valves and water meters maintained and operating properly?	☒	☐	☐	☐
Is upper termination of well protected (housed or fenced)?	☒	☐	☐	☐
Is intake located below the maximum drawdown?	☒	☐	☐	☐
Is there a concrete pad around well head?	☐	☒	☐	☐

PRODUCTION WELL DATA

Type Submersible
(example: 30 hp line shaft turbine)

Rated Capacity Unknown

	Yes	No	Unk	N/A
Are pumps operable?	☒	☐	☐	☐
When was pump installed? _____			☒	☐
Does the system have appropriate redundancy?	☒	☐	☐	☐
Is there an appropriate spare parts inventory?	☐	☐	☒	☐
Are controls functioning properly and adequately protected?	☒	☐	☐	☐
Do underground compartments have a drain?	☐	☐	☐	☒
Is facility properly protected against trespassing and vandalism?	☒	☐	☐	☐
Are pump records maintained? Note below if appropriate.	☒	☐	☐	☐
Is the plumbing adequately painted to prevent excessive corrosion?	☒	☐	☐	☐
Are adequate heating, lighting, and ventilation provided?	☒	☐	☐	☐
Is a preventive maintenance program in operation?	☒	☐	☐	☐
Cross connections observed?	☐	☒	☐	☐

Comments: (Such as, detailed information on any items with identified deficiencies)
The well has elevated iron and manganese levels.

The well casing extends 24 inches above the ground and is sealed. The well discharge header is equipped with an air/vacuum release valve, a flowmeter, a pressure gauge, a hose bib (raw water sample tap), a check valve, a flush valve, and a gate valve. The hose bib is not equipped with a vacuum breaker.

The air/vacuum release valve is a ValMatic dual port throttling valve. The discharge is downturned but not screened.

Explain Controls: The water level in ST001 activates the well pump through the SCADA system.

Comments: (Such as, detailed information on any items with identified deficiencies)
The well is rarely operated.

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

WSF ID PF001 (Reported to be disconnected from the PWS.)
These are EPA assigned identification numbers

Number of Pumps Unknown

Type: Unknown
(example: "3 line shaft turbines")

Capacity Unknown

Controlled by NA

Schematic of Installation:

Not visited during the survey.

	Yes	No	Unk	N/A
Are pumps operable?	☐	☐	☐	☒
Is redundancy provided?	☐	☐	☐	☒
Protected against trespass/vandalism?	☐	☐	☐	☒
Records maintained?	☐	☐	☐	☒
Property maintained?	☐	☐	☐	☒
Metered?	☐	☐	☐	☒
Cross connections observed?	☐	☐	☐	☒

Comments: Not visited during the survey.

For booster stations:

Does each pump have standard P-gage on discharge side?	☐	☐	☐	☒
Does each pump have compound gage on suction side?	☐	☐	☐	☒
For boosters on suction lines directly connected to storage reservoirs, is there automatic cutoff for suction pressure ≤ 2.5 psi?	☐	☐	☐	☒

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

Treatment Objective

B = Disinfection Byproduct Control
C = Corrosion Control
D = Disinfection
E = Dechlorination
F = Iron Removal
I = Inorganics Removal
M = Manganese Removal
N = *No Treatment at Source*
O = Organics Removal
P = Particulate Removal
R = Radionuclides Removal
S = Softening (Hardness Removal)
T = Taste / Odor Control
Z = Other _____

WATER TREATMENT FACILITIES

WSF ID	Treatment Plant Name	Treatment Objective and Code		
TP001	Iron and Manganese Removal Plant	F343 M423	F423 D423	M343

Treatment Description / Comments: Both wells discharge to a common header that is injected with a mixed oxidant solution (MOS) (commonly called liquid hypochlorite) to oxidize iron and manganese, producing solid precipitates that are filtered out of solution in the greensand filter. Additional iron and manganese are removed by adsorption in the filter media. MOS is dosed to provide a free available chlorine residual in the treatment plant discharge.

FOR SYSTEMS EMPLOYING FULL-TIME DISINFECTION

	Yes	No	Unk	N/A
What disinfectant is used? MOS (liquid hypochlorite)				
Is the disinfectant used NSF approved?	☒	☐	☐	☐
Is the amount of disinfectant used recorded?	☒	☐	☐	☐
If Yes, amount used: _____lbs/day varies ppm _____ other (give units)				
Is the amount of disinfectant used compared to water pumped to verify concentration?	☐	☐	☒	☐
Is chemical storage adequate and safe?	☒	☐	☐	☐
If No, explain _____				
Is disinfectant residual monitored at same time/place as coliform samples are collected?	☒	☐	☐	☐
Are residual reports submitted monthly?	☒	☐	☐	☐
Is the disinfection equipment being operated and maintained properly?	☒	☐	☐	☐
Is operational standby equipment provided?	☒	☐	☐	☐
If not, are critical spare parts on hand?	☒	☐	☐	☐
Has disinfection system been free from failure during the past year – no interruption?	☐	☐	☒	☐
If No, give dates of interruptions _____				

CT available minimal minutes _____mg/L _____mg•min/L

Residual ☒Free ☐Combined

Describe provisions for providing contact time between disinfection point and the first point of use: The only contact time available is through the filters.

Measured chlorine residual: see page 13 of 18 Location(s): _____



MIOX–SAL80 with electrolytic cell (s/n 2316-c80g2-0053).

FOR LIQUID HYPOCHLORINATION

Pump model: 2 Milton Roy – 13 gph
Settings: Stroke 35%
Speed 100%
Vat Size: ~120 gallon
Solution Strength: 0.4%

Comments: The MIOX–SAL80 is designed to produce 12 pounds per day of free available chlorine (FAC). The disinfectant solution produced is a mixed oxidant solution (MOS) with a sodium hypochlorite concentration of about 0.4 percent.
The MOS is generated through electrolysis of salt water. The Sure Soft 100% Natural Extra Coarse salt used for the MIOX system is NSF-approved.
One chemical feed pump was operating, with the other as a backup.
There is an emergency shower/eyewash fountain in the treatment building.

PWSID 0400073 | SYSTEM NAME Cocopah East
Date of Survey 1/17/2018

Type: ☒Other (describe in detail) Iron (Fe) and Manganese (Mn) removal is accomplished through the oxidation/filtration and adsorption of iron and manganese. Fluoridation equipment is on-site but not used.

Peak instantaneous flow experienced: 140 gpm (per IHS April 2011 Sanitary Survey)

	Chemicals Added	Points of Application	Purpose	Feed Rate (range)
1)	MOS*	In common header prior to filters	oxidation/disinfection	maintain an FAC residual of 0.5 mg/L after filters
2)	_____	_____	_____	_____

*MOS – mixed oxidant solution generated by the MIOX – contains approximately 0.4 percent sodium hypochlorite and "other" oxidants.

What is the purpose of treatment? Fe and Mn removal and disinfection in addition to providing a free available chlorine (FAC) residual in the filter effluent to provide disinfection in the distribution system.

What is the process control strategy? The operators treat to minimize the Fe and Mn concentration in the finished water to below the secondary USEPA standards (i.e., Fe 0.3 mg/L and Mn 0.05 mg/L). The operators maintain a detectable FAC residual throughout the distribution system.

Who makes process control decisions and how are they made? The operator in responsible charge, with assistance from the PWD director and supervisor.

Process Monitoring:

The operators monitor the FAC residual leaving the filters and do periodic Fe and Mn tests.

Describe the unit processes:

1. Oxidation – The MOS is injected into the water flow from the well(s) prior to an in-line mixer. Oxidized Fe and Mn form iron hydroxide and manganese dioxide flocs, which are removed via filtration. The MOS is pumped into the water stream via one or two, depending on demand, chemical feed pumps.

2. Filtration – The Fe and Mn flocs are removed by passing the treated water through four filters (three are in service) containing greensand. The greensand filters "sieve" the flocs from the water. In addition, the greensand particles are coated with a thin layer of manganese dioxide that will allow unoxidized Fe and Mn to be adsorbed to the surface of the greensand particles, providing additional removal. Periodically, the filters need to be backwashed to remove the captured Fe and Mn flocs and regenerate the greensand. The operators reported they backwash the filters on Monday and Friday. Each backwash is done manually and uses approximately 1,000 gallons of water. The backwash water is wasted to a drain adjacent to the treatment building. The drain has an air gap between the backwash water line and the drain. The drain is piped to the wastewater line that discharges to the wastewater lagoons.

3. Disinfection – The water is disinfected through the injection of the MOS. Sufficient MOS is injected ahead of the filters to meet the demand for Fe and Mn oxidation, other water quality demand, and provide an FAC residual leaving the plant.

Filters: ☒Yes ☐No

Type: ☒Green Sand ☐Dual Media ☐Multi-media ☐Other (describe) _____

Depth of each medium: Unknown

Surface wash? ☐ Yes ☒ No If Yes, type: _____ Air scour? ☒ Yes (air scour is available but not used) ☐ No

Disinfection/Oxidation (describe): Disinfection and oxidation are discussed above.

Is CT adequate under all conditions of flow, temperature and pH? ☐ Yes ☐ No ☒ Unk

Explain: The water is pumped into the distribution system directly from the treatment plant. The storage tank floats on the distribution system so it provides little, if any, detention time. The only detention time available for the water is the time spent in the filters and the distribution piping prior to the first customer.

Comments on process control and finished water quality: No comment.

Comments of equipment condition and adequacy of emergency back-up equipment: The equipment is in fair condition, but only three filter vessels are in operation. Only one chemical feed pump was being used, with the second pump available as a backup. The fluoride equipment is still on-site but not used. The greensand filter media is 15-20 years old.

Stage 1 Rule Compliance:

No comment.

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

FLUORIDATION:

Type: Batch system
Fluoride supply adequate? ☐ Yes ☒ No
Properly stored? ☐ Yes ☒ No
Fluoride setup (description)
Model Prominent - 1.1 gph
Settings: Stroke NA
Frequency NA

Logs or records kept? ☒ Yes ☐ No
Details The fluoride treatment equipment is not being used.

For Saturators:
Make-up Water Softened? ☐ Yes ☒ No
Make-up Water Metered? ☐ Yes ☒ No
Is there a flow sensor shut-off on the line? ☐ Yes ☒ No

Comments: _____



Fluoride injection equipment in the Iron and Manganese Removal Plant building.

SANITARY SURVEY FORM - PRESSURE CONTROL ASSEMBLIES

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

COMPLETE ONE SECTION FOR EACH PRESSURE CONTROL ASSEMBLY

CAPTIVE AIR TANK(S)

WSF ID _____ Location, Description _____

	Yes	No	Unk	N/A
Is there a pressure relief valve?	☐	☐	☐	☐
Is there an operable pressure gauge?	☐	☐	☐	☐
Does low pressure level provide adequate pressure?	☐	☐	☐	☐
Is the tank operating properly (not water logged)?	☐	☐	☐	☐
Are the exterior surfaces of the tank(s) in good physical condition?	☐	☐	☐	☐
Can tank(s) be by-passed for repair?	☐	☐	☐	☐

Pump run time: _____

Time of Day: _____ Cut-In _____ psi

Cut-Out _____ psi

Pump Type: _____

Comments: _____

PRESSURE TANK(S) (air/water interface)

WSF ID HP001 (Inactive) Location, Description Reported to be disconnected from the PWS.

	Yes	No	Unk	N/A
Is there an operable pressure gauge?	☐	☐	☐	☐
Does low pressure level provide adequate pressure?	☐	☐	☐	☐
Is the tank operating properly (not water logged)?	☐	☐	☐	☐
Is air charge system adequate?	☐	☐	☐	☐
Is the exterior surface of the pressure tank in good physical condition?	☐	☐	☐	☐
Is there a water level sight glass?	☐	☐	☐	☐
Is there a bottom drain valve?	☐	☐	☐	☐
Is there a pressure relief valve?	☐	☐	☐	☐
Can tank(s) be by-passed for repair?	☐	☐	☐	☐

Pump run time _____ Cut-In _____ psi

Time of day _____ Cut-Out _____ psi

How much air is in the tank?_____

Pump type: _____

Maximum design pressure: _____

Construction date: _____

Inspection/rehab date: _____

Comments: The pressure tank was not visited during the survey.

CAPTIVE AIR TANK(S)

WSF ID _____ Location, Description _____

	Yes	No	Unk	N/A
Is there a pressure relief valve?	☐	☐	☐	☐
Is there an operable pressure gauge?	☐	☐	☐	☐
Does low pressure level provide adequate pressure?	☐	☐	☐	☐
Is the tank operating properly (not water logged)?	☐	☐	☐	☐
Are the exterior surfaces of the tank(s) in good physical condition?	☐	☐	☐	☐
Can tank(s) be by-passed for repair?	☐	☐	☐	☐

Pump run time: _____

Time of Day: _____ Cut-In _____ psi

Cut-Out _____ psi

Pump Type: _____

Comments: _____

PRESSURE TANK(S) (air/water interface)

WSF ID _____ Location, Description _____

	Yes	No	Unk	N/A
Is there an operable pressure gauge?	☐	☐	☐	☐
Does low pressure level provide adequate pressure?	☐	☐	☐	☐
Is the tank operating properly (not water logged)?	☐	☐	☐	☐
Is air charge system adequate?	☐	☐	☐	☐
Is the exterior surface of the pressure tank in good physical condition?	☐	☐	☐	☐
Is there a water level sight glass?	☐	☐	☐	☐
Is there a bottom drain valve?	☐	☐	☐	☐
Is there a pressure relief valve?	☐	☐	☐	☐
Can tank(s) be by-passed for repair?	☐	☐	☐	☐

Pump run time _____ Cut-In _____ psi

Time of day _____ Cut-Out _____ psi

How much air is in the tank?_____

Pump type: _____

Maximum design pressure: _____

Construction date: _____

Inspection/rehab date: _____

Comments: _____

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

How much **TOTAL** treated storage is provided? 300,000 gallons Is all treated water covered? ☒ Yes ☐ No

Total number of days of supply? ~3.8* days
Comments: *The average daily water usage is 79,000 gallons.

STORAGE FACILITY

WSF ID ST001 Location, Description Storage Tank 1 (Standpipe). On a hill northeast of the North Well.

Storage Volume? 300,000 gallons
Dimensions: 28.25' in diameter x 66.25' in height
Year constructed: 1999
Material: ☐ Bolted steel ☒ Welded steel ☐ Concrete ☐ Other

	Yes	No	Unk	N/A
Does surface runoff and underground drainage drain away?	☒	☐	☐	☐
Is the site protected against flooding?	☒	☐	☐	☐
Is the site protected against trespass/vandalism?	☒	☐	☐	☐

Condition: ☐Good ☒Fair ☐Poor

Describe piping (e.g. floats on line): floats on the line

Foundation: ☒Slab ☐Ring ☐Other

Ladders caged and locked?	☒	☐	☐	☐

Ladder material: metal
Internal ladder? metal

Are overflow lines, air vents, drainage lines or clean out pipes turned downward or covered, screened and terminated a minimum of 3 diameters above the ground or storage tank surface?	☒	☐	☐	☐
Overflow pad?	☐	☒	☐	☐
Erosion?	☐	☒	☐	☐
Working and accurate target?	☐	☒	☐	☐
Sealed and locked shoe-box hatch?	☒	☐	☐	☐
Are surface coatings in contact with water ANSI / NSF approved?	☐	☐	☒	☐
Is tank protected against icing and corrosion?	☒	☐	☐	☐
Can tank be isolated from system?	☒	☐	☐	☐
Is all treated water storage covered?	☒	☐	☐	☐
Is there a formal/written storage tank maintenance program?	☐	☒	☐	☐

What is cleaning frequency for tanks? Unknown

Date tank was last cleaned? Unknown

Are tanks disinfected after repairs are made?	☐	☐	☒	☐

Comments: The tank is within a fenced, gated, and locked enclosure.

The interior and exterior coatings of the tank show minimal corrosion.

The roof access ladder is caged, gated, and locked. The tank's vent is covered and screened. The screen is shrouded to reduce airborne contamination from entering the tank. The screen is insect proof.

The access hatches (manway and instrumentation) have covers that are overlapping, locked, and appear to be watertight.

The tank is fitted with an exterior water level indicator (target). The target cable guide is sealed. The target was not working.

The overflow pipe discharges to the desert, approximately 100 feet from the tank. The overflow pipe is fitted with a flap gate, but the flap gate is partially buried, preventing proper operation. There were no signs of erosion from overflows.



Comments: The SCADA operates the well pump(s) to maintain the water level in the tank.

There is a pressure gauge and hose bib on the tank discharge. The hose bib is not fitted with a vacuum breaker.

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

How much **TOTAL** treated storage is provided? 300,000 gallons Is all treated water covered? ☒ Yes ☐ No

Total number of days of supply? ~3.8* days
Comments: *The average daily water usage is 79,000 gallons.

STORAGE FACILITY

WSF ID ST002 and ST003 (Inactive tanks) Location, Description At the North Well site.

Storage Volume? _____ gallons
Dimensions:_____
Year constructed:_____
Material: ☐ Bolted steel ☐ Welded steel ☐ Concrete ☐ Other

	Yes	No	Unk	N/A
Does surface runoff and underground drainage drain away?	☐	☐	☐	☒
Is the site protected against flooding?	☐	☐	☐	☒
Is the site protected against trespass/vandalism?	☐	☐	☐	☒

Condition: ☐Good ☐Fair ☐Poor

Describe piping (e.g. floats on line): _____

Foundation: ☐Slab ☐Ring ☐Other

Ladders caged and locked?	☐	☐	☐	☒

Ladder material: _____
Internal ladder? _____

Are overflow lines, air vents, drainage lines or clean out pipes turned downward or covered, screened and terminated a minimum of 3 diameters above the ground or storage tank surface?	☐	☐	☐	☒
Overflow pad?	☐	☐	☐	☒
Erosion?	☐	☐	☐	☒
Working and accurate target?	☐	☐	☐	☒
Sealed and locked shoe-box hatch?	☐	☐	☐	☒
Are surface coatings in contact with water ANSI / NSF approved?	☐	☐	☐	☒
Is tank protected against icing and corrosion?	☐	☐	☐	☒
Can tank be isolated from system?	☐	☐	☐	☒
Is all treated water storage covered?	☐	☐	☐	☒
Is there a formal/written storage tank maintenance program?	☐	☐	☐	☐

What is cleaning frequency for tanks? _____

Date tank was last cleaned? _____

Are tanks disinfected after repairs are made?	☐	☐	☐	☒

Comments: These tanks were reported to be disconnected from the PWS.
(Include safety and security concerns)



PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

DISTRIBUTION SYSTEM EVALUATION

System description The mains are 6- and 8-inch AWWA C-900 with 1-inch service lines.

Feet of mains? ~12,000 feet (estimated from the length of sewer lines)

AC pipe? ☐ Yes ☐ No _____

Condition of mains? good

Date of installation of mains? 2002

	Yes	No	Unk	N/A
System drawings available?	☒	☐	☐	☐
As-built drawings?	☒	☐	☐	☐
Date _____ Drawing on-site?	☐	☐	☒	☐
Lines adequately sized?	☒	☐	☐	☐
Adequate pressure maintained?	☒	☐	☐	☐
Mains protected from freezing?	☒	☐	☐	☐
Distribution system free of leaks?	☒	☐	☐	☐
Fire hydrants?	☒	☐	☐	☐
Dead end lines eliminated?	☒	☐	☐	☐
Are dead ends a problem?	☐	☒	☐	☐
Flushing program?	☒	☐	☐	☐

Describe flushing program: The PWD staff flushes the system twice per month and rotates the flushing sites.

Distribution system repair procedures?

Is there an SOP for distribution system repairs?	☐	☐	☒	☐
Is the repaired line flushed after repairs?	☐	☐	☒	☐
Is the repaired line disinfected after repairs?	☐	☐	☒	☐
Is the repaired line bacti tested after repairs before returning the line into service?	☐	☐	☒	☐
Pressure reducing stations? Number _____	☐	☒	☐	☐
Booster stations? Number _____	☐	☒	☐	☐
Connections to other PWSs?	☐	☒	☐	☐
If Yes, please describe:_____				
Cross-connection control program?	☐	☒	☐	☐
Certified assembly tester?	☐	☐	☒	☐

Cross-Connections Observed? ☐ Yes ☒ No

Comments: The majority of the distribution system is looped.
There is no formal written cross-connection control program (CCCP). There are several hose bibs that are not equipped with vacuum breakers.

SAFETY – ETC.

	Yes	No	Unk	N/A
Is there a formal/written safety program?	☐	☒	☐	☐
Is there an eyewash kit or station in the treatment and/or chemical storage areas?	☒	☐	☐	☐

Check one: ☐ No confined spaces were observed.
☒ Confined space(s) were observed.

Describe any confined spaces observed storage tanks and manholes

Check one: ☐ No fall risks were observed.
☒ Fall risks were observed.

Describe any fall risks observed storage tanks

Observed electrical problems? ☐ Yes ☒ No

Note any other safety deficiencies (consider items such as ladders, tank supports, guards on rotating electrical equipment, wiring problems, etc.)

_____

Is there an emergency response plan? ☐ Yes ☒ No

There is no formal written safety plan.

The distribution system pressure and free chlorine residuals measured during the survey are listed in the table below.

Location	Free Chlorine Residual (mg/L)	Pressure (psi)
EP001 at Treatment Plant Building	0.61	
17847 Ballpark Way	0.56	40

SANITARY SURVEY FORM - MISCELLANEOUS

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

MONITORING AND RECORDKEEPING EVALUATION

	Yes	No	Unk	N/A
Bacti Sample Site Plan submitted?	☒	☐	☐	☐
Where are bacti samples collected? in accordance with CSSP				
Familiar with repeat sampling?	☒	☐	☐	☐
Bacti records kept appropriately? (5 years)	☒	☐	☐	☐
Where are Pb/Cu samples collected? in accordance with CSSP				
Where are EP samples collected? _____				
Does the system have a current Monitoring Schedule?	☒	☐	☐	☐
Where are DBP samples collected? in accordance with CSSP				
D/DBP Monitoring plan?	☒	☐	☐	☐
Are TOC Samples Collected?	☐	☐	☐	☒
Chemical monitoring records maintained? (10 years)	☒	☐	☐	☐
Other Records				
Disinfection Profile (if required)?	☒	☐	☐	☐
Sanitary surveys?	☒	☐	☐	☐
IFE (SW only)?	☐	☐	☐	☒
Other? _____	☐	☐	☐	☐

Comments: The operator reported they do process monitoring for FAC residual, iron, and manganese, using a HACH 890 colorimeter.

The CSSP was approved on 6/27/2017.

Bacteriological samples are collected by the operators and delivered to Fresh Terra Services, LLC, in Yuma, AZ. Most of the analytical testing is completed by TestAmerica in Phoenix, AZ.

The USEPA Monitoring Schedule dated 1/11/2018 was discussed.

MANAGEMENT

Administrative Board – Name and description The Cocopah Tribe owns and operates the Cocopah East PWS. The tribe is governed by a chairperson, vice chairperson, and three tribal council members. The tribal administrator manages the day-to-day operation of the tribe. The PWD, which is responsible for the operation and maintenance of the water system, is managed by a director. Under the director, there is a supervisor who manages the employees who work within the water system.

Training provided – Describe as needed to maintain certification

	Yes	No	Unk	N/A
By-laws or articles of incorporation?	☐	☐	☐	☒
Year of enactment: _____				
Are copies available?	☐	☐	☐	☒
Budget:				
Exists?	☒	☐	☐	☐
Adequate?	☐	☒	☐	☐
Tribally subsidized?	☒	☐	☐	☐
Are personnel adequately trained?	☒	☐	☐	☐
Training provided?	☒	☐	☐	☐
Describe: as needed to maintain certification				
Training providers: RCAC, ITCA, others				
Are operators properly certified?	☒	☐	☐	☐
Are there sufficient personnel?	☒	☐	☐	☐
Are abandoned wells present?	☒	☐	☐	☐
Do abandoned wells appear to be properly abandoned?	☐	☐	☒	☐
Is operator aware of procedures regarding well abandonment?	☐	☐	☒	☐
Is there an O&M manual?	☐	☒	☐	☐
Is it current?	☐	☐	☐	☒
Is a copy on-site?	☐	☐	☐	☒
O&M log maintained?	☒	☐	☐	☐

Comments: There are policies established by the tribe to operate the water system. The tribe has a user rate for water of $7.50 per month. The revenues generated by the water rate structure do not support the water system; therefore, the budget for the water system is subsidized by the tribal general fund.

The tribe has an emergency response standard operating procedure (SOP) but not an emergency response plan specific to the water system.

The PWD has no comprehensive operations and maintenance (O&M) manual for the water system. The PWS staff maintains some operation logs at the treatment plant.

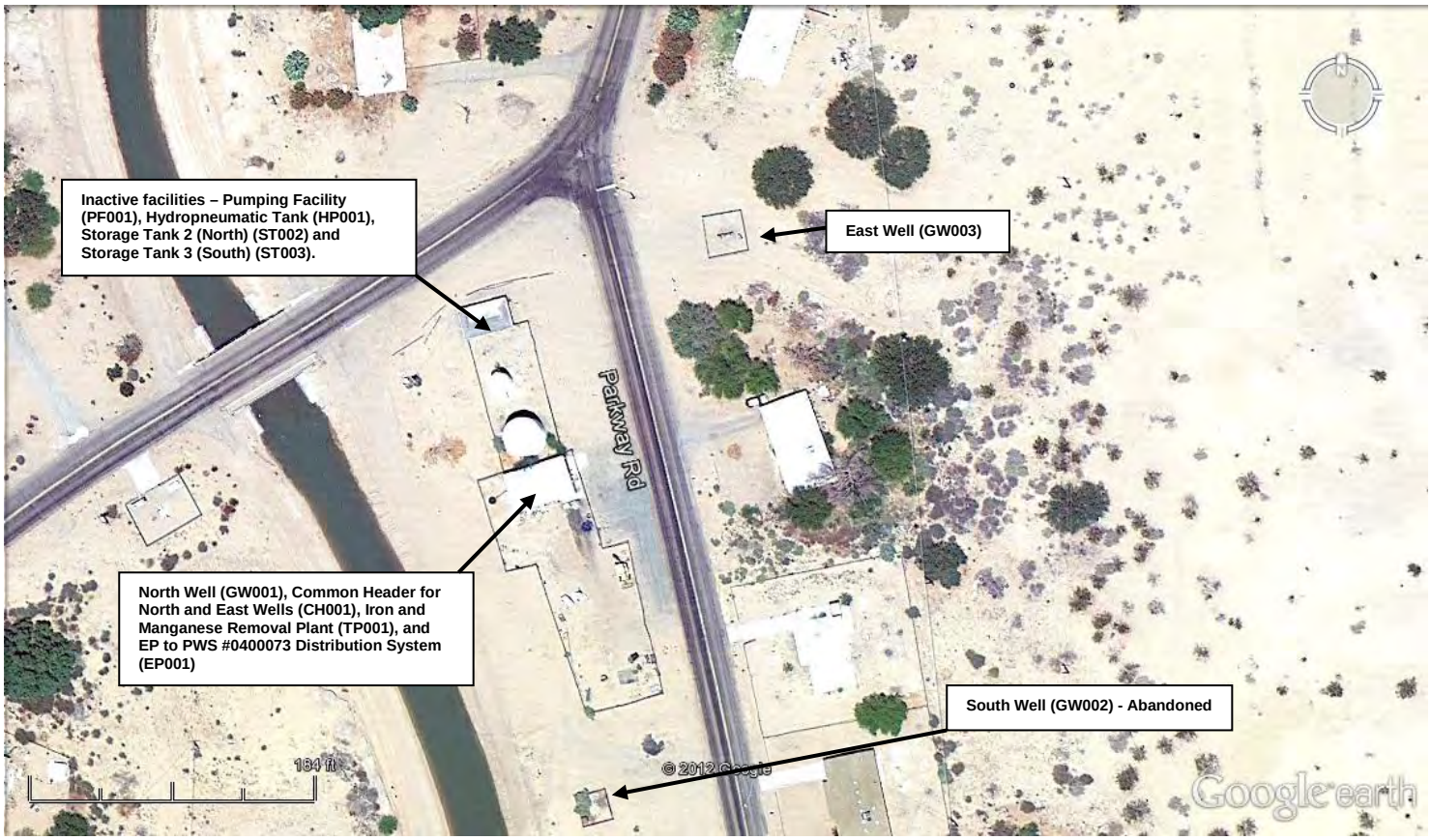
The PWD has no formal plan for scheduled inspection and maintenance of the storage tanks.

The facilities are cluttered and in need of some repair. Treatment chemicals are stored together with oils and other chemicals.

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

Schematic: General Layout of Cocopah East Wells and Treatment Site



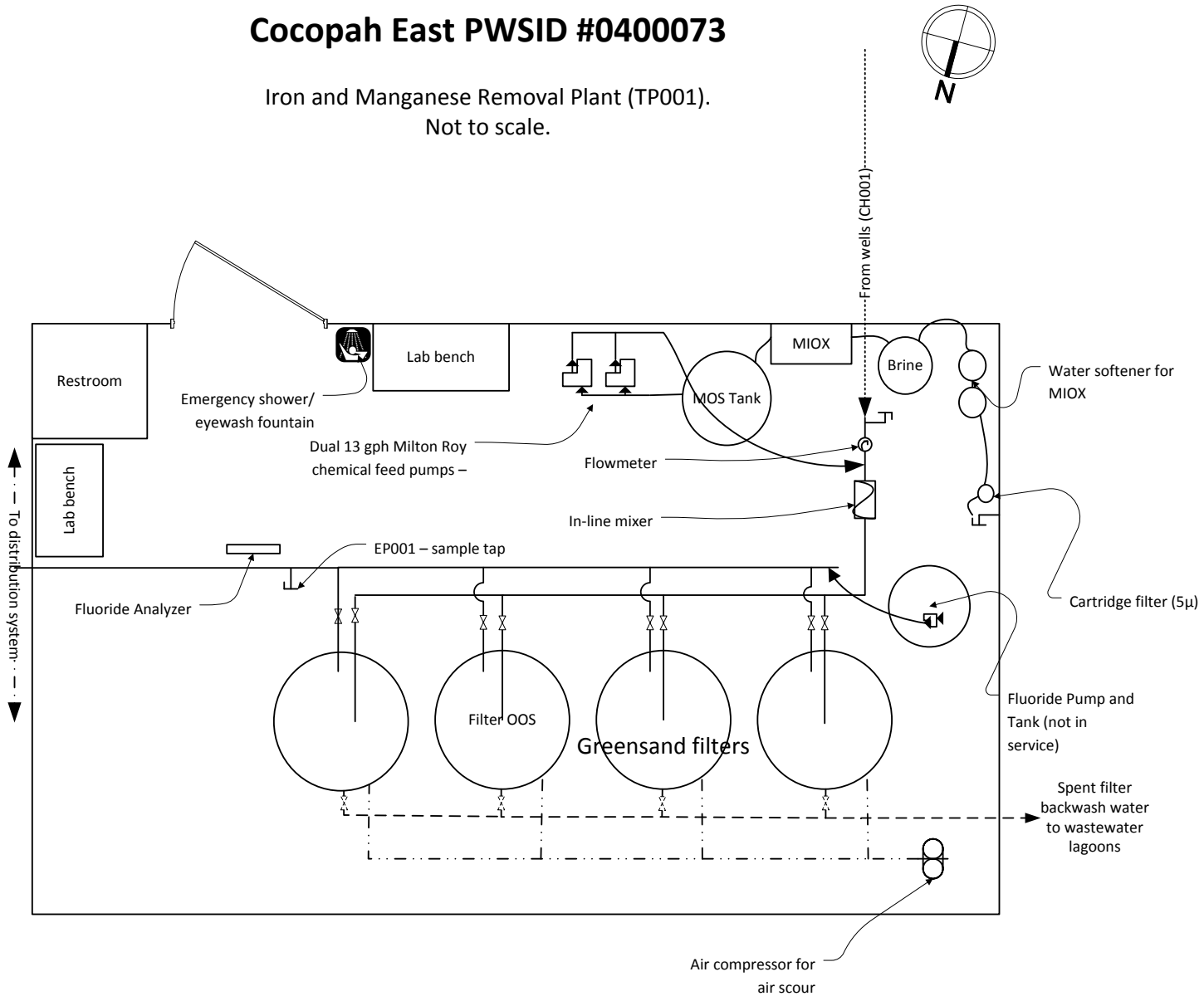
PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

Schematic: Iron and Manganese Removal Plant General Layout

Cocopah East PWSID #0400073

Iron and Manganese Removal Plant (TP001).
Not to scale.



PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

Expert GPS Aerial Photograph

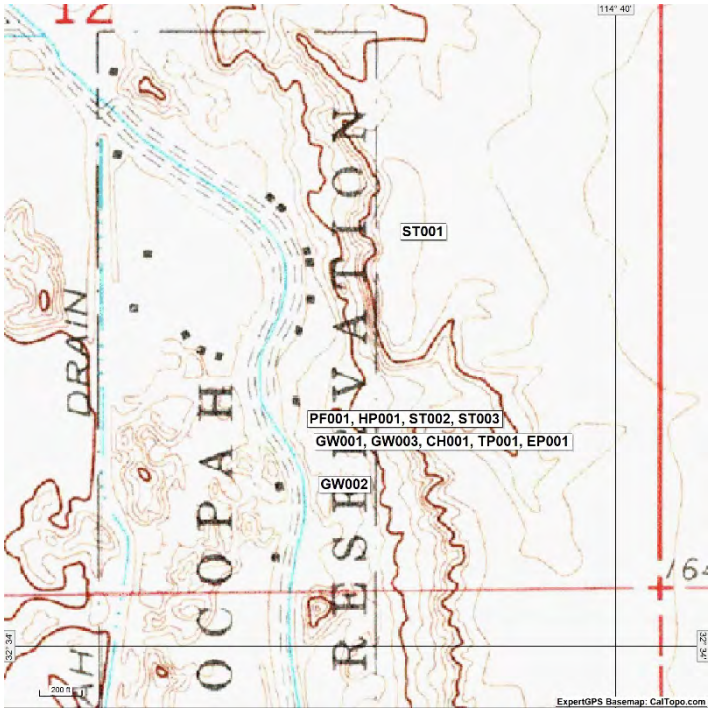


WSF ID	Facility Name	WSF ID	Facility Name
GW001	North Well	**Inactive Facilities**	
GW003	East Well	GW002	South Well
CH001	Common Header for North and East Wells	PF001	Pumping Facility
TP001	Iron and Manganese Removal Plant	HP001	Hydropneumatic Tank
EP001	Entry Point to PWS #0400073 Distribution System	ST002	Storage Tank 2 (North)
ST001	Storage Tank 1 (Standpipe)	ST003	Storage Tank 3 (South)

PWSID 0400073
Date of Survey 1/17/2018

SYSTEM NAME Cocopah East

Expert GPS Topographic and Street Maps



WSF ID	Facility Name	WSF ID	Facility Name
GW001	North Well	**Inactive Facilities**	
GW003	East Well	GW002	South Well
CH001	Common Header for North and East Wells	PF001	Pumping Facility
TP001	Iron and Manganese Removal Plant	HP001	Hydropneumatic Tank
EP001	Entry Point to PWS #0400073 Distribution System	ST002	Storage Tank 2 (North)
ST001	Storage Tank 1 (Standpipe)	ST003	Storage Tank 3 (South)



North Well (GW001)

11150 E. VALLEJO CHANDLER, AZ 85248 [602] 895-2230

WELL SCAN
INCORPORATED

WELL OWNER Cocopah Indian Tribe DATE 4-26-10
CONTRACTOR Underground Solutions JOB # 00473
LOCATION East Res. North Well WELL North
COLOR L B & W

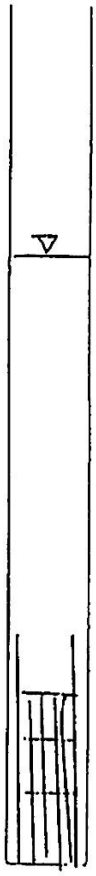
8 INCH DIA. CASING
BAND SETTING 4 "
STATIC WATER LEVEL:
▽ 34 FT

TYPE PERFORATIONS:
Screens
FROM 171 FT
TO 186 FT

REDUCTIONS AT:
6" AT 165 FT
FT

CASED TO Bottom FT

CURRENT DEPTH 186 FT
DRILLED DEPTH ? FT



FOOTAGE MEASURED
From Top of 8" Dia
Casing.
Rust Colored Build-up
To 45'
34' STATIC WATER LEVEL
Very Good Visibility
45' Color of Build-up Turns
Grey
55' + Build-up Color Turns
Black, Also Small Voides
165' 6" Reduction
165 to 171 Blank Casing
171 to 186' Screen
3 Joints - Small Amount
of Nodules, But Slots Mostly
Open.
186 Total Depth w/ File
VIDEOTAPE TO WELL OWNER CONTRACTOR

East Well (GW003)

Sep 01 04 11:42a Shuck Drilling Co. 928-726-6411 p.1

Well Driller Report and Well Log

East Cocopah Well
Drilled 7-20-04

WELL REGISTRATION NUMBER
55-

SECTION 5: GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	Description: Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
0	20	Sand	
20	30	Fine Sand	
30	50	Fine Sand / Some Clay	
50	70	Clay / Some Fine Gravel	
70	90	Sand, Clay	
90	110	Clay	
110	115	Fine Sand / Clay	
115	150	Clay	
150	160	Sand, Clay	
160	165	Clay / Gravel	
165	198	Gravel	
198	200	Gravel / Trace of Clay	
200	280	Gravel (Good)	
280	300	Sand / Gravel	
		18" .250 Wall Conductor Set to 33'	
		295' Casing Installed	
		Water Level 42'	
		CASING STRING	
		0-175 Blank (10¾ O.D. .365 Wall Steel)	
		175-235 Screen (10" .250 Wall .040 slot)	
		235-255 Blank Stainless Wire Wrap (Same as Above)	
		255-275 Screen (Same as Above)	
		275-295 Blank (Same as Above)	

III. Photographs



Cocopah East
PWSID No. 0400073





Sanitary Survey – January 17, 2018
Sleeping Giant Environmental Consultants, LLP

1

Cocopah East (PWSID No. 0400073)
North Well (GW001)

The well is in a fenced, gated, and locked enclosure on the west side of Parkway Road, near the intersection of Salt Cedar and Parkway Roads.



This well is the primary well for the PWS.

The well was drilled in 1971 to a depth of 186 feet. The 8-inch well casing extends approximately 10 inches above the concrete pad. The casing is sealed and vented. The vent is downturned and screened.

The well is equipped with a submersible pump of unknown size. Reportedly, the well produces 130 gpm.

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Sleeping Giant Environmental Consultants, LLP

2

Cocopah East (PWSID No. 0400073)
North Well (GW001)

The well discharge header is equipped with a pressure gauge, a hose bib (raw water sample tap), a flowmeter, a check valve, a flush valve, a gate valve, and a second hose bib and pressure gauge. The hose bibs are not equipped with vacuum breakers.



Cocopah East (PWSID No. 0400073)
East Well (GW003)



The well is in a fenced, gated, and locked enclosure on the east side of Parkway Road, near the intersection of Salt Cedar and Parkway Roads.

The well was drilled in 2004 to a depth of 300 feet. The 10-inch well casing extends from 24 inches above the ground to a depth of 295 feet. The casing is screened from 175 to 235 feet and from 255 to 275 feet. The casing is sealed but not vented.

The well has elevated iron and manganese levels. Reportedly, this well is rarely used.

The well is equipped with a submersible pump of unknown size. The well capacity was unknown.

Cocopah East (PWSID No. 0400073)
East Well (GW003)



The well discharge header is equipped with an air/vacuum release valve (ValMatic dual throttling valve), a flowmeter, a pressure gauge, a hose bib (raw water sample tap), a check valve, a flush valve, and a gate valve. The discharge from the air/vacuum release valve is downturned but not screened. The hose bib is not equipped with a vacuum breaker.

Cocopah East (PWSID No. 0400073)
South Well (GW002)



The well is in a fenced and gated enclosure about 300 feet south of the North Well. The gate was not locked.

The South Well is disconnected from the PWS. The well casing has been backfilled, but it was undetermined if the well was properly abandoned. The discharge piping is still connected to the distribution system. All valves have been closed and blind flanged off.





The Common Header for North and East Wells and the Iron and Manganese Removal Plant are in a locked building at the same site as the North Well.



Four vessels containing greensand are used to remove iron and manganese. The greensand filter media is 15-20 years old. Only three of the vessels were in operation at the time of the survey. The same vessel was out of service during the sanitary survey in 2015.



Cocopah East (PWSID No. 0400073)
Iron and Manganese Removal Plant (TP001)

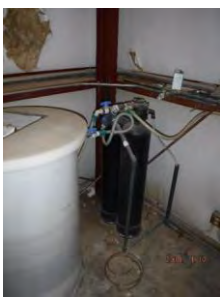


Two times per week, the filters are manually backwashed to remove the captured Fe and Mn flocs and regenerate the greensand. The spent filter backwash water is discharged to the wastewater lagoons.

Cocopah East (PWSID No. 0400073)
Iron and Manganese Removal Plant (TP001)



The MOS is produced by a MIOX-SAL80 on-site generator. The MOS is generated through the electrolysis of salt water. The MIOX-SAL80 is designed to produce 12 pounds per day of free available chlorine (FAC).



The MOS is stored in a 120-gallon chemical vat before being pumped by two Milton Roy 13-gph chemical feed pumps into the common header for both wells.

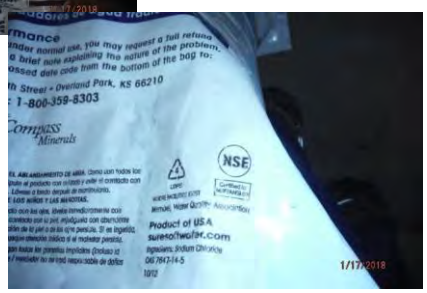


The MOS is dosed at an adequate rate to oxidize the Fe and Mn, meet other chlorine demand, and provide an FAC residual in the distribution system for disinfection. Only one chemical feed pump is being used, set at 35 percent stroke. The other chemical feed pump is a backup.

The MOS pumps are activated automatically whenever the well pumps operate.



The only chemical used is rock salt for the MIOX system. The rock salt is NSF-approved Sure Soft 100% Natural Extra Coarse salt.



Cocopah East (PWSID No. 0400073)
Iron and Manganese Removal Plant (TP001)



Fluoridation equipment is on-site but not used.

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Sleeping Giant Environmental Consultants, LLP

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Cocopah East (PWSID No. 0400073)
Entry Point to PWS #0400073 Distribution System (EP001)



The entry point is on the discharge header from the Iron and Manganese Removal Plant.

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Cocopah East (PWSID No. 0400073)
North Well (GW001)
East Well (GW003)
Iron and Manganese Removal Plant (TP001)







The Cummins Power 40-kW/50-kVA generator will operate the wells and treatment plant.

Cocopah East (PWSID No. 0400073)
Iron and Manganese Removal Plant (TP001)



There is an emergency shower/eyewash fountain in the treatment building.



Cocopah East (PWSID No. 0400073)
Storage Tank 1 (Standpipe) (ST001)

The storage tank is within a fenced, gated, and locked enclosure on a hill northeast of the North Well.

The 300,000-gallon welded steel standpipe was built in 1999. The tank is 66.25 feet in height and 28.25 feet in diameter. The roof access ladder is caged, gated, and locked.

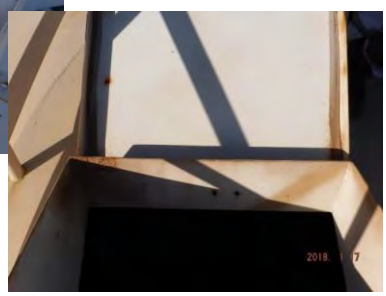
The exterior coating of the tank shows minimal corrosion.

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Cocopah East (PWSID No. 0400073)
Storage Tank 1 (Standpipe) (ST001)





The access hatches (manway and instrumentation) have covers that are overlapping and locked and appear to be watertight.

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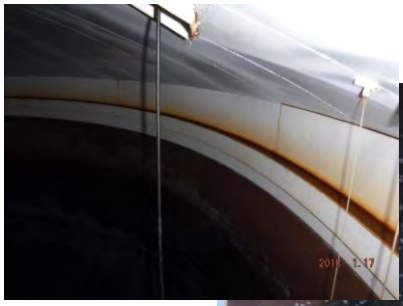
Cocopah East (PWSID No. 0400073)
Storage Tank 1 (Standpipe) (ST001)

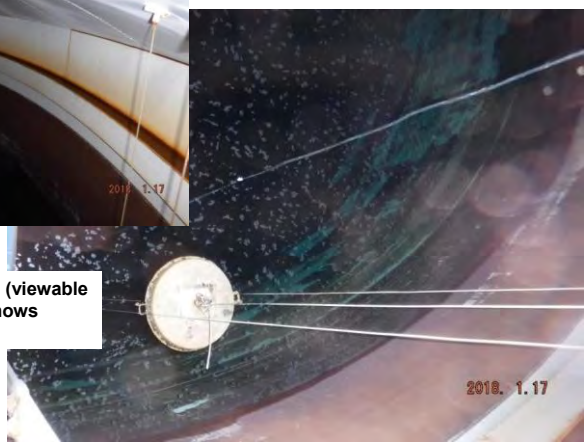




The vent is covered and screened. The screen is shrouded to reduce airborne contaminants from entering the tank. The screen is insect proof.

Cocopah East (PWSID No. 0400073)
Storage Tank 1 (Standpipe) (ST001)





The interior of the tank (viewable from the roof hatch) shows minimal corrosion.

Cocopah East (PWSID No. 0400073)
Storage Tank 1 (Standpipe) (ST001)



The water level in the tank is monitored via a SCADA system that receives a signal from a pressure transducer at the base of the tank. The tank is also equipped with a target (water level indicator). The target was not working. The target cable guide opening is sealed.

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Sleeping Giant Environmental Consultants, LLP

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Cocopah East (PWSID No. 0400073)
Storage Tank 1 (Standpipe) (ST001)



The overflow pipe discharges to the desert, approximately 100 feet from the tank. The overflow pipe is fitted with a flap gate, but the flap gate is partially buried, preventing proper operation. There were no signs of erosion from overflows.



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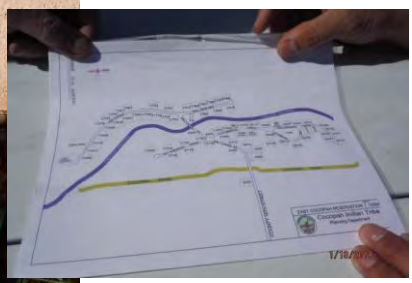
22

Cocopah East (PWSID No. 0400073)
PWS #0400073 Distribution System (DS001)

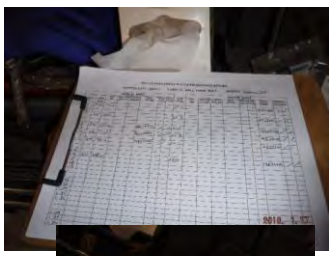


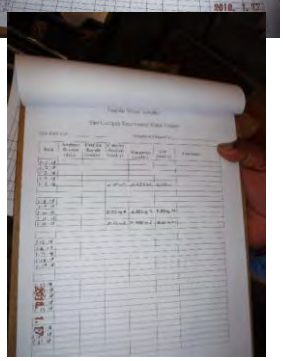
The distribution system pressure and free chlorine residuals measured during the survey are listed in the table below.

Location	Free Chlorine Residual (mg/L)	Pressure (psi)
EP001 at Treatment Plant Building	0.61	
17847 Ballpark Way	0.56	40



Cocopah East (PWSID No. 0400073)
Operational Logs and Test Kits





The PWD has no comprehensive operations and maintenance (O&M) manual for the water system. The PWS staff maintains some operation logs at the treatment plant.

The operators monitor the free available chlorine residual leaving the filters and do periodic Fe and Mn tests.



Appendix F – Documentation of Plant Condition

Piping Deterioration



Figure 1 Corroded Air Scour Piping



Figure 2 Corroded Butterfly Valve

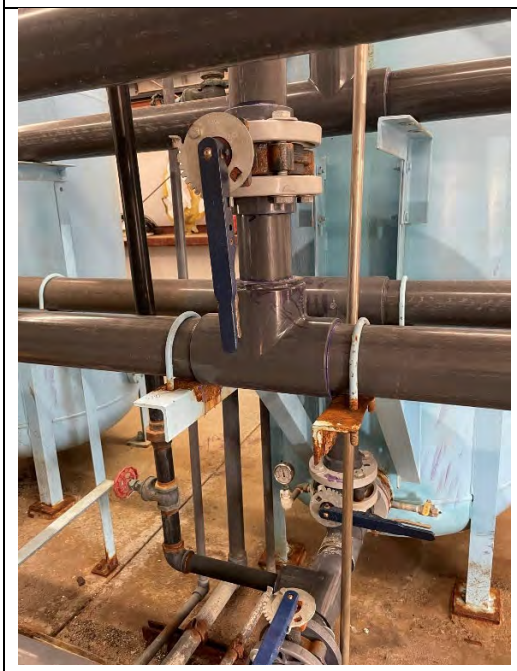


Figure 3 Corroded Pipe Supports



Figure 4 Scale Buildup Around Butterfly Valve

Pressure Vessel Leakage and Corrosion



Figure 5 Corroded Patch on Filter Vessel #1



Figure 6 Leakage from Top of Filter Vessel #1



Figure 7 Broken and Boarded Up Windows

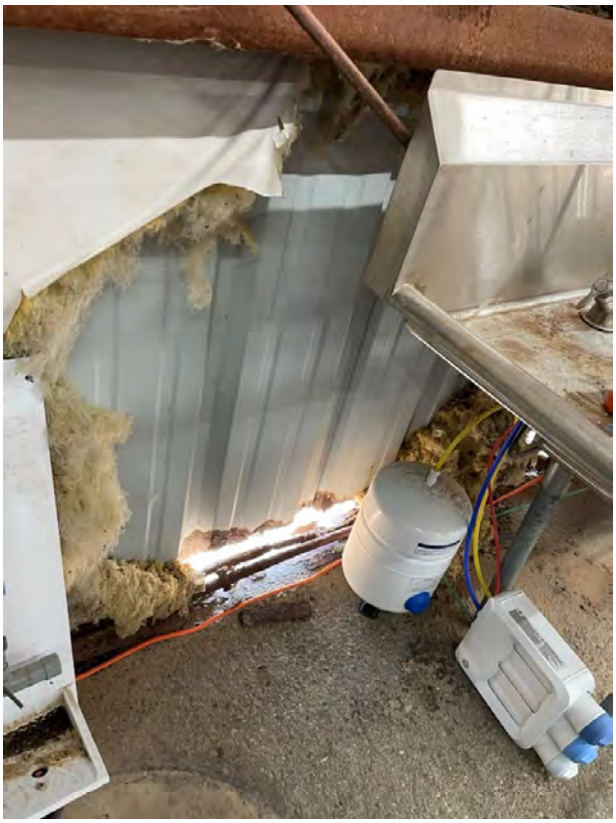


Figure 8 Hole in Building Insulation



Figure 9 Rips in Building Insulation

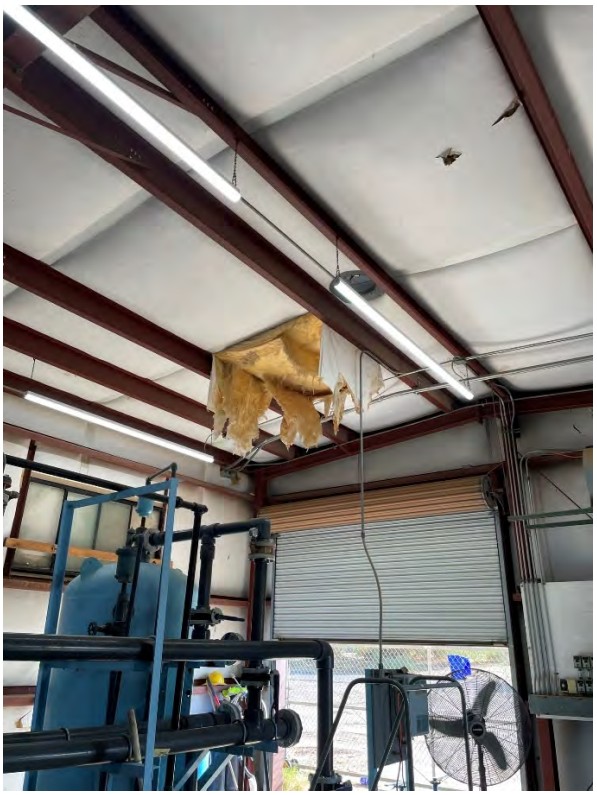


Figure 10 Rip in Ceiling Insulation



Figure 11 Corrosion of Building Exterior



Figure 12 Holes in Building Insulation

Appendix G – Cocopah Public Works O&M Budget

Department: Public Work
Account No: 100 00 300 00
Director: Rudy Alcala

Cocopah Indian Tribe

Budget FY 2023
PERIOD COVERED: 1/1/2023-12/31/2023

Acct#	Description	FY 2023 APPROVED BUDGET
	EXPENDITURES	
6010	Office Supplies	$300
6020	Program Supplies	$300
6040	Maintenance Supplies	$300
6051	Utilities	$284
6054	Gas, Oil, Lubricants	$7,500
6099	Small Tools & Minor Equip.	$500
7020	Contractual/Professional Service	$6,000
7030	Technical Services	$8,500
7040	Repair/Maint: Land & Buldings	$1,200
7041	Repair/Maint: Equipment	$3,000
7042	Repair Maint-Vehic	$4,000
7050	Rent: Equipment	$4,000
7051	Rentals	
7071	Telephone	$3,600
7073	Postage & Freight Out	$200
7090	Other Supplies	$1,000
7091	Licenses & Permits	$800
8010	Travel & Lodging	$1,000
8012	GSA - Vehicle	$7,500
8045	Membership Dues	$500
8050	Registration & Membership	$500
8052	Uniforms	$2,000
9040	Machinery & equipment	$16,700
9043	Computer Purchase	$0
	Total Operating Expenses	$69,684

Appendix H – 2021 Water Sampling Results

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

Laboratory Job ID: 550-162895-1
Client Project/Site: Cocopah East Reservation

For:
Fresh Terra Services
1929 South Arizona Ave
Yuma, Arizona 85365

Attn: Felipe Ozuna



Authorized for release by:
5/6/2021 11:49:48 AM

Ken Baker, Project Manager II
(602)659-7624
Ken.Baker@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Definitions/Glossary

Client: Fresh Terra Services
Project/Site: Cocopah East Reservation

Job ID: 550-162895-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Fresh Terra Services
Project/Site: Cocopah East Reservation

Job ID: 550-162895-1

Job ID: 550-162895-1

Laboratory: Eurofins TestAmerica, Phoenix

Narrative

Job Narrative
550-162895-1

Comments
No additional comments.

Receipt
The samples were received on 4/30/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Fresh Terra Services
Project/Site: Cocopah East Reservation

Job ID: 550-162895-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
550-162895-1	EP001	Drinking Water	04/28/21 10:30	04/30/21 10:00	
550-162895-2	GW002	Drinking Water	04/28/21 10:30	04/30/21 10:00	

Client Sample Results

Client: Fresh Terra Services
Project/Site: Cocopah East Reservation

Job ID: 550-162895-1

Client Sample ID: EP001

Date Collected: 04/28/21 10:30
Date Received: 04/30/21 10:00

Lab Sample ID: 550-162895-1

Matrix: Drinking Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.10		mg/L		05/03/21 09:51	05/05/21 00:20	1
Manganese	**0.057**		0.010		mg/L		05/03/21 09:51	05/05/21 00:20	1

Client Sample ID: GW002

Date Collected: 04/28/21 10:30
Date Received: 04/30/21 10:00

Lab Sample ID: 550-162895-2

Matrix: Drinking Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.17**		0.10		mg/L		05/03/21 09:51	05/05/21 00:24	1
Manganese	**0.31**		0.010		mg/L		05/03/21 09:51	05/05/21 00:24	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 550-241187/1-A
Matrix: Water
Analysis Batch: 241408

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 241187

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.10		mg/L		05/03/21 09:51	05/04/21 23:42	1
Manganese	ND		0.010		mg/L		05/03/21 09:51	05/04/21 23:42	1

Lab Sample ID: LCS 550-241187/5-A
Matrix: Water
Analysis Batch: 241408

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 241187

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Iron			1.00	0.855		mg/L		86	85 - 115		
Manganese			1.00	0.874		mg/L		87	85 - 115		

Lab Sample ID: LCSD 550-241187/6-A
Matrix: Water
Analysis Batch: 241408

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 241187

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron			1.00	0.862		mg/L		86	85 - 115	1	20
Manganese			1.00	0.864		mg/L		86	85 - 115	1	20

Lab Sample ID: 550-162894-A-1-A MS
Matrix: Water
Analysis Batch: 241408

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 241187

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Iron	ND		1.00	0.883		mg/L		87	70 - 130		
Manganese	0.79		1.00	1.55		mg/L		76	70 - 130		

Lab Sample ID: 550-162894-A-1-B MSD
Matrix: Water
Analysis Batch: 241408

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 241187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	ND		1.00	0.911		mg/L		90	70 - 130	3	20
Manganese	0.79		1.00	1.68		mg/L		88	70 - 130	8	20

QC Association Summary

Client: Fresh Terra Services
Project/Site: Cocopah East Reservation

Job ID: 550-162895-1

Metals

Prep Batch: 241187

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-162895-1	EP001	Total/NA	Drinking Water	200.7	
550-162895-2	GW002	Total/NA	Drinking Water	200.7	
MB 550-241187/1-A	Method Blank	Total/NA	Water	200.7	
LCS 550-241187/5-A	Lab Control Sample	Total/NA	Water	200.7	
LCSD 550-241187/6-A	Lab Control Sample Dup	Total/NA	Water	200.7	
550-162894-A-1-A MS	Matrix Spike	Total/NA	Water	200.7	
550-162894-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	200.7	

Analysis Batch: 241408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-162895-1	EP001	Total/NA	Drinking Water	200.7 Rev 4.4	241187
550-162895-2	GW002	Total/NA	Drinking Water	200.7 Rev 4.4	241187
MB 550-241187/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	241187
LCS 550-241187/5-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	241187
LCSD 550-241187/6-A	Lab Control Sample Dup	Total/NA	Water	200.7 Rev 4.4	241187
550-162894-A-1-A MS	Matrix Spike	Total/NA	Water	200.7 Rev 4.4	241187
550-162894-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	200.7 Rev 4.4	241187

Lab Chronicle

Client: Fresh Terra Services
Project/Site: Cocopah East Reservation

Job ID: 550-162895-1

Client Sample ID: EP001

Date Collected: 04/28/21 10:30
Date Received: 04/30/21 10:00

Lab Sample ID: 550-162895-1

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			241187	05/03/21 09:51	SGO	TAL PHX
Total/NA	Analysis	200.7 Rev 4.4		1	241408	05/05/21 00:20	MGM	TAL PHX

Client Sample ID: GW002

Date Collected: 04/28/21 10:30
Date Received: 04/30/21 10:00

Lab Sample ID: 550-162895-2

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	200.7			241187	05/03/21 09:51	SGO	TAL PHX
Total/NA	Analysis	200.7 Rev 4.4		1	241408	05/05/21 00:24	MGM	TAL PHX

Laboratory References:

TAL PHX = Eurofins TestAmerica, Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Accreditation/Certification Summary

Client: Fresh Terra Services
Job ID: 550-162895-1
Project/Site: Cocopah East Reservation

Laboratory: Eurofins TestAmerica, Phoenix

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0728	06-08-21

Method Summary

Client: Fresh Terra Services
Project/Site: Cocopah East Reservation

Job ID: 550-162895-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	TAL PHX
200.7	Preparation, Total Metals	EPA	TAL PHX

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL PHX = Eurofins TestAmerica, Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

FRESH TERRA

Produce Safety, Better Planet

1929 S. Arizona Ave, Suite 12 - Yuma, Az 85364
Telephone (928) 257-3601 - Facsimile (928) 328-1754

CHAIN OF CUSTODY FORM

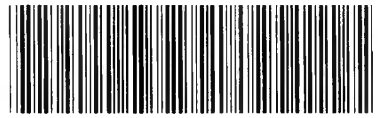
16289

5/6/2021

Customer:	Cocopah Tribe
Address:	14515 S. Veterans Dr.
City, State, Zip:	Somerton, Az 85350
Sampler Name (Print):	Danny Thomas
Sampler Name (Signature):	
Temperature °C	
Total # of Containers:	2
Requires State Form:	☐ Yes
Non-Compliance samples:	☐ Yes

System Name:	Cocopah East
System ID:	0904000073
Owner/Contact Person Name:	Rudy Alcala
Owner/Contact Person Phone:	(928) 627-0616
Owner/Contact Person Fax:	(928) 627-3173
Owner/Contact Person E-mail:	alcalar@cocopah.com

Sample Description:	Sample Matrix	Sampling Date	Sampling Time	Lab. No.	TOTAL COLIFORM (P/A)	FECAL COLIFORM (MF)	E. COLI (MPN)	E. Coli O157:H7	Salmonella	STEC	Iron Manganese		COMMENTS:
1 EP001	DW	4 28 21	1030								✓		Do not report
2 GW002	DW	4-28-21	1020								✓		



Relinquished By:	Date/Time: 4.28.21 1130	Received By:	Date/Time 4 28 21 1130
Relinquished By:	Date/Time: 4 29 21 FedEx	Received By:	Date/Time
Relinquished By:	Date/Time:	Received By:	Date/Time 4302 1

Page 1 Of 2

Login Sample Receipt Checklist

Client: Fresh Terra Services

Job Number: 550-162895-1

Login Number: 162895
List Number: 1
Creator: Maycock, Lisa

List Source: Eurofins TestAmerica, Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix I – Commercial/Non-Commercial Cost Breakdown

Equivalent Dwelling Unit (EDU) Calculation & Commercial/Non-Commercial Cost Breakdown

SDS Project Name: East Cocopah Water Treatment Plant Replacement
SDS Project Number: AZ14999-2001
Type of Service (Water/Sewer/SW): Water
Date Updated: 5/8/2023
Updated By: Ailyn Brizo

EDU Categories (PAO Guidelines 2020)-DO NOT CHANGE			
Unit Type	**EDU**	**Per Unit**	**Notes:**
Single - Family Residence	1	Individual Dwelling Unit	Can be a home, condo, apartment unit.
Food Service Establishment	3	Business	
Hotels/Motels	0.38	Living Unit	
Commercial Facilities	1.2	First 1,000 Sq.Ft	
	0.7	Each Additional 1,000 Sq. Ft	Shall be extrapolated above 1000 Sq. Ft
Schools	1	50 pupils or fewer	Shall be extrapolated above 50 pupils
Automobile Service Station	2	4 pumps or fewer	Shall be extrapolated above 4 pumps
Warehouse (or equivalent)	1	Business	
Other-Water	1	EDU	*based on 150 gal/cap/day (may use actual per cap data if known)
Other-Sewer	1	EDU	*based on 150 gal/cap/day (may use actual per cap data if known)
Other-Solid Waste	1	EDU	*based on 4.51 lbs./cap/day (may use actual per cap data if known)

*Note: EDU calculation based on the Avg. population per home/day. Example for Water: Avg. population/home = 3.5 people per home, flow per 1 EDU = 3.5 x 150 gal/cap/day = 525 Gallons/EDU. Water Bottling Plant uses 20,000 gallons/day of water based on water meter data --> 20,000 gal/525 gal/EDU = 38.09 EDU's.

Project Location:	East Cocopah, AZ
Tribe:	Cocopah Tribe
Avg. Population/Home (may use actual data if known)	4.15

Item #	Project Units	Unit Size	Unit Type for EDU Calculations	Unit	# of Project Units	EDU Per Unit	EDU	Commercial (Yes/No)	Notes/Comments/HITS Info/Etc.
1	Eligible Homes (excluding eligible H1's)	N/A	Single - Family Residence	Individual Dwelling Unit	35	1	35.0	No	All E1 homes in community.
2	Eligible HUD Homes (H1's)	N/A	Single - Family Residence	Individual Dwelling Unit	26	1	26.0	No	HUD homes that are served by the project that are eligible and did not cause the deficiency.
3	Church and Cry House (E2)	3121	Commercial Facilities	First 1,000 Sq.Ft	1	1.2	2.7	No	Incidental tribal building that is eligible. Sq. Footage determined from AutoCAD composite Drawing
				Each Additional 1,000	2.121	0.7			
4	Head Start Program (E2)	20 Students MAX	Commercial Facilities	50 pupils or fewer	1	1	1.0	No	Ineligible non-residential unit. Max student capacity reported by OEHE officer. (HITS #?)
				Shall be extrapolated above 50 pupils	N/A	N/A			

Total EDU's (Rounded)	65	100%
Total Non-Commercial EDU's (Rounded)	65	100%
Total Commercial EDU's (Rounded)	0	0.0%

Data to Enter into SDS Cost Tab		
Total Project Cost (PDP Based)	**Total Non-Commerical Cost** (Based on EDU Cals)	***Total Commerical Cost** (Based on EDU Cals)
$ 5,770,000.00	$ 5,770,000.00	$ -

Appendix F – Well No. 4 Installation Report

WELL INSTALLATION REPORT
EAST COCOPAH RESERVATION
EAST COCOPAH WATER SYSTEM WELL NO. 4
PH21-V99; WA# 12-23
YUMA COUNTY, ARIZONA

PREPARED FOR:

Cocopah Indian Tribe
9803 W. Veterans Place
Somerton, Arizona 85350

PREPARED BY:

Matrix New World Engineering, Land Surveying and Landscape Architecture, PC
3033 North 44 Street, Ste 270
Phoenix, AZ 85018

DATE:

March 26, 2024

MATRIX PROJECT NO.:

22-0672

WELL INSTALLATION REPORT
EAST COCOPAH RESERVATION
EAST COCOPAH WATER SYSTEM WELL NO. 4
PH21-V99; WA# 12-23
YUMA COUNTY, ARIZONA

PREPARED FOR:

Cocopah Indian Tribe
9803 W. Veterans Place
Somerton, Arizona 85350

DATE:

March 26, 2024

March 26, 2024

Dylan Easthouse, RG
Senior Project Hydrogeologist
Matrix New World Engineering

Date



March 26, 2024

Kevin D. Hebert, RG
Senior Project Hydrogeologist
Matrix New World Engineering

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Engineering Progress

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Engineering Progress

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B	Daily Drilling Reports Forms
C	Lithologic Log
D	Geophysical Logs
E	Casing Certifications and Pipe Tally
F	Field Notes – Well Development and Aquifer Testing
G	Laboratory Analytical Report
H	Video Log
I	Final Gyroscopic Directional Survey

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1.0 EXECUTIVE SUMMARY

ADMINISTRATION:

Well Owner:	Cocopah Indian Tribe
Well Legal Location:	C(10-24)12 DCD 32°34'09"; 114°40'19" Yuma County, Arizona
Date Completed:	1/10/2024

WELL PARAMETERS:

Static Water Level (SWL):	42.7 ft bgs (01/26/2024)
Total Depth (Borehole):	310 ft bgs
Casing Materials:	Blank Casing: 8.625-inch (OD) Type 304 SS, +2.0 to 169 ft bgs and 289 to 299 ft bgs with bottom bullnose cap Perforated Casing: 8.7-inch (OD) wire wrap screen Type 304 SS, 0.100-inch slot, 169 to 289 ft bgs
Filter Pack Material:	3/8 x 3/16 Tacna
Filter Pack Interval:	146 – 310

PUMPING TEST RESULTS (PUMPING WELL):

Discharge Test Pumping Rate:	150 gpm	12-hour average
Specific Capacity	170.2 gpm/ft	at end of 12-hour Constant-rate Discharge Test

Transmissivity values were not calculated because the aquifer was not sufficiently stressed during completion of the Constant Rate Discharge test.

PUMPING GROUNDWATER QUALITY:

New Source Water Quality:	Arsenic:	0.0072 mg/L
(01/22/24)	Fluoride:	0.45 mg/L
	Nitrite (as N):	0.16 mg/L
	Total Dissolved Solids:	1300 mg/L
	Manganese	0.25
	Iron	0.19

2.0 INTRODUCTION

Matrix New World Engineering, Land Surveying and Landscape Architecture, PC (Matrix) was contracted by the Cocopah Indian Tribe (Tribe) to provide well siting, design and contractor oversight services for East Cocopah Water System (ECWS) Well No. 4 The work was completed in consultation with representatives of the Tribe and Indian Health Services (IHS). This report describes the procedures and activities associated with drilling, installation, development, and testing of ECWS Well No. 4.

The installed location of ECWS Well No. 4 is in the southwest corner of the Water Treatment Plant near the intersection of Salt Cedar and Park Way in the SE ¼ of the SW ¼ of the SE ¼ of Section 12 Township 10 South, Range 24 West, [C(10-24) 12 DCD], of the Gila and Salt River Baseline and Meridian (**Figure 1**). A permit from the Arizona Department of Water Resources (ADWR) was not required to be obtained because ECWS Well No. 4 is located on the East Cocopah Reservation

3.0 DRILLING AND WELL INSTALLATION

Surface casing installation, borehole drilling and downhole testing, borehole reaming, well installation, development and aquifer testing were conducted in accordance with the Technical Specifications prepared by Matrix, dated March 30, 2023. Following a formal bid process and contractor evaluation, the Owner contracted KP Ventures Well Drilling & Pump Company, LLC (KP Ventures), ADWR Drillers License No. 562 to drill and install ECWS Well No. 4.

In general, drilling and well installation operations were performed on a 12-hour per day, 7-day per week basis to ensure consistency of the drilling fluids and borehole stability. Matrix personnel documented the significant and/or critical field operations presented in this report. A photo log of drilling and well installation activities is presented in **Appendix A**. Copies of the daily drilling report forms completed by KP Ventures are presented in **Appendix B**.

3.1 SURFACE CASING

KP Ventures drilled a 39-foot deep, 24-inch diameter borehole at the ECWS Well No. 4 location on November 17, 2023. A factory new, 0.375-inch walled, 40-foot long, 18-inch outside diameter (OD) low carbon steel (LCS) surface casing manufactured in accordance with ASTM International (ASTM) Specification A53 Grade B was installed in the borehole. The casing was checked for plumbness and extended 2-foot above ground surface. The casing was cemented in place from total depth to within a few feet of land surface with a neat cement grout on November 19, 2023.

3.2 BOREHOLE DRILLING

On November 29, 2023, borehole drilling commenced using the flooded reverse circulation drilling method. A 16-inch diameter tricone bit was used to advance the borehole to a total depth of 310 feet below ground surface (ft bgs), which was completed on December 3, 2023. Drilling mud weights, solids content, and mud viscosity were frequently checked throughout the borehole drilling process in conformance with the specifications.

Composite grab samples of drilled cuttings were collected by KP Ventures at 10-foot intervals from ground surface to the total depth of the borehole. Representative samples from each interval were laid out sequentially for inspection at the well site with a representative portion of the sample placed in labeled sample bags and in sequentially numbered plastic chip trays.

3.3 LITHOLOGIC LOG

A detailed lithologic log of the ECWS Well No. 4 drill cuttings was prepared by a Matrix Arizona-Registered Geologist and is presented in **Appendix C**. Drill cuttings were described in accordance with ASTM D-2488 using the Unified Soil Classification System (USCS).

In general, the sediments encountered from ground surface to 160 ft bgs in ECWS Well No. 4 consisted of predominantly fine-grained sand with minor clay lenses. Below 160 ft bgs, the sediments consisted of predominantly coarse sand and gravel. The lithologic log (**Appendix C**) is shown graphically on **Figures 2, 3, and 4**.

3.4 DOWNHOLE GEOPHYSICAL SURVEY

Following completion of the borehole on December 4, 2023, GeoLog, LLC (GeoLog) conducted a series of downhole geophysical surveys to provide additional stratigraphic detail. The geophysical logs included: single-point; 16-inch and 64-inch normal resistivity; lateral and single point resistivity; natural gamma; spontaneous potential; dual guard; sonic; caliper; deviation, and temperature. The geophysical logs are presented in **Appendix D.**

3.4.1 Electrical Resistivity Logs

Normal Resistivity Log

Electric resistivity logs (E-logs) measure the resistivity of the saturated geologic formations in the open borehole. These logs include the normal devices (16- and 64-inches), lateral log, single point, and the focused logs (dual guard). The 16-inch (short) and 64-inch (long)-normal devices are quantitative logs that measure apparent resistivities of the geologic formation immediately opposite the borehole wall. The short normal measures the apparent resistivity of a smaller area than the long normal and usually extends into the portion of the formation that has been invaded by the drilling fluids. The short-normal log provides good vertical detail and is used for gathering information about tops and bottoms of geologic units as well as apparent resistivities of the different units. The long-normal log penetrates deeper into the formation and typically extends beyond the zone invaded by the drilling fluids. The long-normal log measures the apparent resistivity of a larger section of aquifer than the short normal.

Based on review of the short- and long-normal electric logs for ECWS Well No.4, alternative layers of course grained and finer grained sediment is present in the upper 160 feet of the borehole. From approximately 160 ft bgs to the total depth of the borehole, higher OHM readings (MU) of the E-logs

indicate the presence of coarser grained sediment. The results of the E-logs are consistent with lithologies described in the lithologic log included in **Appendix C**.

Single Point Log

The single point resistivity log is a shallow penetrating log that provides apparent resistivity measurements. The small electrode spacing allows the single point log to pick up thinner beds and fractures within the geologic formation. However, due to its shallow penetration, the measurements are typically influenced by drilling fluids, especially in larger-diameter boreholes. Results of the single point log are usually qualitative and used in conjunction with the other E-logs to pick tops and bottoms of thin bedding planes within the formation. The single point resistivity log for ECWS Well No. 4 did not show any significant anomalies (**Figure 2**).

Dual Guard Log

The dual guard log is a deep penetrating resistivity log that provides good vertical resolution to determine tops and bottoms of geologic units even where the drilling fluid is very conductive, and the formation is highly resistive. This log is also useful to locate thin layers within the aquifer. The dual guard log for ECWS Well No. 4 is consistent with the results of the other E-logs (**Figure 2**).

Spontaneous Potential Log

The spontaneous potential (SP) log is primarily used for geologic correlation, estimating bed thicknesses, and separating non-porous and porous beds. There are no significant anomalies in the ECWS Well No. 4 SP log (**Figure 2**).

3.4.2 Caliper Log

The caliper log records the diameter of the borehole. Results of the caliper log are typically used to determine areas of washouts, voids, bridges, swelling clays, or fractures in rock aquifers. Review of the caliper log for ECWS Well No. 4 shows several areas of washouts in the borehole below 150 ft bgs that coincides with coarse grained sediment observed in the borehole cuttings. Generally, borehole diameter was measured between 16 and 17 inches. The caliper log (**Figure 3**) shows the base of the surface casing is at approximately 38 ft bgs and has a nominal diameter of 18 inches.

3.4.3 Natural Gamma Log

The natural gamma log measures change in the emission of natural gamma radiation from the formation. This log can be run in saturated or unsaturated boreholes, and also in cased wells. The natural gamma

log may be used to distinguish higher clay content in formations, fractured zones, or zones having relatively high concentrations of radioactive elements such as uranium and potassium-40. In alluvial aquifers, higher gamma-ray counts are typically indicative of an increase in the clay content of the formation. High gamma-ray counts are also characteristic of formations rich in feldspar minerals such as granitic or arkosic sands.

The natural gamma log for ECWS Well No.4 presented on **Figure 3** shows gamma-ray counts to be relatively consistent throughout the total depth of the borehole ranging from 40 to 80 counts per second (cps) from 40 ft bgs to the total depth.

3.4.4 Sonic Log

The sonic (acoustic) log measures density of the materials in the borehole. It is used to determine where the formation becomes saturated, estimate porosity of the formation, and identify the location of fractures within a rock aquifer. In an alluvial aquifer, the density measurements will typically differ between clay, sand, gravel, and cobbles.

Very little information of value was obtained based on review of the sonic data and a determination of where the formation becomes saturated was not possible. The poor return of the sonic signal may have been due to higher viscosity in the drilling fluid. The sonic log is presented in **Figure 3**.

3.4.5 Deviation Log

A magnetic deviation survey records plumbness and alignment of the borehole. This log is typically conducted in uncased boreholes to determine if doglegs are present, the true vertical depth, and the direction and dip of the borehole. Review of the deviation log for ECWS Well No. 4 shows the borehole to be straight and plumb. The bottom of the borehole is approximately 0.52 feet northeast of the wellhead (**Appendix D**).

3.4.6 Fluid Temperature and Resistivity Log

The fluid logs consist of the fluid temperature and fluid resistivity logs. As named, they measure the fluid temperature and fluid resistivity (inverse of conductivity) of the fluid in the borehole. ECWS Well No.4 was drilled using the flooded reverse circulation method. A water/mud/polymer drilling fluid was used to create a mud cake on the borehole wall. Fluid temperature started at approximately 84 degrees Fahrenheit (°F) near the top of the borehole and decreased to approximately 77 °F at the bottom of the borehole below 300 ft bgs (**Figure 3**). These results are typical of a well drilled using the flooded reverse circulation drilling method.

3.5 Final Well Design

Based on review of the geophysical and lithologic logs, and in consultation with the Tribe and IHS, it was determined the well be constructed consistent with the preliminary design presented in the Technical Specifications. A Final Well Design prepared by Matrix was submitted to KP Ventures on December 6, 2023.

3.6 BOREHOLE CLEANOUT

On December 6, 2023, KP Ventures filled the borehole with clean formation stabilizer (pea gravel) to maintain borehole stability while waiting for delivery of well casing and annular materials. KP Ventures commenced removal of the pea gravel on December 16, 2023 and completed borehole cleanout on December 17, 2023.

3.7 WELL INSTALLATION

The well casing, screen, and annular materials for ECWS Well No. 4 were installed on December 18-20, 2023. Well installation activities were completed by KP Ventures and documented by Matrix. Descriptions of the casing and annular materials installation activities are presented in the following sections. Copies of the casing certifications, cement mix tickets and pipe tally sheets for well casing are presented in **Appendix E**.

3.7.1 Casing Installation

From the bottom of the borehole to ground surface, the casing installation was as follows:

- Blank casing comprised of 8.625-inch outside diameter Type 304L SS, 0.375-inch wall thickness with a bullnose bottom plug from 289 to 299 ft bgs
- Well screen comprised of 8.7-inch outside diameter wire wrap Type 304L SS with 0.375-inch wall thickness and 0.100-inch slot from 169 to 289 ft bgs
- Blank casing comprised of 8.625-inch outside diameter Type 304L SS, 0.375-inch wall thickness from 169 to +2 ft bgs

Each section of casing was welded in accordance with the Technical Specifications.

3.7.2 Annular Materials Installation

Prior to emplacement of annular materials between the well casing and borehole wall, a swab tool was installed at the bottom of the well and the viscosity of the drilling fluids in the borehole was reduced. The method of annular material installation was consistent with the Technical Specifications, which required

annular materials be placed through a tremie pipe while swabbing the well intermittently to improve settling and prevent bridging of the filter pack.

Commencing from the borehole bottom, the annular material installation included:

- Filter pack (3/8 x 3/16mesh Tacna gravel) and disinfectant (sodium hypochlorite) installed using the pump and tremie method from 310 to 146 ft bgs.
- bentonite chips installed on top of the filter pack from 146 to 141 ft bgs and allowed to hydrate prior to placement of the cement seal.
- Neat cement was installed from 141 ft bgs to near ground level.

The As-built Well Diagram for ECWS Well No. 4 is presented on **Figure 4**.

3.8 WELL DEVELOPMENT

Development of ECWS Well No. 4 consisted of swab and airlift rig development, installation of clay dispersant chemicals, and pump development.

3.8.1 Rig Development

Rig development of ECWS Well No. 4 commenced on December 29, 2023 with an initial downward pass of the swab tool to remove the heavy drilling fluids from the borehole. The swab tool consisted of a 10-foot long perforated, double-flanged joint of 6-inch OD steel tubing with two rubber discs extending out to approximately 8-inches.

On December 30, 2023, a chemical dispersant (Aqua-Clear® Phosphate-Free Dispersant (PFD)) was introduced into the well water column in accordance with the manufacturer's specifications. The Aqua-Clear® PFD was distributed throughout the perforated interval of the well casing and annulus using the reciprocating motion of the swab tool, from the bottom of the well screen to the top of the screened interval. The dispersant is designed to reduce drilling mud viscosity, thereby further facilitating the process of removing mud and sediment from the production zones during swab and air lift rig development.

KP Ventures conducted a second development pass on December 31, 2023. On January 2, 2024, KP Ventures began a final development pass from the top of the screened interval to the bottom of the well perforations. During development, Matrix monitored the sand content using an Imhoff cone, the discharge rate of the airlift, and water quality parameters of temperature, pH, specific conductivity, and TDS. Swab and airlift development was completed on January 2, 2024. Copies of the field notes are presented in **Appendix F**.

3.8.2 Pump Development

A temporary test pump was installed by KP Ventures in ECWS Well No. 4 on January 15, 2024. The pump intake was set at a depth of 271 ft bgs. Flow rates during pump development were measured with a digital flowmeter. Pump development consisted of periodically stopping pumping and allowing the column of water in the column pipe to surge down the well and out into the formation through the well screen. The pump and surge development cycles consisted of 45 minutes of pumping followed by 15-minutes of surging.

During pumping, water levels and field water quality parameters of temperature, pH, specific conductance, TDS, color, and sand content (Imhoff cone) were periodically measured. Pump development was conducted from January 16 - 18, 2024 and was concluded after pumping and surging for a total of approximately 28 hours. Copies of the field notes are presented in **Appendix F**.

4.0 AQUIFER TESTING

Production capacity of ECWS Well No. 4 was evaluated based on the results of a constant rate test and water level recovery test. A step rate test was not performed since the well experienced only minimal drawdown at the highest flow rate of the pump equipment during pump development.

KP Ventures installed all ancillary equipment and operated the test pump during the aquifer testing. Flow rates were measured with a digital flowmeter. During testing, Matrix personnel periodically measured depths-to-water using an electric water level sounding tape. Copies of the field notes are presented in **Appendix F**.

4.1 CONSTANT-RATE DISCHARGE AQUIFER TEST

A 12-hour constant rate test was conducted on ECWS Well No. 4 from 7:30 AM to 7:30 PM on January 22, 2024. The pumping levels, drawdowns, and pumping rates recorded during the constant-rate discharge test are presented in **Appendix F**.

The maximum recorded drawdown in the pumping well during the constant-rate discharge test at 160 gpm was 1.10 feet (**Appendix F**), equivalent to a pumping water level of 43.37 ft bgs.

Graphs of drawdown versus time and specific drawdown versus time for ECWS Well No. 4 are presented on **Figure 5** and **Figure 6**, respectively. The drawdown versus time and specific drawdown versus time plots show a straight-line curve throughout much of the constant-rate discharge test.

Transmissivity values were not calculated for drawdown versus time or specific drawdown versus time because the aquifer was not sufficiently stressed during completion of the Constant Rate Discharge test. The results of any calculations would show elevated values that would not be representative of the transmissivity of the local aquifer.

4.2 WATER LEVEL RECOVERY TEST

A water level recovery test was conducted following completion of the constant-rate discharge test. Recovery was 100% complete 7 minutes after cessation of pumping (**Appendix F**). The recovery data of residual drawdown versus ratio t/t' are plotted on **Figure 7**.

4.3 GROUNDWATER QUALITY SAMPLING

A New Source water quality sample was collected from Cocopah Well No. 4 on January 22, 2024 during the constant-rate discharge test approximately 4 hours after pumping commenced and submitted for

laboratory analysis for Arizona Department of Environmental Quality (ADEQ) New Source Approval. Matrix personnel collected the water sample while the well was pumping at a rate of approximately 160 gpm. The New Source Sample was submitted to Eurofins Environmental Testing America in Phoenix, Arizona. A copy of the laboratory analytical report is presented in **Appendix G**. Results of selected analytes are summarized in **Chart 1**.

Chart 1 New Source Groundwater Quality Results – Constant-rate Test

Analyte (Total)	Sample Result (mg/L)	Primary MCL (mg/L)	Secondary MCL (mg/L)
Arsenic	0.0072	0.010	NE
Fluoride	0.45	4.0	{2.0}
Nitrite (as nitrogen [N])	0.16	1.0	NE
Total Dissolved Solids (TDS)	{1300}	NE	{500}
Manganese	0.25	NE	0.050
Iron	0.19	NE	0.3

Notes: mg/L = All results are reported in milligrams per liter for unfiltered samples.
Bold = Analytical result is greater than or equal to the Maximum Contaminant Level (MCL).
{ } = Analytical result is greater than or equal to Secondary Drinking Water Regulation.
NE = MCL or Secondary Drinking Water Regulation is not established for this constituent.

Results presented in **Chart 1** indicate the concentrations of arsenic (0.0072 mg/L), nitrate (0.16 mg/L, and fluoride (0.45 mg/L) are below their respective MCLs. The concentration of TDS (1300 mg/L) is above the secondary drinking water standards of 500 mg/L.

5.0 FINAL WELL COMPLETION ACTIVITIES

5.1 DOWNHOLE VIDEO SURVEY

A downhole color video survey of ECWS Well No. 4 was performed by GeoLog on January 26, 2024. The location of the top of the wire-wrap well screen observed in the video is approximately 170 ft bgs. The bottom of the well screen could not be observed due to the presence of soft fill at 272 ft bgs. The variances in depth between the As-Built Well Diagram (**Figure 4**) and the well video are attributed to line stretch and differences in datum. A well video summary log is presented in **Appendix H**. Review of the well video shows that the well casing and screen appear to be in good condition with no visible defects.

5.2 GYROSCOPIC DIRECTIONAL SURVEY

A gyroscopic directional survey of ECWS Well No. 4 was conducted by GeoLog on January 26, 2024 (**Appendix I**). A closure distance of 1.13 feet was measured at the vertical depth of 265 feet which was the maximum measurable depth due to the presence of fill in the casing. At 265 ft bgs, the well casing is approximately 0.91 feet west relative to the top of the well. These survey results are within the American Water Works Association (AWWA) A100 standard for plumbness. The AWWA A100 standard allows approximately one-half of the ID of the well of drift for every 100 feet of vertical depth, which is six inches (0.5 feet) per 100 feet. Cocopah Well No. 4 is acceptably straight and plumb to the logged depth of 265 ft bgs.

6.0 REFERENCES

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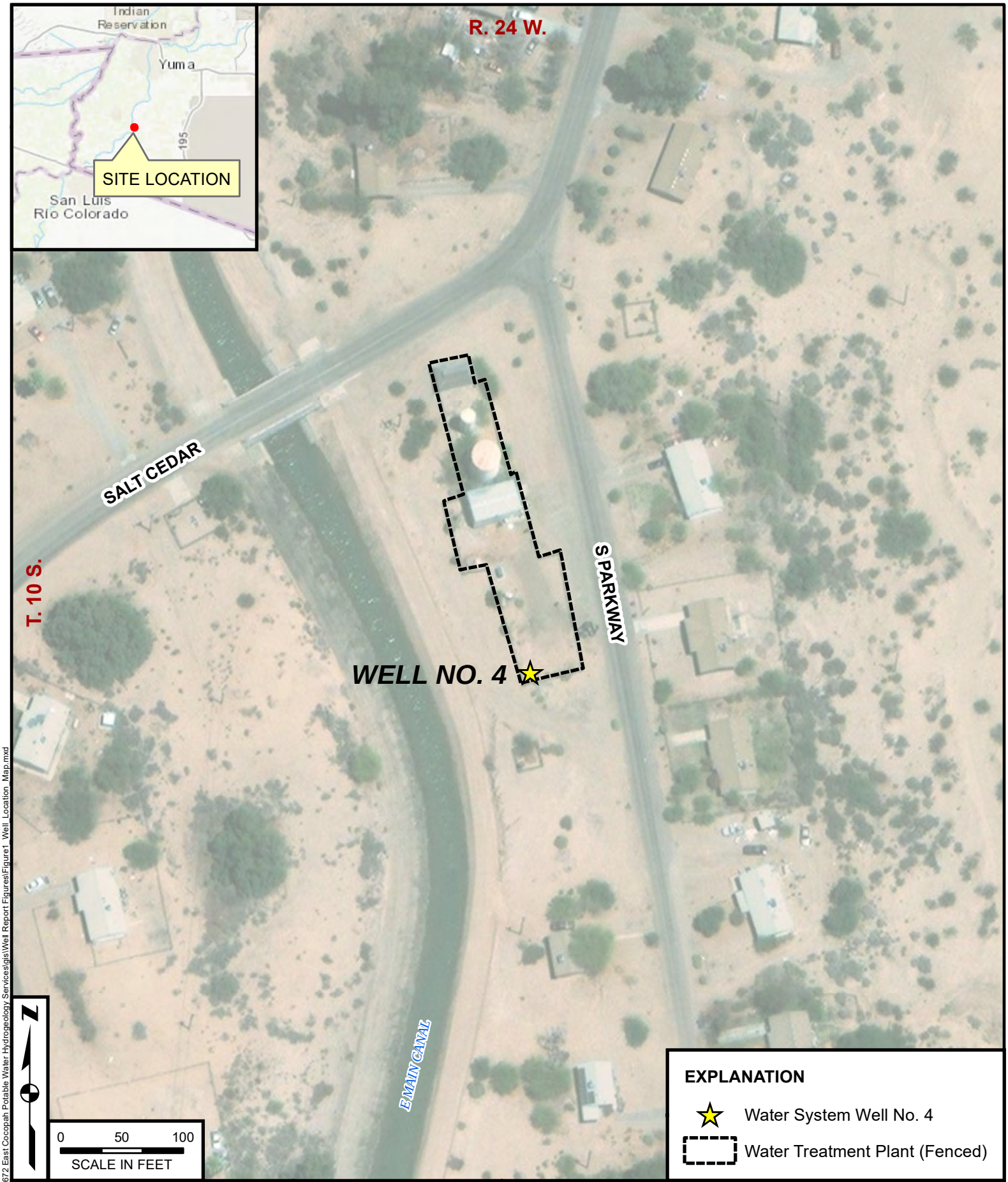
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FIGURES



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COCOPAH INDIAN RESERVATION
COCOPAH WATER SYSTEM
SOMERTON
YUMA COUNTY, ARIZONA

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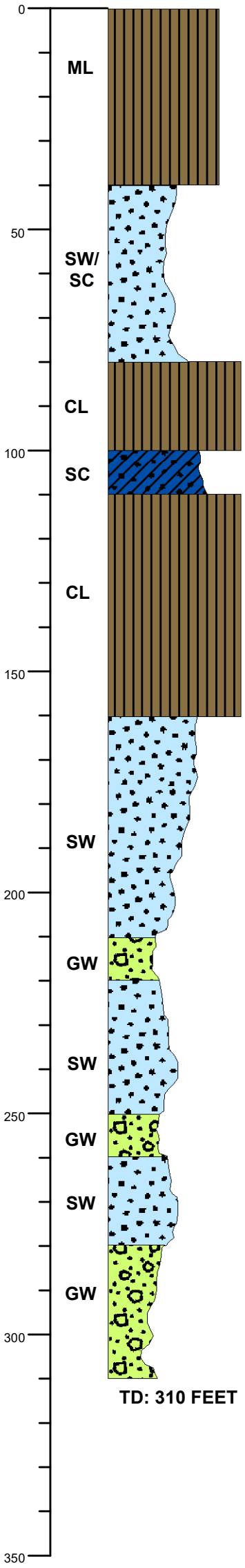
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Phoenix, AZ 85018
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Fax: 602-955.7585
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WATER SYSTEM WELL NO. 4
WELL LOCATION MAP

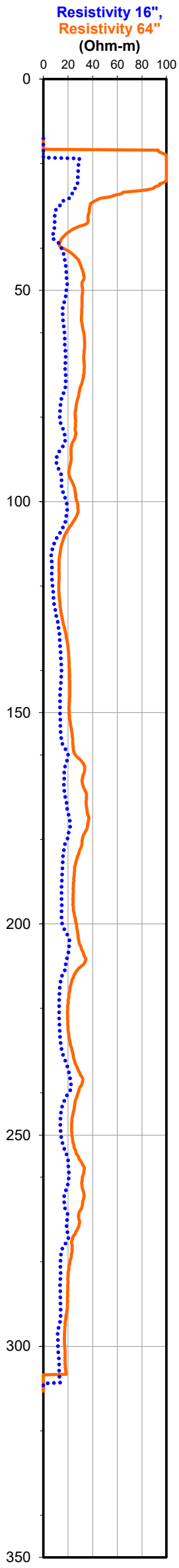
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DATE: 03-04-2024	DATE: 03-04-2024	

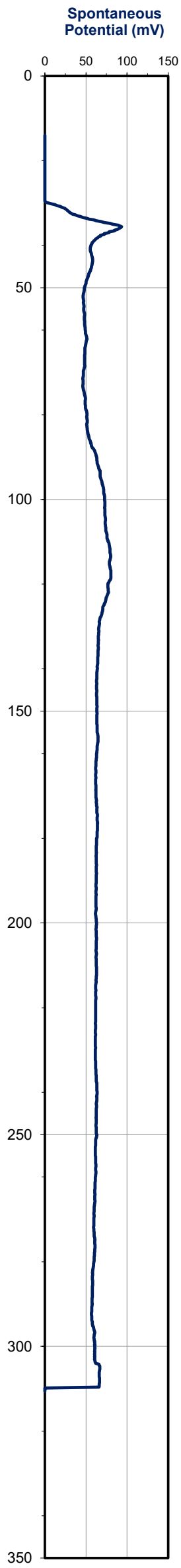
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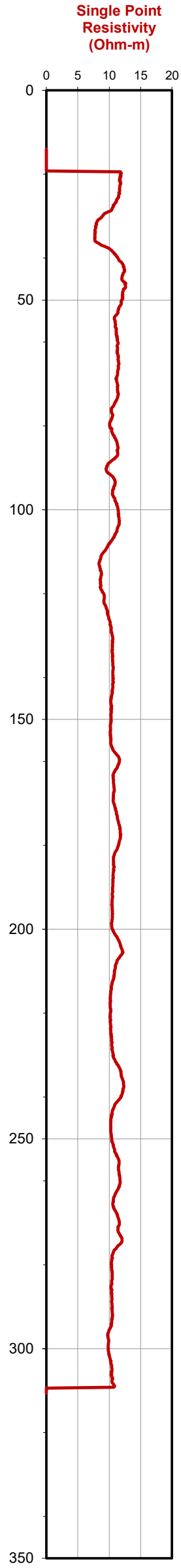
LITHOLOGY
WATER SYSTEM WELL NO. 4

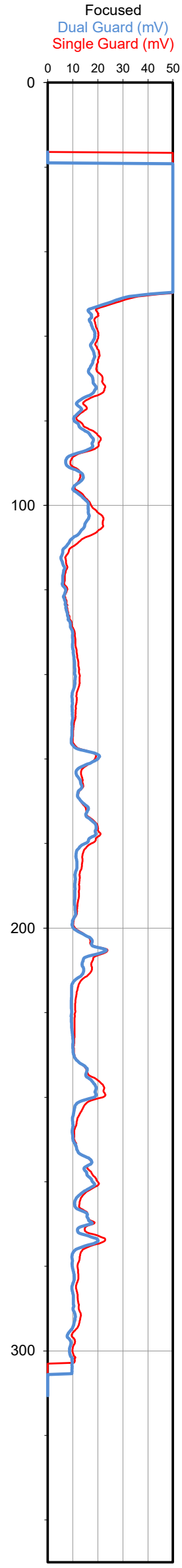


DEPTH (feet below ground surface)









Vertical Scale
1 inch = 30 feet

NOTES:
TD - Total Depth
mV - millivolts
Ohm-m - ohm-meter

UNIFIED SOIL CLASSIFICATIONS SYSTEM (USCS) GENERAL DESCRIPTIONS

SILT / CLAY DOMINANT DEPOSITS		SAND DOMINANT DEPOSITS		GRAVEL DOMINANT DEPOSITS	
CH/MH HIGH PLASTICITY CLAY		SC CLAYEY SAND (≥ 15% FINES)	SP SAND, POORLY GRADED (≤ 5% FINES)	GC CLAYEY GRAVEL (≥ 15% FINES)	GP GRAVEL, POORLY GRADED (≤ 5% FINES)
CL/ML SILT / CLAY WITH SAND		SM SILTY SAND (≥ 15% FINES)	SW SAND, WELL GRADED (≤ 5% FINES)	GM SILTY GRAVEL (≥ 15% FINES)	GW GRAVEL, WELL GRADED (≤ 5% FINES)

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March 1, 2024 Project 22-0672

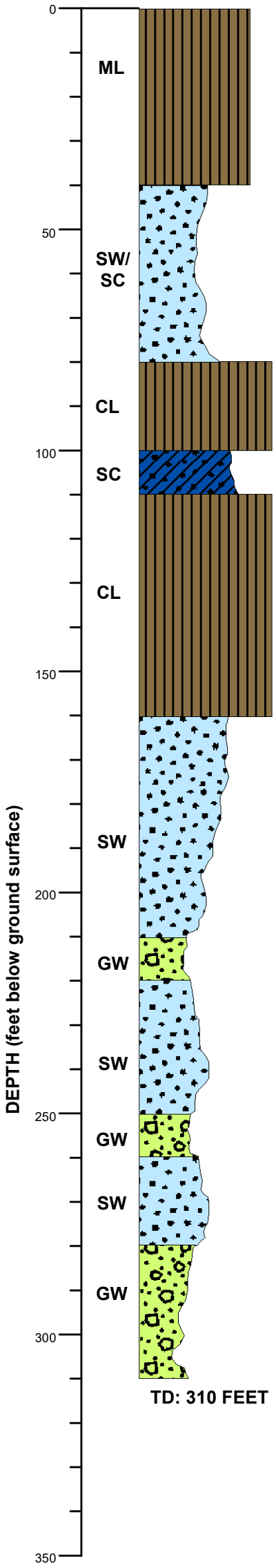
RESISTIVITY, SPONTANEOUS POTENTIAL, SINGLE POINT, FOCUSED GUARD GEOPHYSICAL LOGS WATER SYSTEM WELL NO.4

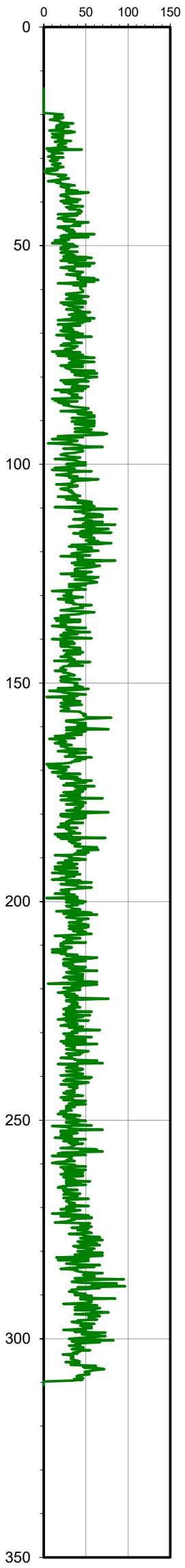
Cocopah Indian Tribe, Yuma County, Arizona

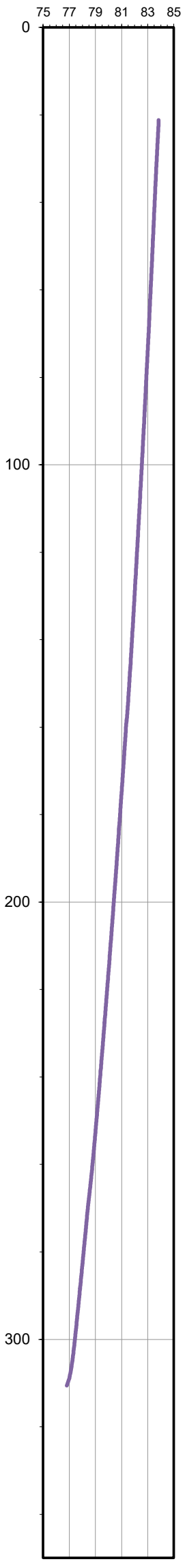
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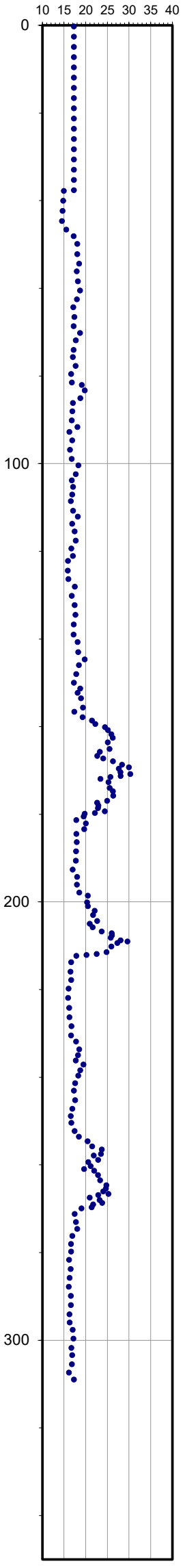
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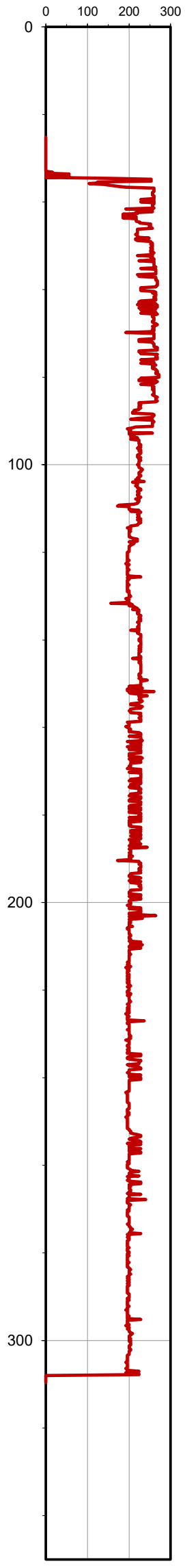
LITHOLOGY
WATER SYSTEM WELL NO. 4











Vertical Scale
1 inch = 30 feet

NOTES:
TD - Total Depth
F - Farenheit
in - inches
USEC/FT - microseconds per foot

UNIFIED SOIL CLASSIFICATIONS SYSTEM (USCS) GENERAL DESCRIPTIONS

SILT / CLAY DOMINANT DEPOSITS		SAND DOMINANT DEPOSITS		GRAVEL DOMINANT DEPOSITS	
CH/MH	HIGH PLASTICITY CLAY	SC — CLAYEY SAND (≥ 15% FINES)	SP — SAND, POORLY GRADED (≤ 5% FINES)	GC — CLAYEY GRAVEL (≥ 15% FINES)	GP — GRAVEL, POORLY GRADED (≤ 5% FINES)
CL/ML	SILT / CLAY WITH SAND	SM — SILTY SAND (≥ 15% FINES)	SW — SAND, WELL GRADED (≤ 5% FINES)	GM — SILTY GRAVEL (≥ 15% FINES)	GW — GRAVEL, WELL GRADED (≤ 5% FINES)

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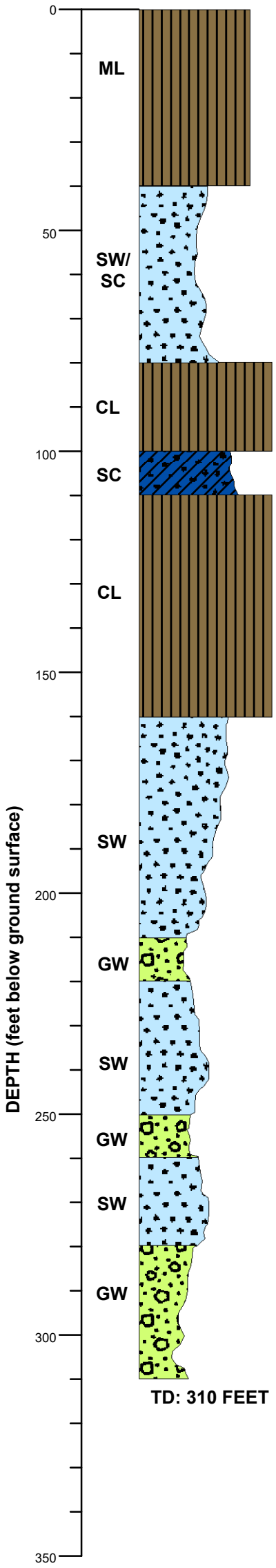
NATURAL GAMMA, SONIC, TEMPERATURE, CALIPER GEOPHYSICAL LOGS WATER SYSTEM WELL NO.4

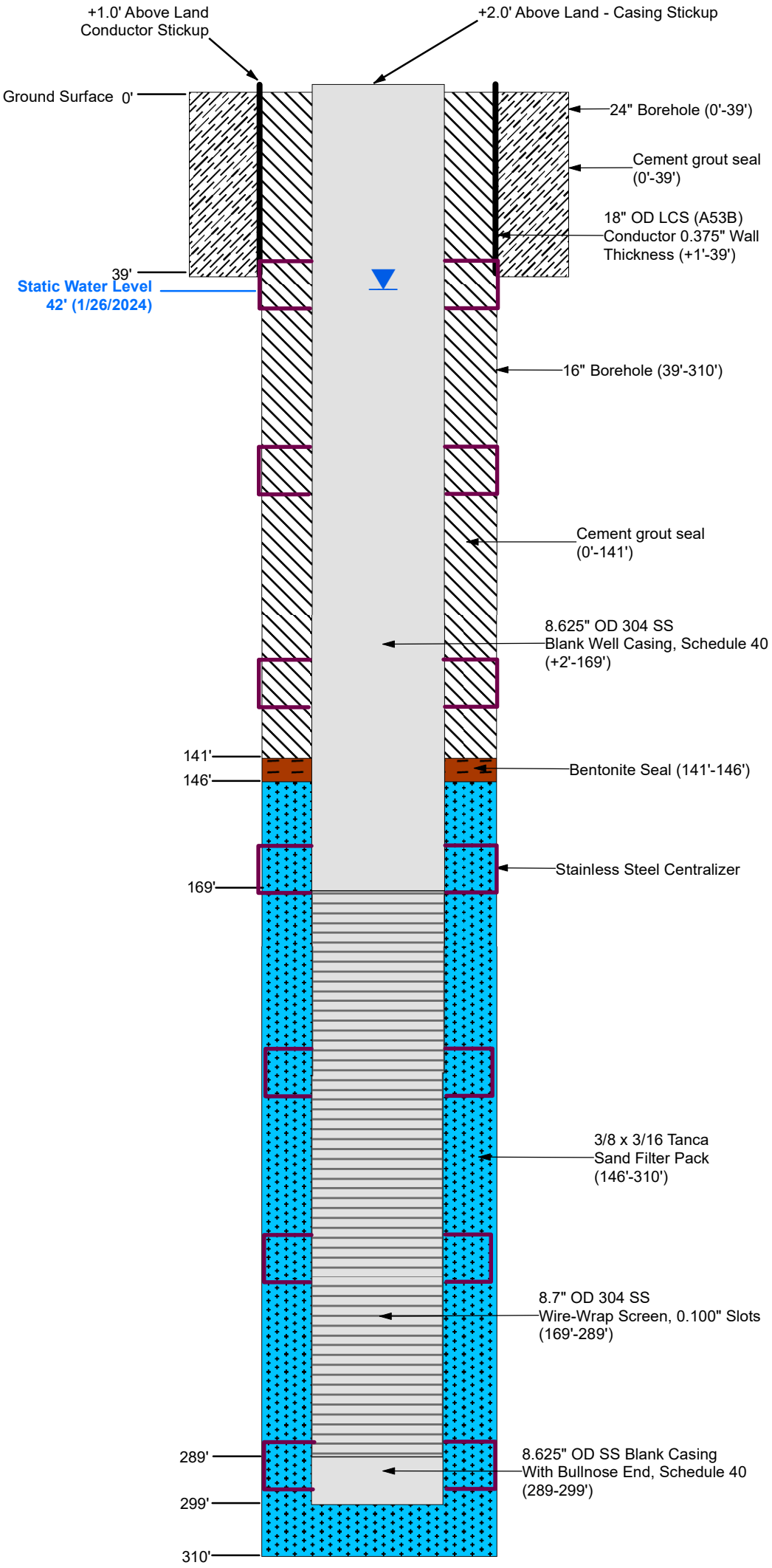
Cocopah Indian Tribe, Yuma County, Arizona

FIGURE NUMBER: 3

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LITHOLOGY
WATER SYSTEM WELL NO. 4





Vertical Scale
1 inch = 30feet

Notes:
Lithology derived from borehole cuttings

TD - Total Depth
OD - Outside Diameter
ID - Inside Diameter
SS - 304L Stainless Steel
LCS - Low Carbon Steel
Sch 40 - Schedule 40
Centralizers at 80 ft intervals

UNIFIED SOIL CLASSIFICATIONS SYSTEM (USCS) GENERAL DESCRIPTIONS

SILT / CLAY DOMINANT DEPOSITS		SAND DOMINANT DEPOSITS		GRAVEL DOMINANT DEPOSITS	
CH/MH HIGH PLASTICITY CLAY		SC CLAYEY SAND (≥ 15% FINES)	SP SAND, POORLY GRADED (≤ 5% FINES)	GC CLAYEY GRAVEL (≥ 15% FINES)	GP GRAVEL, POORLY GRADED (≤ 5% FINES)
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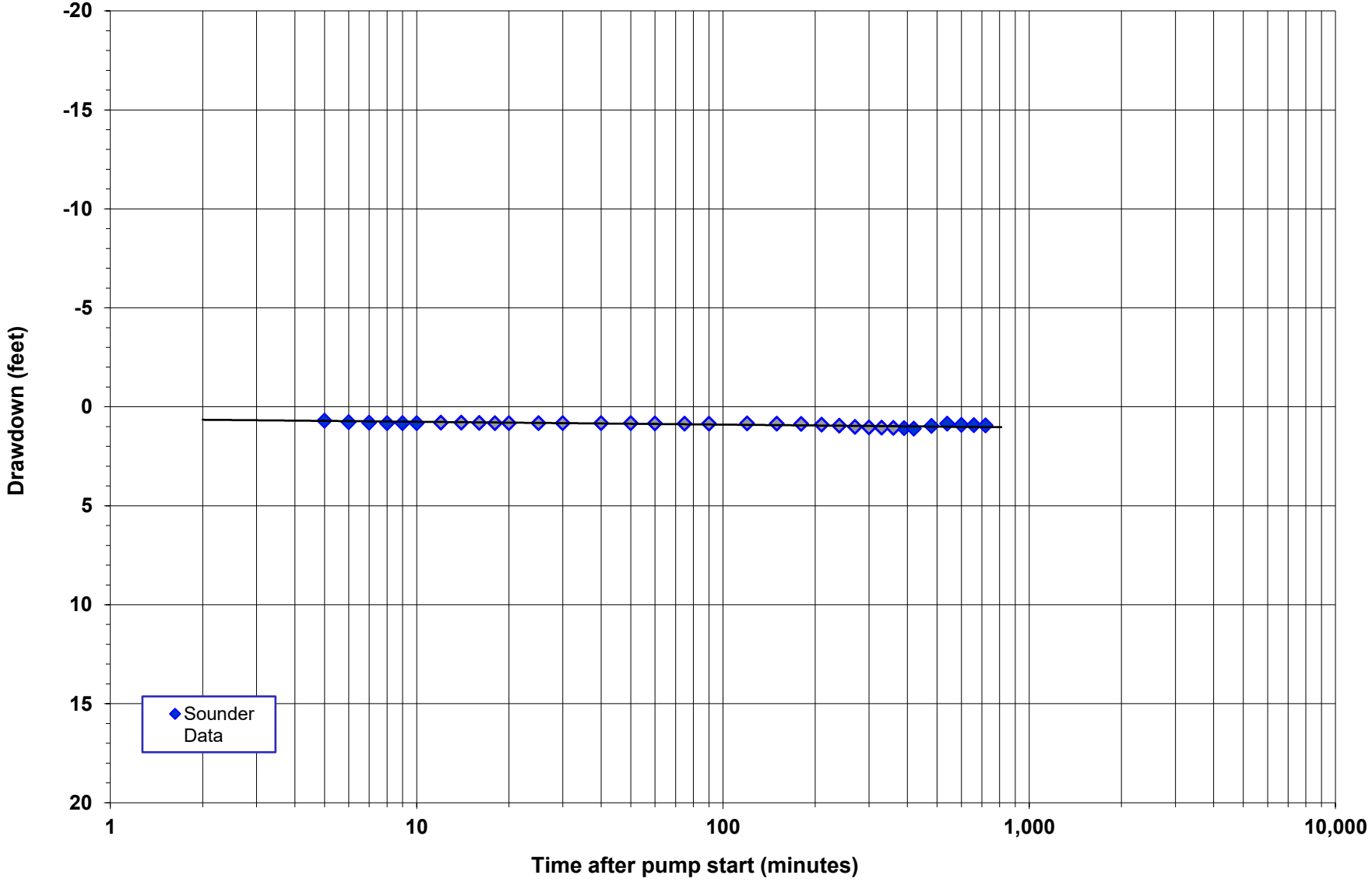
March 26, 2024 Project 22-0672

LITHOLOGIC LOG AND AS-BUILT WELL DIAGRAM WATER SYSTEM WELL NO. 4

Cocopah Indian Tribe, Yuma County, Arizona

FIGURE NUMBER: 4

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COCOPAH INDIAN TRIBE
WATER SYSTEM WELL NO. 4
C(10-24) 12 DCD
YUMA COUNTY, ARIZONA

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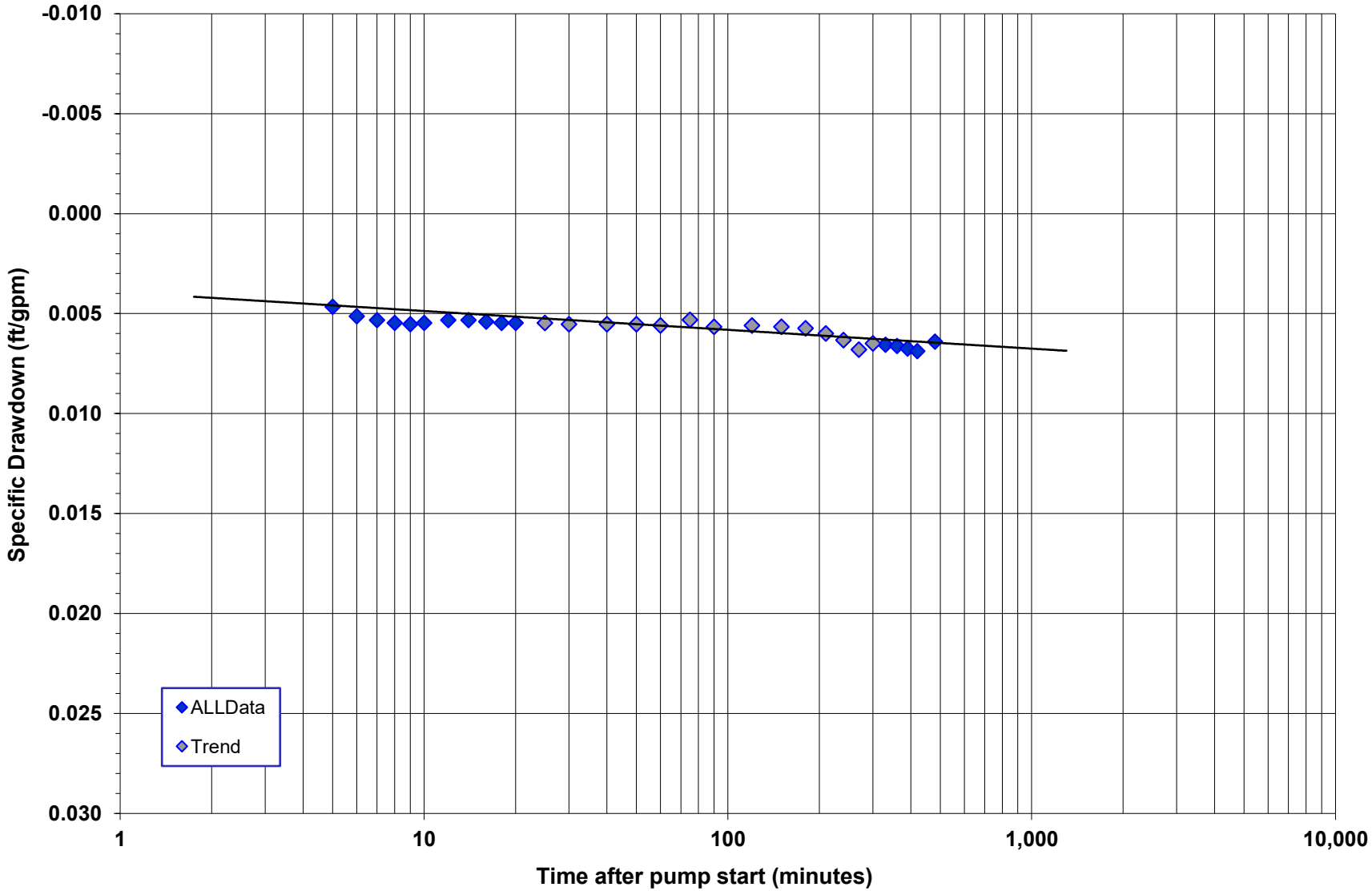
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CONSTANT-RATE DISCHARGE TEST
JANUARY 22, 2024
DRAWDOWN VS. TIME

DRAWN BY: KDH	APPROVED BY: DE	Project Number: 22-0672
DATE: 02-29-2024	DATE: 03-01-2024	

FIGURE NUMBER:

5



COCOPAH INDIAN TRIBE
WATER SYSTEM WELL NO. 4
C(10-24) 12 DCD
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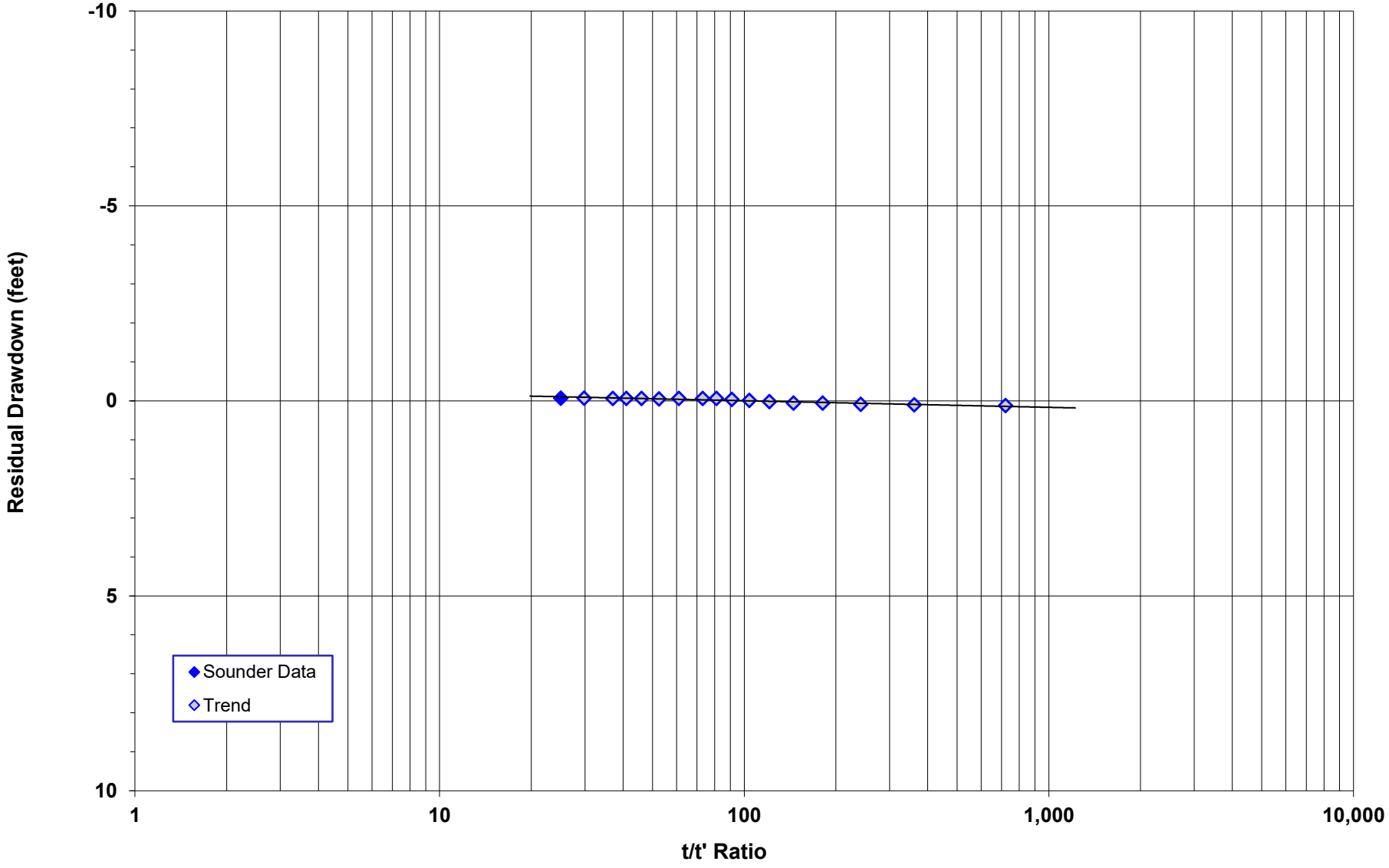
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CONSTANT-RATE DISCHARGE TEST
JANUARY 22, 2024
SPECIFIC DRAWDOWN VS. TIME

DRAWN BY: KDH	APPROVED BY: DE	Project Number: 22-0672
DATE: 02-29-2024	DATE: 03-01-2024	

FIGURE NUMBER:

6



COCOPAH INDIAN TRIBE
WATER SYSTEM WELL NO. 4
C(10-24) 12 DCD
YUMA COUNTY, ARIZONA

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CONSTANT-RATE DISCHARGE TEST - RECOVERY
JANUARY 22, 2024
RESIDUAL DRAWDOWN VS. t/t' RATIO

DRAWN BY: KDH	APPROVED BY: DE	Project Number: 22-0672
DATE: 02-29-2024	DATE: 03-20-2024	

FIGURE NUMBER:

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APPENDICES

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APPENDIX A

Photographs of Well Drilling and Installation

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Photo Log

22-0672 – East Cocopah Water System Well No. 4
November 19, 2023 – January 9, 2024
Photographed by B. McConnell and J. Lawrence

PHOTO 1 (11/14/23): Looking NW – Surface casing installation



PHOTO 2 (11/19/23): Looking N – Weld between cut surface casing



PHOTO 3 (11/30/23): Looking SW – Versa Mark 70 rig used to drill borehole



PHOTO 4 (11/30/23): Looking W – Rig set up to drill



MATRIXNEWORLD
Engineering Progress

Matrix New World Engineering
3033 N. 44 Street, Ste 270
Phoenix, AZ 85018
602.955.5547 973.240.1800
mnwe.com

Photo Log

22-0672 – East Cocopah Water System Well No. 4
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PHOTO 5 (11/30/23): Looking E – Rig set up for drilling



PHOTO 6 (12/4/23): chip tray of cuttings to total depth



PHOTO 7 (11/30/17): Looking W – Where cuttings were discharged



PHOTO 8 (12/19/23): Bullnose casing and blank installed in well



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PHOTO 9 (12/19/23): Wire wrap screen and size



PHOTO 10 (7/27/17): Looking W – All casing laid out prior to installation



PHOTO 11 (12/19/23): Installation of screen and centralizers



PHOTO 12 (1/9/24): Imhoff cone during rig development



MATRIXNEWORLD
Engineering Progress

APPENDIX B

Daily Drilling Reports Forms

Location: Yuma	Well Name Cocopah Date 1-1-24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature Bryce

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller: Bryce	Crew 1: Colton				Air Compressor :	CFM:	PSI:	
Crew 2: Danny	Crew 3:							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0600	0700		Fuel / Drive to site			
0700	0910		Load collar / inspect equipment			1. RIG-UP/DN
0910	1555		Airlift			2. DRILLING
1555	1635		Swab / Airlift			3. REAMING
1635	1820		Clean out tank			4. COND MUD/CIRC
1820	1850		Drive to hotel			5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
Time:
Wt:
Vis:
Time:
Wt:
Vis:
Time:
Wt:
Vis:

Additive	
Type:	Quantity

Remarks/Day Summary:	Hours
	Driller:
	Crew 1
	Crew 2
	Crew 3

Location: Yuma	Well Name Cocopah	Date 1-2-24
Owner:	Well Number 4	
Signature Owner's Rep:	Driller's Signature B—	

Rig Type: Mark 70	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Driller: Bryce	Crew 1: Colton				Air Compressor :	CFM:	PSI:	
Crew 2: Danny	Crew 3:							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0530	0610		Drive to site			
0610	0715		Inspect equipment			1. RIG-UP/DN
0715	1115		Airlift / swab			2. DRILLING
1115	1335		Trip out swab / trip in open			3. REAMING
			ended to 200'			4. COND MUD/CIRC
1335	1730		Clean discharge line & tank			5. TRIP
1730	1800		Secure site			6. LUBE RIG
1800	1830		Drive to hotel			7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER
						Mud
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Additive
						Type: Quantity

Remarks/Day Summary:	Hours
	Driller:
	Crew 1
	Crew 2
	Crew 3

Location: Yuma	Well Name Cocopah Date 1-3-24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B Ly

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller: Bryce	Crew 1: Colton				Air Compressor :	CFM:	PSI:	
Crew 2: Danny	Crew 3:							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0600	0645		Drive to site			
0645	1300		Clean discharge			1. RIG-UP/DN
1300	1500		Plumb in the driveprime			2. DRILLING
1500	1820		Continue cleaning lines			3. REAMING
1820	1900		Drive to hotel			4. COND MUD/CIRC
						5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
Time:
Wt:
Vis:
Time:
Wt:
Vis:
Time:
Wt:
Vis:

Additive	
Type:	Quantity

Remarks/Day Summary

Hours
Driller:
Crew 1
Crew 2
Crew 3

Location: Yuma	Well Name Cocopah Date 1-4-24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature Bryce

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller: Bryce		Crew 1: Colton			Air Compressor :	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0600	0645		Drive to site			
0645	0820		Inspect equipment			1. RIG-UP/DN
0820	1630		Modify the discharge			2. DRILLING
1630	1845		fill the mud system/ test run			3. REAMING
1845	1915		Drive to hotel			4. COND MUD/CIRC
						5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	

Additive	
Type:	Quantity

Hours	
Driller:	
Crew 1	
Crew 2	
Crew 3	

Remarks/Day Summary:

Location: Yuma	Well Name Cocopah Date 1-5-24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B Ly

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller: Bryce	Crew 1: Colton				Air Compressor :	CFM:	PSI:	
Crew 2: Danny	Crew 3:							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0530	0615		Drive to site			
0615	0910		Inspect equipment / repair hose			1. RIG UP/DN
0910	1100		Airlift			2. DRILLING
1100	1230		Hook up 2nd discharge			3. REAMING
1230	1500		Airlift			4. COND MUD/CIRC
1500	1610		Trip out			5. TRIP
1610	1700		Secure site			6. LUBE RIG
1700	2200		Drive to Verde			7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	

Additive	
Type:	Quantity

Location: Yuma	Well Name Cocopah Date 1-8-24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B— L—

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mack 70								
Driller: Bryce	Crew 1: Jose Angel				Air Compressor :	CFM:	PSI:	
Crew 2: Miguel	Crew 3:							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0600	1100		Drive to Yuma			
1100	1520		Repair swab tool			1. RIG UP/DN
1520	1645		Trip in			2. DRILLING
1645	1730		Train hand's on equipment			3. REAMING
1730	1745		Secure site			4. COND MUD/CIRC
1745	1830		Drive to hotel			5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	

Additive	
Type:	Quantity

Remarks/Day Summary

Hours	
Driller	
Crew 1	
Crew 2	
Crew 3	

Location: Yuma	Well Name Cocopah Date 1-9-24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B Ly

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke
Mark 70							
Driller: Bryce		Crew 1: Jose Angel			Air Compressor :	CFM:	
Crew 2: Miguel		Crew 3:					

Time			Driller's Time Log
Start	End	Code	Activity
0530	0615		Drive to site
0615	0715		Inspect equipment
0715	1630		Swab / Airlift
1630	1710		Trip out
1710	1730		Tag bottom / secure site
1730	1800		Drive to hotel

1. DRILL
2. CONNECT
3. TRIP
4. LUBE RIG
5. REPAIR RIG
6. RUN CASING
9. CEMENT
10. GRAVEL PACK
11. Swab/Develop Well
12. DEVELOP WELL
13. TESTING
14. LOGGING/VIDEO
15. AIRLIFTING
16. BUILDING ZONE
17. OTHER

Mud	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	

Additive	
Type:	Quantity

Location: Yuma	Well Name Cocopah
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B. Ly

Rig Type: Mark 70	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model
Driller : Bryce		Crew 1: Jose Angel			Air Compressor :
Crew 2 : Miguel		Crew 3 :			

Time			Driller's Time Log
Start	End	Code	Activity
0515	0600		Drive to site
0600	0745		Inspect / warm up equipment
0745	0900		Trip in open ended / clean out hole
0900	0940		Trip out
0940	1545		Rig down / break down site
1545	2045		Drive to verde

Location: Yuma	Well Name Cocopah Date 1.15.24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B—I—y

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Temp	Press	Rate
Mark 70								
Driller: Bryce	Crew 1: Colton				Air Compressor :	PM		
Crew 2: Danny	Crew 3:							

Time			Driller's Time Log	Formation	
Start	End	Code	Activity		
0545	0800		Unload / load supplies		
0800	1030		Drive to Glendale / load collar		
1030	1345		Drive to Wenden / load surface casing		
1345	1630		Drive to site		
1630	1715		Break down site		
1715	1800		Drive to hotel		

Activity Codes

1. RIG UP/DN
2. DRILLING
3. REAMING
4. COND MUD/CIRC
5. TRIP
6. LUBE RIG
7. REPAIR RIG
8. RUN CASING
9. CEMENT
10. GRAVEL PACK
11. Swab/Develop Well
12. DEVELOP WELL
13. TESTING
14. LOGGING/VIDEO
15. AIRLIFTING
16. BUILDING ZONE
17. OTHER

Mud	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	

Additive	
Type:	Quantity

Hours	
Driller:	
Crew 1	
Crew 2	
Crew 3	

Location: Yuma	Well Name Cocopah / San Luis Date 1-16-24
Owner:	Well Number 4
Owner's Rep:	Driller's Signature B Ly

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller: Bryce	Crew 1: Colton				Air Compressor :	CFM:	PSI:	
Crew 2: Danny	Crew 3:							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0545	0630		Drive to site			
0630	0900		Clean site			1. RIG-UP/DN
0900	1000		Move the Mark 70 to San Luis			2. DRILLING
1000	1750		Clean outside of mud system / Haul			3. REAMING
[redacted]			misc. items to San Luis / Make			4. COND MUD/CIRC
			repairs to the backhoe			5. TRIP
1750	1840		Drive to hotel			6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER
						Mud
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Additive
						Type: Quantity

Remarks/Day Summary:	Hours
	Driller:
	Crew 1
	Crew 2
	Crew 3

Location: Yuma / San Luis	Well Name Cocopah / San Luis Date 1-17-24
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B Ly

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mack 70								
Driller: Bryce		Crew 1: Colton			Air Compressor :	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0530	0615		Drive to site			
0615	0800		Inspect equipment			1. RIG-UP/DN
0800	0900		Haul the mud system to San Luis			2. DRILLING
0900	1350		Repair backhoe / clean site			3. REAMING
1350	1600		Drive backhoe to San Luis			4. COND MUD/CIRC
1600	1715		Grease / inspect equipment			5. TRIP
1715	1800		Drive to hotel			6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER
						Mud
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Additive
						Type: Quantity

Remarks/Day Summary:	Hours
	Driller:
	Crew 1
	Crew 2
	Crew 3

00 S 8TH AVE 85634

5 AM

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Hydel | Job # : | Date: 11-15-23

Customer: | Well # : | Well Name: Mark | Cocopah

Owners Rep: | Driller's Signature: B

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70								
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0530	0630		Fuel / Drive to site
0630	1515		Clean site / load water truck
1515	1715		Drive the rig to site
1715	1745		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job # : | Date: 11-16-23

Customer: | Well # : | Well Name: Cocopah well 4

Owners Rep: | Driller's Signature: Bryce

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70/ARI								
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0580	1320		Drive to wenden/ pick up auger rig & Drive back to site
1320	1800		Drive to Hyder/ Drive water truck back to site
1800	1815		Secure site
1815	1845		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma Job # : Date: 11-17-23

Customer: Well # : Well Name: Cocopah well 4

Owners Rep: Driller's Signature:

Rig Type: Auger rig	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0545	0630		Drive to site / fuel up
0680	0900		Spot in Auger rig / rig up
0900	1000		Greese rig
1000	1120		Unload 400 gallon tank & mud supplies
1120	1330		Go to home depot for supplies
1330	1610		Mix mud / fill the hole
1610	1645		Drill to 8'
1645	1715		Unload surface
1715	1745		Drive to hotel

Total Shift Footage / Moving to site (hrs)		Shift Hours / # of Crew Onsite		Water Hauling Hours / Abandonment Hours	

Materials	Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Driller/ Toolpusher: Customer:

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma Job # : Date: 11-18-23

Customer: Well # : Well Name: Cocopah well 4

Owners Rep: Driller's Signature: B Ly

Rig Type: Anger	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Driller: Bryce		Crew1: Colten			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0545	0615		Fuel up / Drive to site
0616	0720		Check fluids / warm up rig
0720	1720		Drill to 360'
1720	1730		Clean / secure site
1730	1745		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Date: 11-19-23

Job #

Well Name: Cocopah well 4

Location: Yuma

Well #:

Driller's Signature:

Customer:

Owners Rep:

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Auger								
Driller: Brice		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time		Depth	Driller's Time Log Activity
Start	Stop		
0615	0645		Fuel up / Drive to site
0645	0730		Inspect equipment
0730	1145		Drill to 39' / stage site to set surface
1145	1320		Set 38' of 18"
1320	1400		Rig up to cement
1400	1530		cement
1530	1600		Clean out hoses & pumps
1600	1615		secure site
1615	1630		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours	
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours	

Materials	Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Driller/ Toolpusher: Customer:

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job # : | Date: 11-20-23

Customer: | Well # : 4 | Well Name: Cocopah

Owners Rep: | Driller's Signature: B

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Auger								
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0730	0800		Fuel | Drive to site
0800	0900		Top off surface
0900	1400		Make repairs to kelly line | rig down | move rig off
			the hole
1400	1630		Clean site
1630	1645		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma / Verde | Job # : | Date: 11-21-23

Customer: | Well # : 4 | Well Name: Cocopah

Owners Rep: | Driller's Signature: B Lj

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore

Driller: Bryce	Crew1: Colton	Air Compressor:	CFM: / PSI:
Crew 2: Danny	Crew 3:		

Time Start	Time Stop	Depth	Driller's Time Log Activity
0545	1045		Drive to verde
1045	1400		Load supplies

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 11-27-23
Customer: | Well #: 4 | Well Name: Cocopah
Owners Rep: | Driller's Signature: B—Z

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70								
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0530	0715		Load supplies
0715	1215		Drive to site
1215			Clean cuttings / load bits on auger rig /
	1645		rig up the mud system
1645	1715		Drive to napa for parts
1715	1740		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 11-28-23

Customer: | Well #: 4 | Well Name: Cocopah

Owners Rep: | Driller's Signature: B—L

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4½	Tricone	16"					
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0515	0550		Fuel / Drive to site
0550	1700		Rig up / spot in equipment / fix jets on mud system / make up BHA / install temp fence
1700	1710		Secure site & equipment
1710	1745		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours	
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours	

Materials	Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Driller/ Toolpusher: Customer:

Driller's Log — [illegible] Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 11-29-23
Customer: | Well #: 4 | Well Name: Cocopah
Owners Rep: | Driller's Signature: B Lg

Rig Type	DP OD	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4½	Tricone	16"					
Driller: Bryce		Driller: Colton			Air Compressor:	CFM:	PSI:	
Driller: Danny								

Driller's Time Log

Start	Stop	Depth	Activity
0530	0600		Fuel up / Drive to site
0600	0730		Inspect equipment
0730	0840		Mix mud / Trip to bottom
0840	1050		Work on desander pump
1050	1545		Drill to 93'
1545	1600		Trip up
1600	1830		Make repairs to rig
1830	1900		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours	
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours	

Materials

Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Customer:

Driller/ Toolpusher:

Drillers Log - KP Ventures Well Drilling

Location: Yuma

Customer:

Owners Rep:

Date: 11-30-23

Well Name: Cocopah

Driller's Signature:

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4'/2	Tricone	16"					
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0515	0600		Fuel up / Drive to site
0600	0730		Inspect equipment / continue rig repairs
0730	0800		Check fluids / warm up rig
0800	0850		Trip to bottom / circulate
0850	1650		Drill to 172'
1650	1720		Circulate / trip up
1720	1820		Change out screens
1820	1835		Secure site
1835	1900		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job # : | Date: 12-1-23
Customer: | Well # : 4 | Well Name: Cocopah
Owners Rep: | Driller's Signature: B—

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4'/2	Tricone	16"					
Driller: Bryce		Crew1: Colton			Air Compressor:			
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0515	0550		Fuel / Drive to site
0550	0700		Inspect equipment
0700	0830		Fill mud system / mix mud
0830	0850		Circulate / trip in
0850	0930		Drill to 175'
0930	1610		Hole started taking fluid / mix heavy mud
1610	1620		Drill to 180'
1620	1715		Circulate
1715	1745		Trip up / secure site
1745	1815		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours			
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours			

Materials	Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Driller/ Toolpusher: Customer:

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 12-2-23
Customer: | Well #: 4 | Well Name: Cocopah
Owners Rep: | Driller's Signature: B

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4 1/2	Tricone	16"					
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0600	0620		Go to homedepot for supplies
0620	0700		Drive to site
0700	0800		Check fluids/ warm equipment
0800	0830		Circulate
0830	0900		Clean shaker screens
0900	0915		Trip to bottom
0915	0925		Circulate
0925	1000		Drill to 184'
1000	1100		Change screens
1100	1640		Drill to 228'
1640	1710		Circulate/ trip up
1710	1730		Secure site
1730	1800		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours	
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours	

Materials	Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Driller/ Toolpusher: Customer:

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 12-3-23

Customer: | Well #: 4 | Well Name: Cocopah

Owners Rep: | Driller's Signature: B—L

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke
Mark 70	4 1/2	Tricone	16"				
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:
Crew 2: Danny		Crew 3:					

Time Start	Time Stop	Depth	Driller's Time Log Activity
0515	0550		Fuel / Drive to site
0550	0710		Inspect equipment
0710	0735		Circulate to bottom
0735	1050		Drill to 267'
1050	1330		Mix / pump heavy mud
1330	1550		Drill to 310'
1550	1710		Circulate
1710	1730		Trip up
1730	1740		Secure site
1740	1815		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours	
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours	

Materials

Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Driller/ Toolpusher: Customer:

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma
Customer:
Owners Rep:
Job # :
Well # : 4
Date: 12-4-23
Well Name: Cocopah
Driller's Signature: B—L

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4 1/2	Tricone	16"					
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM	PSI	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0515	0600		Fuel / Drive to site
0600	0715		Inspect equipment
0715	0800		Circulate / trip in to bottom
0800	1700		Circulate / clean and condition the hole
1700	1820		Trip out
1820	1925		Wait on logger
1925	2150		Rig logger up / log the hole
2150	2210		Rig down logger / secure site
2210	2240		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours	
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours	

Materials

Description	Unit	Qty	Description	Unit	Qty

Remarks/ Comments:

Driller/ Toolpusher: _____ Customer: _____

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 12-5-23
Customer: | Well #: 4 | Well Name: Cocopah
Owners Rep: | Driller's Signature:

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4 1/2	Tricone	16"					
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0530	0615		Fuel / Drive to site
0615	0715		Inspect equipment
0715	1700		Run 1,058' of discharge / band hoses / work
			on desander pump
1700	1710		secure site
1710	1745		Drive to hotel

Total Shift Footage		Shift Hours		Water Hauling Hours			
Moving to site (hrs)		# of Crew Onsite		Abandonment Hours			

	Unit	Qty	Description	Unit		

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma
Customer:
Owners Rep:
Job # :
Well # : 4
Date: 12-6-23
Well Name: Cocopah
Driller's Signature: B Ly

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4"1/2							

Driller: Bryce	Crew1: Colton	Air Compressor:	CFM:	PSI:
Crew 2: Danny	Crew 3:			

Time		Depth	Driller's Time Log
Start	Stop		Activity
0530	0615		Drive to site
0615	1045		Organize / clean site
1045	1730		Fill the hole w/ gravel
1730	2230		Drive to verde

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 12.14.23

Customer: | Well #: 4 | Well Name: Cocopah

Owners Rep: | Driller's Signature: B—L

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70								
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0600	0700		Gather supplies
0700	1500		Drive to Bill Johnson / the G.D / wenden for supplies
1500	1715		Prep site for casing
1715	1720		Secure site
1720	1800		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job # : | Date: 12-15-23

Customer: | Well # : 4 | Well Name: Cocopah

Owners Rep: | Driller's Signature: B~Ly

Rig Type: Mark 70	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0515	0600		Drive to site
0600	0700		Inspect equipment
0700	1720		Work on desander / unload filter pack / work on the backhoe
1720	1730		Secure site
1730	1815		Drive to hotel

Drillers Log - KP Ventures Well Drilling & Pump Co.

Location: Yuma | Job #: | Date: 12 16 23

Customer: | Well #: 4 | Well Name: Cocopah

Owners Rep: | Driller's Signature: B Z

Rig Type:	D.P. Dia	Bit	Size	Depth Out	Mud Pump (Make, Model)	Type	Stroke	Bore
Mark 70	4 1/2							
Driller: Bryce		Crew1: Colton			Air Compressor:	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time Start	Time Stop	Depth	Driller's Time Log Activity
0520	0600		Drive to site
0600	0800		Inspect equipment
0800	1040		Mix mud and fill hole
1040	1140		Repair discharge/ suction hose
1140	1320		Work to 180'
1320	1440		Clean cuttings screens
1440	1700		Work down to 240'
1700	1715		Secure site
1715	1800		Drive to hotel

Location: Yuma	Well Name Cocopah well 4 Date 12.17.23
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B— L—

Rig Type: Mark 70	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Driller: Bryce		Crew 1: Colton			Air Compressor :	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0500	0545		Fuel / Drive to site			
0545	0715		Check fluids / warm up rig			1. RIG-UP/DN
0715	0800		Circulate to bottom			2. DRILLING
0800	1600		Circulate			3. REAMING
1600	1620		Trip up			4. COND MUD/CIRC
1620	1730		Rig up centrifigual table			5. TRIP
1730	1745		secure site			6. LUBE RIG
1745	1815		Drive to hotel			7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
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Additive	
Type:	Quantity

Remarks/Day Summary:

Hours
Driller:
Crew 1
Crew 2
Crew 3

Location: Yuma		Well Name Cocopah	Date 12.18.23
Owner:		Well Number 4	
Signature Owner's Rep:		Driller's Signature B— Ly	

Rig Type: Mark 70	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Driller : Bryce		Crew 1 : Colton			Air Compressor :	CFM:	PSI:	
Crew 2 : Danny		Crew 3 :						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0530	0615		Fuel / Drive to site			
0615	0700		check fluids / warm equipment			1. RIG-UP/DN
0700	0730		Trip to bottom			2. DRILLING
0730	1145		Circulate			3. REAMING
1145	1300		Trip out			4. COND MUD/CIRC
1300	1345		Rig up to run casing			5. TRIP
1345	1445		Trip in trimie			6. LUBE RIG
1445	1645		standby / wait on decision / gravel			7. REPAIR RIG
			to small			8. RUN CASING
1645	2115		Drive to Verde			9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud	
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Additive	
Type:	Quantity

Remarks/Day Summary:

Hours	
Driller:	
Crew 1	
Crew 2	
Crew 3	

Location: Yuma	Well Name Cocopah Date 12-20-23
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature Bryce

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bo
Mack 70								
Driller : Bryce	Crew 1 : Colton				Air Compressor :	CFM:	PSI:	
Crew 2 :	Crew 3 : Danny							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0945	1015		Drive to site			
1015	1110		Finish running casing			1. RIG-UP/DN
1140	1315		Rig up to gravel pack			2. DRILLING
1315	1830		Gravel pack			3. REAMING
1830	1930		Tag gravel @ 186' / clean site			4. COND MUD/CIRC
1930	2000		Drive to hotel			5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop We
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
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Wt:
Vis:

Additive	
Type:	Quantity

Remarks/Day Summary:

Hours
Driller:
Crew 1
Crew 2
Crew 3

Location: Yuma	Well Name Colopah Date 12·21·23
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller: Bryce		Crew 1: Colton			Air Compressor :	CFM:	PSI:	
Crew 2: Danny		Crew 3:						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0500	0600		Fuel / Drive to site			1. RIG-UP/DN
0600	0700		Inspect equipment			2. DRILLING
0700	0800		Pump mud off			3. REAMING
0800	0945		Gravel pack			4. COND MUD/CIRC
0945	1230		Rig up swab tool			5. TRIP
1230	1320		Add Bentonite seal			6. LUBE RIG
1320	1550		Let Hydrate / repair discharge			7. REPAIR RIG
1550	1620		secure site			8. RUN CASING
1620	2045		Drive to verde			9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
Time:
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Time:
Wt:
Vis:
Time:
Wt:
Vis:

Additive	
Type:	Quantity

Remarks/Day Summary:	Hours
	Driller:
	Crew 1
	Crew 2
	Crew 3

Location: Yuma	Well Name Cocopah	Date 12.27.23
Owner:	Well Number 4	
Signature Owner's Rep:	Driller's Signature	

Rig Type: Mack 70	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Driller : Bryce		Crew 1 : Colton			Air Compressor :	CFM:	PSI:	
Crew 2 : Danny		Crew 3 :						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0530	0615		Fuel / Drive to site			
0615	0700		Inspect equipment			1. RIG-UP/DN
0700	1050		Rig up to cement			2. DRILLING
1050	1235		Cement			3. REAMING
1235	1720		Clean pump / hoses and site			4. COND MUD/CIRC
1720	1800		Drive to hotel			5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
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Time:
Wt:
Vis:

Additive	
Type:	Quantity

Remarks/Day Summary:	Hours
	Driller:
	Crew 1
	Crew 2
	Crew 3

Location: Yuma	Well Name Colopah Date 12-28-23
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B—L

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller : Bryce		Crew 1: Colton			Air Compressor :	CFM:	PSI:	
Crew 2 : Danny		Crew 3:						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0600	0650		Fuel / Drive to site			
0650	1210		Go thru equipment			1. RIG-UP/DN
1210	1340		Rig up to discharge			2. DRILLING
1340	1600		Repair hoses			3. REAMING
1600	1725		Change rubbers pump off tanks			4. COND MUD/CIRC
1725	1800		clean site / Drive to hotel			5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
Time:
Wt:
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Time:
Wt:
Vis:
Time:
Wt:
Vis:

Additive	
Type:	Quantity

Remarks/Day Summary:

Hours
Driller:
Crew 1
Crew 2
Crew 3

Location: Yuma	Well Name Colopay Date 12-29-23
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller : Bryce	Crew 1 : Colton				Air Compressor :	CFM:	PSI:	
Crew 2 : Danny	Crew 3 :							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0540	0620		Fuel / Drive to site			
0620	0915		Inspect equipment			1. RIG-UP/DN
0915	1740		Airlift heavys			2. DRILLING
1740	1750		Secure site			3. REAMING
1750	1820		Drive to hotel			4. COND MUD/CIRC
						5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
Time:
Wt:
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Additive	
Type:	Quantity

Remarks/Day Summary:

Hours
Driller:
Crew 1
Crew 2
Crew 3

Location: Yuma	Well Name Cocopah Date 12-30-23
Owner:	Well Number 4
Signature Owner's Rep:	Driller's Signature B Ly

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Driller : Bryce		Crew 1 : Colton			Air Compressor :	CFM:	PSI:	
Crew 2 : Danny		Crew 3 :						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0530	0615		Fuel / Drive to site			
0615	0730		Inspect equipment			1. RIG-UP/DN
0730	0830		lift heavy mud			2. DRILLING
0830	1120		Swab in agua clear			3. REAMING
1120	1630		work on equipment			4. COND MUD/CIRC
1630	1715		Drive to hotel			5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER
						Mud
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Additive
						Type: Quantity

Remarks/Day Summary:

Hours
Driller:
Crew 1
Crew 2
Crew 3

Location: Yuma					Well Name Cocopah		Date 12-31-23		
Owner:					Well Number 4				
Signature Owner's Rep:					Driller's Signature B— L—				
Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore	
Driller : Bryce		Crew 1 : Colton			Air Compressor :	CFM:	PSI:		
Crew 2 : Danny		Crew 3 :							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0500	0600		Fuel / Drive to site			
0600	0700		Inspect equipment			
0700	0900		Swab to bottom			1. RIG-UP/DN
0900	1800		Airlift / swab			2. DRILLING
1800	1830		Load collar			3. REAMING
1830	1915		Drive to hotel			4. COND MUD/CIRC
						5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
						9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud
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Time:
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Additive	
Type:	Quantity

Remarks/Day Summary:	Hours
	Driller:
	Crew 1
	Crew 2
	Crew 3

Location: Vecee to Yuma	Well Name Cocopah #4 Date 11-28-23
Owner:	Well Number
Signature Owner's Rep:	Driller's Signature

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller : Challenge	Crew 1 :				Air Compressor :	CFM:	PSI:	
Crew 2 :	Crew 3 :							

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0630			On phone meeting Heading to Yuma			
						1. RIG-UP/DN
			Stopping in to Hose paver and 7-11.			2. DRILLING
						3. REAMING
						4. COND MUD/CIRC
						5. TRIP
1710			Made to site unloading and heading to room.			6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
1800			clocked out.			9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
						12. DEVELOP WELL
						13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER
						Mud
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Time:
						Wt:
						Vis:
						Additive
						Type: Quantity

Remarks/Day Summary: Stay in Yuma	Hours
	Driller: 11.5
	Crew 1
	Crew 2
	Crew 3

Location: Yuma - Good Year		Well Name Cocopah #4	Date 11-29-23
Owner:		Well Number	
Signature Owner's Rep:		Driller's Signature	

Rig Type: Mark 70	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Driller : Chatten R	Crew 1 :				Air Compressor :	CFM:	PSI:	
Crew 2 :	Crew 3 :							

Time Start	End	Code	Driller's Time Log Activity	Formation		Activity Codes
0630			On meeting heading to site			
0650			On site with crew: assisting on mud system with guys getting them more familiar with it. And how to mix mud and polamars			1. RIG-UP/DN 2. DRILLING 3. REAMING 4. COND MUD/CIRC 5. TRIP 6. LUBE RIG 7. REPAIR RIG 8. RUN CASING 9. CEMENT 10. GRAVEL PACK 11. Swab/Develop Well 12. DEVELOP WELL 13. TESTING 14. LOGGING/VIDEO 15. AIRLIFTING 16. BUILDING ZONE 17. OTHER
1630			Heading to Valley to pick up mud product in am.			
1930			Clocked out Good Year			

Mud
Time:
Wt:
Vis:
Time:
Wt:
Vis:
Time:
Wt:
Vis:

Additive	
Type:	Quantity

Remarks/Day Summary: Out town

Hours	
Driller:	13
Crew 1	
Crew 2	
Crew 3	

Location: GoodYear to Yuma to Verde
Owner:
Signature
Owner's Rep:

Well Name Cocopah #4
Well Number
Driller's Signature
Date 11-30-23

Rig Type:	D.P DIA	Bit	Size	Depth Out	Mud Pump : Make/Model	Type	Stroke	Bore
Mark 70								
Driller :		Crew 1 :			Air Compressor :	CFM:	PSI:	
Crew 2 :		Crew 3 :						

Time			Driller's Time Log	Formation		Activity Codes
Start	End	Code	Activity			
0630			On phone meeting headings to Em for mud supplies			1. RIG-UP/DN
						2. DRILLING
						3. REAMING
1100			Stopped in at home depot in Yuma for Buckets to use on mud system.			4. COND MUD/CIRC
						5. TRIP
						6. LUBE RIG
						7. REPAIR RIG
						8. RUN CASING
1210			On site whooching trailer. Assisting crew on mud system and mud properties			9. CEMENT
						10. GRAVEL PACK
						11. Swab/Develop Well
1430			Headed Verde.			12. DEVELOP WELL
1830			Clocked out. In Verde.			13. TESTING
						14. LOGGING/VIDEO
						15. AIRLIFTING
						16. BUILDING ZONE
						17. OTHER

Mud	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	
Time:	
Wt:	
Vis:	

Additive	
Type:	Quantity

Remarks/Day Summary:

Hours	
Driller:	12
Crew 1	
Crew 2	
Crew 3	

Location: ~~Yuma~~ Yecla to Yuma Back

Owner:

Signature
Owner's Rep:

Well Name Cocopah #4. Date 12-2-23

Well Number

Driller's Signature

Rig Type: Mark 70	D.P DIA	Bit	Size	Depth Out
Driller : Chatten B				
Crew 2 :	Crew 1 :			
	Crew 3 :			

Mud Pump : Make/Model	Type	Stroke	Bore
Air Compressor :	CFM:	PSI:	

Time Start	Time End	Code	Driller's Time Log Activity	Formation	
0630			On phone meeting, Going head to Yuma picking up trash pump. For crew on way.		
1200			on site		
1546			Heading to fuel up head to yecla.		
1930			clocked out.		

Activity Codes

1. RIG-UP/DN
2. DRILLING
3. REAMING
4. COND MUD/CIRC
5. TRIP
6. LUBE RIG
7. REPAIR RIG
8. RUN CASING
9. CEMENT
10. GRAVEL PACK
11. Swab/Develop Well
12. DEVELOP WELL
13. TESTING
14. LOGGING/VIDEO
15. AIRLIFTING
16. BUILDING ZONE
17. OTHER

Mud

Time:
Wt:
Vis:
Time:
Wt:
Vis:
Time:
Wt:
Vis:

Additive

Type: Quantity

arks/Day Summary:

Hours	
Driller:	13
Crew 1	
Crew 2	
Crew 3	

LOCATION: Yuma / CoCo Park

OWNER:

SIGNATURES

OWNER'S REP:

AZ WELL# 4

DRILLING CO: KP Vent wics

DATE: 12-19-12

DRILLER'S SIGNATURE:

RIG TYPE:	D.P. DIA.	BIT	SIZE	DEPTH OUT
Mack 30				

DRILLER: Clayton M CREW 1 Coulton

CREW 2: Ontiveros CREW 3:

MUD PUMP:

MAKE/MODEL:

TYPE: STROKE: BORE:

AIR COMPRESSOR:

MAKE:

CFM: PSI:

TIME START	TIME END	CODE	DRILLER'S TIME LOG ACTIVITY	FORMATION DEPTH	FORMATION ROCK TYPE
5:30			Get To Site. Fuel Rig		
			Warm up Equipment		
6:30			Setting up To run Tools To		
			Bottom, Remove Casing, Move		
			Back Hoe out of Way		
8:30			Tripping To Bottom		
10:30			Circulating on Bottom Waiting		
			for Hard Formation		
11:15			Setting up To Trip Out		
12:45			Collar laid Down		
			Setting up To run in Trimming		
1:30			Trimming in Set up To		
			Circulate through Trimming		
2:30			#1 in Table Bringing up #2		
3:00	6:15		Run in Casing 1-10		
6:30			Clean up Set Shop Down		
	7:00		equipment		

ACTIVITY CODES: 1. RIG-UP/ON; 2. DRILLING; 3. REAMING; 4. COND MUD/CIRC; 5. TRIP; 6. LUBE RIG; 7. REPAIR RIG; 8. RUN CASING; 9. CEMENT; 10. WAIT ON CEMENT; 11. FISHING; 12. DEVELOP WELL; 13. TESTING; 14. LOGGING / VIDEO; 15. OTHER

MUD

TIME: WT: VIS:

TIME: WT: VIS:

TIME: WT: VIS:

ADDITIVES TYPE	QUANTITY

REMARKS / DAY SUMMARY:

HOURS:

DRILLER: 13.5

CREW 1: 13.5

CREW 2: 13.5

CREW 3:

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APPENDIX C

Lithologic Log

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LOG OF BORING

WELL NO. Cocopah Well No. 4 SHEET 1 OF 4

PROJECT: East Cocopah Water System Well No. 4 PROJECT #: 22-0672 ADWR WELL #: 55- N/A

WELL LOCATION: Yuma, Arizona FOREMAN: Bryce L.

DRILLING CONTRACTOR: KP Ventures LOGGED BY: B. McConnell

DRILLING EQUIPMENT: Versa Mark 70 START DATE: 11/29/23 FINISH DATE: 12/3/23

DRILLING METHOD: Reverse Circulation WATER LEVEL: 90 ft bgs

TOTAL DEPTH: 310 ft bgs SAMPLING METHOD: Grab samples

Depth BGS (Feet)	USCS Symbol	DESCRIPTION	DETAILS AND/OR DRILLING REMARKS
0	SP-SM	**Poorly-graded sand with silt (0'-20'):** Brown (5/4; 7.5YR), dry, well sorted sand intermixed with some silt. No plasticity, weak reaction to HCL, weak cementation, soft consistency. Sand is fine grained, poor to well, angular to rounded. 5-10% Silt/Clay, 90-95% Sand, 0% Gravel	
20	SC	**Clayey Sand (20'-40'):** Brown (5/3; 7.5YR), dry, poor to moderately sorted sand intermixed with clay. Low to medium plasticity, weak reaction to HCL, weak cementation, soft consistency. Sand is fine to medium grained, poor to moderately sorted, subangular to rounded. 40% Silt/Clay, 60% Sand, 0% Gravel	
40	SW-SM	**Well-graded sand with silt (40'-80'):** Brown (5/4; 7.5YR), damp poor to moderately sorted sand intermixed with silt. No plasticity, weak to medium reaction to HCL, weak cementation, soft consistency. Sand is fine to coarse grained, poor to moderately sorted, angular to rounded. 5-15% Silt/Clay, 85-95% Sand, 0% Gravel	Visc: 39.45 pH: 9.0 Weight: 8.3 Sand: --
80			

Notes: Lithology descriptions, grain size determinations, and contacts for the penetrated formation are based on ASTM D-2488 and the Unified Soil Classification System (Visual-Manual Procedure). HCl = hydrochloric acid

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LOG OF BORING

WELL NO. Cocopah Well No. 4 SHEET 2 OF 4

Depth BGS (Feet)	USCS Symbol	DESCRIPTION	DETAILS AND/OR DRILLING REMARKS
80–100	CL	**Sandy Lean Clay (80'-100'):** Brown (5/3; 7.5YR), damp, moderately to well sorted clay intermixed with sand and silt. Low to medium plasticity, weak reaction to HCL, weak cementation, soft consistency. Sand is fine to medium grained, moderately to well sorted, subangular to rounded. 65-70% Silt/Clay, 30-35% Sand, 0% Gravel	Visc: 39.92 pH: 9.0 Weight: -- Sand: --
100–110	SC	**Clayey Sand (100'-110'):** Brown (5/3; 7.5YR), damp, poor to moderately sorted sand intermixed with clay. Low to medium plasticity, weak to medium reaction to HCL, none to weak cementation, soft consistency. Sand is fine to medium grained, poor to moderately sorted, subangular to rounded. 40% Silt/Clay, 60% Sand, 0% Gravel	
110–160	CL	**Lean Clay with Sand (110'-160'):** Gray (5/1; 10YR), damp, well sorted clay intermixed with sand and some silt. Low to medium plasticity, weak to medium reaction to HCL, none to weak cementation, firm consistency. Sand is fine to medium grained, moderately sorted, subrounded to well-rounded. 75-85% Silt/Clay, 15-25% Sand, 0% Gravel Increase in sand from 15% to 25% @ 140'	Visc: 43 pH: 10.0 Weight: 9.4 Sand: 0.5
160–180	SW	**Well-graded sand with gravel (160'-210'):** Brown (5/3; 7.5YR), damp, moderately to well sorted clay intermixed with sand and silt. Low to medium plasticity, weak reaction to HCL, weak cementation, soft consistency. Sand is fine to medium grained, moderately to well sorted, subangular to rounded. 65-70% Silt/Clay, 30-35% Sand, 0% Gravel	Visc: 39 pH: 8.0 Weight: 8.4 Sand: 0.5

Notes:

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LOG OF BORING

WELL NO. Cocopah Well No. 4 SHEET 3 OF 4

Depth BGS (Feet)	USCS Symbol	DESCRIPTION	DETAILS AND/OR DRILLING REMARKS
180	SW	**Well-graded sand with gravel (160'-210'):** Brown (5/3; 7.5YR), damp, moderately to well sorted clay intermixed with sand and silt. Low to medium plasticity, weak reaction to HCL, weak cementation, soft consistency. Sand is fine to medium grained, moderately to well sorted, subangular to rounded. 65-70% Silt/Clay, 30-35% Sand, 0% Gravel	Visc: 50 pH: 10.0 Weight: 9.5 Sand: 10
210	GW	**Well-graded sand with gravel (210'-220'):** Gray (6/1; 7.5YR), damp, poorly sorted gravel intermixed with sand. No plasticity, none to weak reaction to HCL, no cementation. Sand is fine to coarse grained, very poorly sorted, subangular to well rounded. Gravels are fine to coarse reaching up to 1in., poorly sorted, subangular to well rounded 0-5% Silt/Clay, 25-35% Sand, 65-75% Gravel	Visc: 60 pH: 9.0 Weight: 8.8 Sand: 3.0
220	SW	**Well-graded sand with gravel (220'-250'):** Gray (5/1; 7.5YR), damp, poorly sorted sand intermixed with gravel. No plasticity, none to weak reaction to HCL, no cementation, soft to firm consistency. Sand is fine to coarse grained, poorly sorted, subangular to well rounded. Gravels are fine, moderately sorted, subrounded to well rounded. 0-5% Silt/Clay, 85-90% Sand, 10-15% Gravel	
250	GW	**Well-graded sand with gravel (250'-260'):** Gray (5/1; 7.5YR), damp, poorly sorted gravel intermixed with sand. No plasticity, none to weak reaction to HCL, no cementation. Sand is fine to coarse grained, poorly sorted, subangular to well rounded. Gravels are fine to coarse reaching up to 1.2in., poorly sorted, subangular to well rounded 0-5% Silt/Clay, 20-25% Sand, 75-80% Gravel	Visc: 59 pH: 10 Weight: 8.9 Sand: 1.5
260	SW	**Well-graded sand with gravel (260'-280'):** Gray (6/1; 7.5YR), damp, poorly sorted sand intermixed with gravel. No plasticity, none to weak reaction to HCL, no cementation, soft consistency. Sand is fine to coarse grained, poorly sorted, subangular to rounded. Gravels are fine to coarse, poor to moderately sorted, subangular to rounded. 0-5% Silt/Clay, 85-90% Sand, 10-15% Gravel	
280			

Notes:

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LOG OF BORING

WELL NO. Cocopah Well No. 4 SHEET 4 OF 4

Depth BGS (Feet)	USCS Symbol	DESCRIPTION	DETAILS AND/OR DRILLING REMARKS
280	GW	**Well-graded sand with gravel (280'-310'):** Gray (6/1; 7.5YR), damp, poorly sorted gravel intermixed with sand. No plasticity, none to weak reaction to HCL, no cementation. Sand is fine to coarse grained, poorly sorted, subangular to well rounded. Gravels are fine to coarse reaching up to 0.9 in., poorly sorted, subangular to rounded 0-5% Silt/Clay, 35-40% Sand, 55-60% Gravel	Visc: 53 pH: 10.0 Weight: 8.8 Sand: 0.5
310		**Total Depth of Boring @ 310 Feet bgs**	
315			
320			
325			
330			
335			
340			
345			
350			
355			
360			
365			
370			
375			
380			

Notes:

TACNA SAND & GRAVEL

SIEVE ANALYSIS TEST RESULTS

PROJECT: KP Ventures
LOCATION:
MATERIAL: 3/8 x 3/16
TESTED BY: DAVE BURAU

DATE: 11/16/23
SAMPLE NO.:
SAMPLE FROM: STOCK

FRACTION EQUIVALENTS	US STANDARD	OPENING INCHES	PERCENT WEIGHT	PERCENT RETAINED	PERCENT PASSED	SPECS		
3/4"	3/4"	0.750						
1/2"	1/2"	0.500						
3/8"	3/8"	0.375	0.0	0.0	100.0			
5/16"	5/16"	0.312	11.6	11.6	88.4			
1/4"	1/4"	0.250	64.4	76.0	24.0			
3/16"	#4	0.187	23.1	99.1	0.9			
1/8"	#6	0.132						
3/32"	#8	0.0937						
	#10	0.0787						
	#12	0.0661						
	#14	0.0555						
	#16	0.0469						
	#18	0.0394						
	#20	0.0331						
	#30	0.0234						
	#40	0.0165						
	#50	0.0117						
	#60	0.0098						
	PAN		0.9	100.0				
TOTAL								

SUBMITTED BY: **David Burau**

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Engineering Progress

APPENDIX D

Geophysical Logs

GeoLog, LLC

P.O. Box 2571 Cottonwood AZ. 86326
(928) 899-6491
ccatalano@geologaz.com

WELL Cocopal Well #3
TYPE of LOGS Elogs,SP,Gam
Date 12-04-23
SYSTEM NAME

CLIENT KP Ventures
WELL ID Cocopal Well #4 ELOGS, SP, GAMMA, FLUID
PROJECT CocoPal
COUNTY Yuma STATE Arizona

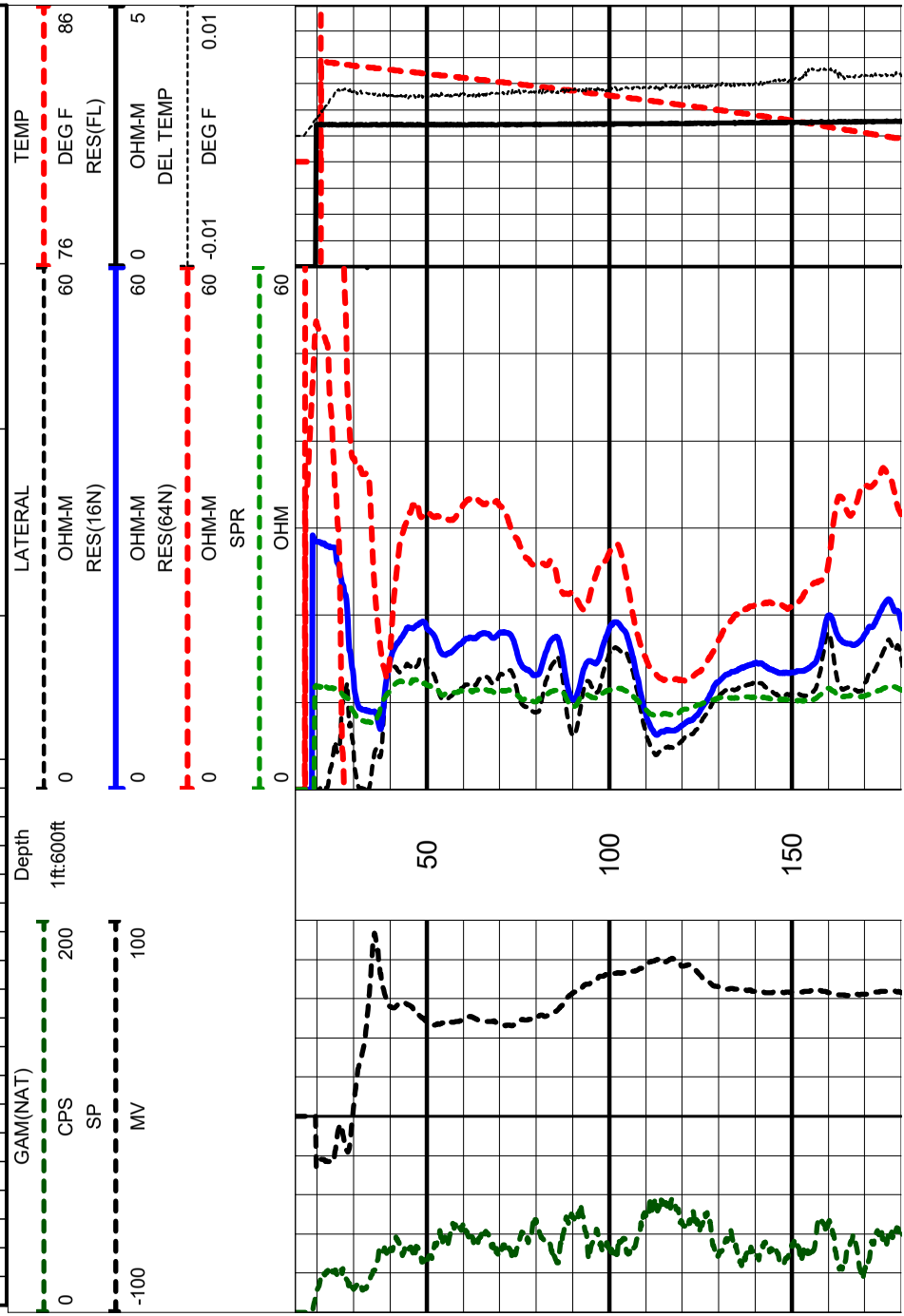
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W 114 deg 40 min 19.2 sec
SEC TWP RGE

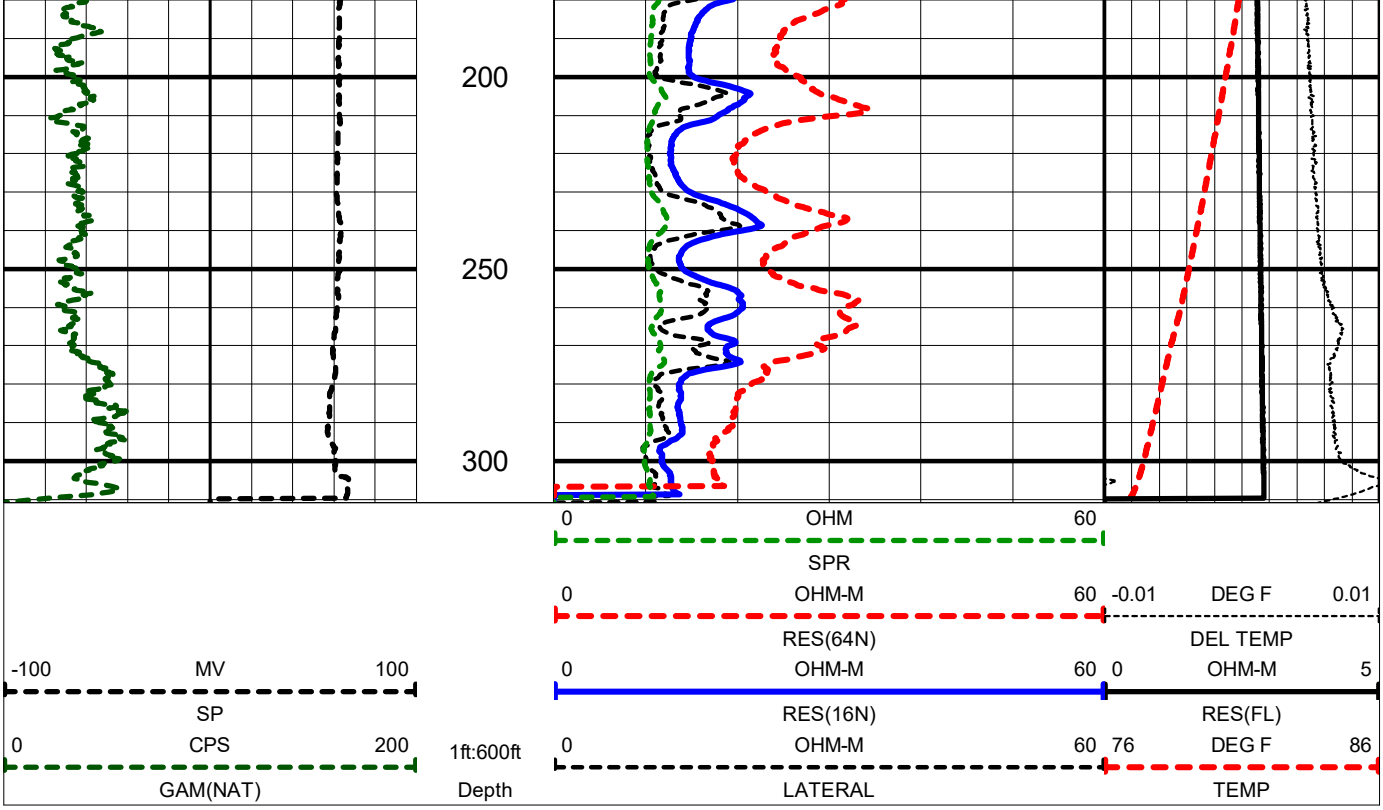
OTHER SERVICES
Caliper
Sonic
Dual Guard

PERMANENT DATUM	Ground Level	ELEVATION G.L. 709 ft-amsl	K.B.
LOGS MEAS. FROM	Ground Level	SURFACE CONDUCTOR 38 ft-bgl	D.F.
DRILLING MEAS. FROM	Ground Level		G.L.

DATE	12-04-23	TYPE FLUID IN HOLE	Drilling Mud
RUN No	2	RES MUD	2.9 ohm-m
WELL TYPE	Water Production	RES MUD FILTRATE	
DEPTH-DRILLER	310 ft-bgl	RES WALL CAKE	
DEPTH-LOGGER	311 ft-bgl	MAX. REC. TEMP.	83.8 Deg F
ADDITIVES	Bentonite, Polymer		
BIT TYPE	16 inch diameter Tricone		
DRILLING METHOD	Flooded R/C		
RECORDED BY	Yovanni Rosas		
WITNESSED BY	Matrix		

RUN	Logging Tools Used / Century System VI			CASING RECORD / BIT RECORD			
NO.	TOOL S/N	FROM	TO	SIZE	WGT.	FROM	TO
RUN 1	Caliper	0	311 ft-bgl			0	
RUN 2	Elogs,sp,gamma	0	311 ft-bgl				
RUN 3	Sonic	0	311 ft-bgl	CAL DATE	12-04-23		
RUN 4	Dual Guard	0	311 ft-bgl				
RUN 5				SHOP			
RUN 6							




200
250
300
0
OHM
60
SPR
0
OHM-M
60
-0.01
DEG F
0.01
RES(64N)
DEL TEMP
-100
MV
100
0
OHM-M
60
0
OHM-M
5
SP
RES(16N)
RES(FL)
0
CPS
200
1ft:600ft
0
OHM-M
60
76
DEG F
86
GAM(NAT)
Depth
LATERAL
TEMP

GeoLog, LLC

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ccatalano@geologaz.com

WELL Cocopal Well #3
TYPE of LOGS Sonic & Caliper
Date 12-04-23
SYSTEM NAME

CLIENT KP Ventures
WELL ID Cocopal Well #4 SONIC and CALIPER
PROJECT CocoPal
COUNTY Yuma STATE Arizona

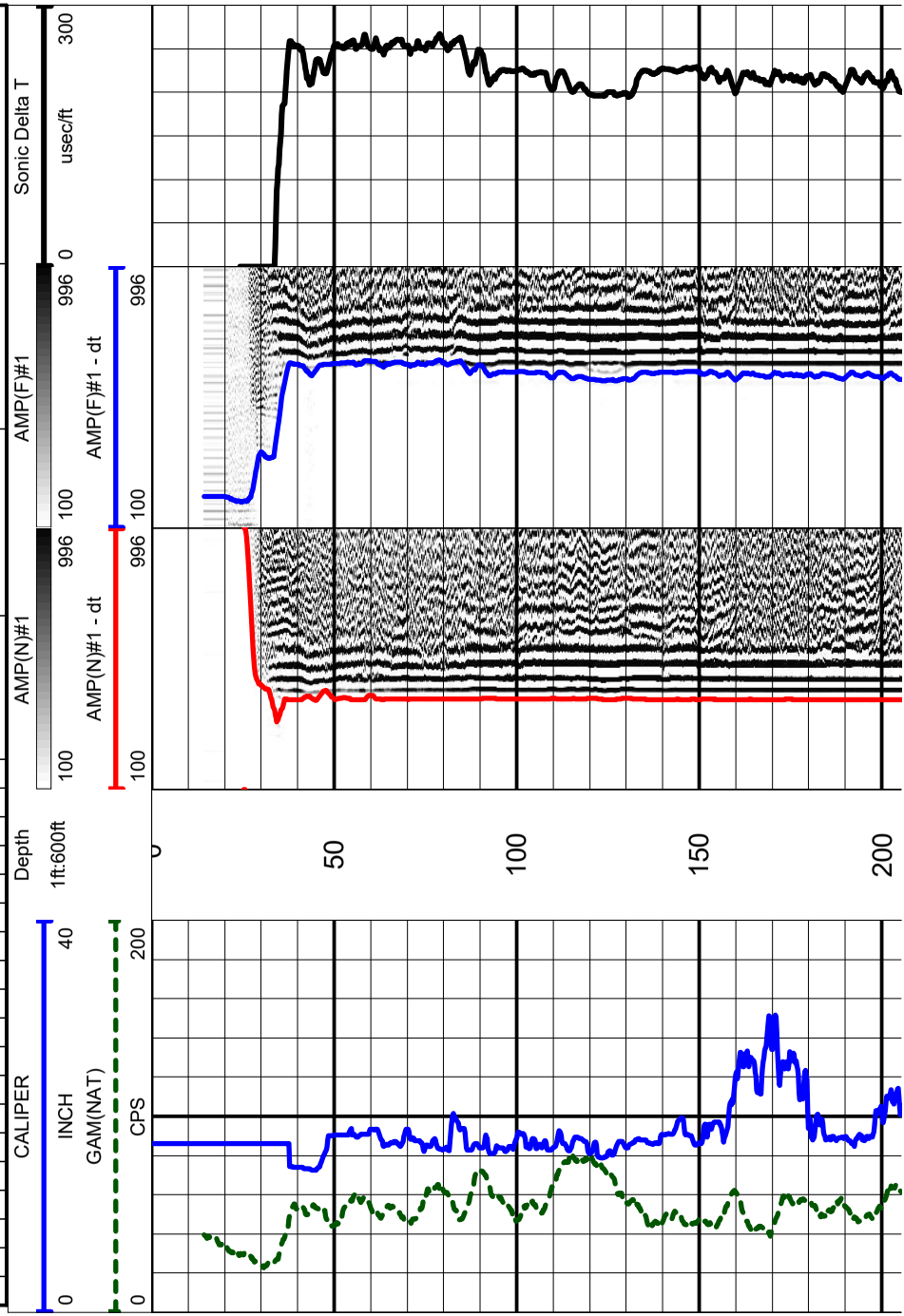
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W 114 deg 40 min 19.2 sec
SEC TWP RGE

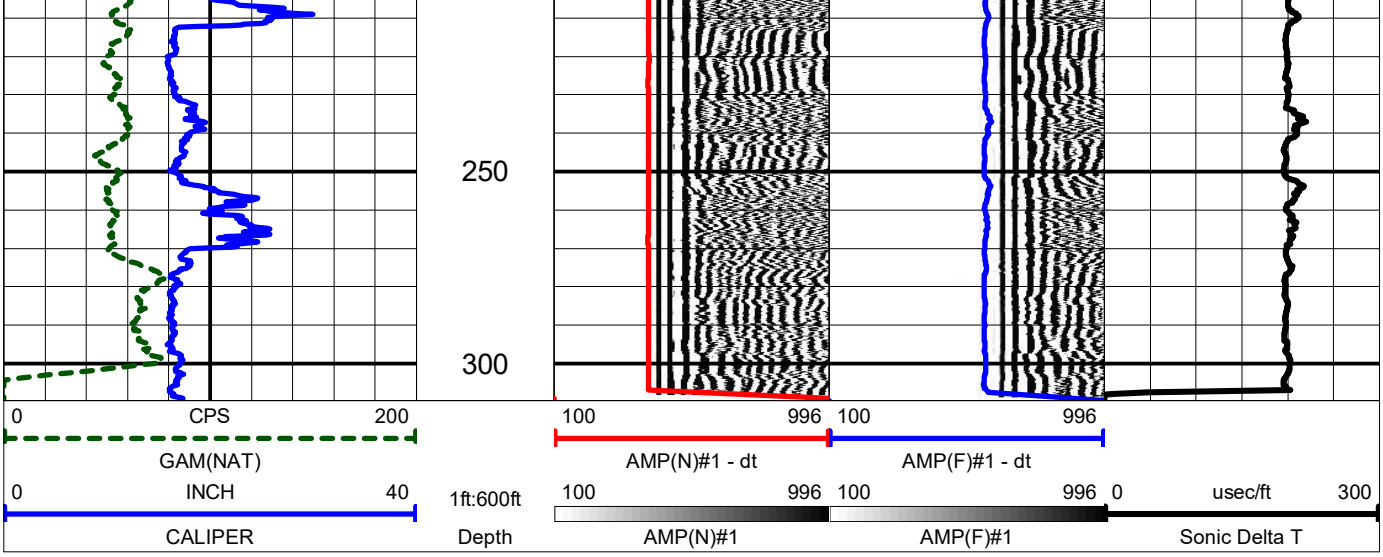
OTHER SERVICES
Magnetic Deviation
Elogs, SP, Gamma, Fluid
Dual Guard

PERMANENT DATUM	Ground Level	ELEVATION G.L. 709 ft-amsl	K.B.
LOGS MEAS. FROM	Ground Level	SURFACE CONDUCTOR 38 ft-bgl	D.F.
DRILLING MEAS. FROM	Ground Level		G.L.

DATE	12-04-23	TYPE FLUID IN HOLE	Drilling Mud
RUN No	3/1	RES MUD	1.7 ohm-m
WELL TYPE	Water Production	RES MUD FILTRATE	
DEPTH-DRILLER	310 ft-bgl	RES WALL CAKE	
DEPTH-LOGGER	311 ft-bgl	MAX. REC. TEMP.	82.4 Deg F
ADDITIVES	Bentonite, Polymer		
BIT TYPE	16 inch diameter Tricone		
DRILLING METHOD	Flooded R/C		
RECORDED BY	Yovanni Rosas		
WITNESSED BY	Matrix		

RUN	Logging Tools Used / Century System VI			CASING RECORD / BIT RECORD			
NO.	TOOL S/N	FROM	TO	SIZE	WGT.	FROM	TO
RUN 1	Caliper	0	311 ft-bgl			0	
RUN 2	Elogs,sp,gamma,dev	0	311 ft-bgl				
RUN 3	Sonic	0	311 ft-bgl	CAL DATE	12-04-23		
RUN 4	Dual Guard	0	311 ft-bgl				
RUN 5				SHOP			
RUN 6							




250
300
0
CPS
200
GAM(NAT)
0
INCH
40
CALIPER
1ft:600ft
Depth
100
996
100
996
AMP(N)#1 - dt
AMP(F)#1 - dt
100
996
100
996
AMP(N)#1
AMP(F)#1
0
usec/ft
300
Sonic Delta T

GeoLog, LLC

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WELL Cocopal Well #3
TYPE of LOGS Dual Guard
Date 12-04-23
SYSTEM NAME

CLIENT KP Ventures
WELL ID Cocopal Well #4 DUAL GUARD, ELOGS, CALIPER
PROJECT CocoPal
COUNTY Yuma STATE Arizona

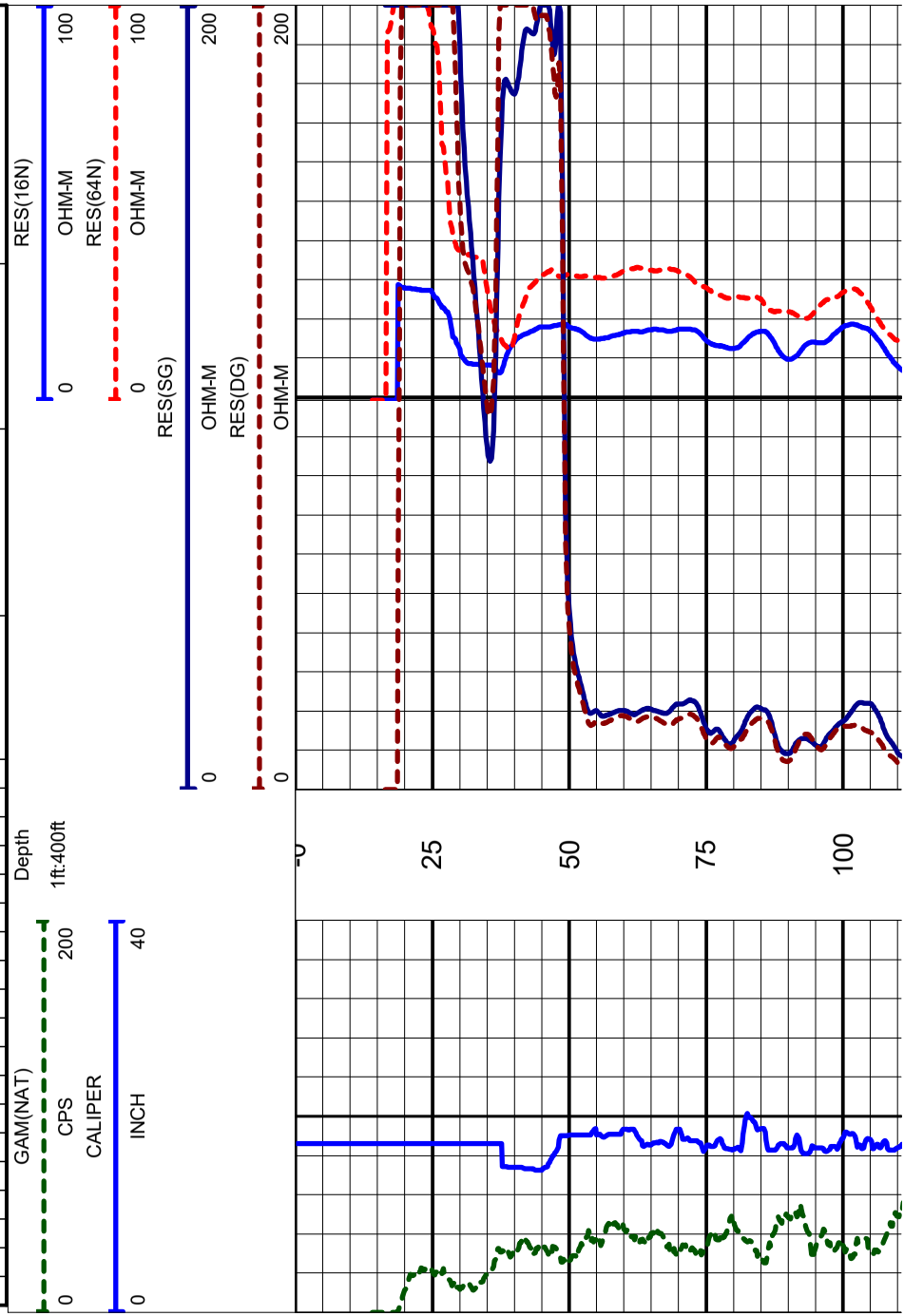
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W 114 deg 40 min 19.2 sec
SEC TWP RGE

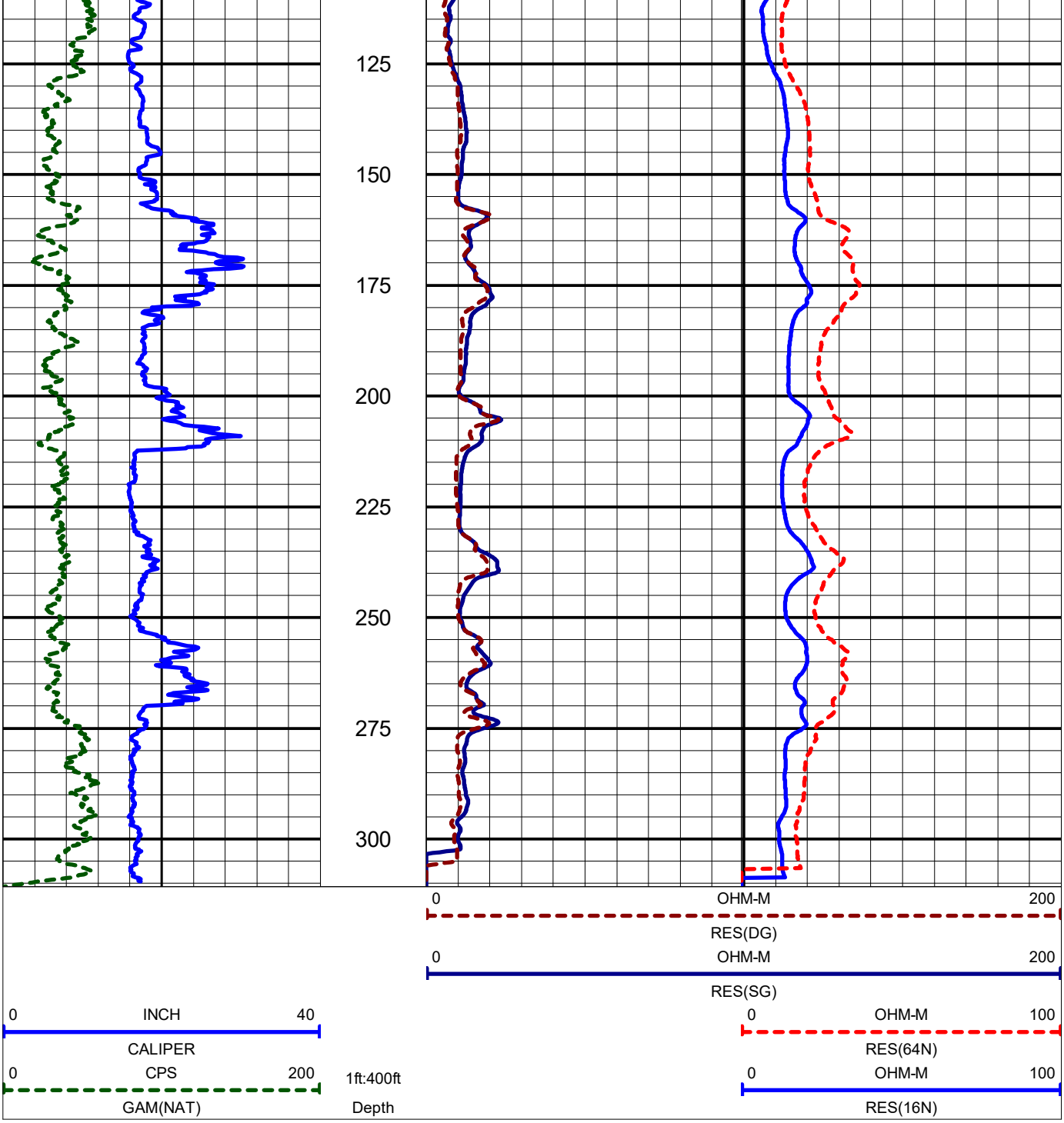
OTHER SERVICES
Magnetic Deviation
SP, Fluid
Sonic

PERMANENT DATUM	Ground Level	ELEVATION G.L. 709 ft-amsl	K.B.
LOGS MEAS. FROM	Ground Level	SURFACE CONDUCTOR 38 ft-bgl	D.F.
DRILLING MEAS. FROM	Ground Level		G.L.

DATE	12-04-23	TYPE FLUID IN HOLE	Drilling Mud
RUN No	4/2/1	RES MUD	2.9 ohm-m
WELL TYPE	Water Production	RES MUD FILTRATE	
DEPTH-DRILLER	310 ft-bgl	RES WALL CAKE	
DEPTH-LOGGER	311 ft-bgl	MAX. REC. TEMP.	83.8 Deg F
ADDITIVES	Bentonite, Polymer		
BIT TYPE	16 inch diameter Tricone		
DRILLING METHOD	Flooded R/C		
RECORDED BY	Yovanni Rosas		
WITNESSED BY	Matrix		

RUN	Logging Tools Used / Century System VI			CASING RECORD / BIT RECORD			
NO.	TOOL S/N	FROM	TO	SIZE	WGT.	FROM	TO
RUN 1	Caliper	0	311 ft-bgl			0	
RUN 2	Elogs,sp,gamma	0	311 ft-bgl				
RUN 3	Sonic	0	311 ft-bgl	CAL DATE	12-04-23		
RUN 4	Dual Guard	0	311 ft-bgl				
RUN 5				SHOP			
RUN 6							




125
150
175
200
225
250
275
300
0
OHM-M
200
RES(DG)
0
OHM-M
200
RES(SG)
0
INCH
40
CALIPER
0
CPS
200
GAM(NAT)
1ft:400ft
Depth
0
OHM-M
100
RES(64N)
0
OHM-M
100
RES(16N)

GeoLog, LLC

P.O. Box 2571 Cottonwood AZ. 86326
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ccatalano@geologaz.com

WELL Cocopal Well #3
TYPE of LOGS Deviation
Date 12-04-23
SYSTEM NAME

CLIENT KP Ventures
WELL ID Cocopal Well #4 MAGNETIC DEVIATION
PROJECT CocoPal
COUNTY Yuma STATE Arizona

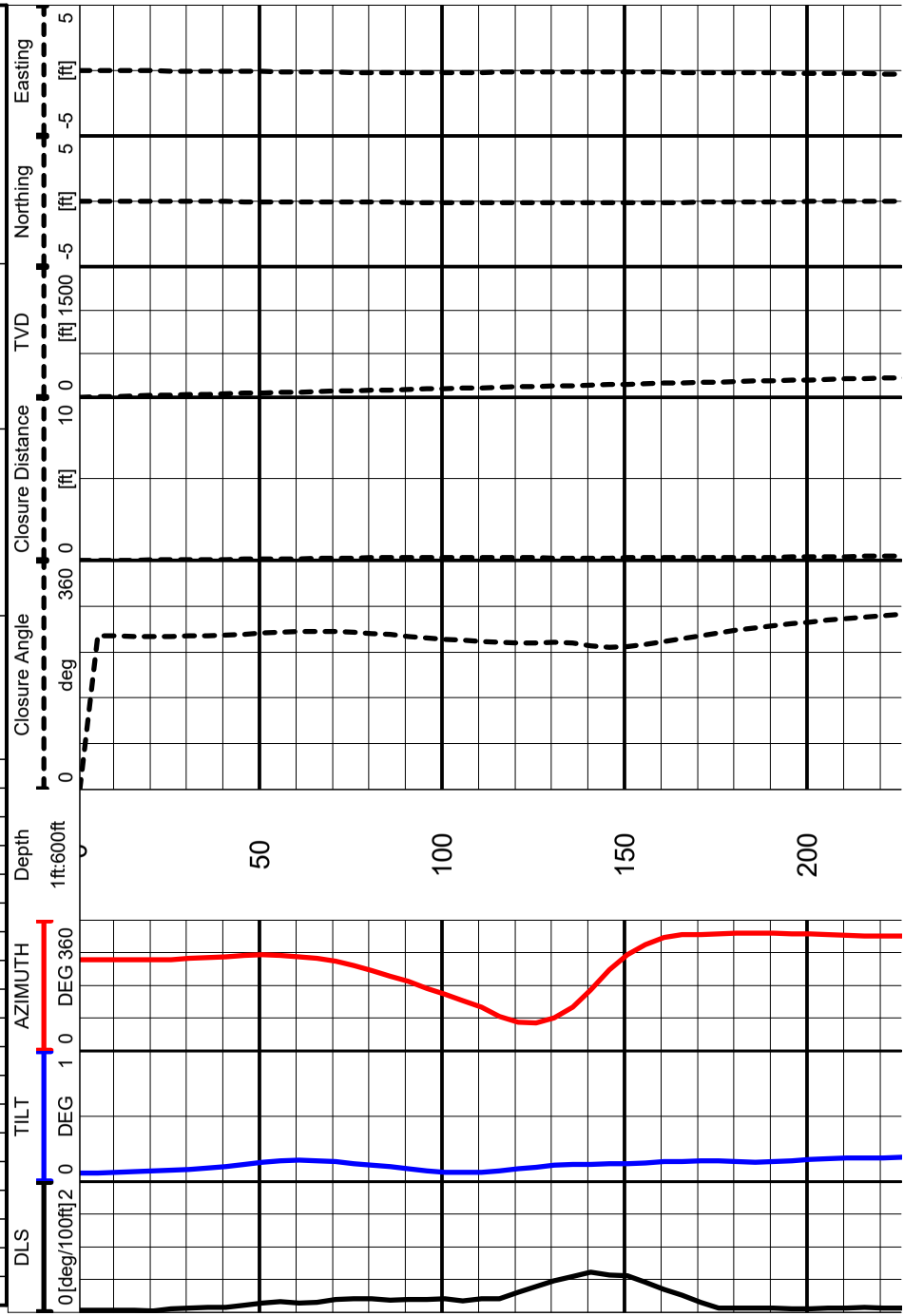
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W 114 deg 40 min 19.2 sec
SEC TWP RGE

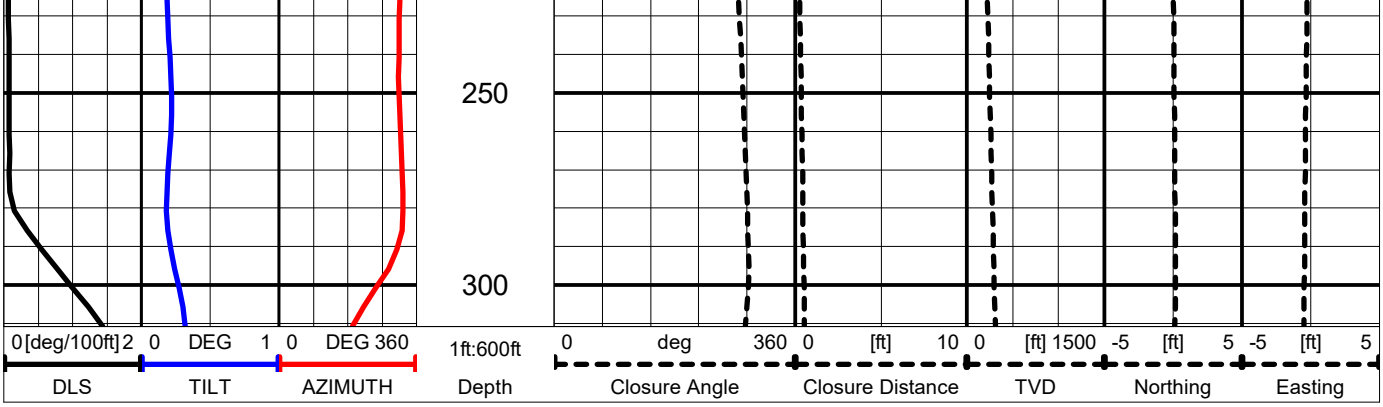
OTHER SERVICES
Caliper
Elogs, SP, Gamma, Fluid
Sonic
Dual Guard

PERMANENT DATUM	Ground Level	ELEVATION G.L. 709 ft-amsl	K.B.
LOGS MEAS. FROM	Ground Level	SURFACE CONDUCTOR 38 ft-bgl	D.F.
DRILLING MEAS. FROM	Ground Level		G.L.

DATE	12-04-23	TYPE FLUID IN HOLE	Drilling Mud
RUN No	2	RES MUD	1.7 ohm-m
WELL TYPE	Water Production	RES MUD FILTRATE	
DEPTH-DRILLER	310 ft-bgl	RES WALL CAKE	
DEPTH-LOGGER	311 ft-bgl	MAX. REC. TEMP.	82.4 Deg F
ADDITIVES	Bentonite, Polymer		
BIT TYPE	16 inch diameter Tricone		
DRILLING METHOD	Flooded R/C		
RECORDED BY	Yovanni Rosas		
WITNESSED BY	Matrix		

RUN	Logging Tools Used / Century System VI			CASING RECORD / BIT RECORD			
NO.	TOOL S/N	FROM	TO	SIZE	WGT.	FROM	TO
RUN 1	Caliper	0	311 ft-bgl			0	
RUN 2	Elogs,sp,gamma,dev	0	311 ft-bgl				
RUN 3	Sonic	0	311 ft-bgl	CAL DATE	12-04-23		
RUN 4	Dual Guard	0	311 ft-bgl				
RUN 5				SHOP			
RUN 6							




250
300
0 [deg/100ft] 2
0 DEG 1
0 DEG 360
1ft:600ft
0 deg 360
0 [ft] 10
0 [ft] 1500
-5 [ft] 5
-5 [ft] 5
DLS
TILT
AZIMUTH
Depth
Closure Angle
Closure Distance
TVD
Northing
Easting

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APPENDIX E

Casing Certifications and Pipe Tally

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PIPE TALLY

WELL CASING AND SCREEN

Date: 12/18/23 **Page:** 1 of 1

Job No.:	22-0672	Job Title:	East Cocopah Water System
Well No.:	55- NA	Reported By:	J. Lawrence
Well Name:	E. Cocopah Water System Well No. 4	Well Location:	C(10-24)12 DCD
Total Depth:	299 ft bls	Weather:	Cool

Type of Connections: [X] Welded [ ] Threaded + Coupled [ ] Flush Thread [ ] Other

Pipe #	Length (feet)	Length Sum (feet)	BOP* Depth (feet bls)	Pipe Type	Pipe #	Length (feet)	Length Sum (feet)	BOP* Depth (feet bls)	Pipe Type
1	10.47	10.47	299.00	Blank w/Bullnose	36				
2	20.04	30.51	288.53	Screen	37				
3	20.02	50.53	268.49	Screen	38				
4	20.02	70.55	248.47	Screen	39				
5	20.02	90.57	228.45	Screen	40				
6	19.98	110.55	208.43	Screen	41				
7	20.02	130.57	188.45	Screen	42				
8	20.12	150.69	168.43	Blank	43				
9	20.12	170.81	148.31	Blank	44				
10	20.12	190.93	128.19	Blank	45				
11	20.12	211.05	108.07	Blank	46				
12	20.05	231.10	87.95	Blank	47				
13	20.05	251.15	67.90	Blank	48				
14	20.15	271.30	47.85	Blank	49				
15	20.05	291.35	27.70	Blank	50				
16	10.00	301.35	7.65	Blank	51				
17					52				
18					53				
19					54				
20					55				
21					56				
22					57				
23					58				
24					59				
25					60				
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									

SUMMARY OF TALLY

Total length of casing/screen tallied (feet):	301.35
Length of casing cut off after landing (feet):	0.0
Stickup (feet above top of surface casing):	0.0
Stickup (feet above land surface):	2.35
Bottom of casing (feet bls):	299.00
Screened Intervals (feet bls):	169-289
Total length of screen (feet):	120.10
Total length of blank casing (feet):	181.25
(= blank casing + end cap - cut off)	

Notes: * BOP = Bottom of pipe

Screen is 8.7-inch (OD) Wire Wrap Type 304 Stainless Steel (0.100-inch slot).

Blank casing is 8.625-inch (OD) Type 304 Stainless Steel.

CHUNGHUNGSTEEL

MILL TEST CERTIFICATE

CHUNG HUNG STEEL CORPORATION (CSC GROUP)
317, YU LIAO ROAD, CHIAO TOU DISTRICT,
KAOHSIUNG CITY 82544, TAIWAN (R.O.C.)
TEL: +886-7-6117171 FAX: +886-7-6110594
COMPANY REGISTRATION NUMBER:07838854

CUSTOMER	MASTER PIPE DISTRIBUTION COMPANY, LLC	CERTIFICATE NO.	P22A260011-1
COMMODITY	ERW BLACK CARBON STEEL PIPE, BEVELED ENDS, MILL'S LACQUER COATING, WITH PLASTIC END CAPS. SPEC: API 5L B/X42 PSL 1 (46TH ED., 2018) / ASME SA-53 B -2017 / ASTM A53 B -2018	CONTRACT NO.	PA196IA-01
SPECIFICATION STANDARD	API 5L B/X42 PSL 1 (46TH ED., 2018) / ASME SA-53 B -2017 / ASTM A53 B -2018	ORDER NO.	3804

ISSUE DATE	SHIPPING DATE	INVOICE NO.
NOV 03 2022	NOV 03 2022	IP22100033

Heat No. (Lot. No.)	Size	Quantity	Flattening	Hardness (HRC)
21ML460 (S322800006)	18" x 0.375" x 40.17'	14 pcs (18.018 MT)	Acceptable	-
22MP437 (S322900001)	18" x 0.375" x 40.17'	1 pcs (1.335 MT)	Acceptable	-
22PA220 (S322900001)	18" x 0.375" x 40.17'	31 pcs (39.897 MT)	Acceptable	-

Specification Level: - | Type of Pipe Process of Manufacture: ERW/HFW | Delivery Condition: Thermomechanical Rolled

Additional Information

Reference to API 5CT (10th Ed., 2018) / API 5L (46th Ed., 2018)
MTC in accordance with EN 10204 3.1 / AS/NZS 1163:2016 11.2.4
Hardness to NACE MR0175/MR0103 / ISO 15156-2:2003(E) / ISO 17945
Mercury and Lead Free
Country of Melt and Pour: TAIWAN
PO NO.: 3804 / 5871

*Note

1. Pipe Manufacturing:
   (MPL) LUKANG MILL: 42, Lugong Rd, Changhua Coastal Ind. Park, Lukang Township, Changhua County 50544, TAIWAN (R.O.C.)
   (MPD) DAFA MILL: 18, Huachung Rd, Dafa Ind. Park, Daliao Dist, Kaohsiung City 83162, TAIWAN (R.O.C.)
2. Coil Rolling: (CSC) China Steel, TAIWAN; (CHS) Chung Hung Steel, TAIWAN; (DSC) Dragon Steel, TAIWAN
3. Steelmaking: (CSC) China Steel, TAIWAN; (DSC) Dragon Steel, TAIWAN
4. UT Calibration Reference/Acceptance Level: Notch Type N5(L2), N10(L3) or N15 in accordance with API 5CT & 5L / ISO 10893-11
   Hole Size: 1.6 mm (0.063") or 3.2 mm (0.125")
5. Heat Treatment of Weld Seam: N (Normalizing)>=900°C(1652°F); A (Annealing)>=650°C(1202°F)
6. Tensile Test Specimen Size:
   API / ASTM No.2 to No.4 in accordance with the longitudinal strip tension test specimen number of ASTM A370 Fig. A2.3
   ASTM T in accordance with the transverse tension test specimen of ASTM A370 Fig. A2.5
   JIS in accordance with Z2241
   AS/NZS in accordance with AS 1391
7. Tensile Test Specimen Type: Circular Segments in accordance with ASTM A370 / ASTM E8/E8M
8. Impact Test Specimen Size:
   API in accordance with ASTM A370
   AS/NZS in accordance with AS 1544.2 / AS/NZS 1163:2016 9.4.2.2
9. The test data presented in USC units were converted from the SI measurement system used for the original inspection

Information of Inspection				Chemical Compositions (%)																		C.E. (%)		Mechanical Properties															
																								Tensile Test							Impact Test									
Heat No. (Lot No.) (Pipe Mfg.) *1 (Coil Rolling) *2 (Steelmaking) *3	Hydro Test Pressure psi (Hold Time)	UT Weld Seam *4	Heat Treat Weld Seam *5	Test Freq.	C	Si	Mn	P	S	V	Al	Nb	Ti	Mo	Cu	Ni	Cr	B	Nb + V + Ti	Nb + V	IIW	Pcm	Aged	Loc.	Specimen *6 *7 Nominal Width (mm)	Y.S. (ksi)	T.S. (ksi)	YS/TS Ratio (%)	EL. (%)	Aged	Loc.	Specimen *8	Individual Value (ft.lbs)			Ave. (ft.lbs)	Temp. (°F)
					x100			x1000		x100								x10000	x100														-	-		-	-
																																	-	-		-	-
					20 max.	25 max.	120 max.	30 max.	30 max.	8 max.	10 max.	-	4 max.	10 max.	40 max.	40 max.	30 max.	-	15 max.	6 max.	0.43 max.	0.25 max.												-	-		-	-
21ML460 (S322800006) (MPD) (CHS) (DSC)	1490 (5s)	N10	A	L	14	13	94	13	3	TR	3	2	TR	TR	1	1	1	2	2	2	-	-	N	T180	(T) 38.40	55.8	63.7	87.6	32.4	-	-	-	-	-	-	-	-
				P	14	12	91	13	3	TR	3	2	TR	0	TR	TR	1	1	2	2	-	-	N	W	(T) 38.40	-	90.8	-	-	-	-	-	-	-	-	-	-
				P	14	12	92	13	3	TR	3	2	TR	0	TR	TR	1	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22MP437 (S322900001) (MPD) (CHS) (DSC)	1490 (5s)	N10	A	L	14	16	93	17	2	TR	3	2	TR	TR	2	1	2	1	2	2	-	-	N	T180	(T) 38.40	58.0	77.3	75.0	33.0	-	-	-	-	-	-	-	-
				P	15	14	97	17	3	TR	3	2	TR	0	TR	TR	1	1	2	2	-	-	N	W	(T) 38.40	-	82.4	-	-	-	-	-	-	-	-	-	-
				P	15	14	97	16	3	TR	3	2	TR	0	TR	TR	1	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22PA220 (S322900001) (MPD) (CHS) (DSC)	1490 (5s)	N10	A	L	14	16	94	16	2	TR	3	2	TR	TR	2	1	2	2	2	2	-	-	N	T180	(T) 38.40	59.9	78.5	76.2	33.2	-	-	-	-	-	-	-	-
				P	15	14	97	17	3	TR	3	2	TR	0	TR	TR	1	1	2	2	-	-	N	W	(T) 38.40	-	81.7	-	-	-	-	-	-	-	-	-	-
				P	14	14	97	16	3	TR	3	2	TR	0	TR	TR	1	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCEWITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION.

This product has been manufactured under API License No. 5L-0169 / 5L-1042 using a quality system that complies with ISO 9001 No. 7M8Y003-12 (ISO 9001:2015). We certify that the material has been supplied in accordance with the product specifications listed on this test certificate. Steelmaking process is basic oxygen continuously cast, fine-grained, and fully killed steels. Inspections and tests covered include visual, ultrasonic (N10 Notch, dia 3.2 Hole), flattening, weld ductility, hydrostatic pressure (hoop stress of 85% of SMYS for 5 seconds), mass and dimensions. The chemistry (except Boron is tested by CSC TAF No.0130), tensile and charpy test results reported on this certificate have been derived from tests performed by CHS, TAF No. 2824, in accordance with the terms of ILAC.

GENERAL MANAGER
TECHNOLOGY DEPARTMENT

Chengen Lan

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APPENDIX F

Field Notes – Well Development and Aquifer Testing

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Water Level Drawdown

Constant-rate Discharge Test

Date: 1/22/2024 **Page:** 1 of 1

Job Number:	22-0672	Job Title:	East Cocopah Water System Well No. 4
Well No.:	NA	Reported By:	J. Lawrence
Pump Agency:	KP Ventures	Static Water Level:	42.27 feet bls
Foreman:	Christian Diaz	Measure Point:	Top of sounding tube
Pump make, size, intake depth:	SEI 30 HP, 8-Stage Submersible Pump	Stick-up:	3.22 feet
Average Q (gpm):	150	Line Correction:	0 feet

Clock Time	Time Since Pump Start (t)	Sounder Reading	Pumping Water Level	Draw Down (s)	Discharge Rate (Q)	Specific Capacity	Specific Draw Down	Remarks
	minutes	feet	feet bls	feet	gpm	gpm/ft	ft/gpm	
7:30	0	45.49	42.27					Pump on
7:31	1							
7:32	2							
7:33	3							
7:34	4							
7:35	5	46.19	42.97	0.70	150	214.286	0.0047	
7:36	6	46.26	43.04	0.77	150	194.805	0.0051	
7:37	7	46.29	43.07	0.80	150	187.500	0.0053	
7:38	8	46.31	43.09	0.82	150	182.927	0.0055	
7:39	9	46.32	43.10	0.83	150	180.723	0.0055	
7:40	10	46.31	43.09	0.82	150	182.927	0.0055	
7:42	12	46.29	43.07	0.80	150	187.500	0.0053	
7:44	14	46.29	43.07	0.80	150	187.500	0.0053	
7:46	16	46.30	43.08	0.81	150	185.185	0.0054	
7:48	18	46.31	43.09	0.82	150	182.927	0.0055	
7:50	20	46.31	43.09	0.82	150	182.927	0.0055	
7:55	25	46.31	43.09	0.82	150	182.927	0.0055	
8:00	30	46.32	43.10	0.83	150	180.723	0.0055	
8:10	40	46.32	43.10	0.83	150	180.723	0.0055	
8:20	50	46.32	43.10	0.83	150	180.723	0.0055	
8:30	60	46.33	43.11	0.84	150	178.571	0.0056	
8:45	75	46.34	43.12	0.85	160	188.235	0.0053	
9:00	90	46.34	43.12	0.85	150	176.471	0.0057	
9:30	120	46.33	43.11	0.84	150	178.571	0.0056	
10:00	150	46.34	43.12	0.85	150	176.471	0.0057	
10:30	180	46.35	43.13	0.86	150	174.419	0.0057	
11:00	210	46.39	43.17	0.90	150	166.667	0.0060	
11:30	240	46.44	43.22	0.95	150	157.895	0.0063	Sample Collected
12:00	270	46.51	43.29	1.02	150	147.059	0.0068	
12:30	300	46.53	43.31	1.04	160	153.846	0.0065	
13:00	330	46.54	43.32	1.05	160	152.381	0.0066	
13:30	360	46.55	43.33	1.06	160	150.943	0.0066	
14:00	390	46.57	43.35	1.08	160	148.148	0.0067	
14:30	420	46.59	43.37	1.10	160	145.455	0.0069	
15:30	480	46.45	43.23	0.96	150	156.250	0.0064	Pump off
16:30	540	46.34	43.12	0.85	150	176.471	0.0057	
17:30	600	46.40	43.18	0.91	160	175.824	0.0057	
18:30	660	46.42	43.20	0.93	160	172.043	0.0058	
19:30	720	46.43	43.21	0.94	160	170.213	0.0059	
END OF CONSTANT-RATE DISCHARGE TEST								

43.37 = Max PWL
1.10 = Max DDN

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Water Quality Parameters

Constant-rate Discharge Test

Date: 1/22/2024 **Page:** 1 of 1

Job Number:	22-0672	Job Title:	East Cocopah Water System Well No. 4
Well No.:	NA	Reported By:	J. Lawrence
Pump Agency:	KP Ventures	Static Water Level:	42.27 feet bls
Foreman:	Christian Diaz	Measure Point:	Top of sounding tube
Pump make, size, intake depth:	SEI 30 HP, 8-Stage Submersible Pump	Stick-up:	3.22 feet
Average Q (gpm):	150	Line Correction:	0 feet

Clock Time	Sounder Reading	Temp.	pH	Specific Cond.	Total Dissolved Solids	Visual Turbidity	Solids Rossum	Remarks
	feet	°F	SU	µS/cm	ppm	*	mL	Imhoff
8:30	46.37	70.1	7.65	1902	931	clear	0.4	
9:30	46.33	69.0	7.81	1933	943	milky	0.6	0.2
10:30	46.35	79.5	7.71	1887	922	milky	0.6	0.1
11:30	46.48	77.9	7.85	1895	938	milky	0.7	trace
12:30	46.53	78.8	7.89	1902	939	milky	0.8	trace
13:30	46.55	79.5	7.91	191	950	milky	1.1	trace
14:30	46.54	70.7	7.77	1917	950	clear	1.3	trace
15:30	46.45	70.3	7.75	1920	959	clear	1.6	trace

END OF CONSTANT-RATE DISCHARGE TEST

Notes: °F = degrees Fahrenheit µS/cm = microsiemens per centimeter ppm = parts per million
* = clear, milky, low, medium, high mL = milliliters

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Engineering Progress

Water Level Recovery

Constant-rate Discharge Test

Date: 10/25/23 - 10/27/23 **Page:** 1 of 2

Job Number:	22-0672	Job Title:	East Cocopah Water System Well No. 4
Well No.:	NA	Reported By:	J. Lawrence
Pump Agency:	KP Ventures	Static Water Level:	42.27 feet bls
Foreman:	Christian Diaz	Measure Point:	Top of sounding tube
Pump make, size, intake depth:	SEI 30 HP, 8-Stage Submersible Pump	Stick-up:	3.22 feet
Average Q (gpm):	150	Line Correction:	0 feet

Clock Time	Time Since Pump Start (t)	Time Since Pump Stop (t')	Ratio t/t'	Sounder Reading	Recovery Water Level	Residual Draw Down (s')	Remarks
	minutes	minutes		feet	feet bls	feet	
19:30	720	0		46.43	43.21	0.94	**Pump off 01/22/24**
19:31	721	1	721.0	45.61	42.39	0.12	
19:32	722	2	361.0	45.59	42.37	0.10	
19:33	723	3	241.0	45.58	42.36	0.09	**3 minutes- 90% recovery**
19:34	724	4	181.0	45.55	42.33	0.06	
19:35	725	5	145.0	45.55	42.33	0.06	
19:36	726	6	121.0	45.51	42.29	0.02	**6 minutes- 98% recovery**
19:37	727	7	103.9	45.48	42.26	-0.01	**7 minutes- >100% recovery**
19:38	728	8	91.0	45.45	42.23	-0.04	
19:39	729	9	81.0	45.43	42.21	-0.06	
19:40	730	10	73.0	45.43	42.21	-0.06	
19:42	732	12	61.0	45.43	42.21	-0.06	
19:44	734	14	52.4	45.44	42.22	-0.05	
19:46	736	16	46.0	45.43	42.21	-0.06	
19:48	738	18	41.0	45.43	42.21	-0.06	
19:50	740	20	37.0	45.43	42.21	-0.06	
19:55	745	25	29.8	45.42	42.20	-0.07	
20:00	750	30	25.0	45.42	42.20	-0.07	
END OF RECOVERY READINGS							

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Engineering Progress

APPENDIX G

Laboratory Analytical Report

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Dylan Easthouse
Matrix New World Engineering
3033 North 44th Street, Ste 270
Phoenix, Arizona 85018

Generated 2/28/2024 9:33:05 AM

JOB DESCRIPTION

Cocopah

JOB NUMBER

550-213257-1

Eurofins Phoenix
4625 East Cotton Center Boulevard
Suite #189
Phoenix AZ 85040

See page two for job notes and contact information.

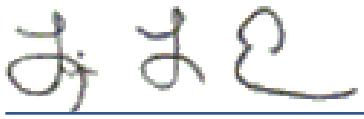
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Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southwest, LLC Project Manager.

Authorization



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Authorized for release by
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(602)659-7681

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Definitions/Glossary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
M2	Matrix spike recovery was low, the associated blank spike recovery was acceptable.

GC Semi VOA

Qualifier	Qualifier Description
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.
T5	Laboratory not licensed for this parameter

HPLC/IC

Qualifier	Qualifier Description
D2	Sample required dilution due to high concentration of analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL) but above MDL.

Metals

Qualifier	Qualifier Description
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike was acceptable.
T5	Laboratory not licensed for this parameter
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

General Chemistry

Qualifier	Qualifier Description
H1	Sample analysis performed past holding time.
H5	This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
N7	Additional analysis was not performed based on the "Total" result which was below the requested analyte's MCL/Action level/Trigger level.
T5	Laboratory not licensed for this parameter

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 550-213257-1 — Eurofins Phoenix

Job Narrative
550-213257-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 1/22/2024 5:05 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.2°C and 2.3°C.

Receipt Exceptions
A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

Subcontract Work
Method Asbestos: This method was subcontracted to Fiberquant Inc. The subcontract laboratory certification is different from that of the facility issuing the final report. The subcontract report is appended in its entirety.

Methods Gross Alpha by EPA 900.0, Radium 226, 228 by EPA 903.0/904.0, Uranium 234, 235, 238 and Total: These methods were subcontracted to Radiation Safety Eng., Inc. The subcontract laboratory certifications are different from that of the facility issuing the final report. The subcontract report is appended in its entirety.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC/MS Semi VOA
Method 548.1_PREC: The matrix spike (550-213257-N-1-B MS) recovery for preparation batch 810-86815 and analytical batch 810-86889 was outside control limits (70% - 142%) for Endothall (57%). The associated laboratory control sample (LCS) recovery was within acceptance limits. Sample results may be low biased.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

PFAS
Method 537.1_DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-738244.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Dioxin
Method 1613B_DW: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following samples run on instrument 10D5 exceeded this criteria: Cocopah-271-01222024 (550-213257-1), (CCV 320-740746/2), (LCS 320-738000/2-A), (LCSD 320-738000/3-A), (LLCS 320-738000/4-A) and (MB 320-738000/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

Job ID: 550-213257-1 (Continued) Eurofins Phoenix

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals
Method 200.8: The continuing calibration verification (CCV) associated with batch 550-315008 recovered above the upper control limit for Beryllium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. Cocopah-271-01222024 (550-213257-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
Method SM2150_Odor_B: The following sample was received outside of holding time. As such, the laboratory had insufficient time remaining to perform the analysis within holding time.: Cocopah-271-01222024 (550-213257-1).

Method SM5310B: The continuing calibration blank (CCB) associated with analytical batch 550-315213 exceeded the 10% relative percent difference method acceptance limit for consecutive replicates. All replicates were less than one half of the reporting limit; the data has been reported.

(CCB 550-315213/4)

Method SM5310B: The continuing calibration blank (MB) associated with analytical batch 550-315213 exceeded the 10% relative percent difference method acceptance limit for consecutive replicates. All replicates were less than one half of the reporting limit; the data has been reported.

(MB 550-315213/5)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Biology
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-213257-1	Cocopah-271-01222024	Water	01/22/24 11:30	01/22/24 17:05

Detection Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Client Sample ID: Cocopah-271-01222024

Lab Sample ID: 550-213257-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Inorganic Arsenic	6.9		0.50		ug/L	10		1632A	Total/NA
Nitrite as N	0.16		0.050		mg/L	1		300.0	Total/NA
Fluoride	0.45		0.40		mg/L	1		300.0	Total/NA
Chloride	190	D2	20		mg/L	10		300.0	Total/NA
Sulfate	450	D2	20		mg/L	10		300.0	Total/NA
Arsenic	7.2		0.10		ug/L	1		1638	Total Recoverable
Sodium	250	M3	0.50		mg/L	1		200.7	Total/NA
Calcium	110		2.0		mg/L	1		200.7	Total/NA
Iron	0.19		0.10		mg/L	1		200.7	Total/NA
Magnesium	34		2.0		mg/L	1		200.7	Total/NA
Manganese	0.25		0.010		mg/L	1		200.7	Total/NA
Potassium	4.6	T5	0.50		mg/L	1		200.7	Total/NA
SiO2, Silica	23		0.21		mg/L	1		200.7	Total/NA
Arsenic	0.0072		0.0010		mg/L	1		200.8	Total/NA
Barium	0.052		0.00050		mg/L	1		200.8	Total/NA
Copper	0.058		0.0020		mg/L	1		200.8	Total/NA
Lead	0.0027		0.00050		mg/L	1		200.8	Total/NA
Nickel	0.0031		0.0020		mg/L	1		200.8	Total/NA
Selenium	0.0013		0.00050		mg/L	1		200.8	Total/NA
Zinc	96		13		ug/L	1		200.8	Total/NA
Mercury	0.00057		0.00020		mg/L	1		245.1	Total/NA
Calcium hardness as calcium carbonate	280	T5	5.0		mg/L	1		SM 2340B	Total/NA
Total Hardness	420		13		mg/L	1		SM 2340B	Total/NA
Turbidity	0.65		0.20		NTU	1		180.1	Total/NA
Langelier Index	0.74	T5			LangSU	1		2330B	Total/NA
Ammonia	0.11	T5	0.050		mg/L	1		350.1	Total/NA
Color, Apparent	3.0		3.0		Color Units	1		SM 2120B	Total/NA
Odor	1.0	H1 T5	1.0		T.O.N.	1		SM 2150B	Total/NA
Alkalinity as CaCO3	250		6.0		mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	250		6.0		mg/L	1		SM 2320B	Total/NA
Specific Conductance	1800		2.0		umhos/cm	1		SM 2510B	Total/NA
Total Dissolved Solids	1300		20		mg/L	1		SM 2540C	Total/NA
pH	8.0	H5	1.7		SU	1		SM 4500 H+ B	Total/NA
Temperature	12.0	H5 T5	0.1		Degrees C	1		SM 4500 H+ B	Total/NA
Total Organic Carbon	1.2		0.50		mg/L	1		SM 5310B	Total/NA
Total Organic Carbon - Duplicates	1.2		0.50		mg/L	1		SM 5310B	Total/NA
Total Organic Carbon - Quad	1.2		0.50		mg/L	1		SM 5310B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: Cocopah-271-01222024
Date Collected: 01/22/24 11:30
Date Received: 01/22/24 17:05

Lab Sample ID: 550-213257-1
Matrix: Water

Method: EPA-DW 524.2 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.00050		mg/L			01/24/24 19:07	1
1,1,2-Trichloroethane	ND		0.00050		mg/L			01/24/24 19:07	1
1,1-Dichloroethene	ND		0.00050		mg/L			01/24/24 19:07	1
1,2,4-Trichlorobenzene	ND		0.00050		mg/L			01/24/24 19:07	1
1,2-Dichlorobenzene	ND		0.00050		mg/L			01/24/24 19:07	1
1,2-Dichloroethane	ND		0.00050		mg/L			01/24/24 19:07	1
1,2-Dichloropropane	ND		0.00050		mg/L			01/24/24 19:07	1
1,4-Dichlorobenzene	ND		0.00050		mg/L			01/24/24 19:07	1
Benzene	ND		0.00050		mg/L			01/24/24 19:07	1
Carbon tetrachloride	ND		0.00050		mg/L			01/24/24 19:07	1
Chlorobenzene	ND		0.00050		mg/L			01/24/24 19:07	1
cis-1,2-Dichloroethene	ND		0.00050		mg/L			01/24/24 19:07	1
Ethylbenzene	ND		0.00050		mg/L			01/24/24 19:07	1
Methylene Chloride	ND		0.00050		mg/L			01/24/24 19:07	1
Styrene	ND		0.00050		mg/L			01/24/24 19:07	1
Tetrachloroethene	ND		0.00050		mg/L			01/24/24 19:07	1
Toluene	ND		0.00050		mg/L			01/24/24 19:07	1
trans-1,2-Dichloroethene	ND		0.00050		mg/L			01/24/24 19:07	1
Trichloroethene	ND		0.00050		mg/L			01/24/24 19:07	1
Vinyl chloride	ND		0.00050		mg/L			01/24/24 19:07	1
Xylenes, Total	ND		0.0015		mg/L			01/24/24 19:07	1
Trihalomethanes, Total	ND		0.00050		mg/L			01/24/24 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*70 - 130*		*01/24/24 19:07*	*1*
1,2-Dichlorobenzene-d4	*99*		*70 - 130*		*01/24/24 19:07*	*1*

Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Heptachlor epoxide	ND		0.0097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Di(2-ethylhexyl)adipate	ND		0.58		ug/L		01/29/24 09:33	01/31/24 01:59	1
Di (2-ethylhexyl)phthalate	ND		0.58		ug/L		01/29/24 09:33	01/31/24 01:59	1
Hexachlorobenzene	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Simazine	ND		0.068		ug/L		01/29/24 09:33	01/31/24 01:59	1
Alachlor	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Atrazine	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Propachlor	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Metribuzin	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Butachlor	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Aldrin	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Benzo[a]pyrene	ND		0.019		ug/L		01/29/24 09:33	01/31/24 01:59	1
Metolachlor	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
gamma-BHC (Lindane)	ND		0.019		ug/L		01/29/24 09:33	01/31/24 01:59	1
Endrin	ND		0.0097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Methoxychlor	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Heptachlor	ND		0.0097		ug/L		01/29/24 09:33	01/31/24 01:59	1
Hexachlorocyclopentadiene	ND		0.097		ug/L		01/29/24 09:33	01/31/24 01:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Perylene-d12	*92*		*70 - 130*	*01/29/24 09:33*	*01/31/24 01:59*	*1*

Client Sample ID: Cocopah-271-01222024

Date Collected: 01/22/24 11:30
Date Received: 01/22/24 17:05

Lab Sample ID: 550-213257-1

Matrix: Water

Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Triphenylphosphate	*98*		*70 - 130*	*01/29/24 09:33*	*01/31/24 01:59*	*1*
2-Nitro-m-xylene	*100*		*70 - 130*	*01/29/24 09:33*	*01/31/24 01:59*	*1*

Method: EPA 548.1 - Endothall (GC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Endothall	ND	M2	5.0	ug/L		01/26/24 06:33	01/26/24 22:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*81*		*70 - 130*	*01/26/24 06:33*	*01/26/24 22:14*	*1*

Method: EPA 1632A - Arsenic Speciation by Hydride- Generation Cryo-Trapping GC-AAS

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Arsenic	**6.9**		0.50	ug/L			01/31/24 14:40	10

Method: EPA-DW2 504.1 - EDB, DBCP and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010	ug/L		01/26/24 10:08	01/26/24 19:55	1
1,2-Dibromo-3-Chloropropane	ND		0.010	ug/L		01/26/24 10:08	01/26/24 19:55	1

Method: EPA 505 - Organochlorine Pesticides/PCBs (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.080	ug/L		01/30/24 07:36	01/31/24 02:04	1
PCB-1221	ND		0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1
PCB-1232	ND		0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1
PCB-1242	ND		0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1
PCB-1248	ND		0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1
PCB-1254	ND		0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1
PCB-1260	ND		0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1
Chlordane (technical)	ND		0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1
Toxaphene	ND		0.50	ug/L		01/30/24 07:36	01/31/24 02:04	1
Total PCBs as DCB (Qualitative)	ND	T5	0.10	ug/L		01/30/24 07:36	01/31/24 02:04	1

Method: EPA 515.3 - Herbicides (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-TP (Silvex)	ND		0.10	ug/L		01/25/24 08:37	01/25/24 23:51	1
Dalapon	ND		1.0	ug/L		01/25/24 08:37	01/25/24 23:51	1
Dicamba	ND		0.10	ug/L		01/25/24 08:37	01/25/24 23:51	1
Dinoseb	ND		0.10	ug/L		01/25/24 08:37	01/25/24 23:51	1
Pentachlorophenol	ND		0.040	ug/L		01/25/24 08:37	01/25/24 23:51	1
Picloram	ND		0.10	ug/L		01/25/24 08:37	01/25/24 23:51	1
2,4-D	ND		0.10	ug/L		01/25/24 08:37	01/25/24 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*93*		*70 - 130*	*01/25/24 08:37*	*01/25/24 23:51*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.050	mg/L			01/24/24 02:34	1
Nitrite as N	**0.16**		0.050	mg/L			01/24/24 02:34	1
Fluoride	**0.45**		0.40	mg/L			01/24/24 02:34	1
Chloride	**190**	**D2**	20	mg/L			01/24/24 03:29	10

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Client Sample ID: Cocopah-271-01222024
Date Collected: 01/22/24 11:30
Date Received: 01/22/24 17:05

Lab Sample ID: 550-213257-1
Matrix: Water

Method: EPA 300.0 - Anions, Ion Chromatography (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**450**	**D2**	20		mg/L			01/24/24 03:29	10

Method: EPA 531.2 - Carbamate Pesticides (HPLC) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
3-Hydroxycarbofuran	ND		0.50		ug/L			02/01/24 00:01	1
Aldicarb	ND		0.50		ug/L			02/01/24 00:01	1
Aldicarb sulfone	ND		0.70		ug/L			02/01/24 00:01	1
Aldicarb sulfoxide	ND		0.50		ug/L			02/01/24 00:01	1
Carbaryl	ND		0.50		ug/L			02/01/24 00:01	1
Carbofuran	ND		0.90		ug/L			02/01/24 00:01	1
Methomyl	ND		0.50		ug/L			02/01/24 00:01	1
Oxamyl	ND		1.0		ug/L			02/01/24 00:01	1

Method: EPA 547 - Glyphosate (DAI HPLC) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/30/24 19:05	1

Method: EPA 549.2 - Diquat and Paraquat (HPLC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diquat	ND		0.40		ug/L		01/25/24 06:38	01/25/24 16:52	1

Method: EPA 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorooctanoic acid (PFOA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorononanoic acid (PFNA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorodecanoic acid (PFDA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorotridecanoic acid (PFTrDA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
NMeFOSAA	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
NEtFOSAA	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
9Cl-PF3ONS	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
11Cl-PF3OUdS	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
HFPO-DA (GenX)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.0019		ug/L		02/03/24 05:51	02/06/24 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*02/03/24 05:51*	*02/06/24 15:08*	*1*
13C2 PFDA	*103*		*70 - 130*	*02/03/24 05:51*	*02/06/24 15:08*	*1*
d5-NEtFOSAA	*88*		*70 - 130*	*02/03/24 05:51*	*02/06/24 15:08*	*1*
13C3 HFPO-DA	*84*		*70 - 130*	*02/03/24 05:51*	*02/06/24 15:08*	*1*

Client Sample ID: Cocopah-271-01222024

Date Collected: 01/22/24 11:30
Date Received: 01/22/24 17:05

Lab Sample ID: 550-213257-1

Matrix: Water

Method: EPA 1613B - Tetra Chlorinated Dioxin (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		5.2		pg/L		02/02/24 11:30	02/16/24 17:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*38*		*31 - 137*	*02/02/24 11:30*	*02/16/24 17:00*	*1*

Method: EPA 1638 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**7.2**		0.10		ug/L		02/06/24 10:17	02/07/24 16:34	1

Method: EPA 200.7 - ICP Metals by 200.7

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sodium	**250**	**M3**	0.50		mg/L		01/24/24 09:08	01/26/24 14:53	1
Calcium	**110**		2.0		mg/L		01/24/24 09:08	01/26/24 14:53	1
Iron	**0.19**		0.10		mg/L		01/24/24 09:08	01/26/24 14:53	1
Magnesium	**34**		2.0		mg/L		01/24/24 09:08	01/26/24 14:53	1
Manganese	**0.25**		0.010		mg/L		01/24/24 09:08	01/26/24 14:53	1
Potassium	**4.6**	**T5**	0.50		mg/L		01/24/24 09:08	01/26/24 14:53	1
Vanadium	ND	T5	0.010		mg/L		01/24/24 09:08	01/26/24 14:53	1
SiO2, Silica	**23**		0.21		mg/L		01/24/24 09:08	01/26/24 14:53	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0010		mg/L		01/24/24 08:00	01/29/24 18:44	1
Arsenic	**0.0072**		0.0010		mg/L		01/24/24 08:00	01/29/24 18:44	1
Barium	**0.052**		0.00050		mg/L		01/24/24 08:00	01/29/24 18:44	1
Cadmium	ND		0.00010		mg/L		01/24/24 08:00	01/29/24 18:44	1
Chromium	ND		0.0010		mg/L		01/24/24 08:00	01/29/24 18:44	1
Copper	**0.058**		0.0020		mg/L		01/24/24 08:00	01/29/24 18:44	1
Lead	**0.0027**		0.00050		mg/L		01/24/24 08:00	01/29/24 18:44	1
Nickel	**0.0031**		0.0020		mg/L		01/24/24 08:00	01/29/24 18:44	1
Selenium	**0.0013**		0.00050		mg/L		01/24/24 08:00	01/29/24 18:44	1
Thallium	ND		0.00010		mg/L		01/24/24 08:00	01/29/24 18:44	1
Silver	ND		0.20		ug/L		01/24/24 08:00	01/29/24 18:44	1
Zinc	**96**		13		ug/L		01/24/24 08:00	01/29/24 18:44	1
Beryllium	ND	V1	0.40		ug/L		01/24/24 08:00	01/29/24 18:44	1
Aluminum	ND		10		ug/L		01/24/24 08:00	01/29/24 18:44	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.00057**		0.00020		mg/L		01/29/24 11:40	01/29/24 14:51	1

Method: Lab SOP None - Organic Arsenic

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Organic Arsenic	ND		0.50		ug/L			02/09/24 17:50	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Calcium hardness as calcium carbonate	**280**	**T5**	5.0		mg/L			01/31/24 12:12	1
Total Hardness	**420**		13		mg/L			01/31/24 12:12	1

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Client Sample ID: Cocopah-271-01222024

Date Collected: 01/22/24 11:30
Date Received: 01/22/24 17:05

Lab Sample ID: 550-213257-1

Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Turbidity (EPA 180.1)	**0.65**		0.20		NTU			01/23/24 13:30	1
Langelier Index (SM 2330B)	**0.74**	**T5**			LangSU			01/31/24 12:00	1
Ammonia (EPA 350.1)	**0.11**	**T5**	0.050		mg/L			01/30/24 12:20	1
Color, Apparent (SM 2120B)	**3.0**		3.0		Color Units			01/24/24 11:07	1
Odor (SM 2150B)	**1.0**	**H1 T5**	1.0		T.O.N.			01/24/24 11:55	1
Alkalinity as CaCO3 (SM 2320B)	**250**		6.0		mg/L			01/24/24 16:52	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	**250**		6.0		mg/L			01/24/24 16:52	1
Carbonate Alkalinity as CaCO3 (SM 2320B)	ND		6.0		mg/L			01/24/24 16:52	1
Alkalinity, Phenolphthalein (SM 2320B)	ND		6.0		mg/L			01/24/24 16:52	1
Hydroxide Alkalinity as CaCO3 (SM 2320B)	ND		6.0		mg/L			01/24/24 16:52	1
Specific Conductance (SM 2510B)	**1800**		2.0		umhos/cm			01/30/24 19:02	1
Total Dissolved Solids (SM 2540C)	**1300**		20		mg/L			01/25/24 18:20	1
Cyanide, Total (SM 4500 CN E)	ND		0.050		mg/L		01/31/24 20:45	02/01/24 16:50	1
Cyanide, Amenable (SM 4500 CN G)	ND	N7	0.050		mg/L			02/16/24 09:15	1
Cyanide, Non-amenable (SM 4500 CN G)	ND	N7 T5	0.050		mg/L		01/31/24 20:45	02/01/24 16:50	1
pH (SM 4500 H+ B)	**8.0**	**H5**	1.7		SU			01/24/24 13:30	1
Temperature (SM 4500 H+ B)	**12.0**	**H5 T5**	0.1		Degrees C			01/24/24 13:30	1
Total Organic Carbon (SM 5310B)	**1.2**		0.50		mg/L			01/31/24 21:24	1
Total Organic Carbon - Duplicates (SM 5310B)	**1.2**		0.50		mg/L			01/31/24 21:24	1
Total Organic Carbon - Quad (SM 5310B)	**1.2**		0.50		mg/L			01/31/24 21:24	1

Method: SM 9223B - Coliforms, Total, and E.Coli (Presence/Absence)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	Absent				No Unit			01/22/24 17:50	1
Coliform, Total	Absent				No Unit			01/22/24 17:50	1

Surrogate Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		BFB	DCZ
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
550-213257-1	Cocopah-271-01222024	95	99
LCS 550-314631/4	Lab Control Sample	98	97
LCSD 550-314631/5	Lab Control Sample Dup	94	94
MB 550-314631/7	Method Blank	97	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DCZ = 1,2-Dichlorobenzene-d4

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		PRY	TPP	2NMX
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)
550-213257-1	Cocopah-271-01222024	92	98	100
LCS 810-86999/2-A	Lab Control Sample	99	100	106
LLCS 810-86999/3-A	Lab Control Sample	97	97	105
MB 810-86999/1-A	Method Blank	95	99	103

Surrogate Legend

PRY = Perylene-d12
TPP = Triphenylphosphate
2NMX = 2-Nitro-m-xylene

Method: 548.1 - Endothall (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DCPAA
Lab Sample ID	Client Sample ID	(70-130)
550-213257-1	Cocopah-271-01222024	81
550-213257-1 MS	Cocopah-271-01222024	84
550-213257-1 MSD	Cocopah-271-01222024	85
LCS 810-86815/24-A	Lab Control Sample	92
LLCS 810-86815/25-A	Lab Control Sample	88
MB 810-86815/26-A	Method Blank	94

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 515.3 - Herbicides (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCPAA2	DCPAA2
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
550-213257-1	Cocopah-271-01222024	93	93
LLCS 810-86421/2-B	Lab Control Sample	103	103
MB 810-86698/1-B	Method Blank	100	100

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Surrogate Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	PFHxA (70-130)	PFDA (70-130)	d5NEFOS (70-130)	HFPODA (70-130)
550-213257-1	Cocopah-271-01222024	85	103	88	84
LCS 320-738244/3-A	Lab Control Sample	81	96	85	82
LCSD 320-738244/4-A	Lab Control Sample Dup	84	98	90	84
LLCS 320-738244/2-A	Lab Control Sample	82	99	89	82
MB 320-738244/1-A	Method Blank	80	101	93	81

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
d5NEFOS = d5-NEtFOSAA
HFPODA = 13C3 HFPO-DA

Isotope Dilution Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Method: 1613B - Tetra Chlorinated Dioxin (HRGC/HRMS)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TCDD (31-137)
550-213257-1	Cocopah-271-01222024	38
LLCS 320-738000/4-A	Lab Control Sample	36
MB 320-738000/1-A	Method Blank	41

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD

Method: 1613B - Tetra Chlorinated Dioxin (HRGC/HRMS)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TCDD (25-141)
LCS 320-738000/2-A	Lab Control Sample	38
LCSD 320-738000/3-A	Lab Control Sample Dup	35

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD

Method: 524.2 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 550-314631/7
Matrix: Water
Analysis Batch: 314631

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.00050		mg/L			01/24/24 10:50	1
1,1,2-Trichloroethane	ND		0.00050		mg/L			01/24/24 10:50	1
1,1-Dichloroethene	ND		0.00050		mg/L			01/24/24 10:50	1
1,2,4-Trichlorobenzene	ND		0.00050		mg/L			01/24/24 10:50	1
1,2-Dichlorobenzene	ND		0.00050		mg/L			01/24/24 10:50	1
1,2-Dichloroethane	ND		0.00050		mg/L			01/24/24 10:50	1
1,2-Dichloropropane	ND		0.00050		mg/L			01/24/24 10:50	1
1,4-Dichlorobenzene	ND		0.00050		mg/L			01/24/24 10:50	1
Benzene	ND		0.00050		mg/L			01/24/24 10:50	1
Carbon tetrachloride	ND		0.00050		mg/L			01/24/24 10:50	1
Chlorobenzene	ND		0.00050		mg/L			01/24/24 10:50	1
cis-1,2-Dichloroethene	ND		0.00050		mg/L			01/24/24 10:50	1
Ethylbenzene	ND		0.00050		mg/L			01/24/24 10:50	1
Methylene Chloride	ND		0.00050		mg/L			01/24/24 10:50	1
Styrene	ND		0.00050		mg/L			01/24/24 10:50	1
Tetrachloroethene	ND		0.00050		mg/L			01/24/24 10:50	1
Toluene	ND		0.00050		mg/L			01/24/24 10:50	1
trans-1,2-Dichloroethene	ND		0.00050		mg/L			01/24/24 10:50	1
Trichloroethene	ND		0.00050		mg/L			01/24/24 10:50	1
Vinyl chloride	ND		0.00050		mg/L			01/24/24 10:50	1
Xylenes, Total	ND		0.0015		mg/L			01/24/24 10:50	1
Trihalomethanes, Total	ND		0.00050		mg/L			01/24/24 10:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*70 - 130*		*01/24/24 10:50*	*1*
1,2-Dichlorobenzene-d4	*99*		*70 - 130*		*01/24/24 10:50*	*1*

Lab Sample ID: LCS 550-314631/4
Matrix: Water
Analysis Batch: 314631

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	0.0500	0.0448		mg/L		90	70 - 130
1,1,2-Trichloroethane	0.0500	0.0506		mg/L		101	70 - 130
1,1-Dichloroethene	0.0500	0.0470		mg/L		94	70 - 130
1,2,4-Trichlorobenzene	0.0500	0.0506		mg/L		101	70 - 130
1,2-Dichlorobenzene	0.0500	0.0471		mg/L		94	70 - 130
1,2-Dichloroethane	0.0500	0.0489		mg/L		98	70 - 130
1,2-Dichloropropane	0.0500	0.0508		mg/L		102	70 - 130
1,4-Dichlorobenzene	0.0500	0.0478		mg/L		96	70 - 130
Benzene	0.0500	0.0495		mg/L		99	70 - 130
Carbon tetrachloride	0.0500	0.0464		mg/L		93	70 - 130
Chlorobenzene	0.0500	0.0509		mg/L		102	70 - 130
cis-1,2-Dichloroethene	0.0500	0.0441		mg/L		88	70 - 130
Ethylbenzene	0.0500	0.0520		mg/L		104	70 - 130
Methylene Chloride	0.0500	0.0439		mg/L		88	70 - 130
Styrene	0.0500	0.0519		mg/L		104	70 - 130
Tetrachloroethene	0.0500	0.0505		mg/L		101	70 - 130

Method: 524.2 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 550-314631/4
Matrix: Water
Analysis Batch: 314631

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Toluene			0.0500	0.0524		mg/L		105	70 - 130		
trans-1,2-Dichloroethene			0.0500	0.0484		mg/L		97	70 - 130		
Trichloroethene			0.0500	0.0491		mg/L		98	70 - 130		
Vinyl chloride			0.0500	0.0472		mg/L		94	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*70 - 130*
1,2-Dichlorobenzene-d4	*97*		*70 - 130*

Lab Sample ID: LCSD 550-314631/5
Matrix: Water
Analysis Batch: 314631

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane			0.0500	0.0491		mg/L		98	70 - 130	9	20
1,1,2-Trichloroethane			0.0500	0.0484		mg/L		97	70 - 130	4	20
1,1-Dichloroethene			0.0500	0.0475		mg/L		95	70 - 130	1	20
1,2,4-Trichlorobenzene			0.0500	0.0487		mg/L		97	70 - 130	4	20
1,2-Dichlorobenzene			0.0500	0.0453		mg/L		91	70 - 130	4	20
1,2-Dichloroethane			0.0500	0.0481		mg/L		96	70 - 130	2	20
1,2-Dichloropropane			0.0500	0.0505		mg/L		101	70 - 130	1	20
1,4-Dichlorobenzene			0.0500	0.0450		mg/L		90	70 - 130	6	20
Benzene			0.0500	0.0494		mg/L		99	70 - 130	0	20
Carbon tetrachloride			0.0500	0.0496		mg/L		99	70 - 130	7	20
Chlorobenzene			0.0500	0.0490		mg/L		98	70 - 130	4	20
cis-1,2-Dichloroethene			0.0500	0.0518		mg/L		104	70 - 130	16	20
Ethylbenzene			0.0500	0.0501		mg/L		100	70 - 130	4	20
Methylene Chloride			0.0500	0.0435		mg/L		87	70 - 130	1	20
Styrene			0.0500	0.0494		mg/L		99	70 - 130	5	20
Tetrachloroethene			0.0500	0.0493		mg/L		99	70 - 130	2	20
Toluene			0.0500	0.0511		mg/L		102	70 - 130	3	20
trans-1,2-Dichloroethene			0.0500	0.0514		mg/L		103	70 - 130	6	20
Trichloroethene			0.0500	0.0495		mg/L		99	70 - 130	1	20
Vinyl chloride			0.0500	0.0444		mg/L		89	70 - 130	6	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*70 - 130*
1,2-Dichlorobenzene-d4	*94*		*70 - 130*

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 810-86999/1-A
Matrix: Water
Analysis Batch: 87142

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 86999

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Heptachlor epoxide	ND		0.0098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Di(2-ethylhexyl)adipate	ND		0.59		ug/L		01/29/24 09:33	01/30/24 21:36	1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 810-86999/1-A
Matrix: Water
Analysis Batch: 87142

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 86999

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Di (2-ethylhexyl)phthalate	ND		0.59		ug/L		01/29/24 09:33	01/30/24 21:36	1
Hexachlorobenzene	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Simazine	ND		0.069		ug/L		01/29/24 09:33	01/30/24 21:36	1
Alachlor	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Atrazine	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Propachlor	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Metribuzin	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Butachlor	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Aldrin	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Benzo[a]pyrene	ND		0.020		ug/L		01/29/24 09:33	01/30/24 21:36	1
Metolachlor	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
gamma-BHC (Lindane)	ND		0.020		ug/L		01/29/24 09:33	01/30/24 21:36	1
Endrin	ND		0.0098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Methoxychlor	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Heptachlor	ND		0.0098		ug/L		01/29/24 09:33	01/30/24 21:36	1
Hexachlorocyclopentadiene	ND		0.098		ug/L		01/29/24 09:33	01/30/24 21:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Perylene-d12	*95*		*70 - 130*	*01/29/24 09:33*	*01/30/24 21:36*	*1*
Triphenylphosphate	*99*		*70 - 130*	*01/29/24 09:33*	*01/30/24 21:36*	*1*
2-Nitro-m-xylene	*103*		*70 - 130*	*01/29/24 09:33*	*01/30/24 21:36*	*1*

Lab Sample ID: LCS 810-86999/2-A
Matrix: Water
Analysis Batch: 87142

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86999

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Heptachlor epoxide			1.93	2.17		ug/L		113	70 - 130		
Di(2-ethylhexyl)adipate			1.93	2.14		ug/L		111	70 - 130		
Di (2-ethylhexyl)phthalate			1.93	2.21		ug/L		115	70 - 130		
Hexachlorobenzene			1.93	2.16		ug/L		112	70 - 130		
Simazine			1.93	2.05		ug/L		106	70 - 130		
Propachlor			1.93	2.31		ug/L		120	70 - 130		
Metribuzin			1.93	2.01		ug/L		104	70 - 130		
Butachlor			1.93	2.21		ug/L		115	70 - 130		
Aldrin			1.93	2.07		ug/L		107	70 - 130		
Metolachlor			1.93	2.24		ug/L		116	70 - 130		
gamma-BHC (Lindane)			1.93	2.16		ug/L		112	70 - 130		
Endrin			1.93	2.24		ug/L		116	70 - 130		
Methoxychlor			1.93	2.20		ug/L		114	70 - 130		
Heptachlor			1.93	2.10		ug/L		109	70 - 130		
Hexachlorocyclopentadiene			1.93	2.02		ug/L		105	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Perylene-d12	*99*		*70 - 130*
Triphenylphosphate	*100*		*70 - 130*
2-Nitro-m-xylene	*106*		*70 - 130*

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LLCS 810-86999/3-A
Matrix: Water
Analysis Batch: 87142

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86999

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Heptachlor epoxide			0.00995	0.0107		ug/L		108	50 - 150		
Di(2-ethylhexyl)adipate			0.597	0.620		ug/L		104	50 - 150		
Di (2-ethylhexyl)phthalate			0.597	0.636		ug/L		107	50 - 150		
Hexachlorobenzene			0.0995	0.0976	E4	ug/L		98	50 - 150		
Simazine			0.0696	0.0670	E4	ug/L		96	50 - 150		
Propachlor			0.0995	0.105		ug/L		106	50 - 150		
Metribuzin			0.0995	0.0955	E4	ug/L		96	50 - 150		
Butachlor			0.0995	0.113		ug/L		114	50 - 150		
Aldrin			0.0696	0.0698	E4	ug/L		100	50 - 150		
Metolachlor			0.0995	0.107		ug/L		107	50 - 150		
gamma-BHC (Lindane)			0.0199	0.0210		ug/L		106	50 - 150		
Endrin			0.00995	0.0126		ug/L		127	50 - 150		
Methoxychlor			0.0995	0.0784	E4	ug/L		79	50 - 150		
Heptachlor			0.00995	0.00857	E4	ug/L		86	50 - 150		
Hexachlorocyclopentadiene			0.0995	0.0839	E4	ug/L		84	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
Perylene-d12	*97*		*70 - 130*
Triphenylphosphate	*97*		*70 - 130*
2-Nitro-m-xylene	*105*		*70 - 130*

Method: 548.1 - Endothall (GC/MS)

Lab Sample ID: MB 810-86815/26-A
Matrix: Water
Analysis Batch: 86889

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 86815

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Endothall	ND		5.0		ug/L		01/26/24 06:33	01/26/24 15:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*94*		*70 - 130*	*01/26/24 06:33*	*01/26/24 15:57*	*1*

Lab Sample ID: LCS 810-86815/24-A
Matrix: Water
Analysis Batch: 86889

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86815

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Endothall			100	92.2		ug/L		92	69 - 136		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*92*		*70 - 130*

Method: 548.1 - Endothall (GC/MS) (Continued)

Lab Sample ID: LLCS 810-86815/25-A
Matrix: Water
Analysis Batch: 86889

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86815

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Endothall			5.00	5.54		ug/L		111	50 - 150		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*88*		*70 - 130*

Lab Sample ID: 550-213257-1 MS
Matrix: Water
Analysis Batch: 86889

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 86815

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Endothall	ND	M2	100	56.5	M2	ug/L		57	70 - 142		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*84*		*70 - 130*

Lab Sample ID: 550-213257-1 MSD
Matrix: Water
Analysis Batch: 86889

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 86815

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Endothall	ND	M2	100	75.8		ug/L		76	70 - 142	29	31

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*85*		*70 - 130*

Method: 1632A - Arsenic Speciation by Hydride- Generation Cryo-Trapping GC-AAS

Lab Sample ID: MB 350-1157/9
Matrix: Water
Analysis Batch: 1157

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Inorganic Arsenic	ND		0.50		ug/L			01/31/24 12:59	10

Lab Sample ID: LCS 350-1157/10
Matrix: Water
Analysis Batch: 1157

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Inorganic Arsenic			5.00	5.11		ug/L		102			

Lab Sample ID: LCSD 350-1157/11
Matrix: Water
Analysis Batch: 1157

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Inorganic Arsenic			5.00	5.43		ug/L		109		6	

Method: 504.1 - EDB, DBCP and 1,2,3-TCP (GC)

Lab Sample ID: MB 810-86851/1-A
Matrix: Water
Analysis Batch: 86888

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 86851

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.010		ug/L		01/26/24 10:08	01/26/24 17:22	1
1,2-Dibromo-3-Chloropropane	ND		0.010		ug/L		01/26/24 10:08	01/26/24 17:22	1

Lab Sample ID: LCS 810-86851/5-A
Matrix: Water
Analysis Batch: 86888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86851

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2-Dibromoethane (EDB)			0.250	0.240		ug/L		96	70 - 130		
1,2-Dibromo-3-Chloropropane			0.250	0.231		ug/L		92	70 - 130		

Lab Sample ID: LCS 810-86851/5-A
Matrix: Water
Analysis Batch: 86888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86851

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2-Dibromoethane (EDB)			0.250	0.231		ug/L		92	70 - 130		
1,2-Dibromo-3-Chloropropane			0.250	0.229		ug/L		92	70 - 130		

Lab Sample ID: LLCS 810-86851/2-A
Matrix: Water
Analysis Batch: 86888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86851

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2-Dibromoethane (EDB)			0.0100	0.0119		ug/L		119	50 - 150		
1,2-Dibromo-3-Chloropropane			0.0100	0.0139		ug/L		139	50 - 150		

Lab Sample ID: 550-213257-1 DU
Matrix: Water
Analysis Batch: 86888

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 86851

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
1,2-Dibromoethane (EDB)	ND			ND		ug/L				NC	30
1,2-Dibromo-3-Chloropropane	ND			ND		ug/L				NC	30

Method: 505 - Organochlorine Pesticides/PCBs (GC)

Lab Sample ID: MB 810-87062/9-B
Matrix: Water
Analysis Batch: 87126

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 87062

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.080		ug/L		01/30/24 07:36	01/30/24 21:55	1
PCB-1221	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1
PCB-1232	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1
PCB-1242	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1
PCB-1248	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1
PCB-1254	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1
PCB-1260	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1
Chlordane (technical)	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1

Method: 505 - Organochlorine Pesticides/PCBs (GC) (Continued)

Lab Sample ID: MB 810-87062/9-B
Matrix: Water
Analysis Batch: 87126

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 87062

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		0.50		ug/L		01/30/24 07:36	01/30/24 21:55	1
Total PCBs as DCB (Qualitative)	ND		0.10		ug/L		01/30/24 07:36	01/30/24 21:55	1

Lab Sample ID: LLCS 810-87062/4-A
Matrix: Water
Analysis Batch: 87126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 87062

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chlordane (technical)			0.100	0.0910	E4	ug/L		91	50 - 150		

Lab Sample ID: LLCS 810-87062/5-A
Matrix: Water
Analysis Batch: 87126

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 87062

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Toxaphene			0.500	0.575		ug/L		115	50 - 150		

Method: 515.3 - Herbicides (GC)

Lab Sample ID: LLCS 810-86421/2-B
Matrix: Water
Analysis Batch: 86761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86421

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,4,5-TP (Silvex)			0.100	0.0918	E4	ug/L		92	48 - 148		
2,4,5-TP (Silvex)			0.100	0.0918	E4	ug/L		92	48 - 148		
Dinoseb			0.200	0.211		ug/L		106	39 - 141		
Dinoseb			0.200	0.211		ug/L		106	39 - 141		
Pentachlorophenol			0.0400	0.0380	E4	ug/L		95	30 - 171		
Pentachlorophenol			0.0400	0.0410		ug/L		102	30 - 171		
Picloram			0.100	ND		ug/L		87	24 - 150		
Picloram			0.100	ND		ug/L		87	24 - 150		
2,4-D			0.200	0.103		ug/L		51	24 - 138		
2,4-D			0.200	0.103		ug/L		51	24 - 138		

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*103*		*70 - 130*
2,4-Dichlorophenylacetic acid	*103*		*70 - 130*

Lab Sample ID: MB 810-86698/1-B
Matrix: Water
Analysis Batch: 86761

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 86698

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-TP (Silvex)	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
2,4,5-TP (Silvex)	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
Dalapon	ND		1.0		ug/L		01/25/24 08:37	01/25/24 16:40	1
Dalapon	ND		1.0		ug/L		01/25/24 08:37	01/25/24 16:40	1
Dicamba	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1

Method: 515.3 - Herbicides (GC) (Continued)

Lab Sample ID: MB 810-86698/1-B
Matrix: Water
Analysis Batch: 86762

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 86698

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Dicamba	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
Dinoseb	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
Dinoseb	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
Pentachlorophenol	ND		0.040		ug/L		01/25/24 08:37	01/25/24 16:40	1
Pentachlorophenol	ND		0.040		ug/L		01/25/24 08:37	01/25/24 16:40	1
Picloram	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
Picloram	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
2,4-D	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1
2,4-D	ND		0.10		ug/L		01/25/24 08:37	01/25/24 16:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*100*		*70 - 130*	*01/25/24 08:37*	*01/25/24 16:40*	*1*
2,4-Dichlorophenylacetic acid	*100*		*70 - 130*	*01/25/24 08:37*	*01/25/24 16:40*	*1*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 550-314685/1026
Matrix: Water
Analysis Batch: 314685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.050		mg/L			01/24/24 06:52	1
Nitrite as N	ND		0.050		mg/L			01/24/24 06:52	1
Fluoride	ND		0.40		mg/L			01/24/24 06:52	1
Chloride	ND		2.0		mg/L			01/24/24 06:52	1
Sulfate	ND		2.0		mg/L			01/24/24 06:52	1

Lab Sample ID: MB 550-314685/2
Matrix: Water
Analysis Batch: 314685

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.050		mg/L			01/23/24 23:30	1
Nitrite as N	ND		0.050		mg/L			01/23/24 23:30	1
Fluoride	ND		0.40		mg/L			01/23/24 23:30	1
Chloride	ND		2.0		mg/L			01/23/24 23:30	1
Sulfate	ND		2.0		mg/L			01/23/24 23:30	1

Lab Sample ID: LCS 550-314685/28
Matrix: Water
Analysis Batch: 314685

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Nitrate as N			4.00	3.86		mg/L		96	90 - 110		
Nitrite as N			4.00	4.19		mg/L		105	90 - 110		
Fluoride			4.00	3.93		mg/L		98	90 - 110		
Chloride			20.0	19.6		mg/L		98	90 - 110		
Sulfate			20.0	19.5		mg/L		97	90 - 110		

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 550-314685/29
Matrix: Water
Analysis Batch: 314685

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrate as N			4.00	3.85		mg/L		96	90 - 110	0	20
Nitrite as N			4.00	4.18		mg/L		105	90 - 110	0	20
Fluoride			4.00	4.03		mg/L		101	90 - 110	3	20
Chloride			20.0	19.6		mg/L		98	90 - 110	0	20
Sulfate			20.0	19.5		mg/L		97	90 - 110	0	20

Method: 531.2 - Carbamate Pesticides (HPLC)

Lab Sample ID: MBL 810-87214/1-A
Matrix: Water
Analysis Batch: 87293

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
3-Hydroxycarbofuran	ND		0.50		ug/L			01/31/24 19:52	1
Aldicarb	ND		0.50		ug/L			01/31/24 19:52	1
Aldicarb sulfone	ND		0.70		ug/L			01/31/24 19:52	1
Aldicarb sulfoxide	ND		0.50		ug/L			01/31/24 19:52	1
Carbaryl	ND		0.50		ug/L			01/31/24 19:52	1
Carbofuran	ND		0.90		ug/L			01/31/24 19:52	1
Methomyl	ND		0.50		ug/L			01/31/24 19:52	1
Oxamyl	ND		1.0		ug/L			01/31/24 19:52	1

Method: 547 - Glyphosate (DAI HPLC)

Lab Sample ID: MB 810-87084/1-A
Matrix: Water
Analysis Batch: 87130

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/30/24 17:49	1

Lab Sample ID: LCS 810-87084/3-A
Matrix: Water
Analysis Batch: 87130

Client Sample ID: Lab Control Sample
Prep Type: Dissolved

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Glyphosate			50.0	49.1		ug/L		98	73 - 122		

Lab Sample ID: LLCS 810-87084/2-A
Matrix: Water
Analysis Batch: 87130

Client Sample ID: Lab Control Sample
Prep Type: Dissolved

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Glyphosate			5.00	5.97	E4	ug/L		119	42 - 160		

Method: 549.2 - Diquat and Paraquat (HPLC)

Lab Sample ID: MB 810-86677/1-A
Matrix: Water
Analysis Batch: 86755

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 86677

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diquat	ND		0.40		ug/L		01/25/24 06:38	01/25/24 14:37	1

Lab Sample ID: LCS 810-86677/2-A
Matrix: Water
Analysis Batch: 86755

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86677

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diquat			5.00	3.85		ug/L		77	70 - 130		

Lab Sample ID: LLCS 810-86677/3-A
Matrix: Water
Analysis Batch: 86755

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 86677

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diquat			0.400	0.458		ug/L		114	21 - 161		

Lab Sample ID: 550-213257-1 DU
Matrix: Water
Analysis Batch: 86755

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 86677

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Diquat	ND			ND		ug/L				NC	28

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-738244/1-A
Matrix: Water
Analysis Batch: 738433

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 738244

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorooctanoic acid (PFOA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorononanoic acid (PFNA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorodecanoic acid (PFDA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorotridecanoic acid (PFTrDA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
NMeFOSAA	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
NEtFOSAA	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
9Cl-PF3ONS	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
11Cl-PF3OUdS	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
HFPO-DA (GenX)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.0020		ug/L		02/03/24 05:08	02/05/24 14:21	1

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MB 320-738244/1-A
Matrix: Water
Analysis Batch: 738433

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 738244

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	80		70 - 130	02/03/24 05:08	02/05/24 14:21	1
13C2 PFDA	101		70 - 130	02/03/24 05:08	02/05/24 14:21	1
d5-NEtFOSAA	93		70 - 130	02/03/24 05:08	02/05/24 14:21	1
13C3 HFPO-DA	81		70 - 130	02/03/24 05:08	02/05/24 14:21	1

Lab Sample ID: LCS 320-738244/3-A
Matrix: Water
Analysis Batch: 738433

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 738244

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluorohexanoic acid (PFHxA)			0.0800	0.0670		ug/L		84	70 - 130		
Perfluoroheptanoic acid (PFHpA)			0.0800	0.0712		ug/L		89	70 - 130		
Perfluorooctanoic acid (PFOA)			0.0800	0.0776		ug/L		97	70 - 130		
Perfluorononanoic acid (PFNA)			0.0800	0.0740		ug/L		93	70 - 130		
Perfluorodecanoic acid (PFDA)			0.0800	0.0789		ug/L		99	70 - 130		
Perfluoroundecanoic acid (PFUnA)			0.0800	0.0751		ug/L		94	70 - 130		
Perfluorododecanoic acid (PFDoA)			0.0800	0.0786		ug/L		98	70 - 130		
Perfluorotridecanoic acid (PFTrDA)			0.0800	0.0827		ug/L		103	70 - 130		
Perfluorotetradecanoic acid (PFTeA)			0.0800	0.0844		ug/L		105	70 - 130		
Perfluorobutanesulfonic acid (PFBS)			0.0710	0.0625		ug/L		88	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			0.0730	0.0725		ug/L		99	70 - 130		
Perfluorooctanesulfonic acid (PFOS)			0.0744	0.0750		ug/L		101	70 - 130		
NMeFOSAA			0.0800	0.0756		ug/L		95	70 - 130		
NEtFOSAA			0.0800	0.0774		ug/L		97	70 - 130		
9Cl-PF3ONS			0.0747	0.0775		ug/L		104	70 - 130		
11Cl-PF3OUdS			0.0755	0.0748		ug/L		99	70 - 130		
HFPO-DA (GenX)			0.0800	0.0652		ug/L		82	70 - 130		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			0.0755	0.0727		ug/L		96	70 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	81		70 - 130
13C2 PFDA	96		70 - 130
d5-NEtFOSAA	85		70 - 130
13C3 HFPO-DA	82		70 - 130

Lab Sample ID: LCSD 320-738244/4-A
Matrix: Water
Analysis Batch: 738433

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 738244

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			0.0800	0.0667		ug/L		83	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)			0.0800	0.0712		ug/L		89	70 - 130	0	30

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCSD 320-738244/4-A
Matrix: Water
Analysis Batch: 738433

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 738244

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)			0.0800	0.0756		ug/L		94	70 - 130	3	30
Perfluorononanoic acid (PFNA)			0.0800	0.0740		ug/L		92	70 - 130	0	30
Perfluorodecanoic acid (PFDA)			0.0800	0.0777		ug/L		97	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)			0.0800	0.0764		ug/L		96	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)			0.0800	0.0806		ug/L		101	70 - 130	3	30
Perfluorotridecanoic acid (PFTrDA)			0.0800	0.0817		ug/L		102	70 - 130	1	30
Perfluorotetradecanoic acid (PFTeA)			0.0800	0.0824		ug/L		103	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)			0.0710	0.0638		ug/L		90	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			0.0730	0.0720		ug/L		99	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)			0.0744	0.0747		ug/L		100	70 - 130	0	30
NMeFOSAA			0.0800	0.0766		ug/L		96	70 - 130	1	30
NEtFOSAA			0.0800	0.0812		ug/L		102	70 - 130	5	30
9Cl-PF3ONS			0.0747	0.0780		ug/L		104	70 - 130	1	30
11Cl-PF3OUdS			0.0755	0.0745		ug/L		99	70 - 130	0	30
HFPO-DA (GenX)			0.0800	0.0662		ug/L		83	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			0.0755	0.0715		ug/L		95	70 - 130	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*84*		*70 - 130*
13C2 PFDA	*98*		*70 - 130*
d5-NEtFOSAA	*90*		*70 - 130*
13C3 HFPO-DA	*84*		*70 - 130*

Lab Sample ID: LLCS 320-738244/2-A
Matrix: Water
Analysis Batch: 738433

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 738244

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluorohexanoic acid (PFHxA)			0.00400	0.00329		ug/L		82	50 - 150		
Perfluoroheptanoic acid (PFHpA)			0.00400	0.00369		ug/L		92	50 - 150		
Perfluorooctanoic acid (PFOA)			0.00400	0.00367		ug/L		92	50 - 150		
Perfluorononanoic acid (PFNA)			0.00400	0.00363		ug/L		91	50 - 150		
Perfluorodecanoic acid (PFDA)			0.00400	0.00357		ug/L		89	50 - 150		
Perfluoroundecanoic acid (PFUnA)			0.00400	0.00370		ug/L		92	50 - 150		
Perfluorododecanoic acid (PFDoA)			0.00400	0.00367		ug/L		92	50 - 150		
Perfluorotridecanoic acid (PFTrDA)			0.00400	0.00370		ug/L		93	50 - 150		
Perfluorotetradecanoic acid (PFTeA)			0.00400	0.00425		ug/L		106	50 - 150		
Perfluorobutanesulfonic acid (PFBS)			0.00355	0.00307		ug/L		86	50 - 150		

Method: 537.1 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LLCS 320-738244/2-A
Matrix: Water
Analysis Batch: 738433

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 738244

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	0.00365	0.00348		ug/L		95	50 - 150
Perfluorooctanesulfonic acid (PFOS)	0.00372	0.00365		ug/L		98	50 - 150
NMeFOSAA	0.00400	0.00346		ug/L		87	50 - 150
NEtFOSAA	0.00400	0.00371		ug/L		93	50 - 150
9Cl-PF3ONS	0.00374	0.00347		ug/L		93	50 - 150
11Cl-PF3OUdS	0.00378	0.00367		ug/L		97	50 - 150
HFPO-DA (GenX)	0.00400	0.00280		ug/L		70	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.00378	0.00332		ug/L		88	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*82*		*70 - 130*
13C2 PFDA	*99*		*70 - 130*
d5-NEtFOSAA	*89*		*70 - 130*
13C3 HFPO-DA	*82*		*70 - 130*

Method: 1613B - Tetra Chlorinated Dioxin (HRGC/HRMS)

Lab Sample ID: MB 320-738000/1-A
Matrix: Water
Analysis Batch: 740746

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 738000

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		5.0		pg/L		02/02/24 11:30	02/16/24 08:21	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*41*		*31 - 137*	*02/02/24 11:30*	*02/16/24 08:21*	*1*

Lab Sample ID: LCS 320-738000/2-A
Matrix: Water
Analysis Batch: 740746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 738000

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,3,7,8-TCDD	100	112		pg/L		112	73 - 146

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*38*		*25 - 141*

Lab Sample ID: LCSD 320-738000/3-A
Matrix: Water
Analysis Batch: 740746

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 738000

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,3,7,8-TCDD	100	122		pg/L		122	73 - 146	8	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*35*		*25 - 141*

Method: 1613B - Tetra Chlorinated Dioxin (HRGC/HRMS) (Continued)

Lab Sample ID: LLCS 320-738000/4-A
Matrix: Water
Analysis Batch: 740746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 738000

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,3,7,8-TCDD			5.00	5.56		pg/L		111	50 - 150		

Isotope Dilution	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*36*		*31 - 137*

Method: 1638 - Metals (ICP/MS)

Lab Sample ID: MB 350-1226/1-A
Matrix: Water
Analysis Batch: 1246

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 1226

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.10		ug/L		02/06/24 10:17	02/07/24 15:47	1

Lab Sample ID: MB 350-1226/2-A
Matrix: Water
Analysis Batch: 1246

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 1226

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.10		ug/L		02/06/24 10:17	02/07/24 15:50	1

Lab Sample ID: LCS 350-1226/3-A
Matrix: Water
Analysis Batch: 1246

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 1226

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic			25.0	25.7		ug/L		103	85 - 115		

Lab Sample ID: LCSD 350-1226/4-A
Matrix: Water
Analysis Batch: 1246

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 1226

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic			25.0	21.7		ug/L		87	85 - 115	17	20

Lab Sample ID: 550-213257-1 MS
Matrix: Water
Analysis Batch: 1246

Client Sample ID: Cocopah-271-01222024
Prep Type: Total Recoverable
Prep Batch: 1226

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic	7.2		25.0	30.1		ug/L		92	70 - 130		

Lab Sample ID: 550-213257-1 MSD
Matrix: Water
Analysis Batch: 1246

Client Sample ID: Cocopah-271-01222024
Prep Type: Total Recoverable
Prep Batch: 1226

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	7.2		25.0	35.6		ug/L		114	70 - 130	17	20

Method: 200.7 - ICP Metals by 200.7

Lab Sample ID: MB 550-314639/1-A
Matrix: Water
Analysis Batch: 314902

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 314639

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND		0.50		mg/L		01/24/24 09:08	01/26/24 14:36	1
Calcium	ND		2.0		mg/L		01/24/24 09:08	01/26/24 14:36	1
Iron	ND		0.10		mg/L		01/24/24 09:08	01/26/24 14:36	1
Magnesium	ND		2.0		mg/L		01/24/24 09:08	01/26/24 14:36	1
Manganese	ND		0.010		mg/L		01/24/24 09:08	01/26/24 14:36	1
Potassium	ND		0.50		mg/L		01/24/24 09:08	01/26/24 14:36	1
Vanadium	ND		0.010		mg/L		01/24/24 09:08	01/26/24 14:36	1
SiO2, Silica	ND		0.21		mg/L		01/24/24 09:08	01/26/24 14:36	1

Lab Sample ID: LCS 550-314639/3-A
Matrix: Water
Analysis Batch: 314902

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 314639

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sodium			20.0	18.8		mg/L		94	85 - 115		
Calcium			21.0	21.1		mg/L		100	85 - 115		
Iron			1.00	0.971		mg/L		97	85 - 115		
Magnesium			21.0	21.0		mg/L		100	85 - 115		
Manganese			1.00	0.890		mg/L		89	85 - 115		
Potassium			20.0	18.8		mg/L		94	85 - 115		
Vanadium			1.00	0.955		mg/L		95	85 - 115		
SiO2, Silica			10.7	10.5		mg/L		98	85 - 115		

Lab Sample ID: LCSD 550-314639/4-A
Matrix: Water
Analysis Batch: 314902

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 314639

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sodium			20.0	18.8		mg/L		94	85 - 115	0	20
Calcium			21.0	21.1		mg/L		100	85 - 115	0	20
Iron			1.00	1.01		mg/L		101	85 - 115	4	20
Magnesium			21.0	21.0		mg/L		100	85 - 115	0	20
Manganese			1.00	0.892		mg/L		89	85 - 115	0	20
Potassium			20.0	18.8		mg/L		94	85 - 115	0	20
Vanadium			1.00	0.974		mg/L		97	85 - 115	2	20
SiO2, Silica			10.7	10.3		mg/L		96	85 - 115	2	20

Lab Sample ID: 550-213257-1 MS
Matrix: Water
Analysis Batch: 314902

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 314639

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Sodium	250	M3	20.0	255	M3	mg/L		50	70 - 130		
Calcium	110		21.0	130	M3	mg/L		79	70 - 130		
Iron	0.19		1.00	1.16		mg/L		97	70 - 130		
Magnesium	34		21.0	53.9		mg/L		94	70 - 130		
Manganese	0.25		1.00	1.14		mg/L		88	70 - 130		
Potassium	4.6	T5	20.0	24.1		mg/L		98	70 - 130		
Vanadium	ND	T5	1.00	1.00		mg/L		100	70 - 130		

Method: 200.7 - ICP Metals by 200.7 (Continued)

Lab Sample ID: 550-213257-1 MS
Matrix: Water
Analysis Batch: 314902

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 314639

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
SiO2, Silica	23		10.7	32.5		mg/L		89	70 - 130

Lab Sample ID: 550-213257-1 MSD
Matrix: Water
Analysis Batch: 314902

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 314639

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sodium	250	M3	20.0	256	M3	mg/L		55	70 - 130	0	20
Calcium	110		21.0	130	M3	mg/L		81	70 - 130	0	20
Iron	0.19		1.00	1.15		mg/L		96	70 - 130	1	20
Magnesium	34		21.0	53.9		mg/L		94	70 - 130	0	20
Manganese	0.25		1.00	1.13		mg/L		88	70 - 130	0	20
Potassium	4.6	T5	20.0	24.2		mg/L		98	70 - 130	0	20
Vanadium	ND	T5	1.00	0.987		mg/L		98	70 - 130	1	20
SiO2, Silica	23		10.7	32.6		mg/L		90	70 - 130	0	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 550-314626/1-A
Matrix: Water
Analysis Batch: 315008

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 314626

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0010		mg/L		01/24/24 08:00	01/29/24 18:32	1
Arsenic	ND		0.0010		mg/L		01/24/24 08:00	01/29/24 18:32	1
Barium	ND		0.00050		mg/L		01/24/24 08:00	01/29/24 18:32	1
Cadmium	ND		0.00010		mg/L		01/24/24 08:00	01/29/24 18:32	1
Chromium	ND		0.0010		mg/L		01/24/24 08:00	01/29/24 18:32	1
Copper	ND		0.0020		mg/L		01/24/24 08:00	01/29/24 18:32	1
Lead	ND		0.00050		mg/L		01/24/24 08:00	01/29/24 18:32	1
Nickel	ND		0.0020		mg/L		01/24/24 08:00	01/29/24 18:32	1
Selenium	ND		0.00050		mg/L		01/24/24 08:00	01/29/24 18:32	1
Thallium	ND		0.00010		mg/L		01/24/24 08:00	01/29/24 18:32	1
Silver	ND		0.20		ug/L		01/24/24 08:00	01/29/24 18:32	1
Zinc	ND		13		ug/L		01/24/24 08:00	01/29/24 18:32	1
Beryllium	ND	V1	0.40		ug/L		01/24/24 08:00	01/29/24 18:32	1
Aluminum	ND		10		ug/L		01/24/24 08:00	01/29/24 18:32	1

Lab Sample ID: LCS 550-314626/3-A
Matrix: Water
Analysis Batch: 315008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 314626

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.100	0.0903		mg/L		90	85 - 115
Arsenic	0.100	0.0939		mg/L		94	85 - 115
Barium	0.100	0.0875		mg/L		88	85 - 115
Cadmium	0.100	0.0962		mg/L		96	85 - 115
Chromium	0.100	0.0952		mg/L		95	85 - 115
Copper	0.100	0.0955		mg/L		95	85 - 115
Lead	0.100	0.101		mg/L		101	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 550-314626/3-A
Matrix: Water
Analysis Batch: 315008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 314626

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nickel	0.100	0.0932		mg/L		93	85 - 115
Selenium	0.100	0.0976		mg/L		98	85 - 115
Thallium	0.100	0.100		mg/L		100	85 - 115
Silver	100	94.5		ug/L		94	85 - 115
Zinc	100	94.3		ug/L		94	85 - 115
Beryllium	100	115	V1	ug/L		115	85 - 115
Aluminum	200	190		ug/L		95	85 - 115

Lab Sample ID: LCSD 550-314626/4-A
Matrix: Water
Analysis Batch: 315008

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 314626

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	0.100	0.0911		mg/L		91	85 - 115	1	20
Arsenic	0.100	0.0951		mg/L		95	85 - 115	1	20
Barium	0.100	0.0887		mg/L		89	85 - 115	1	20
Cadmium	0.100	0.0966		mg/L		97	85 - 115	0	20
Chromium	0.100	0.0938		mg/L		94	85 - 115	1	20
Copper	0.100	0.0941		mg/L		94	85 - 115	1	20
Lead	0.100	0.102		mg/L		102	85 - 115	1	20
Nickel	0.100	0.0932		mg/L		93	85 - 115	0	20
Selenium	0.100	0.0982		mg/L		98	85 - 115	1	20
Thallium	0.100	0.100		mg/L		100	85 - 115	0	20
Silver	100	94.0		ug/L		94	85 - 115	1	20
Zinc	100	93.6		ug/L		94	85 - 115	1	20
Beryllium	100	112	V1	ug/L		112	85 - 115	3	20
Aluminum	200	184		ug/L		92	85 - 115	3	20

Lab Sample ID: 550-213257-1 MS
Matrix: Water
Analysis Batch: 315008

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 314626

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	ND		0.100	0.0931		mg/L		92	70 - 130
Arsenic	0.0072		0.100	0.102		mg/L		94	70 - 130
Barium	0.052		0.100	0.148		mg/L		96	70 - 130
Cadmium	ND		0.100	0.0901		mg/L		90	70 - 130
Chromium	ND		0.100	0.0897		mg/L		90	70 - 130
Copper	0.058		0.100	0.140		mg/L		82	70 - 130
Lead	0.0027		0.100	0.0942		mg/L		92	70 - 130
Nickel	0.0031		0.100	0.0867		mg/L		84	70 - 130
Selenium	0.0013		0.100	0.0971		mg/L		96	70 - 130
Thallium	ND		0.100	0.0910		mg/L		91	70 - 130
Silver	ND		100	82.4		ug/L		82	70 - 130
Zinc	96		100	180		ug/L		83	70 - 130
Beryllium	ND	V1	100	104	V1	ug/L		104	70 - 130
Aluminum	ND		200	205		ug/L		98	70 - 130

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 550-213257-1 MSD
Matrix: Water
Analysis Batch: 315008

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA
Prep Batch: 314626

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	ND		0.100	0.0945		mg/L		94	70 - 130	2	20
Arsenic	0.0072		0.100	0.103		mg/L		96	70 - 130	2	20
Barium	0.052		0.100	0.149		mg/L		97	70 - 130	1	20
Cadmium	ND		0.100	0.0919		mg/L		92	70 - 130	2	20
Chromium	ND		0.100	0.0911		mg/L		91	70 - 130	2	20
Copper	0.058		0.100	0.140		mg/L		83	70 - 130	1	20
Lead	0.0027		0.100	0.0936		mg/L		91	70 - 130	1	20
Nickel	0.0031		0.100	0.0874		mg/L		84	70 - 130	1	20
Selenium	0.0013		0.100	0.0980		mg/L		97	70 - 130	1	20
Thallium	ND		0.100	0.0904		mg/L		90	70 - 130	1	20
Silver	ND		100	84.0		ug/L		84	70 - 130	2	20
Zinc	96		100	179		ug/L		83	70 - 130	0	20
Beryllium	ND	V1	100	103	V1	ug/L		103	70 - 130	0	20
Aluminum	ND		200	207		ug/L		100	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 550-314935/1-A
Matrix: Water
Analysis Batch: 314960

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 314935

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		01/29/24 11:40	01/29/24 14:34	1

Lab Sample ID: LCS 550-314935/2-A
Matrix: Water
Analysis Batch: 314960

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 314935

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00500	0.00471		mg/L		94	85 - 115		

Lab Sample ID: LCSD 550-314935/3-A
Matrix: Water
Analysis Batch: 314960

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 314935

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.00500	0.00471		mg/L		94	85 - 115	0	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 550-314920/3
Matrix: Water
Analysis Batch: 314920

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.20		NTU			01/23/24 13:30	1

Method: 180.1 - Turbidity, Nephelometric (Continued)

Lab Sample ID: LCS 550-314920/4
Matrix: Water
Analysis Batch: 314920

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Turbidity			20.0	20		NTU		98	90 - 110		

Lab Sample ID: LCSD 550-314920/5
Matrix: Water
Analysis Batch: 314920

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Turbidity			20.0	18		NTU		92	90 - 110	6	20

Lab Sample ID: 550-213257-1 DU
Matrix: Water
Analysis Batch: 314920

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Turbidity	0.65			0.65		NTU				1	20

Method: 350.1 - Nitrogen, Ammonia (Low Level)

Lab Sample ID: MB 550-315062/21
Matrix: Water
Analysis Batch: 315062

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.050		mg/L			01/30/24 12:03	1

Lab Sample ID: MB 550-315062/60
Matrix: Water
Analysis Batch: 315062

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.050		mg/L			01/30/24 13:08	1

Lab Sample ID: LCS 550-315062/81
Matrix: Water
Analysis Batch: 315062

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Ammonia			1.00	1.04		mg/L		104	90 - 110		

Lab Sample ID: LCSD 550-315062/82
Matrix: Water
Analysis Batch: 315062

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia			1.00	1.06		mg/L		106	90 - 110	2	20

Method: SM 2120B - Color, Colorimetric

Lab Sample ID: LCSSRM 810-86577/11
Matrix: Water
Analysis Batch: 86577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits		
Color, Apparent			20.0	20.0		Color Units		100.0	100. - 100. 0 0		

Lab Sample ID: 550-213257-1 DU
Matrix: Water
Analysis Batch: 86577

Client Sample ID: Cocopah-271-01222024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Color, Apparent	3.0			3.00		Color Units				0	20

Method: SM 2150B - Odor

Lab Sample ID: MBL 810-86601/1
Matrix: Water
Analysis Batch: 86601

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Odor	ND		1.0		T.O.N.			01/24/24 11:53	1

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 550-314805/6
Matrix: Water
Analysis Batch: 314805

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3	ND		6.0		mg/L			01/24/24 16:52	1
Bicarbonate Alkalinity as CaCO3	ND		6.0		mg/L			01/24/24 16:52	1
Carbonate Alkalinity as CaCO3	ND		6.0		mg/L			01/24/24 16:52	1
Alkalinity, Phenolphthalein	ND		6.0		mg/L			01/24/24 16:52	1
Hydroxide Alkalinity as CaCO3	ND		6.0		mg/L			01/24/24 16:52	1

Lab Sample ID: LCS 550-314805/5
Matrix: Water
Analysis Batch: 314805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Alkalinity as CaCO3			250	246		mg/L		98	90 - 110		

Lab Sample ID: LCSD 550-314805/18
Matrix: Water
Analysis Batch: 314805

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Alkalinity as CaCO3			250	245		mg/L		98	90 - 110	1	20

Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 550-314744/4
Matrix: Water
Analysis Batch: 314744

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		2.0		umhos/cm			01/30/24 18:04	1

Lab Sample ID: LCS 550-314744/3
Matrix: Water
Analysis Batch: 314744

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Specific Conductance			997	966		umhos/cm		97	90 - 110		

Lab Sample ID: LCSD 550-314744/12
Matrix: Water
Analysis Batch: 314744

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Specific Conductance			997	961		umhos/cm		96	90 - 110	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 550-314810/1
Matrix: Water
Analysis Batch: 314810

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		20		mg/L			01/25/24 18:20	1

Lab Sample ID: LCS 550-314810/2
Matrix: Water
Analysis Batch: 314810

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Dissolved Solids			1000	974		mg/L		97	90 - 110		

Lab Sample ID: LCSD 550-314810/3
Matrix: Water
Analysis Batch: 314810

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Dissolved Solids			1000	966		mg/L		97	90 - 110	NaN	10

Method: SM 4500 CN E - Cyanide, Total

Lab Sample ID: MB 550-315153/1-A
Matrix: Water
Analysis Batch: 315155

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 315153

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.050		mg/L		01/31/24 20:45	02/01/24 16:50	1

Method: SM 4500 CN E - Cyanide, Total (Continued)

Lab Sample ID: LCS 550-315153/2-A
Matrix: Water
Analysis Batch: 315155

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 315153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.100	0.0980		mg/L		98	90 - 110

Lab Sample ID: LCSD 550-315153/3-A
Matrix: Water
Analysis Batch: 315155

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 315153

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cyanide, Total	0.100	0.0963		mg/L		96	90 - 110	2	20

Method: SM 4500 CN G - Cyanide, Amenable

Lab Sample ID: MB 550-315982/1
Matrix: Water
Analysis Batch: 315982

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Amenable	ND		0.050	mg/L			02/16/24 09:15	1

Lab Sample ID: LCS 550-315982/2
Matrix: Water
Analysis Batch: 315982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Amenable	0.100	0.0980		mg/L		98	90 - 110

Lab Sample ID: LCSD 550-315982/3
Matrix: Water
Analysis Batch: 315982

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cyanide, Amenable	0.100	0.0963		mg/L		96	90 - 110	2	20

Method: SM 4500 H+ B - pH

Lab Sample ID: LCSSRM 550-314692/1
Matrix: Water
Analysis Batch: 314692

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.0		SU		99.3	98.5 - 101.5

Lab Sample ID: LCSSRM 550-314692/25
Matrix: Water
Analysis Batch: 314692

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.0		SU		99.3	98.5 - 101.5

Method: SM 4500 H+ B - pH (Continued)

Lab Sample ID: LCSSRM 550-314692/32
Matrix: Water
Analysis Batch: 314692

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	6.9		SU		99.1	98.5 - 101.5

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 550-315213/5
Matrix: Water
Analysis Batch: 315213

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		0.50	mg/L			01/31/24 17:31	1
Total Organic Carbon - Duplicates	ND		0.50	mg/L			01/31/24 17:31	1
Total Organic Carbon - Quad	ND		0.50	mg/L			01/31/24 17:31	1

Lab Sample ID: LCS 550-315213/6
Matrix: Water
Analysis Batch: 315213

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon	20.0	18.7		mg/L		94	90 - 110
Total Organic Carbon - Duplicates	20.0	18.7		mg/L		94	90 - 110
Total Organic Carbon - Quad	20.0	18.7		mg/L		94	90 - 110

Lab Sample ID: LCSD 550-315213/7
Matrix: Water
Analysis Batch: 315213

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Organic Carbon	20.0	18.6		mg/L		93	90 - 110	1	20
Total Organic Carbon - Duplicates	20.0	18.6		mg/L		93	90 - 110	1	20
Total Organic Carbon - Quad	20.0	18.6		mg/L		93	90 - 110	1	20

Method: 9223B - Coliforms, Total, and E.Coli (Presence/Absence)

Lab Sample ID: MB 550-314519/1
Matrix: Water
Analysis Batch: 314519

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	Absent			No Unit			01/22/24 17:50	1
Coliform, Total	Absent			No Unit			01/22/24 17:50	1

QC Association Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

GC/MS VOA

Analysis Batch: 314631

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	524.2	
MB 550-314631/7	Method Blank	Total/NA	Water	524.2	
LCS 550-314631/4	Lab Control Sample	Total/NA	Water	524.2	
LCSD 550-314631/5	Lab Control Sample Dup	Total/NA	Water	524.2	

GC/MS Semi VOA

Prep Batch: 86815

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	548.1	
MB 810-86815/26-A	Method Blank	Total/NA	Water	548.1	
LCS 810-86815/24-A	Lab Control Sample	Total/NA	Water	548.1	
LLCS 810-86815/25-A	Lab Control Sample	Total/NA	Water	548.1	
550-213257-1 MS	Cocopah-271-01222024	Total/NA	Water	548.1	
550-213257-1 MSD	Cocopah-271-01222024	Total/NA	Water	548.1	

Analysis Batch: 86889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	548.1	86815
MB 810-86815/26-A	Method Blank	Total/NA	Water	548.1	86815
LCS 810-86815/24-A	Lab Control Sample	Total/NA	Water	548.1	86815
LLCS 810-86815/25-A	Lab Control Sample	Total/NA	Water	548.1	86815
550-213257-1 MS	Cocopah-271-01222024	Total/NA	Water	548.1	86815
550-213257-1 MSD	Cocopah-271-01222024	Total/NA	Water	548.1	86815

Prep Batch: 86999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	525.2	
MB 810-86999/1-A	Method Blank	Total/NA	Water	525.2	
LCS 810-86999/2-A	Lab Control Sample	Total/NA	Water	525.2	
LLCS 810-86999/3-A	Lab Control Sample	Total/NA	Water	525.2	

Analysis Batch: 87142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	525.2	86999
MB 810-86999/1-A	Method Blank	Total/NA	Water	525.2	86999
LCS 810-86999/2-A	Lab Control Sample	Total/NA	Water	525.2	86999
LLCS 810-86999/3-A	Lab Control Sample	Total/NA	Water	525.2	86999

GC Semi VOA

Analysis Batch: 1157

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	1632A	
MB 350-1157/9	Method Blank	Total/NA	Water	1632A	
LCS 350-1157/10	Lab Control Sample	Total/NA	Water	1632A	
LCSD 350-1157/11	Lab Control Sample Dup	Total/NA	Water	1632A	

Prep Batch: 86421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-86421/2-B	Lab Control Sample	Total/NA	Water	515.3	

GC Semi VOA

Cleanup Batch: 86497

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-86421/2-B	Lab Control Sample	Total/NA	Water	Aliquot	86421

Prep Batch: 86698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	515.3	
MB 810-86698/1-B	Method Blank	Total/NA	Water	515.3	

Cleanup Batch: 86739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	Aliquot	86698
MB 810-86698/1-B	Method Blank	Total/NA	Water	Aliquot	86698

Analysis Batch: 86761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	515.3	86739
MB 810-86698/1-B	Method Blank	Total/NA	Water	515.3	86739
LLCS 810-86421/2-B	Lab Control Sample	Total/NA	Water	515.3	86497

Analysis Batch: 86762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 810-86698/1-B	Method Blank	Total/NA	Water	515.3	86739
LLCS 810-86421/2-B	Lab Control Sample	Total/NA	Water	515.3	86497

Prep Batch: 86851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	504.1	
MB 810-86851/1-A	Method Blank	Total/NA	Water	504.1	
LCS 810-86851/5-A	Lab Control Sample	Total/NA	Water	504.1	
LLCS 810-86851/2-A	Lab Control Sample	Total/NA	Water	504.1	
550-213257-1 DU	Cocopah-271-01222024	Total/NA	Water	504.1	

Analysis Batch: 86888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	504.1	86851
MB 810-86851/1-A	Method Blank	Total/NA	Water	504.1	86851
LCS 810-86851/5-A	Lab Control Sample	Total/NA	Water	504.1	86851
LCS 810-86851/5-A	Lab Control Sample	Total/NA	Water	504.1	86851
LLCS 810-86851/2-A	Lab Control Sample	Total/NA	Water	504.1	86851
550-213257-1 DU	Cocopah-271-01222024	Total/NA	Water	504.1	86851

Prep Batch: 87062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	505	
MB 810-87062/9-B	Method Blank	Total/NA	Water	505	
LLCS 810-87062/4-A	Lab Control Sample	Total/NA	Water	505	
LLCS 810-87062/5-A	Lab Control Sample	Total/NA	Water	505	

Analysis Batch: 87126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	505	87062
MB 810-87062/9-B	Method Blank	Total/NA	Water	505	87062

GC Semi VOA (Continued)

Analysis Batch: 87126 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-87062/4-A	Lab Control Sample	Total/NA	Water	505	87062
LLCS 810-87062/5-A	Lab Control Sample	Total/NA	Water	505	87062

HPLC/IC

Prep Batch: 86677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	549.2	
MB 810-86677/1-A	Method Blank	Total/NA	Water	549.2	
LCS 810-86677/2-A	Lab Control Sample	Total/NA	Water	549.2	
LLCS 810-86677/3-A	Lab Control Sample	Total/NA	Water	549.2	
550-213257-1 DU	Cocopah-271-01222024	Total/NA	Water	549.2	

Analysis Batch: 86755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	549.2	86677
MB 810-86677/1-A	Method Blank	Total/NA	Water	549.2	86677
LCS 810-86677/2-A	Lab Control Sample	Total/NA	Water	549.2	86677
LLCS 810-86677/3-A	Lab Control Sample	Total/NA	Water	549.2	86677
550-213257-1 DU	Cocopah-271-01222024	Total/NA	Water	549.2	86677

Filtration Batch: 87084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Dissolved	Water	Filtration	
MB 810-87084/1-A	Method Blank	Dissolved	Water	Filtration	
LCS 810-87084/3-A	Lab Control Sample	Dissolved	Water	Filtration	
LLCS 810-87084/2-A	Lab Control Sample	Dissolved	Water	Filtration	

Analysis Batch: 87130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Dissolved	Water	547	87084
MB 810-87084/1-A	Method Blank	Dissolved	Water	547	87084
LCS 810-87084/3-A	Lab Control Sample	Dissolved	Water	547	87084
LLCS 810-87084/2-A	Lab Control Sample	Dissolved	Water	547	87084

Filtration Batch: 87214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Dissolved	Water	Filtration	
MBL 810-87214/1-A	Method Blank	Dissolved	Water	Filtration	

Analysis Batch: 87293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Dissolved	Water	531.2	87214
MBL 810-87214/1-A	Method Blank	Dissolved	Water	531.2	87214

Analysis Batch: 314685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	300.0	
550-213257-1	Cocopah-271-01222024	Total/NA	Water	300.0	
MB 550-314685/1026	Method Blank	Total/NA	Water	300.0	
MB 550-314685/2	Method Blank	Total/NA	Water	300.0	

HPLC/IC (Continued)

Analysis Batch: 314685 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 550-314685/28	Lab Control Sample	Total/NA	Water	300.0	
LCSD 550-314685/29	Lab Control Sample Dup	Total/NA	Water	300.0	

LCMS

Prep Batch: 738244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	537.1 DW	
MB 320-738244/1-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 320-738244/3-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 320-738244/4-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	
LLCS 320-738244/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	

Analysis Batch: 738433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-738244/1-A	Method Blank	Total/NA	Water	537.1 DW	738244
LCS 320-738244/3-A	Lab Control Sample	Total/NA	Water	537.1 DW	738244
LCSD 320-738244/4-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	738244
LLCS 320-738244/2-A	Lab Control Sample	Total/NA	Water	537.1 DW	738244

Analysis Batch: 738743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	537.1 DW	738244

Specialty Organics

Prep Batch: 738000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	HRMS-Sep	
MB 320-738000/1-A	Method Blank	Total/NA	Water	HRMS-Sep	
LCS 320-738000/2-A	Lab Control Sample	Total/NA	Water	HRMS-Sep	
LCSD 320-738000/3-A	Lab Control Sample Dup	Total/NA	Water	HRMS-Sep	
LLCS 320-738000/4-A	Lab Control Sample	Total/NA	Water	HRMS-Sep	

Analysis Batch: 740746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	1613B	738000
MB 320-738000/1-A	Method Blank	Total/NA	Water	1613B	738000
LCS 320-738000/2-A	Lab Control Sample	Total/NA	Water	1613B	738000
LCSD 320-738000/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	738000
LLCS 320-738000/4-A	Lab Control Sample	Total/NA	Water	1613B	738000

Metals

Prep Batch: 1226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total Recoverable	Water	1638	
MB 350-1226/1-A	Method Blank	Total Recoverable	Water	1638	
MB 350-1226/2-A	Method Blank	Total Recoverable	Water	1638	
LCS 350-1226/3-A	Lab Control Sample	Total Recoverable	Water	1638	
LCSD 350-1226/4-A	Lab Control Sample Dup	Total Recoverable	Water	1638	
550-213257-1 MS	Cocopah-271-01222024	Total Recoverable	Water	1638	

Metals (Continued)

Prep Batch: 1226 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1 MSD	Cocopah-271-01222024	Total Recoverable	Water	1638	

Analysis Batch: 1246

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total Recoverable	Water	1638	1226
MB 350-1226/1-A	Method Blank	Total Recoverable	Water	1638	1226
MB 350-1226/2-A	Method Blank	Total Recoverable	Water	1638	1226
LCS 350-1226/3-A	Lab Control Sample	Total Recoverable	Water	1638	1226
LCSD 350-1226/4-A	Lab Control Sample Dup	Total Recoverable	Water	1638	1226
550-213257-1 MS	Cocopah-271-01222024	Total Recoverable	Water	1638	1226
550-213257-1 MSD	Cocopah-271-01222024	Total Recoverable	Water	1638	1226

Analysis Batch: 1263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	None	

Prep Batch: 314626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	200.8	
MB 550-314626/1-A	Method Blank	Total/NA	Water	200.8	
LCS 550-314626/3-A	Lab Control Sample	Total/NA	Water	200.8	
LCSD 550-314626/4-A	Lab Control Sample Dup	Total/NA	Water	200.8	
550-213257-1 MS	Cocopah-271-01222024	Total/NA	Water	200.8	
550-213257-1 MSD	Cocopah-271-01222024	Total/NA	Water	200.8	

Prep Batch: 314639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	200.7	
MB 550-314639/1-A	Method Blank	Total/NA	Water	200.7	
LCS 550-314639/3-A	Lab Control Sample	Total/NA	Water	200.7	
LCSD 550-314639/4-A	Lab Control Sample Dup	Total/NA	Water	200.7	
550-213257-1 MS	Cocopah-271-01222024	Total/NA	Water	200.7	
550-213257-1 MSD	Cocopah-271-01222024	Total/NA	Water	200.7	

Analysis Batch: 314902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	200.7	314639
MB 550-314639/1-A	Method Blank	Total/NA	Water	200.7	314639
LCS 550-314639/3-A	Lab Control Sample	Total/NA	Water	200.7	314639
LCSD 550-314639/4-A	Lab Control Sample Dup	Total/NA	Water	200.7	314639
550-213257-1 MS	Cocopah-271-01222024	Total/NA	Water	200.7	314639
550-213257-1 MSD	Cocopah-271-01222024	Total/NA	Water	200.7	314639

Prep Batch: 314935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	245.1	
MB 550-314935/1-A	Method Blank	Total/NA	Water	245.1	
LCS 550-314935/2-A	Lab Control Sample	Total/NA	Water	245.1	
LCSD 550-314935/3-A	Lab Control Sample Dup	Total/NA	Water	245.1	

Metals

Analysis Batch: 314960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	245.1	314935
MB 550-314935/1-A	Method Blank	Total/NA	Water	245.1	314935
LCS 550-314935/2-A	Lab Control Sample	Total/NA	Water	245.1	314935
LCSD 550-314935/3-A	Lab Control Sample Dup	Total/NA	Water	245.1	314935

Analysis Batch: 315008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	200.8	314626
MB 550-314626/1-A	Method Blank	Total/NA	Water	200.8	314626
LCS 550-314626/3-A	Lab Control Sample	Total/NA	Water	200.8	314626
LCSD 550-314626/4-A	Lab Control Sample Dup	Total/NA	Water	200.8	314626
550-213257-1 MS	Cocopah-271-01222024	Total/NA	Water	200.8	314626
550-213257-1 MSD	Cocopah-271-01222024	Total/NA	Water	200.8	314626

Analysis Batch: 315070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 2340B	

General Chemistry

Analysis Batch: 86577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 2120B	
LCSSRM 810-86577/11	Lab Control Sample	Total/NA	Water	SM 2120B	
550-213257-1 DU	Cocopah-271-01222024	Total/NA	Water	SM 2120B	

Analysis Batch: 86601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 2150B	
MBL 810-86601/1	Method Blank	Total/NA	Water	SM 2150B	

Analysis Batch: 313141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	2330B	

Analysis Batch: 314692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 4500 H+ B	
LCSSRM 550-314692/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCSSRM 550-314692/25	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
LCSSRM 550-314692/32	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 314744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 2510B	
MB 550-314744/4	Method Blank	Total/NA	Water	SM 2510B	
LCS 550-314744/3	Lab Control Sample	Total/NA	Water	SM 2510B	
LCSD 550-314744/12	Lab Control Sample Dup	Total/NA	Water	SM 2510B	

General Chemistry

Analysis Batch: 314805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 2320B	
MB 550-314805/6	Method Blank	Total/NA	Water	SM 2320B	
LCS 550-314805/5	Lab Control Sample	Total/NA	Water	SM 2320B	
LCSD 550-314805/18	Lab Control Sample Dup	Total/NA	Water	SM 2320B	

Analysis Batch: 314810

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 2540C	
MB 550-314810/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 550-314810/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 550-314810/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 314920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	180.1	
MB 550-314920/3	Method Blank	Total/NA	Water	180.1	
LCS 550-314920/4	Lab Control Sample	Total/NA	Water	180.1	
LCSD 550-314920/5	Lab Control Sample Dup	Total/NA	Water	180.1	
550-213257-1 DU	Cocopah-271-01222024	Total/NA	Water	180.1	

Analysis Batch: 315062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	350.1	
MB 550-315062/21	Method Blank	Total/NA	Water	350.1	
MB 550-315062/60	Method Blank	Total/NA	Water	350.1	
LCS 550-315062/81	Lab Control Sample	Total/NA	Water	350.1	
LCSD 550-315062/82	Lab Control Sample Dup	Total/NA	Water	350.1	

Prep Batch: 315153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 4500 CN C	
MB 550-315153/1-A	Method Blank	Total/NA	Water	SM 4500 CN C	
LCS 550-315153/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN C	
LCSD 550-315153/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN C	

Analysis Batch: 315155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 4500 CN E	315153
MB 550-315153/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	315153
LCS 550-315153/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	315153
LCSD 550-315153/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	315153

Analysis Batch: 315157

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 4500 CN G	315153

Analysis Batch: 315213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 5310B	
MB 550-315213/5	Method Blank	Total/NA	Water	SM 5310B	
LCS 550-315213/6	Lab Control Sample	Total/NA	Water	SM 5310B	

General Chemistry (Continued)

Analysis Batch: 315213 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 550-315213/7	Lab Control Sample Dup	Total/NA	Water	SM 5310B	

Analysis Batch: 315982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	SM 4500 CN G	
MB 550-315982/1	Method Blank	Total/NA	Water	SM 4500 CN G	
LCS 550-315982/2	Lab Control Sample	Total/NA	Water	SM 4500 CN G	
LCSD 550-315982/3	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN G	

Biology

Analysis Batch: 314519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-213257-1	Cocopah-271-01222024	Total/NA	Water	9223B	
MB 550-314519/1	Method Blank	Total/NA	Water	9223B	

Lab Chronicle

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Client Sample ID: Cocopah-271-01222024

Date Collected: 01/22/24 11:30
Date Received: 01/22/24 17:05

Lab Sample ID: 550-213257-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	524.2		1	314631	R1K	EET PHX	01/24/24 19:07
Total/NA	Prep	525.2			86999	KW	EA SB	01/29/24 09:33
Total/NA	Analysis	525.2		1	87142	TD	EA SB	01/31/24 01:59
Total/NA	Prep	548.1			86815	AC	EA SB	01/26/24 06:33
Total/NA	Analysis	548.1		1	86889	CM	EA SB	01/26/24 22:14
Total/NA	Analysis	1632A		10	1157	D1C	EET SSM	01/31/24 14:40
Total/NA	Prep	504.1			86851	MP	EA SB	01/26/24 10:08 - 01/26/24 12:25 [1]
Total/NA	Analysis	504.1		1	86888	JV	EA SB	01/26/24 19:55
Total/NA	Prep	505			87062	AC	EA SB	01/30/24 07:36 - 01/30/24 12:58 [1]
Total/NA	Analysis	505		1	87126	JV	EA SB	01/31/24 02:04
Total/NA	Prep	515.3			86698	AM	EA SB	01/25/24 08:37
Total/NA	Cleanup	Aliquot			86739	AM	EA SB	01/25/24 12:51
Total/NA	Analysis	515.3		1	86761	SS	EA SB	01/25/24 23:51
Total/NA	Analysis	300.0		1	314685	MMH	EET PHX	01/24/24 02:34
Total/NA	Analysis	300.0		10	314685	MMH	EET PHX	01/24/24 03:29
Dissolved	Filtration	Filtration			87214	HB	EA SB	01/31/24 10:45
Dissolved	Analysis	531.2		1	87293	KO	EA SB	02/01/24 00:01
Dissolved	Filtration	Filtration			87084	MP	EA SB	01/30/24 09:36
Dissolved	Analysis	547		1	87130	KO	EA SB	01/30/24 19:05
Total/NA	Prep	549.2			86677	DB	EA SB	01/25/24 06:38
Total/NA	Analysis	549.2		1	86755	KO	EA SB	01/25/24 16:52
Total/NA	Prep	537.1 DW			738244	H1K	EET SAC	02/03/24 05:51
Total/NA	Analysis	537.1 DW		1	738743	SS	EET SAC	02/06/24 15:08
Total/NA	Prep	HRMS-Sep			738000	BLR	EET SAC	02/02/24 11:30
Total/NA	Analysis	1613B		1	740746	JBC	EET SAC	02/16/24 17:00
Total Recoverable	Prep	1638			1226	V1R	EET SSM	02/06/24 10:17
Total Recoverable	Analysis	1638		1	1246	V1R	EET SSM	02/07/24 16:34
Total/NA	Prep	200.7			314639	SGO	EET PHX	01/24/24 09:08
Total/NA	Analysis	200.7		1	314902	GLW	EET PHX	01/26/24 14:53
Total/NA	Prep	200.8			314626	SGO	EET PHX	01/24/24 08:00
Total/NA	Analysis	200.8		1	315008	DSJ	EET PHX	01/29/24 18:44
Total/NA	Prep	245.1			314935	HHL	EET PHX	01/29/24 11:40
Total/NA	Analysis	245.1		1	314960	HHL	EET PHX	01/29/24 14:51
Total/NA	Analysis	None		1	1263	KJG	EET SSM	02/09/24 17:50
Total/NA	Analysis	SM 2340B		1	315070	GLW	EET PHX	01/31/24 12:12
Total/NA	Analysis	180.1		1	314920	ZH	EET PHX	01/23/24 13:30
Total/NA	Analysis	2330B		1	313141	MEJ	EET PHX	01/31/24 12:00
Total/NA	Analysis	350.1		1	315062	ZH	EET PHX	01/30/24 12:20
Total/NA	Analysis	SM 2120B		1	86577	AN	EA SB	01/24/24 11:07
Total/NA	Analysis	SM 2150B		1	86601	AN	EA SB	01/24/24 11:55
Total/NA	Analysis	SM 2320B		1	314805	CXK	EET PHX	01/24/24 16:52
Total/NA	Analysis	SM 2510B		1	314744	CXK	EET PHX	01/30/24 19:02
Total/NA	Analysis	SM 2540C		1	314810	GRW	EET PHX	01/25/24 18:20 - 01/30/24 17:30 [1]

Lab Chronicle

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Client Sample ID: Cocopah-271-01222024

Date Collected: 01/22/24 11:30
Date Received: 01/22/24 17:05

Lab Sample ID: 550-213257-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SM 4500 CN C			315153	CXK	EET PHX	01/31/24 20:45
Total/NA	Analysis	SM 4500 CN E		1	315155	CXK	EET PHX	02/01/24 16:50
Total/NA	Prep	SM 4500 CN C			315153	CXK	EET PHX	01/31/24 20:45
Total/NA	Analysis	SM 4500 CN G		1	315157	CXK	EET PHX	02/01/24 16:50
Total/NA	Analysis	SM 4500 CN G		1	315982	MEJ	EET PHX	02/16/24 09:15
Total/NA	Analysis	SM 4500 H+ B		1	314692	CXK	EET PHX	01/24/24 13:30
Total/NA	Analysis	SM 5310B		1	315213	ECC	EET PHX	01/31/24 21:24
Total/NA	Analysis	9223B		1	314519	ECC	EET PHX	01/22/24 17:50 - 01/23/24 12:00 [1]

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

= Fiberquant Inc, 5025 South 33rd Street, Phoenix, AZ 85040-2816

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

EET PHX = Eurofins Phoenix, 4625 East Cotton Center Boulevard, Suite #189, Phoenix, AZ 85040, TEL (602)437-3340

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

EET SSM = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (206)622-6960

Radiation = Radiation Safety, 3245 North Washington Street, Chandler, AZ 85225

Accreditation/Certification Summary

Client: Matrix New World Engineering
Job ID: 550-213257-1
Project/Site: Cocopah

Laboratory: Eurofins Phoenix

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0728	06-10-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7	200.7	Water	Potassium
200.7	200.7	Water	Vanadium
2330B		Water	Langelier Index
350.1		Water	Ammonia
SM 2340B		Water	Calcium hardness as calcium carbonate
SM 4500 CN G	SM 4500 CN C	Water	Cyanide, Non-amenable
SM 4500 H+ B		Water	Temperature

Laboratory: Eurofins Eaton Analytical South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0432	07-26-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
505	505	Water	Total PCBs as DCB (Qualitative)
SM 2150B		Water	Odor

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0708	08-11-24

Laboratory: Eurofins Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	12-18-24
ANAB	Dept. of Defense ELAP	L2236	12-18-24
ANAB	Dept. of Energy	L2236.01	12-18-24
ANAB	ISO/IEC 17025	L2236	12-18-24
California	State	2954	12-18-24
Florida	NELAP	E87575	12-18-24
Louisiana (All)	NELAP	03073	12-18-24
Maine	State	WA01273	12-18-24
New Jersey	NELAP	WA014	12-18-24
New York	NELAP	67778	12-18-24
Oregon	NELAP	4167-008	12-18-24
US Fish & Wildlife	US Federal Programs	A20571	12-18-24
USDA	US Federal Programs	525-23-4-22573	12-18-24
Washington	State	C788-23a	12-18-24
Wisconsin	State	399133460	12-18-24

Method Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Method	Method Description	Protocol	Laboratory
524.2	Volatile Organic Compounds (GC/MS)	EPA-DW	EET PHX
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	EA SB
548.1	Endothall (GC/MS)	EPA	EA SB
1632A	Arsenic Speciation by Hydride- Generation Cryo-Trapping GC-AAS	EPA	EET SSM
504.1	EDB, DBCP and 1,2,3-TCP (GC)	EPA-DW2	EA SB
505	Organochlorine Pesticides/PCBs (GC)	EPA	EA SB
515.3	Herbicides (GC)	EPA	EA SB
300.0	Anions, Ion Chromatography	EPA	EET PHX
531.2	Carbamate Pesticides (HPLC)	EPA	EA SB
547	Glyphosate (DAI HPLC)	EPA	EA SB
549.2	Diquat and Paraquat (HPLC)	EPA	EA SB
537.1 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	EET SAC
1613B	Tetra Chlorinated Dioxin (HRGC/HRMS)	EPA	EET SAC
1638	Metals (ICP/MS)	EPA	EET SSM
200.7	ICP Metals by 200.7	EPA	EET PHX
200.8	Metals (ICP/MS)	EPA	EET PHX
245.1	Mercury (CVAA)	EPA	EET PHX
None	Organic Arsenic	Lab SOP	EET SSM
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	EET PHX
180.1	Turbidity, Nephelometric	EPA	EET PHX
2330B	Langelier Index	SM	EET PHX
350.1	Nitrogen, Ammonia (Low Level)	EPA	EET PHX
SM 2120B	Color, Colorimetric	SM	EA SB
SM 2150B	Odor	SM	EA SB
SM 2320B	Alkalinity	SM	EET PHX
SM 2510B	Conductivity, Specific Conductance	SM	EET PHX
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET PHX
SM 4500 CN E	Cyanide, Total	SM	EET PHX
SM 4500 CN G	Cyanide, Amenable	SM	EET PHX
SM 4500 H+ B	pH	SM	EET PHX
SM 5310B	Organic Carbon, Total (TOC)	SM	EET PHX
9223B	Coliforms, Total, and E.Coli (Presence/Absence)	SM	EET PHX
900	Gross Alpha	RAD EPA	Radiation
908.0	Total Uranium Isoptopes	EPA	Radiation
EPA	Asbestos	EPA	
EPA	RAD-226-228 combined	TAL-RCH	Radiation
1638	Preparation, Total Recoverable Metals	EPA	EET SSM
200.7	Preparation, Total Metals	EPA	EET PHX
200.8	Preparation, Total Metals	EPA	EET PHX
245.1	Preparation, Mercury	EPA	EET PHX
504.1	Microextraction	EPA-DW	EA SB
505	Extraction, Organochlorine Pesticides/PCBs	EPA	EA SB
515.3	Extraction of Chlorinated Acids	EPA-DW	EA SB
525.2	Extraction of Semivolatile Compounds	EPA	EA SB
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EET SAC
548.1	Extraction of Endothall	EPA-DW	EA SB
549.2	Extraction of Diquat and Paraquat	EPA	EA SB
Aliquot	Preparation, Extract aliquot	None	EA SB
Filtration	Sample Filtration	None	EA SB
HRMS-Sep	Separatory Funnel (Liquid-Liquid) Extraction	EPA	EET SAC
SM 4500 CN C	Cyanide, Distillation	SM	EET PHX

Method Summary

Client: Matrix New World Engineering
Project/Site: Cocopah

Job ID: 550-213257-1

Method	Method Description	Protocol	Laboratory

Protocol References:

EPA = US Environmental Protection Agency

EPA-DW = "Methods For The Determination Of Organic Compounds In Drinking Water", EPA/600/4-88/039, December 1988 And Its Supplements.

EPA-DW2 = "Methods For The Determination of Organic Compounds in Drinking Water - Supplement III ",, EPA/600/R-95-131, August 1995

Lab SOP = Laboratory Standard Operating Procedure

None = None

RAD EPA = EPA Radioanalytical Methodology

SM = "Standard Methods For The Examination Of Water And Wastewater"

TAL-RCH = TestAmerica Laboratories, Richland, Facility Standard Operating Procedure.

Laboratory References:

= Fiberquant Inc, 5025 South 33rd Street, Phoenix, AZ 85040-2816

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

EET PHX = Eurofins Phoenix, 4625 East Cotton Center Boulevard, Suite #189, Phoenix, AZ 85040, TEL (602)437-3340

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

EET SSM = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (206)622-6960

Radiation = Radiation Safety, 3245 North Washington Street, Chandler, AZ 85225

FIBERQUANT ANALYTICAL SERVICES

Determination of Asbestos in Water using TEM

JobNumber: 202400811

Client: EUROFINS TEST AMERICA PHOENIX

4625 E COTTON CTR BLVD STE 189

PHOENIX, AZ 85040-0000

Office Phone: (602) 437-3340

FAX: (602) 454-9303

 # Samples: 1 TEM **Rec:** 1/23/2024 **Method:** EPA 100.2 TEM Water

Client Job: Cocopah / 550-213257-1 **PO Number:** US0403329297

Report Date: 1/29/2024 **Date Analyzed:** 1/29/2024 **Routing Number:** -

Method and Analysis Information: **Fiberquant Internal SOP:** TEMw

Samples are analyzed using the protocols given in EPA method 100.2. Samples should be un-preserved water in 1 L containers having about 200 ml headspace for shaking. There is a 48 hr deadline between the time the sample is taken and the time it is filtered to minimize loss of asbestos fibers due to biological interference unless the sample is pre-treated with ozone and UV. Each sample is shaken for ~1 minute, and ultrasonicated for at15 minutes. A measured amount of sample is then filtered through a 0.2 um pore size mixed cellulose ester (MCE) filter, backed by a 5 um pore size MCE filter and a glass frit. Several volumes of liquid may be filtered for each sample in order to assure that a properly loaded sample is obtained. A portion of each resulting filter (and blanks) is then coated with 100-200 um of carbon in a Denton 502A Carbon Evaporator. The carbon encapsulates all of the larger and most of the smaller particulate on the filter. Three mm square pieces of the coated filter are placed on three or more copper TEM grids, and the original filter material is dissolved away in a Jaffe wick and/or condensation washer. The finished replica in carbon containing the particulate is then examined on a JEOL 1200 transmission electrom microscope at 10,000 to 20,000x magnification. All asbestos fibers >10um in length are tabulated and characterized as asbestos or non-asbestos using a combination of morphology, electron diffraction characteristics, and elemental composition. The result is calculated in millions of fibers per liter (MFL). The grid is scanned until 20 grid openings have been observed, or until an analytical sensitivity (the hypothetical observation of one fiber) of 0.2 MFL has been reached. The nominal 20 grid opening cut-off is used for those samples containing so much non-asbestos particulate that the desired analytical sensitivity is impractical to attain. The filtering time listed below is the time at which the filtering was completed.

The method was designed to determine EPA drinking water compliance. The standard for drinking water is <7 MFL as measured by this method. Fiberquant maintains Arizona Environmental Laboratory license #AZ0633 covering EPA Method 100.1 and 100.2.

Overall, the coefficient of variation can be expected to be approximately 0.5 for analyses in which >20 asbestos fibers have been counted, ranging up to 1.00 for analyses in which only a few asbestos fibers are counted.

The analysis was performed under an ongoing quality assurance program which includes: Lab blanks, prepared with each set of samples and analyzed at a rate of one per twenty-five samples. Each analyst has suitable background credentials, such as at least a bachelor's degree ina physical science, and has undergone extensive 2-6 month training in TEM techniques and mineralogy specific to TEM asbestos analysis before being allowed to perform client analyses. Unknown reference samples are routinely identified to ensure that each analyst can collect and correctly interpret TEM information. The TEM is aligned and its performance checked daily. Magnification, electron diffraction pattern size, and analytical performance characteristics are calibrated routinely. Samples are re-analyzed sometimes by the same analyst and sometimes by a different analyst in order to determine accuracy and precision. The total of QC analyses (blanks + recounts) are greater than 10% of analyzed samples. Each analyst participates in interlab round robins and proficiency testing in order to show correlation to other lab's analyses. Because TEM samples are not analyzed in batches, which would be traditional for most water analyses, and not every sample has a duplicate or replicate analysis associated with it, it is not possible to include a traditional QC report with the analysis. QC reports are produced quarterly, and are available on request. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. Fiberquant is accredited by NVLAP to perform TEM analysis of asbestos in air samples, and has been found to be proficient in the EPA water proficiency program. Accreditation or proficiency does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

	Date	Time	By:	Dylan Easthouse
Sampled collected:	1/22/2024	11:30		
Received:	1/23/2024	9:19		
Filtered:	1/23/2024	16:08		
Analyzed:	1/29/2024	11:46		

Analysis Results:

Lab Number	Client Number	Date	Condition	Filtered Vol (ml)	#GOs	GO Area	MFL>10um	AsbestosType	Sensitivity (MFL>10um)
							Job Number:		202400811
2024-00811- 1	ocopah-271-0122202	1/22/2024	acceptable	35	11	0.01011	<0.2	-	0.2

Analyst: UWE .. STEIMLE

Printed: 29-Jan-24

Original Print Date: 29-Jan-24

Larry S. Pierce, Approved Accreditation Signatory

QA Report:	Job Number:	202400811

1. Calibrations	
TEM magnification. date of last.	12/29/2023
TEM camera constant. date of last.	1/25/2024
EDS performance check (k-factors, resolution, low-e perf.). date of last.	1/29/2024
TEM stage drift, minimum beam size. date of last.	1/29/2024
plasma asher. date of last.	6/7/2023

2. Blanks (1/25 samples required)	Not Required This Job

3. Recounts (1/17 samples required)	Not Required This Job

4. Analyst Performance	
NVLAP proficiency testing	Current
verified counts. cum. % true positives	93.9
verification of diffraction pattern identifications. cum. % correct	88.0
verification of EDS spectra. cum. % correct	99.5

Fiberquant Analytical Services

Fiberquant, Inc. 5025 S. 33rd St., Phoenix, Arizona 85040 602-276-6139 Fax 602-276-4558

TEM Water Sample Count Sheet

Method: EPA 100.1 (600/4-84-043)

Sample Information

Client: EUROFINS TEST AMERICA PHOENIX

Client Smp #: **Cocopah-271-01222024**

Lab #: **2024-00811- 1** Vol Filtered (ml) 35

✓ MCE ___ PC Pore um: ___ 0.4 ✓ 0.22 ___ 0.1

Grid Orientation Draw Asym Spot

E6	E7	E8	E9	E10	E11	E12	E13	E14	E15
F6	F7	F8	F9	F10	F11	F12	F13	F14	F15
G6	G7	G8	G9	G10	G11	G12	G13	G14	G15
H6	H7	H8	H9	H10	H11	H12	H13	H14	H15
I6	I7	I8	I9			I12	I13	I14	I15
J6	J7	J8	J9			J12	J13	J14	J15
K6	K7	K8	K9	K10	K11	K12	K13	K14	K15
L6	L7	L8	L9	L10	L11	L12	L13	L14	L15
M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
N6	N7	N8	N9	N10	N11	N12	N13	N14	N15

Grid Map
X denotes GO's on 1st grid; O denotes GO's on 2nd

Grid Information

#Grids Prepped: 3 GO Area: 0.01011 #GOs to Count 11

System Information

Est. % Loading 5

TEM: ✓ Jeol N ___ Jeol S Ac. Volatage 120keV or other: ___ keV

Measured @20K Scanned @ 12 K Alignment: ✓ checked EDS: ___ calib ✓ not used

Fiber Counts:

Grid Storage # 1964 S8 Acceptable Prep ✓ (>50% coverage, >50% intact, no folds, <5% opaque, 20 good GOs

Location		Str. Type				Size		Morphology			Diffraction Data							EDXA Data							Ident.'n	
GO #	STR #	FIBER	BUNDLE	MATRIX	CLUSTER	Length	Width	TUBULAR	BLOCKY	Negativo #	5.2A Row Spacing	Estimated In-Row Spacing	CHRY	AMPH	NONASB	NO PATT	File #	Na	Mg	Si	Ca	Fe	Other	File #	ASBTYPE	NONASB
L11	NSD																									
J12	↓																									
H13																										
F13	✓																									

Grid Storage # D61 H510 US 1-29 Acceptable Prep ✓ (>50% coverage, >50% intact, no folds, <5% opaque, 20 good GOs

E13	NSD																									
F4	↓																									
G9																										
H2	✓																									

Grid Storage # 1964 F3 T1 US 1-29 Acceptable Prep ✓ (>50% coverage, >50% intact, no folds, <5% opaque, 20 good GOs

H8	NSD																									
J9																										
L10	✓																									

Abbreviations: NSD=No structures Detected, CH=chrysotile, GR=grunnerite, AN=anthophyllite, TR=tremolite, AP=amphibole, GO=grid opening, NA=non-asbestos

Notes:

Totals:	CH > 10	0	AP > 10	0	GOs Counted	11	*Results:*	Str/mm2	< 9	MFL	< 0.2

Analyst: Uwe Steimle ***Date:*** 1-29-24

Eurofins Phoenix
4625 East Cotton Center Boulevard Suite #189
Phoenix, AZ 85040
Phone: 602-437-3340

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Eshelman, Linda	Carrier Tracking No(s):	COC No: 550-38668.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: linda.eshelman@et.eurofinsus.com	State of Origin: Arizona	Page: Page 1 of 1
Company: Fiberquant Inc		Accreditations Required (See note): State - Arizona		Job #: 550-213257-1
Address: 5025 South 33rd Street, ,	Due Date Requested: 2/19/2024			
City: Phoenix	TAT Requested (days):			
State, Zip: AZ, 85040-2816				
Phone:	PO #:			
Email:	WO #:			
Project Name: Cocopah	Project #: 55018664			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos)/ Asbestos	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Cocopah-271-01222024 (550-213257-1)	1/22/24	11:30 Arizona		Water			X	1	
Sample: Dylan Easthouse SEA									

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	ESHELMAN DCS	1-23-24	9.25		1-23-24 9:19	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Review of Analysis Request (initials)

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121 (480) 897-9459
Website: www.radsafe.com FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

TestAmerica
4625 E. Cotton Center Blvd., Suite #189
Phoenix, AZ 85040

Sampling Date: January 22, 2024
Sample Received: January 23, 2024
Analysis Completed: February 02, 2024

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
550-213257-1	7.2 ± 0.6	4.2 ± 0.7	3.0 ± 0.9	0.8 ± 0.2	< 0.8	0.8 ± 0.2
Date of Analysis	1/24/2024	1/29/2024	1/29/2024	1/26/2024	1/26/2024	1/26/2024

2/2/2024
Robert L. Metzger, Ph.D., C.H.P. Date
Laboratory License Number AZ0462

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121 (480) 897-9459
Website: www.radsafe.com FAX (480) 892-5446

Isotopic Uranium Analysis

TestAmerica
4625 E. Cotton Center Blvd., Suite #189
Phoenix, AZ 85040

Sampling Date: January 22, 2024
Sample Received: January 23, 2024
Uranium Analysis Date: January 29, 2024

Sample No.	^{238}U	^{235}U	^{234}U	Total	
550-213257-1	1.8 ± 0.3	0.086 ± 0.002	2.3 ± 0.4	4.2 ± 0.7	Activity (pCi/L)
	5.5 ± 1.0	0.040 ± 0.001	0.00037 ± 0.00006	5.5 ± 1.0	Content (µg/L)
	Comments:				

Robert L. Metzger, Ph.D.,C.H.P. February 2, 2024
Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality

Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report

Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

January 22, 2024 (Sample Date) 11:30 (Sample Time) (24 hour clock)

Owner/Contact Person: _____

Owner/Contact Fax Number: _____

Owner/Contact Phone Number: _____

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring

☐ Quarterly

☐ Composite of four quarterly samples

Date Q1 collected: _____

Date Q2 collected: _____

Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result		Exceed MCL
Calculated	15 pCi/L		Adjusted Gross Alpha	4000	1/29/2024	3.0 ± 0.9		
EPA 00-02		3 pCi/L	Gross Alpha	4002	1/24/2024	7.2 ± 0.6		
7500 - Rn			Radon	4004				
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	1/29/2024	5.5 ± 1.0	µg/L	
			Uranium 234	4007	1/29/2024	0.00037 ± 0.00006		
			Uranium 235	4008	1/29/2024	0.040 ± 0.001		
			Uranium 238	4009	1/29/2024	5.5 ± 1.0		
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	1/26/2024	0.8 ± 0.2		
GammaRay HPGE		1 pCi/L	Radium 226	4020	1/26/2024	0.8 ± 0.2		
GammaRay HPGE		1 pCi/L	Radium 228	4030	1/26/2024	< 0.8		

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE73688

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 550-213257-1

Authorized Signature: Robert L. Metzger

Date Public Water System Notified: _____

DWAR 6: 11/2007

Eurofins Phoenix
4625 East Cotton Center Boulevard Suite #189
Phoenix, AZ 85040
Phone: 602-437-3340

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Eshelman, Linda	Carrier Tracking No(s):	COC No: 550-38669.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: linda.eshelman@et.eurofinsus.com	State of Origin: Arizona	Page: Page 1 of 1
Company: Radiation Safety Eng., Inc.		Accreditations Required (See note): State - Arizona		Job #: 550-213257-1
Address: 3245 North Washington Street, ,	Due Date Requested: 2/19/2024			
City: Chandler	TAT Requested (days):			
State, Zip: AZ, 85225				
Phone:	PO #:			
Email:	WO #:			
Project Name: Cocopah	Project #: 55018664			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Gross Alpha by EPA 900.0)/ Gross Alpha	SUB (Radium 226, 228 by EPA 903.0/904.0)/ Radium 226, 228	SUB (Uranium 234, 235, 238 and Total)/ Uranium 234,235,238-Isotopic	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
Cocopah-271-01222024 (550-213257-1)	1/22/24	11:30 Arizona		Water			X	X	X	1	731688

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	L BATEMAN DCS	1-23-24	14:40		Jan 23rd 2024	14:41 pm
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins Phoenix
4625 East Cotton Center Boulevard
Suite 189
Phoenix, AZ 85040-4807
phone 602.437.3340

Chain of Custody Record

eurofins | Environment Testing America

2/28/2024

Regulatory Program: ☐DW ☐NPDES ☐RCRA ☐Other: 213257

Eurofins Environment Testing America

Client Contact	Project Manager: Kevin Hebert	Site Contact:	Date: 1.22.24	COC No:
Company Name: matrix / Newworld Eng	Email: khebert@mnwe.com	Lab Contact:	Carrier:	1 of 1 COCs
Address: 3033 N 44th St #270	Tel/Fax: 602-908-2973			TALS Project #:
City/State/Zip: Phx, AZ 85018	**Analysis Turnaround Time**			Sampler: JL
Phone: 602-955-5547	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
FAX	TAT if different from Below _____			Walk-in Client:
Project Name: Cocopah	☐ 2 weeks			Lab Sampling:
Site: Yuma	☐ 1 week			
PO# 22-0672	☐ 2 days			Job / SDG No.:
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	New source PFAS																Sample Specific Notes:
Cocopah-271-01222024	1.22.24	1130	G	W				X	X															
																								Dylan Basthouse Email
																								dbasthouse@mnwe.com
																								~~Quote# 550-210297-1~~ #1/22
																								Quote# 55018362

550-213257 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

1.23.24

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by: Joseph Lawrence	Company: matrix	Date/Time: 1.22.24	Received by:	Company: Matrix	Date/Time: 1/22/24, 1200
Relinquished by:	Company: Matrix	Date/Time: 1/22/24, 1705	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company: EETA PHX	Date/Time: 1/22/24 17:05

CDO

Order Information

Bottle Order: Cocopah Well - 022-0672 - New Source
Bottle Order #: 26772
Request From Client: 1/15/2024
Date Order Posted: 1/15/2024 10:38:49AM
Order Status: Ready To Process
Prepared By: Linda Eshelman
Deliver By Date: ***1/19/2024 11:59:00PM***
Lab Project Number: 55018664
PWSID:

Order Completion Information

Creator: Linda Eshelman
Filled by:
Sent Date: 01-16-24
Sent Via:
Tracking #:

2/28/2024

Sets	Bottles/Set	Qty	Bottle Type Description	Preservative	Method	Matrix	Sample Type	Comments	Lot #
1	2	2	Amber Glass 1 liter - unpreserved	None	1613B_DW - 1613B	Water	Normal		0702491C
1	1	1	Plastic 1 liter Wide - Unpreserved	None	SUBCONTRACT - Asbestos	Water	Normal		011501C
1	1	1	Plastic 500ml - Wide - HNO3	Nitric Acid	200.8 - 200.7/200.8/245.1	Water	Normal		22476200Y
1	3	3	Voa Vial 40ml - Ascor Acid & HCL on side	Ascorbic Acid and Hydrochloric Acid	524.2_Preserved - 524.2	Water	Normal		231549
1	2	2	Plastic 500ml - Wide -unpreserved	None	300_ORGFMS - 300.0 Anions	Water	Normal		
					2320B - All forms of Alkalinity	Water	Normal		
					2540C_Calcd - TDS	Water	Normal		
					SM4500_H+ - pH and temperature	Water	Normal		022880C
					180.1 - Turbidity	Water	Normal		
					2510B - Specific Conductance	Water	Normal		
1	1	1	Plastic 500ml - Wide - H2SO4	Sulfuric Acid	350.1_LL - Ammonia	Water	Normal		230141C
1	1	1	Bacti Bottle - Idexx 125 mL w/thio	Sodium Thiosulfate	9223B_PA_DW - E. Coli & Total Coliforms	Water	Normal		KW0027V
1	1	1	Plastic ~~500~~ 250ml - Wide - NaOH	Sodium Hydroxide	4500_CN_E - Amenable Cyanide	Water	Normal		2201146
1	1	1	Plastic Cubitainer 1L	None		Water	Normal	Gross Alpha, R226/228, U-234,235,238	011501B
1	3	9	Voa Vial 40ml - with Sodium Thiosulfate	Sodium Thiosulfate	504.1_PREC - 504.1	Water	Normal		
					505_PREC - Phase II & V PCB/Toxaphene/Chlordane	Water	Normal		227633
					547_PREC - 547	Water	Normal		
1	2	2	Amber Glass 125 mL - Sodium Sulfite	Sodium Sulfite	515.3_PREC - 515.3	Water	Normal		22G186083
1	2	2	Amber Glass 1 Liter- Sodium Sulfite/HCl	Sodium Sulfite w/HCl	525.2_PREC - 525.2	Water	Normal		22G186083

Please notify your PM immediately if an error is found in shipment. When returning samples, please return all provided QC samples.

			VOA Vial 40mL Amber - NaThio + C6H7KO7	Sodium Thiosulfate/K Dihydrogen Citrate		Water	Normal	B2-223-QVB
1	3	3	Voa Vial 40ml Amber - Sodium thiosulfate	Sodium Thiosulfate	548.1_PREC - 548	Water	Normal	227633
1	1	1	Amber Plastic 500mL - H2SO4/SOTH	Sodium Thiosulfate/Sulfuric Acid	549.2_PREC - 549	Water	Normal	
1	1	1	Plastic 500ml - unpreserved	None	2120B - Apparent Color	Water	Normal	0228201L
1	1	1	Amber Glass 1 liter - unpreserved	None	SM2150_Odor_B - Local Method	Water	Normal	0105401L
1	1	1	Plastic 250ml - with Nitric Acid	Nitric Acid	1638 - 1638	Water	Normal	2201760004
1	1	1	Plastic 250mL - with Hydrochloric Acid	Hydrochloric Acid	1632A_As3_OF_D - 1632	Water	Normal	66109
1	4	4	Voa Vial 40mL Amber - Hydrochloric Acid	Hydrochloric Acid	SM5310B - Local Method	Water	Normal	63024
1	1	1	Voa Vial 40ml - Ascor Acid & HCL on side	Ascorbic Acid and Hydrochloric Acid	524.2_Preserved - 524.2	Water	Trip Blank	

2/28/2024

Total Bottle Summary

Bottle Type Description	Preservative	Bottle Count
Amber Glass 1 liter - unpreserved	None	3
Amber Glass 1 Liter- Sodium Sulfite/HCl	Sodium Sulfite w/HCl	2
Amber Glass 125 mL - Sodium Sulfite	Sodium Sulfite	2
Amber Plastic 500mL - H2SO4/SOTH	Sodium Thiosulfate/Sulfuric Acid	1
Bacti Bottle - Idexx 125 mL w/thio	Sodium Thiosulfate	1
Plastic 1 liter Wide - Unpreserved	None	1
Plastic 250mL - with Hydrochloric Acid	Hydrochloric Acid	1
Plastic 250ml - with Nitric Acid	Nitric Acid	1
Plastic 500ml - Wide - H2SO4	Sulfuric Acid	1
Plastic 500ml - Wide - HNO3	Nitric Acid	1
Plastic 500ml - Wide - NaOH	Sodium Hydroxide	1
Plastic 500ml - Wide -unpreserved	None	2
Plastic 500ml - unpreserved	None	1
Plastic Cubitainer 1L	None	1
Voa Vial 40ml - Ascor Acid & HCL on side	Ascorbic Acid and Hydrochloric Acid	4
Voa Vial 40ml - with Sodium Thiosulfate	Sodium Thiosulfate	6
Voa Vial 40mL Amber - Hydrochloric Acid	Hydrochloric Acid	4
VOA Vial 40mL Amber - NaThio + C6H7KO7	Sodium Thiosulfate/K Dihydrogen Cit	2
Voa Vial 40ml Amber - Sodium thiosulfate	Sodium Thiosulfate	2
	Total Bottles:	37

Please notify your PM immediately if an error is found in shipment. When returning samples, please return all provided QC samples.

Eurofins Phoenix
4625 East Cotton Center Boulevard Suite #189
Phoenix, AZ 85040
Phone: 602-437-3340

Chain of Custody Record

eurofins

Client Information (Sub Contract Lab)	Sampler	Lab PM: Eshelman Linda	Carrier Tracking No(s):	COC No: 550-38673.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: linda.eshelman@et.eurofinsus.com	State of Origin: Arizona	Page: Page 1 of 1
Company: Eurofins Environment Testing Northern Ca		Accreditations Required (See note): State Arizona		Job #: 550-213257 1
Address: 880 Riverside Parkway	Due Date Requested: 2/26/2024			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Emai	WO #:			
Project Name: Cocopah	Project #: 55018664			
Site:	SSOW#:			

Preservation Codes:

A	HCL	M	Hexane
B	NaOH	N	None
C	Zn Acetate	O	AsNaO2
D	Nitric Acid	P	Na2O4S
E	NaHSO4	Q	Na2SO3
F	MeOH	R	Na2S2O3
G	Amchlor	S	H2SO4
H	Ascorbic Acid	T	TSP Dodecahydrate
I	Ice	U	Acetone
J	DI Water	V	MCAA
K	EDTA	W	pH 4-5
L	EDA	Y	Trizma
		Z	other (specify)

Other

Analysis Requested

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B_DW/HRMS_Sep_P	537 1_DW/537 1_DW_Prep EPA 537 1 List (18 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
Cocopah-271-01222024 (550-213257 1)	1/22/24	11:30 Arizona		Water			X	X	4	AZ Sample

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I II, III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Grace 01-23-24	14:30	EETSW	Fedex		
2				DS Mayes	01/24/24 0945	EETSac
3				Received by	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No. 2290385	Cooler Temperature(s) °C and Other Remarks: 0.5°C

Ver 06/08/2021

Eurofins Phoenix
4625 East Cotton Center Boulevard Suite #189
Phoenix, AZ 85040
Phone: 602-437-3340

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler	Lab PM: Eshelman, Linda	Carrier Tracking No(s)	COC No: 550-38676.1
Client Contact: Shipping/Receiving	Phone	E-Mail: linda eshelman@et eurofinsus.com	State of Origin: Arizona	Page: Page 1 of 1
Company: Eurofins Environment Testing Northwest,		Accreditations Required (See note): State - Arizona		Job #: 550-213257-1
Address: 5755 8th Street East, ,	Due Date Requested: 2/26/2024			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 206-622-6960(Tel)	PO #			
Email	WO #			
Project Name: Cocopah	Project #: 55018664			
Site	SSOW#			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Tnzma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1638/1638_Prep_W (MOD) Custom List 1: 1 Metal	1632A_OF/ Inorganic Arsenic in Water	Org_Arsenic	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
Cocopah-271-01222024 (550-213257-1)	1/22/24	11:30 Arizona		Water			X	X	X	2	

Therm. ID: Dig 2 Cust. Seal: (Y) N
Uncorr./Corr. Temp: 0.2 / 0.3 °C
Delivery: UPS / FedEx / Other: ____
Ice Type: Blue / Dry / (Wet) / None
Label Ver.: 1 Packing: B

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify) — Primary Deliverable Rank: 2	Special Instructions/QC Requirements: 6388 9414 4166

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	Eme	01-23-24 14:30	EETSW	Fedex		
2					1/24/24 10:10	EETSW
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Eurofins Phoenix
4625 East Cotton Center Boulevard Suite #189
Phoenix, AZ 85040
Phone 602-437-3340

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Eshelman, Linda	Carrier Tracking No(s):	COC No: 550-38671.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: linda.eshelman@et.eurofinsus.com	State of Origin: Arizona	Page: Page 1 of 1
Company: Eurofins Eaton Analytical		Accreditations Required (See note): State - Arizona		Job #: 550-213257-1
Address: 110 S Hill Street, ,	Due Date Requested: 2/26/2024			
City: South Bend	TAT Requested (days):			
State, Zip: IN, 46617				
Phone: 574-233-4777(Tel) 574-233-8207(Fax)	PO #:			
Email:	WO #:			
Project Name: Cocopah	Project #: 55018664			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	504.1_PREC/504.1_Prep Full List	505_PREC/505_Prep Phase II & V PCB/Toxaphene/Chlordane	515.3_PREC/515.3_Prep (MOD) Chlorinated Acids - Phase II & V b	525.2_PREC/525.2_Prep (MOD) 525.2 State Compounds	531.2_PREC/Filtration_OP (MOD) Phase II & V	547_PREC/Filtration_OP Glyphosate	548.1_PREC/548.1_P Endothall	549.2_PREC/549.2_P Diquat	2120B/ Apparent Color	SM2150_Odor_B				Total Number of containers
			Preservation Code:																	
Cocopah-271-01222024 (550-213257-1)	1/22/24	11:30 Arizona		Water			X	X	X	X	X	X	X	X	X	X				21

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify)
Other:

Special Instructions/Note:

pH Acceptable

Initial Temp: 2.6
Corrected Temp: 2.8
IR Gun # 294

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Emma	01-23-24 16:00	EESW	Fedex		
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 1-24-24 0743	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

eurofins | Environment Testing

Sacramento Sample Receiving Notes (SSRN)

550-213257 Field Sheet

Job. _____

Tracking # 6388 9414 4144

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSL / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal Cooler Custody Seal Temperature & corrected Temperature & other observations
File in the job folder with the COC.

Therm ID L06 Corr Factor (+ / -) NA °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal 2290385

Cooler ID _____

Temp Observed 0.5 °C Corrected 0.5 °C

From Temp Blank ☒ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☒	☐
Cooler Temperature is acceptable?	☒	☐	☐
Frozen samples show signs of thaw?	☐	☐	☒

Initials. DM Date. 01/24/24

Unpacking/Labeling The Samples	Yes	No	NA
Containers are not broken or leaking?	☒	☐	☐
Samples compromised/tampered with?	☐	☒	☐
COC is complete w/o discrepancies	☒	☐	☐
Sample custody seal?	☐	☐	☒
Sample containers have legible labels?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Is the Field Sampler's name on COC?	☐	☐	☒
Samples w/o discrepancies?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Alkalinity has no headspace?	☐	☐	☒
Perchlorate has headspace? (Methods 314, 331 6850)	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

**Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")*

Initials. DM Date. 01/24/24

Notes _____

Trizma Lot #(s) _____

Ammonium Acetate Lot #(s) _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☒	☐	☐
NCM Filed?	☐	☐	☒
Samples received within hold time?	☐	☐	☒
Log Release checked in TALS?	☐	☐	☒

Initials. DM Date 01/24/24

eurofins | Environment Testing

550-213257 Field Sheet

Date:	1/24/2024
End Time:	1415
pH Paper Lot:	HC208072
Analyst:	

Preservative ID	Preservative Type	Container ID
A	Hydrochloric Acid	
A	Nitric Acid	
ZZZZZZZZZZZZZZZZ	ZZZZZZZZZZZZZZZZZZZZZZZZ	ZZZZZZZZZZ
ZZZZZZZZZZZZZZZZ	ZZZZZZZZZZZZZZZZZZZZZZZZ	ZZZZZZZZZZ

Sample ID	Initial pH	Final pH	Preservative ID	Preservative Added (mL)	Comments
550-213257-AO-1	2	NA	NA	NA	NA
550-213257-AE-1	2	NA	NA	NA	NA

Login Sample Receipt Checklist

Client: Matrix New World Engineering

Job Number: 550-213257-1

Login Number: 213257
List Number: 1
Creator: Gravlin, Andrea

List Source: Eurofins Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Received Trip Blank(s) not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	

Login Sample Receipt Checklist

Client: Matrix New World Engineering

Job Number: 550-213257-1

Login Number: 213257
List Number: 2
Creator: Moore, Gary

List Source: Eurofins Eaton Analytical South Bend
List Creation: 01/24/24 10:40 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

Login Sample Receipt Checklist

Client: Matrix New World Engineering

Job Number: 550-213257-1

Login Number: 213257
List Number: 3
Creator: Morazzini, Dominic S

List Source: Eurofins Sacramento
List Creation: 01/24/24 11:14 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2290385
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Matrix New World Engineering

Job Number: 550-213257-1

Login Number: 213257
List Number: 4
Creator: Miller, Darren R

List Source: Eurofins Seattle
List Creation: 01/24/24 02:03 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

MATRIXNEWORLD
Engineering Progress

APPENDIX H

Video Log

Video Survey Log

P.O. Box 2571
Cottonwood, Arizona 86326
(928) 899-6491
ccatalano@geologaz.com

Well Name: CoCopah Well #4 **Recorded By:** Adam G **Date:** 01/26/24

Well Location: N32° 34' 08.5" W114° 40' 19.3" **Elevation:** 99

Client: KP Ventures **Well Owner:** NA

Casing Diameter ID: 8" OD: 8 5/8" 0=ground 17" stick up

Type of Casing Stainless

Static Water Level 42

Top of Perforations 170

Type of Perforations Louvers

Casing Reductions NIA 42' SWL moderate turbidity

Other Notes

170 Wire Wrap screen some silt present

244 dec. silt on wire wrap screen

Bottom of Perforations NIA

Top of Fill 272 272 Top of fill

- NOT TO SCALE -

Scanned with CamScanner

MATRIXNEWORLD
Engineering Progress

APPENDIX I

Final Gyroscopic Directional Survey

GeoLog, LLC

P.O. Box 2571 Cottonwood AZ. 86326
(928) 899-6491
ccatalano@geologaz.com

WELL Cocopal Well #4
TYPE of LOGS Gyroscopic
Date 01-26-24
SYSTEM NAME Axis

CLIENT KP Ventures Well Drilling & Pump Co. LLC
WELL ID Cocopal Well #4 GYROSCOPIC
PROJECT Yuma
COUNTY Yuma STATE Arizona

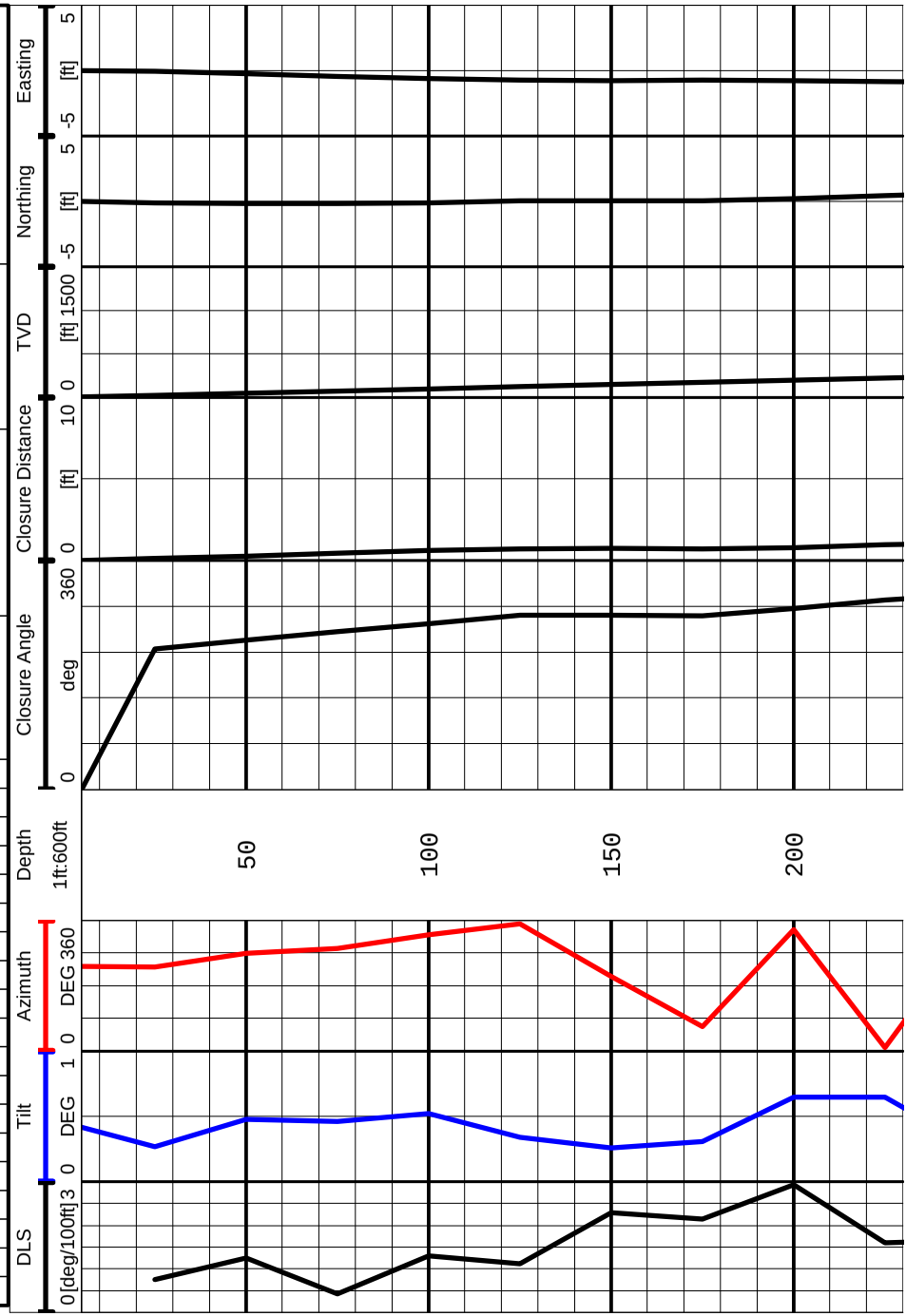
LOCATION
N 32 deg 34 min 08.5 sec
W 114 deg 40 min 19.3 sec
SEC TWP RGE

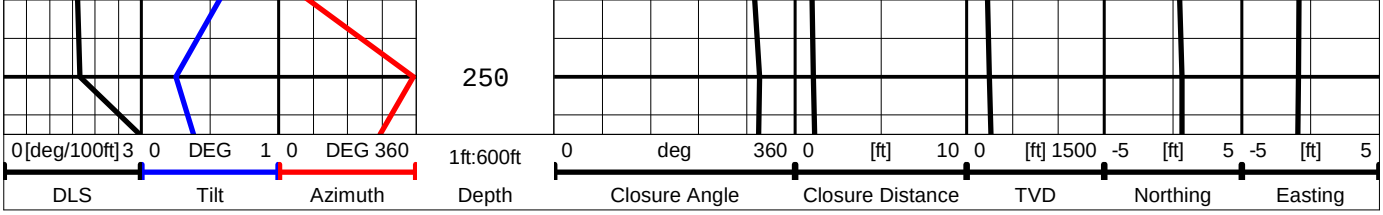
OTHER SERVICES
Video Survey Log

PERMANENT DATUM	Ground Level	ELEVATION G.L. 99 ft-amsl	K.B.
LOGS MEAS. FROM	Ground Level	SURFACE CONDUCTOR	D.F.
DRILLING MEAS. FROM	Ground Level		G.L.

DATE	01-26-24	TYPE FLUID IN HOLE	Water
RUN No	2	RES MUD	
WELL TYPE	Water Production	RES MUD FILTRATE	
DEPTH-DRILLER		RES WALL CAKE	
DEPTH-LOGGER	272 ft-bgl	MAX. REC. TEMP.	
ADDITIVES			
BIT TYPE			
DRILLING METHOD			
RECORDED BY	Alan Gregorski		
WITNESSED BY			

RUN	Logging Tools Used / Century System VI			CASING RECORD / BIT RECORD			
NO.	TOOL S/N	FROM	TO	SIZE	WGT.	FROM	TO
RUN 1	Video Survey Log	0	272 ft-bg,			0	
RUN 2	Gyroscopic	0	265 ft-bgl				
RUN 3				CAL DATE			
RUN 4							
RUN 5				SHOP			
RUN 6							

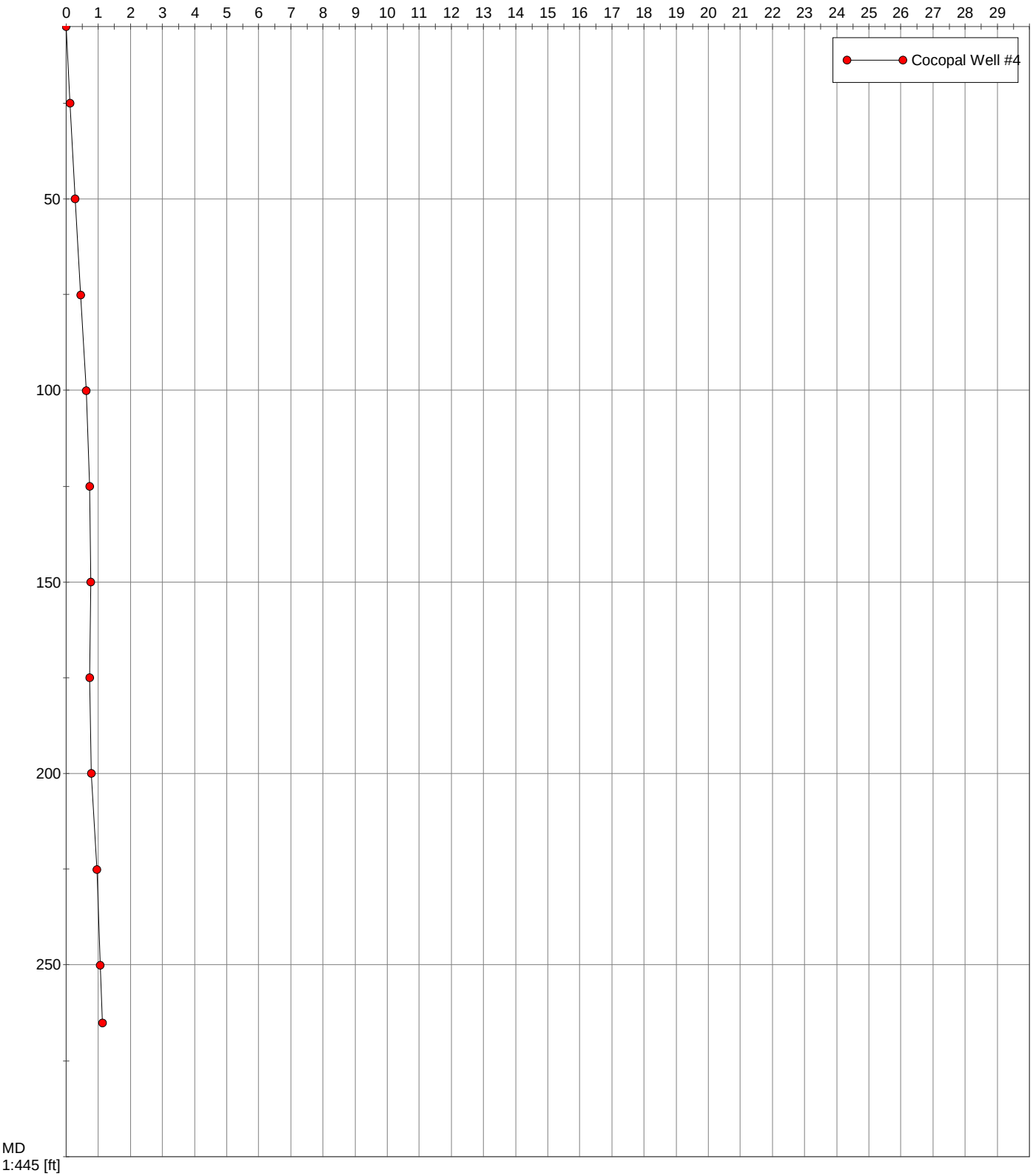


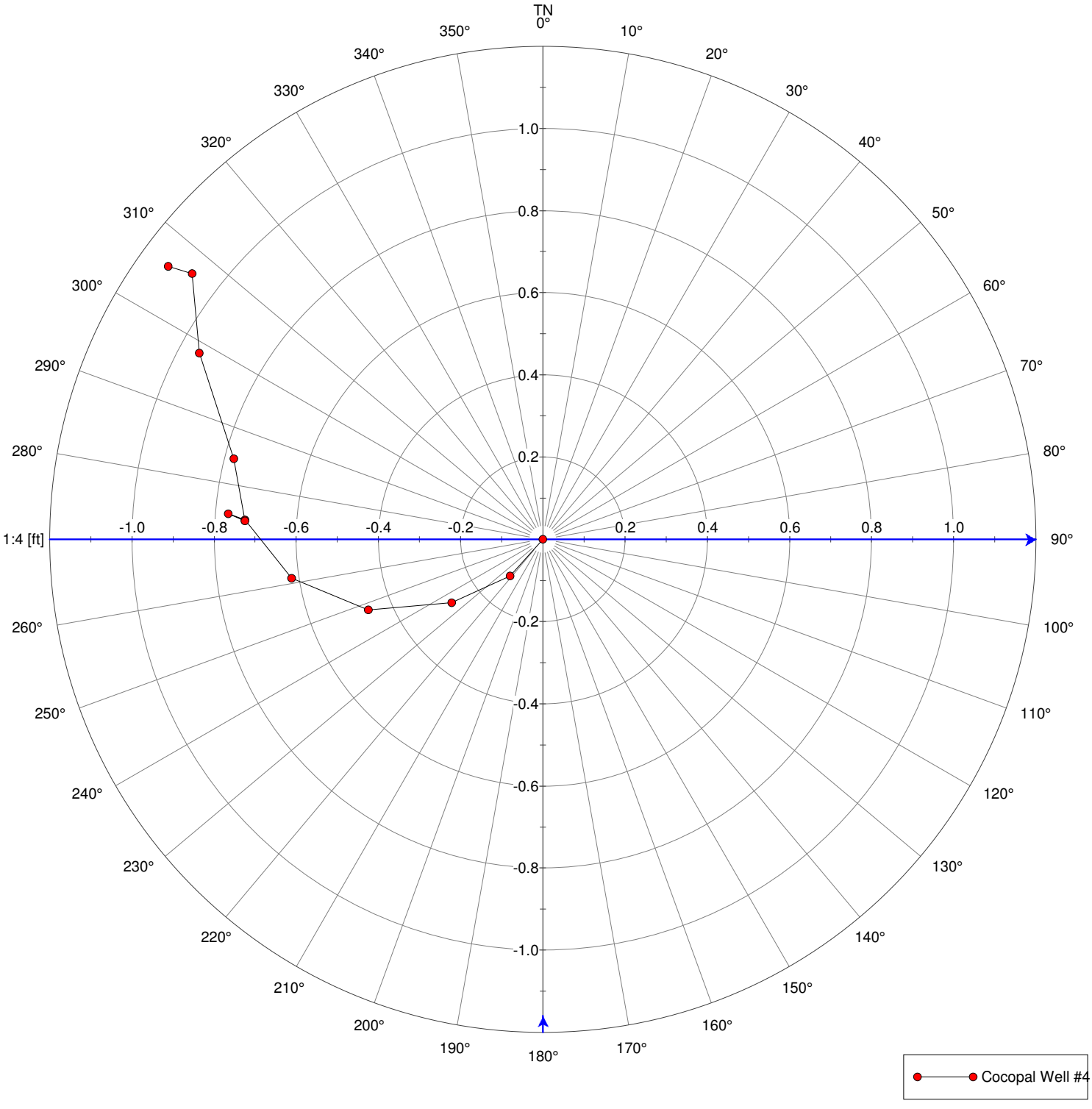

250
0 [deg/100ft] 3
0 DEG 1
0 DEG 360
1ft:600ft
0 deg 360
0 [ft] 10
0 [ft] 1500
-5 [ft] 5
-5 [ft] 5
DLS
Tilt
Azimuth
Depth
Closure Angle
Closure Distance
TVD
Northing
Easting

GeoLog, LLC
Borehole Geophysics

Well Name:	Cocopal Well #4
Project:	Yuma
Date:	1/26/2024
Technician:	Alan Gregorski
Client:	KP Ventures
Tool:	Axis Champ Gyro SRO

Depth ft	Tilt deg	Azimuth deg	Easting [ft]	Northing [ft]	TVD [ft]	Closure Distance [ft]	Closure Angle deg	DLS [deg/100ft]
5	0.42	232.46	0.0000	0.0000	5.0000	0.0000	0.0000	0.0000
25	0.27	231.59	-0.0801	-0.0899	24.9996	0.1204	221.7200	0.7504
50	0.48	269.33	-0.2217	-0.1543	49.9990	0.2701	235.1590	1.2543
75	0.46	282.21	-0.4248	-0.1713	74.9982	0.4580	248.0420	0.4292
100	0.52	320.40	-0.6120	-0.0952	99.9973	0.6193	261.1610	1.3023
125	0.34	349.80	-0.7250	0.0472	124.9970	0.7265	273.7240	1.1167
150	0.26	205.84	-0.7662	0.0619	149.9960	0.7687	274.6220	2.2844
175	0.31	66.94	-0.7249	0.0446	174.9960	0.7262	273.5180	2.1361
200	0.65	334.25	-0.7521	0.1964	199.9950	0.7773	284.6320	2.9326
225	0.65	10.10	-0.8365	0.4527	224.9930	0.9511	298.4200	1.6004
250	0.25	352.95	-0.8536	0.6465	249.9920	1.0708	307.1400	1.6707
265	0.38	265.46	-0.9115	0.6649	264.9920	1.1282	306.1100	2.9708


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
Cocopal Well #4
50
100
150
200
250
MD
1:445 [ft]


TN
0°
10°
20°
30°
40°
50°
60°
70°
80°
90°
100°
110°
120°
130°
140°
150°
160°
170°
180°
190°
200°
210°
220°
230°
240°
250°
260°
270°
280°
290°
300°
310°
320°
330°
340°
350°
1.0
0.8
0.6
0.4
0.2
-0.2
-0.4
-0.6
-0.8
-1.0
1:4 [ft]
Cocopal Well #4

END OF ADDENDUM #1