



April 11, 2022

Anthony Uribe
City of Coalinga
(Submitted Electronically)

RE: Proposal for WTP Upgrades - Task Order #4 – Washwater Reclamation and Sludge Drying Bed Improvements

Dear Anthony,

MKN & Associates, Inc. (MKN) is pleased to submit a scope and fee of design services for the City of Coalinga (City) Water Treatment Plant (WTP) Upgrades - Task Order #4 – Washwater Reclamation and Sludge Drying Bed Improvements.

Project Background

The City is exploring implementing the following improvements to washwater reclamation and sludge drying bed systems:

- **Installation of permanent sludge decant return piping to the washwater reclamation basin.** In an effort to separate sludge decant return piping and washwater return piping (as the original WTP was constructed prior to issuance of the EPA Filter Backwash Recycling Rule), the City has temporarily installed sludge decant return piping to convey decanted sludge drainage within the drying beds to the washwater reclamation basin. It is understood that the City wishes to implement a more permanent sludge decant return piping installation.
- **Installation of an online turbidimeter on the existing reclamation pump discharge piping.** Per the EPA Backwash Recycling Rule, 99.9 percent of the backwash volume can be recycled at 10 percent of the influent flowrate at less than 2 NTU. It is understood that the WTP staff currently take daily grab samples to verify the recycled washwater is less than 2 NTU. However, per the DDW's recent inspection comments, installation of an online turbidimeter will likely be required. As previously discussed with City Staff, it would likely be most beneficial to route the discharge sample piping to the High Service Pump Station Building, where a new turbidimeter would be installed. Control signals would likely be routed to the new High-Service Pump Station Control Panel and intercepted by the WTP's recently-upgraded SCADA system.
- **Evaluation of existing sludge drying bed drainage system.** It is understood that standing water is typically observed within the sludge drying beds, fostering unnecessary plant growth and weeds. It is suspected that the existing sand media that covers the top of underdrain system needs to be replenished to facilitate better drainage. MKN will work with City staff and equipment manufacturers to evaluate



replacement of the existing drainage system media, rehabilitation of the existing underdrain system, and other cost-effective alternatives (i.e. modern ceramic or plastic tile drainage blocks, MicroWedge or Wedgewater Dewatering Blocks, etc.) to identify long-term solutions to facilitating optimal sludge drainage through evaluation of drainage alternative life-cycle costs. However, it is understood that the City may want to simply proceed with replacing portions of the sand filtration media that covers the surface of each drying bed. MKN will solicit budgetary quotes from JBI Water and Wastewater, the Coombs-Hopkins Company, and G3 Engineering (in addition to any other manufacturers or representatives that the City prefers) to identify other feasible underdrain rehabilitation or media replacement alternatives.

Per a discussion with City staff on March 30, 2022, a final design proposal for upgrades to the existing sludge drying bed will be developed following a detailed design scoping workshop with City staff in the near future.

Scope of Work

Task Group 100 – Project Management, Meetings and QA/QC

Task 101 – Project Management and QA/QC

Overall project management, which includes supervision of in-house staff, planning and monitoring of contract budget and schedule, and coordination with the City and MKN's project team will be conducted by MKN's Project Manager.

MKN will provide senior technical review and implement our quality assurance and quality control (QA/QC) measures throughout the project.

Task 102 – Meetings

MKN has included the following meetings as part of this scope of services:

- **Project Kickoff Meeting** – In-person meeting to review the project scope, schedule and budget.
- **Progress Review Meetings** (2) – Progress reviews by video conference meetings.

Deliverables:

- Meeting Agenda and Minutes (3 meetings)

Task 103 – Data Review

MKN will review previously obtained data (i.e. typical raw water lift/intake flowrates, previously-prepared technical memorandum(s), as-built drawings, field-measured dimensions, recent field photographs and videos, previous meeting notes, etc.). MKN will verify all necessary and relevant information with City Staff prior to proceeding with subsequent tasks.

Task Group 200 – Preliminary Engineering

Task 201 – Preliminary Engineering Report

The report will state the design criteria and project constraints, present preliminary equipment sizing and layout information, and include budgetary capital, life-cycle,



operations, and maintenance cost opinions. The report will present the following information:

- Water and sludge quality history at wash water reclamation basin and sludge drying beds
- Evaluation of existing sludge drying bed underdrain media. If it is determined that additional drainage alternatives need to be explored, MKN will explore for modifications the existing underdrain system and/or replacement alternatives that will improve the overall system performance, operation, and maintenance procedures
- Operating objectives for the new washwater basin and sludge drying bed improvements, including (but not limited to):
 - associated decant pumping instrumentation objectives (i.e. turbidimeter sampling, etc.)
 - tile/block dewatering grid size, typical sludge drawoff and drained washwater solids content and flowrates, collection system flowrates, washdown requirements, etc. *(note: to be conducted if existing drying bed drainage media elected to be evaluated against other alternatives)*
- Description of miscellaneous piping, valving, metering, and drainage control structures.
- Establishment of necessary clearances for operational and maintenance activities (i.e., equipment replacements, dewatered sludge collection operations, etc.).
- A description of electrical requirements including a process schematic including alarms and telemetry system for remote operation and data logging
- Identification of site constraints and the most appropriate mitigation measures (including associated costs).
- Potential impacts to the washwater and sludge reclamation system and WTP processes downstream of the washwater return piping
- Identification of overhead and underground utilities and restrictions (i.e., power, communication, and water utilities).
- Description of other site improvements to be included in the design
- Evaluation of operator safety.
- Layout of the recommended improvements at each project site.
- Engineer's estimate of probable construction, life-cycle, operations, and maintenance costs.
- Design and construction schedule, lead times for equipment and phasing options.

MKN will submit the draft report for the City review and comment. MKN's project manager and project engineer will attend a draft report review meeting with City to address comments and discuss the next steps in the project.

MKN will incorporate comments received from the City into the Final Preliminary Engineering Report and submit the final report to the City.



Deliverables:

- Draft Preliminary Engineering Report (electronic MS Word .DOC and Adobe .PDF files)
- Final Preliminary Engineering Report (Adobe .PDF files)
- 30% Plans, Specifications List, Cost Estimate (Adobe .PDF files)

Task Group 300 – Detailed Design

Task 301 - 90% Plans, Specifications, and Cost Estimate

MKN will incorporate the draft and final Engineering Report deliverable review comments from City and prepare 90% construction plans; specifications components including bid proposal items and quantities, explanation of bid items, and technical specifications; and an engineer's cost opinion for construction of Washwater Reclamation and Sludge Drying Bed Improvements. Technical specifications will be developed in 2014 CSI format and plans will be prepared in AutoCAD. The City will review the contents of each submittal and provide comments for incorporation into subsequent submittals. The following design plans are anticipated to be included in the 90% design deliverable:

- General (3 Sheets)
- Civil (4 Sheets)
- Process (3 Sheets)
- Instrumentation (2 Sheets)

Deliverables:

- 90% Plans (electronic Adobe .PDF files, 24" x 36")
- 90% Technical Specifications (electronic Adobe .PDF files)
- 90 % Front-End Bidding Documents (electronic MS Word .DOC files)
- Engineer's opinion of probable construction cost (electronic Adobe .PDF file)

Task 302 – Draft Final Plans, Specifications, and Cost Estimate

MKN will incorporate 90% review comments from the City and prepare draft final construction plans; specifications components including bid proposal items and quantities, explanation of bid items, and technical specifications; and an engineer's cost opinion for construction of the Washwater Reclamation and Sludge Drying Bed Improvements Project. MKN will assemble the bid specifications by incorporating the bid proposal items and quantities, explanation of bid items, and technical specifications. The following design plans are anticipated to be included in the draft final design deliverable:

- General (3 Sheets)
- Civil (4 Sheets)
- Process (3 Sheets)
- Instrumentation (2 Sheets)



Deliverables:

- Draft Final stamped and signed plans (electronic Adobe .PDF files, 24" x 36")
- Draft Final stamped and signed technical specifications (electronic Adobe .PDF files)
- Draft Final Front-End Bidding Documents (electronic MS Word .DOC files)
- Engineer's opinion of probable construction cost (electronic Adobe .PDF file)

It is assumed the City Engineer (Tri-City Engineering) will review and prepare the Draft Final Front-End Bidding Documents for bid advertisement.

Task Group 400 – Bid Phase Support

Task 401 – Bid Phase Support Services

The City will coordinate with appropriate departments to advertise the plans and bid specifications. MKN will attend a pre-bid meeting and provide to the City written responses to bidder questions through the bid period. MKN will prepare and provide conformed plans and specifications incorporating any changes resulting from the bid period.

Deliverables:

- Addenda, RFI responses, and clarifications as needed
- Conformed plans (electronic Adobe .PDF files, 24" x 36")
- Conformed specifications (electronic Adobe .PDF files)

Additional Services

While not included in our initial Scope of Services, MKN is well-qualified to perform the following additional services if requested by the City and following an amendment to the agreement for professional services. At this time, we do not anticipate that these services will be required to complete the preliminary design phase of this project.

- Bench and/or pilot testing of raw water treatment technologies
- Utility potholing
- Assistance with pre-purchasing equipment, including preparation of separate bid packages



Schedule

The anticipated schedule for the project is included in **Table A**.

Table A. Anticipated Project Schedule	
Deliverable	Deliverable Date (Time Period Following Notice-to-Proceed)
Draft Basis of Design Report and 30% PS&E (Time to Complete TO #4 Work)	3 weeks
Final Basis of Design Report and 30% PS&E (Time to Complete TO #4 Work)	1 week
90% PS&E	6 weeks
Draft Final PS&E	2 weeks

Preparation of the Draft and Final Basis of Design Report Deliverables assume concurrent preparation of other Draft and Final Basis of Design/30% PS&E Deliverables from Task Order #1 in a single Basis of Design Report document. Following final design scoping, design criteria for Task Orders #2 and #3 will be briefly summarized in the same Basis of Design Report as Task Order #1 and #4 (to be amended).

Fee Estimate

MKN proposes to complete this work on a time and materials basis with a budget not to exceed the value provided in the Fee Estimate (included as **Exhibit B**) and is based on the 2022 MKN rate schedule, (included as **Exhibit C**).

Should you have any questions or wish to discuss any of the information presented herein, please do not hesitate to contact me at your convenience. My phone number is (559) 246-1947 and email is hliang@mknassociates.us.

Sincerely,

Henry Liang, PE
Principal-In-Charge

Stefanos Word, EIT, ENV SP
Project Engineer

Enclosures:

- Exhibit A – Anticipated Drawing Sheet List
- Exhibit B – Fee Estimate
- Exhibit C – Rate Schedule

Exhibit A - Anticipated Drawing Sheet List

Project: Coaliga WTP Upgrades - Task Order #4 - Washwater Reclamation and Sludge Drying Bed Improvements Project						
				Total No. Sheets for 30% Submittal	Total No. Sheets for 90% Submittal	
				7	12	
Drawing Sheet Count						
Sheet	Plan Sheet Title	Sheet No.	Assigned Firm	Include in 30%?	Include in 90%?	Remarks
General						
1	Cover Sheet/Title Sheet/Sheet Index	G-001	MKN	Yes	Yes	
2	Abbreviations, Legend, and General Notes	G-002	MKN	No	Yes	
3	General Notes	G-003	MKN	No	Yes	
Civil						
4	Construction and Staging Plan	C-101	MKN	No	Yes	
5	Site Demolition Plan	C-102	MKN	Yes	Yes	
6	Yard Piping Plan	C-103	MKN	Yes	Yes	
7	Civil Details - I	C-104	MKN	No	Yes	
Process						
8	Washwater Reclamation Improvements - Plan and Sections	D-101	MKN	Yes	Yes	
9	Sludge Drying Bed Improvements - Plan and Sections	D-102	MKN	Yes	Yes	
10	Process Details - I	D-501	MKN	No	Yes	
Instrumentation						
12	2 Sheets Anticipated	--	MKN	Yes	Yes	ISA Symbols Legend and Abbreviations
13		--	MKN	Yes	Yes	Washwater Reclamation Improvements P&ID



WTP Upgrades - Task Order #4 - Washwater Reclamation and Sludge Drying Bed Improvements

	Project Director	Principal Engineer	Assistant Engineer II	CAD Technician I	Total Hours (MKN)	Labor (MKN)	ODCs (MKN)	Non-Labor Costs	Total Fee
Hourly Rates	235	205	145	115					
Task Group 100 – Project Management, Meetings and QA/QC									
Task 101 – Project Management and QA/QC	4	12			16	\$3,400	\$ 102	\$102	\$ 3,502
Task 102 – Meetings	2	2	2		6	\$1,170	\$ 35	\$35	\$ 1,205
Task 103 – Data Review		2	2		4	\$700	\$ 21	\$21	\$ 721
Subtotal	6	16	4	0	26	\$ 5,270	\$ 158	\$ 158	\$ 5,428
Task Group 200 – Preliminary Engineering									
Task 201 – Preliminary Engineering Report	2	4	24	12	42	\$6,150	\$ 185	\$185	\$ 6,335
Subtotal	2	4	24	12	42	\$ 6,150	\$ 185	\$ 185	\$ 6,335
Task Group 300 – Detailed Design									
Task 301 - 90% Plans, Specifications, and Cost Estimate	2	4	32	24	62	\$8,690	\$ 261	\$261	\$ 8,951
Task 302 – Draft Final Plans, Specifications, and Cost Estimate	2	4	4	8	18	\$2,790	\$ 84	\$84	\$ 2,874
Subtotal	4	8	36	32	80	\$ 11,480	\$ 344	\$ 344	\$ 11,824
Task Group 400 – Bid Phase Support									
Task 401 – Bid Phase Support Services	2	2	4	4	12	\$1,920	\$ 58	\$58	\$ 1,978
Subtotal	2	2	4	4	12	\$ 1,920	\$ 58	\$ 58	\$ 1,978
TOTAL BUDGET	14	30	68	48	160	\$24,820	\$ 745	\$ 745	\$ 25,565



2022 FEE SCHEDULE FOR
PROFESSIONAL SERVICES

ENGINEERS AND TECHNICAL SUPPORT STAFF

Engineering Technician	\$65/HR
Administrative Assistant	\$85/HR
CAD Technician I	\$115/HR
CAD Design Technician II	\$140/HR
Senior Designer	\$150/HR
Assistant Engineer I	\$125/HR
Assistant Engineer II	\$145/HR
GIS Specialist	\$150/HR
Planner	\$170/HR
Senior Planner	\$190/HR
Project Engineer I/ Senior Scientist	\$170/HR
Project Engineer II	\$180/HR
Senior Project Engineer I	\$190/HR
Senior Project Engineer II	\$195/HR
Project Manager	\$200/HR
Principal Engineer	\$205/HR
Project Director	\$235/HR

CONSTRUCTION MANAGEMENT SERVICES

Construction Inspector	\$162/HR
Assistant Resident Engineer	\$169/HR
Resident Engineer	\$184/HR
Construction Inspector	\$197/HR
Construction Manager	\$201/HR
Principal Construction Manager	\$236/HR

Routine office expenses such as computer usage, software licenses and fees, telephone charges, office equipment and supplies, incidental postage, copying, and faxes are included as a 3% fee on labor cost.

The foregoing Billing Rate Schedule is effective through December 31, 2022 and will be adjusted each year after at a rate of 2 to 5%.

DIRECT PROJECT EXPENSES

Outside Reproduction	Cost + 10%
Subcontracted or Subconsultant Services	Cost + 10%
Travel & Subsistence (other than mileage)	Cost
Auto Mileage	Current IRS Rate - \$.58.5/mi.