WAI - 46

FUKUNAGA & ASSOCIATES, INC.
CONSULTING ENGINEERS

March 6, 2019

Mr. Juan A. Rivera, P.E.
Wastewater Reclamation Division
County of Maui
Department of Environmental Management
2200 Main Street, suite 610
Wailuku, Maui, HI 96793

Dear Mr. Rivera:

Subject: **Fee Proposal for Effluent Pump Station Renovations**
Kihei Wastewater Reclamation Facility (CBS-1119)

We are pleased to present this fee proposal for professional services associated with the engineering and design of the proposed Effluent Pump Station Renovations at the Kihei WWRF. Based on our kickoff meeting and discussions (minutes attached), we understand that the initial project scope will include a predesign conceptual alternative analysis of 3 options for the pump station renovations. The analysis will include conceptual layout and station configurations, discussion regarding operational "pros & cons", and budgetary costs. The objective is to provide the information necessary for the County to proceed with a project that best meet current and future conditions, with available funding.

As discussed at our initial meeting, following the completion of the predesign conceptual alternative analysis and the determination of the selected project, a design scope and fee proposal will be submitted for approval.

The fee summary for the predesign effort for Fukunaga & Associates, Inc. and MK Engineers, Ltd. is as follows:

1. Fukunaga & Associates, Inc. (Civil/Prime) ..... $ 22,676.00
2. MK Engineers, Ltd. (Electrical) 7,440.00

SUBTOTAL (Phase 1) ..... $ 30,116
TOTAL LUMP SUM FEE (Phase 1) ..... $ 30,000

A manpower breakdown is attached for your review. We hope this fee proposal meets with your satisfaction and we look forward to working with you. If there are any questions or comments, please call me at 944-1821.

Very truly yours,

FUKUNAGA & ASSOCIATES, INC

Jon K. Nishimura, P.E.
Enclosures

RECEIVED AT WAI MEETING ON 7/22/19
Deputy Director, DEM

1357 Kapiolani Blvd., Ste. 1530 | Ph: 808.944.1821 | fukunagaengineers.com
Honolulu, Hawaii 96814 | Fax: 808.946.9339 | office@fukunagaengineers.com

FUKUNAGA AND ASSOCIATES, INC.
MANPOWER ESTIMATE

PROJECT:
KIHEI WWRF EFFLUENT PS REHAB PROJECT - JOB NO. WW19-11
KIHEI, MAUI, HAWAI
CLIENT: COUNTY OF MAUI, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, WASTEWATER RECLAMATION DIVISIOI

WORK DESCRIPTION	PRIN	PROJ ENGR	SR ENGR	CIVIL ENGR	CAD TECH	REMARKS	PRIN	PROJ ENGR	SR ENGR	CIVIL ENGR	CAD TECH	SUBTOTAL	DESIGN SERVICES
FUKUNAGA & ASSOCIATES, INC													
CONCEPT DEVELOPMENT & PROJECT SCOPING													
PHASE 1 - CALCULATIONS & SKETCHES													
A. RESEARCH & FIELD INVESTIGATIONS	4	8	8				$860	$1,368	$1,224	$0	$0	$3,452	**$3,452**
B. CONCEPTUAL ALTERNATIVE DESIGN	8	16	40		8		$1,720	$2,736	$6,120	$0	$920	$11,496	**$11,496**
C. COST ESTIMATES AND LETTER REPORT	4	16	24		4		$860	$2,736	$3,672	$0	$460	$7,728	**$7,728**
TOTALS	16	40	72	0	12		$3,440	$6,840	$11,016	$0	$1,380	**$22,676**	**$22,676**
RATE	215.00	171.00	153.00	139.00	115.00								
	3440	6840	11016	0	1380	$22,676							
	TOTAL LABOR - FUKUNAGA & ASSOCIATES					**$22,676**							

CERTIFICATION OF WAGE RATE COMPLIANCE

The Direct Salary Rates for architect and engineering positions shown on this proposal do not exceed three (3) times the allowable rates shown on City and County of Honolulu **Purchasing Bulletin:**_____ ("DAGS rates"), **dated:**_____

_____

Signature Date

County of Maui
Department of Environmental Management
Wastewater Reclamation Division

MKengineers
CONSULTING ELECTRICAL ENGINEERS

March 5, 2019

Mr. Jon Nishimura
Fukunaga & Associates, Inc.
1357 Kapiolani Blvd., Suite 1530
Honolulu, Hawaii 96814

Subject: Kihei WWRF Reuse Effluent Pump Station Renovation;
Concept Development and Project Scoping

Dear Mr. Nishimura:

Thank you for inviting us to be on the engineering team for this project. Enclosed is our fee proposal worksheet that itemizes the tasks we expect to accomplish. We propose to accomplish the work for a fee of $7,440.

Our proposal includes effort to accomplish the following:

1. Prepare the electrical aspects of 3 conceptual alternative designs.
2. Prepare a report including sketches and budgetary engineering estimates of construction costs for each concept.

Our fee proposal worksheets are enclosed for your information.

We look forward to working with you on this project.

Sincerely,
MK Engineers, Ltd.

R. C. Katahara
Principal

Enclosure: Fee proposal worksheet

100 Kahelu Avenue, Suite 220 • Mililani, Hawaii 96789
Telephone (808) 848-8622 • Fax (808) 848-5574 • E-Mail: info@mkhawaii.com

MK ENGINEERS, LTD. 3/5/19

PROJECT: KIHEI WWRF REUSE EFFLUENT PUMP STATION RENOVATION (CBS-1119)

COUNTY OF PROJECT: Maui

CLIENT: FUKUNAGA & ASSOCIATES, INC.

CONCEPT DEVELOPMENT AND PROJECT SCOPING

			MANHOURS				
DESCRIPTION OF TASK		Trips	Principal	SR EE	EE	Cad	Typist
A.	RESEARCH		1.0				
B.	3 CONCEPTUAL ALTERNATIVE DESIGNS		16.0				
C.	COST ESTIMATES AND REPORT		12.0			12.0	
TOTALS		0.0	29.0	0.0	0.0	12.0	0.0
FEE CALCULATION FOR DESIGN PHASE				HOURS		RATE	COST
PRINCIPAL				29.0		216.00	6,264.00
SR ELECTRICAL ENGINEER				0.0		172.00	0.00
ELECTRICAL ENGINEER				0.0		120.00	0.00
DRAFTSMAN				12.0		98.00	1,176.00
TYPIST				0.0		76.00	0.00
TRIPS - INTER-ISLAND - PARKING, AIR, GROUND TRANS		0				400.00	0.00
MISC COSTS (TRIPS, REPRO, ETC.)							
SUBTOTAL							7,440.00
TAXES (USE .04712 FOR HONO & .04166 FOR OTHER COUNTIES			Included in rate				0.00
TOTAL FOR CONCEPT DEVELOPMENT AND PROJECT SCOPING							**7,440.00**

Kihei WWRF Effluent Pump Station Renovation Kickoff Meeting
Friday, February 15, 2019 9:30 am Kihei WWRF Training Room

MEETING MINUTES:
Please see attached for sign-in sheet.

1. Introduction – Fukunaga and Associates, Inc. has been selected as the prime/civil engineering consultant for this project. Jon Nishimura will be overseeing the project. Andy Amuro is the project manager and Amanda Miyahara is the project engineer.

2. Background – The existing effluent pumps are old and the controls system has reached the end of its useful life. An upgrade is due, especially since the new distribution system will be expanded and will be dependent on the reliability of the pumping system. The ESB floating cover is also nearly at the end of its life (approaching 20 years).

3. Target Design Conditions – Pumps to be replaced should be capable of accommodating future demands.

    a. Pumps and the effluent reuse system should also be designed to handle all of the projected flows (100% reuse – no injection wells) pending the possible (now proposed) Supreme Court action and decision.

    b. Identification of potential issues based on predesign assessment:

        i. The existing wetwell size may be too small for the three new pumps, especially if pumps are to be enlarged.

        ii. The inlet pipe connecting the ESB to the wetwell may be too small. Fukunaga and Associates ran an analysis and estimated about 6" of head differential required to transmit flow from the ESB to the wetwell due to hydraulic losses. This affects the effective, usable storage of the on-site plant effluent storage.

4. Surge Relief – the surge anticipator valve to be installed with the current construction project is designed to relieve system surge pressures by discharging surge water into the overflow box and ultimately into an injection well. Since the EPS piping will be modified as a part of this project, the design can be revised to discharge the surge flow back into the wetwell.

5. Existing Pumps

    a. 1 pump is running 18-20 hours per day. The pump turns off when the tank is full.

    b. Variable speed vs. constant speed motor

        i. Isaac reported that VFDs were installed before but didn't last. Reverted back to fixed speed with soft-start capability.

        ii. There is ample on-site storage as well as additional elevated storage being constructed so don't need VFDs to modulate flows to serve demand.

    c. Turbine vs. Submersible pump

        i. If operational efficiency (energy) is factored in, a vertical turbine pump will probably be less expensive than a submersible pump (life cycle cost). The relatively high operating head would require large submersible pumps that could be too big for the existing wet well.

ii. If submersible pumps are selected, however, the slab, hatches, rails, etc. will need to be assessed and possibly modified. As stated, the submersible pumps will need to be oversized to provide performance equivalent to the turbine pumps.

6. Tentative Scope of Work – priority will be to replace the 3 pumps and the piping. As a result of the discussion, three viable options were suggested for additional consideration:

    a. Option 1 – replace the 3 pumps and piping only; keep the existing pump house structure.

    b. Option 2 – replace/relocate the entire EPS. The wetwell could be relocated to be contiguous to the ESB.

    c. Option 3 – demolish the EPS building and install the controls in a stainless-steel cabinet. New pumps will be designed to operated outside (similar to Lahaina WWRF effluent pump system). OPS is okay with this option as it will be easier to access, maintain and replace the pumps and piping.

    d. Juan Rivera to assess the wetwell to see if it's structurally sound. His findings will affect the selection of the above options or determine whether new items need to be added to the scope of work.

    e. Fukunaga and Associates to develop a conceptual design (Calculation and sketches format) of the three options listed above and will provide budget estimates to help COM determine which options to choose with the available funds.

    f. Electrical SOW to be determined at a future meeting, when the electrical subconsultant is on board and has a chance to inspect the site. MK Engineers will be the electrical engineer.

7. Budget – $150k (design) + $750k (construction), no SRF funding. If additional funding is needed, may need to request SRF funding from DOH.

8. Schedule – construction monies programmed to be available in July 2020.

9. Survey – Andy had a project in which the surveyor took a 3D laser scan of the Navy's Waiawa pump station, the primary potable water source for Joint Base Pearl Harbor-Hickam. The result is a point cloud 3D model of the existing conditions. Dimensions can be measured directly off the survey, saving time and money. The point cloud can be brought into AutoCAD and allows for imaging and creating a virtual reality model of the facility. The City & County of Honolulu, Division of Collection Systems Maintenance has recently purchased a laser scanner and is planning on using it to digitize all of their pump stations.

Project: Kihei WWRF Effluent Pump Station Renovations
Date: February 15, 2019
Time: 9:30 am
Location: Kihei WWRF Training Room
Description: Kickoff Meeting

Initials	Name	Organization	Phone Number	E-Mail
AH	Albert Hahn	COM – WWRD	2644563	Albert.Hahn@co.maui.hi.us
	Randy Demeyers	COM – WWRD		Randy.Demeyers@co.maui.hi.us
JR	Juan Rivera	COM – WWRD		Juan.Rivera@co.maui.hi.us
DQ	Daniel Quenga	COM – WWRD	808-344-9163	Daniel.Quenga@co.maui.hi.us
DA	Deborah ~~Schulman~~ Amuro	COM – WWRD		Deborah.Schulman@co.maui.hi.us
RB	Reggie Balidoy	COM – WWRD		Reginald.Balidoy@co.maui.hi.us
	Romeo Yanos	COM – WWRD	808-757-4288	Romeo.Yanos@co.maui.hi.us
	Tom Johnson	COM – WWRD		Tom.Johnson@co.maui.hi.us
	Cassie Martin	COM – WWRD		Cassie.Martin@co.maui.hi.us
	ISAAC BLANCHARD	COM "	757-4299	~~[illegible]~~ isaac.blanchard@co.maui.hi.us
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AA	Andrew Amuro	Fukunaga and Assoc.	944-1821	aamuro@fukunagaengineers.com
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	Jeffrey Kafka	COM WWRD		