Eyasco, Inc.
Advanced System Integration

April 14, 2020
Proposal 6-20-2019

Mr. Jay Cuetara
Solano County Water Agency
810 Vaca Valley Parkway, Suite 203
Vacaville, CA 95688

Subject: 2020/2021 Budget and Scope

Dear Mr. Cuetara,

The purpose of this letter is to present our scope of work and cost estimate for fiscal year 2020/2021. Our estimate is based on reviewing past years budgets for similar tasks, and developing a scope and budget based on conversations with SCWA personnel.

Eyasco designed and built the second gate control system for installation at Gibson Check this year with the hope that we could use this single gate controller box at other single-gate checks considered for automation, such as I-80 Check and Alamo Check. The efficacy of using this "standard" design will depend on the site conditions – e.g. whether there is room to safely and securely install the enclosure. Part of our scope this coming year will be to evaluate the design and build two new enclosures for installation around April of 2021.


Gibson Check Panel Wiring

Gibson Check Front Panel

We are also planning on replacing up to 12 rotary encoders at the Putah Canal Checks to measure gate position. The current set of encoders, if present, are broken. This last year we installed a new rotary encoder at Sweeney

and Gibson that use a direct drive rather than a belt drive system to measure gate rotation. These should last almost indefinitely and will be integrated into gate control or measurement systems as they are installed.

This last year we did not make the major inroads into configuring SCWA's new SCADA network because of circumstances beyond our control. But the infrastructure is currently being constructed off-site and we will be working on the build out. This will result in us setting up a parallel system and hopefully transitioning over to the new network when the infrastructure is ready.

We will continue our efforts to develop a means for remote monitoring of the gate control structures through secure private networks. We will also continue our efforts at upgrading and improving monitoring systems along Putah Canal. These improvements will include upgrading obsolete controllers and adding 4G modems in some cases.

Fiscal 2019/2020 Summary

Tasks completed or are nearing completion, including:

Canal Automation

- By the end of this fiscal year the second gate control system at Gibson Check will installed and operational.
- SiteHawk SCADA is now running on www.grabdata2.com showing real time values from Headworks, Sweeney Check and Gibson Check (see below).
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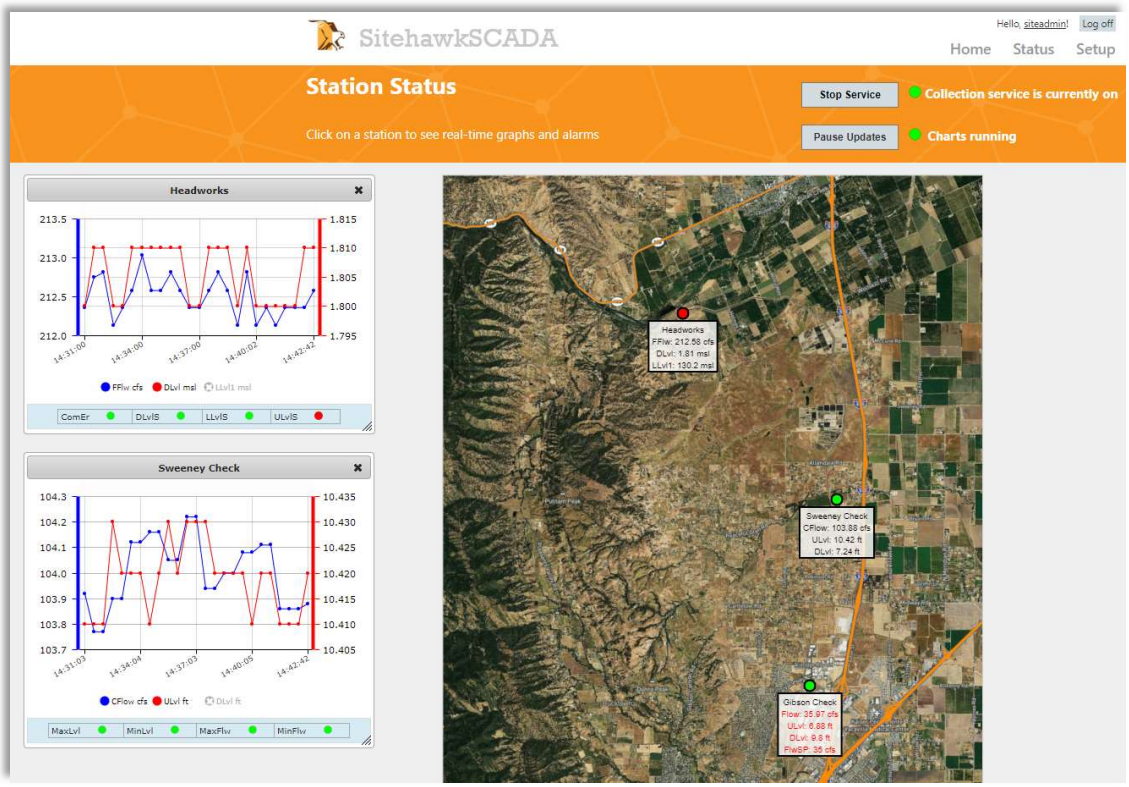

Figure 1 SiteHawk SCADA showing real time data on Putah canal

PDO Operations

- Eyasco is currently working on a digital HMI panel upgrade to the analog alarm panel at PDO for USGS and Headworks flows. The upgrade includes a new panel to set alarm levels and view sensor readings in real time. When this is installed a new PLC will be installed at PDO with programming to interface with the panel. Installation will probably be during the 2020/2021 fiscal year.

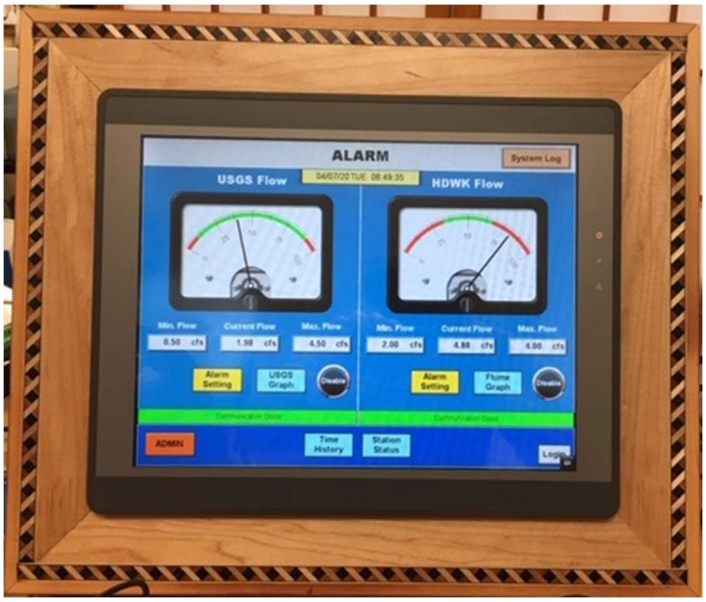

Figure 2- PDO Digital Alarm Panel

Merlin Mobile:

- Changed controller query for Measures page to pull back all events including EvtFail events. Now the table includes all events / highlights flagged events and the chart only shows events that haven't been QA flagged.
- Rewrote Projects>Stations>Measures pages to search for any unacknowledged alarms (not just past 24 hours)
- Increased efficiency of queries for these pages and wrote queries into stored procedures
- Changed events page to show QaQc data in table but not in chart
- Added updated of max/min datetime keys to manual event insert
- Added date selector to show specific dates on chart/table
- Added selectors on chart to page through events on the chart
- Table redone to open on same page as chart with same dates

Bug fixes

- Datetimes automatically being adjusted by timezone
- X-Axis overlapping
- Broken table links
- Changed range of the value axis to take factor of max and minimum difference and add to the maximum and minimum values.
- Changed 7 day and 28 day plots to show as line plots.

LADR:

Changes Made

- Adding the LU_VVL grid to import process so users can pullup the grid for reference and add VVL codes if needed.

- Improved functionality on adding codes to LU_VVL table – codes and types must already exist from the State, new Add VVL Code form added to app.
- Allowing users to assign Lab Reports (PDF files) to a Sample basis rather than an Event basis.
- Improved forms in the import process:
    - Resizable grids
    - Smaller fonts
    - Larger popup forms
    - Reordering columns to stay consistent throughout import process
    - Consistent button locations and styling buttons to stand out more
- Notifying users if there are more than 500 records
- Alert and redirect when the user's session have timed out
- Changing the combobox filtering in validation grid to use "Starts With" filtering rather than "Contains" filtering. This will make finding certain codes easier while validatin
- Specify log vs ANA date in Events grid
- Allowing users to edit active field of VVL codes. Users cannot edit names, codes, or types fields due to being part of the database table key
- Allowing users to edit event description and active fields. Users cannot edit name fields due to being part of the database table key
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Bugs Fixes

- Web application now filters by EDF data, which limits Types and Codes from the State Database to the correct amount of Types and Codes
- Editing VVL codes now works properly
- Fixed issue where two projects (or an incorrect project) are present in a single Lab File
- Bug with adding project fixed
- Bug with editing station name fixed

Merlin Web:

- Rating Curve improving update functionality
- Added procedure to update start/end dates for single type ID when "Recalc" or "Recalc All" is selected in Data Library. This
- Added alarm value guide to alarmed charts to display as a horizontal line
- Got rid of equal spacing to fix bug with different time increments
- Changing the ordering of alarms to have the alaramed measurement show up first on the dashboard.
- Changing coloring of alarms to correct field in database, parsing out the hexadecimal code if the field is a code.
- Coloring other parts of dashboard to make alarms more apparent.
- Re-structuring the dashboard layout to accept only three graphs at a time and to be pageable.
- Syncing pagination up with graphs and table.
- Adding alarm field to last value table. Coloring table to display when alarms are present.

Proposed Fiscal 2020/2021 Scope

The tasks identified in our 2020/2021 scope of work include:

1. Public Web Enhancements – Continued support for SCWA public web sites including implementing responsive web design for transitioning to mobile web browsers.
2. Database and Report Support– Manage and improve data collection and consolidation methods and services including:
    a. Finalization of the automated Water Quality Reports
    b. Implementation of rating curve tool to manage updates and track historical changes.
    c. Water Accounting Database support.
    d. Development of new reports including more detailed monthly, quarterly or yearly water quality summary reports.
3. Software Enhancements and Support– Continue to provide enhancements and support as-needed.
    a. Evaluate 3rd party software (Aquarius) for use in collecting and reporting laboratory water quality results.
    b. Merlin Enterprise operation in new SCADA network
    c. Moving and modifying software applications as required for SCADA and Business network security.
4. SCADA Network Support – Provide technical support for network infrastructure, data telemetry, programming or configuration to assist moving SCWA automated monitoring and control systems to a dedicated SCADA network. Hours have been added to support the following specific tasks:
    a. SCADA network implementation design and support
    b. Adding security protocols to remote connections to measurement and control systems
    c. Transitioning from public to virtual private network for cellular communications
    d. Integrating more real time data into SCWA SCADA network
5. Monitoring and Operations Support– Improvements of hardware and software used at Solano Dam Headworks, PDO and Putah Canal in support of water operations. This includes:
    a. Add two more checks to control system – including design, programming assembly and installation
    b. Replace rotary encoders at 12 rotary gate locations
6. Project Management – Task coordination, on-site meetings not included in the above tasks, budget tracking, and all travel time to and from SCWA offices.

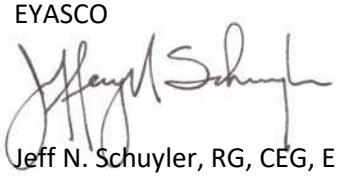
Cost Estimate

Eyasco's estimated costs for completing the tasks described above are shown on the attached Table 1. We propose to perform the above scope-of-work on a time and materials basis. Based on our current rate schedule, which is attached, the estimated total to complete the above scope is $435,275.

We thank you for the opportunity to continue working with Solano County Water Agency. Please feel free to contact us with any questions regarding the content of this proposal.

Yours truly,

EYASCO



Jeff N. Schuyler, RG, CEG, EIT
President

TABLE 1
2020/2021 Budget Estimate

Item	Task	Hours	Rate	Expense	Amount
1	**Public Web Enhancements**	**370**			**$ 66,400**
a	Principal	10	220.00		2200
b	Senior Programmer	340	180.00		61200
c	Application Programmer	20	150.00		3000
2	**Database and Report Support**	**355**			**$ 57,550**
a	Principal	75	220.00		16500
b	Senior Programmer	130	180.00		23400
c	Junior Programmer	110	135.00		14850
d	Clerical	40	70.00		2800
e	Other	0	0.00		0
3	**Software Enhancements and Support**	**370**			**$ 72,700**
a	Principal	100	220.00		22000
c	Senior Programmer	150	180.00		27000
h	Junior Programmer	120	135.00		16200
i	Other	0	0.00	7500❶	7500
4	**SCADA Network Development**	**425**			**$ 80,000**
a	Principal	75	220.00		16500
c	Senior Programmer	200	180.00		36000
d	Application Programmer	150	150.00		22500
e	Junior Programmer	0	135.00		0
f	Project Engineer	0	145.00		0
g	Technician	0	135.00		0
h	Travel	0	70.00		0
i	Other		0.00	5000①	5000
5	**Monitoring and Operations Support**	**685**			**$ 138,525**
a	Principal	100	220.00		22000
e	Junior Programmer	315	135.00	5390④	47915
f	Project Engineer	270	145.00	1500③	40650
g	Technician	0	135.00		1500
h	Travel	0	70.00		0
i	Other	0	0.00	26460②	26460
6	**Project Management**	**80**			**$ 20,100**
a	Principal	30	220.00		6600
f	Senior Programmer	50	180.00		9000
g	Travel	0	70.00		0
h	Clerical	0	70.00		0
i	Other	0	0.00	4500③	4500
		2,285	**TOTAL**		**$ 435,275.00**

NOTES:

1. Softw are license: SiteHaw k maps, MerlinMobile, Nevron SSRS
2. Placeholder for rotary encoder purchase and assembly
3. Travel and Misc. Costs
4. NUC Computers, HMI Panels

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2020 Billing Rates

The labor rates and other direct costs shown here are Eyasco's published billing rates for 2018. They apply to all time-and-materials contracts.

General Labor Rates

Principal	*$220/hr*
Software Architect	*$200/hr*
Senior Programmer	*$180/hr*
Application Programmer	*$150/hr*
Junior Programmer	*$135/hr*
Project Engineer	*$145/hr*
Engineering Technician	*$135/hr*
Clerical, Drafting	*$80/hr*
Travel	*$70/hr*

Direct Costs - include airfares, vehicle rentals, hotel accommodations, subsistence, supplies and materials incurred for a project.

Direct Cost items	*Actual cost plus 15%*
Mileage	*$0.575/mile*

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