



Photo Credit: SRP, May 2015-SRP Flowtography™ Station @ Planned Newman Canyon Site

***Proposal for 1 SRP Flowtography™ Station Installation and
Equipment O&M services at Newman Canyon***

***February 2, 2016
Lee W. Ester and Hector Buenrostro
Salt River Project***

Table of Contents

I.	Introduction	3
II.	Water Monitoring Method and Data Collection	3
	A. Data Management	3
	B. Data Access/Sharing.....	3
	C. Drone Command Hub	3
III.	SRP Flowtography™ Station (no stream flow record or event gage)	4
IV.	Site Survey, Back Office Initialization & Setup, & Installation Costs	4
V.	Operation and Maintenance (O&M) - Recurring Costs Estimates.....	5
VI.	Invoicing.....	6
	A. Operation and Maintenance (O&M) - Recurring Charges	6
	B. Break-Fix Event (Exception to Planned Schedule)	6
	C. Special Call Out and Change Orders	6
	D. Future Pricing.....	6
VII.	Notice to Proceed	6



I. Introduction

SRP is providing the following proposal for the installation of 1 SRP Flowtography™ station (for collection of images only, not stream flow monitoring), located in the Upper Lake Mary watershed, at Newman Canyon USGS gage site.

II. Water Monitoring Method and Data Collection

A. Data Management

The site images must be manually extracted from the devices. Images collected may have missing periods caused by unforeseen circumstances such as break fix events and vandalism. Collection of the images would be facilitated at a level of frequency to be determined as part of this project. For example, depending on runoff events and site visit costs, it could be done quarterly, monthly, or weekly (not to exceed 4 in 9 months). The images are uploaded into SRP's Cumulus system.

B. Data Access/Sharing

Images from the project's inception to completion will be retained and can be requested for retrieval from SRP. SRP may request to use the data for current/future business purposes.

C. Drone Command Hub

Flowtography thumbnail images will be available by User ID/Password at a third party's website (www.dronewireless.com).



Figure 1 Drone Command Hub Login

III. SRP Flowtography™ Station (no stream flow record or event gage)

SRP Flowtography™ Station will collect images only (that is, no equipment in the stream to collect stage data) and the transmittal of those images via cellular network are needed to gather information that is important to visualizing the stream currently monitored by USGS.

The site (in the table below) would be equipped with a camera and cellular modem, mounting, enclosures and hardware, and would be solar powered.

The cost for the SRP Flowtography™ station (all equipment) with no event monitoring is shown in **Table 1**.

Table 1 – Equipment Costs

<i>Equipment Cost</i>			
Site Name	Qty	Estimated Capital Cost	Total
SRP FLOWTOGRAPHY™ site – no event monitoring (images only)	1	\$ 3,512 (plus any taxes if applicable)	\$3,512
Total Costs (applicable taxes not included)			\$3,512

- Specific permitting of the sites, e.g. Landowner access agreements, County / Forest Service permits would be the responsibility of the City of Flagstaff to obtain.

IV. Site Survey, Back Office Initialization & Setup, & Installation Costs

Below is a summary of the initialization and installation cost to install the SRP Flowtography™ station. Cost includes initial site selection and survey, setup web service for image data to be accessible, transport of staff and materials (all station requirements) to site, installation and initialization of site, and staff accommodations and travel expenses as required.

Table 2 – Installation Costs

<i>Installation Costs</i>			
Site Name	Qty	Estimated Capital Cost	Total
SRP FLOWTOGRAPHY™ site – no event monitoring (images only)	1	\$ 4,234 (plus any taxes if applicable)	\$4,234
Total Costs (applicable taxes not included)			\$4,234



V. Operation and Maintenance (O&M) - Recurring Costs Estimates

The O&M budget will be used to travel, operate, maintain the site and collect Flowtopography images and retain the images.

To meet the above deliverables, SRP estimates the annual site costs in **Table 2**. *Taxes, if applicable, will be additional.* The actual timing of services provided could vary due to inclement weather, travel methods, site complexity, site access issues, forest closures, Pine Grove Quiet zone restrictions, hunting seasons, and break fix events.

Table 2 – Comprehensive O&M Costs (Includes data processing and web services)

Annual Maintenance Budget-Planned (not to exceed 4 sites visits/9 Months)			
	Qty	Estimated O&M Cost	Total
SRP FLOWTOGRAPHY™ site – no event monitoring (images only)	1	\$ 4,313 / 9 Months / site / Not to exceed 4 visits (includes Travel & Lake crossing)	\$4,313
Retention of Flowtopography Images – Cataloged in SRP’s Cumulus system for storage and recovery as needed	1	Included	Included
Cellular Fees SRP FLOWTOGRAPHY™ sites	1	\$240 / month / 1 site (estimated recurring monthly cost)	\$2,160
Data Management	1	\$3,000 / year / site (estimated recurring annual cost) None	\$0
Total Estimated 9 Month O&M Costs			\$6,473
O&M Costs per site (applicable taxes not included)			\$6,473

Renewed funding by Client will be subject to the approval of a recommended funding term as approved by the City of Flagstaff City Council.

**In the event of any unforeseen circumstances, equipment needs or break-fix events, the following SRP costs could apply:*

<i>Transportation – Helicopter</i>	<i>\$ 650 per rotor hour (avg. depends on aircraft)</i>
<i>Transportation – Vehicle - ground</i>	<i>\$ 10 per SRP labor hour</i>
<i>Additional Materials</i>	<i>Actual cost plus 15%</i>
<i>Cellular Network Fees (other equipment as required)</i>	<i>\$ 85 per site per month</i>
<i>Labor (Professional Services)</i>	<i>\$ 125 per hour</i>
<i>Labor (non-technical if appropriate)</i>	<i>\$ 105 per hour</i>
<i>Data Processing (Professional & Analytical Services)</i>	<i>\$ 145 per hour</i>
<i>Direct Hydrographic Measurement (exclusive of travel costs)</i>	<i>\$ 510 per site / event</i>
<i>Overnight stay and meal expenses (when required)</i>	<i>~ \$ 250 per day/person</i>

*SRP and City of Flagstaff to establish criteria for City authorization for SRP to conduct ad-hoc services or emergency services due to equipment outages prior to the installation of the equipment.



VI. Invoicing

All invoices will be accompanied by a detailed description of equipment and/or services provided by site, date, and purpose as follows.

During the equipment implementation of the project, SRP will invoice in advance for 50% (\$3,873) of the total estimate (\$7,746). The funds will be used directly towards the purchase of equipment and preparing site infrastructure. The balance of the costs will be invoiced when the sites are completed.

A. Operation and Maintenance (O&M) - Recurring Charges

At such time that the initial installation is complete, the site will enter into the operational and maintenance phase of the project. Invoicing for routine services will occur at regular intervals and will be submitted subsequent to scheduled or unscheduled (break fix) service events (subject to City authorization).

B. Break-Fix Event (Exception to Planned Schedule)

In the event any special services or equipment requirements are needed, these actions will be invoiced as they occur. A process for seeking City of Flagstaff approval for exceptions to equipment or service events will need to be defined.

C. Special Call Out and Change Orders

Special call-out for pre/post-storm or other servicing (such as collecting direct hydrographic measurements or collect data and photographs) will be charged as a Break-Fix event.

D. Future Pricing

Future pricing is subject to escalation by the published CPI. Costs will be reviewed/renewed annually in the month of April each year.

VII. Notice to Proceed

This document outlines SRP's proposal for the deployment of 1 SRP Flowtography™ station. SRP will operate and maintain the site, retain the Flowtography images in support of the City of Flagstaff Upper Lake Mary Monitoring Project.

An Independent Contractor Agreement (ICA), when appropriately signed, will serve as City of Flagstaff's notice to proceed for SRP. The ICA has been included as a companion document to this proposal. The ICA, Schedule A, refers to this project proposal. Schedule B summarizes all Compensation and Payment costs.

If the City should have any questions or would like to discuss this project proposal in further detail, please contact:

Lee W. Ester, Manager
Water Measurement
Salt River Project
(602) 236-5592

Lee.Ester@srpnet.com



Hector Buenrostro, Analyst/Engineer
Water Measurement
Salt River Project
(602) 236-2410

Hector.Buenrostro@srpnet.com

