Borrego Springs Watermaster
Technical Advisory Committee Meeting
February 21, 2023 @ 10:00 a.m – 12:00 p.m.
Meeting Available by Remote Access Only*

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AGENDA

Items with supporting documents in the TAC Meeting Package are denoted with a page number.

I. **Roll Call**

II. **Public Comments**
This is an opportunity for members of the public to address the TAC. Comments will be limited to three minutes per commenter.

III. **Review of new Watermaster guidelines regarding TAC procedures…….…….. Page 2**

IV. **Review of draft Groundwater Monitoring Plan** (draft Plan has been delivered via separate email)

V. **Redetermination of Sustainable Yield in 2025 ……..…… Page 11**

VI. **Status Update: DWR Monitoring Well Funded through the DWR's Technical Support Services Grant (time permitting)**

VII. **Public Comments (time permitting)**
This is an opportunity for members of the public to address the TAC on items discussed during the meeting. Comments will be limited to three minutes per commenter, time permitting.

VIII. **Future Meetings**

IX. **Adjournment**

Borrego Springs Watermaster
Technical Advisory Committee Meeting
February 21, 2023
AGENDA ITEM III

To: Technical Advisory Committee (TAC)

From: Andy Malone, PG (West Yost), Technical Consultant

Date: February 16, 2023

Subject: Watermaster Board Resolution to Establish Guidelines for the Technical Advisory Committee Process

Background

Section I.A.58 defines the Technical Advisory Committee as (page 13):

> *The advisory body established pursuant to Section IV.G(l) of this Judgment to study technical aspects of the Basin and to issue recommendations to Watermaster based on such technical study for the purpose of achieving Sustainable Groundwater Management in the Basin in an effective and efficient manner, consistent with the rights and obligations of the Parties established by this Judgment.*

The sections of the Judgment that refer to the TAC include: I.A.58; II.E, III.B; III.F; III.I.5; IV.E.7; IV.G; and VI.B.2. The sections of the Rules & Regulations that refer to the TAC include Article III.

At its December 8, 2022 meeting, the Board discussed the provisions included in the Judgment and Rules & Regulations and concluded that the role of the Technical Consultant is not well defined and that the Board should adopt supplemental guidelines to clarify expectations of the participants in the TAC process via a Board resolution. At its January 12, 2023 and February 9, 2023 meetings, the Board reviewed and discussed draft guidelines for the TAC that were presented by staff for consideration. Following public input and Board discussion, the Board directed staff to draft a formal resolution incorporating the comments received during the Board meeting.

Discussion

Enclosed for your review is the draft *Resolution No. 23-01 of the Board of Directors of the Borrego Springs Watermaster to Establish Guidelines for the Technical Advisory Committee Process*. The Resolution provides guidelines for TAC membership and the roles and responsibilities of the Technical Consultant and TAC members. The Board requested staff to inform the TAC of intent to adopt the Resolution. The Resolution will be considered for adoption at the March 9, 2023 Board meeting.

At the TAC meeting, staff can provide additional information and answer any questions about the Resolution.

Enclosure

Resolution No. 23-01 of the Board of Directors of the Borrego Springs Watermaster to Establish Guidelines for the Technical Advisory Committee Process

RESOLUTION NO. 23-01
OF THE BOARD OF DIRECTORS OF THE BORREGO SPRINGS WATERMASTER
TO ESTABLISH GUIDELINES FOR THE TECHNICAL ADVISORY COMMITTEE PROCESS

WHEREAS, a Stipulated Judgment (Judgment) was entered in the Superior Court of California on April 8, 2021 that determined and adjudicated all groundwater rights in the Borrego Springs Subbasin (Subbasin) and established the Borrego Springs Watermaster (Watermaster) to administer and enforce the provisions of the Judgment including its Physical Solution.

WHEREAS, Section IV.G. of the Judgment establishes a Technical Advisory Committee (TAC) to advise the Watermaster on technical matters, defines the process for selection of TAC members, and defines the TAC's duties and responsibilities.

WHEREAS, Section I.A.58. of the Judgment defines the TAC as: "*The advisory body established pursuant to Section IV.G(I) of this Judgment to study technical aspects of the Basin and to issue recommendations to Watermaster based on such technical study for the purpose of achieving Sustainable Groundwater Management in the Basin in an effective and efficient manner, consistent with the rights and obligations of the Parties established by this Judgment*."

WHEREAS, there are several sections in the Judgment that provide information as to the TAC meeting frequency and the technical matters on which the TAC is expected to provide recommendations or input to the Board, including Sections II.E, III.B; III.F; III.I.5; IV.E.7; IV.G; and VI.B.2.

WHEREAS, Article III of the Watermaster Rules & Regulations provides additional definitions and information regarding the TAC.

WHEREAS, the Watermaster Board has identified that the role of the Watermaster Technical Consultant in the TAC process is not well defined and that supplemental guidelines are appropriate to clarify expectations of the participants in the TAC process via Board resolution.

NOW, THEREFORE, be it resolved by the Board of Directors of the Borrego Springs Watermaster, that:

1. The Board of Directors hereby establishes guidelines governing the TAC membership and the roles and responsibilities of the Technical Consultant and TAC members, which are defined in the attached Exhibit 1.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Borrego Springs Watermaster held on the 9th day of March 2023 by the following vote:

AYES:

NOES:

ABSENT:

_____
David Duncan, Chairperson
Board of Directors

_____
Shannon Smith, Secretary of the Board
ATTEST

Exhibit 1 to Resolution 23-01
GUIDELINES FOR THE TECHNICAL ADVISORY COMMITTEE PROCESS

TAC Membership & Appointments

- The TAC is comprised of technical experts appointed by individual Parties with BPA rights or the County.
- The Watermaster Technical Consultant is not a member of the TAC and is a non-voting participant responsible for facilitation of the TAC members discussions.
- Appointed TAC members must meet the licensure requirements defined in Section IV.G.1 of the Judgment.
- New and replacement members may be appointed to the TAC by any Party with BPA rights or the County. To appoint a member, a Party or the County must notify Watermaster Staff and provide the name and qualifications of the appointed member. Qualifications should be provided in the form of a resume or CV that reference the appointee's CA licensure.
- Each Party and the County may have one vote represented on the TAC. A Party or the County may be represented by more than one technical expert at meetings (e.g., two experts employed by the same firm), however the experts must collaborate to provide a single set of comments on documents and a single vote when providing recommendations to the Board.
- Compensation of the TAC members is the responsibility of the appointing Party. TAC members serve without compensation or reimbursement of expenses by Watermaster.

Technical Consultant Role and Responsibilities

Role. The Technical Consultant is an independent advisor to the Watermaster Board that is responsible for facilitating the TAC.

Responsibilities. The specific responsibilities of the Technical Consultant in the TAC Process include:

- Coordinate with TAC members to schedule meetings at the frequency defined by the Board, and no less than twice per year. All meetings of the TAC must be open the public and provide opportunity for public comment, as defined in Section IV.G.1 of the Judgment.
- Define draft meeting agendas for consideration and approval by the Board.
    - The timing of agenda topics should be scheduled to ensure the TAC will provide timely input and/or recommendations to the Board on specific topics defined by the Judgment and any other matter referred to the TAC by the Board.
    - Seek direction from the Board as to the scope of the TAC's role for each technical issue that is referred. The scope could include providing the Board (1) input or (2) a formal recommendation. A formal recommendation necessitates the development of a TAC Recommendation Report.
- Notice all meetings of the TAC to the Watermaster's distribution list via email and the Watermaster website.

- Record TAC meetings (held via video conference) and draft meeting minutes, including capturing the recommendations of each TAC member, for review and edit by the TAC members. TAC members will be given one week to provide comments on the draft meeting minutes.
- Report out all TAC discussions to the Board following each TAC meeting.
- Ensure that all email correspondence documenting input and recommendations include all TAC members so that all members are informed of the input/recommendations provided to the Technical Consultant. Should the Technical Consultant need to discuss and clarify input via phone call with any TAC member, the results of that call will be documented via email and distributed to the entire TAC membership.
- For technical issues which require formal TAC recommendations to the Watermaster Board, which necessitates preparation of a TAC Recommendation Report, the Technical Consultant will:
    - Provide the TAC with relevant technical information and recommendations to facilitate discussion by the TAC. Recommendations provided should cover a range of options to address the issue and reference the pros and cons of each potential option for discussion. Recommendations will be supported using "best available science, records, and data". Any relevant data should be presented to the TAC members and provided upon request.
    - Distribute relevant information to the TAC members about the requested recommendation topic not later than two weeks before a TAC meeting so TAC members have the background information needed to formulate recommendations for discussion at the TAC meeting.
    - Inform the TAC members of the opportunity to prepare either or both of the following supporting materials prior to a TAC meeting:
        - A memo or report documenting their analysis and recommendations for distribution to the TAC with the meeting agenda package.
        - Presentation slides documenting their analysis and recommendations for presentation at the TAC meeting.

      Additionally inform the TAC members that all supplemental materials must be submitted to the Technical Consultant and all TAC members before or during a TAC meeting.
    - Publish supporting meeting materials to the TAC and Watermaster distribution list not later than 72 hours before a TAC meeting.
    - Facilitate TAC discussions through presentation of recommendations during TAC meetings and seeking input and discussion from each TAC member.
    - Summarize the TAC recommendations into a draft TAC Recommendation Report based on discussion at TAC meetings and any follow up e-mail correspondence with the goal of facilitating consensus. The TAC recommendation report may not include

any supplemental reports by any TAC member that have not been previously reviewed and discussed by the TAC.

- Circulate a draft of the TAC Recommendation Report for comment and input by all TAC members.
- Provide up to three weeks for TAC members to review the TAC Recommendation Report. The duration of the review period will be established by the Technical Consultant based on deadlines set by the Watermaster Board.
- Prepare a final draft of the TAC Recommendation Report, based on the comments received from the TAC, describing the TAC recommendation and document if consensus has been achieved among the TAC. If consensus cannot be achieved, the TAC Recommendation Report to the Watermaster shall clearly describe the differences in opinion and arguments for each opinion.
- Provide no less than one week for TAC members to review the final TAC Recommendation Report.
- Timely inform all TAC members when a TAC Recommendation Report will be presented to the Board so they may request to provide direct input, feedback, and supplemental information during the Board agenda Item.
- Publish its own independent Staff Report to the Board with the Technical Consultant's recommendation on the issue, including reference to the TAC Recommendation Report.
- Provide the Board with the TAC and Staff recommendations at least 72 hours prior to a meeting at which the Board intends to take action on the issue.
- Present the Technical Consultant and TAC recommendation to the Board. The presentation will clearly identify the Technical Consultant's recommendation and the TAC's recommendation.

- For technical issues that are referred to the TAC for input only:
  - Timely provide the TAC with relevant technical information to facilitate discussion by the TAC.
  - Publish supporting meeting materials not later than 72 hours before a TAC meeting to ensure members have the background information needed to formulate recommendations to the Board.
  - Facilitate TAC discussions through presentation of information and the Technical Consultant's recommendation during TAC meetings.
  - Circulate a draft of the subject technical report prepared by the Technical Consultant (Technical Memorandum, Technical Report, Staff Report, Presentation) for comment and input by all TAC members prior to submission of the report to the Watermaster Board.
    - For memorandum and reports of substantial length requiring TAC member input, provide up to three weeks for TAC members to review. The duration of

the review period will be established by the Technical Consultant based on deadlines set by the Watermaster Board.

- Timely inform all TAC members when the subject technical issue will be presented to the Board so they may be present to provide public comment during the Board agenda Item.
- Prepare and present a final draft of the subject technical report to the Board that demonstrates how TAC input was obtained and utilized.
    - For memorandum and reports of substantial length that require TAC member input, the report will include an appendix of Response to TAC Comments that documents the Technical Consultants response to the input of each TAC member.

TAC Members Role and Responsibilities

Role. To collaborate with all members of the TAC to formulate technical recommendations to the Board on the specific topics defined by the Judgment and any other matter referred to the TAC by the Board. The TAC members will endeavor to reach consensus with the goal of achieving Sustainable Groundwater Management in the Basin in an effective and efficient manner.

Responsibilities. The specific responsibilities of the TAC Members include:

- Attendance at TAC meetings. If a meeting cannot be attended, the TAC member should timely review the TAC meeting recording and provide its input to the TAC and Technical Consultant via email within one week of the circulation of draft meeting minutes.
- Active participation in TAC meetings, including reading supporting materials to enable effective discussion of topics referred to the TAC and communication of recommended actions.
- Timely review of all documents that summarize TAC discussions and recommendations. Reporting schedules established by the Board will not be delayed for non-timely responses without express consent of the Board.
    - Provide comments/edits on draft meeting minutes of TAC meetings to the Technical Consultant within one week of receiving the draft. Non-responses by TAC members will be noted in the minute's authorship line.
    - For issues which require formal TAC recommendations to the Watermaster Board, which necessitates preparation of a TAC Recommendation Report:
        - TAC Members may elect to prepare either or both of the following information items prior to a TAC meeting:
            - A memo or report documenting their analysis and recommendations for distribution to the TAC with the meeting agenda package.

- Presentation slides documenting their analysis and recommendations for presentation at the TAC meeting.

All supplemental materials must be submitted to the Technical Consultant and all TAC members before or during a TAC meeting.

- TAC Members will provide comments and edits to the draft TAC Recommendation Report prepared by the Technical Consultant by the defined deadline, which will be up to a three-week review period. Non-responses by TAC members will be noted in the final report and the TAC members vote will be characterized as "no response" (e.g., did not vote on the recommendation).
- If TAC member consensus cannot be achieved, each TAC member will carefully review and edit its non-consensus recommendation to the Board to ensure it accurately reflects the views of the TAC member.
- For any Party that is represented by more than one technical expert, the experts must collaborate to provide a single set of comments on documents and a single vote when providing recommendations to the Board.
- TAC Members will timely review the final draft of the TAC Recommendation Report prepared by the Technical Consultant to ensure all feedback on the draft report was accurately captured. TAC members will have a one-week review period.
- TAC members may attend Watermaster Board meetings to provide direct feedback to the Board on any TAC Recommendation Report. TAC members who wish to make a presentation to the Board of their recommendation documented in the TAC Recommendation Report recommendation must timely notify the Technical Consultant of the request. Timely notification constitutes one week in advance of the Board meeting at which the agenda item will be considered for action.

- For technical issues that require TAC input only,
  - Provide timely review of the Technical Consultant's technical report (Technical Memorandum, Technical Report, Staff Memo, Presentation) on the subject issue.
  - For substantial memorandum and reports requiring input, up to three weeks will be provided to review the Technical Consultant's technical report. The duration of the review period will be established by the Technical Consultant based on deadlines set by the Watermaster Board.
  - TAC members may attend Watermaster Board meetings to provide direct feedback to the Board on any technical issue referred to the TAC for input.

- Ensure that all email correspondence documenting TAC member input and recommendations include all TAC members so that all members are informed of the input/recommendations provided to the Technical Consultant. Should the TAC member

need to discuss and clarify input via phone call with any TAC member or the Technical Consultant, the results of that call will be documented via email and distributed to the entire TAC membership and Technical Consultant.

Borrego Springs Watermaster
Technical Advisory Committee Meeting
February 21, 2023
AGENDA ITEM III

To: Technical Advisory Committee (TAC)

From: Andy Malone, PG (West Yost), Lead Technical Consultant

Date: February 16, 2023

Subject: Recommendations for Re-Purposing of SGM Grant Funds to Support the Redetermination of the Sustainable Yield by 2025

Background

At its meeting on February 9, 2023, the Watermaster Board, in consideration of a TAC-majority recommendation, approved a revised scope of work and budget for WY 2023 and 2024 to update the Borrego Valley Hydrologic Model (BVHM) and Redetermine the Sustainable Yield by 2025. Table 1 below summarizes the Board-approved revised scope of work with a cost estimate of $348,204.

Table 1. Revised Scope of Work to Redetermine the Sustainable Yield by 2025
WY 2023 and WY 2024

Task No.	Task	Cost Estimate
1	Compare FMP-estimated Pumping to Actual Pumping for WY 2022	$20,222
2	Update Water-Use Factors in the FMP	$39,196
3	Correct Errors Identified in 2021 BVHM	$22,577
4	Perform Model Recalibration	$128,510
5	Determine the Sustainable Yield (including documentation)	$137,699
	Total Cost for All Tasks	**$348,204**
	SGM Grant Budget	**$186,500**
	Variance	**$161,704**

Prior to the Board approval of the revised scope of work, the Board had approved a budget of $186,500 to perform Task 1 and Task 5 only and included this scope and budget in the Sustainable Groundwater Management (SGM) grant application, which was recently approved by the California Department of Water Resources (DWR). Hence, the Board needs to fund the difference of $161,704 between its prior approved scope/budget and the revised scope/budget (see "Variance" on Table 1).

The Board intends to re-purpose SGM grant funds to cover the Variance of $161,704.[1] At the February 9, 2023 Board meeting, Watermaster staff presented options for the re-purposing of various tasks (presented in Table 2 below). A discussion ensued at the Board meeting, specifically regarding the SGM grant tasks to construct and monitor a surface-water flow monitoring station on Coyote Creek. These tasks (and budgets) included:

- Task 5 - Construction of New Surface Water Monitoring Station ($89,000)
- Task 4 - Surface Water Flow Monitoring for Three Years ($90,000)

The scope and costs for these tasks were derived by Dudek and are documented in a letter to Watermaster Staff dated January 20, 2022 (attached to this memo as Exhibit 2).

Specifically, some Board members questioned the ability to successfully implement these tasks considering: (i) the administrative challenges in obtaining the necessary approvals, permits, and environmental clearance; (ii) the probable difficulties in constructing, maintaining, and monitoring the facility based on outcomes of prior monitoring efforts; and (iii) the fact that all this work will need to be completed within the compressed SGM grant implementation schedule which expires on March 31, 2025. The Board then requested TAC input on whether or not to forgo SGM Grant Task 4 and Task 5 and re-purpose the budget to support the revised scope of work to Redetermine the Sustainable Yield by 2025.

Table 2 below provides two options for re-purposing SGM grant funding to support a revised scope of work to Redetermine the Sustainable Yield by 2025. Option 1 includes the construction of the surface-water flow monitoring station with about 1 to 1.5 years of monitoring until the end of the SGM implementation schedule on March 31, 2025. Option 2 eliminates Task 4 and 5 and re-purposes the grant funds to support the Redetermination of the Sustainable Yield by 2025.

Table 2. Options for Re-Purposing of SGM Grant Funding

SGM Grant Task	Approved SGM Grant Budget	Re-Purposed SGM Grant Funds to Support Revised Scope to Redetermine Sustainable Yield	
		Option 1	*Option 2*
Task 5. Construct New Surface-Water Monitoring Station	$89,000		$89,000
Task 4. Surface-Water Flow Monitoring	$90,000	$45,000	$80,000
Task 6 - Identify and Address 6 Improperly Abandoned Wells	$340,000	$55,000	
Task 11a. Board Meetings	$90,000	$90,000	$90,000
Totals	**$609,000**	**$190,000**	**$259,000**
Target Budget for Grant Re-Purposing		$161,704	$161,704

Next Steps

The TAC should come prepared to discuss the pros and cons of performing Tasks 4 and 5 as part of the SGM grant implementation at the TAC meeting on February 21, 2023. Watermaster staff requests that each TAC member provide their verbal or written opinion to Andy Malone

[1] The full list of SGM grant-funded tasks and their associated budgets are attached to this memo as Exhibit 1.

(amalone@westyost.com) by February 27, 2023 so Watermaster staff can present the TAC opinions to the Board at its March 9, 2023 meeting.

Enclosures

Exhibit 1: SGM Implementation Grant Funded Tasks for the Borrego Springs Watermaster: Monitoring, Reporting, and GMP Update for Sustainable Management in the Borrego Springs Subbasin

Exhibit 2: *Working Draft Proposition 68 Grant Project Support for Borrego Springs Coyote Creek Alternative Stream Monitoring*. Letter to Watermaster Staff from Dudek. January 20, 2022.

Exhibit 1

SGM Implementation Grant Funded Tasks for the Borrego Springs Watermaster

Monitoring, Reporting, and GMP Update for Sustainable Management in the Borrego Springs Subbasin

	Category	(a) Requested Grant Amount
(a)	**Project Administration**	
	Task 12 - Project Management and Grant Reporting	
	Task 12a. Project Management	$92,000
	Task 12b. Grant Management and Reporting	$45,000
(b)	**Planning/Design/Environmental**	
	none	
(c)	**Construction/Implementation**	
	Task 5 - Construction of New Surface Water Monitoring Station	
	Task 5 Construction of New Surface Water Monitoring Station	$89,000
	Task 6 - Identify and Address Improperly Abandoned Wells	
	Task 6a. Outreach.	$10,000
	Task 6b. Well Abandonment	$198,000
	Task 6c. Conversion of Abandoned Wells to Monitoring Wells	$132,000
(d)	**Monitoring/Assessment**	
	Task 1 - Groundwater Production Monitoring	
	Task 1a - Monthly meter reading and pumping calculations.	$72,000
	Task 1b - Annual meter accuracy testing.	$65,000
	Task 2 - Groundwater Level Monitoring	
	Task 2a - Implement the existing and future expanded groundwater-level monitoring program.	$86,000
	Task 2b - Expand Monitoring Network through Outreach.	$10,000
	Task 3 - Groundwater Quality Monitoring	
	Task 3a - Implement the existing and future expanded groundwater-quality monitoring program.	$135,000
	Task 3b - Prepare Water-Quality Monitoring Plan (WQMP).	$35,000
	Task 4 - Surface Water Flow Monitoring	
	Task 4. Surface Water Flow Monitoring	$90,000
	Task 7 - Maintain and Enhance the Data Management System.	
	Task 7. Maintain and Enhance the Data Management System.	$57,000
	Task 8 - Annual Reporting to DWR and the Court.	
	Task 8. Annual Reporting to DWR and the Court.	$125,000
	Task 9 - Redetermination of the Sustainable Yield by 2025	
	Task 9a: Redetermination of the Sustainable Yield (WY 2022)	$115,750
	Task 9b: Redetermination of the Sustainable Yield (WY 2023)	$31,500
	Task 9c: Redetermination of the Sustainable Yield (WY 2024-25)	$155,000
	Task 10 - Prepare the 2025 GMP Update	
	Task 10. Prepare the 2025 GMP Update.	$190,000
(e)	**Interested Parties Outreach/Public Education**	
	Task 11 - Stakeholder Outreach	
	Task 11a. Board Meetings	$90,000
	Task 11b: TAC Meetings.	$100,000
	Task 11c. Stakeholder Workshops and Open House.	$45,000
	Task 11d. Maintain Website, Distribution List, and Respond to Stakeholder Inquiries.	$15,000
(f)	**Grand Total (Sum rows (a) through (d) for each column)**	**$1,983,250**

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ENCINITAS, CALIFORNIA 92024
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Exhibit 2

January 20, 2022

Samantha Adams
Borrego Springs Watermaster
Subject: Working Draft Proposition 68 Grant Project Support for Borrego Springs Coyote Creek Alternative Stream Monitoring

Dear Ms. Adams:

Dudek is providing this scope for alternative stream monitoring at Coyote Creek in Borrego Springs as a potential project component of the Proposition 68 Grant Project. This scope provides a first order estimate.

As identified in the GMP, approximately 65% of the surface water inflow to the Borrego Valley comes from Coyote Creek (USGS 1982). The watershed encompasses approximately 180 square miles and is located almost entirely within the boundary of the Anza-Borrego Desert State Park. Streamflow in the Coyote Creek Watershed has been documented by USGS as the number one source of recharge to the Basin via streamflow leakage (i.e., infiltration of surface water runoff). Two historical stream gages were located on Coyote Creek, one of which stopped recording streamflow in 1983, and the other stopped recording flow in 1993. USGS Station Number 1025580 (Upper–Northern) recorded daily discharge data from 1951–1983; at this station, annual average streamflow was measured to be 1,831 AFY (USGS 2017). USGS Station Number 10255805 (Lower–Southern) recorded daily discharge data from 1983–1993; at this station, annual average streamflow was measured to be 1,774 AFY (USGS 2017). Annual variability over the period measured ranges from 326 acre-feet to 10,715 acre-feet. This large annual variability is a function of large annual variability of precipitation falling on the Coyote Creek Watershed. The BWD and Watermaster have been periodically taking manual stream flow measurements along perennial reaches of Coyote Creek since the Spring of 2018.

The BWD, DWR and USGS conducted a site reconnaissance during the GMP preparation to determine if a stream gage could be reactivated along Coyote Creek. Due to the dynamic nature of the braided alluvial fan—high sedimentation and erosion that occurs along Coyote Creek—it was determined by the agencies that Coyote Creek was not a good candidate for a traditional stream gage.

This project provides for installation of camera (ECAM or equivalent) and staff gauge to document high flows in Coyote Creek. The ECAM camera is a standalone, cellular, solar, and battery operated camera that can be accessed 24 hours per day 7 days per week and configured to push images to a website. This infrastructure has successfully been deployed by the Santa Barbara County Flood Control District. It is anticipated that the ECAM will be mounted at the approximate historical location of USGS Station Number 10255805 where the ECAM will likely be mounted on top of an existing metal building or on a standalone tower. This proposed location is also the general location of the San Diego County Flood Control's Coyote Creek Station 27034 rain gauge. The BWD will coordinate with San Diego County Flood Control and Anza-Borrego Desert Research Center to determine whether the ECAM can use existing telemetry infrastructure already deployed in the Basin. In order to calculate stream flow discharge, a survey of the cross-sectional area of Coyote Creek at the proposed location of the staff gauge and upstream and downstream of the staff gauge location will be completed. A rating curve displaying discharge versus stage at the location of the staff gauge will be developed in order to determine stream flow discharge using the staff gauge as recorded by the ECAM. Due to the shifting nature of the stream channel geometry it is anticipated that the Coyote Creek channel will likely need to be resurveyed at least annually and after major flood events. The rating curve would also require updating as part of the channel resurvey. The estimated cost to complete the Coyote Creek streamflow monitoring is **$160,000**, including contingency for the channel shifting.

Task 1 – Survey

A 1-D model will be used to generate the stage-discharge curve. The modeling software that will be used is the River Analysis System developed by the Hydrologic Engineer Center, U.S. Army Corps of Engineers also referred to as HEC-RAS. As part of the model development, terrain data is needed of the channel at the intended installation location. It was assumed that no more than 10 cross-sections will be required when generating the cost estimate. Since the channel has a history of shifting, the cross-sections will cover all visible historical channels in the area of interest. The cost estimate for surveying includes preparation, surveying field work and post-processing the data for input into the model.

Cost for Task 1 ..... $22,000.00

Task 2 – Model Development

A 1D HEC-RAS model will be developed of the channel segment where the stream gage and camera are to be installed. To do this, information about the channel will be entered into the HEC-RAS program, namely, ground elevations and the type of ground cover. The ground cover is important because dense grass affects the river flow more than clear sand. It is assumed that historic data from USGS is available for use in the model, in addition to, the field data collected by Dudek.

Cost for Task 2 ..... $23,500.00

Task 3 – Stage-Discharge Rating Curve

To create the stage-discharge rating curve, the model will be run for various stream flows. The results will provide corresponding water surface elevations. Each water surface elevation and streamflow pair will be one point on the stage-discharge rating curve. Then, as long as the channel conditions remain the same, the curve can be used to estimate streamflow given the height of the water surface on the staff gage.

Cost for Task 3 ..... $7,000.00

Task 4 – Initial Installation of Camera and Staff Gage

This task captures the cost of installing the staff gage and camera at the site.

Cost for Task 4 ..... $35,000.00

Task 5 – Monitoring/Assessment

The site will be monitored for three years. This involves manual measurements, maintenance of the equipment and updating the stage-discharge rating curve as conditions at the site change. It is assumed that a storm large enough to change the channel characteristics will occur about once a year for the two subsequent years after the initial installation. Therefore, the budget includes two additional surveys of the established cross-sections. Then after each re-survey; the model will be updated, re-run and the rating curve will be regenerated. Also included are manual measurements of the water surface elevation and corresponding streamflow each year for a total of three trips.

Cost for Task 5 ..... $63,000.00

OPTIONAL

The stream has been known to create and shift to a new channel during a large storm. This optional task assumes that this may happen one time during the three-year monitoring duration and includes the cost of moving the equipment to a new location. It is assumed that the equipment is not damaged and remains functional.

Cost for Optional Task $8,000.00

Dudek appreciates this opportunity to assist you. If you have any questions or require further discussion, please contact me at 760.415.1425.

Sincerely,

Trey Driscoll, PG No. 8511, CHG No. 936
Senior Principal Hydrogeoloigst

cc: Amy Lynn-Williams, Dudek