

H156358

ORIGINAL

MEMORANDUM OF UNDERSTANDING
NO. R14MU350036
BETWEEN
THE CITY OF SAN DIEGO
PUBLIC UTILITIES DEPARTMENT
AND
THE BUREAU OF RECLAMATION

SAN DIEGO RIVER GROUNDWATER MODEL PROJECT

September 8, 2014

1. **THIS MEMORANDUM OF UNDERSTANDING (MOU)** for the San Diego River Groundwater Model Project [Project] is made and entered into this ____ day of _____, 2014, by the City of San Diego Public Utilities Department hereinafter referred to as the [City], and the United States Department of the Interior, Bureau of Reclamation, hereinafter referred to as [Reclamation], both of which are at times collectively referred to as [Partners].

2. **OBJECTIVES AND BENEFIT**

This Project is a partnership between Reclamation and the City to continue to update the groundwater models for the San Diego River System and the Qualcomm Stadium area. The primary objective for the San Diego River models will be to refine the models developed in 2003 and updated in 2013, and perform re-calibration. The primary objective of the Qualcomm Stadium model will be to refine the model and develop comprehensive calibration through the development of calibration targets.

3. **BACKGROUND**

The San Diego River is located entirely within San Diego County in southwest California where it begins in the Peninsular Mountain Range and flows west to the Pacific Ocean. The San Diego River watershed is home to over a half-million people, approximately 25 state and federal listed species, and provides a local water supply through five storage reservoirs and several groundwater aquifers. Land use development is primarily in the lower watershed from Santee/El Monte Valley to the Pacific Ocean.

Along the San Diego River, there are underdeveloped, and in some cases degraded, groundwater basins or aquifers that could provide a local water supply. Many of these groundwater resources were managed successfully and utilized prior to their degradation and the ensuing introduction of imported water to the region. Maintenance and, if necessary, restoration of these resources are primary goals of the City. Towards this goal, the City has initiated a groundwater management effort to facilitate the sustainable use of two San Diego River groundwater basins, Santee/El Monte and Mission Valley.

Document No. **C-16404**
Filed OCT 14 2014
Office of the City Clerk
San Diego, California

ORIGINAL

4. AUTHORITY

This MOU is made pursuant to the Act of Congress approved June 17, 1902, (32 Stat. 388), and acts amendatory thereof or supplementary thereto, all of which acts are commonly known and referred to as Reclamation Law, and the Consolidated Appropriations Act of 2014, P.L. 113-76, January 17, 2014.

This MOU is made pursuant to San Diego Municipal Code section 22.3210 in order to further the sustainability of the City's groundwater basins.

5. RESPONSIBILITIES

All work to be performed under this MOU shall be identified in the Scope of Work [SOW]. The SOW includes the description of tasks to be performed, responsibilities of Partners, a cost estimate, and a schedule. The SOW is contained in Attachment A to this document. The work described in this SOW shall be implemented immediately upon execution of this MOU. Any changes to the tasks in the SOW shall be in writing and made part of this MOU.

The responsibilities of Reclamation's Lower Colorado Engineering Services Office [ESO] and Southern California Area Office [SCAO] are to complete the six (6) tasks outlined in the SOW, and deliver all identified Technical Memorandum to the City. Draft copies of the technical memos will be provided for review before finalizing the documents.

6. STUDY COST AND FUNDING

The total estimated cost of this SOW is \$319,000 and will be cost-shared between Reclamation and the City (\$70,000 from Reclamation, \$249,000 from the City).

The City will provide \$249,000 in matching funds to Reclamation in three contributions as follows:

- Payment #1: \$83,000 no later than October 1, 2014 (City fiscal year July 1, 2014- June 30, 2015);
- Payment #2 \$83,000 no later than August 1, 2015 (City fiscal year July 1, 2015- June 30, 2016); and
- Final Payment #3 \$83,000 no later than August 1, 2016 (City fiscal year July 1, 2016- June 30, 2017)

All matching funds contributed will be transferred to Reclamation and deposited within a designated account.

In the event that any funds advanced to Reclamation by the City are not required to complete the work under the SOW, such excess funds shall be returned by Reclamation to the City without interest, upon completion of the work defined by the

SOW; provided, however, that in the event the Parties agree on additional work consistent with the direction of this Agreement, such excess funds may be retained by Reclamation.

7. TERMS OF AGREEMENT

This MOU shall remain in full force and effect from the date of August 14, 2014 but not exceeding December 31, 2017. This MOU may be modified, in writing, by mutual agreement of the parties.

This MOU may be terminated for cause, by either party, 60-days from written notification by the party requesting termination. In the event of termination, Reclamation shall return to the City any unused funds provided by the City under this MOU; provided, however, that in the event the MOU is terminated by the City before the work has been completed, adequate funds will be retained to complete the tasks of the SOW and prepare a concluding report.

Upon completion of the work, a final audit of the study costs will be conducted, any unused funds will be returned to the City.

8. IT IS MUTUALLY AGREED AND UNDERSTOOD BY AND BETWEEN THE PARTIES THAT:

Reclamation requires a cost match of Project costs by the City through direct funding. The estimated match is: **\$249,000**. After the MOU has been executed by the Partners, Reclamation will provide notice in the form of a Bill for Collection to the City that Reclamation requires the City to advance funds in order to commence work that is detailed in the SOW. After execution of the MOU and the City's receipt of the Bill for Collection, the City will make three (3) semiannual payments over the term of this MOU, as defined in Section 6.

Nothing in this MOU shall obligate the agencies or the United States to any current or future expenditure of resources in the absence or in advance of the availability of appropriations from Congress.

This MOU in no way restricts the Partners from participating in similar activities or arrangements with other public or private agencies, organizations, or individuals.

No member of, or Delegate to, Congress shall be admitted to any share or part of this MOU, or any benefits that may arise wherefrom; but this provision shall not be construed to extend to the MOU if made with a corporation for its general benefit.

This MOU in no way grants the Partners or any of its members any preferential treatment, exclusive use rights, or other privileges at or on Reclamation facilities, its lands or waters, over and/or above those which are accorded the general public.

This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between or among the parties to this MOU will be handled in accordance with applicable laws, regulations, and procedures including those for Government procurement and printing. Such endeavors, if any, will be outlined in separate agreements that shall be made in writing by representatives of the parties and shall be independently authorized by appropriate statutory authority. This MOU does not provide such authority, and specifically, this MOU does not establish authority for a noncompetitive award to the Partners of any contract or other agreement.

The parties hereto agree to meet as necessary, to discuss all matters relevant to this MOU to include the SOW.

9. COORDINATION AND PROGRESS REPORTS

The Partners will meet on a monthly basis via conference calls or in-person meetings. These meetings will be in lieu of written progress reports. Reclamation will provide draft technical memorandums for each task to the City for review and comment. Reclamation will provide final technical memorandums in a report format to the City. This may include hard copies and/or cd's although or other suitable media (e.g. flash drive) that can store the model effectively may be used.

Work performed under this MOU is subject to examination and audit by the State Auditor General, the Federal Inspector General, and each Party for a period of three years after final payment of funds under this MOU.

10. KEY PERSONS FOR THIS MOU:

10.1 Bureau of Reclamation

Mr. William J. Steele
Southern California Area Manager
27708 Jefferson Avenue, Suite 202
Temecula, CA 92590
(951) 695-5310, wsteele@usbr.gov

Ms. Leslie Cleveland
Water Resources Manager
27708 Jefferson Avenue, Suite 202
Temecula, CA 92590
(951) 695-5310, lcleveland@usbr.gov

ORIGINAL

10.2 The City of San Diego

Mr. Gregory Cross, Project Manager
600 B Street, Suite 600
San Diego, CA 92101
(619) 533-4235; gcross@sandiego.gov

IN WITNESS WHEREOF, the Partners have executed this MOU on the date and the year written below.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
LOWER COLORADO REGION

By: William J. Steele
William J. Steele
Area Manager

Dated this 11th day of September, 2014

THE CITY OF SAN DIEGO
Mayor or Designee

By: Downs Prior
Downs Prior
Principal Contract Specialist
Public Works Contracts |

Dated this 1st day of October, 2014

APPROVED the form and legality of this Agreement
this 1 day of Oct, 2014.

Jan I. Goldsmith, City Attorney

By: Raymond C. Palmucci
Raymond C. Palmucci
Deputy City Attorney

ORIGINAL

ATTACHMENT A

Scope of Work
And
Budget

[Faint, illegible text]

Service Agreement

**Engineering Services Office (ESO)
Bureau of Reclamation, Lower Colorado Region**

Service Agreement No.:	2014-072
Date:	2014-07-29
Project Title:	San Diego River System and Qualcomm Groundwater Model Update
Client:	Southern California Area Office
Client POC:	Leslie Cleveland, Program Manager 951-695-5310
ESO POC:	Doug Blatchford, Civil Engineer (Hydrologic) -702-293-8098
Cost Authority No.:	14XR0680A1 RX.18786S16.1000000

1.0 General Information

- a. Background. The City of San Diego (City) seeks to augment its water supply through integrated water resource management of its surface water and ground water resources. One key source of local water supply is the local aquifer, associated with alluvial deposition along the San Diego River. In 2003 the City completed a conceptual groundwater model of the San Diego River, which was updated by Reclamation in 2013. In addition to the update to the San Diego River models, Reclamation completed a conceptual, draft groundwater model of the Qualcomm Stadium area.
- b. Objectives. This service agreement will continue to update the groundwater models for the San Diego River System and the Qualcomm Stadium area. The primary objective for the San Diego River models will be to refine the models developed in 2003 and updated in 2013, and perform re-calibration. The primary objective of the Qualcomm Stadium model will be to refine the model and develop comprehensive calibration through the development of calibration targets.

2.0 Scope of Work

2.1 Progress Meetings

Conduct monthly and quarterly progress meetings for three year life of project (beginning with City's fiscal cycle July 1, 2014-June 30, 2015), with a kickoff meeting in August 2014. Kickoff meeting and quarterly meetings will be held at the City of San Diego Public Utilities Department, as requested by the City. Monthly meetings other than quarterly meetings will be held in Boulder City, Nevada via conference call or VTC, unless otherwise directed. ESO will develop the agenda and produce the minutes for each meeting, the agenda will include the budget status.

Estimated number of Meetings: 12 meetings at the City, including kickoff meeting, quarterly updates, training, and tech transfer. 24 meetings via conference call or VTC.

2.2 Literature Review

Review existing literature and documentation on San Diego River System, focused on most recent research by the USGS, such as the latest Basin Characterization Model, the latest understanding of subsurface flow, and hydrogeology.

2.3 SEM-MV Groundwater Vistas© Models Update.

Tasks

2.3.1 SEM-MV – Update Recharge. Verify recharge values from 2003 report generated by the Soil Moisture Budget Model, for Santee-El Monte calibrated models (SEM_Run_36_99_Calib, SEM_Run83_99_Calib), Mission Valley calibrated model (MV_Run36_99_Calib) and Recharge Zones A, B, C, and D. Update the SEM_Run_36_99_Calib and MV_Run36_99_Calib models and recharge zones in the Soil Moisture Budget Model to July 2013 by adding additional monthly time steps for 13 years, 9 months. Input the Soil Moisture Budget Model output into respective Recharge Zones of the two respective groundwater models (SEM_Run36_99_Calib, MV_Run36_99_Calib).

2.3.2 SEM-MV Update Streamflow Package. Verify streamflow values from 2003 report for Santee-El Monte calibrated models (SEM_Run_36_99_Calib, SEM_Run83_99_Calib), and Mission Valley calibrated model (MV_Run36_99_Calib). Update the SEM_Run_36_99_Calib and MV_Run36_99_Calib models to July 2013 by adding additional monthly time steps for 13 years, 9 months.

2.3.3 SEM-MV Update Upstream, Downstream Boundary Conditions. For SEM calibrated models, (SEM_Run_36_99_Calib, SEM_Run83_99_Calib) verify upstream inflow data (boundary condition) and update to July 2013, verify downstream discharge data to Mission Gorge (downstream boundary condition), and update to July 2013. For MV calibrated model (MV_Run36_99_Calib), verify upstream inflow data from Mission Gorge (boundary condition) and update to July 2013, and verify downstream discharge data to Pacific Ocean (downstream boundary condition), and update to July 2013.

2.3.4 SEM-MV Update Well Pumping. For SEM calibrated models, (SEM_Run_36_99_Calib, SEM_Run83_99_Calib) verify well pumping data and update to July 2013. For MV calibrated model (MV_Run36_99_Calib), verify well pumping data from Mission Gorge (boundary condition) and update to July 2013.

2.3.5 SEM-MV Update Elevation Data. Update model elevation data for SEM calibrated models, (SEM_Run_36_99_Calib, SEM_Run83_99_Calib) and MV calibrated model (MV_Run36_99_Calib).

2.3.6 SEM-MV Re-Calibrate. Re-Calibrate updated, SEM Models (SEM_Run_36_99_Calib, SEM_Run83_99_Calib), and MV Model (MV_Run36_99_Calib).

2.3.7 SEM-MV Update Base, Alternative Models. Develop Base and Alternative Scenarios from SEM calibrated models (SEM_Run_36_99_Calib, SEM_Run83_99_Calib) and MV calibrated models (MV_Run36_99_Calib). Develop SEM_Run36_99_Base, SEM_Run36_99_Alt, and MV_Run36_99_Base and MV_Run36_99_Alt.

2.3.8 SEM-MV Update Figures. Update figures from 2003 Conceptual Groundwater Master Plan.

2.3.9 SEM-MV Technical Memorandum Update. Peer reviewed, updated 2003 Technical Memorandum including results from SEM and MV re-calibrated models, base scenarios, and alternatives, and incorporate updated figures.

2.4 Qualcomm Model Update

Tasks

2.4.1 Qualcomm – Verify Mass Balance, Input Values. Verify mass balance of existing model as compared to Arcadis Report, and make adjustments to roughly calibrated model to approximate Arcadis results (assuming Arcadis mass balance is correct). Verify Arcadis input values for Arcadis upstream and downstream boundary conditions, for streamflow, and recharge.

2.4.2 Qualcomm – Develop Initial Heads. Develop an initial head file for use in starting conditions, with the intent to reduce mass imbalance in first three time steps in model.

2.4.3 Qualcomm – Develop MT3D Model. Develop MT3D model with the intent to simulate Arcadis results in mass transport.

2.4.4 Qualcomm -- Calibrate Model. Calibrate model similar to Arcadis model results, by developing targets at specific well locations also used in Arcadis report, with the intent to approximate Arcadis results.

2.4.5 Qualcomm – Refine Model. Refine model through sensitivity testing, and re-calibration, and development of future pump scenarios. Develop at least two additional models to simulate groundwater pumping scenarios, Qualcomm_Alt_1 and Qualcomm_Alt_2.

2.4.6 Qualcomm – Draft Technical Memorandum. Peer reviewed, updated existing Technical Memorandum for Qualcomm Stadium, including figures.

2.4.7 Qualcomm – Public Vetting. Publically distribute Technical Memorandum and three models, Qualcomm_Calib, Qualcomm_Alt_1, and Qualcomm_Alt_2 for comments and feedback, to such entities as the USGS, CH2MHill, and others to be determined.

2.4.8 Qualcomm – Final Technical Memorandum. Incorporate comments and feedback from public vetting process. Finalize Technical Memorandum.

2.5 Tech Transfer

Tasks

2.5.1 Written User's Manual. Prepare a written user's manual and training plan on how to use the models including (1) detailed, functional information such as how to add wells, change well pumping rates, modify boundary and initial conditions, change time steps, etc and (2) an overall approach to using the model for basin management activities, with at least two typical step-by-step examples.

2.5.2 Training. Set up at least one three day workshop followed by two days of face-to face training with city staff.

2.5.3 Deliverable: Training Manual and Training

2.6 Surface Water/Groundwater coupled models

2.6.1 Develop PRMS. Develop Precipitation Runoff Modeling System (PRMS) model for the San Diego River System.

2.6.2 Develop GSFLOW. Develop Coupled Ground-Water and Surface-Water Flow Model Based on the Integration of the Precipitation-Runoff Modeling System (PRMS) and MODFLOW 2005 models of the Santee-El Monte (SEM) and Mission Valley (MV) systems.

2.6.3 Technical Memorandum. Summarize PRMS and GSFLOW models in Technical Memorandum.

3.0 Deliverables

Task 2.2

Deliverable: List of research articles available, one paragraph summary (abstract) of the research, and key findings.

Task 2.3.9

Deliverable: Technical Memorandum Update in both pdf and MS Word© format (no hard copies unless specifically requested), and seven updated groundwater models in Groundwater Vistas © format, namely:

1. SEM_Run36_99_Calib
2. SEM_Run83_99_Calib
3. SEM_Run36_99_Base
4. SEM_Run36_99_Alt
5. MV_Run36_99_Calib
6. MV_Run36_99_Base
7. MV_Run36_99_Alt

Task 2.4.6

Deliverable: Draft Technical Memorandum Update in both pdf and MS Word© format (no hard copies unless specifically requested), and one updated groundwater models in Groundwater Vistas © format, namely:

1. Qualcomm_Calib
2. Qualcomm_Alt_1
3. Qualcomm_Alt_2

Task 2.4.8

Deliverable: Final Technical Memorandum Update in both pdf and MS Word© format (no hard copies unless specifically requested), and one updated groundwater models in Groundwater Vistas © format, namely:

1. Qualcomm_Calib
2. Qualcomm_Alt_1
3. Qualcomm_Alt_2

Task 2.5.3

Deliverable: Training Manual and Training Plan in both pdf and MS Word© format (no hard copies unless specifically requested)

Task 2.6.3

Deliverable: Final Technical Memorandum Update in both pdf and MS Word© format (no hard copies unless specifically requested), and PRMS and GSFLOW models:

1. PRMS
2. GSFLOW

4.0 Roles and Responsibilities

1. Terri Saumier, PE, Deputy Chief ESO (Project Sponsor)
2. Tom Nichols, PE, ESO Manager
3. Doug Blatchford, PE, Hydrologist ESO's point of contact shall provide project management, technical support, and coordination between ESO and all associated stakeholders.
4. Leslie Cleveland, SCAO, shall administer the project's budget.

5.0 Phases, Tasks, and Milestones

1. Task 2.1 – Progress Meetings - August 1, 2014 – June 30, 2017
2. Task 2.2 - Literature Review - August 1, 2014 – September 30, 2014
3. Task 2.3 – SEM-MV Model Update - August 1, 2014 – November 11, 2016
4. Task 2.4 – Qualcomm Model Update August 1, 2014 – March 6, 2017
5. Task 2.5- Tech Transfer – March 7, 2017 – June 26, 2017
6. Task 2.6 – Surface Water/Groundwater Coupled Models - April 5, 2016 to June 26, 2017

Specific project phases, tasks, and milestone dates are provided and broken down in Exhibit 1.

6.0 Cost

The total time and materials, not-to-exceed, non-contract cost for ESO services as defined in this Service Agreement is: **\$319,000. SCAO funded is \$70,000, City of San Diego funded is \$249,000, for a total of \$319,000.**

The above costs are inclusive of ESO clerical support, checking, peer and supervisory review, office supplies and automation equipment, printing, reproductions, shipping, transportation and per diem, if required. The budget estimate is attached to this document.

Total for successful contract performance: \$319,000

7.0 Communications

ESO's POC will proactively communicate with SCAO's POC during all phases of the project. Various forms of communications will be utilized, including email, telephonic and in-person.

8.0 Quality Management

Requirements for quality analysis/design deliverables include applicable codes, standards, guidance, regulations, laws and statutes. Requirements for quality construction deliverables include drawings, specifications, and applicable supplementation guidance.

Quality Control for analysis/design related deliverables shall include peer review, checking and supervisory oversight. Additionally, draft documents will be reviewed by the client.

9.0 Risk Management

A risk is an uncertain event or condition that would have a negative effect on the service agreement's objectives. This section identifies preliminary risks (A detailed risk analysis may be a deliverable of this agreement) including the probability and consequences of occurrence, and planned risk response strategies (avoidance, mitigation, acceptance, transference). The probability and consequences will be qualitatively identified by rating the identified risk from 1 to 5, with 1 being a low probability of occurrence or consequences and 5 being a high probability of occurrence or consequences. The risk will then be categorized as low (L-green), medium (M-yellow), high (H-orange), and critical (C-red) in accordance with the following table.

Probability	Almost Certain (5)	M	M	H	H	C
	Likely (4)	M	M	M	H	H
	Possible (3)	L	M	M	H	H
	Unlikely (2)	L	L	M	M	H
	Rare (1)	L	L	L	M	M
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
		Consequences				

10.0 Change Management

Final 8-8-2014

Proactively managing changes, whether their effects are negative or positive, is a critical factor for project success. This management requires planning, monitoring, impact analysis, and adjustments; and dialog and collaboration with the project team, stakeholders and sponsors. Any changes impacting this service agreement schedule more than 15 calendar days, impacting this service agreement costs by more than \$6,500, or those that delete or add major scope elements shall be handled with a formal change order.

11.0 Project Monitoring and Closeout

Throughout the course of work under this service agreement from commencement through closeout, a monthly report will be issued indicating performance metrics (cost and schedule) including actual expenses, percent complete on tasks; performance analysis including simple earned values and indexes; summary and high level accomplishments during the reporting month; summary and high level planned accomplishments (look ahead) for the next reporting month; and significant project and/or policy issues.

To ensure that all deliverables and other scope of work elements have been provided as expected by the client, at the conclusion of the work, a brief project closeout report will be issued addressing final performance metrics included in the monthly reports, and lessons learned (successes and challenges), and client ratings for technical service work (cost-effectiveness, timeliness, technical knowledge, issue resolution, responsiveness).

12.0 Approvals



Leslie Cleveland, Southern California Area Office, Lower Colorado Region

8/12/2014
Date



Terri Saumler, Deputy Regional Engineer, Lower Colorado Region

11 Aug 14
Date

For

Exhibit 1

San Diego River System
Total Cost Estimate
Estimate Price Level: August 2014
Date: August 8, 2014

Cost Type	Value
Non-Contract Cost	
	\$0
	\$0
Sub Total	\$0
Engineering Services Office	
Modeling	\$319,000
Sub Total (ESO Only)	\$319,000
Finance Office	\$0
Acquisitions & Assistance Office	\$0
Sub Total (All Offices)	\$319,000
TOTAL	\$319,000