

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

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October 7, 2013

Larry Hampson, PE, District Engineer
Monterey Peninsula Water Management District
P.O. Box 85
Monterey, CA 93942

Dear Larry:

Schaaf & Wheeler is pleased to propose the following engineering services for *Evaluation of the Reclamation Ditch as a source of supply for the Groundwater Recharge Project*. The study will consider flow availability for diversion from the Reclamation Ditch near Davis Road, and the available capacity within the City of Salinas/MRWPCA sewer systems to convey those flows to the Groundwater Recharge Project at the MRWPCA plant site. Our detailed scope of work is attached.

Our project team will include Andy Sterbenz, PE, for Project Management, civil design and analysis. Andy runs our Salinas office and is familiar with the competing water needs of Monterey County. Jim Schaaf, PE, PhD leading the analysis of Reclamation Ditch system flows and changes. Jim prepared the Zone 9 Fees Studies and models of the Reclamation Ditch for MCWRA, and understands the Reclamation Ditch system and its interactions with Tembladero Slough and the Salinas River. I will serve as Principal in Charge and provide quality control and assurance.

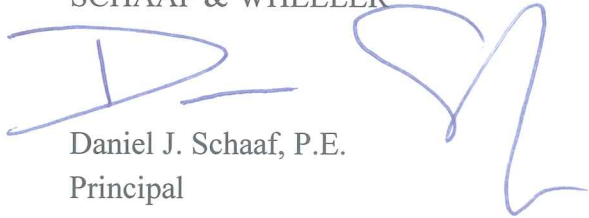
We estimate that it will take approximately three months to complete the studies, which includes coordination with the City/Agency staff and review of the draft technical memorandums by the project team. If water quality sampling is included in the project, final completion will not occur until the spring flow sampling is complete and incorporated in the report.

Fee

The not-to-exceed fee for the base scope of work is \$44,000. A detailed estimate by task is attached.

Please feel free to contact Andy Sterbenz at (831) 883-4848 or by e-mail at asterbenz@swws.com with any questions. We look forward to working with you on the *Evaluation of the Reclamation Ditch as a source of supply for the Groundwater Recharge Project*.

Very truly yours,
SCHAAF & WHEELER

A handwritten signature in blue ink, appearing to read 'D. Schaaf', is written over the printed name and title.

Daniel J. Schaaf, P.E.
Principal

Enclosure

EDUCATION

BSCE, Massachusetts Institute of Technology

MSCE, University of Texas at San Antonio

LICENSES

Registered Civil Engineer
California #C69703

Texas #93537

AFFILIATIONS

American Water Works Association

Society of American Military Engineers

American Public Works Association

Monterey Bay Water Works Association



Andrew A. Sterbenz, P.E. has over 20 years experience managing engineer organizations and solving engineering problems, and is recognized for developing and implementing creative solutions to complex problems. In 2006-2007 and 2012-2013 he served as the full-time District Engineer for the Marina Coast Water District, managing a \$150 million water

and sewer capital improvements budget that includes the development of new groundwater, recycled and desalinated water supplies for the former Fort Ord. He has prepared long-range water supply plans in California and Texas. Plans include the projection of population and water demands, the assessment of current water supply availability, and the analysis of water management strategies to meet projected shortages. He is adept at analyzing, researching, planning, coordinating and executing strategies to achieve organizational goals. Andy has prepared detailed plans and specifications for bidding and construction for public agencies, and managed construction projects for the client agencies. He has conducted environmental studies and remediation design, and assisted with environmental permitting. He is experienced with state and federal environmental regulations.

MAJOR PROJECT ACCOMPLISHMENTS

WATER AND WASTEWATER SYSTEMS PLANNING AND DESIGN

Interim District Engineer - Marina Coast Water District - Marina, CA (2006-2007, 2012-2013)

Soquel Drive Cast Iron Main Replacement-Soquel Creek Water District-Soquel, CA (2012)

Watkins Gate Well and Pipeline- Marina Coast Water District - Marina, CA (2011-2012)

Stonegate Water Supply Project - San Benito County Public Works-Hollister, CA (2011-2013)

Castroville Community Plan Infrastructure Estimate - Monterey County Redevelopment Agency - Monterey, CA (2009-2010)

Greens Bayou Fabrication Yard Development - KBR - Houston, Texas (2004-2005)

Modular Wastewater Treatment System - LOGCAP - Balkans, Yugoslavia (1999)

WATER DELIVERY SYSTEMS

Raw Water Pump Station Design and Construction - Coastal Water Authority - Houston, Texas (2000)

Moses Bayou 84-Inch Siphon - Gulf Coast Water Authority - Texas City, Texas (2001)

System Water Audit - Gulf Coast Water Authority - Texas City, Texas (1999)

WATER SUPPLY PLANNING

2010 Urban Water Management Plan - Marina Coast Water District - Marina, CA (2010-2011)

Regional Urban Water Augmentation Project - Marina Coast Water District - Marina, CA (2006-2007)

Region H Water Plans (2001 and 2006) - San Jacinto River Authority - Conroe, Texas (1998-2001, 2002-2006)

Colorado River Water Availability Model - Texas Natural Resource Conserv. Commission - Austin, TX (2002)

STORMWATER PLANNING AND DESIGN

Wrigley-Ford Creeks Maintenance Project - City of Milpitas - Milpitas, CA (2011-2012)

Reclamation Ditch Repair at Alisal St - Monterey County Water Resources Agency - Salinas, CA (2009)

PROGRAM MANAGEMENT

Anderson Dam Seismic Retrofit Project-Santa Clara Valley Water District-San Jose, CA (2012-Present)

ENVIRONMENTAL CLEANUP

Firing Range Removal - IAH Airside Improvements Program - Houston, Texas (2002-2003)

Landfill Removal - IAH Airside Improvements Program - Houston, Texas (2002-2003)

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EDUCATION

BSCE, Wayne State University
MSCE (Hydraulic Engineering),
Stanford University
PhD, Stanford University

LICENSES

Registered Civil Engineer
California #C28234
Nevada #10305

AFFILIATIONS

Fellow, American Society of Civil
Engineers
Founding Member, Floodplain
Management Association



Dr. James R. Schaaf, Ph.D, PE has over 35 years of experience in the areas of water resources engineering, infrastructure and urban systems computer modeling, planning, design and operations, and maintenance management of public facilities. He has managed numerous, large flood insurance studies, as well as drainage master plans, flood control master plans and preliminary designs, flood damage surveys, and hydrologic and hydraulic investigations. Jim is a foremost authority in the hydrology and hydraulics of rivers and streams, and he is often called upon during litigation to factually explain a flood event. Jim has been involved in many types of investigations throughout California and neighboring states.

MAJOR PROJECT ACCOMPLISHMENTS

FLOOD PROTECTION

Flood Insurance Studies - Santa Clara, Monterey, San Luis Obispo, San Diego, San Benito, Orange, Riverside Lake, San Joaquin, Santa Barbara, Merced and Los Angeles Counties and the Cities of San Rafael, Simi Valley, Stockton and Larkspur - Federal Emergency Management Agency (FEMA)
Flood Insurance Studies - Napa and Marin Counties and Cities of Sunnyvale, Fremont and Hayward - San Francisco District, U.S. Army Corps of Engineers
Flood Insurance Study - Sacramento City and County, Sacramento District, U.S. Army Corps of Engineers
Report on the 1978 Floods in the San Joaquin Valley - Sacramento District, U.S. Army Corps of Engineers
Flood Hazard Mitigation Study of the Lower Carmel River, 1981 - Monterey County Flood Control and Water Conservation District
Flood Protection Alternatives for Carmel Hacienda Retirement Community, 1996 - Monterey County Water Resources Agency
San Luis Obispo Creek Flood Control Master Plan - San Luis Obispo County
San Diego River Basin Flood Control Master Plan - San Diego County
Gilroy Non-Structural Flood Control Plan - City of Gilroy
Flood Control and Drainage Master Plan - Santa Margarita Ranch Company
Magpie Creek Flood Plain Delineation - McClellan Air Force Base
Dam Break Inundation Studies - Grant Co. Dam No. 2, Santa Clara County; Lexington and Stevens Creek Dams, - Santa Clara Valley Water District; Nacimiento Dam, Monterey County Water Resources Agency; and four water reservoirs, Alameda Co. Water District.
Natomas/ Pleasant Grove Flood Control - Sacramento Area Flood Control Authority
North San Jose Non-Structural Flood Control Plan - City of San Jose
ALERT System Development, Installation and Operation - Southern Pacific Co., Benicia

HYDROLOGY AND HYDRAULICS

Storm Drainage Hydrology and Hydraulics Manual - Alameda County
Pajaro River Flood Control Hydrology - Pajaro River Flood Prevention Authority
Hawkins Ranch Hydrologic Data Collection - Brandenburg, Butters & Associates
Santa Margarita Ranch Hydrologic Data Collection - Santa Margarita Ranch Company
Hydrologic Data Collection - Blackhawk Country Club
Flood Hydrology Study for Silver Lake, Reno, Nevada - Reimer Associates
Analysis of 1995 Floods that Damaged Mission Fields Subdivision, Carmel - Office of Monterey County Counsel
Santa Ynez Scour Depth Study - Fugro West
Guadalupe River Diversion Physical Model Study - Santa Clara Valley Water District

EROSION PROTECTION

San Tomas Creek Erosion Protection – Legacy Partners

Study for the Protection and Enhancement of the Environment in the Russian River Basin - San Francisco

STORM DRAIN SYSTEM PLANS AND IMPROVEMENTS

Storm Drainage Master Plans for the Counties of Sutter, San Joaquin, Stanislaus, San Benito, and Merced.

District, U.S. Army Corps of Engineers

Storm Drainage Improvements – Cypress Point Club

Sedimentation Basin Sizing – Lexington Quarry

EDUCATION

BSCE, San Jose State University

MSCE (Water Resources Engineering), San Jose State University

LICENSES

Registered Civil Engineer, California #C57617

AFFILIATIONS

American Society of Civil Engineers

Floodplain Management Association



Daniel J. Schaaf, PE has 20 years of project experience encompassing the areas of flood control and drainage, surface water hydrology, and physical and numerical modeling. Dan has managed several large hydrology/hydraulics, flood control and drainage projects. He is skilled in open channel hydraulics, coastal and estuary processes, 1D and 2D modeling, floodplain mapping and storm drain master planning. He is currently working on implementing modeling projects that integrate pipe and surface flows using sophisticated 2D modeling software. He has performed several FEMA Flood Insurance Studies and Letters of Map Revisions for clients throughout California. He is proficient in modeling and GIS software: GeoHEC-HMS, GeoHEC-RAS, TRIM3D, RMA-2, RMA-10, MIKE 11, MIKE 21, MIKE-URBAN, MOUSE, EPA SWMM, Cybernet, InfoSWMM, InfoWorks, QUAL2E, EPA-Net, ArcGIS 10.0, Spatial Analyst, 3D Analyst, AutoCAD Map and ArcIMS.

FLOODPLAIN MANAGEMENT

Silicon Valley BART Extension Floodplain Study – Valley Transit Authority (2012)

San Tomas Aquino Flood Study – Santa Clara Valley Water District (2012)

Salt Creek Floodplain Analysis – Private Owner Redding (2012)

Flood Analysis and Bayfront Levee Wave Analysis – City of San Mateo (2010)

Arroyo Las Positas and Arroyo Mocho CLOMR – City of Livermore (2011)

Southern California Wildfire Post Fire Flood Study – FEMA (2003 and 2007)

Highway 46/101 Drainage Study – City of Paso Robles (2008-2009)

Truckee River CLOMR – Reno Sparks Indian Colony (2009)

Phelps Creek LOMR – UC Sanata Barbara (2009)

Hooke Creek Flood Insurance Study – San Bernardino County, FEMA (2005)

Soscol Gateway Drainage Study – City of Napa (2005)

Mint Canyon Flood Insurance Study – Los Angeles County, FEMA (2008)

Nevada State Flood Insurance Study– FEMA (1999)

Santa Clara County Flood Insurance Study – FEMA (1990)

Nachez River LOMR – DHI/Yakima County WA (2007)

RIVER AND STREAM ENHANCEMENT

Altamont Creek Oil Removal Study – City of Livermore (2009-2010)

East Arm Mountain Lake Enhancement, San Francisco – The Presidio Trust (2005)

Reclamation Ditch Channel Study – Monterey County Water Resources Agency (Ongoing)

South Bay Pond Interim Management Plan – Cargill Salt (2000-2004)

PLANNING AND DESIGN

North San Jose Drainage Master Plan - City of San Jose (2012)

Stormwater Master Plan – City of Los Altos (2010)

Stormwater Master Plan – County of Santa Cruz (2009-2010)

El Charro Specific Plan Channel Design – City of Livermore (2005-2010)

Northside Pump Station Design – City of Alameda, Public Works Department (2010)

Storm Drain Master Plan and Sea Level Rise Study – City of Alameda (2008-2010)

Storm Drain Master Plan – City of Paso Robles (2007)

Storm Drain Master Plan – City of San Mateo (2004)

Storm Drain Master Plan and Subsequent Update – City of Livermore (2003)

Program Management for Storm Drain Capital Improvement Program– City of Belmont Public Works (2005)

HYDROLOGY AND HYDRAULICS

Isabel Interchange, Livermore, Storm Drain Alignments – Mark Thomas & Associates (2006)

Pajaro River Breaching Alternatives – County of Santa Cruz (2006-2007)

El Charro Specific Plan Hydrology Study – City of Livermore (2005-2009)

Napa Sonoma Salt Marsh Restoration - US Army Corps of Engineers (1999)

MODELING AND GEOGRAPHIC INFORMATION SYSTEMS (GIS)

District Engineering Services: GIS Phase I – Marina Coast Water District (2007)

Bolinas Lagoon Restoration Hydrodynamic Modeling and GIS - US Army Corps of Engineers (2000-2001)

Scope of Work, Evaluation of Reclamation Ditch as potential source of supply for the GWR Project:

The Monterey Regional Water Pollution Control Agency (MRWPCA) and the Monterey Peninsula Water Management District (MPWMD) are studying the proposed Monterey Peninsula Groundwater Recharge Project (GWR Project), with the goal of producing new indirect potable water supply for injection into the Seaside Groundwater Basin. Source water for the project may come from the City of Salinas Wastewater Treatment Plant, the Reclamation Ditch, the Blanco Drain, stormwater from MRWPCA member cities and/or secondary or tertiary effluent from the MRWPCA Regional Treatment Plant.

Transfers of source water flowing in known and definite channels, such as the Reclamation Ditch, out of the Salinas Valley to the Monterey Peninsula would be a consumptive use that may require an appropriative permit from the State Water Resources Control Board (SWRCB). MPWMD desires to retain a consultant to provide hydrologic information and analysis that may be used in a permit application to the SWRCB.

Tasks

Reclamation Ditch

The Reclamation Ditch watershed is approximately 157 square miles. It includes Alisal, Gabilan and Natividad Creeks, and collects urban runoff from the City of Salinas as well as agricultural tile-drain flows from the surrounding area. The Reclamation Ditch is tributary to Tembladero Slough, which joins the Old Salinas River channel just upstream of Moss Landing Harbor. The Old Salinas River channel is controlled by tide gates at Potrero Road.

A diversion pump station for the GWR project may be located on the Reclamation Ditch near Davis Road, where there is an existing sanitary sewer (SS) main to receive the flows and convey them to the MRWPCA Regional Treatment Plant. The existing 54-inch SS main crosses under the Reclamation Ditch in an inverted siphon. A pump station at this location would need to monitor flow in the SS system and divert flows only when there is available conveyance capacity. Additionally, if a minimum flow is required in the Reclamation Ditch to support downstream water users or environmental flows, the pump station may only divert flows above that minimum.

Task 1. Using the basin hydrology previously developed for the Reclamation Ditch system, information available from the USGS gages in the watershed and other available watershed and water use data as appropriate, the Consultant will make an estimate of mean daily, monthly, and annual flows classified into a 3-tier scheme (i.e., wet, normal, and dry) during the period of record for flow and/or rainfall data at the following locations along the Reclamation Ditch:

- at the Old Salinas River confluence
- downstream of the confluence with Tembladero Slough
- Davis Road crossing
- one additional location to be determined (optional task)

Work products from this task will provide baseline data for analysis in Task 2 to identify what effect diversions may have on downstream flows through Tembladero Slough and to the ocean.

Task 2. In consultation with MPWMD, City of Salinas and the MRWPCA, the Consultant will estimate the available conveyance capacity in the sanitary sewer system at the 54-inch siphon. Potential diversion targets will be established for Average Dry Weather Flow and Peak Wet Weather Flow, with diurnal peak and low flows for each condition. The availability of Reclamation Ditch flows within these ranges will be identified, and the resultant reduction of in-stream flows will be estimated. Summarize potential changes to flow quantities at the points described in Task 1. The Consultant will develop a conceptual diversion pump station design (station type, location and pump/force main sizing).

Task 3. Review existing Reclamation Ditch easements and agreements to identify existing in-stream flow requirements for protection of downstream species and/or habitats. Review the SWRCB database to identify downstream water rights on the Reclamation Ditch, Tembladero Slough and Old Salinas River Channel. Further identify whether there would be periods when diversions may not be carried out due to downstream or in-stream flow requirements.

~~**Task 4.** In consultation with MRWPCA, review available water quality data to identify if there are periods when water quality would prohibit diversion to the GWR Project. Up to four water quality samples may be collected from the Reclamation Ditch to establish seasonal baselines (dry weather, wet season first flush, mid-wet season, spring season).~~

Task 5. Coordination meetings. Meet with project participants including MPWMD, MRWPCA, MCWRA and the City of Salinas. Assume three meetings between multiple agencies.

Reclamation Ditch Deliverables: Technical Memo summarizing data used, method of analysis, discussion of results, stream gage site descriptions, watershed description (including a map of the watershed), tables of flow data as appropriate, and listing of references used.

Data requirements:

1. City of Salinas flow and capacity data for the Davis Road sewer main (Siphon under Reclamation Ditch).
2. MRWPCA capacity information on the Salinas Interceptor
3. MCWRA easements/agreements for the Reclamation Ditch

References:

1. City of Salinas Sewer System Master Plan, 2011
2. USGS Reclamation Ditch gauge no. 11152650
3. SWRCB 2010 Section 303(d) Listing of Impaired Water Bodies
4. MCWRA Reclamation Ditch Watershed Impact Fee Program / Nexus Analysis Summary Report, 2009

Table 1: Monterey Peninsula Water Management District
GWR Project EIR - Water Availability Assessment
Fee Estimate

Prepared by: Schaaf & Wheeler
Prepared on: 10/4/2013

Task	TASK ITEMS DESCRIPTION	PROJECT MGR \$ 210.00	PROJECT ENG \$ 200.00	SENIOR ENG \$ 180.00	ASSOC ENG \$ 160.00	ASST ENG \$ 140.00	SUBTOTAL M.H.'S	IN-HOUSE LABOR COSTS \$	Sub- consultants	Other Costs	SUBTOTAL Sub Fees	MARKUP on Subs 0.1	TOTAL COSTS \$
1	Reclamation Ditch Flows												
	Statistical analysis of historic gauge data	6	4			8	18	\$3,180			\$0	\$0	\$3,180
	Estimation of flows at 3 points based on statistical analysis and basin models	6	4			32	42	\$6,540			\$0	\$0	\$6,540
							0	\$0			\$0	\$0	\$0
	Rounded Subtotal	12	8	0	0	40	60	\$9,720			\$0	\$0	\$9,720
2	Estimate Sanitary Sewer Conveyance Capacity												
	Research and review sewer capacity reports/plans		2			6	8	\$1,240			\$0	\$0	\$1,240
	Calculate dirunal max and min flows and excess capacity		2			4	6	\$960			\$0	\$0	\$960
	Estimate maximum diversions based on streamflow and sewer capacity					4	4	\$560			\$0	\$0	\$560
	Summarize changes to in-stream flows					4	4	\$560			\$0	\$0	\$560
	Develop conceptual diversion pump station design		8		8	16	32	\$5,120			\$0	\$0	\$5,120
	Prepare technical memorandum	4	16		24		44	\$7,880			\$0	\$0	\$7,880
	Rounded Subtotal	4	28	0	32	34	98	\$16,320			\$0	\$0	\$16,320
3	Identify In-Stream Flow Requirements												
	Research and review Reclamation Ditch easements and agreements	2	4		12		18	\$3,140			\$0	\$0	\$3,140
	Identify downstream water rights, locations and amounts in SWRCB database	2	4			8	14	\$2,340			\$0	\$0	\$2,340
	Research and identify periods and conditions where diversions are prohibited	4	4			8	16	\$2,760			\$0	\$0	\$2,760
	Rounded Subtotal	8	12	0	12	16	48	\$8,240			\$0	\$0	\$8,240
4	Identy Water Quality Limitations												
	Review available water quality data with MRWPCA		2			4	6	\$960			\$0	\$0	\$960
	Collect water quality samples (if required, 4 sampling events)					8	8	\$1,120		\$4,000	\$4,000	\$400	\$5,520
	Rounded Subtotal	0	2	0	0	12	14	\$2,080			\$4,000	\$400	\$6,480
5	Coordination Meetings												
	Assume 3 meetings with multiple agencies.	2	8		8		18	\$3,300			\$0	\$0	\$3,300
							0	\$0			\$0	\$0	\$0
	Rounded Subtotal	2	8	0	8	0	18	\$3,300			\$0	\$0	\$3,300
	TOTAL	26	58	0	52	102	238	\$39,660	0	0	\$4,000	\$400	\$44,060

\$37,580

\$37,580