



City of Sacramento City Council

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915 I Street, Sacramento, CA, 95814
www.CityofSacramento.org

Meeting Date: 7/31/2012

Report Type: Consent

Title: Supplemental Agreement: Larry Walker Associates for FY 2012/2013 Stormwater Monitoring Services (I14010200)

Report ID: 2012-00593

Location: Citywide

Recommendation: Pass 1) a Motion authorizing the City Manager or City Manager's designee to execute Supplemental Agreement No. 1 to City Agreement No. 2011-1218 with Larry Walker Associates, Inc., to provide Stormwater Monitoring Services for FY2012/2013, for an amount not to exceed \$858,159, and 2) a Resolution authorizing amendments to the FY10-FY14 NPDES Program (I14010200) Revenue and Expenditure Budgets (Fund 6211), for the reimbursement from the County of Sacramento and the Cities of Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova for their share of the FY 2012/2013 Stormwater Monitoring Program costs in the total amount of \$523,902.

Contact: Bill Busath, Interim Engineering Manager, 808-1434; Sherill Huun, Supervising Engineer, 808-1455 - Department of Utilities

Presenter: None

Department: Department Of Utilities

Division: Water Quality Engineering

Dept ID: 14001331

Attachments:

- 1-Description/Analysis
- 2-Background
- 3-Resolution
- 4-Exhibit A - Agreement with Larry Walker Associates

City Attorney Review

Approved as to Form
Joe Robinson
7/26/2012 9:15:02 AM

City Treasurer Review

Reviewed for Impact on Cash and Debt
Russell Fehr
7/20/2012 11:28:23 AM

Approvals/Acknowledgements

Sandra Talbott, Interim City Attorney

Shirley Concolino, City Clerk
John F. Shirey, City Manager

Russell Fehr, City Treasurer

Department Director or Designee: Dave Brent - 7/24/2012 5:08:25 PM



Description/Analysis

Issue: Water quality sampling of stormwater runoff and of local waterways is a component of the stormwater monitoring program conducted to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) permit issued by the Central Valley Regional Water Quality Control Board to the County of Sacramento and the cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova (Permittees). A Request for Qualifications process was conducted to select a firm to perform some of the required stormwater monitoring services, and Larry Walker Associates, Inc. (LWA) was selected as the top ranked firm to provide these services for up to three years. The City is administering the contract for these services on behalf of the Permittees, and will receive reimbursement for the cost share of the other Permittees. This report recommends approval of the first supplemental agreement to professional services agreement CA2011-1218 with LWA to provide monitoring services for the second of three monitoring seasons.

Policy Considerations: The NPDES Stormwater Monitoring Program is a federally mandated program. Implementation of the 2012/2013 Stormwater Monitoring Program supports the following environmental resources goals of the City's 2030 General Plan:

1. Protect local watersheds, water bodies and groundwater resources, including creeks, reservoirs, the Sacramento and American rivers, and their shorelines.
2. The City shall control sources of pollutants and improve and maintain urban runoff water quality through storm water protection measures consistent with the City's NPDES permit.

Economic Impacts: None

Environmental Considerations: The Environmental Planning Services Manager has reviewed the project and has determined that it is not subject to California Environmental Quality Act (CEQA) review, because it is an information collection activity as part of an ongoing water quality study (CEQA Guidelines Section 15306). There will be no environmental impacts associated with collection and analysis of water quality samples.

Sustainability: The NPDES permit requires implementation of the Stormwater Monitoring Program and the reduction of pollutants conveyed by stormwater runoff. The Stormwater Monitoring Program provides the data needed to develop pollution reduction programs. Completion of the tasks in this supplemental agreement is consistent with the City Sustainability Master Plan. These activities advance the Master Plan goals of:

1. Reducing the use of pesticides and other toxic materials
2. Protecting and restoring the City's urban creeks
3. Conserving the use and protection of sources of water

Commission/Committee Action: Not applicable

Rationale for Recommendation: Approval of this supplemental agreement is recommended to continue professional services needed to comply with the requirements in the NPDES permit.

Financial Considerations: The Permittees share the cost of the required stormwater monitoring pursuant to the terms of a master Memorandum of Understanding (the "MOU"), approved by the City Council at the July 31, 2012 council meeting. The cost for this supplemental agreement is \$858,159, which includes cost shared services in the amount of \$785,460, and \$72,699 for City only services.

The Multi-Year Operating Project, FY10-FY14 NPDES Program (I14010200, Storm Drainage Fund 6011) has sufficient funding for the City's share of the supplemental agreement cost. Budget for revenues and expenditures in the amount of \$523,902 will be appropriated in the project FY10-FY14 NPDES Program (I14010200, Storm Drainage Grant/Reimbursable Fund 6211) for the cost sharing.

Emerging Small Business Development (ESBD): Larry Walker Associates is not certified as an Emerging or Small Business Enterprise.

Background

In September 2008, the Regional Water Quality Control Board - Central Valley Region reissued a National Pollutant Discharge Elimination System permit (Permit No. CAS082597) to the County of Sacramento and the cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova (Permittees) regulating the discharge of stormwater into local water bodies. The permit requires implementation of programs to reduce the pollution conveyed by stormwater runoff into local water bodies and requires implementation of this Stormwater Monitoring Program.

The costs for implementing some of these programs are shared by the Permittees, as described in a master Memorandum of Understanding (MOU) approved by the City Council in 2003 (No. 2003-054). An update of the MOU is scheduled for approval at the July 31, 2012 council meeting. The MOU includes administrative procedures for sharing of work products and apportionment of program costs, which includes monitoring activities.

A significant portion of the Stormwater Monitoring Program is accomplished through annual professional services agreements. These services include development of sampling plans, field sampling, technical assistance, laboratory analysis, and preparation of reports.

The City, on behalf of the Permittees, conducted a Request for Qualifications (RFQ) process in 2011. The RFQ included various permit required monitoring tasks to be performed over a period of up to three years, including FY2011/2012, FY2012/2013, and FY2013/2014. An evaluation panel consisting of City and other Permittee staff selected Larry Walker Associates, Inc. as the top ranked firm to provide the requested services.

The original FY2011/2012 stormwater monitoring services contract included work for one monitoring season, with a potential maximum of two successive one-year extensions upon the approval of supplemental agreement(s) specifying the scope of services and payment provisions for such extended term(s). The FY2012/2013 stormwater monitoring services supplemental agreement provides services for the second of the three years authorized by the original agreement.

The FY2012/2013 supplemental agreement includes services for coordination of stormwater sampling activities, sampling of water quality within creeks and sump locations, program effectiveness assessments, data analysis, and regulatory reporting. The scope also contains a City only task for services as needed, including monitoring the Arcade Creek detention basin and other miscellaneous water quality consultation topics.

The cost for the proposed FY 2012/2013 supplemental agreement is \$858,159, which includes cost shared services in the amount of \$785,460, and \$72,699 for City only services. For the cost shared services, the cost sharing is as follows:

Agency	%	Amount
City of Sacramento	33.3%	\$ 261,558
County of Sacramento	38.4%	\$ 301,617
City of Citrus Heights	5.9%	\$ 46,342
City of Elk Grove	10.9%	\$ 85,615
City of Folsom	5.2%	\$ 40,844
City of Galt	1.7%	\$ 13,353
City of Rancho Cordova	4.6%	\$ 36,131
Total	100.0%	\$ 785,460

RESOLUTION NO.

Adopted by the Sacramento City Council

BUDGET AMENDMENTS FOR FY2012/2013 STORMWATER MONITORING PROGRAM

BACKGROUND

- A. In September 2008, the Regional Water Quality Control Board - Central Valley Region reissued a National Pollutant Discharge Elimination System (NPDES) permit (Permit) to the County of Sacramento and the cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova (Permittees), regulating the discharge of stormwater to local bodies of water.
- B. The Permit requires that the Permittees develop and implement programs to reduce pollution caused by stormwater runoff and to conduct this Stormwater Monitoring Program. The Permittees share the cost of stormwater monitoring required by the Permit, pursuant to the terms of a master Memorandum of Understanding (the "MOU).
- C. Larry Walker Associates, Inc. has been selected to provide the required stormwater monitoring services for up to three years through a Request for Qualifications process. The City and LWA entered into professional services agreement number CA2011-1218 for the performance of these services in FY2011/2012.
- D. City staff has negotiated a supplemental agreement for LWA to provide stormwater monitoring services for FY2012/2013, the second year of this potential three year agreement.
- E. In accordance with the 2012 MOU, the cost of these services will be shared by the parties. During the FY 2012/2013 monitoring year, the cost to the City of Sacramento will not exceed \$334,257, and the County of Sacramento and the cities of Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova will reimburse the City for their cost share in the total amount of \$523,902.
- F. The Environmental Planning Services Manager has reviewed the project and has determined that it is not subject to California Environmental Quality Act review, because it is an information collection activity as part of an ongoing water quality study (CEQA Guidelines Section 15306). There will be no environmental impacts associated with collection and analysis of water quality samples.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

Section 1. The City Manager or City Manager's designee is authorized to amend the FY10-FY14 NPDES Program (114010200) Revenue and Expenditure Budgets (Fund 6211), for the reimbursement from the County of Sacramento and the cities of Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova for their share, based on the 2012 MOU, of the FY 2012/2013 Stormwater Monitoring Program costs in the total amount of \$523,902.



Requires Council Approval: No YES Meeting: 7/19/12

Real Estate Other Party Signature Needed Recording Requested



General Information

Type: Outside Agency Formal Bid-Prof Service	PO Type:	Attachment: Supplement No.: <u>1</u>
\$ Not to Exceed: \$ <u>858,159</u>		Original Doc Number:
Other Party: Larry Walker Associates		Certified Copies of Document::
Project Name: Stormwater Monitoring Services		Deed: <input checked="" type="checkbox"/> None <input type="checkbox"/> Included <input type="checkbox"/> Separate
Project Number: 14010200	Bid Transaction #:	E/SBE-DBE-M/WBE:

Department Information

Department: Utilities Division: Engineering Services
 Project Mgr: Delia McGrath Supervisor: Sherill Huun
 Contract Services: Date: July 19, 2012 Division Mgr: Bill Busath
 Phone Number: 808-5390 Org Number: 14001331
 Comment: Return to attention Karen Parker at MC 13400

Review and Signature Routing

Department	Signature or Initial	Date
Project Mgr:	<i>[Signature]</i>	6/19/12
Accounting:		
Contract Services:		
Supervisor:	<i>[Signature]</i>	6-20-12
Division Manager:	<i>[Signature]</i>	7/2/12

City Attorney	Signature or Initial	Date
City Attorney:	<i>[Signature]</i>	6-29-12

Send Interoffice Mail Notify for Pick Up

Authorization	Signature or Initial	Date
Choose Director		
Department Director:		
City Mgr: yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

For City Clerk Processing

Finalized:

Initial: _____

Date: _____

Imaged:

Initial: _____

Date: _____

Received:
(City Clerk Stamp Here)

SUPPLEMENTAL AGREEMENT
Engineering Services Division

Project Title and Job Number: **Stormwater Monitoring Services (I14010200)**
Date: **07/19/2012**
Purchase Order #:0000016174

Supplemental Agreement No: 1

The City of Sacramento ("City") and Larry Walker Associates ("Contractor"), as parties to that certain Professional Services Agreement designated as Agreement Number CA2011-1218, including any and all prior supplemental agreements modifying said agreement (said agreement and supplemental agreements are hereafter collectively referred to as the "Agreement"), hereby supplement and modify the Agreement as follows:

1. The scope of Services specified in Exhibit A of the Agreement is amended as follows, to add FY 2012/2013 services to the Agreement:

Contractor shall perform the work and services specified in "Attachment 2 to Exhibit A", which is attached hereto and incorporated herein by this reference.

2. The Budget for performance of the 2012/2013 stormwater monitoring services is set forth in "Attachment 2 to Exhibit B", attached hereto and incorporated herein by this reference.

3. In consideration of the additional and/or revised services described in Section 1 above, the maximum not-to-exceed amount that is specified in Exhibit B of the Agreement for payment of Contractor's fees and expenses, is increased/decreased by \$858,159, and said maximum not-to-exceed amount is amended as follows:

Agreement's original not-to-exceed amount:	\$ <u>815,863</u>
Increase/decrease by this supplemental agreement:	\$ <u>858,159</u>
New not-to-exceed amount including all supplemental agreements:	\$ <u>1,674,022</u>

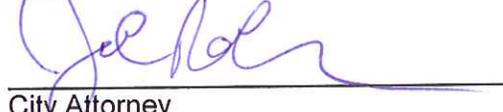
4. Contractor agrees that the amount of increase in the not-to-exceed amount specified in Section 3 above, and the rates specified in Section 2 above, shall constitute full compensation for the additional and/or revised services specified in Section 1, above, and shall fully compensate Contractor for any and all direct and indirect costs that may be incurred by Contractor in connection with such additional and/or revised services, including costs associated with any changes and/or delays in work schedules or in the performance of other services or work by Contractor.
5. Contractor warrants and represents that the person or persons executing this supplemental agreement on behalf of Contractor has or have been duly authorized by Contractor to sign this supplemental agreement and bind Contractor to the terms thereof.
6. Except as specifically revised herein, all terms and conditions of the Agreement shall remain in full force and effect, and Contractor shall perform all of the services, duties, obligations, and conditions required under the Agreement, as supplemented and modified by this supplemental agreement.

Approval Recommended by:

Approved as to Form By:

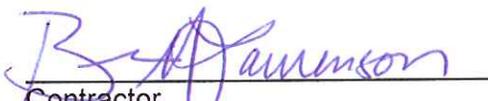


Project Manager



City Attorney

Approved By:



Contractor

Approved By:

City of Sacramento

Attested to By:

City Clerk

ATTACHMENT 2 TO EXHIBIT A
CONTRACTOR SCOPE OF SERVICES

SACRAMENTO STORMWATER MONITORING PROGRAM, 2012-13

This Scope of Work describes the consulting services to be provided by Larry Walker Associates, Inc. (LWA) and its subcontractors (collectively, "Consulting Team") to the Sacramento Stormwater Quality Partnership (Partnership) during the 2012-13 contract year, under the terms of LWA's Stormwater Monitoring Program contract with the City of Sacramento Department of Utilities.

Task 1. MONITORING MANAGEMENT

This task involves all work related to monitoring activity coordination, including sampling and analysis plans (SAP's) preparation, pre-season equipment preparation, weather forecasting, Coordinated Monitoring Program (CMP) coordination, and Partnership status updating following monitoring mobilization efforts related to this contract. These activities provide general monitoring support for all of the monitoring activities. Specific monitoring tasks are included under in this Scope of Services to cover the individual study monitoring and reporting tasks.

Task Deliverables	Target Submittal Date
Urban Runoff Discharge Sampling and Analysis Plan	September 1, 2012
Urban Tributary Sampling and Analysis Plan	September 1, 2012
CMP Coordination Plan	September 1, 2012
Daily Weather Forecast	Weekdays October 1, 2012 through April 30, 2013
Event Summary Email	Within 2 business days of end of sampling event
Laboratory Assessment Memorandum	August 15, 2012
Data Quality Evaluation Plan	August 15, 2012

Subtask 1.1 Preseason Preparations

Preseason preparations include specific maintenance, planning, and training tasks that occur prior to active monitoring.

Sampling Plan Preparation and Field Crew Training

The Consulting Team will update the 2012-13 monitoring year urban runoff discharge and urban tributary sampling and analysis plans and the Coordinated Monitoring Program (CMP) river sampling coordination plan. These documents will specify sampling locations, analytical constituents, laboratories, bottle and equipment cleaning procedures, QC rotation schedule and communication plan. The urban runoff discharge and urban tributary SAP will also include field procedures for dry and wet weather monitoring. Analytical constituents and associated sample collection procedures will conform to the requirements of the NPDES Permit, in particular the schedules for monitoring of constituents listed in the NPDES Permit MRP, Table B and include pyrethroids in the water column samples. The Consulting Team shall identify and secure the services of qualified laboratories to perform all sample analyses specified in the SAP, and assign qualified consulting team staff to perform all required monitoring functions.

Consulting Team will review laboratory performance and compliance with reporting limitation requirements in Table B of the permit and provide recommendations for a primary and secondary laboratory. The memorandum will compare reporting limitations, turnaround time, historical performance and logistics of potential contract

laboratories. Consulting Team will plan, arrange and conduct a two hour training session for Partnership and Consulting Team field personnel, covering clean sampling techniques and the procedures outlined in the urban tributary monitoring SAP and the urban runoff discharge characterization SAP. Consulting Team will update the Data Quality Evaluation Plan as part of the SAP preparation and laboratory evaluation work.

Urban Runoff Discharge Characterization Station Preparations

The urban runoff discharge stations are enabled with automated composite samplers, enclosures, and remote telephonic connections. The Strong Ranch Slough and Natomas Detention Basin outlet locations have CR1000 dataloggers with a custom sampling program that was installed in summer 2010 and 2011, respectively. The Sump 111 location will remain as previously configured. The Consulting team will test all equipment for readiness and recommend any necessary repairs or equipment replacement. The Consulting Team will collect equipment blank samples for Teflon tubing and composite bottles for total organic carbon, metals and trace organics, if necessary based on actual equipment deployed.

Urban Tributary Station Preparations

The urban tributary locations are generally “manually” sampled using one-time grab samples or composites of manually collected aliquots. The Consulting Team will procure and deploy all equipment, materials, and supplies necessary to perform the urban tributary monitoring activities specified in the SAP. Testing and calibration of field equipment will be performed as needed. The Consulting Team will install continuous data collection probes at the Willow Creek and Laguna Creek locations that measure turbidity, temperature, pH, and specific conductance. Dissolved oxygen probes may also be installed at Laguna Creek.

Subtask 1.2 Pre-storm Activities

Pre-storm activities refer to the tasks performed by the Consulting Team immediately before a targeted storm event. These activities include procuring and mobilizing sampling equipment, reviewing updated weather forecast information, and coordinating field-staffing logistics.

Equipment Preparation

The Consulting Team will prepare and mobilize all necessary equipment to complete monitoring activities including composite bottles (carboys), pump tubing, sample bottles, portable pumps, field meters, coolers, ice, etc. Equipment that comes in direct contact with sample will be laboratory-cleaned according to the Partnership protocols.

Weather Tracking

This sub-task involves all work related to providing weather updates to the Partnership with daily written forecasts during the business week and unlimited 24-hour, 7-day per week phone consultation, on request. A specialized weather forecasting consulting firm will be contracted to provide primary forecasting services. The Consulting Team will provide forecast information in the form of daily weekday written forecasts and business hour phone communication or pre-arranged after-hour support. As candidate storm events are identified, the Consulting Team will notify field crews and consult the Partnership as necessary.

Study Coordination

The Consulting Team will maintain contact with all key field staff for each study including the CMP river monitoring crew. Field crews will be updated, as necessary, according to the Partnership “storm action levels” which specify readiness and mobilization status. The Consulting Team will present monitoring options to the Partnership

with regard to storm selection and event timing as forecasts develop. The Partnership “storm contact” will provide feedback on whether to mobilize for a storm event or in scheduling dry weather events.

Consulting Team will assist in the activities of the CMP to provide support for collection of American and Sacramento River samples during up to three wet weather monitoring events and one dry weather event. Consulting Team will confirm that sample analysis includes Table B of the Monitoring and Reporting Program (MRP). CMP staff will collect river samples. If requested, Consulting Team will make all necessary arrangements to ensure that such samples are collected by CMP staff, including labeling and delivering sample bottles, preparing chain of custody forms, and ensuring sample delivery to the analytical laboratories. CMP analytical costs are not included in this agreement, and will be billed directly to the Partnership by the CMP. Urban runoff discharge characterization, urban tributary and receiving water will be coordinated to the extent possible.

Subtask 1.3 Storm Activities

This subtask involves the general oversight and coordination by the “monitoring manager” during the storm event of all field activities for urban tributary and CMP river monitoring. The Consulting Team monitoring manager will remain available by phone throughout the entirety of the sampling event to coordinate weather forecast reporting, field condition evaluation, storm progress tracking, sample pick-up, staffing, equipment troubleshooting, as well as providing essential mobilization and tracking duties. It may also be necessary for the monitoring manager to mobilize to the field for final site visits at the end of the monitoring event.

Subtask 1.4 Post-storm Activities

This subtask cover activities following the completion of sampling related to preparation of storm composites, sample shipment, coordination with laboratories, and monitoring activity summary e-mails.

Sample Disposition

At the conclusion of each monitoring event for each of the studies, Consulting Team will deliver the urban runoff discharge characterization and urban tributary samples from the field stations to the staging area. The composite samples will be broken down by Consulting Team into appropriate containers for all required analyses as specified in the SAP, and placed on ice. All samples will be promptly packed and delivered to the analytical laboratories. Consulting Team will prepare chain of custody documentation to accompany the samples from staging area to laboratory. Consulting Team will pay for commercial delivery services as needed.

Oversee Laboratory Activities

Laboratories shall be instructed to batch Sacramento stormwater samples separately, or exclusively with samples of a compatible matrix, to minimize analytical interferences from other sources.

Laboratory turn-around times shall be 30 days from receipt of samples. Laboratories shall be requested to output analytical data into spreadsheet files in the format established for the Sacramento Stormwater Monitoring Database, and provide them to the Consulting Team along with hard copy lab reports.

Consulting Team shall conduct follow-up communications with analytical laboratories as needed, to confirm laboratory receipt of samples, verify laboratory instructions for sample preparation and analysis, and assist laboratory personnel with other questions or issues as they arise.

Summary E-mail Notification

This subtask involves distribution of status e-mails following any mobilization effort and event summary memoranda following successfully captured monitoring events. The post event status email will be sent to the

Partnership within 48 hours of the completion of any mobilization effort whether it results in a successfully captured event or a false start. The e-mails will provide a brief summary of the forecast, decision-to-mobilize discussion, monitoring activities, problems encountered, rainfall totals, and any recommendations for future events.

TASK 2. URBAN RUNOFF DISCHARGE CHARACTERIZATION MONITORING

This task involves all specific work related to urban runoff discharge monitoring, including collection of samples, QA/QC data evaluation, and reporting. This task relates to monitoring activities on North Natomas Basin No. 4, Sump 111 and Strong Ranch Slough, as required by the Sacramento Stormwater NPDES Permit (MRP section II.C, Urban Discharge Monitoring).

Task Deliverables	Target Submittal Date
Urban Runoff Discharge Annual Data Report - DRAFT	July 19, 2013
Urban Runoff Discharge Annual Data Report - FINAL	Within two weeks of submittal of all Partnership comments

Subtask 2.1 Monitoring

This subtask involves work related to discharge sample collection and analysis of samples from North Natomas Basin No. 4, Sump 111, and Strong Ranch Slough. Additional details on procedures will be included in the 2012/13 SAP.

Consulting Team shall conduct urban runoff discharge monitoring using composite collection equipment and existing permanent sampling stations at the three locations. Consulting Team shall collect samples during up to three storm events and one dry weather events at three urban runoff sites (North Natomas Basin No. 4, Sump 111, and Strong Ranch Slough) between September 1, 2012 – June 30, 2013, weather and other conditions permitting. Consulting Team shall be responsible for field supervisory activities prior to and during monitoring events. Consulting Team shall provide monitoring support services and all monitoring including maintenance/equipment calibration and troubleshooting. The Partnership will provide at least one field staff to support Consulting Team led activities, as necessary for longer monitoring events and during the first event of the year.

Storm-length or 24-hour composites (whichever is less) shall be collected for each of the events monitored. Consulting Team staff shall be responsible for deploying, changing, and collecting composite carboys as needed, and for collecting grab samples for constituents as specified in the SAP. Samples will be analyzed for constituents in Table B of the MRP, including pyrethroids, for all events.

False Starts

In the event that a storm is selected for monitoring and sample collection activities commence, but the storm does not or is not projected to produce sufficient rainfall within a reasonable period to produce adequate runoff to perform sampling, field crews will be demobilized and the event will be considered a false start. Labor hours and other direct costs are budgeted for two false starts.

Blackout periods

Monitoring will not be required under this Scope of Work during the following period (all dates inclusive): November 22, 2012 – November 27, 2012 and December 23, 2012 – January 2, 2013; and other periods to be determined jointly by Consulting Team and Partnership during the course of the wet weather monitoring season. The monitoring task manager will remind Partnership contacts and field crews in advance of these blackout dates.

Subtask 2.2 Reporting

The Consulting Team will prepare a report summarizing field activities and the reported data for the urban tributary efforts described in subtask 2.1.

Consulting Team will check all lab data reports to verify that all requested analyses were completed and that all requested results were reported (including laboratory internal QA/QC results), and that specifications for holding times, analytical methods, and reporting limits were met by the laboratories. Consulting Team will contact laboratory personnel to request that they correct errors, provide missing information, or rerun sample analyses as needed. The designated agency contacts will be copied on all formal memoranda sent to analytical labs.

Consulting Team will conduct a comprehensive evaluation of all QA/QC data produced by the analytical laboratories, apply the QA/QC results to the environmental sample data, and qualify any data which do not meet data quality objectives, according to protocols established in the most recent Partnership Data Quality Evaluation Plan (DQEP).

Draft and Final Urban Runoff Discharge Characterization Monitoring Report

Consulting Team will prepare a draft urban tributary monitoring report containing the results of all monitoring events, including a description of monitoring field activities, rainfall/runoff measurements during the monitoring events, antecedent precipitation conditions, analytical results, and the full documentation of the data evaluation according to the DQEP. The scope of prepared analyses and reporting (data plots, trend assessments, etc.) may be decreased to Program Effectiveness Assessment Level 1, at the direction of the Partnership, based on requirements for the Report of Waste Discharge and agreements with Regional Board. In any case, the Consulting Team will advise the Partnership on the most efficient approach in preparing the data analyses to reduce duplication of effort and unnecessary work. Consulting Team will deliver draft report to Partnership by July 19, 2013 in electronic format (Microsoft Word and PDF format) for review and comment.

Consulting Team will respond to Partnership review comments on the draft report, incorporate changes where necessary, and deliver an electronic copy of the final report within three weeks of receipt of Partnership comments. As requested, Consulting Team also will provide up to twelve hard copies of the report and laboratory reports.

Task 3. URBAN TRIBUTARY MONITORING

This task relates to monitoring activities on Willow Creek in Folsom, Arcade Creek, and Laguna Creek, as required by the Sacramento Stormwater NPDES Permit (MRP section II.B-2, Urban Tributary Monitoring).

Task Deliverables	Target Submittal Date
Urban Tributary Annual Data Report - DRAFT	July 19, 2013
Urban Tributary Annual Data Report - FINAL	Within two weeks of submittal of all Partnership comments

Subtask 3.1 Monitoring

Urban tributary monitoring includes water and sediment quality studies of three long-term urban tributary monitoring stations.

Consulting Team will collect samples from Arcade Creek at Watt Avenue (Sacramento), Laguna Creek at Stockton Boulevard (Sacramento), and Willow Creek at Blue Ravine Road (Folsom), during three wet weather events and one dry weather event between September 1, 2012 and June 30, 2013. Consulting Team will target the first event of the

wet season forecasted with a minimum 0.33” of rain during a 24-hour period and a minimum 50% probability of precipitation. These mobilization criteria may be modified with Partnership approval.

Consulting Team will collect all samples as grab samples during the 2012-13 year. Samples will be collected at mid-depth, mid-stream locations (where feasible), and timed to be as near the peak of the hydrograph as possible during wet weather events.

Consulting Team will install continuous depth, pH, turbidity, and temperature probes at the Willow Creek and Laguna Creek locations to assist with monitoring mobilization and characterizing the representativeness of any grab samples. The continuous probes will be installed in late September and maintained through the last monitored storm event or longer, depending on direction from the Partnership.

Consulting Team will collect sediment samples in the urban tributaries once in the dry season (June – September) and once in the wet season within two weeks following a monitored storm event. Consulting Team will submit samples to analytical laboratories for total solids and pyrethroid analysis.

False Starts

In the event that a storm is selected for monitoring and sample collection activities commence, but the storm does not or is not projected to produce sufficient rainfall within a reasonable period to produce adequate runoff to perform sampling, field crews will be demobilized and the event will be considered a false start. Labor hours and other direct costs are budgeted for two false starts.

Blackout periods

Monitoring will not be required under this Scope of Work during the following period (all dates inclusive): November 22, 2012 – November 27, 2012 and December 23, 2012 – January 2, 2013; and other periods to be determined jointly by Consulting Team and Partnership during the course of the wet weather monitoring season. The monitoring task manager will remind Partnership contacts and field crews in advance of these blackout dates.

Subtask 3.2 Reporting

The Consulting Team will prepare a report summarizing field activities and the reported data for the urban tributary efforts described in subtask 3.1.

Consulting Team will check all lab data reports to verify that all requested analyses were completed and that all requested results were reported (including laboratory internal QA/QC results), and that specifications for holding times, analytical methods, and reporting limits were met by the laboratories. Consulting Team will contact laboratory personnel to request that they correct errors, provide missing information, or rerun sample analyses as needed. The designated agency contacts will be copied on all formal memoranda sent to analytical labs.

Consulting Team will conduct a comprehensive evaluation of all QA/QC data produced by the analytical laboratories, apply the QA/QC results to the environmental sample data, and qualify any data which do not meet data quality objectives, according to protocols established in the most recent Partnership Data Quality Evaluation Plan (DQEP).

Draft and Final Urban Tributary Monitoring Report

Consulting Team will prepare a draft urban tributary monitoring report containing the results of all monitoring events, including a description of monitoring field activities, rainfall/runoff measurements during the monitoring events, antecedent precipitation conditions, analytical results, and the full documentation of the data evaluation according to the DQEP. The scope of prepared analyses and reporting (data plots, trend assessments, etc.) may be decreased to Program Effectiveness Assessment Level 1, at the direction of the Partnership, based on requirements for the Report of Waste Discharge and agreements with Regional Board. In any case, the Consulting Team will

advise the Partnership on the most efficient approach in preparing the data analyses to reduce duplication of effort and unnecessary work. Consulting Team will deliver draft report to Partnership by July 19, 2013 in electronic format (Microsoft Word and PDF format) for review and comment.

Consulting Team will respond to Partnership review comments on the draft report, incorporate changes where necessary, and deliver an electronic copy of the final report within three weeks of receipt of Partnership comments. As requested, Consulting Team also will provide up to twelve hard copies of the report and laboratory reports.

Task 4. Baseline Pre-Development Monitoring

The Consulting Team previously prepared a sampling and analysis plan (SAP) for the baseline pre-development monitoring study (MRP Section III.C.) based on the study selected by the Partnership and as described in the selection analysis and work plan prepared in the FY1112 contract year. The objective of the study is to comply with Permit requirements as discussed in the November 2009 Stormwater Quality Improvement Plan. Significant development has not occurred in the Sacramento area and baseline monitoring is only possible at this time. The Partnership selected to study the Alder Creek watershed as development is expected there sooner than in the Upper Laguna Creek watershed and to better evaluate current mercury loading. This may require a Permit modification, pending a review by Regional Board staff and possibly Regional Board management. If the Upper Laguna Creek monitoring is required, the Consulting Team will propose an alternate approach whereby the urban tributary monitoring (Task 3) is augmented to include baseline monitoring with commensurate cost reduction to Alder Creek monitoring activities.

Subtask 4.1 Monitoring

The sampling and analysis plan is not yet complete and approved by the Partnership. The final sampling and analysis plan will be written under a separate scope of services so as not to exceed the attached budget estimate. It is expected that the following activities will be performed: water quality grab samples, installation of continuous data collection probe(s), cross sectional survey data to determine stage-flow relationships and establish baseline cross sections. The number of sampling events will be determined based on the available budget. It is expected that the Consulting Team will perform the field work, however, collaborative efforts by the Bureau of Reclamation or in-kind Partnership contributions may allow for budget reductions or study augmentation.

Subtask 4.2 Reporting

The Consulting Team will prepare a draft field activities and data reporting memorandum or report that summarizes activities performed by the Consulting Team, data quality review, final data with qualification, data plots of calibrated continuous sensor data, problems and their resolution, survey data, pebble count data collected, and recommendations for future sampling efforts. The draft memorandum will be submitted electronically to the Partnership and other parties designated by the Partnership.

Task Deliverables	Target Submittal Date
Draft Annual Data Collection Memorandum	August 1, 2013
Final Annual Data Collection Memorandum	Within two weeks of submittal of all Partnership comments

Task 5. PROGRAM EFFECTIVENESS ASSESSMENT

The Consulting Team will assist the Partnership in assessing the effectiveness of their monitoring and target pollutant programs through the update and implementation of a watershed pollutant removal spreadsheet. Consulting

Team will also assist in effectiveness evaluation as part of the Annual Monitoring Report assistance (see subtask 6.2).

Task Deliverables [1]	Target Submittal Date
Draft Project Schedule	Within two weeks of task initiation notification from Partnership
Draft Workshop Summary Notes - decisions and action items	Within one week of workshop session
Draft LTEA Analysis Report Section	As determined by Partnership during first workshop session
Final LTEA Analysis Report Section	Within two weeks of receipt of all Partnership comments

Note: [1] for each Program element assigned to Consulting Team (see subtask 5.3)

Subtask 5.1 Monitoring Element Assistance

The Consulting Team will summarize the effectiveness evaluation analysis performed as part of the Subtask 2.2 and 3.2 reporting tasks and other available historical data including upstream-downstream comparisons, new development – old development comparisons, trend analysis, and other analysis as requested by the Partnership. This task will also consider strategic planning issues related to monitoring planning activities.

Subtask 5.2 Target Pollutant Element Assistance

The Consulting Team will review and update the watershed model spreadsheet load removed model, developed previously, to evaluate sources and effectiveness of programs on target pollutants. The spreadsheet model will also help to estimate the amount of pollutant prevented from discharging to receiving waters by existing BMPs as required by the NPDES Permit. If requested by the Partnership, Consulting Team will prepare a brief memorandum in early 2012 to summarize the results of the model and subsequent recommendations and next steps. It is expected that the watershed model can be updated for mercury and sediment and expanded to include either a pesticide or copper if data are readily available from the Partnership.

When requested, Consulting Team will assist the Partnership in facilitation of the Target Pollutant program, including convening Partnership work groups to review and update target pollutant strategies, preparing the Target Pollutant section of the annual report and other related tasks. The Consulting Team will provide as needed technical assistance for effectiveness evaluation including updates to the target pollutant work plans, target pollutant prioritization, program effectiveness assessments and longer-term planning and technical coordination with other Program elements.

Subtask 5.3 Long Term Effectiveness Assessments Assistance

When requested, Consulting Team will provide technical expertise preparing the long term effectiveness assessment (LTEA) that is due to the Regional Board by March 15, 2013 (180 days prior to permit expiration). It is expected that the County of Sacramento staff will lead the Partnership LTEA effort for the following Program elements: New Development, Industrial/Commercial, Illicit Discharge, Construction, and Public Education and Outreach. The Consulting Team will provide as needed services, which may include, but not limited to, participation in workshops scheduled and coordinated by the Partnership, review of LTEA data collection practices, preparation or revision of LTEA reporting text and analysis. The Consulting Team will provide as-needed technical guidance on data collection and compilation performed by the Partnership that is necessary to prepare the LTEA reports.

Task 6. TECHNICAL EXPERTISE

The Consulting Team will assist the Partnership in the preparation of technical reports and “as-needed” regulatory assistance related to Permit compliance or regional regulatory activities (e.g., TMDL development, Basin Plan amendments, etc.). The Consulting Team and Permittees will jointly prepare a program calendar to coordinate key deliverable milestones and track monitoring events and Permit- required deadlines.

Task Deliverables	SubTask	Target Submittal Date
Draft NWQE and summary email	6.1	Within twelve weeks of completion of receiving water sampling event
Draft FY1213 Annual Report Monitoring Section	6.2	August 15, 2013
Final FY1213 Annual Report Monitoring Section	6.2	Within two weeks of receipt of all Partnership comments
Draft CMP Report Memorandum	6.3	August 1, 2013
Final CMP Report Memorandum	6.3	Within two weeks of receipt of all Partnership comments
Meeting notes from Delta Methylmercury TMDL Control Study Workshops	6.4	Within one week of meeting
Draft Delta Methylmercury TMDL Control Study Work Plan and Cover Letter	6.4	March 1, 2013
Final Delta Methylmercury TMDL Control Study Work Plan and Cover Letter	6.4	Within two weeks of receipt of all Partnership comments
Regulatory Update Summary	6.5	Monthly before the 15 th in at least 75% of months
Prepare ROWD Submittal Package	6.6	February 1, 2013
Develop Calendar and Punch-list for ROWD Deliverables	6.6	December 1, 2012
Summary of Monitoring Data		
Recommendations to Improve Monitoring Program		
Loading Updates	6.7	
Kick-off meeting	6.7	August 1, 2012
Regression and data summaries	6.7	November 1, 2012
Draft Loading Report	6.7	December 15, 2012
Discharge Volume Estimate		
Loads Discharged of Target Pollutants		
Watershed Treatment Model Updates		
Final Loading Report	6.7	February 1, 2013 (or 2 weeks from receipt of draft comments, whichever is later)

Task Deliverables	SubTask	Target Submittal Date
Long Term Trend Analysis Memorandum Time Series Plots Receiving Water Trend Analysis Urban Runoff Trend Analysis Comparison of Old and New Development Correlation of Target Pollutants and Other Constituents	6.8	TBD with expected submittal to Regional Board in March 2013

Subtask 6.1 Prepare Notices of Water Quality Exceedances

Consulting Team will promptly review all CMP river and urban tributary monitoring data and compare the results to applicable water quality standards as required by NPDES Permit provision “C. Receiving Water Limitations,” and Monitoring and Reporting Program requirements I.C. and I.D. The “water quality standards” are broadly defined in the Permit language; this is interpreted to include applicable standards, objectives and criteria within the Basin Plan, California Toxics Rule, National Toxics Rule, California Department of Health Services (Title 22), and California Department of Fish and Game (diazinon and chlorpyrifos criteria). CMP data will be delivered to the Consulting Team with sufficient time to prepare the analysis and letter. The Consulting Team will prepare a Notice of Water Quality Exceedance (NWQE) for submittal to the Regional Board. The Consulting Team will use the agreed upon evaluation process and will document this process for the inclusion in the Annual Monitoring Report. The draft letter will be submitted in an editable electronic format to the Partnership at least six days before it is due to the Regional Board. The Consulting Team will promptly respond to comments or questions on the draft NWQE so that the final NWQE is prepared and submitted by the Partnership.

Subtask 6.2 Prepare Annual Monitoring Report Sections

The Consulting Team will provide assistance in the preparation of the Joint Program Annual Report, due to the RWQCB by October 1, 2013. The Consulting Team will prepare the monitoring section and the Report of Water Quality Exceedance (RWQE) appendix of the Joint Report. The Partnership will consider and provide guidance on these sections. The Partnership will determine the schedule for delivery of these items before July 1, 2013. The RWQE is prepared according to the Permit requirements. Upon a determination by either the Permittees or the RWQCB that urban discharges are causing or contributing to exceedance(s) of a water quality standard within Sacramento-area receiving waters, and on an as-needed basis as determined by the Permittees, Consulting Team will prepare a Report of Water Quality Exceedance, pursuant to the procedure specified in Receiving Water Limitation C.3. of the Partnership NPDES Permit. The report will describe BMPs that are currently being implemented and additional BMPs that will be implemented to prevent further such exceedances. The report will be in such format as decided upon in consultation with the Permittees and Regional Board staff.

Additionally, the Consulting Team will provide assistance in evaluating and reporting the documentation of activities that relate to monitoring permit requirements and evaluates the direct and indirect effectiveness of each activity. Where possible effectiveness will be assessed as raised awareness, changed behaviors, reduced loads and improved runoff quality. As a result of the effectiveness assessment, reporting will also include recommendation to improve program elements, modify existing BMPs or identify use of new BMPs. The Annual Report will also encompass the results of the watershed pollutant removal spreadsheet (Subtask 5.2).

Subtask 6.3 Prepare Coordinated Monitoring Program Report

The Consulting Team will prepare a memorandum report summarizing the monitoring activities of the CMP including reporting of data results, summary of quality control or sample collection issues, comparison to select and applicable water quality objectives and preparation of updated trend plots and summary statistics. It is expected that the level of effort and format will be similar to the report prepared for the CMP in August 2011. The water quality objective and trend plot tasks may be omitted, at the direction of the Partnership, if such analyses and reporting are not required based on the ROWD and Annual Report requirements.

Subtask 6.4 TMDL Support Services

The Consulting Team will assist the Partnership as-needed with technical matters and reporting relating to TMDLs. This work will include preparation of comment letters, attendance at meetings on behalf of the Partnership, and preparing data analysis to support comments or TMDL development. The Consulting Team will prepare the Delta Methylmercury TMDL Control Study Work Plan in draft form by March 1, 2013 based on input from the Partnership. This includes facilitation of two meetings and preparation of a Control study outline, one draft Work Plan, and a final Work Plan and cover letter for submittal to the Regional Board.

Subtask 6.5 General Policy Tracking

The Consulting Team will assist the Partnership, as necessary, with regulatory issues. Additional tasks may include tracking statewide policy changes relevant to the monitoring program and providing e-mail summaries and updates or meeting notes. This includes tracking the efforts and providing appropriate response associated with the Total Maximum Daily Loads (TMDL), Drinking Water Policy Group and Pelagic Organism Decline activities. The Consulting Team will provide monthly summaries regulatory issues statewide for issues that may affect the Partnership.

Subtask 6.6 Report of Waste Discharge Preparation

Consulting Team will assist the Partnership with development of the Report of Waste Discharge. It is expected that the Partnership will prepare a separate document following the fourth annual report (October 1, 2012) to supplement materials in that report. The Consulting team will prepare as-needed technical analyses in addition to the other tasked items to address monitoring, target pollutant permit and other LTEA elements (subtasks, 5.1, 5.2, and 5.3 respectively). As-needed services may include, but are not limited to the following: communication support with the Regional Board (e.g., meetings, notifications, and conference calls), preparation of EPA forms, "simple" antidegradation analysis, and other analyses not specifically described in subtasks 6.7 and 6.8. The Consulting Team scope of work may be modified as more information on the ROWD becomes available. Such changes are not expected to change this subtask budget, but the Partnership may reallocate other task budget.

The Consulting Team will coordinate all deliverables related to the ROWD with the Partnership "Leadership Team" to ensure sufficient time for Partnership review of technical deliverables. The Consulting Team will maintain a deliverable calendar and "punch-list" for the ROWD items discussed in this scope of work.

Subtask 6.7 Loading Updates

The Consulting Team will analyze Partnership historical data and prepare an urban runoff discharge characterization report to satisfy Monitoring and Reporting Program requirements in section I.B.10.a.

Urban runoff from the Sacramento metropolitan area contributes to pollutant loadings in the region's receiving waters, during both wet and dry weather conditions. Effective use of funds to control and reduce discharges of pollutants requires accurate assessment of the relative contributions of urban runoff sources to pollutant loadings within the contributing watershed. Assessment of runoff loadings is problematic because wet weather discharges are

intermittent and seasonal. Previous work has demonstrated that pollutants build up in the urban watershed during dry periods, particularly during the lengthy extended dry season, and are washed off during rainfall events.

A statistically based approach was developed by Larry Walker Associates (LWA) to quantify and predict urban runoff pollutant loadings, incorporating statistical methods to account for buildup and washoff effects. This approach was first applied in response to a Sacramento Stormwater NPDES Permit requirement in the 1992 Discharge Characterization Project (DCP) report. The DCP was updated in 1996, 2004, and 2008 for mercury using additional data generated by the stormwater Permittees' ongoing discharge monitoring program. The results of the DCP projects indicate that certain urban runoff pollutants exhibit distinct relationships to rainfall patterns. This technique therefore can be used to prioritize control strategies, and provides a more accurate means of calculating urban runoff mass loadings for comparisons with other pollutant sources.

Previous DCP updates characterized runoff pollutant loadings based on a "baseline" monitoring data periods (e.g., from 1990-1995, 2000-2005). It was originally envisioned that the DCP would be updated periodically, and used to assess changes in patterns of urban runoff loadings over time.

The proposed methods for this update of the DCP use data from Sacramento, California to model pollutant build-up and wash-off from urban areas, and calculate mass loadings to receiving waters during both wet and dry weather conditions. The approach involves identifying the empirical relationships between rainfall characteristics and urban runoff pollutant discharges, and then calculating mass loadings from urban runoff sources in the Sacramento area using a continuous simulation model.

Regression equations will be developed to describe the relationships of runoff water quality with factors that prove to be significant determinants of runoff quality, such as cumulative annual precipitation to date, days since last storm, and rainfall volume. Continuous simulation modeling will then be used to predict mass loads from these relationships using the typical (historical) rainfall time series, consisting of typically 30 or more years of daily rainfall observations. This lengthy period of record is assumed to contain the typical range of weather conditions experienced within the Sacramento area, from droughts to floods. Continuous simulation is used because it can incorporate significant serial and cross correlations of model parameters, and can be used to reflect decreasing mass loads from watersheds as a wet season progresses, and pollutant buildup between storms.

The results will be presented both for the Sacramento urban area as a whole, as well as broken down by major receiving water body destination, and by urban (sub)watershed (local drainage area). The results will be defined as overall (annual) loadings and separately by annual wet and dry weather components.

A comparison methodology will be developed for a preliminary evaluation of the trends over time. The methodology will consider using previous DCP (1992, 1996, 2004, 2008) to compare models or may use different periods of input data. The results may provide information that can be used to assess the overall effectiveness of the stormwater management program. The long-term trends in urban runoff will be specifically addressed through a comparison of the rate of change in concentrations to the variability in data not accounted for by the identified factors.

Subtask 6.7.1 – Compile and Organize Data

Available and appropriate runoff water quality and flow data for urban runoff monitoring stations in the Sacramento urban area will be compiled. The majority of these data are assumed to be available from the Sacramento Stormwater Water Quality Database and historical flow data from site dataloggers, but applicable data that may be available from other sources, including studies performed by the Central Valley Regional Water Quality Control Board, USGS, and County of Sacramento ALERT stations.

Available data from rainfall monitoring stations within the Sacramento urban area will be compiled. The most complete and reliable precipitation data sets will be identified and formatted for use in the data analysis. Characteristics of the local (sub)watersheds (drainage areas) also will be compiled for the urban area.

Subtask 6.7.2 – Develop Statistical Characterizations of Inputs

The constituents selected for evaluation will initially include no more than ten pollutants or pollutant group representative listed on the current version of the Sacramento Stormwater Permittees' Target Pollutant list. The analysis will focus on data produced at the three long-term monitoring stations: North Natomas Detention Basin No. 4, Sump 104, Sump 111, and Strong Ranch Slough. Each pollutant for which substantial runoff quality data are available will be characterized statistically, through the use of:

- frequency of detection (% detected data, i.e., where the lab provides a measured value)
- basic descriptive statistics (number of samples, mean, median, min., max., standard deviation, variance); where there are sufficient numbers of detected data points (generally 30%), non-detect (ND) data will be incorporated into the analysis through a probabilistic technique known as “Regression on Order Statistics” (ROS)
- assessment of data distribution through probability distribution plots, with probabilities adjusted to account for ND data

The above analysis will be used to identify those pollutants, which will be selected for further analysis and modeling. The selected pollutants will include those for which:

- there are at least 10 total detected data points (from among the three long term sites) and at least 30% of the data points are detected data.

The selected list of up to ten (fraction specific) constituents shall be submitted for approval to the Permittees before continuing. The Permittees may wish to substitute constituents that have been reported in recent Notices of Water Quality Exceedance (NWQE) to the Regional Board into the DCP constituent list. Consideration of more than ten DCP constituents requires additional data handling, analysis and reporting, but may be considered as an optional item to be funded later.

Subtask 6.7.3 – Establish Regression Relationships

An iterative process will be used to identify statistically significant multivariate linear regression equations relating runoff quality to environmental parameters, for each pollutant meeting the requirements for sufficient detected data per Task 6.7.2. A flow chart will be produced and distributed to the Permittees following refinement of the approach. If bacteria indicators are included in the constituent list, such constituents will be assessed as to whether any special considerations should be included in the analytical approach.

Initially, it will be assumed that data from the three long-term monitoring sites will be combined in the additional analysis. This assumption will be discussed with the UC Davis statistician, and may be verified through analysis of covariance (ANCOVA) techniques to assess site-to-site differences in the runoff quality data. ANCOVA also will be used to assess whether there is pseudo-replication among the data from the different sites; i.e., whether the data from different sites actually behave as replicates, rather than as independent data points. This is done by assessing the correlation among the residual errors from the ANCOVA for different sites.

Predictor (independent) variables (e.g., precipitation parameters) will be incorporated in the MLR equations via either a forwards (additive) or backwards (subtractive) stepwise process, including only those predictor variables for which the correlation with the dependent variable (runoff quality) is statistically-significant.

Inspection of residual errors from the regression equation plots will be used to assess compliance with the primary assumptions of equal variance (homoscedasticity) and normality, upon which multiple linear regression (MLR) analysis is based. Established statistical techniques will be used to evaluate collinearity or co-dependence among the predictor variables; the MLR equations will be adjusted accordingly if such effects are identified as significant.

Only those constituents for which the final MLR model produces a R-squared value of 0.2 or higher will be carried forward for continuous simulation modeling. The qualifying list of constituents will be submitted to the Permittees for approval prior to continuing analysis.

Rainfall/runoff relationships will be established for all urban runoff monitoring sites with sufficient rainfall and runoff flow data, based on the drainage area served by each station.

Area-wide rainfall/runoff relationships will be computed for the areas covered by the selected precipitation gauges from which the historical rainfall record will be derived, according to established techniques, and based on the relevant characteristics of the local drainage areas associated with each gage. Where local or regional agencies have already performed this function, the established equations will be used.

Task 6.7.4 – Program and Run Continuous Simulation Model

For each pollutant, the MLR equation developed under Subtask 5.3 will be used to estimate runoff concentrations and/or loadings, using the precipitation parameters from the historical record as input. Each regression equation uses only those environmental parameters that were deemed to be statistically significant (and were therefore included in the equation per the analysis performed under Subtask 5.3). The continuous simulation model will be programmed to compute mass loadings from the MLR equations and the independent variables (principally rainfall/runoff parameters) specified in each equation, using the historical record as the basis for defining representative environmental conditions.

The model will be run continuously through the historical record on a daily time step, with the independent variables derived for each day of the historical record used as input to the MLR equation. The rainfall data from the historical record will be used to calculate values for event precipitation, cumulative precipitation to date, and days since last storm as needed for each day in the historical record.

The model will iteratively compute runoff loadings for each day in the historical input record from each drainage area in the Sacramento urban area. The results will be compiled and tabulated by year and according to wet vs. dry weather conditions for each (sub)watershed (drainage area). Statistical summaries of the results will be provided for dry weather conditions, wet weather conditions, and for annual averages, for each pollutant modeled, delineated by local drainage area, major receiving water body destination, and for the entire urban area. The results will include a summary of loadings per acre for each pollutant.

The uncertainty inherent in the model will be assessed by evaluation of the variation in results exhibited among multiple runs of the continuous simulation model.

The sensitivity of the continuous simulation model will be assessed through an evaluation of how the results of the model are affected by changes to the input parameters and coefficients.

Subtask 6.7.5-- Prepare Summary Report

A draft summary report will be prepared containing a listing of the data used in the analysis, descriptions of the methods applied, the results of the ANCOVA/MLR analysis (i.e., the regression equations), the continuous simulation modeling results, and discussion and interpretation of the results.

Within four weeks following receipt of Permittee review comments, a final report shall be prepared, addressing Permittee comments and questions. Twenty printed copies of the final and ten electronic copies of the report on CD shall be provided.

Subtask 6.7.5-- Watershed Treatment Model Updates

The Consulting Team will update the previously developed Watershed Treatment Model to consider calibration with urban tributary, urban runoff data, or other program data, expand the number of constituents examined, and

better address dry weather loading. The analysis may be significantly expanded through a separate contract or amendment to this contract if Proposition 84 funds are granted in summer 2012. Without additional funding the analysis will rely on updates of previous work and other tasks (Subtask 5.2).

Subtask 6.8 Long Term Trend Analysis

The UCD or other statistician will be consulted on the most appropriate means to best assess annual trends in runoff quality without developing alternate sets of input data beyond what is developed for the loading summary (Task 6.7). The possible evidence of annual trends in runoff quality could be evaluated in different ways. The average concentration and/or loading results generated by the current continuous simulation model will be compared to those generated by the 1996 and 1992 DCP project models. This comparison methodology would include differences between the model (structure and assumptions) as well as between the input data sets. An alternate, optional, comparison technique would use the newly developed model and input data from different periods. This second technique would require repeating development of the MLRs based for each additional period. The budget is based on the assumption that comparison to previous model runs will be sufficient for trend analysis. The results will be evaluated both graphically and via standard parametric or non-parametric statistical techniques.

Subtask 6.9 Comprehensively Review of Proprietary Controls

The Consulting Team will provide as-needed review of proprietary control performance data or proposed monitoring programs to assist the in Partnership analysis and response to manufactures and vendors. The Consulting Team will also assist the Partnership in an overall review of available and Partnership-acceptable proprietary controls.

Task 7. PROJECT MANAGEMENT

Consulting Team will provide project management to ensure that the project is completed on time and within budget, including project coordination and administration necessary to achieve the tasks previously described, and periodic communications with the Partnership and subcontractors. Consulting Team will provide qualified staff to complete all tasks as described in the preceding Scope of Services.

Consulting Team will schedule, prepare for and attend bi-monthly progress meetings with the Partnership to discuss progress and results of the monitoring program. Consulting Team will prepare an agenda and distribute to Partnership agencies in advance of each scheduled progress meeting. At the request of the Partnership, Consulting Team may schedule bi-monthly monitoring or effectiveness evaluation work group teleconferences in those months without progress meetings.

Consulting Team will produce Progress Reports for review at the progress meetings as needed to keep the Partnership apprised of work progress, schedule and budget status.

Consulting Team will submit a monthly invoice with detailed budget status information on a subtask basis, and a monthly written report describing project activities and expenditures during the period covered by the invoice.

Task 8. CITY OF SACRAMENTO SERVICES

Consulting Team will provide as-needed services to the City of Sacramento that will not be billed to other Partnership members. It is expected that will include work related to the Arcade Creek Basin sampling, drinking water, and solid waste related water quality regulatory and monitoring issues specific to the City of Sacramento.

Subtask 8.1 Arcade Creek Detention Basin

The Consulting Team will collect grab samples and the Del Paso Regional Park Wetland urban runoff inlet and outlet to Arcade Creek for three wet weather events. Samples will be analyzed for mercury, metals and OP

pesticides. If an outlet sample is not collected for an event, an additional outlet sample may be collected later in the year if there are available funds. The Consulting Team will prepare a data summary report that documents sample collection and the analytical results, including tables comparing inlet and outlet concentrations. The study does not require measurement of flow volume.

Subtask 8.2 Long Term Effectiveness Assessment and Report of Waste Discharge Preparation Assistance

The Consulting Team will provide as-needed assistance to City of Sacramento staff for City of Sacramento - specific tasks related to Long Term Effectiveness Assessment or Report of Waste Discharge preparation. The Consulting Team will prepare draft reporting text, assistance in data compilation and review, and review elements of City of Sacramento -specific and Partnership submittals.

Subtask 8.3 Sacramento and San Joaquin River Delta Regulatory Expertise

The Consulting Team will provide policy analysis and communication support to the City of Sacramento related to issues in the Delta, including but not limited to the Delta Plan, Bay Delta Conservation Plan (BDCP), and Bay-Delta Water Quality Control Plan amendments. These services will be in addition to the support provided to the Partnership in Subtasks 6.4 and 6.5 of this Scope of Services. For the contract year, the Consulting team will attend and facilitate a regulatory update meeting with City approximately every other month or quarterly to coordinate policy comments and provide status updates. The Consulting Team is not expected to attend all meetings related to the noted policy efforts, but the City may request representation or assistance and key meetings. Services to be provided include review of selected portions of key Delta related reports and preparation of draft comments in support of stormwater and combined system discharger considerations. Services may also provide assistance tracking schedules for upcoming key documents, recommendations for follow-up activities including additional policies and reports to track, and input on guiding principles. Specific services are as follows:

Delta Plan

Consulting Team will assist with comments as necessary on sixth version of Delta Plan. Consulting Team will provide a summary of implications of final Delta Plan and Final EIR. Consulting Team will provide assistance with review of DEIR if reissued.

Estimated schedule: TBD (6th version currently scheduled to be posted mid-May 2012). Public discussion currently scheduled for Summer 2012

Bay Delta Conservation Plan (BDCP)

Consulting Team will review selected portions of Plan and DEIR. Consulting Team will assist with public review process after Plan and EIR are finalized.

Estimated schedule: July 2012 – April 2013

Bay-Delta Water Quality Control Plan

Consulting Team will review environmental documents and staff report and provide the City with a written summary of comments and key issues.

Estimated Schedule:

Feb -October 2013 (Estimated State Board adoption in August 2013. Implementation estimated from August 2013 through at least 2018)

Other

Provide recommendations for input on other State Board or Central Valley Water Board policies in support of discharger considerations, or additional support for follow-up on Delta policies.

Subtask 8.4 As Needed Services

The Consulting Team will provide as-needed assistance to the City of Sacramento related to comment preparation on Delta initiatives, stormwater management plans and compliance assistance for City of Sacramento facilities, and solid waste related water quality regulatory and monitoring issues specific to the City of Sacramento.

Notes to Scope of Work

The period during which the Larry Walker Associates services described herein will be performed from approximately July 1, 2012 through approximately June 2013. However, upon mutual consent of City and Larry Walker Associates, some activities may extend beyond this time period.

Remaining budget from FY2012/2013 may be utilized for assignments continuing in FY2013/2014.

ATTACHMENT 2 TO EXHIBIT B

SACRAMENTO STORMWATER QUALITY PARTNERSHIP 2012-13 MONITORING BUDGET

TASK	DESCRIPTION	LABOR HOURS					LAB COSTS [I]	OTHER DIRECT COSTS [I]	DIRECT COST NOTES	TOTALS [I]	PERMIT REFERENCE SECTION/NOTES
		LWA SENIOR ADVISOR	LWA PROJECT MANAGER	SENIOR ENG./SCI.	STAFF ENG./SCI. II	STAFF ENG./SCI.					
MONITORING MANAGEMENT AND COORDINATION											
1.1	Preseason Preparations	0	32	48	104	120	\$ 1,600	\$ 650	Site visits; materials	\$ 52,290	MRP II.
1.2	Pre-storm activities	0	36	0	64	120	\$ 1,550	\$ 6,935	Forecasts; materials; equip. cleaning	\$ 43,805	MRP II.
1.3	Storm activities	0	40	24	0	0	\$ -	\$ -		\$ 14,170	MRP II.
1.4	Post-storm activities	0	36	12	20	72	\$ -	\$ 2,200	Sample shipping	\$ 26,220	MRP II.
Sub TOTAL LABOR HOURS:		0	144	84	188	312					
Sub TOTAL COSTS:							\$ 2,550	\$ 9,785		\$ 116,435	
URBAN RUNOFF DISCHARGE CHARACTERIZATION MONITORING											
2.1	Monitoring	0	0	24	72	72	\$ 55,638	\$ 2,000	Mileage; materials	\$ 84,158	
2.2	Reporting	0	24	40	40	100	\$ -	\$ 250		\$ 34,370	MRP II.C.
Sub TOTAL LABOR HOURS:		0	24	64	112	172					
Sub TOTAL COSTS:							\$ 55,638	\$ 2,250		\$ 118,528	
URBAN TRIBUTARY MONITORING											
3.1	Monitoring	0	0	24	72	72	\$ 69,828	\$ 14,500	Mileage; materials; data storage rental	\$ 110,848	MRP II.B.2.
3.2	Reporting	0	24	40	40	100	\$ -	\$ 300		\$ 34,420	WDR D.3.b.
Sub TOTAL LABOR HOURS:		0	24	64	112	172					
Sub TOTAL COSTS:							\$ 69,828	\$ 14,800		\$ 145,268	
BASELINE PRE-DEVELOPMENT MONITORING											
4.1	Monitoring	0	8	24	56	56	\$ 19,309	\$ 14,400	Mileage; materials; data storage rental	\$ 57,269	MRP II.D.
4.2	Reporting	0	24	24	64	12	\$ -	\$ -		\$ 22,360	WDR D.3.b.
Sub TOTAL LABOR HOURS:		0	32	48	120	68					
Sub TOTAL COSTS:							\$ 19,309	\$ 14,400		\$ 79,429	
PROGRAM EFFECTIVENESS ASSESSMENT											
5.1	Monitoring Element Assistance	2	24	24	8	0	\$ -	\$ 50	Mileage	\$ 12,270	WDR D.29.
5.2	Target Pollutant Element Assistance	2	8	40	8	0	\$ -	\$ 50	Mileage	\$ 11,870	WDR D.29.
5.3	Long Term Effectiveness Assessments	12	12	20	0	0	\$ -	\$ 150	Mileage	\$ 10,010	MRP III.A.
Sub TOTAL COSTS:			44	84	16	0	\$ -	\$ 250		\$ 34,150	
TECHNICAL EXPERTISE											
6.1	Prepare NWQEs	0	8	24	24	0	\$ -	\$ -		\$ 10,600	WDR C.3.a.
6.2	Prepare ABR Sections	24	20	40	12	8	\$ -	\$ 50	Mileage	\$ 21,800	WDR D.3.b.
6.3	CMP Annual Technical Memo	0	24	80	24	8	\$ -	\$ 50	Mileage	\$ 26,930	
6.4	TMDL Support Services	0	24	12	40	0	\$ -	\$ 150	Mileage	\$ 14,530	Hg TMDL
6.5	General Policy Tracking	80	16	64	0	0	\$ -	\$ 400	Mileage	\$ 37,200	NA
6.6	ROWD Preparation	40	0	0	80	24	\$ -	\$ 50	Mileage	\$ 26,210	
6.7	Loading updates	24	64	0	100	40	\$ -	\$ 50	Mileage	\$ 42,370	ROWD; Prop 84 offsets
6.8	Long term trend analysis	24	40	0	100	0	\$ -	\$ 50	Mileage	\$ 31,250	ROWD; Prop 84 offsets
6.9	Comprehensive Review of Proprietary Controls	2	0	40	80	24	\$ -	\$ 50	Mileage	\$ 24,910	MRP III.D.
Sub TOTAL LABOR HOURS:		192	196	220	160	80					
Sub TOTAL COSTS:							\$ -	\$ 650		\$ 235,898	
7.0 PROJECT MANAGEMENT											
Sub TOTAL LABOR HOURS:		4	80	60	0	24			\$ 500; Mileage	\$ 35,560	NA
Sub TOTAL COSTS:							\$ -	\$ 500		\$ 35,560	
Sub Total Partnership										\$ 785,468	

ATTACHMENT 2 TO EXHIBIT B

SACRAMENTO STORMWATER QUALITY PARTNERSHIP 2012-13 MONITORING BUDGET

TASK	DESCRIPTION	LABOR HOURS					LAB COSTS [1]	OTHER DIRECT COSTS [1]	DIRECT COST NOTES	TOTALS [1]	PERMIT REFERENCE SECTION/NOTES
		LWA SENIOR ADVISOR	LWA PROJECT MANAGER	SENIOR ENG./SCL.	STAFF ENG./SCL. II	STAFF ENG./SCL.					
8.0 CITY OF SACRAMENTO ONLY											
8.1	<i>Arade Creek Detention Basin</i>	0	24	0	64	0	\$ 10,000	\$ -		\$ 25,760	
8.2	<i>LTEA and ROWD Assistance</i>	20	40	0	24	12	\$ -	\$ 150	Mileage	\$ 19,870	
8.3	<i>Delta Policy Tracking and Support</i>	60	0	0	24	0	\$ -	\$ 159	Mileage	\$ 18,999	
8.4	<i>As-needed services</i>	24	0	0	12	0	\$ -	\$ 150	Mileage; materials	\$ 8,070	NA
Sub TOTAL LABOR HOURS:		104	64	0	124	12					
Sub TOTAL COSTS:							\$ 10,000	\$ 459		\$ 72,699	
TOTAL LABOR HOURS		316	608	624	772	840					
TOTAL COSTS							\$ 157,325	\$ 43,094		\$ 858,159	

Notes:
 [1] Includes 10% LWA markup for lab costs and subcontractor labor.



Memorandum

To: Brian Laurenson, LWA
From: Lou Regenmorter, CDM
Date: June 8, 2012
Subject: CDM Smith Staff and Labor Rates for 2012-13

Listed below are names of current CDM Smith staff that will be available to work on the Sacramento NPDES monitoring program in 2012-2013. Their individual labor rates are listed next to their names. These rates are based on current 2012 raw labor rates, current CDM Smith overhead rate, and anticipated increases during 2013.

PERSONNEL	Rate \$/Hour
Bruce Corwin, Client Officer	\$250
Lou Regenmorter, PM	\$210
Tom Titus, Staff Scientist	\$135
Asami Tanimoto, Staff Scientist	\$121
Bill Schilling, Staff Engineer	\$120
Chris Park, Staff Scientist	\$120
Stacy Porter, Staff Scientist	\$111
Sami Nall, Staff Engineer	\$107
Selena Gallagher, Staff Scientist	\$98
Stephen Umbertis, Staff Scientist	\$98
Larry Bullock, Drafter	\$98
Christine Wood, Contract Admin	\$141
Julie Hinchcliff, Word Processor	\$130

Feel free to contact me if you have any questions.

Pacific EcoRisk
 2250 Cordelia Rd.
 Fairfield, CA 94534
 PH (707)207-7760
 FAX (707)207-7916
 TAX ID #: 68-0482693

QUOTE

Date:	6/6/12
Terms:	Net 30
Good From:	7/1/12 - 6/30/13
	1.5% discount -10 days

Prepared For:	Invoice to:
Larry Walker Associates 509 4th Street Davis, CA 95616	Brian Laurensen 530-753-6400 x230 BrianL@lwa.com

Service	Quantity	Unit	Unit Fee	Net Fee
Chronic Stormwater Toxicity Testing (100% only)				
<i>Selenastrum capricornutum</i> growth test	1	ea.	\$735.00	\$735.00
Discount - ≥ 2 samples being tested simultaneously			"10%"	-\$73.50
<i>Ceriodaphnia dubia</i> survival and reproduction test	1	ea.	\$735.00	\$735.00
Discount - ≥ 2 samples being tested simultaneously			"10%"	-\$73.50
Fathead minnow survival and growth test	1	ea.	\$735.00	\$735.00
Discount - ≥ 2 samples being tested simultaneously			"10%"	-\$73.50
Chronic Stormwater Toxicity Testing (dilution series testing)				
<i>Selenastrum capricornutum</i> growth test	1	ea.	\$1,270.00	\$1,270.00
<i>Ceriodaphnia dubia</i> survival and reproduction test	1	ea.	\$1,470.00	\$1,470.00
Fathead minnow survival and growth test	1	ea.	\$1,575.00	\$1,575.00
TIE TESTING OPTIONS				
Chronic Toxicity Phase I TIE- Targeted (Blank, 50%, and 100%)				
Baseline	1	each	\$970.00	\$1,020.00
Filtration/Centrifugation	1	each	\$970.00	\$1,020.00
Filtration/Centrifugation Treatment	1	each	\$95.00	\$100.00
C8 SPE	1	each	\$970.00	\$1,020.00
C8 SPE Treatment	1	each	\$95.00	\$100.00
PBO	1	each	\$970.00	\$1,020.00
PBO Spiking During Renewals	1	each	\$140.00	\$150.00
Cation Exchange	1	each	\$970.00	\$1,020.00
Cation Exchange Column Treatment	1	each	\$95.00	\$100.00
EDTA at 3 mg/L	1	each	\$970.00	\$1,020.00
EDTA Spiking During Renewals	1	each	\$140.00	\$150.00
EDTA at 8 mg/L	1	each	\$970.00	\$1,020.00
EDTA Spiking During Renewals	1	each	\$140.00	\$150.00
STS at 10 mg/L	1	each	\$970.00	\$1,020.00
STS Spiking During Renewals	1	each	\$140.00	\$150.00
STS at 25 mg/L	1	each	\$970.00	\$1,020.00
STS Spiking During Renewals	1	each	\$140.00	\$150.00
			Subtotal	\$10,230.00
Chronic Toxicity Phase I TIE- Tier 1 (Blank, 50%, and 100%)				
Baseline	1	each	\$970.00	\$1,020.00
Aeration	1	each	\$970.00	\$1,020.00
Aeration Treatment	1	each	\$95.00	\$100.00
Filtration/Centrifugation	1	each	\$970.00	\$1,020.00
Filtration/Centrifugation Treatment	1	each	\$95.00	\$100.00
C8 SPE	1	each	\$970.00	\$1,020.00
C8 SPE Treatment	1	each	\$95.00	\$100.00
Methanol Eluate	1	each	\$970.00	\$1,020.00
Methanol Eluate Treatment	1	each	\$95.00	\$100.00
Graduated pH - pH 6.5	1	each	\$970.00	\$1,020.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
Graduated pH - pH 7.5	1	each	\$970.00	\$1,020.00

pH Adjustments During Renewals	1	each	\$140.00	\$150.00
Graduated pH - pH 8.5	1	each	\$970.00	\$1,020.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
Cation Exchange	1	each	\$970.00	\$1,020.00
Cation Exchange Column Treatment	1	each	\$95.00	\$100.00
EDTA at 3 mg/L	1	each	\$970.00	\$1,020.00
EDTA Spiking During Renewals	1	each	\$140.00	\$140.00
EDTA at 8 mg/L	1	each	\$970.00	\$1,020.00
EDTA Spiking During Renewals	1	each	\$140.00	\$150.00
STS at 10 mg/L	1	each	\$970.00	\$1,020.00
STS Spiking During Renewals	1	each	\$140.00	\$150.00
STS at 25 mg/L	1	each	\$970.00	\$1,020.00
STS Spiking During Renewals	1	each	\$140.00	\$140.00
<i>Optional Treatments Targeted Toward Pesticides</i>				
PBO	1	each	\$970.00	\$1,020.00
PBO Spiking During Renewals	1	each	\$140.00	\$150.00
Carboxylesterase	1	each	\$970.00	\$1,020.00
Carboxylesterase Spiking During Renewals	1	each	\$140.00	\$150.00
BSA	1	each	\$970.00	\$1,020.00
BSA Spiking During Renewals	1	each	\$140.00	\$140.00
			Subtotal	\$14,790.00
Chronic Toxicity Phase I TIE- Tier 2 (Blank, 50%, and 100%)				
Filtration/Centrifugation at pH1	1	each	\$970.00	\$1,020.00
Filtration/Centrifugation Treatment at pH1	1	each	\$95.00	\$100.00
Filtration/Centrifugation at pH 3	1	each	\$970.00	\$1,020.00
Filtration/Centrifugation Treatment at pH 3	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
Filtration/Centrifugation at pH 10	1	each	\$970.00	\$1,020.00
Filtration/Centrifugation Treatment at pH 10	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
C8 SPE at pH1	1	each	\$970.00	\$1,020.00
C8 SPE Treatment at pH1	1	each	\$95.00	\$100.00
C8 SPE at pH 3	1	each	\$970.00	\$1,020.00
C8 SPE Treatment at pH 3	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
C8 SPE at pH 9	1	each	\$970.00	\$1,020.00
C8 SPE Treatment at pH 9	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
C8 SPE Eluate at pH1	1	each	\$970.00	\$1,020.00
C8 SPE Eluate Treatment at pH1	1	each	\$95.00	\$100.00
C8 SPE Eluate at pH 3	1	each	\$970.00	\$1,020.00
C8 SPE Eluate Treatment at pH 3	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
C8 SPE Eluate at pH 9	1	each	\$970.00	\$1,020.00
C8 SPE Eluate Treatment at pH 9	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
Aeration at pH1	1	each	\$970.00	\$1,020.00
Aeration Treatment at pH1	1	each	\$95.00	\$100.00
Aeration at pH 3	1	each	\$970.00	\$1,020.00
Aeration Treatment at pH 3	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
Aeration at pH 10	1	each	\$970.00	\$1,020.00
Aeration Treatment at pH 10	1	each	\$95.00	\$100.00
pH Adjustments During Renewals	1	each	\$140.00	\$150.00
			Subtotal	\$14,640.00
TIE Project Management/Reporting (Cost on a "per TIE" basis)				
Senior Scientist	12	hrs.	\$110.00	\$1,320.00
Project Manager	6	hrs.	\$175.00	\$1,050.00
Consulting Rates				
Dr. Scott Ogle: CEO/Special Projects Director		hr.	\$195.00	TBD

Stephen Clark: Vice President/Special Projects Director (Project Manager)	hr.	\$175.00	TBD
Alison Briden: Assistant Project Manager	hr.	\$125.00	TBD
Senior Scientist	hr.	\$110.00	TBD
Scientist	hr.	\$95.00	TBD
Administrative Assistant	hr.	\$70.00	TBD
Laboratory Assistant	hr.	\$65.00	TBD
Total			TBD

Notes:
1) TIE costs do not include supporting chemical analysis or cost for analysis of eluates from C8 SPE or cation exchange columns.
2) If TIEs were to be performed at 100% solution (excluding the 50% solution treatment), the test costs would be: \$7910 for the targeted Phase I TIE, \$14,190 for the Phase I Tier 1 TIE, and \$11,450 for the Phase I Tier 2 TIE.
3) The optional pesticide Tier 1 TIE treatments targeted toward pesticides have become increasingly common treatments in TIEs that assist in defining the role of specific pesticide classes in causing toxicity.

Turnaround Time:
Standard TAT is 30 days from end of test.
TAT 10 business days from end of test - 25% surcharge.
TAT 5 business days from end of tests - 50% surcharge.
Rush TAT 48 hours from end of test - 100% surcharge.

Acceptance Signature: _____ Date: _____

Print Name: _____



Hydrology | Hydrology | Geomorphology | Erosion

cbec, inc., eco-engineering

RATE SCHEDULE Effective January 1, 2012

Category	Hourly Rate
President	\$ 150
Senior Associate / Eco-Hydrologist	\$130
Associate / Eco-Engineer	\$115
Associate / Eco-Hydrologist	\$115
Desktop Publishing	\$ 75
Technicians	\$ 80
Clerical/Admin	\$ 55

Expenses are invoiced at 115% of cost.

Unless expressly provided for within the contract, rates are subject to increase annually on January 1 of each year.

1255 Starboard Dr., West Sacramento, CA 95691 USA
T/F 916.570.2502 C 916.243.8290 c.bowles@cbecoeng.com
www.cbecoeng.com