

C/CAG

CITY/COUNTY ASSOCIATION OF GOVERNMENTS OF SAN MATEO COUNTY

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TASK ORDER FORM

Date/Start Date: July 1, 2017

Consultant Name: Larry Walker & Associates

Contract: Countywide Water Pollution Prevention Program Technical Support

Task Order No.: LWA-03

Task Order Name: Municipal Stormwater NPDES Permit Compliance Assistance

Scope of Work: Green Infrastructure and Mercury & PCBs

Deliverables: See attached scope of work

Budgeted Cost: Per attached Fiscal Year 2017-18 scope of work, not to exceed \$557,500

Completion Date: June 30, 2018

The parties indicated herein agree to execute this Task Order per the scope indicated above. No payment will be made for any work performed prior to the start date of this Task Order. Unless otherwise indicated, receipt of this executed Task Order is your Notice to Proceed with the work specified herein.

C/CAG

LWA

Sandy Wong, Executive Director Date

Date

Scope of Services

Fiscal Year 2017-2018

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Scope of Services

Services described in this document are limited to those that will be conducted in Fiscal Year (FY) 2017-2018. A summary cross referencing scope tasks to MRP provisions is provided below.

Task	Related MRP Provisions
Task 5. Green Infrastructure Planning	C.3
Sub-Task 5.1 Countywide approach to assist member agencies in developing Green Infrastructure Plans	C.3.j
a) Support ongoing technical advisory committee	C.3.j.i
b) Support development of frameworks or work plans for Green Infrastructure Planning	C.3.j.i (1)
c) Develop guidelines, standard specifications, and design details	C.3.j.i.(2)(e) C.3.j.i.(2)(f)
d) Develop Model Plan Update Materials	C.3.j.i.(2)(h) C.3.j.i.(2)(i)
e) Identify green infrastructure opportunities and prioritization	C.3.j.i.(2)(b) C.3.j.i.(2)(c) C.3.j.i.(2)(d)
Sub-Task 5.2 Education and outreach materials	C.3.j.i (4)
Sub-Task 5.3 Assist member agencies in identifying green infrastructure projects that will be implemented over the permit term	C.3.j.ii
Sub-Task 5.4 Assist member agencies in identifying targets for impervious surface to be retrofitted by 2020, 2030, and 2040	C.3.j.i.(2)(c)
Sub-Task 5.5 Assist member agencies in developing a tracking tool to document green infrastructure implementation over time	C.3.j.i.(2)(d)
Sub-Task 5.6. C/CAG, BASMAA, and Team Coordination	NA
Sub-Task 5.7 Funding Nexus Evaluation	C.3.j.i.(2)(k)
Task 9. Mercury & PCBs Load Reduction	C.11 and C.12
Sub-Task 9.3 Determine/Confirm Mercury and PCBs Wasteload Allocations for San Mateo County, Required Reductions, and Sub-allocations for Permittees and Develop Alternate Approach if Appropriate	C.11.a and C.12.a
Sub-Task 9.4 Assist with the Development, Documentation, and Implementation of an Assessment/Tracking Methodology for Mercury and PCBs	C.11.b and C.12.b
Sub-Task 9.6 Develop Initial Phase of a Reasonable Assurance Analysis to Demonstrate How the County will Collectively Achieve the Load Reductions for Mercury and PCBs required via GI	C.11.b, C.11.d, C.12.b, C.12.d
Sub-Task 9.7 Develop a Building Demolition Management Program	C.12.f
Sub-Task 9.8 Develop an Assessment Methodology and Data Collection Program to Quantify PCBs Loads Reduced via the Above Program	C.11.d and C.12.d
Sub-Task 9.9 C/CAG, BASMAA, and Team Coordination	NA

Task 5. Green Infrastructure Planning

Work on the Sub-Tasks 5.1 and 5.2 will continue in FY 2017-2018.

Sub-Task 5.1 Countywide approach to assist member agencies in developing Green Infrastructure Plans

This task will be the heart of the Green Infrastructure Planning effort with a focus on coordinating with the Sub-Task 9.6 determination of future goals for green infrastructure to meet TMDL pollutant load reductions. Coordination with these efforts both in terms of data-gathering and development of tools will help facilitate cost-effective and timely development of the Green Infrastructure Plan related task. During FY 17-18 this work will focus on working with the Green Infrastructure technical advisory committee on developing a range of GI Plan related elements—the guidelines, standard specifications and design details; supporting member agencies' planning and adoption of updates to planning documents; continued work in identifying and prioritizing opportunities for GI; supporting SMCWPPP's countywide public education and outreach efforts; and the mercury and PCBs load reduction related efforts in Sub-Tasks 5.3, 5.4, and 5.5.

a) Support ongoing technical advisory committee

The LWA team will provide staff support for an ongoing technical advisory committee (TAC) of member agency representatives. Per the project schedule, support and/or participation in TAC meetings are expected to continue to the 2nd quarter of 2018. Several of the TAC meetings will involve discussion of work products for multiple tasks. This work will include coordinating with C/CAG to prepare agendas, meeting minutes, PowerPoint presentations, handouts to supplement key elements of presentations, and draft and final work products as agenda attachments.

Deliverables

- Draft and final agendas, meeting minutes, presentations, work products, work schedules and other materials for TAC meetings (projected 13 meetings between May 2015 and May 2018).
- Up to five TAC meetings and support in determining TAC membership (FY 17-18).

b) Support development of frameworks or work plans for Green Infrastructure Planning

This Sub-Task will be completed in FY 16-17.

c) Develop guidelines, standard specifications, and design details

Work on this Sub-Task began in FY 16-17 and will continue in FY 17-18. Information on the regional efforts in development of these materials will be gathered through the LWA Team's work in Sub-Task 5.6 Coordination with C/CAG and BASMAA. A result of the work in FY 16-17 has been a reorganization of the approach to developing the guidelines and other documents. The completion of the full "suite" of documents will involve efforts of the LWA Team, led by CD+A, with other documents being prepared through separate documents by EOA and Urban Rain|Design. The "suite" of SMCWPPP Green Infrastructure Guidance Documents will consist of the follow five documents:

1. *Policy and Overview Manual* (led by CD+A)
2. *Buildings and Sites Manual* (led by Urban Rain|Design)
3. *Sustainable Streets Manual* (led by CD+A)
4. *C.3 Regulated Projects Manual* (led by EOA)
5. *Operations and Maintenance Manual* (led by Urban Rain|Design)

A set of technical resource manuals for the SMCWPPP Green Infrastructure Guidance documents will be prepared containing a range of checklists, and specification and detail resources that could be updated more readily without requiring a more comprehensive effort to create things from scratch. This could include:

- Typical green infrastructure details as PDFs and AutoCAD files, such as those in the current *C.3 Technical Guidelines* and from San Francisco Public Utilities Commission, as well as new details for green streets elements. (CD+A will lead in collecting these resources and will provide a set of details specific to the application of green infrastructure in streets).
- Specifications for green infrastructure soil mix, using the BAASMA regional mix.
- Specifications for various types of permeable pavements.
- Plant lists
- Reference list of design manuals for green streets, sustainable streets, etc.

Policy and Overview Manual – This concise document will define the policy framework for the SMCWPPP Green Infrastructure Guidance documents. It will describe the overall purpose of the stormwater quality effort and green infrastructure from both the regulatory standpoint of the MRP and from the broader perspectives of sustainability, healthy communities, etc. A policy-focused section will be included that is relatable to the broader purpose of the Green Infrastructure Plans that each member agency will be developing during the permit period.

There will also be a “How to Use the SMCWPPP Green Infrastructure Guidance documents” section describing the relationships between them and their applicability to different stages of planning, design, construction, and operations and maintenance of green infrastructure for both C.3 regulated projects and in support of achieving the TMDL reduction targets.

The document will build from the introductory sections of both the existing *C.3 Stormwater Technical Guidance* and *Green Streets and Parking Lots Design Guidebook* in describing the stormwater regulatory purpose of green infrastructure, the broader principles of sustainable stormwater design, and the relationship to supporting broader sustainability, economic vitality, and placemaking goals of communities in San Mateo County. The document will also include an overview of green infrastructure design elements, such as pervious pavement, bioretention, rain gardens, etc.; and defining their functions and applicable uses. This will set a consistent nomenclature and application of green infrastructure elements that will be used throughout the SMCWPPP Green Infrastructure Guidance documents.

Sustainable Streets Manual – This will be a reworking of the existing *Sustainable Green Streets and Parking Lot Guidebook*. The bulk of the introductory text about what green infrastructure is and its purpose and function will be presented in a distilled form in this document, as the bulk of this discussion will now be in the *Policy and Overview Manual*. Guidance describing the relationship of complete streets design to opportunities for green infrastructure, different street typologies and contexts, and refinement of the green street infrastructure guidance will be added, along with additional detail, to bring the information up to the state of the practice.

As identified through the discussions at the BASMAA Green Streets Curb Extension Charrette, a focus of this document will also be defining the multidisciplinary decision-making process for agencies to effectively integrate complete and green streets design.

Reference will be made to appropriate detailed information in the *C.3 Regulated Projects Manual* and the technical resource manuals as appropriate. But, the *Sustainable Streets Manual* will include specific appendices containing key typical design details and specifications addressing the

considerations for putting green infrastructure in the street right of way. Similarly, reference will be made to the *Operations & Maintenance Manual* with special considerations for sustainable green streets being included in this manual.

The following steps will build from the work completed in FY 16-17 and are expected to lead to the efficient and timely development of the *Policy and Overview Manual* and *Sustainable Streets Manual*, and associated technical resource manuals. These with the other manuals of the SMCWPPP Green Infrastructure Guidance documents can be used by member agencies to meet the MRP Green Infrastructure Plan requirements for the 2019 Annual Report:

1. The LWA team will draft the full text and range of sample graphics for the *Policy and Overview* and *Sustainable Streets* manuals for C/CAG review and comment. The LWA team will review C/CAG comments and hold a meeting to finalize direction for preparing the TAC review copy of the guidelines and standards. (FY 17-18).
2. The LWA team will prepare a TAC review copy of the *Policy and Overview* and *Sustainable Streets* manuals. (FY 17-18)
3. The TAC will be provided with review copies of the two manuals and associated technical resource manuals about one month prior to a TAC workshop for discussion and agreement on TAC requested changes to the draft. (FY 17-18)
4. Final comprehensive drafts of the two manuals and associated technical resource manuals will be prepared, incorporating TAC comments. (FY 17-18)
5. Final digital, Acrobat PDF, versions of the two manuals and associated technical resource manuals will be provided. (FY 17-18)
6. Following the completion of the FY 17-18 efforts, The LWA team could develop and deploy the San Mateo County Model Green Infrastructure Guidelines and Standards on a web-based resource platform available to C/CAG members (similar to 21 Elements website) in FY 18-19.

Deliverables

- Administrative review draft *Policy and Overview* and *Sustainable Streets* manuals.
- Meeting with C/CAG to discuss and resolve review.
- TAC review of draft *Policy and Overview* and *Sustainable Streets* manuals and associated technical resource manuals.
- Final comprehensive copy of the *Policy and Overview* and *Sustainable Streets* manuals and associated technical resource manuals.

d) Develop Model Plan Update Materials

The LWA team produced a model plan language report with suggested revision language in FY 16-17.

Budget is provided in FY 17-18 for the LWA Team to provide some support to member agencies as they prepare their plan updates.

Deliverables

- Support to member agencies as they prepare their plan updates. (FY 17-18)

e) Identify green infrastructure opportunities and prioritization

MRP 2.0 provision C.3.e.i.(2)(a) requires a Green Infrastructure Plan to include the identification of potential and planned green infrastructure projects, both public and private, on a drainage-area specific basis for implementation and assessment of potential load reductions by 2020, 2030, and

2040. Sub-Task 9.6 will result in drainage-area-level estimates of the amount of green infrastructure needed within each jurisdiction (in terms of treatment capacities) to meet these future load reduction goals. These results will be available for use in this task via access to the web-based GIS tool developed in Sub-Task 10.8 and updated in Sub-Task 9.6.

The LWA team will work with C/CAG member agencies to define the methods for moving from the long-term planning and estimating of performance of future green infrastructure through to the recording and modeling of actual construction and performance over time. The team will also work to establish prioritization criteria and identify priority projects. Therefore, it will be important to identify a methodology for bridging the long-range generalized planning with project identification using clear and documented assumptions. The result of this task will provide more-defined and scoped public capital improvement projects and private development proposals to meet future goals established for green infrastructure.

CD+A is aware through their work on the City of San Mateo Sustainable Streets project that there is an interest in gathering data that helps to establish the feasibility of green streets, such as the presence of on-street parking, parking utilization, presence of trees and other landscape, potential for road diets or other pavement reduction, etc. Information regarding any existing or planned green infrastructure projects will also be requested.

The following steps will lead to the efficient and timely development of a prioritized list and mapping of both public and private green infrastructure projects on a drainage-area-specific basis that can be used by member agencies to meet the MRP Green Infrastructure Plan requirements for the 2019 Annual Report, as well as on-going local planning and further MRP-related efforts beyond 2020:

1. The LWA team will prepare draft prioritization methodology and criteria memorandum, drawing from existing green streets/infrastructure policies and plans and modeling tools and screening approaches developed in Tasks 9 and 10. At a TAC meeting, the LWA team will facilitate a discussion regarding the methodology and criteria and receive feedback on potential refinements. Based on input received from the TAC, a final memorandum will be developed. Note that this memorandum may be revised further as the mapping of opportunities and priorities is performed. (FY 17-18)
2. The LWA team will prepare an initial mapping of existing and potential green infrastructure opportunities (both new and redevelopment and public streets and open space opportunities), and prioritize them based on the criteria and methodology developed in the previous step. This effort will be coordinated with the Sub-Task 5.3 identification of green infrastructure projects within the permit term. Resulting maps of project opportunities and priorities will be loaded into the web-based GIS tool to support member agency and TAC review and comment on the opportunities and priorities. Member agencies and the TAC will be asked to provide written comments on the project opportunities and priorities. Based on comments received, the LWA team will refine the mapping of opportunities and incorporate within the web-based GIS tool for final viewing by member agencies and the TAC. At a TAC meeting, the LWA team will facilitate a high-level review of agency comments and initial responses, focused on common themes. (FY 17-18)
3. The LWA team will develop refinements to the mapping of green infrastructure opportunities to present phased implementation to meet future goals for 2020, 2030, and 2040 timeframes, based on the prioritization. This effort will be coordinated with the work in Sub-Task 5.4 to identify targets for impervious surface retrofits within these timeframes. The resulting maps will be loaded within the web-based GIS tool for TAC review. Member agencies and the TAC will be asked to provide written comments on the mapping and scheduled projects. Based on comments received, the LWA team will refine the mapping

and incorporate within the web-based GIS tool for final viewing by member agencies and the TAC. (FY 17-18)

4. The LWA team will prepare final mapping data and finalize the prioritization criteria and methodology memorandum, and a memorandum describing how member agencies can use outputs to inform local planning (e.g., development review, further land use and infrastructure planning, capital planning and project development for transportation). (FY 17-18)

Deliverables

- Draft and final prioritization methodology and criteria memorandum (FY 17-18)
- Draft and final green infrastructure opportunities and priorities mapping (FY 17-18)
- Draft and final revised green infrastructure opportunities and 2020, 2030, and 2040 project schedule maps. (FY 17-18)
- Final mapping GIS data, final prioritization criteria and methodology memorandum. (FY 17-18)

Sub-Task 5.2 Education and outreach materials

The LWA team will use its knowledge, presentation, and graphic skills gained from the team's involvement in green streets, complete streets, and sustainable and green streets planning and design projects, which have included extensive public outreach. This background will help us to provide support to C/CAG, and its member agencies, in educating the public, agency staff, and elected officials on green infrastructure and LID planning, policy, design, and implementation. Examples of the wide range of potential work products that CD+A staff can produce or contribute to in support of countywide and local GI Planning efforts, include the preparation of:

- Model PowerPoint presentations on green infrastructure related topics
- Model handouts or presentation boards on specific topics or a series of coordinated educational booklets or flyers
- Presentation or handout text or graphic components
- Case studies and summaries of research results
- Individual tables, diagrams, 3D or other graphics which could include:
 - 3D Isometrics
 - Computer generated photo simulations
 - Hand drawn perspectives, sketches or vignettes
 - Plan view drawings and diagrams
 - AutoCAD drawings
 - Flow charts

Under this task, C/CAG, and its member agencies, can take advantage of CD+A's experience in preparing graphics that convey complex spatial relationships or topics in an intuitive manner that is easy to grasp by a broad range of audiences, and other materials that can support C/CAG countywide education and outreach efforts, and model documents/materials that could be prepared to support the focused GI Plan-related work that member agencies may be undertaking in FY 17-18. The budget for this task is based on an anticipated level of effort that may be needed to support C/CAG over the course of the Green Infrastructure Planning in FY 17-18. No work would be undertaken in the task without prior approval from C/CAG.

The GI Committee will be informed of this potential support for their local efforts at the beginning of FY 17-18, and CD+A can work with C/CAG and the GI Committee members to define materials that may be desired.

This task is primarily related to Provision C.3.j.i.(4) of the MRP “Conduct outreach and education”; and could also be related to other green infrastructure outreach and education provisions of the MRP.

Deliverable

- Draft and final educational and outreach materials (slides for PowerPoint presentations, individual or coordinated series of handouts, individual graphics, etc.), as directed and approved by C/CAG staff.
- Final materials based on feedback from C/CAG staff and its consultants, and GI Committee members, as appropriate.

Sub-Task 5.3 Assist member agencies in identifying green infrastructure projects that will be implemented over the permit term

Based on the Reasonable Assurance Analysis performed for Sub-Task 9.6, a cost optimization will be performed to identify subwatersheds within each jurisdiction to emphasize implementation of green infrastructure. This optimization will locate areas where early investment of green infrastructure will maximize stormwater capture and associated PCBs load reduction to achieve the San Mateo County portion of the 120 grams/year to be reduced within the current permit term. Sub-Task 9.6 will also result in the production of GIS layers (loaded into the web-based GIS tool) depicting areas to emphasize green infrastructure, which will serve as a starting point for identifying specific opportunities for green infrastructure projects. The LWA team will work closely with C/CAG member agencies to identify these opportunity projects, delineate associated drainage areas to each project, and determine the type and size of each green infrastructure practice needed at the site. This may also require coordination with regional planning agencies to identify potential private parcels for incorporation of onsite stormwater management or LID within the permit term.

Once projects are identified and characterized, the details for each project (e.g., drainage area characteristics, infiltration rate, green infrastructure type and size) will be input into the WAMP (developed in Sub-Task 10.4 and updated in Sub-Task 9.6) for quantification of resulting stormwater volumes captured. Resulting estimations of stormwater volumes will be compared to jurisdictional or county-wide stormwater volumes determined in Sub-Task 9.6 to be captured to meet the County portion of the 120 grams/year reduction of PCBs. This provides a simple accounting system for the tracking of green infrastructure projects and linkage to the Reasonable Assurance Analysis, creating ease in annual reporting and overall discussions with Regional Board staff regarding progress of TMDL implementation.

Deliverables

- Technical memorandum summarizing green infrastructure projects, volumes captured, and linkage to the Reasonable Assurance Analysis, for use as reference in annual report.

Sub-Task 5.4 Assist member agencies in identifying targets for impervious surface to be retrofitted by 2020, 2030, and 2040

The Reasonable Assurance Analysis performed in Sub-Task 9.6 will identify the amount of areas treated with green infrastructure to meet the 2020, 2030, and 2040 milestones. Sub-Task 5.1 will identify the specific drainage areas for green infrastructure projects throughout the County. The LWA team will utilize these results to identify targets for impervious surfaces to be retrofitted with green infrastructure by 2020, 2030, and 2040. These results will be summarized for each subwatershed and jurisdiction in the County to support internal planning and prioritization of implementation.

Deliverables

- Technical memorandum summarizing targets for retrofit of impervious surfaces with green infrastructure.

Sub-Task 5.5 Assist member agencies in developing a tracking tool to document green infrastructure implementation over time

The LWA team will modify the web-based GIS tool developed in Sub-Task 10.8 to include features for mapping of green infrastructure projects (locations and drainage areas), as well as functionality to view project attributes once selected by the user. As projects are implemented, information for each project can be entered into the tool for viewing by C/CAG member agencies (and the public if chosen). The tool will allow the user to zoom to the project site or drainage area and view as an overlay of google map layers. Once the project is selected by the user, a pop-up window will allow the user to view project attributes (e.g., project type, drainage area, and potential standard rendering). The LWA team will work closely with C/CAG member agencies to obtain information for existing projects to be loaded into the tool.

The resulting web-based GIS and tracking tool will enable C/CAG member agencies to view and share information about green infrastructure projects implemented. The tool will be flexible, in the public domain, and easily accessible via the web. The web link allows C/CAG member agencies to also use the tool as a public engagement and education tool. As C/CAG continues implementation of projects identified in the Green Infrastructure Plan, users or viewers of web-based tool can view where projects are located and the drainage areas treated or captured. Once the GreenPlanIT LID tracker tool is completed by SFEI, the LWA team will assess this tool and system components to explore opportunities to link directly to the tool or utilize GIS or other relevant data for incorporation in the web-based GIS tool developed by the LWA team.

In the future, C/CAG can easily modify the web-based GIS tool to provide additional functionality, features, or graphics for viewing or measuring progress. For instance, the WAMP developed for Sub-Task 10.4 and refined in Sub-Task 9.6 provides another web-based tool for C/CAG members to also track the implementation of green infrastructure for annual reporting purposes, including the tracking of stormwater volumes captured. With the Reasonable Assurance Analysis (Sub-Task 9.6) identifying the amount of stormwater capture and associated load reductions to meet TMDL wasteload allocations for the County, this provides the WAMP the capability to track progress towards achieving the wasteload allocation. The web-based GIS tracking tool developed within this task can be updated in the future to provide a “dashboard” that tracks progress made towards meeting stormwater capture targets. With simple linkages to stormwater capture volumes calculated within WAMP and graphics available within that system, graphics can be included in the web-based GIS tool that presents to the public the current progress and the amount of stormwater capture left to achieve the 2040 “goal” to meet the TMDL wasteload allocations. In this way, the goals of C/CAG can be conveyed as goals for all citizens within each jurisdiction, and the public can be engaged as stewards for implementation of both LID and green infrastructure.

Deliverables

- Web-based green infrastructure tracking tool.

Sub-Task 5.6 C/CAG, BASMAA, and Team Coordination

The LWA team will coordinate with C/CAG and BASMAA, attending meetings and participating in regional workgroups focused on C.11 and C.12 compliance efforts such as tracking measures, accounting for load reductions. Information regarding green infrastructure planning, such as: development of jurisdiction frameworks or work plans for Green Infrastructure Planning;

development of guidelines, standard specifications, and design details; and other related information that may be developed through BASMAA activities during this fiscal year. The LWA team will provide briefings and advise to the C/CAG Program Manager, Stormwater and Technical Advisory Committees on the regional approaches.

Sub-Task 5.7 Funding Nexus Evaluation

MRP 2.0 provision C.3.j.i(2)(k) requires a Green Infrastructure Plan to include “an evaluation of prioritized project funding options, including, but not limited to: Alternative Compliance funds; grant monies, including transportation project grants from federal, State, and local agencies; existing Permittee resources; new tax or other levies; and other sources of funds.” Other sub-tasks will identify a prioritized list of potential public and private green infrastructure projects on a drainage-area-specific basis. This Sub-Task (5.7) will provide an evaluation of funding sources that could potentially pair with the types of projects identified.

The LWA team will use its knowledge and expertise to identify and evaluate the feasibility of various funding strategies with specific information included to enable member agencies to complete their Green Infrastructure Plans in a thorough and timely manner. Specifically, SCI is aware of many funding strategies through their work with other municipal clients, the California Stormwater Quality Association (CASQA) and regulatory agencies such as the EPA and the State Water Boards.

Stormwater funding is a challenging field with many hurdles that are rapidly changing, just as the regulations pertaining to water quality are. This effort will require thorough research into common existing funding mechanisms (fees, taxes, developer fees, etc.) as well as recently pioneered funding strategies such as alternative compliance funds, enhanced infrastructure finance districts, etc. Many municipalities are finding that no single source of revenue is adequate to fund its stormwater needs, and Green Infrastructure funding will be no different. It is expected that the most successful funding strategy will be a “portfolio” approach containing multiple funding sources. The end product will be a tool box of options.

In light of this, assigning priorities will be particularly challenging. In addition to the likelihood of multiple funding sources for each project, different types of projects will fit different types of funding schemes better than others based on a project’s specific goals and features. Add to that the possibilities of multi-jurisdictional (or even regional) collaboration, the opportunistic and competitive natures of grant funding, and public-private partnerships, and it is clear that any prioritization scheme will need to be flexible.

The funding research work will invariably inform the prioritization efforts of Sub-Task 5.1.e. Therefore, this work will be iterative in nature, and will need to be paced in a manner to support other subtasks as well as being timely for member agencies. To be most efficient, this Sub-Task will be broken into multiple steps:

1. The LWA team will prepare a preliminary matrix of funding opportunities accompanied by a brief description including pros and cons. These will be broken into categories (sustainable recurring revenue sources, one-time grant funds, loans or other financing opportunities, etc.). At a TAC meeting, the LWA team will facilitate a discussion of the funding options and criteria for a prioritization methodology. This discussion will also include topics such as multi-jurisdictional issues, use of debt financing, integration with project priorities developed in Sub-Task 5.1.e, and how to leverage opportunistic funding (piggy-backing onto transportation projects, etc.). It is likely that some of the identified funding options will be discarded due to applicability or feasibility issues.

2. Based on the feedback received by the TAC in Step 1, The LWA Team will prepare a Draft Funding Options Report that includes a matrix of funding options illustrating pertinent features and a prioritization metric. For each type of funding mechanism, this Report will include background information, the requirements for employing the mechanism, pros and cons, and, where applicable, examples of revenue amounts. Issues to be discussed will include multi-jurisdictional (or regional) strategies, public versus private projects, and public-private partnerships (P3). Member agencies and the TAC will be asked to provide comments on the Draft Funding Options Report. At a TAC meeting, the LWA team will facilitate a high-level review of the agency comments and initial responses, focused on common themes.
3. The LWA Team will develop refinements to the Funding Options Report.

Deliverables

- Preliminary Funding Matrix
- Draft and final Funding Options Report.

Task 9. Mercury & PCBs Load Reduction

Sub-Task 9.3 Determine/Confirm Mercury and PCBs Wasteload Allocations for San Mateo County, Required Reductions, and Sub-allocations for Permittees and Develop Alternate Approach if Appropriate

This analysis will require both modeling and TMDL development experience, as it will require disassembling the original TMDL and calculation of allocations, comparison to modeled sediment and mercury and PCBs loads for Bayside San Mateo County, and recalculation of wasteload allocations and required reductions for the County portion of the Bay-Area-wide allocation. Team member Stephen Carter of Paradigm was the watershed modeling lead supporting EPA in development of the Los Angeles and Long Beach Harbors Toxics TMDLs, which is the only TMDL in California that rivals the San Francisco Bay TMDLs in terms of number of pollutants (including PCBs) and geographic scale. With this TMDL modeling experience and trust of the regulators, the LWA team will provide thoughtful interpretation of the San Francisco Bay TMDLs, engage Regional Water Board staff on assumptions to be used in the Reasonable Assurance Analysis (RAA), and perform an RAA that results in modeling processes and calculation of allocations and reductions for the County that are accepted by Regional Water Board and EPA staff. As discussions with Regional Water Board staff regarding the revision of the PCBs TMDL continue, this analysis will provide further evidence of the need to revise the TMDL and include more accurate approaches to recalculate allocations for all permittees.

Although the mercury and PCBs TMDLs were based on extensive science and research, the ultimate calculation of wasteload allocations and required reductions for stormwater runoff were relatively simple. The calculations will be revisited in the RAA to engage Regional Water Board staff on feasible goals for green infrastructure that are associated with hydrology, sediment transport, and concentrations of mercury and PCBs throughout the County.

The team will present C/CAG the results of analyses and key decision points, as well as inform C/CAG of discussions required with Regional Water Board staff to gain early buy-in on methods used to ensure acceptance of the RAA.

Sub-Task 9.4 Assist with the Development, Documentation, and Implementation of an Assessment/Tracking Methodology for Mercury and PCBs

The LWA team will develop and implement an integrated green infrastructure and institutional source control BMP mercury and PCBs load reduction framework to track efforts and demonstrate anticipated compliance with load allocations established in Sub-Task 9.3. Expected and observed load reductions derived from institutional BMPs, also referred to as source controls or non-structural BMPs, will be developed based on available data and values from the literature and compiled in a straightforward and easily accessible spreadsheet tool. Relevant assumptions will be San Mateo County or Bay Area-specific factors where feasible and clearly stated with relevant references (e.g., potential regional guidance developed by BASMAA). An extensive discussion of the volume reduction reporting capabilities of the web-based Watershed Adaptive Management Program (WAMP) will have been completed in Sub-Task 10.4. The WAMP is a web-based platform that has been developed to allow C/CAG member agencies and the LWA team to predict runoff capture volumes for the 85th percentile storm, other critical storms, or annual volumes identify by selecting a project location and enter project characteristics (e.g., BMP type and size, drainage area characteristics, infiltration rate). The WAMP also provides storage of project information and runoff capture predictions for integration within the RAA and will allow for direct integration into the Sub-Task 9.4 tracking spreadsheet tool.

Deliverables

- Mercury and PCBs load reduction spreadsheet tracking tool.
- WAMP green infrastructure volume reduction output.

Sub-Task 9.6 Develop Initial Phase of a Reasonable Assurance Analysis to Demonstrate How the County will Collectively Achieve the Load Reductions for Mercury and PCBs required via GI

The modeling performed for the RAA will build off of the systems developed in Sub-Task 10.4, with key updates to meet specific needs of the RAA. The LWA team's approach will provide significant cost savings to C/CAG and ensure that efforts supporting the Stormwater Resource Plan provide a head start for the RAA and conserve budgets for both tasks. Once updated, the system will provide full capability to address all requirements of the RAA and this task, provide a system for cost-effective green infrastructure planning, and capitalize on efforts performed in other RAAs throughout California to provide defensible and approvable approaches for the interpretation and implementation of TMDLs.

The following is a summary steps to be taken to update the modeling system and perform the initial phase of the RAA.

Step 1: Update of the Watershed Model (with focus on Bayside). The HSPF model (based on BAHM) utilized for the Stormwater Resource Plan is limited to the simulation of hydrology, does not include simulation of sediment or mercury/PCBs sources or transport, and will require additional calibration to be defensible for the RAA. The BAHM model will be reconfigured within LSPC (recoded version of HSPF within C++) capable of simulating key sediment and pollutant transport processes required for the RAA. The converted model will take full advantage of all rainfall data available within the County as hourly input, GIS representing key land characteristics (including HRUs developed in Task 10.1), and subwatersheds throughout the County developed in Task 10.2. Original modeling parameters utilized within BAHM will serve as the starting point for performing updated calibrations for the RAA.

The model will be calibrated for hydrology and sediment loads based on available stream gage and water quality monitoring data. Based on local and regional studies of mercury and PCBs

concentrations and their potential association with suspended sediment, the LWA team will develop approaches within the model to simulate these pollutants as a function of modeled hydrology and sediment transport. Flow and sediment transport are key to the RAA as both provide mechanisms for either modeling mercury and PCBs directly, or as often performed for RAAs and development of TMDLs, assignment of typical water or sediment concentrations based on observed data (i.e., the method used in the San Francisco Bay mercury and PCBs TMDLs). Special steps will be taken to account for anomalously high or low mercury/PCBs concentrations observed through available monitoring studies so that the model can accurately simulate loads for these areas. The model will be calibrated to meet performance criteria that are common for TMDL development, were most recently required by the Los Angeles Regional Water Board for all RAAs performed in that region, and will be included within upcoming statewide guidance on RAAs.

Step 2: Determine/Confirm Mercury and PCBs Wasteload Allocations for San Mateo County, Required Reductions, and Sub-allocations for Permittees.

This step is under Sub-Task 9.3.

Step 3: Develop Quantitative Relationship Between Green Infrastructure Implementation and Mercury and PCBs Load Reduction. The RAA modeling system will be used to establish relationships between stormwater volumes, sediment loads, mercury and PCBs loads, and the overall amount of GI needed to achieve incremental reductions of mercury and PCBs loadings through stormwater capture. The RAA will establish a robust quantitative linkage between stormwater volumes controlled (and potentially sediment loads) at strategic locations throughout Bay-side subwatersheds and mercury and PCBs loads to demonstrate that TMDL wasteload allocations will be met. The RAA will also chart a course for cost-effective GI planning by optimizing those subwatersheds throughout the County where implementation should be emphasized to maximize load reductions with minimal costs.

The LWA team will tailor an RAA approach that will include different categories of GI and LID selected by C/CAG. For instance, with the MRP requirements for LID in new and redeveloped areas, it will be important for the RAA to take credit for any new and redevelopment projected to occur in the County. The LWA team will work with C/CAG to develop estimates of the rate of new and redevelopment that could occur and would be subject to low impact development (LID) or GI ordinances, as well as assumptions that could be incorporated for GI implementation resulting from public incentive programs. The RAA performed for the County will look into specific GI types that are determined to be the most cost-effective, and if chosen by C/CAG, specific results will be presented for each type of practice. These could include GI resulting from new and redevelopment, LID on publicly owned parcels, green streets, park retrofits with regional projects capturing runoff at the neighborhood scale, etc.

Based on the relative costs of the projects and opportunities identified throughout subwatersheds of the County, the LWA team will perform an optimization that identifies the most cost-effective combination and sizes of practices to achieve the volume or load reductions required. The SUSTAIN model will be used to automate the simulation of millions of scenarios, with each scenario representing a unique combination of GI practices identified as opportunities within each subwatershed throughout the County. Results of the optimization will be presented in a cost effectiveness curve (C-E curve) that depicts the most cost-effective practices to achieve increasing load reductions. Results of the RAA model optimizations (C-E curves) will be presented for each C/CAG member agency so that results can be assessed in terms of the stormwater controls selected to achieve the reduction target.

The RAA will also present results spatially and over time to guide the Green Infrastructure Plan and future implementation efforts. The LWA team will tailor approaches for the County to present interim reductions and associated GI treatment capacities and treated areas to meet interim and

final TMDL reductions for 2020, 2030, and 2040, as well as interim reductions required within the current permit term. The RAA results will be presented for each interim and final year in tabular form, which can be presented for each jurisdiction or subwatershed of the County. Similar tables will be developed that relate treatment capacities to the amount of treated areas, as required by the MRP.

Maps of treatment capacities and amount of treated areas within each subwatershed will be developed in GIS for inclusion within the web-based mapping tool developed within Task 10. This will provide direct access of model results to C/CAG as well as the technical team supporting the Green Infrastructure Planning.

Step 4: Assessment of Alternative Modeling Scenarios. Based on consultation with C/CAG member agencies, multiple model scenarios will be evaluated to inform management decisions regarding cost-effective green infrastructure planning. Up to 10 alternative scenarios will be developed and evaluated, including (but not limited to) the following considerations:

- Pollutant reduction targets evaluated for individual jurisdictions, with each jurisdiction providing equal reductions (expressed as percentages of load reductions from existing conditions).
- Pollutant reduction targets evaluated county-wide, with green infrastructure selection based on cost-effectiveness and independent of jurisdictional boundaries.
- Alternative scenarios for assignment of urban areas determined to be covered by the MRP, with separation of unpermitted areas or areas addressed by separate NPDES permits.
- Alternative scenarios that consider different types of stormwater capture projects (e.g., inclusion of regional projects as compared to scenarios that only consider LID or green streets).
- Sensitivity of pollutant reduction targets or associated assumptions (e.g., sediment concentration targets, background sources, total and cohesive sediment).
- Critical hydrologic conditions during which loads are quantified.

Model scenarios may include a combination of the above considerations or others to provide an analysis of the sensitivity of these factors on green infrastructure planning and costs. Results of these analysis will inform the selection of cost-effective scenarios for the Green Infrastructure Plan and considerations for future revisions of TMDLs.

Step 5: Preparation of RAA Results for 2018 Annual Report and Green Infrastructure Planning. A report will be developed that documents the data used and a full description of models and model input used in the RAA to establish the relationship between GI and PCBs load reduction. The LWA team will also update the WAMP for use by the technical team supporting the Green Infrastructure Plan to provide a tool for the quantification of stormwater capture associated with GI opportunities identified in Task 5. WAMP will be updated with the critical hydrologic condition used in the RAA to calculate the County's portion of the TMDL wasteload allocations, as well as updated GI types or design assumptions developed within the RAA or after the Stormwater Resource Plan is completed. The WAMP will enable C/CAG member agencies or the technical team supporting the Green Infrastructure Plan to perform volume reduction calculations for various GI types and sizes, based on methods that are consistent with the RAA. If C/CAG decides to provide Regional Water Board staff access to the WAMP (via weblink), this could also provide an important communication tool to explain ultimate outcomes of the RAA with Regional Water Board staff and gain buy-in on methods used.

Deliverables

- Draft report summarizing results of initial phase of the RAA
- Final report summarizing results of initial phase of the RAA (incorporating C/CAG comments)
- Three meetings with C/CAG
- Updated web-based GIS tool with RAA results loaded
- Updated WAMP for use by C/CAG and the Green Infrastructure Plan

Sub-Task 9.7 Develop a Building Demolition Management Program

The LWA team will work with the BASMAA regional project underway to assist municipalities by developing a model program to address PCBs loads in runoff resulting from demolition and remodeling projects. The LWA team will provide a liaison to the regional project to representing SMCWPPP permittees and providing updates and guidance to C/CAG and permittees on the impact of the regional approaches and program and assisting with the coordination of C/CAG and permittees input to the regional project. The work on this Sub-Task will include coordination with the work on Sub-Task 9.4, where expected and observed load reductions for institutional BMPs, including the demolition program, will be developed based on available data.

Deliverable

- Written and oral summaries for C/CAG on the BASMAA regional project

Sub-Task 9.8 Develop an Assessment Methodology and Data Collection Program to Quantify PCBs Loads Reduced via the Above Program

The LWA team will work with the BASMAA regional project underway to assist municipalities by developing a model program to address PCBs loads in runoff resulting from demolition and remodeling projects. The LWA team will provide a liaison to the regional project to representing SMCWPPP permittees and providing updates and guidance to C/CAG and permittees and assisting with the coordination of C/CAG and permittees input to the regional project.

Deliverable

- Written and oral summaries for C/CAG on the BASMAA regional project

Sub-Task 9.9 C/CAG, BASMAA, and Team Coordination

The LWA team will coordinate with C/CAG and BASMAA, attending meetings and participating in regional workgroups focused on Green Infrastructure planning efforts. The LWA team will provide briefings and advise to the C/CAG Program Manager, Stormwater and Technical Advisory Committees on the regional approaches.

Budget

The proposed budget for the FY 2017-2018 scope of work is provided in the summary table below. The budget is broken down by tasks, sub-tasks, and billing rates consistent with the rates set in the on-call contract with C/CAG. The detailed budget is provided in a spreadsheet.

Task	Preliminary Budget Estimate for Scope of Work Fiscal Year 2017-18 (12 Months) (July 2017-June 2018)	LWA Sub-Total	Paradigm Sub-Total	CD+A Sub-Total	SCI Sub-Total	Sub- contractor Mark up	Total Task Cost
5	Green Infrastructure Planning						
5.1	Develop coordinated approach for GI Plans	\$ 10,320	\$ -	\$ 118,544	\$ -	\$ 11,854	\$ 140,718
5.2	Support outreach efforts on GI planning	\$ 1,880	\$ -	\$ 10,510	\$ -	\$ 1,051	\$ 13,441
5.3	Assist member agencies identify GI projects	\$ 7,100	\$ 43,400	\$ -	\$ -	\$ 4,340	\$ 54,840
5.4	Assist member agencies determine retrofit targets	\$ 6,630	\$ 44,400	\$ -	\$ -	\$ 4,440	\$ 55,470
5.5	Using the SWRP develop a tracking tool to document GI projects and assist agencies upload historic projects	\$ 4,390	\$ 31,000	\$ -	\$ -	\$ 3,100	\$ 38,490
5.6	Coordination with CCAG and BASMAA	\$ 18,001	\$ 4,000	\$ 6,104	\$ -	\$ 1,010	\$ 29,115
5.7	Funding Nexus Evaluation	\$ 7,200	\$ -	\$ 2,088	\$ 38,335	\$ 4,042	\$ 51,665
9	Mercury and PCBs Load Reduction						
9.4	Assist C/CAG develop, document, and implement an assessment/tracking methodology for mercury and PCBs load reduction over the course of the MRP term	\$ 5,330	\$ 37,400	\$ -	\$ -	\$ 3,740	\$ 46,470
9.6	Develop initial phase of a reasonable assurance analysis	\$ 5,140	\$ 46,200	\$ -	\$ -	\$ 4,620	\$ 55,960
9.7	Develop a building demolition management program	\$ 17,460	\$ -	\$ -	\$ -	\$ -	\$ 17,460
9.8	Develop an assessment methodology and data collection program to quantify PCBs loads	\$ 17,360	\$ 6,000	\$ -	\$ -	\$ 600	\$ 23,960
9.9	Coordination with CCAG and BASMAA	\$ 15,440	\$ 4,000	\$ 9,156	\$ -	\$ 1,316	\$ 29,911
Totals		\$ 116,251	\$ 216,400	\$ 146,401	\$ 16	\$ 36,282	\$ 557,500

Task	Scope of Work Fiscal Year 2017-18 (12 Months) (July 2017-June 2018)	Task Lead	LWA										Total Hours	Direct Costs	LWA Sub-Total
			Associate	Sr. Staff	Project Staff II-A	Project Staff II-B	Project Staff (1b)	Project Staff I-A	Project Staff I-B	Project Staff I-C	Contract Manager	Admin. Assist.			
			\$235	\$210	\$185	\$165	\$130	\$150	\$135	\$105	\$140	\$75			
5	Green Infrastructure Planning	CD+A													
5.1	Develop coordinated approach for GI Plans		20	24							2		46	\$ 300	\$ 10,320
5.2	Support outreach efforts on GI planning		8										8		\$ 1,880
5.3	Assist member agencies identify GI projects		4	28							2		34		\$ 7,100
5.4	Assist member agencies determine retrofit targets		2	28							2		32		\$ 6,630
5.5	Using the SWRP develop a tracking tool to document GI projects and assist agencies upload historic projects		2	18							1		21		\$ 4,390
5.6	Coordination with CCAG and BASMAA		51	24							5		80	\$ 276	\$ 18,001
5.7	Funding Nexus Evaluation			20				20					40		\$ 7,200
9	Mercury and PCBs Load Reduction	Paradigm													
9.1	Participate on behalf of C/CAG "Clean Watersheds for a Clean Bay" grant program												0		\$ -
9.2	Assist with progress reports												0		\$ -
9.3	Assist C/CAG evaluate whether an alternative PCBs load reduction allocation approach is warranted in San Mateo County												0		\$ -
9.4	Assist C/CAG develop, document, and implement an assessment/tracking methodology for mercury and PCBs load reduction over the course of the MRP term		6	18							1		25		\$ 5,330
9.5	Assist member agencies in identifying, quantifying, and tracking load reductions associated with green infrastructure projects												0		\$ -
9.6	Develop initial phase of a reasonable assurance analysis		4	20									24		\$ 5,140
9.7	Develop a building demolition management program		20	40	20						4		84	\$ 100	\$ 17,460
9.8	Develop an assessment methodology and data collection program to quantify PCBs loads		20	40	20						4		84		\$ 17,360
9.9	Coordination with CCAG and BASMAA		40	24							5		69	\$ 300	\$ 15,440
Totals			177	284	40	0	0	20	0	0	26	0	547	\$ 976	\$ 116,251

Task	Scope of Work Fiscal Year 2017-18 (12 Months) (July 2017-June 2018)	Paradigm								CD+A					
		Principal Engineer	Principal Hydrologist	Principal Water Quality Analyst	Sr. Water Quality Analyst	Staff Engineer	Total Hours	Direct Costs	Paradigm Sub-Total	Erickson Principal	Kronemeyer Assoc. Princ.	Goldade Assoc. Princ.	Singh Senior Assoc.	Project Urban Designer	Urban Designer
		\$200	\$185	\$180	\$165	\$145				\$240.93	\$142.62	\$140.55	\$112.16	\$90.70	\$78.24
5	Green Infrastructure Planning														
5.1	Develop coordinated approach for GI Plans						0	\$ -	154	64	211	90	144	240	
5.2	Support outreach efforts on GI planning						0	\$ -	4	16	12	8	24	32	
5.3	Assist member agencies identify GI projects	60			120	80	260	\$ 43,400							
5.4	Assist member agencies determine retrofit targets	40			80	160	280	\$ 44,400							
5.5	Using the SWRP develop a tracking tool to document GI projects and assist agencies upload historic projects	30			90	70	190	\$ 31,000							
5.6	Coordination with CCAG and BASMAA	20					20	\$ 4,000	16		16				
5.7	Funding Nexus Evaluation								4		8				
9	Mercury and PCBs Load Reduction														
9.1	Participate on behalf of C/CAG "Clean Watersheds for a Clean Bay" grant program						0	\$ -							
9.2	Assist with progress reports						0	\$ -							
9.3	Assist C/CAG evaluate whether an alternative PCBs load reduction allocation approach is warranted in San Mateo County						0	\$ -							
9.4	Assist C/CAG develop, document, and implement an assessment/tracking methodology for mercury and PCBs load reduction over the course of the MRP term	30			120	80	230	\$ 37,400							
9.5	Assist member agencies in identifying, quantifying, and tracking load reductions associated with green infrastructure projects						0	\$ -							
9.6	Develop initial phase of a reasonable assurance analysis	60	60		140		260	\$ 46,200							
9.7	Develop a building demolition management program						0	\$ -							
9.8	Develop an assessment methodology and data collection program to quantify PCBs loads	30					30	\$ 6,000							
9.9	Coordination with CCAG and BASMAA	20					20	\$ 4,000	24		24				
	Totals	290	60	0	550	390	1290	\$ 216,400	202	80	271	98	168	272	

Task	Scope of Work Fiscal Year 2017-18 (12 Months) (July 2017-June 2018)				SCI								Sub-Contractor Markup	Task Cost (incl 10% sub markup)
		Total Hours	Direct Costs	CD+A Sub-Total	Bliss	Bradshaw	Consultant	Research Assistant	Admin	Total Hours	Direct Costs	SCI Sub-Total		
					President	Sr. Engineer								
5	Green Infrastructure Planning													
5.1	Develop coordinated approach for GI Plans	903	\$ 725	\$ 118,544						0		\$ -	\$ 11,854	\$ 140,717.91
5.2	Support outreach efforts on GI planning	96		\$ 10,510						0		\$ -	\$ 1,051	\$ 13,440.82
5.3	Assist member agencies identify GI projects	0		\$ -						0		\$ -	\$ 4,340	\$ 54,840.00
5.4	Assist member agencies determine retrofit targets	0		\$ -						0		\$ -	\$ 4,440	\$ 55,470.00
5.5	Using the SWRP develop a tracking tool to document GI projects and assist agencies upload historic projects	0		\$ -						0		\$ -	\$ 3,100	\$ 38,490.00
5.6	Coordination with CCAG and BASMAA	32		\$ 6,104						0		\$ -	\$ 1,010	\$ 29,115.05
5.7	Funding Nexus Evaluation	12		\$ 2,088	16	120	35	55	20	246	850	\$ 38,335	\$ 4,042	\$ 51,665.43
9	Mercury and PCBs Load Reduction													
9.1	Participate on behalf of C/CAG "Clean Watersheds for a Clean Bay" grant program	0		\$ -						0		\$ -	\$ -	\$ -
9.2	Assist with progress reports	0		\$ -						0		\$ -	\$ -	\$ -
9.3	Assist C/CAG evaluate whether an alternative PCBs load reduction allocation approach is warranted in San Mateo County	0		\$ -						0		\$ -	\$ -	\$ -
9.4	Assist C/CAG develop, document, and implement an assessment/tracking methodology for mercury and PCBs load reduction over the course of the MRP term	0		\$ -						0		\$ -	\$ 3,740	\$ 46,470.00
9.5	Assist member agencies in identifying, quantifying, and tracking load reductions associated with green infrastructure projects	0		\$ -						0		\$ -	\$ -	\$ -
9.6	Develop initial phase of a reasonable assurance analysis	0		\$ -						0		\$ -	\$ 4,620	\$ 55,960.00
9.7	Develop a building demolition management program	0		\$ -						0		\$ -	\$ -	\$ 17,460.00
9.8	Develop an assessment methodology and data collection program to quantify PCBs loads	0		\$ -						0		\$ -	\$ 600	\$ 23,960.00
9.9	Coordination with CCAG and BASMAA	48		\$ 9,156						0		\$ -	\$ 1,316	\$ 29,911.07
	Totals	1091	\$ 725	\$146,401	16	120	35	55	20	246	\$ 850	\$ 38,335	\$ 40,114	\$ 557,500