AMENDMENT (No. 1) TO THE AGREEMENT BETWEEN THE CITY/COUNTY ASSOCIATION OF GOVERNMENTS OF SAN MATEO COUNTY AND PARADIGM ENVIRONMENTAL

WHEREAS, the Board of Directors of the City/County Association of Governments for San Mateo County (hereinafter referred to as C/CAG) and Paradigm Environmental (hereinafter referred to as Paradigm) are parties to an agreement to develop the San Mateo Countywide Sustainable Streets Master Plan dated November 8, 2018 (the "Existing Agreement"); and

WHEREAS, Paradigm and C/CAG wish to amend the Existing Agreement to add an additional $189,174 to provide scope enhancements and update hourly rate classes; and

WHEREAS, the scope enhancements and hourly rate classifications are included in Exhibit A to this Amendment;

IT IS HEREBY AGREED by C/CAG and Paradigm that:

1. Section 2.a. of the Existing Agreement is revised to reflect the funding amount is increased by an additional $189,174 to implement the scope enhancements shown in Exhibit A to this Amendment, for a new total not-to-exceed amount of $1,131,395.

2. The materials in Exhibit A to this Amendment replace the original Scope of Work, Hourly Rates, and Budget in the Exhibits A and B to the Existing Agreement.

3. All other provisions of the Existing Agreement shall remain in full force and effect.

4. The terms hereof amending the Existing Agreement shall take effect upon signature by both parties.

5. In the event of a conflict between the terms of this Amendment and the terms of the Existing Agreement, the terms of this Amendment shall prevail.

For C/CAG:

_____
Maryann Moise Derwin, Chair

Date: October 10, 2019

For Paradigm Environmental:

_____
Signature

Date: _____

Approved as to form:

_____
C/CAG Legal Counsel

EXHIBIT A

AMENDED SCOPE OF WORK, BUDGET, AND
HOURLY RATE CLASSIFICATIONS

1 WORK PLAN

The following provides a detailed Work Plan for completing those tasks in the Scope of Work (SOW) assigned to the Consultant team to complete the San Mateo Countywide Sustainable Streets Master Plan (SSMP). Enhancements or amendments to the Work Plan via contract amendment are shown in underline with reference to the relevant contract amendment.

Task 1. Project Initiation

The following outlines the Work Plan for completing Tasks 1.3 through 1.5 of the SOW designated for the consultant.

Task 1.3. Coordination Meetings

The Consultant team will participate in monthly conference calls with C/CAG and Caltrans to provides updates on the status of tasks and deliverables and coordination efforts with parallel countywide projects (e.g., Reasonable Assurance Analysis, County of San Mateo Climate Change Preparedness and Adaptation Guidance Documents. On a quarterly basis and as determined necessary by C/CAG, the Consultant team will attend coordination meetings in person with C/CAG and Caltrans.

Deliverables: Monthly project team meeting agenda and minutes.

Task 1.4. Stakeholder Advisory Committee Meetings

The Consultant team will assist C/CAG with convening quarterly meetings of a Stakeholder Advisory Committee (SAC) to provide updates and seek input on project deliverables. The meetings will focus on addressing local jurisdiction priorities, community concerns, and infrastructure constraints with respect to developing the prioritization criteria and project concepts for the SSMP. The Consultant team will work closely with C/CAG staff to strategize the formation of the SAC and anticipated participants (including external stakeholders from transportation agencies and community organizations), develop objectives and desired outcomes of the quarterly stakeholder meetings, plan the meetings, facilitate the meetings, and develop meeting agenda packages and other meeting materials as needed.

Deliverables:

- Quarterly SAC meeting agenda and minutes.

Amendment No. 1 Scope Enhancement:

The Consultant team will assist C/CAG to engage additional countywide stakeholders via existing forums such as C/CAG's Green Infrastructure Committee and Congestion Management Program Technical Advisory Committee, to review key deliverables and offer strategic input. These existing forums comprise technical staff from C/CAG's member agencies working on stormwater and transportation goals and initiatives and meet regularly to discuss ongoing programmatic and implementation issues. The Consultant team will support C/CAG as needed to attend relevant meetings to engage local agencies throughout the SSMP development process and gain feedback on project deliverables. Phone calls and meetings with individual stakeholders may also be utilized in lieu of meetings. The Consultant team will develop presentations and other information as needed to inform agencies of the planning process and obtain feedback on key decisions or deliverables.

Amendment No. 1 Scope Enhancement Deliverables:

- Meeting presentations and summaries of stakeholder feedback, as appropriate, depending on selected venues for soliciting input on project deliverables/process.

Task 1.5. Consultant Project Management

The Consultant will provide management of the team of subconsultants and coordinate efforts for each task and the preparation of deliverables. Monthly invoices that comply with C/CAG and Caltrans requirements will be provided to C/CAG that include progress reports on activities supporting each task and the status of deliverables.

Deliverables: Monthly consultant invoices and work summaries.

Task 2. Community Engagement

Task 2.1. Develop Community Engagement Strategy

The Consultant team will work with C/CAG to leverage the County's Climate Change Collaborative and ongoing C/CAG community outreach strategies to develop an engagement strategy that allows stakeholders and the public to meaningfully participate in the planning process. The team will hold an initial meeting with C/CAG to discuss the proposed engagement strategy and obtain feedback on how to proceed. Based on C/CAG input, the team will prepare a memo outlining the project engagement strategy, schedule, deliverables, and roles and responsibilities. The engagement strategy will identify key goals, project milestones, audience types, specific measures to engage and receive participation from vulnerable communities, and communications tools, and then organize these concepts into a schedule of activities.

The Consultant team will organize the engagement around four phases of the project where education and input will benefit the process. The first phase will focus on educating the community about the project and process, then a discussion about the proposed sustainable streets prioritization criteria, followed by input on design concepts, and finally review of the draft plan. In each phase, the team will facilitate public events and provide an online presence to allow a broader population to engage. The goal will be to offer a fun and productive community forum that results in two-way communication about the master planning process, public goals and concerns, and design ideas.

Phase I: Project Introduction and Sustainable Street Design Toolkits (March 2019)

The goals for this phase of outreach include introducing the project and educating the public about climate change impacts and green infrastructure (GI) and sustainable streets role in addressing the challenges. The team will introduce the project goals, scope, and timelines to the community and share previous work and decisions made in the Stormwater Resource Plan (SRP), Green Streets Design Guidebook, and bicycle and pedestrian plans. As part of the workshop, the team will ask the public to provide their feedback on preferences for the various elements that make up sustainable streets. Planning for this workshop will consider opportunities to locate the event at or near a school in a vulnerable community.

Phase II: Prioritization Criteria and Street Network (July 2019)

For the second phase of outreach, the team will engage the public to learn about their priorities for the various criteria the team is considering for evaluating sustainable streets priorities. The team will hold a series (up to 6 events) of targeted "pop-up" events with stakeholders, either through attending existing meetings (like neighborhood groups) or hosting a booth or table at community events or community institutions. These pop-up events will reach community stakeholders that may not be able to join typical workshops, such as children and working families, seniors and elderly, as well as the disabled community. The team will update the community on the project process, introduce the proposed criteria for sustainable street prioritization, and ask the public to rank the criteria most important to them. The progress of the plan will also be shared on a project website where people can submit their preferences on the criteria via an online survey.

Phase III: Review Initial Design Concepts (November 2019)

In this phase, the team will facilitate Walk and Talks on the corridors with proposed pilot concept designs so that the community can talk about the potential improvements on site. Walking tours will focus on reviewing the GI design concepts, traffic calming elements, and intersection improvements. The team will

look for opportunities where the Walk and Talk routes can be coordinated with existing complete street and green street projects to provide the public with a comparison. The team will identify local community organizations to partner with on facilitating the events.

Phase IV: Draft Sustainable Streets Master Plan (March 2020)

The team will organize a final workshop that will be an open house, ideally timed with an existing community event, to share the draft SSMP. Key elements of the plan will be shared on boards and the team will be present to talk through the ideas and recommended projects. This will also be an opportunity for the public to share their feedback on the streetscape design concepts, the overall network, and priorities. This input will be combined with comments from C/CAG member agencies and stakeholders to refine the draft SSMP for the final version.

Deliverables:

- Draft community engagement strategy.
- Final community engagement strategy (incorporating C/CAG comments).
- Outreach event materials, including Power Point presentations, event meeting notes, and attendance records.

Task 3. Climate Adaptation Risk Analysis on Local Transportation Network

Task 3.1. Quantify Climate Change–Related Precipitation Impacts Related to Transportation Network

As part of preparing the County of San Mateo's Climate Change Preparedness and Adaptation Guidance Study under its Round 1 Climate Adaptation Planning Grant, the County's separate consultants will downscale Global Climate Model (GCM) predictions for use in modeling hydrology. The C/CAG Consultant team will work collaboratively with the County's consultant to review proposed methodologies and ensure that downscaling techniques and results will meet the needs of Task 3.1.

Based on the downscaled GCM predictions, the Consultant will perform adjustments to the countywide hydrology model to simulate the changes in peak storm events and runoff from various impervious surfaces, including roadways. The updated hydrology model will provide simulation of hydrologic scenarios representing existing conditions and future conditions with climate change. The model will be used to compare these scenarios using multiple metrics, including annual runoff volumes, peak flow conditions (e.g., 5-, 10-, or 25-year storms), or other critical conditions identified in Task 5.1 for prioritizing sustainable street opportunities. The model will also enable comparison of scenarios at different spatial scales, including estimation of stormwater runoff at the countywide level, within city/unincorporated county jurisdictions, within vulnerable communities, or from roadways or other urban areas that drain to roadways. These model results will be processed and presented spatially to serve as a primary factor in the sustainable streets prioritization process developed in Task 5.1. For each of the model subwatersheds, model results will be summarized in terms of climate change impacts on annual rainfall, annual runoff, and peak flows, and the influence that roadway runoff has on these metrics. Up to four climate change scenarios will be considered in the analysis of precipitation impacts to the transportation network.

Deliverables:

- Draft technical memo summarizing the changes in runoff characteristics for different climate change scenarios.
- Final technical memo incorporating comments from C/CAG and the SAC.

Task 3.2. Quantify Stormwater Capture Benefits

The San Mateo Countywide Reasonable Assurance Analysis required by the Municipal Regional Permit includes the linkage of the countywide hydrology model with EPA's System of Urban Stormwater Treatment & Analysis Integration (SUSTAIN) model to provide simulation of GI stormwater capture,

treatment, and infiltration processes and cost-optimization of GI projects to inform GI planning efforts. The Consultant will link the SUSTAIN model to the Task 3.1 hydrology model and provide simulation of future climate change to evaluate the benefits of planned GI for climate change adaptation, and the additional level of green streets needed to meet long-term pollutant goals. The SUSTAIN model is configured with multiple scenarios representing increasing levels of green streets in combination with existing GI projects (implemented since 2003), LID associated with new development and redevelopment projected for 2040, and regional projects identified in the SRP.

Deliverables:

- Draft technical memo summarizing stormwater capture benefits of green streets to support climate change adaptation, and the additional green streets needed to provide equivalent pollutant load reductions under future climate change scenarios.
- Final technical memo incorporating comments from C/CAG and the SAC.

Task 4. Hi-Resolution Data Analysis and Fine Scale Drainage Delineation

Task 4.1. Data Collection

The Consultant will support C/CAG to work with C/CAG member agencies, Caltrans, and other stakeholders to identify and compile additional datasets that can support the SSMP, including information for natural and surface drainage features, utility systems, capital improvement programs, other community priorities (e.g., bicycle or pedestrian plans), localized flooding, vulnerable communities, environmental justice issues, etc. Once compiled, the Consultant will identify missing data that are not included, are geospatially mis-located, or do not have complete attribute information. The first level of QA/QC will be completed using high resolution LiDAR and ortho-imagery data, Digital Elevation Model (DEM), and Google street view. Field verification will be conducted as the second level of QA/QC to obtain possible information on missing data. The Consultant will generate a Geographic Information System (GIS)-based inventory with meaningful attributes necessary to complete the SSMP and will be transferable to a web-based platform that could be accessed by all project team members.

Deliverables:

- Technical memo outlining data requested from C/CAG member agencies and stakeholders to support Task 4.
- Data inventory and web-based viewer incorporating key datasets for stakeholder review.

Task 4.2. High-Resolution Drainage System Delineation

The Consultant will utilize the GIS-based inventory generated under Task 4.1 to delineate drainage areas at the catch-basin scale. Urban hydrology differs from natural environments in terms of minor elevation changes (e.g., street crown or curb) that define the flow path of runoff, and thus requires innovative approaches to analyze high-resolution data to understand areas that drain to individual catch basins. When analyzed at the scale of San Mateo County, the number of catch basins and associated drainage areas requires an automated procedure to perform delineations cost-effectively and within the C/CAG budget for the SSMP. The Consultant will tailor automated algorithms in ArcGIS to perform the necessary automated delineations at the county scale. The Consultant will perform the following steps to automate delineation of catch basin drainage areas throughout the county:

1. Incorporate high-resolution LiDAR and ortho-imagery data to modify the DEM to account for: (A) urbanized features (e.g., street crowns or curbs, buildings) that impact the flow direction of surface runoff, and (B) the storm drain network that transfers flows across topographic divides.
2. Use a series of automated ArcHydro tools in ArcGIS to determine flow direction, flow accumulation, and drainage areas for each catch basin.
3. The prioritization of sustainable streets opportunities (Task 5.1) and development of the SSMP (Task 5.2) will be highly dependent on the accuracy of the catch basin drainage area delineation. Therefore,

drainage area delineation results will be reviewed for QA/QC and as determined necessary, the above algorithms will be revised for improved accuracy until sufficient quality is obtained.

Deliverables:

- GIS dataset of catch-basin-scale drainage area delineation and web-based viewer incorporating dataset.
- Draft technical memo summarizing process and results for catch-basin-scale drainage area delineation.
- Final technical memo summarizing process and results for catch-basin-scale drainage area delineation, incorporating comments from C/CAG and the SAC.

Task 4.3. Identify Sustainable Streets Opportunities in the ROW at the Street–Scale

Development of the San Mateo County Stormwater Resource Plan included an initial screening of all streets in the county that can provide meaningful opportunities for green streets. This screening considered factors such as road type (e.g., local neighborhood, city street), ownership (GI is focused on public and ROW opportunities), and road slope. The Consultant will build upon this screening and develop automated algorithms to identify GI opportunities within streets and the public rights-of-way (ROW) that can be integrated with sustainable street designs. The Consultant will perform the following steps:

1. Develop GIS-based tools that process the available countywide 2017 ortho-imagery data, in conjunction with LiDAR and shaded-relief data, to extract major surface features within the ROW and streets.
2. Tailor algorithms to utilize the above results and automate identification of opportunities for GI features such as vegetative curb extensions at: (A) intersections with catch basins and storm drain infrastructure (to allow cost-effective underdrain connections, as needed), and (B) mid-block locations where they can be integrated with pedestrian and bicycle improvements (considering on-street parking and/or red curb zones). Constraints such as utilities, driveway cuts, hazard areas, etc. will be used to exclude areas from consideration.
3. Perform QA/QC of the identified sustainable street opportunities and locations of GI features. If results indicate that improvements are needed, the above processes will be modified. This process will continue until sufficient QA/QC is achieved.
4. Using algorithms developed in Task 4.2, drainage areas will be delineated for each of the GI features identified with the sustainable street opportunities.

Based on the identified opportunities for sustainable streets and associated GI features, the Consultant will translate information developed in Task 4.3 into assumptions for stormwater capture, treatment, and/or infiltration that can be incorporated in the SUSTAIN model and used for Task 3.2 to evaluate the benefits of sustainable streets for mitigating the impacts of climate change. This same information can be used in future updates to the countywide RAA for assessment of needed green streets to meet long-term MRP goals for pollutant load reduction.

Deliverables:

- GIS dataset of identified opportunities for GI within sustainable streets.
- Draft technical memo summarizing identification of GI opportunities within sustainable streets.
- Final technical memo summarizing identification of GI opportunities within sustainable streets, incorporating comments from C/CAG and the SAC.

Task 5. Prioritization of Sustainable Streets Opportunities and Development of Master Plan

Task 5.1. Develop Prioritization Criteria

The San Mateo County Stormwater Resource Plan included a quantitative scoring and prioritization system that considered multiple benefits of green streets. The output from the Stormwater Resource Plan

prioritization process is 1000's of streets with individual quantitative scores that were categorized as High, Medium, and Low priority for representation in the RAA modeling system. The Consultant will build upon this effort to: (1) incorporate more-detailed information from Task 4 on the opportunities for GI within street ROW and the associated drainage areas, and (2) expand the prioritization approach to provide more-detailed consideration of co-benefits of sustainable streets and community input obtained in Task 2.

Task 4 will provide comprehensive information on the opportunities to incorporate GI within the street ROW throughout the county, including specific locations for GI components (e.g., individual bioretention basins, bulb-outs at intersections) and the associated drainage areas. For Task 5.1, this information will be critical to improving methods for quantifying and scoring the benefits of green streets in terms of effectiveness. For instance, the more locations within a street ROW to incorporate bioretention or the larger the drainage area, the more opportunity to capture, store, and/or infiltrate stormwater. The Stormwater Resource Plan prioritization process considered surrogate factors to evaluate green street effectiveness for stormwater capture, such as imperviousness or hydrologic soil group (e.g., higher imperviousness or more sandy soil can indicate more capture and infiltration). With the new information developed in Task 4, Task 5.1 will incorporate improved metrics for evaluating and scoring green street effectiveness for the SSMP. For instance, a street with a greater drainage area and more GI opportunities within the ROW will be assigned greater scores.

The Consultant team will develop Task 5.1 prioritization criteria that will be grouped into three main categories: performance, constructability, and co-benefits. The performance criteria will add site-level granularity to the Stormwater Resource Plan output by using the detailed information provided in Task 4. This will be coupled with localized data on flooding (if available) or ongoing flood management planning efforts to improve overall projected stormwater performance per street location. In addition to adding granularity to reduce the 1000's of streets into a more manageable prioritization list for master planning, the performance criteria will include data to target preferred subwatersheds for pollutant load reduction and climate adaptation. This will be done by leveraging RAA and Task 3 results for subwatershed-specific stormwater capture benefits, while giving reduced preference to areas expected to be addressed by other efforts, such as those streets that fall within drainage areas of planned regional projects or those that are within priority growth areas that are expected to be addressed via C.3. As an alternative scenario for the SSMP, C/CAG member agencies may wish to explore approaches that *emphasize* green streets within large areas projected for redevelopment, with a goal for municipalities to partner with developers on sustainable street retrofits that can enhance these communities.

Constructability criteria consist of geotechnical constraints and site space constraints. Improved geotechnical data versus the SRP screening allows for better analysis of infiltration feasibility and rates, which improves prioritization of opportunities. Examples of improved site-level data include available boring log data, groundwater well data or depth to groundwater layers, and contaminated soil layers. The LiDAR and utility analysis from Task 4 will improve our understanding of surface and subsurface space constraints for green street retrofit feasibility. Shallow, large diameter utilities, such as water mains and gas transmission mains, provide high risk utility conflicts that reduce GI implementation feasibility and overall project cost-benefit. GIS-level analysis will be cross-checked using visual inspection at top sites to verify utility locations by identifying valve box, manholes, and other visible indicators.

Co-benefit criteria help to rank sites, but more importantly, they serve as indicators of project synergy and funding opportunities that can be used with Task 5.2 to support project phasing and SSMP development. Criteria such as overlaps with planned capital streetscape improvement projects or with other city of countywide priorities, such as Safe Routes to Schools, can be critical for identifying projects to prioritize for near-term implementation. Some of these co-benefits were considered in the Stormwater Resource Plan prioritization process, but improvements can be made through further coordination with C/CAG member agencies. Co-benefit criteria also allow for incorporation of community engagement and stakeholder input from Task 2 to be factored into project selection by including the sustainable street co-benefits that are most important to the local community. This may be habitat enhancement or new community gathering spaces, or stakeholders' interests may be more performance-driven, such as addressing nuisance flooding.

Deliverables:

- Draft I technical memo outlining the sustainable streets prioritization criteria and approach.
- Draft II technical memo outlining the sustainable streets prioritization criteria and approach, incorporating comments from C/CAG and the SAC.
- Final technical memo outlining the sustainable streets prioritization criteria and approach, incorporating public/stakeholder comments.
- GIS dataset of prioritized sustainable street projects and web-based viewer incorporating dataset.

Amendment No. 1 Scope Enhancement:

Based on the preliminary prioritization efforts completed during the first fiscal year of this project, it is evident that there are distinct sustainable street typologies that have different project drivers, design elements, and implementation mechanisms. Accordingly, the importance and associated weighting of the prioritization criteria differs between these typologies. This includes evaluating potential criteria to identify new curb extension opportunities in locations where transportation projects are currently not planned. The Consultant will incorporate outcomes from Task 5.2 to define recommended rating criteria per typology. The goal of this effort is to create prioritization criteria and rating outputs that more directly map to defined implementation mechanisms.

Amendment No. 1 Scope Enhancement Deliverables:

- GIS map outputs summarizing prioritization scores by category, where the categories are stormwater performance, constructability (hydrogeological constraints and site space constraints), co-benefits, and project synergies.

Task 5.2. Develop Countywide Sustainable Streets Master Plan

Converting a ranked list of street segments into a master plan requires grouping segments into feasible sustainable street projects, evaluating implementation mechanisms (e.g., policies, programs, and co-located projects), and identifying funding sources (e.g., Caltrans, Prop 1, streetscape improvement projects). Ranked street segments from Task 5.1 will be grouped by linking contiguous top-ranked streets into cohesive projects that meet minimum drainage area and cost-effectiveness metrics. This process of identifying individual projects will also take into consideration physical overlaps with other planned streetscape projects, complete street initiatives, or active transportation network recommendations that could serve as implementation mechanisms. The result of this effort will be a ranked project list with quantified costs and benefits. The total runoff capture from the project list will be quantified and compared to volume capture targets identified by the RAA to be met with green streets. In addition to water quality benefits, the projects may also support flooding, climate change, recharge, pedestrian/bicycle safety and connectivity, transit operation improvements, and other co-benefit goals. These projects will be phased into a recommended master plan by directly linking them to implementation mechanisms and funding sources, evaluating project schedules and costs, and creating a long-term plan that spreads fiscal and staffing resources into a feasible annual allocation.

Review Existing Plans to Define Synergy Opportunities

The Consultant team will ensure that the SSMP leans heavily on linking to project synergy opportunities that would enable sustainable street retrofits at a rate needed to achieve stormwater capture targets and climate change adaptation goals. C/CAG member agencies are developing GI plans that map out GI projects within their boundaries, including green streets, to meet MRP pollutant reduction targets by 2040. The SSMP will directly link to these GI plans to align recommendations, identify local supporting procedures, and reference key documents. The SSMP will serve as an implementation extension of these GI plans.

As existing planned transportation projects and their associated funding sources present the primary opportunities for implementing sustainable streets, a critical step will be to evaluate existing transportation plans and project data throughout the County to identify projects with the best potential for GI integration.

The Consultant team will coordinate with C/CAG member agencies to identify planned streetscape capital improvement projects within the county and consider those that could serve as synergy opportunities for GI implementation. This process will leverage potential co-located projects originally identified for the SRP and to be refined in Task 5.1, as well as the ongoing efforts within the GI plans. The integration of bicycle facility improvements, sidewalks, safe crossings, and transit routes and stops with stormwater management benefits will result in sustainable street projects that have more widespread public support and financial tools for implementation.

Develop Sustainable Streets Policy Proposals and Best Practices

Capital project proposals are only one component of a comprehensive Sustainable Streets Master Plan. Sustainable street projects can also be developed and supported through policy and programmatic mechanisms. As part of the development of the SSMP, the Consultant will work with C/CAG to compile existing policies and programs in the County related to sustainable street development and to determine policy and programmatic needs and opportunities related to sustainable street development. Based on this analysis, the Consultant will work with C/CAG to propose programmatic and policy mechanisms to support sustainable streets implementation. This may include a model Sustainable Streets policy or a series of model Sustainable Streets policies. These proposals will detail the type and scope of streetscape projects that warrant the evaluation and implementation of GI. Policy proposals may also include business practice improvements and protocols, such as a protocol for designing sustainable streets for climate change adaptation or a protocol for community outreach during sustainable street planning, design, and construction.

Develop Recommended Sustainable Street Network

The SSMP will be accompanied by a database of prioritized sustainable street opportunities, with quantified costs and benefits, documented site suitability characteristics, and identified implementation mechanisms.

Top priority projects will have an increased level of detail in the SSMP. This increased detail includes identifying the potential project lead, collaborating agencies, and funding sources, while also verifying project feasibility via site evaluations and developing more detailed project cost estimates and schedules. The analysis of funding opportunities and linking of projects to funding sources will draw on past work by BASMAA including the "Roadmap of Funding Solutions for Sustainable Streets". Input from C/CAG members and knowledge gained from stakeholder engagement outlined in Task 2 will also be critical to the process of identifying the top projects to include in the 0 to 5-yr plan. The data for the projects in the 10- and 20-yr implementation horizon will be documented within the SSMP and included in web-based mapping tools similar to the tool developed for the SRP. This will enable easy updates as data changes and will facilitate assessments of sustainable street viability as synergy opportunities arise from 2020 to 2040.

Deliverables:

- Draft I SSMP report that combines output from the other tasks into a comprehensive 5-, 10-, and -20-yr sustainable streets implementation plan.
- Draft II SSMP report that incorporates comments from C/CAG and the SAC.
- Final SSMP report that incorporates public/stakeholder comments and additional comments from C/CAG and the SAC.

Amendment No. 1 Scope Enhancement:

To facilitate grouping of street segments into sustainable street projects and to give definition to these opportunities, the Consultant will develop sustainable street typologies. The typologies will be organized by their associated typical characteristics, such as their primary project driver, design elements, and funding sources. The Consultant will participate in meetings with C/CAG and Caltrans to discuss and finalize the proposed typologies to be used for locating and categorizing sustainable street projects.

To support linking potential GI opportunities with existing or planned synergy opportunities the Consultant team will collect available plans and data, assess data gaps, and work with municipal staff to locate missing data. Based on the results from the first fiscal year of this project, it is likely that the team may need to create

data and/or convert data into an appropriate form for analysis, namely GIS. The team will use the working sustainable streets typologies to vet existing transportation project opportunities for potential for GI inclusion. For projects that represent a synergy opportunity, the team will document planned project scope, schedule, and existing prioritization and funding mechanisms. As part of this review, the team will also document related policies and programs supporting project implementation and prioritization.

Based on the results, the Consultant Team will present the best synergy opportunities in map and list form for C/CAG staff to review. This includes synergy opportunities for longer, linear sustainable street projects, as well as isolated curb extension improvements at intersections. The Consultant will develop draft and final memoranda documenting these proposals and submit them to C/CAG for review. Per C/CAG's direction, the team may also present these recommendations to C/CAG member agencies for discussion and review before inclusion in the Final Plan.

Because co-benefit priorities and project synergy opportunities change over time, the Consultant will develop a tool to enable C/CAG member agencies to evaluate the viability of current and future GI curb extension opportunities at intersections.

To ensure the SSMP will be a highly visual and tool-oriented master plan document that is easily digestible by a diverse set of stakeholders, including the public, the Consultant team will conduct an extra round of edits and draft version of the SSMP report in InDesign. Documentation of more complex, technical processes and procedures are expected to be included as appendices, as necessary.

Amendment No. 1 Scope Enhancement Deliverables:

- Draft III SSMP report that formats the document in InDesign.
- Draft and Final memorandum summarizing policy and programmatic recommendations.
- Map and list of best transportation project synergy opportunities by project type.
- Intersection Assessment Tool – Draft and Final

Task 6. Project Concepts

Task 6.1. Develop Pilot Project Concepts

The Consultant team will work with C/CAG and its member agencies to select 10 high priority projects evaluated in Task 5 for development of conceptual designs. The conceptual designs will be consistent with the San Mateo County Green Streets and Parking Lots Design Guidebooks. To support this task, the Consultant team will build upon the conceptual design templates and layouts prepared for the Stormwater Resource Plan that have proven successful in conveying information to the State Water Resources Control Board and Caltrans and have led to successful grant funding and funding partnerships. To build upon these concept templates, the Consultant team will incorporate more-detailed information to demonstrate how GI can be integrated with bicycle and pedestrian improvements, discuss the multiple benefits of sustainable streets for adapting to climate change, quantify stormwater capture and pollutant load reduction benefits (based on methods consistent with the RAA to maintain relevancy with GI plans), and provide cost estimates for various phases of design and construction to support grant applications or discussions on funding or partnerships. The Consultant team will develop visually compelling concepts, while also summarizing water quality, greenhouse gas, and other project benefits. The goal is to create concepts that serve as effective tools for C/CAG member agencies to convey project potential to stakeholders and potential funding partners.

Deliverables:

- Up to 10 Draft I project concepts
- Up to 10 Draft II project concepts, incorporating comments from C/CAG member agencies
- Up to 10 Final project concepts, incorporating public/stakeholder comments and additional comments from C/CAG and the SAC, to be incorporated in the SSMP.

Amendment No. 1 Scope Enhancement:

The Consultant team will work with C/CAG and its member agencies to develop up to two typical details showing the integration of GI into complete streets. This includes compiling an inventory of related details crated to date for C/CAG member agencies (as part of GI Plans or the C/CAG Green Infrastructure Design Guide) to help identify gaps and make recommendations on new details to develop.

Amendment No. 1 Scope Enhancement Deliverables:

- Technical memo on existing typical details, gaps, and recommendations for additional details to be developed
- Draft typical details
- Final typical details, incorporating comments from C/CAG member agencies and the SAC

Task 7. Web-Based Sustainable Streets Project Implementation Mapping and Tracking Tool

Task 7.1. Develop a Mapping and Tracking Tool

There are several functional considerations for development of a tracking tool that will meet the various needs of C/CAG member agencies for demonstrating progress implementing GI and sustainable streets, quantifying benefits (e.g., progress towards meeting MRP pollutant reduction targets and climate change adaptation goals), and presenting results. There are additional technical considerations of a web-based system related to software, user access, and system maintainability. The following outlines key considerations for the tracking tool and proposed approaches to meet these needs given the budget and schedule of the project. The Consultant will meet with C/CAG and its member agencies, Caltrans, and other stakeholders to discuss these and other considerations to ensure that all user preferences and desired functionality are understood. Based on this feedback, the Consultant will develop a detailed software development plan that outlines the system architecture, user access, system requirements (e.g., either hosted on local server or cloud), and other details for C/CAG review.

Once the plan is approved, the Consultant will develop the system prepare a user manual, and provide a training course for C/CAG and its member agencies and stakeholders.

Leverage the RAA to Calculate Tracking Metrics (Relevant to the MRP and Water Resources Planning Initiatives)

Key to the tracking of GI implementation is the quantitative metrics that will be used to assess and report progress to the Water Board for meeting interim and final PCB and mercury reduction targets in the MRP. The countywide RAA is translating load reduction targets into preferred quantifiable metrics that can be used by the tracking tool. The outputs are envisioned to lead to future "stormwater volume management" goals that can be linked to parallel planning efforts for stormwater, water supply and reuse, flood resiliency, precipitation-based climate change impacts, and more. In this way, stormwater volumes can become the common "currency" for future integrated planning efforts, and a common goal that links various funding opportunities from state agencies (e.g., Prop 1, Caltrans). The RAA will estimate stormwater volumes to be managed over time to meet the pollutant reduction targets, which will be reported spatially (by municipal jurisdiction and subwatershed) and by each category of GI project (e.g., LID, regional projects, green streets). The tracking tool will serve as an essential component supporting the adaptive management process and provide recalculation of managed stormwater volumes as projects are implemented.

The Consultant will use the same algorithms from the RAA models to generate outputs for the tracking tool. By leveraging the work to date, the Consultant will cost-effectively prepare a user-friendly tool for C/CAG member agencies to enter projects and estimate volumes that are consistent with RAA metrics that will serve as the foundation for implementation, compliance reporting, and adaptive management.

Public Domain Tool

The Consultant will deliver a customized tool built upon a technology stack that is compatible with nearly all municipal IT systems while also avoiding any extra licensing fees. The Consultant will utilize free and

open source software (FOSS) for the web-based architecture. The tracking tool will be built upon FOSS and will accept and output multiple data formats; allow for interactive mapping; and provide efficient user management, maintenance, and data consistency.

Functionality and User Friendliness

Functionality and user friendliness can be the most important considerations for the tracking tool to ensure that the system continues to be utilized by C/CAG member agencies and stakeholders. Functionality refers to the usefulness of the system—if the system is considered to be a useful tool then users will continue to access it for their planning needs. User friendliness refers to the system's ease of access, aesthetics, and overall "feel" of the system. For a tool that handles complex subjects and data (i.e., GI implementation, volume capture, mapping, etc.) then functionality and user friendliness are even more important for ease of operation and display of outputs that are intuitive and self-evident (reducing the need for overly detailed manuals or continuous training).

It is anticipated that elements of the tracking tool will be public facing and password-protected. For instance, the tracking tool can include a unique login for each C/CAG member agency in order for city or County staff to update and view GI implementation progress within their jurisdiction only. In addition, jurisdictional data will also be rolled up to report and visualize results countywide (combining all GI projects implemented within all jurisdictions), which will support C/CAG (or their consultants) with compiling information for preparation of annual reports to the Water Board. Separately, a public-facing element of the tracking tool (accessed from the C/CAG or SMCWPPP website) could include narratives and visualizations that are less technical and serve the additional role as a public outreach tool. The Consultant will work closely with C/CAG and its member agencies to identify target audiences of the tracking tool, various logins/permissions needed, and visualizations/narratives to be tailored for the public-facing and password-protected elements.

Deliverables:

- Draft software development plan that outlines the system architecture, user access, system requirements (e.g., either hosted on local server or cloud), and other details for the proposed web-based tracking tool.
- Final software development plan incorporating comments from C/CAG and the SAC.
- Draft web-based tracking tool.
- Training session providing a demonstration of the web-based tracking tool.
- Final web-based tracking tool incorporating recommended changes and comments received from C/CAG and the SAC.

Amendment No. 1 Scope Enhancement:

Once the software development plan is approved the Consultant will develop a draft system for review by C/CAG and its member agencies. Following this review, the Consultant will hold a workshop to provide a detailed discussion of additional considerations for system functionality and capability. Feedback received during this workshop will be documented in a technical memorandum that will serve as an addendum to the software development plan and identify additional goals and considerations for development of the tracking system. It is anticipated that additional goals and considerations may include metrics to be quantified and tracked, approaches for visualizing results, and output from the tool to support annual reporting. Based on this feedback, the Consultant will incorporate the additional goals and considerations into the tracking tool.

Amendment No. 1 Scope Enhancement Deliverables:

- Workshop with C/CAG and its member agencies to discuss additional goals and considerations for tracking tool.
- Technical memorandum summarizing additional goals and considerations, serving as an addendum to the software development plan.

Total Project Budget

1	**Project Initiation**	**$71,011**
1.3	Staff/Consultant Coordination Meetings	**$26,440**
1.4	Stakeholder Advisory Committee Meetings	**$22,641**
1.5	Consultant Project Management	**$21,930**
2	**Community Engagement**	**$88,110**
2.1	Develop Community Engagement Strategy	**$30,790**
2.2	Community Stakeholder and Engagement Meetings	**$57,320**
3	**Climate Adaptation Risk Analysis on Local Transportation Network**	**$88,269**
3.1	Quantify climate change-related precipitation impacts related to the transportation network	**$42,330**
3.2	Quantify stormwater capture benefits	**$45,939**
4	**Hi-Resolution Data Analysis and Fine-Scale Drainage Delineation**	**$200,420**
4.1	Data Collection	**$30,875**
4.2	High-resolution drainage system delineation	**$80,285**
4.3	Identify Sustainable Streets opportunities in the ROW at the street-scale	**$89,260**
5	**Prioritization of Sustainable Streets Opportunities and Development of Master Plan**	**$317,690**
5.1	Develop prioritization criteria	**$65,428**
5.2	Develop Countywide Sustainable Streets Master Plan	**$252,262**
6	**Project Concepts**	**$98,910**
6.1	Develop pilot project concepts	**$98,910**
7	**Web-based Sustainable Streets Project Implementation Mapping and Tracking Tool**	**$266,985**
7.1	Develop a mapping and tracking tool	**$266,985**
	Total	**$1,131,395**

Fiscal Year 2018-19 Budget

Task No.	Task	Paradigm					Lotus				Alta				EOA			URD		NHC		CD + A		Team Total
		Principal Engineer	Sr. Engineer	Sr. Developer	Associate Engineer	Paradigm Total	Principal	Sr. Engineer	Design Engineer	Lotus Total	Sr. Design Associate	Planning Associate	Planner	Alta Total	Managing Engineer	Senior Scientist	EOA Total	Principal	URD Total	Senior Scientist	NHC Total	Principal	CD+A Total	
		$215	$190	$175	$155		$195	$185	$125		$205	$163	$106		$216	$172		$195		$172		$240		
1	**Project Initiation**																							**$22,950**
1.3	Staff/Consultant Coordination	16				$3,440	12			$2,340	12			$2,460		2	$344		$0		$0		$0	$8,584
1.4	Stakeholder Advisory Committee	12				$2,580	10			$1,950	6			$1,230	6		$1,296		$0		$0		$0	$7,056
1.5	Consultant Project Management	34				$7,310				$0				$0			$0		$0		$0		$0	$7,310
2	**Community Engagement**																							**$45,390**
2.1	Develop Community Engagement	2				$430	2			$390	72	30		$19,650		60	$10,320		$0		$0		$0	$30,790
2.2	Community Stakeholder and Engagement Meetings	4				$860	4			$780	24	24		$8,832		24	$4,128		$0		$0		$0	$14,600
3	**Climate Adaptation Risk Analysis on Local Transportation Network**																							**$0**
3.1	Quantify climate change-related precipitation impacts related to the transportation netw ork					$0				$0				$0			$0		$0		$0		$0	$0
3.2	Quantify stormw ater capture benefits					$0				$0				$0			$0		$0		$0		$0	$0
4	**Hi-Resolution Data Analysis and Fine-Scale Drainage Delineation**																							**$200,420**
4.1	Data Collection	10	28		151	$30,875				$0				$0			$0		$0		$0		$0	$30,875
4.2	High-resolution drainage system	20	110	75	180	$66,225	8		100	$14,060				$0			$0		$0		$0		$0	$80,285
4.3	Identify Sustainable Streets opportunities in the ROW at the street-scale	20	120	80	140	$62,800	8	40	140	$26,460				$0			$0		$0		$0		$0	$89,260
5	**Prioritization of Sustainable Streets Opportunities and Development of Master Plan**																							**$17,550**
5.1	Develop prioritization criteria	4			20	$3,960	20	30		$9,450	12			$2,460			$0		$0		$0	7	$1,680	$17,550
5.2	Develop Countyw ide Sustainable Streets Master Plan					$0				$0				$0			$0		$0		$0		$0	$0
6	**Project Concepts**																							**$0**
6.1	Develop pilot project concepts					$0				$0				$0			$0		$0		$0		$0	$0
7	**Web-based Sustainable Streets Project Implementation Mapping and Tracking Tool**																							**$87,625**
7.1	Develop a mapping and tracking	32	65	220	165	$83,305				$0				$0	20		$4,320		$0		$0		$0	$87,625
	Total	**154**	**323**	**375**	**656**	**$261,785**	**64**	**70**	**240**	**$55,430**	**126**	**54**	**0**	**$34,632**	**26**	**86**	**$20,408**	**0**	**$0**	**0**	**$0**	**7**	**$1,680**	**$373,935**

Fiscal Year 2019-20 Budget

Task	Paradigm					Lotus				Alta				EOA			URD		NHC		CD + A			Scope Enhancements and Resulting Changes to Costs	
	Principal Engineer	Sr. Engineer	Sr. Developer	Associate Engineer	Paradigm Total	Principal	Sr. Engineer	Design Engineer	Lotus Total	Sr. Design Associate	Planning Associate	Planner	Alta Total	Managing Engineer	Senior Scientist	EOA Total	Principal	URD Total	Senior Scientist	NHC Total	Principal	CD+A Total	Team Total		
	$215	$190	$175	$155		$195	$185	$125		$205	$163	$106		$216	$172		$195		$172		$240			Original	Net Change
Project Initiation																							**$48,061**	**$43,060**	**$5,001**
Staff/Consultant Coordination Meetings	32				$6,880	24			$4,680	24			$4,920		8	$1,376		$0		$0		$0	$17,856	$17,856	$0
Stakeholder Advisory Committee Meetings	24				$5,160	24			$4,680	9	12		$3,801	9		$1,944		$0		$0		$0	$15,585	$10,584	$5,001
Consultant Project Management	68				$14,620				$0				$0			$0		$0		$0		$0	$14,620	$14,620	$0
Community Engagement																							**$42,720**		
Develop Community Engagement Strategy					$0				$0				$0			$0		$0		$0		$0	$0		
Community Stakeholder and Engagement Meetings	12				$2,580	12			$2,340	70	70		$25,760		70	$12,040		$0		$0		$0	$42,720		
Climate Adaptation Risk Analysis on Local Transportation Network																							**$88,269**		
Quantify climate change-related precipitation impacts related to the transportation network	12	80		114	$35,450				$0				$0			$0		$0	40	$6,880		$0	$42,330		
Quantify stormwater capture benefits	20	90		145	$43,875				$0				$0			$0		$0	12	$2,064		$0	$45,939		
Hi-Resolution Data Analysis and Fine-Scale Drainage Delineation																							**$0**		
Data Collection					$0				$0				$0			$0		$0		$0		$0	$0		
High-resolution drainage system delineation					$0				$0				$0			$0		$0		$0		$0	$0		
Identify Sustainable Streets opportunities in the ROW at the street-scale					$0				$0				$0			$0		$0		$0		$0	$0	Original	Net Change
Prioritization of Sustainable Streets Opportunities and Development of Master Plan																							**$300,140**	**$172,512**	**$127,628**
Develop prioritization criteria	8			20	$4,820	24	60	120	$30,780	12	40	13	$10,358			$0		$0		$0	8	$1,920	$47,878	$17,790	$30,088
Develop Countywide Sustainable Streets Master Plan	40	40	10	80	$30,350	180	260	370	$129,450	40	220	300	$75,860	32		$6,912	30	$5,850		$0	16	$3,840	$252,262	$154,722	$97,540
Project Concepts																							**$98,910**	**$88,475**	**$10,435**
Develop pilot project concepts	4			60	$10,160	60	170	240	$73,150				$0			$0	80	$15,600		$0		$0	$98,910	$88,475	$10,435
Web-based Sustainable Streets Project Implementation Mapping and Tracking Tool																							**$179,360**	**$133,250**	**$46,110**
Develop a mapping and tracking tool	60	140	360	468	$175,040				$0				$0	20		$4,320		$0		$0		$0	$179,360	$133,250	$46,110
Total	**280**	**350**	**370**	**887**	**$328,935**	**324**	**490**	**730**	**$245,080**	**155**	**342**	**313**	**$120,699**	**61**	**78**	**$26,592**	**110**	**$21,450**	**52**	**$8,944**	**24**	**$5,760**	**$757,460**		

The following rates will be used for identified proposal staff and others that may work on the project

Paradigm Environmental

Principal Engineer	$215
Senior Engineer	$190
Sr. Developer	$175
Associate Engineer	$155
Associate Developer	$145
Associate Scientist	$135

Lotus Water

Principal-in-charge	$195
Senior Engineer	$185
Project Manager	$170
Project Engineer	$140
Design Engineer	$125
CADD/Graphics	$105
Admin/PM Support	$95

Alta Planning + Design

Principal	$270
Senior Design Associate	$205
Associate Engineer	$170
Planning Associate	$163
Design Associate	**$135**
Planner	$106
Administration	**$78**

EOA

Principal	$230
Managing Engineer/Scientist III	$216
Managing Engineer/Scientist II	$214
Managing Engineer/Scientist I	$211
Design Engineer	$125
CADD/Graphics	$105
Senior Engineer/Scientist III - Project Leader	$194
Senior Engineer/Scientist II	$172
Senior Engineer/Scientist I	$154
Associate Engineer/Scientist II	$144
Associate Engineer/Scientist I	$117
Technician	$94
Clerical/Computer Data Entry	$70

Urban Rain | Design

Principal	$195
Intern	$75

Northwest Hydraulic Consultants

Senior Scientist	$172

CD+A

Principal	$240