2:30 PM, Thursday, April 21, 2016
San Mateo County Transit District Office
1250 San Carlos Avenue, 2nd Floor Auditorium
San Carlos, California

STORMWATER (NPDES) COMMITTEE AGENDA

1. Public comment on items not on the Agenda (presentations limited to three minutes). Breault No materials

2. Stormwater Issues from March C/CAG Board meeting:
   • Receive copy of executed Task Order EOA-02, issued to EOA, Inc. for an amount not to exceed $247,027 for water quality monitoring services to the Countywide Water Pollution Program for Fiscal Year 2015-16. (Information) Fabry No materials
   • Review and approve Resolution 16-04, authorizing the Executive Director to execute Task Orders with EOA, Inc., Larry Walker & Associates, and S. Groner & Associates in amounts not to exceed $464,480, $326,209, and $250,000, respectively, for technical support services to the Countywide Water Pollution Program for Fiscal Year 2015-16. (ACTION) Fabry No materials

3. ACTION – Review and approve January 21 and February 18 Stormwater Committee meeting minutes Fabry Pages 1-8

4. INFORMATION – Announcements on stormwater issues Fabry Verbal

5. ACTION - Receive presentation on and provide feedback to C/CAG’s technical consultant on project screening and prioritization for the countywide Stormwater Resource Plan Fabry/ Carter Page 9-60

6. ACTION – Review preliminary 2016-17 budget information for the Countywide Water Pollution Prevention Program Fabry Handouts

7. Regional Board Report Mumley No Materials

8. Executive Director’s Report Wong No Materials

9. Member Reports All No Materials

1 For public transit access use SamTrans Bus lines 390, 391, 292, KX, PX, RX, or take CalTrain to the San Carlos Station and walk two blocks up San Carlos Avenue. Driving directions: From Route 101 take the Holly Street (west) exit. Two blocks past El Camino Real go left on Walnut. The entrance to the parking lot is at the end of the block on the left, immediately before the ramp that goes under the building. Enter the parking lot by driving between the buildings and making a left into the elevated lot. Follow the signs up to the levels for public parking. Persons with disabilities who require auxiliary aids or services in attending and participating in this meeting should contact Mima Guilles at 650 599-1406, five working days prior to the meeting date.

City/County Association of Governments of San Mateo County (C/CAG)
555 County Center, Redwood City, CA 94063. Telephone 650.599.1406. Fax 650.361.8227.
C/CAG AGENDA REPORT

Date: April 21, 2016

To: Stormwater Committee

From: Matthew Fabry, Program Manager

Subject: Review and approve January 21 and February 18, 2016 Stormwater Committee meeting minutes

(For further information or questions contact Matthew Fabry at 650 599-1419)

RECOMMENDATION

Review and approve January 21 and February 18, 2016 Stormwater Committee meeting minutes, as drafted.

ATTACHMENTS

1. Draft January 21, 2016 Minutes
2. Draft February 18, 2016 Minutes
The Stormwater Committee met in the SamTrans Offices, 1250 San Carlos Avenue, San Carlos, CA, 2nd floor auditorium. Attendance at the meeting is shown on the attached roster. In addition to the Committee members, also in attendance were Sandy Wong (C/CAG Executive Director), Matt Fabry (C/CAG Program Manager), Jon Konnan (EOA, Inc.), Jim Eggemeyer (San Mateo County), Patrick Ledesma (San Mateo County), Michelle Daher (East Palo Alto), Azalea Mitch (Menlo Park), and John Fuller (Daly City). In Chair Breault’s absence, Vice-Chair Walter called the meeting to order at 2:40 p.m.

1. Public comment: None

2. C/CAG staff Matt Fabry provided an update on issues relevant to the Committee from the November and December C/CAG Board meetings:
   - In November the Board approved issuing a task order to EOA, Inc. to continue providing technical support services to the Countywide Water Pollution Program while C/CAG staff completes the competitive procurement process for selecting consultants to continue supporting the Program in the future.
   - In November the Board reviewed and approved a resolution that affirmed C/CAG’s commitment to supporting its member agencies in meeting stormwater permitting mandates, requested State Water Board partnership on addressing pollutants of concern, and expressed concern regarding the quantitative load reduction requirement for PCBs which are presented as Numeric Effluent Levels rather than Numeric Action Levels in the reissued Municipal Regional Permit (MRP).
   - In December the Board reviewed and approved the appointment of Peter Vorametsanti, Interim Public Works Director, to represent the City of Millbrae on the Stormwater Committee, and received a presentation from Fabry on key provisions of the reissued MRP.

3. ACTION – The draft minutes from the August 20 and October 15, 2015 Stormwater Committee meetings were approved unanimously. (Motion: Willis, Second: Oskoui).

4. PRESENTATION – Fabry and Jon Konnan (EOA, Inc.) provided a presentation on key provisions of the reissued MRP and how they compare to the previous MRP. Fabry noted that the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) adopted the revised MRP on November 19, 2015. Despite many hours of testimony at the adoption hearing, Permittees remaining concerns with the final draft permit were mainly not addressed. The permit regulates the stormwater discharges from C/CAG’s member agencies, all of the municipalities in Santa Clara, Alameda, and Contra Costa Counties, and the cities of Vallejo, Fairfield, and Suisun City. It addresses the full spectrum of stormwater issues, including municipal operations, industrial and commercial facility BMPs/inspections, construction site management, water quality monitoring, public outreach, new and redevelopment, and certain water quality pollutants of concern. Key provisions in the revised permit include requirements to reduce trash, mercury, and PCBs (polychlorinated biphenyls) discharges from storm drains and for each municipality

DRAFT Meeting Minutes
to develop a Green Infrastructure Plan.

Committee members asked about C/CAG’s level of support to agencies in developing their Green Infrastructure Plans. Fabry stated that C/CAG will provide as much support as possible on the countywide level (e.g., guidances and templates) but noted that each agency will need to have its own local council and community engagement process.

Fabry noted one key change with the revised MRP is that potable water discharges are no longer covered. Agencies that have water utilities must get coverage under the State General Permit for Drinking Water System Discharges and should have filed a Notice of Intent for coverage by January 1, 2016.

Konnann summarized the Countywide Water Pollution Prevention Program’s recent approach to identifying watersheds in San Mateo County where PCBs and mercury controls would be most cost-effective. The approach is consistent with MRP requirement and includes desktop and field monitoring components. It is intended to show a reasonable level of effort towards identifying source areas for these pollutants. Konnann also briefly summarized the new MRP requirement to develop a program to manage PCBs-containing materials and wastes during building demolition. The program is for buildings constructed during the 1950s through 1970s when PCBs were in widespread use including in caulking around windows and doors and in concrete joints and in sealants in floor systems. Konnann noted that this program will play a key role in meeting the PCBs load reduction requirements, in that the permit stipulates that two-thirds of the required load reduction will be credited if the program is satisfactorily implemented.

Committee member Walter asked if there is ongoing monitoring for PCBs and mercury in fish in San Francisco Bay and Konnann confirmed that this type of monitoring has been and will continue to be conducted every few years.

5. ACTION – In August 2015, the C/CAG Board approved 10 on-call contracts with firms qualified to provide support to the Countywide Water Pollution Prevention Program in various categories of expertise. In November, C/CAG staff issued a Request for Proposals to the 10 firms for numerous support tasks associated with the reissued Municipal Regional Permit. Nine of the 10 firms submitted proposals. Staff convened a review panel including Committee members Porter and Oskoui and conducted interviews during the first week of January. Fabry provided a handout detailing the review panel’s recommendation regarding which consultant should receive task orders to provide support services to the Countywide Water Pollution Prevention Program. Committee members requested a future presentation by the selected consultants on the overall scopes of work.

The Committee unanimously approved the staff recommendation (Motion: Murtuza, Second: McMinn).

6. INFORMATION – Fabry summarized information on a SMCWPPP/SCVURPPP water quality petition requesting the State Water Resources Control Board (State Water Board) to review the Regional Water Board’s reissuance of the MRP. At the December 8, 2015 C/CAG Board meeting the C/CAG Board directed staff to explore opportunities for signing on with another Countywide Stormwater Program’s petition. C/CAG’s Countywide Water Pollution Prevention Program signed on as a co-petitioner with the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) on behalf of C/CAG’s member agencies. The SCVURPPP petition addressed procedural concerns with the reissuance process as well as the technical issue of whether Numeric Effluent Limitations for mercury and polychlorinated biphenyls (PCBs) reductions are appropriate instead of Numeric Action Levels. The petition was filed on December 16, 2015.
Committee members requested additional information about the timeline for the State Water Board to consider the petition. Committee members also requested C/CAG staff forward a model letter urging State Water Board review of the SMCWPPP/SCVURPPP petition on the reissued MRP.

7. Regional Board Report: NONE

8. Executive Director’s Report: C/CAG Executive Director Sandy Wong provided an update on the new C/CAG Water Committee, which will facilitate discussions on countywide approaches to water related issues, such as stormwater runoff pollution control, flood control, and sea level rise. The new committee includes seats for elected officials and city/county managers, and a seat for BAWSCA. Wong noted that the Water Committee is inviting various guest speakers, including the following in February 2016:

- A speaker from the Santa Clara Valley Water District to discuss how that organization functions, including aspects such as obtaining federal funding.
- A representative from the Integrated Water Resource Management Plan program, especially since San Mateo County may not be getting its share of available funding through this program.

9. Member Reports: NONE

Vice-chair Walter adjourned the meeting at 3:46 p.m.
The Stormwater Committee met in the SamTrans Offices, 1250 San Carlos Avenue, San Carlos, CA, 2nd floor auditorium. Attendance at the meeting is shown on the attached roster. In addition to the Committee members, also in attendance were Sandy Wong (C/CAG Executive Director), Matt Fabry (C/CAG Program Manager), Chris Sommers (EOA, Inc.), Sandy Mathews (Larry Walker and Associates), Steve Carter and John Riverson (Paradigm Environmental), Phil Erickson (Community Design + Architecture), Stephen Groner (S. Groner Associates), Tatum Mothershead and Cynthia Royer (Daly City), Patrick Ledesma, Julie Casagrande, Joe LaClair, and Andrea Chow (San Mateo County), Terence Kyaw (Redwood City), Ali Hatefali (Town of Hillsborough), Leticia Alvarez and Gilbert Yau (City of Belmont), John Swiecki and Keegan Black (City of Brisbane), Paige Safe (City of San Carlos), Azalea Mitch (City of Menlo Park), Sarah Scheidt and Ralph Braboy (City of San Mateo), Andrew Wemmer (City of South San Francisco), Michelle Daher (City of East Palo Alto), and Dale Bowyer (Regional Water Board).

Vice-chair Walter called the meeting to order at 2:10 p.m.

1. Public comment: None

2. C/CAG staff Matt Fabry provided an update on issues relevant to the Committee from the January C/CAG Board meeting. The Board received a copy of the water quality petition requesting the State Water Resources Control Board review the San Francisco Bay Regional Water Quality Control Board’s reissuance of the Municipal Regional Permit. The Board also approved the appointment of Justin Murphy, Director of Public Works, to represent the City of Menlo Park on the Stormwater Committee.

3. ACTION – Approval of the draft minutes from the January 21, 2015 Stormwater Committee meeting was deferred due to lack of a quorum.

4. PRESENTATION – C/CAG’s technical consultants provided the following presentations on planned Municipal Regional Permit compliance support to member agencies:

   - Chris Sommers (EOA) – EOA is continuing to provide support at the local (Permittee), countywide (SMCWPPP) and regional (BASMAA) levels. EOA will continue to provide general support to the Program Manager, support for most subcommittees, trainings, and assistance with annual reporting, trash load reduction, green infrastructure “no missed opportunities,” mercury and PCBs controls, and water quality monitoring.

   - Sandy Mathews (LWA) – LWA is assessing SMCWPPP’s subcommittee structure, including the mix of focus areas, frequency and length of meetings, and participants vs. target audiences. LWA will identify any opportunities for improvement. LWA is also reviewing SMCWPPP’s training program and methods relative to requirements in the reissued Municipal Regional Permit (MRP 2.0) and target audiences and will develop a training framework document.

   - Phil Erickson (CD+A) – Erickson reviewed basic information on green infrastructure (GI) including its multiple benefits. Erickson then presented the schedule and process for CD+A to assist local agencies in San Mateo County to prepare individual GI plans and described coordination with
the Stormwater Resource Plan development and mercury and PCBs load reduction tasks. A new San Mateo County GI Technical Advisory Committee is being formed that will need involvement of staff from a variety of municipal departments. Standard specifications and design details will be compiled and made available along with a model GI plan. CD+A will assist with identifying GI opportunities, prioritization, and implementation tracking. Measures of success will include MRP 2.0 compliance and the level of integration of GI into standard municipal practices.

- Steve Carter (Paradigm) – Paradigm is assisting with development of a countywide Stormwater Resource Plan (SRP). A June 2016 draft of the SRP will incorporate project concepts in support of Proposition 1 grant applications. The final SRP is anticipated to be due to the State by January 2017. The SRP will start by characterizing drainage areas, stormwater infrastructure, land characteristics (soils, topography, land use, imperviousness), hydrology (rainfall and flow), and pollutant sources and transport. It will then identify opportunities for stormwater capture projects and GI and prioritize, using a GIS screening of public parcels and rights-of-way. The prioritization will be based on maximum effectiveness for stormwater control and achieving multiple benefits (groundwater recharge, reuse, enhancement of habitat or open space). Input from local agencies on candidate projects will be needed by April. Draft project concepts will be completed by May 25 and final project concepts by June 10.

- Steve Carter – Paradigm will perform a Reasonable Assurance Analysis (RAA) consistent with requirements in MRP 2.0. The analysis will build off of watershed stormwater capture modeling conducted as part of SRP development to calculate estimated GI project capture volumes. The watershed modeling will provide the ability to recalculate the San Mateo County wasteload allocation via an improved estimate of sediment loading (which is the basis of the allocation), assessment of the critical period, and incorporation of local mercury and PCBs concentrations. The RAA will identify the quantitative relationship between GI implementation and mercury/PCBs load reductions and will include an optimization step to ensure cost-effective planning. Separate analyses will be performed for each jurisdiction.

- Stephen Groner (SGA) – SGA will support SMCWPPP’s public outreach/education program. The goals of the program include MRP 2.0 compliance (e.g., pollution prevention), developing community awareness of the associated challenges, and support for obtaining additional revenue and expanding the program. SGA will develop a 5-year strategic outreach plan that identifies appropriate audiences, barriers and motivators and integrates with other SMCWPPP components. SGA will implement pollutant specific outreach that targets reduced runoff (rain barrel program), bacteria (pet owner outreach), pesticides (point of purchase outreach), and litter reduction (coastal cleanup inland sites). SGA will also manage SMCWPPP’s web site and utilize social media, support school and community engagement, and support with outreach aspects of technical efforts related to GI and the countywide SRP.

5. INFORMATION – Fabry referred Committee members to the agenda package for a calendar of Bay Area Stormwater Management Agencies Association (BASMAA) committee meetings, which was provided in an effort to promote attendance by permittee staff representatives. Fabry noted that significant permit compliance activities take place at the regional level in BASMAA committees and San Mateo permittees have historically relied solely on C/CAG’s consultants to represent them at these meetings. With a revised permit recently adopted, staff is seeking support from Committee members in identifying committed individuals to begin participating in BASMAA committees.

6. INFORMATION – Fabry referred Committee members to the agenda package for a list of approvals
anticipated to be needed in 2016 for regional or countywide submittals on behalf of C/CAG’s member agencies in accordance with requirements in the Municipal Regional Permit.

7. Regional Board Report: NONE

8. Executive Director’s Report: C/CAG Executive Director Sandy Wong provided an update on an upcoming tour of the Santa Clara Valley Water District’s Advanced Water Purification plant through the C/CAG Water Committee and invited committee members to attend.

9. Member Reports: NONE

Vice-chair Walter adjourned the meeting at 3:32 p.m.
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*X* - Committee Member Attended

*O* - Other Jurisdictional Representative Attended
C/CAG AGENDA REPORT

Date: April 21, 2016

To: Stormwater Committee

From: Matthew Fabry, Program Manager

Subject: Receive presentation from C/CAG’s technical consultant on project screening and prioritization for the countywide Stormwater Resource Plan

(For further information or questions contact Matthew Fabry at 650 599-1419)

_____________________________

RECOMMENDATION

Receive presentation from C/CAG’s technical consultant on project screening and prioritization for the countywide Stormwater Resource Plan

BACKGROUND

C/CAG is contracted with Paradigm Environmental (via subcontract to Larry Walker & Associates) to develop a countywide Stormwater Resource Plan (SRP) in accordance with requirements promulgated in SB 985 (Pavley, 2014) and guidance from the State Water Resources Control Board (State Board). SRPs are now required in order to compete for voter-approved bond funds for stormwater or dry weather capture projects. C/CAG is working with Paradigm Environmental to develop a countywide SRP on an expedited schedule to enable its member agencies to submit implementation grant proposals for the State Board’s stormwater grant program, which will be distributing up to $200 million in Proposition 1 Water Bond funds in two separate funding rounds. Round 1 grant applications are due the first week of July.

To support development of the SRP, C/CAG solicited GIS data from its member agencies. Paradigm Environmental compiled the GIS data with other publicly available state data sets to help model watershed processes and develop a screening and prioritization process for identifying stormwater capture projects. In addition, C/CAG asked member agencies to provide projects for inclusion in the SRP, which Paradigm Environmental also compiled. Attachment 1 summarizes all GIS data sets that pertain to San Mateo County and all projects submitted by member agencies.

In addition to projects proactively identified by member agencies, Paradigm Environmental is developing a screening and prioritization process to identify other potential opportunities for stormwater capture and green infrastructure (GI). These opportunities are broken down into three main categories: public parcels with regional stormwater capture potential, public parcels with potential for inclusion of on-site green infrastructure or low impact development measures, and green streets.
These opportunities are then prioritized based on a variety of criteria. Weighting factors are applied to the different criteria to develop an overall score for the various project opportunities. This is to satisfy SB 985’s requirement for a quantitative, metrics-based prioritization process. Attachment 2 summarizes the key assumptions and process Paradigm Environmental has implemented to-date in developing a screening and prioritization process.

The short-term goal in developing a countywide SRP is to support member agencies’ ability to compete for grant funds to implement green infrastructure projects during the current term of the Municipal Regional Permit in support of achieving mandated load reductions for mercury and PCBs. As part of C/CAG’s consultant-led effort to assist member agencies in applying for grant funds, Paradigm Environmental is contracted to develop project concept documents for each agency. These concepts would provide the basis for a grant application. C/CAG originally solicited consultant support in this regard with a goal of producing two project concepts per agency. In order to develop this many concepts, Paradigm Environmental has provided a simplified project concept template based on similar work they have performed in southern California. Alternatively, Paradigm Environmental has proposed a more detailed project concept that could be utilized if the overall number of concepts produced was reduced to just one per member agency (21 concepts vs. 42). C/CAG staff is requesting Committee member feedback on the desired approach in this regard. Attachment 3 provides the two project concept templates, one simplified and one more detailed, for Committee consideration.

The long-term goal of the SRP, in addition to developing a comprehensive countywide plan for managing stormwater runoff in San Mateo County, is to support C/CAG’s member agencies in developing their GI Plans, as mandated by the Municipal Regional Permit. The GIS analyses and project screening and prioritization processes Paradigm Environmental is developing will feed directly into the same required efforts for the GI planning process. As such, C/CAG’s member agencies should be well-positioned moving forward in meeting Municipal Regional Permit requirements for GI Plans.

Steve Carter with Paradigm Environmental will be providing a presentation that goes over all of the work to-date, including preliminary results of the screening and prioritization process. He is seeking input from the Stormwater Committee on the topics below:

- Major concerns with the screening process for identifying opportunities for stormwater capture projects and green infrastructure.
- Feedback on the process for prioritizing projects for the SRP and selection for candidates for developing concept documents.
- Decision on the number and detail of project concepts to be developed.
- General feedback on projects submitted by C/CAG member agencies for co-locating stormwater capture projects or green infrastructure.

**ATTACHMENTS**

1. Summary of Compiled Datasets and Projects
2. Preliminary Process for Identification and Prioritization of Stormwater Capture Projects and Green Streets
3. Mock Project Concepts (Simplified and Detailed Options)
To: Matt Fabry, PE, San Mateo Countywide Water Pollutant Prevention Program
From: Stephen Carter, PE, Paradigm Environmental
cc: Sandy Mathews, Larry Walker Associates
Date: 4/1/2016
Re: Summary of Compiled Datasets

1 INTRODUCTION

The Countywide Storm Water Resource Plan (SWRP) provides an ideal opportunity for C/CAG to proactively plan for future requirements of the Municipal Regional Permit (MRP) while providing essential information needed to explore funding needs and opportunities and Proposition 1 grants for project implementation. The development of the SWRP requires extensive compilation, review, and analysis of numerous datasets obtained from a variety of sources.

On February 29th, 2016, the San Mateo Countywide Water Pollution Prevention Program requested datasets from various agencies, and Paradigm is in the process of reviewing these data and analyzing various watershed characteristics to inform the planning process. The request was sent to San Mateo County, all cities within the County, the Regional Water Quality Control Board, community groups, and several consultants. The information requested was grouped into two major categories which included (1) GIS or other spatial data, and (2) candidate project information. The following sections of this memo are organized around these two categories of data.

2 GIS DATA

This section summarizes the collected GIS datasets that pertain to the San Mateo County. Two subsections organize this discussion based on datasets that were publicly available online (Section 2.1) and datasets that were obtained directly from each jurisdiction (Section 2.2).

2.1 Publicly Available Datasets

To assist with the development of the SWRP, publicly available local and regional datasets were downloaded to provide necessary background information on the hydrology, water quality issues, and planning efforts throughout the County. GIS data that would support model development and identification of project opportunities throughout the County were also obtained. Organizations such as the Oakland Museum, California Department of Forestry and Fire Protection, United States Geologic Survey (USGS), and the California Department of Water Resources were useful sources of hydrologic data for the County. Water quality data for local waterbodies, such as 303(d) impaired waters, was obtained from the United States Environmental Protection Agency (EPA). Most of the planning and administrative datasets were obtained from the San Mateo County Online GIS Enterprise, with supplemental data downloaded from the Association of Bay Area Governments (ABAG). GIS data obtained from online sources are presented in Table 1 in Attachment A.
2.2 Requested Datasets

While a wide range of data are available online, several GIS datasets were specifically requested from each jurisdiction. For the development of the stormwater capture model and green infrastructure project concepts, higher resolution datasets will be required. While several county-wide datasets discussed in the previous section create a foundation for a regional database, cities and other local entities typically have more detailed information that will supplement and enhance the downloaded datasets. The types of datasets received generally fall into three broad categories describing the type of information and potential use in developing the SWRP:

- **Physical Characteristics**: Local soils, land use, topography, and impervious cover datasets were requested to supplement regional datasets for use in the development of hydrologic response units (HRU) and other foundational elements derived for the stormwater capture model.
- **Infrastructure**: Additional GIS data containing locations, geometry, and attribute data for infrastructure, such as sidewalks, streets, buildings, public utilities and facilities were requested and will be used to inform the development of project concepts and green infrastructure planning efforts.
- **Political & Administrative**: Planning datasets such as General Plan land uses, special planning area boundaries, housing opportunity sites, and planned improvements were also requested and will be considered for use during project prioritization and green infrastructure planning efforts.

A summary of datasets received directly from individual jurisdictions is provided in Attachment A (Table 2).

3 PROJECT DATA

In addition to GIS data that helps to characterize watersheds in the County, information on planned projects within the various jurisdictions was requested to identify projects with opportunities for co-locating stormwater capture projects. Co-locating stormwater capture projects with other infrastructure improvements increases opportunities for cost-sharing and maximizes multiple benefits achieved by a single project. This section outlines projects that will be considered for co-location during the prioritization of stormwater capture projects for the SWRP. Two subsections organize this discussion based on survey responses from each jurisdiction (Section 3.1) and a list of planned projects associated with the “Safe Routes to School” program (Section 3.2).

3.1 Project Data Survey

A survey was conducted to provide each jurisdiction within the County an opportunity to identify potential project for co-location of stormwater capture projects. The following information was requested for each submitted project: project name and description, location, sponsoring agency, main contact for the project, and multi-benefits received from each planned project. Of cities and agencies surveyed, responses were received from 10 jurisdictions which included a total of 60 projects for consideration. The jurisdictions that provided input for potential co-located projects are the County of San Mateo, Atherton, Belmont, Burlingame, Half Moon Bay, Menlo Park, Redwood City, San Carlos, City of San Mateo, and South San Francisco. The list will be reviewed to identify projects that represent ideal opportunities for co-locating with stormwater capture projects. Projects
for which locations were provided are shown in Figure 1. A summary of responses to the survey is presented in Attachment B (Table 3).
3.2 Safe Routes to School Program

The Safe Routes to School Program is a coordinated effort from the San Mateo County Office of Education and C/CAG to encourage school children to walk and bicycle to school by implementing projects that improve safety and reduce traffic and emissions associated with school-related travel. Walk audits supported by C/CAG identified areas throughout the County that would benefit from infrastructure improvements, such as new crosswalks, curb extensions, sidewalks, and curb ramps. These types of improvements also present opportunities to include green streets that will serve to improve drainage characteristics in addition to many other benefits. Locations of each of the infrastructure improvements are shown in Figure 2. A list of projects identified from the walk audits is presented in Attachment B (Table 4). This information will be considered during the prioritization of stormwater capture projects for the SWRP.
## ATTACHMENT A: SUMMARY OF GIS DATASETS

### Table 1. Summary of GIS Datasets Obtained from Publicly Available Sources

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## ATTACHMENT B: SUMMARY OF POTENTIAL CO-LOCATED PROJECTS

### Table 3. Project Information from Survey Responses

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<th>No.</th>
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<th>Address</th>
<th>Project Type</th>
<th>Multiple Benefits</th>
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<td>Skylonda Fire Station</td>
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<td>3</td>
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<td>Carlos St (California Ave to Virginia Ave) in Moss Beach</td>
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<td>273 Alameda de Las Pulgas, Atherton, CA 94027</td>
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- LID
- Regional
- Green Street
- Flood Control
- Stormwater Capture
- Stormwater Treatment
- Stormwater Recharge
- Groundwater Recharge
- Educational and recreational opportunities in cooperation with LLESD
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<td>Citywide Sidewalk Repairs</td>
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<td>Storm Drain Master Plan</td>
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<td>Citywide Pavement Management System</td>
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<td>Half Moon Bay</td>
<td>Stormwater Program (MRP)</td>
<td>Various locations some residential, some public projects</td>
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<td>Vicinity of 151 Commonwealth Dr. Menlo Park, CA 94025</td>
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<td>North side of Chilco St. between Bayfront Expressway and Terminal Ave. Menlo Park, CA 94025</td>
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<td>Santa Cruz Ave. between Chestnut and Curtis Streets Menlo Park, CA 94025</td>
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<td>Alma St. west of Burgess Dr. Menlo Park, CA 94025</td>
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<td>El Camino Real Corridor Study &amp; Design Implementation</td>
<td>El Camino Real between Sand Hill Rd. and Alejandra Ave. Menlo Park, CA 94025</td>
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<td>LID Regional Green Street Flood Control Stormwater Capture Stormwater Treatment Groundwater Recharge Community Enhancement Habitat restoration</td>
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<td>Middlefield Streetscape Project</td>
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<td>Kennedy Safe Routes to School Project</td>
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<td>739 Valota Rd, Redwood City, CA 94061</td>
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<td>Intersection of Maple Street and Lathrop St, Redwood City CA</td>
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<td>3737 Farm Hill Blvd, Redwood City, CA 94061</td>
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<td>San Carlos</td>
<td>US-101 Holly Street Bicycle and Pedestrian Overpass</td>
<td>N/A Overpass will connect E. San Carlos Ave with Skyway Rd</td>
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<td>Elm St and Rosewood between Brittan and Arroyo, Arroyo between Elm and Woodland, Brittan between Elm and Rosewood</td>
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<td>San Carlos</td>
<td>Downtown Green Alleys</td>
<td>Cowgill and Ortega alley. Cowgill is bounded in the north by Holly St and in the south by Eaton Street. Ortega alley is bounded in the north by Belmont Ave and in the south by Eaton</td>
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<td>Elizabeth Street Pedestrian Walkway Green Improvements</td>
<td>Pedestrian walkway connecting Elizabeth Street and Orange Ave</td>
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<td>Flood Control Stormwater Capture Stormwater Treatment Groundwater Recharge Community Enhancement</td>
<td>Increased safety for pedestrians using the walkway, increased community connectivity, decreasing erosion in a hillside area by capturing more stormwater</td>
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<td>San Mateo Drive Pedestrian and Bicycle Improvements Project</td>
<td>San Mateo Drive from Peninsula Ave to Baldwin Ave</td>
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<td>East Poplar from Bayshore to Cavanaugh</td>
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<td>Central Park, City of San Mateo 30 South El Camino Real</td>
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<td>South San Francisco</td>
<td>SSF CalTrain Station/Plaza</td>
<td>Grand Avenue and Airport Blvd</td>
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<td>Throughout SSF</td>
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<td>Spruce Avenue (b/w Parkway Ave and Railroad Ave)</td>
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<td></td>
<td>LID</td>
<td>Regional</td>
</tr>
<tr>
<td>58</td>
<td>South San Francisco</td>
<td>New Police Station</td>
<td>TBD</td>
<td></td>
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</tr>
<tr>
<td>59</td>
<td>South San Francisco</td>
<td>New Parks&amp;Rec/Library Complex</td>
<td>TBD</td>
<td></td>
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<td>●</td>
</tr>
<tr>
<td>60</td>
<td>South San Francisco</td>
<td>Large Trash Capture Device Installation</td>
<td></td>
<td></td>
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</table>
Table 4. List of Infrastructure Improvements for the Safe Routes to School Program

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Project Description</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audubon Elementary School</td>
<td>Consider curb extensions on north and east corners.</td>
<td>Egret Ave/Crane Ave Foster City</td>
</tr>
<tr>
<td>Audubon Elementary School</td>
<td>Consider curb extensions on both sides of crosswalk</td>
<td>833 Gull Ave Foster City</td>
</tr>
<tr>
<td>Bowditch Middle School</td>
<td>Consider curb extensions on both ends of crosswalk</td>
<td>Beach Park Boulevard/Tarpon Street, Foster City</td>
</tr>
<tr>
<td>Bowditch Middle School</td>
<td>Consider curb extensions on both ends of crosswalk</td>
<td>Swordfish Street/Haddock Street, Foster City</td>
</tr>
<tr>
<td>Bowditch Middle School</td>
<td>Consider curb extensions on both ends of crosswalk</td>
<td>Beach Park Boulevard/Swordfish Street, Foster City</td>
</tr>
<tr>
<td>Brewer Island Elementary School</td>
<td>Consider curb extensions on both sides of crosswalk</td>
<td>Niantic Drive Foster City</td>
</tr>
<tr>
<td>Foster City Elementary School</td>
<td>Provide pedestrian signal on Edgewater Blvd for proposed crosswalk</td>
<td>Edgewater Boulevard, Foster City</td>
</tr>
<tr>
<td>Foster City Elementary School</td>
<td>Consider curb extension on northeast corner of intersection</td>
<td>Castor Street/Beach Park Boulevard, Foster City</td>
</tr>
<tr>
<td>Foster City Elementary School</td>
<td>Provide wider pedestrian waiting areas</td>
<td>Beach Park Boulevard/Edgewater Boulevard, Foster City</td>
</tr>
<tr>
<td>Franklin Elementary School</td>
<td>Consider bulb-outs at the southeast, southwest, and northeast corners to improve pedestrian visibility and reduce crossing distance</td>
<td>Trousdale / Quesada, Burlingame</td>
</tr>
<tr>
<td>Franklin Elementary School</td>
<td>Consider a modern roundabout in concert with a road diet on Trousdale Road</td>
<td>Trousdale / Quesada, Burlingame</td>
</tr>
<tr>
<td>Project Title</td>
<td>Project Description</td>
<td>Address</td>
</tr>
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</tr>
<tr>
<td>Franklin Elementary School</td>
<td>Consider installing high-visibility crosswalk on north leg of Trousdale Road with corner bulb-outs and RRFB</td>
<td>Trousdale / S. Ashton, Burlingame</td>
</tr>
<tr>
<td>Franklin Elementary School</td>
<td>Long-term improvement: Consider bulb-outs at all four corners</td>
<td>Castenada / Trousdale, Burlingame</td>
</tr>
<tr>
<td>Lincoln Elementary School</td>
<td>Consider reconfiguring park to provide a separated parking lot with parking aisle separated from sidewalk</td>
<td>Ray Park, Burlingame</td>
</tr>
<tr>
<td>Cabrillo Elementary School</td>
<td>Install curb extensions at the intersection with Crespi Drive; enough space could be reclaimed to install a small pocket park or rain garden; install high-visibility crosswalk.</td>
<td>De Solo Drive, Pacifica</td>
</tr>
<tr>
<td>Sunset Ridge Elementary</td>
<td>Curb extensions on Cataline Avenue</td>
<td>Hickey Boulevard/Catalina Avenue, Pacifica</td>
</tr>
<tr>
<td>Costano Elementary School</td>
<td>Work with the Bay Area Water Supply and Conservation Agency to construct a new access point from Purdue Avenue. Provide a wide (~14') walking/biking path with a landscape buffer and marked crosswalk</td>
<td>Hetch Hetchy Easement Driveway/Purdue Ave Realignment, EPA</td>
</tr>
<tr>
<td>Costano Elementary School</td>
<td>Consider full diversion of NB traffic at north leg of (existing) school driveway/Purdue Ave or installing a traffic circle at Purdue/Fordham</td>
<td>Purdue Ave/Fordham St Traffic Calming, EPA</td>
</tr>
<tr>
<td>East Palo Alto Charter Elementary</td>
<td>Consider paving dirt area and striping to facilitate circulation, provide additional loading zone and parking stalls.</td>
<td>School Parking Side/Rear Parking Lot, Runnymede Street EPA</td>
</tr>
<tr>
<td>East Palo Alto Charter Elementary</td>
<td>Construct curb extensions and bi-directional curb ramps on all corners, potentially in combination with modern mini-roundabout</td>
<td>Runnymede Street at Pulgas Street, EPA</td>
</tr>
<tr>
<td>Phoenix Academy Charter High School</td>
<td>Construct curb extension and bi-directional curb ramps on northeast corner</td>
<td>Clarke Ave/Garden St, EPA</td>
</tr>
<tr>
<td>Project Title</td>
<td>Project Description</td>
<td>Address</td>
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<tr>
<td>-------------------------------------------</td>
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</tr>
<tr>
<td>Ravenswood Tri-School Campus</td>
<td>Construct redesign of the school frontage/parking lot to improve loading and non-motorized access, ensure width of Clarke Avenue for Class II lanes</td>
<td>Clarke Ave/Brentwood Load Zones, EPA</td>
</tr>
<tr>
<td>Lomita Park Elementary School</td>
<td>Curb extensions on south and west corners</td>
<td>San Anselmo Ave/San Juan Ave, Millbrae</td>
</tr>
<tr>
<td>Meadows Elementary School</td>
<td>Curb extensions on both corners of the intersection</td>
<td>Mosswood Lane/Helen Drive, Millbrae</td>
</tr>
<tr>
<td>Meadows Elementary School</td>
<td>Curb extensions on both corners of the intersection</td>
<td>Banbury Lane/Helen Drive, Millbrae</td>
</tr>
<tr>
<td>Taylor Middle School</td>
<td>Construct curb extension on the southwest corner</td>
<td>Richmond Drive/Laurel Ave, Millbrae</td>
</tr>
<tr>
<td>Taylor Middle School</td>
<td>Construct curb extension on south corner</td>
<td>Alemenar St/Taylor Blvd, Millbrae</td>
</tr>
<tr>
<td>Taylor Middle School</td>
<td>Convert roadway to CCW one-way direction with an angled parking inside lane, one through lane, and an outside lane for school loading.</td>
<td>Lincoln Circle, Millbrae</td>
</tr>
<tr>
<td>Spring Valley Elementary School</td>
<td>Construct curb extensions with curb ramps on each corner to square up the skewed intersection</td>
<td>Murchison Drive/Ashton Way, Millbrae</td>
</tr>
<tr>
<td>Central Middle School</td>
<td>Evaluate the feasibility of reducing curb radii at north, east, and south corners of intersection</td>
<td>Cedar Street/Arroyo Ave, SC</td>
</tr>
<tr>
<td>Central Middle School</td>
<td>Trim vegetation at 2132 Brittan Ave blocking the beacon, consider replacing existing substandard beacon with RRFB, consider constructing curb extensions at crossing</td>
<td>Tamarack Ave/Greenwood Ave/Brittan Ave, SC</td>
</tr>
<tr>
<td>John Gill Elementary School</td>
<td>Road diet project for Jefferson Avenue</td>
<td>Jefferson Ave Road Diet, SC</td>
</tr>
<tr>
<td>John Gill Elementary School</td>
<td>Constructing curb extension in eastern corner to reduce curb radius and reduce crossing distance on Jefferson. Curb extension cannot obstruct storm drain on Hawes Street.</td>
<td>Jefferson Ave/Hawes St, SC</td>
</tr>
<tr>
<td>Roosevelt School</td>
<td>Reduced curb extensions in the NE and SW corner to facilitate SamTrans bus operations</td>
<td>Vera Ave/Alameda DLP, SC</td>
</tr>
<tr>
<td>Sacred Heart Schools</td>
<td>Close free right turn and create mini park with walkway</td>
<td>Elena Ave/Faxon Rd, Atherton</td>
</tr>
<tr>
<td>Fox Elementary</td>
<td>Construct curb extensions on NE and SE corners of intersection</td>
<td>Benson Way/St James Rd, Belmont</td>
</tr>
<tr>
<td>Fox Elementary</td>
<td>Construct curb extension on the SE corner of intersection</td>
<td>Ralston Ave/Hallmark Drive, Belmont</td>
</tr>
<tr>
<td>Project Title</td>
<td>Project Description</td>
<td>Address</td>
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<td>-----------------------</td>
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<td>----------------------------------------------</td>
</tr>
<tr>
<td>Fox Elementary</td>
<td>Repave and widen existing pathways, reconstruct stairway below the school area, trim vegetation on sections of pathways.</td>
<td>Pedestrian Parkways, Belmont</td>
</tr>
<tr>
<td>Nesbit Elementary School</td>
<td>Remove vegetation on median in parking lot</td>
<td>Front Parking Lot, Belmont</td>
</tr>
<tr>
<td>Nesbit Elementary School</td>
<td>Construct curb extension on the SE corner of intersection</td>
<td>Hiller Street/Biddulph Wy, Belmont</td>
</tr>
<tr>
<td>Ralston Middle School</td>
<td>Widen sidewalk on south side of Ralston Ave from Parking Lot to Davis Drive. Trim vegetation along sidewalk</td>
<td>Ralston Ave/Davis Dr, Belmont</td>
</tr>
<tr>
<td>Sandpiper Elementary</td>
<td>Construct median pedestrian island in landscaped median</td>
<td>Redwood Shores Parkway/Seastorm Drive, Redwood Shores</td>
</tr>
<tr>
<td>Sandpiper Elementary</td>
<td>Construct sidewalk on the south side of Redwood Shores Parkways from Waterside Circle to Egret Lane</td>
<td>Redwood Shores Parkway/Westside Circle, Redwood Shores</td>
</tr>
<tr>
<td>La Honda Elementary</td>
<td>Install a sidewalk along the east side of Entrada Way. Alternatively, move informal pedestrian path from west side of the road to east side.</td>
<td>Entrada Way, La Honda</td>
</tr>
<tr>
<td>Monte Verde Elementary</td>
<td>Add curb bulb-outs, widen crosswalk, and replace curb ramps with directional ramps</td>
<td>Shannon Dr/Turnberry Dr, SSF</td>
</tr>
<tr>
<td>Monte Verde Elementary</td>
<td>Add curb bulb-out and red curb to improve visibility</td>
<td>Shannon Dr/Saint Cloud Dr, SSF</td>
</tr>
<tr>
<td>Monte Verde Elementary</td>
<td>Add curb bulb-out and red curb to improve visibility</td>
<td>Shannon Dr/Orrey Wy, SSF</td>
</tr>
<tr>
<td>Ponderosa Elementary</td>
<td>Add sidewalks on north side</td>
<td>Country Club Dr, SSF</td>
</tr>
<tr>
<td>Ponderosa Elementary</td>
<td>Add sidewalk</td>
<td>Constitution Way, SSF</td>
</tr>
<tr>
<td>Ponderosa Elementary</td>
<td>Add sidewalk</td>
<td>Ponderosa Rd/Lassen St, SSF</td>
</tr>
<tr>
<td>Hatch/Cunha School</td>
<td>Add curb extension, median improvements</td>
<td>Cabrillo Hwy/Kelly Ave, HMB</td>
</tr>
<tr>
<td>Hatch/Cunha School</td>
<td>Add curb extension</td>
<td>Church St/Kelly St, HMB</td>
</tr>
<tr>
<td>Kennedy Middle School</td>
<td>Consider modern roundabout</td>
<td>Alameda DLP/Maddux Dr, RWC</td>
</tr>
<tr>
<td>Project Title</td>
<td>Project Description</td>
<td>Address</td>
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</tr>
<tr>
<td>Kennedy Middle School</td>
<td>Add curb extensions for all crosswalk entrances</td>
<td>Goodwin Ave/Maddux Dr, RWC</td>
</tr>
<tr>
<td>Kennedy Middle School</td>
<td>Add curb extension on both sides of crosswalks, consider median pedestrian refuge on east side of intersection</td>
<td>Connecticut Ave/Washington Ave, RWC</td>
</tr>
<tr>
<td>Kennedy Middle School</td>
<td>Add curb extension on both sides of crosswalk</td>
<td>Connecticut Ave/Oregon Ave, RWC</td>
</tr>
<tr>
<td>Abbott Middle School</td>
<td>Curb extensions should be installed on the north leg of the intersection</td>
<td>Alameda de Las Pulgas and 36th Avenue, SM</td>
</tr>
<tr>
<td>Abbott Middle School</td>
<td>Install “walk-through” median be installed north of the intersection</td>
<td>North of the intersection of Alameda de Las Pulgas and 36th Avenue, SM</td>
</tr>
<tr>
<td>Abbott Middle School</td>
<td>New sidewalk be installed</td>
<td>East side of Fernwood Street from Hillsdale Boulevard to 36th Avenue, SM</td>
</tr>
<tr>
<td>Abbott Middle School</td>
<td>Curb extensions be installed on the west leg of intersection</td>
<td>Hillsdale Boulevard and Fernwood, SM</td>
</tr>
<tr>
<td>Borel Middle School</td>
<td>Curb extensions be installed at the south leg of the intersection</td>
<td>Alameda de Las Pulgas and Barneson Avenue, SM</td>
</tr>
<tr>
<td>Borel Middle School</td>
<td>Curb extensions be installed on the west and south leg of the intersection</td>
<td>Barneson Avenue and Edinburgh Street, SM</td>
</tr>
<tr>
<td>George Hill Elementary</td>
<td>50-foot median be installed on the north and south legs</td>
<td>Curtiss Street and San Miguel Way, SM</td>
</tr>
<tr>
<td>George Hill Elementary</td>
<td>Curb extensions be installed on the east leg</td>
<td>San Miguel Way and Meadow Court, SM</td>
</tr>
<tr>
<td>Meadow Heights Elementary School</td>
<td>Curb extensions be installed at the intersection</td>
<td>28th Avenue and Mason Lane, SM</td>
</tr>
<tr>
<td>Meadow Heights Elementary School</td>
<td>Curb extensions should be installed on the north leg</td>
<td>Dolores Street and Sequoia Avenue, SM</td>
</tr>
<tr>
<td>Meadow Heights Elementary School</td>
<td>Curb extensions be installed at the south entrance of the school</td>
<td>South Entrance Driveway, Parkside Way, SM</td>
</tr>
<tr>
<td>Sunnybrae Elementary</td>
<td>Consider curb extensions on north and west corners of intersection</td>
<td>S. Delaware St/Birch Street, SM</td>
</tr>
<tr>
<td>Project Title</td>
<td>Project Description</td>
<td>Address</td>
</tr>
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</tr>
<tr>
<td>Green Hills Elementary School</td>
<td>Redesign parking lot to improve internal circulation.</td>
<td>Cypress Ct/Laurel Ave, Millbrae</td>
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<tr>
<td>Spruce Elementary School</td>
<td>Consider constructing a bulb-out at the southeast corner</td>
<td>Tamarack and Elm, SSF</td>
</tr>
<tr>
<td>Spruce Elementary School</td>
<td>Consider constructing a bulb-out on the east side of Spruce</td>
<td>Spruce Ave north of Driveway, SSF</td>
</tr>
<tr>
<td>Spruce Elementary School</td>
<td>Consider constructing bulb-outs at the northeast and southeast corners.</td>
<td>Spruce and Lux, SSF</td>
</tr>
<tr>
<td>Spruce Elementary School</td>
<td>Consider constructing bulb-outs at the driveway</td>
<td>Spruce / School Lot Driveway, SSF</td>
</tr>
<tr>
<td>Farallone View Elementary School</td>
<td>the sidewalk between the school driveway and the school frontage be widened to allow safer pedestrian activity. It is recommended that the sidewalk be constructed as 8 to 10 feet wide to allow for two-by-two passing of students and their parents</td>
<td>Le Conte Ave, Montara</td>
</tr>
<tr>
<td>Laurel Elementary School</td>
<td>Along the south frontage of the school, there is currently an underutilized area with low height vegetation and compacted dirt. It is recommended that this area could be better utilized as an opportunity area for school bus waiting, bike parking, other Safe Route to School activities, or maybe school education opportunities</td>
<td>36th Avenue, SM</td>
</tr>
<tr>
<td>Laurel Elementary School</td>
<td>Curb extensions should be installed on the north leg of the intersection</td>
<td>Alameda de Las Pulgas and 36th Avenue</td>
</tr>
<tr>
<td>Laurel Elementary School</td>
<td>Install “walk-through” median be installed north of the intersection</td>
<td>North of the intersection of Alameda de Las Pulgas and 36th Avenue, SM</td>
</tr>
<tr>
<td>Laurel Elementary School</td>
<td>Curb extensions should be installed on the north leg of the intersection</td>
<td>Hacienda Street and Winway, SM</td>
</tr>
<tr>
<td>Beresford Elementary School</td>
<td>Curb extensions should be installed on the north leg of the intersection</td>
<td>28th Avenue and Juniper Street, SM</td>
</tr>
<tr>
<td>Project Title</td>
<td>Project Description</td>
<td>Address</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>McKinley Institute of Technology and North Star Academy</td>
<td>Construct bulb-outs</td>
<td>Duane / Harrison, RWC</td>
</tr>
<tr>
<td>McKinley Institute of Technology and North Star Academy</td>
<td>Construct bulb-outs at the northwest and southwest corners of Jefferson / Cleveland with ADA-compliant curb ramps</td>
<td>Jefferson at Clinton and Cleveland, RWC</td>
</tr>
<tr>
<td>Adelante Spanish Immersion School</td>
<td>Consider constructing curb extensions in the NW and SE corners, aligning the curb with the existing crosswalks.</td>
<td>Fernside Street/Sterling Way, RWC</td>
</tr>
<tr>
<td>Hawes Community School</td>
<td>Construct curb extension in northern corner</td>
<td>Roosevelt Ave/Hudson St, RWC</td>
</tr>
<tr>
<td>Hawes Community School</td>
<td>Construct curb extensions in all corners</td>
<td>Oak Avenue/Hudson St, RWC</td>
</tr>
<tr>
<td>Woodside Elementary School</td>
<td>Provide new pathway through fire station, Improve pathway along south side of Add walkway near Woodside Road</td>
<td>Cedar Lane, Woodside</td>
</tr>
<tr>
<td>Half Moon Bay HS</td>
<td>Consider widening the existing sidewalk by cutting into the slope</td>
<td>Lewis Forest Drive/School Parking Lot, HMB</td>
</tr>
<tr>
<td>Martin Elementary</td>
<td>Consider constructing curb extensions.</td>
<td>Hillside Boulevard and Arden Avenue, SSF</td>
</tr>
<tr>
<td>Martin Elementary</td>
<td>Consider constructing curb extensions.</td>
<td>Hillside Boulevard and Belmont Avenue, SSF</td>
</tr>
<tr>
<td>Martin Elementary</td>
<td>Consider reconstructing both sides of the street to provide raised sidewalks, curbs, and gutters. Consider widening the north sidewalk to provide clear passage around the utility poles.</td>
<td>School Street from Hillside Boulevard to Olive Avenue, SSF</td>
</tr>
<tr>
<td>Martin Elementary</td>
<td>Consider studying drainage issues.</td>
<td>School Street and Olive Avenue, SSF</td>
</tr>
<tr>
<td>Westlake Elementary</td>
<td>Curb extensions should be installed on the east leg</td>
<td>Fieldcrest Drive and Westlawn Avenue, DC</td>
</tr>
<tr>
<td>Arundel School</td>
<td>Install mini-roundabout with mountable center island</td>
<td>Phelps Rd/Palm Ave, SC</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

The Countywide Storm Water Resource Plan (SWRP) provides an ideal opportunity for C/CAG to proactively plan for future requirements of the MRP while providing essential information needed to explore funding needs and opportunities and Proposition 1 grants for project implementation. Key to the SWRP will be a detailed characterization of the watersheds within the County and the opportunities and constraints to the implementation of stormwater capture projects. Paradigm has requested several datasets from various agencies and is in the process of reviewing these data and analyzing various watershed characteristics to inform the planning process.

The State Water Resources Control Board (SWRCB) has developed Storm Water Resource Plan Guidelines (Guidelines) to guide public agency SWRP development efforts and ensure individual stormwater and dry weather runoff capture projects included within the SWRP are eligible for bond funds (e.g., Proposition 1 grant funding). As part of these Guidelines, the SWRP must employ quantitative methods to identify and prioritize stormwater and dry weather runoff capture projects. Based on analysis of data compiled for the County, a preliminary process has been developed for project identification and prioritization that is summarized within this memorandum for C/CAG review. This process will result in a prioritized list of projects that will assist in the selection of high-priority projects to be considered for development of individual concept reports to accompany Proposition 1 grant proposals. However, as other tools are developed and additional analyses are performed throughout the project duration, additional quantitative methods will be used to strengthen the overall process and associated narrative for the SWRP. For example, the Guidelines suggest the quantification of stormwater capture volumes as a metric to be used in the project identification/prioritization process. A stormwater capture model is currently under development and therefore this metric cannot be used in the preliminary approach. Instead, surrogate indicators are used to gage each project’s stormwater capture effectiveness, such as impervious areas addressed by the project and underlying soils that can influence infiltration at the project site. Once the stormwater capture model is completed it will be used to estimate project-specific stormwater capture volumes, which will be integrated within the process for incorporation in the SWRP.

Several assumptions are included within this preliminary process that will influence the identification and prioritization of projects for the SWRP. The goal of this memorandum is to summarize these assumptions for C/CAG review, and receive feedback on the process before it is initiated for the project.
2 SUMMARY OF DATASETS

This section summarizes collected and derived datasets that will be used in the screening and prioritization process. Two subsections organize this discussion based on natural/physical datasets (Section 2.1) and boundary/categorical datasets (Section 2.2).

2.1 Hydrologic Response Units

When creating a process for analyzing a watershed and identifying/prioritizing potential stormwater and dry weather runoff capture projects, the spatial representation of the landscape must include elements which most affect hydrology and pollutant transport. Natural hydrology is most affected by physical characteristics such as soil type, infiltration rate, and land segment slope. Hydrologic Soil Group categorizes soils based on drainage characteristics, with Group A consisting of well-drained soils and Group D consisting of poorly-drained soils. In the urban setting, other complicating factors such as impervious cover, urban irrigation, and artificial drainage networks are also important to consider. To begin the opportunity screening process, these essential characteristics were combined into a single representation of the landscape termed Hydrologic Response Units (HRUs).

For San Mateo County, the combination of impervious cover, hydrologic soil group, slope, and land use were used to define a set of HRUs for project identification and prioritization. This spatial layer also forms the basic foundation for characterizing the physical landscape in a watershed model, which will be developed for subsequent SWRP tasks as well as future efforts to address MRP requirements (e.g., Reasonable Assurance Analysis). Table 1 summarizes the four components of the HRUs and the source datasets used to derive each. Maps showing the spatial distribution of each of the 4 primary HRU components are presented as Figure 1 through Figure 4.

Table 1. Summary of HRU components and source data sets

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Data Source</th>
<th>Approximate Source Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impervious Cover</td>
<td>National Land Cover Dataset (NLCD)</td>
<td>2011</td>
</tr>
<tr>
<td>Hydrologic Soil Group</td>
<td>National Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO)</td>
<td>2016¹</td>
</tr>
<tr>
<td>Percent Slope</td>
<td>Derived from San Mateo County LiDAR Digital Elevation Model (DEM)</td>
<td>2010</td>
</tr>
<tr>
<td>Land Use</td>
<td>San Mateo County Assessor’s Office Parcels</td>
<td>2014</td>
</tr>
</tbody>
</table>

¹: NRCS SSURGO dataset was downloaded in March 2016
Figure 1. Impervious Cover

Figure 2. Hydrologic Soil Group
Figure 3. Percent Slope

Figure 4. Land Use
2.2 Ownership & Special Considerations

The following subsections describe datasets containing information regarding (1) ownership and public right-of-way that will be used as filters for identifying potential projects, and (2) other special considerations that will be used to establish additional context within the identification and prioritization process.

2.2.1 Parcels

The parcel dataset will be used in the screening of public parcels. This dataset was derived from the County Assessor’s Office data from 2014. The parcel dataset includes land use and owner information that will be used to identify public parcels. Since no specific attribute information is apparent that designates public parcels specifically, a combination of parsing techniques will likely be applied to the ownership and land use attributes to decipher public parcels.

2.2.2 Streets & Right-of-Way

The street dataset was obtained as a line shapefile from the County Department of Public Works (DPW). The right-of-way (ROW) dataset was obtained as a polygon shapefile. The layer was developed in 2006 and is not actively updated by the County. Updated information on the rights-of-way are contained in the most recent parcel data from the County Assessor’s Office and will be used in conjunction with the 2006 rights-of-way layer.

Typical street attributes such as street hierarchy (arterial, collector, local), width, and condition were not immediately discernable within the streets dataset. The most recent 2015 Census TIGER line shapefile will be used in conjunction with the DPW streets shapefile to determine each road’s functional class for screening. After functional classes are determined, the ROW shapefile will be used to assess the width of remaining streets.
2.2.3 Flood-prone Streams

A layer for flood-prone streams was created using the National Hydrography Dataset (NHD) stream layer. A list of streams with known flooding issues within the County was used to extract the creek segments from the NHD dataset. The flood-prone streams will be used in conjunction with local watershed layers to prioritize projects within areas tributary to these streams.
2.2.4 Polychlorinated Biphenyl (PCB) Areas

Areas of interest due to the likely presence of PCB sources will be used in assessing the priority of projects. This layer was developed by EOA, Inc. to identify parcels that have a higher risk of being a PCB source. Level of risk was determined by evaluating a number of risk-factors associated with each parcel and whether or not a parcel has a history of being a PCB source. Risk-factors were evaluated using a variety of datasets, such as land use pre-1980, SWRCB Industrial Permitted Facilities, pavement conditions, and violations previously issued by the Permittee. Section 4.3 outlines the different levels of risk assigned to each PCB risk area.
3 SCREENING

The following subsections outline the method for identifying and screening public land and streets for siting stormwater and dry weather runoff capture and green street projects.

3.1 Screening of Public Parcels

Beginning with the County Assessor’s parcels dataset, the first step is to identify suitable public parcels for potential project consideration. Parcels will first be screened for public ownership. As no readily identifiable attribute is available flagging public ownership, such as a special attribute or within the APN number, the owner attribute will be parsed to distinguish public entities. Parcels with an owner attribute that begins with “City of”, “County of” or “Town of” will be selected. Additionally, the land use attribute will be used to select a set of additional parcels to be added to the set selected based on ownership. Parcels with a land use designation that described as public use (e.g., park or school) will also be selected. Parcels that are part of a waterbody will be excluded.

Once a set of suitable parcels is selected, additional criteria will be imposed to designate locations that are most suitable for either a regional stormwater and dry weather runoff capture project (capturing runoff from surrounding areas) or onsite Low Impact Development (LID) retrofits (capturing onsite runoff only). All parcels that are less than 0.25 acres will be removed from

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Note that regional stormwater and dry weather runoff capture projects will likely be most cost-effective from a countywide standpoint of maximizing the capture of stormwater. However, onsite green infrastructure
consideration for regional stormwater capture, and will be categorized as opportunities for onsite green infrastructure retrofits. The HRUs will be used to eliminate parcels with physical limitations due to high slopes or known poorly drained soils that would also impede the primary goal of stormwater capture. A summary of the screening factors for both (1) selecting parcels, and (2) eliminating parcels based on physical constraints is presented in Table 2.

Table 2. Screening factors for identifying potential project sites

<table>
<thead>
<tr>
<th>Screening Factor</th>
<th>Parcel Characteristic</th>
<th>Criteria</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Parcels</td>
<td>Ownership</td>
<td>City, County or Town</td>
<td>Identify all public parcels for regional storm and dry weather runoff capture projects or onsite LID retrofits</td>
</tr>
<tr>
<td>Land Use</td>
<td>Park, School, Other (e.g., Golf Course)</td>
<td>&gt;0.25 acres</td>
<td>Adequate space for regional stormwater and dry weather runoff capture project</td>
</tr>
<tr>
<td>Suitability</td>
<td>Parcel Size</td>
<td>&lt;0.25 acres</td>
<td>Opportunity for onsite green infrastructure retrofit</td>
</tr>
<tr>
<td></td>
<td>Site Slope</td>
<td>&lt; 10 %</td>
<td>Steeper grades present additional design challenges</td>
</tr>
</tbody>
</table>

3.2 Screening of Rights-of-Way

In addition to public parcels, rights-of-way must be identified and screened for potential green street implementation. Street type, slope, and soil type will be used to screen rights-of-way suitable for green streets.

Street use is often a significant consideration in siting green streets. Variables such as high traffic volumes and road speed limit can impact suitability in terms of both system performance and long-term operation and maintenance costs. Selection of streets will focus on local neighborhood roads, city streets, parking lot roads and alleys as these functional classes typically exhibit characteristics of lower traffic volume and lower speeds limits as opposed to major arteries, collector roads, and highways. The 2015 Census TIGER road lines will be used to assign a functional class to each street in the County’s street data set. The ROW dataset will be used to remove any private roads from the selection.

Because mild slopes are more suitable for green streets, sections of street that have greater than a 5% slope will be removed from consideration.

A summary of the screening factors for both (1) selecting potential streets, and (2) eliminating streets based on physical or ownership constraints is presented in Table 3.

projects are also often very useful as public demonstration projects to promote wider-scale green infrastructure and LID on privately owned land.
### Table 3. Screening Criteria for Streets & Right-of-Way

<table>
<thead>
<tr>
<th>Screening Factor</th>
<th>Street Section Characteristic</th>
<th>Criteria</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection</td>
<td>Functional Class</td>
<td>S1400</td>
<td>Local neighborhood road, rural road, city street, alley, parking lot roads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>S1730</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S1780</td>
<td></td>
</tr>
<tr>
<td>Suitability</td>
<td>Ownership</td>
<td>Private</td>
<td>Potential projects are focused on public and right-of-way opportunities</td>
</tr>
<tr>
<td></td>
<td>Road Slope</td>
<td>&lt; 5%</td>
<td>Steep grades present additional design challenges; reduce capture opportunity due to increased runoff velocity</td>
</tr>
</tbody>
</table>

### 4 PRIORITIZATION OF PROJECT OPPORTUNITIES

The following subsections outline the methodology for prioritizing stormwater capture and green street project sites. In addition to the physical characteristics, several special considerations were included in the prioritization methodology to take into account high opportunity projects and currently planned projects provided by agencies, as well as consideration of potential multiple benefits. Because the conditions for a suitable project differ between project type, regional stormwater capture, green streets, and LID retrofit projects will be evaluated independently and given a separate prioritization score.

#### 4.1 Prioritization Based on Physical Characteristics

Physical characteristics of the identified project opportunities are key considerations in the prioritization process, as these typically serve as surrogate indicators of the expected effectiveness of each project in terms of ability to capture stormwater. In subsequent efforts to develop the SWRP, a stormwater capture model will be developed that will provide estimates of project-specific potential for stormwater capture. Once this tool is available, the prioritization process can be revisited to validate the methods used and build the narrative for the SWRP, which per the Guidelines requires quantitative scoring metrics associated with stormwater capture volumes.

#### 4.1.1 Regional Stormwater Capture Project Opportunities

After the identification of feasible project locations, screened parcels will be prioritized to aid in the selection of projects that would be the most effective and provide the greatest number of benefits. A scoring system was developed to take into account key physical characteristics obtained in the development of the HRUs, as well as the considerations in Section 4.3 through 4.5. Prioritization scoring criteria for stormwater capture projects on public parcels are presented in Table 5.

In order to determine the physical characteristics of each parcel, some characteristics require averaging of values over the potential drainage area. Since it is infeasible to accurately delineate every parcel drainage area at this stage, a method was derived to establish a representative drainage area for each parcel. Several assumptions are made in determining the representative drainage area: (1) a regional project footprint will account for 50 percent of its parcel area, and (2) the estimated
drainage area is 250 times the area of the project footprint. Using these assumptions, the representative drainage area is drawn as a circular buffer around each parcel centroid using the estimated area. For large parcels, the buffer will be limited to 1,000 acres to limit uncertainty. Additionally, buffers will be clipped to the County land boundary to remove sections that extend into a waterbody. The representative drainage area for each parcel will be used to obtain an average value for imperviousness and slope that will be used in the prioritization scoring method. There are five physical characteristics used in the prioritization of parcels for regional stormwater capture:

1. **Parcel land use** is used to prioritize sites that are most likely to have adequate space for a regional project and cause minimal disturbance of existing use. Parks or other public open space are given the highest priority, followed by parking lots, parcels that require full or partial demolition of public buildings, and, finally, schools and golf courses.

2. **Impervious area**, averaged over the representative drainage area, is included in the prioritization due to the connection between highly impervious areas and large runoff potential. Because the primary goal is to reduce runoff via stormwater capture, regional projects should be placed to treat areas that produce high runoff volumes. Higher priority is given to parcels with representative drainage areas with high imperviousness.

3. **Parcel size** is prioritized to ensure that regional project sites have adequate space to treat large drainage areas. Larger parcels are given higher priority scores.

4. **Hydrologic Soil Group** at the parcel is also considered in the prioritization. Soil groups are categorized based on their drainage properties, with Group A representing the most well-drained soils and Group D representing the least well-drained soils. Because infiltration is one of the objectives of stormwater capture, highest priority is given to Soil Group A, with each subsequent group assigned fewer points.

5. **Slope**, averaged over the representative drainage area, is the last physical characteristic in the prioritization of parcels for regional projects. Sites with mild slopes often provide the most feasible opportunities for stormwater capture. Constructing on steep slopes presents difficulties with implementation and performance of the stormwater capture structure.

### 4.1.2 Onsite LID Retrofit Project Opportunities

After the identification of feasible project locations, screened parcels will be prioritized to aid in the selection of projects that would be the most effective and provide the greatest number of benefits. A scoring system was developed to take into account key physical characteristics obtained in the development of the HRUs, as well as the considerations in Section 4.3 through 4.5. Prioritization scoring criteria for LID projects on public parcels are presented in Table 6.

While many of the same characteristics for regional projects are used to evaluate LID, the scale of projects requires different spatial evaluation. Low-impact development typically treats runoff generated onsite. This means that the drainage area for LID is typically no larger than the parcel size. For LID prioritization, all physical characteristics will be evaluated at the parcel spatial scale. There are four physical characteristics used in the prioritization of LID retrofit projects:
1. **Parcel land use** was used to prioritize sites that are ideal for LID retrofit projects. Because LID treats runoff generated onsite, it is typically located where imperviousness is high, such as existing buildings, walkways, and pavements. Public buildings and parking lots are given the highest priority, followed by public open space, and schools and golf courses.

2. **Impervious area**, averaged over the parcel area, is included in the prioritization because of the connection between highly impervious areas and large runoff potential. Because the primary goal is to reduce runoff, LID projects should be placed to treat sites that produce high runoff. Higher priority is given to parcels with high imperviousness.

3. **Hydrologic Soil Group** at the parcel is also considered in the prioritization. Soil groups are categorized based on their drainage properties, with Group A representing the most well-drained soils and Group D representing the least well-drained soils. Because infiltration is one of the objectives of stormwater capture, highest priority is given to Soil Group A, with each subsequent group assigned fewer points.

4. **Slope**, averaged over the parcel, is the last physical characteristic in the prioritization of parcels for LID retrofit projects. Sites with mild slopes often provide the most feasible opportunities for stormwater capture. Constructing on steep slopes presents difficulties with implementation and performance of the LID structures.

**4.1.3 Green Street Opportunities**

After the identification of feasible green streets opportunities, screened streets will be prioritized to aid in the selection of locations that would be the most effective and provide the greatest number of benefits. A scoring system was developed to take into account key physical characteristics obtained in the development of the HRUs, as well as the considerations described in Section 4.3 through 4.5. Prioritization scoring criteria for green streets in rights-of-way are presented in Table 7.

In order to evaluate the physical characteristics of each street, street lines must be discretized into segments of appropriate length for evaluating feasibility of distributed practices at the proper scale. Street lines in GIS will be broken at each intersection to further segment continuous roads into well-defined segments. It is then necessary to average each physical characteristic over the potential drainage area.

Since it is infeasible to accurately delineate drainage areas to every street at this stage, a method was derived to establish a representative drainage area for each street segment. Representative drainage areas will be based on an assumed ratio of contributing drainage area per length of street. Previously, similar analysis suggested a ratio of approximately 20 acres of drainage area per 1 mile of suitable street. Using these assumptions, the representative drainage area will be drawn as a buffer (approximately 85 feet on both sides) around each street line equaling the estimated area described above. Buffers will be clipped to the County land boundary to remove sections that extend into a waterbody. The representative drainage area for each street will be used to obtain an average value for imperviousness and slope that will be used in the prioritization scoring method. There are four physical characteristics used in the prioritization of suitable green streets:
1. **Street type** was used to prioritize sites that are most suitable for green street retrofit. Heavily-used streets can require increased maintenance and reduce system performance. Highest priority is given to local neighborhood roads, city streets, parking lot roads and alleys, while lower priority is given to major arteries, collector roads, and highways.

2. **Impervious area**, averaged over the representative drainage area, is included in the prioritization due to the connection between highly impervious areas and large runoff potential. Because the primary goal is to reduce runoff via stormwater capture, green streets should be placed to treat areas that produce high runoff. Higher priority is given to parcels with representative drainage areas with high imperviousness.

3. **Hydrologic Soil Group** in the right-of-way is also considered in the prioritization. Soil groups are categorized based on their drainage properties, with Group A representing the most well-drained soils and Group D representing the least well-drained soils. Because infiltration is one of the benefits of green streets, highest priority is given to Soil Group A, with each subsequent group assigned fewer points.

4. **Slope**, averaged over the length of street segment, is the last physical characteristic in the prioritization of rights-of-way for green streets. Sites with mild slopes are ideal for green streets because it allows for street design that capture more volume and reduces maintenance requirements.

### 4.2 Flood-prone Streams

Regional, LID, and green street project sites will be given higher priority according to proximity to flood-prone streams. Projects placed within the subwatersheds of flood-prone streams will help to mitigate flood risks and reduce flood and hydromodification impacts by limiting the volume of runoff that reaches the impacted streams. Regional stormwater capture projects can either slow the travel of runoff to the flood-prone stream through capture and slow release or remove the runoff volume entirely through infiltration or beneficial use. Distributed LID and green streets in subwatersheds of flood-prone streams would alter the imperviousness and hydrology so that less runoff contributes to flooding. Higher priority will be given to sites closest to the flood-prone streams with the assumption that more upstream area could potentially be captured. Project sites that are not within the subwatersheds of flood-prone streams will receive no additional points.

### 4.3 PCB Risk Areas

PCB risk areas were examined during project prioritization to give higher priority to projects with potential for source control. PCBs are one of the primary pollutants of concern within the Bay Area and so siting of stormwater capture projects in PCB risk areas can potentially address water quality issues. Table 4 lists the various levels of PCB risk developed by EOA, Inc. that were used in the prioritization of projects. Areas with High-High and High-Moderate were given the highest priority, while areas that show signs of redevelopment with moderate to low risk are given the lowest priority.

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As part of the Reasonable Assurance Analysis (RAA) required by the MRP to address PCB and mercury TMDLs and the Green Infrastructure Plan, further analysis will be performed after completion of the SWRP to determine the full extent that TMDLs will be addressed with green infrastructure. Future updates of the SWRP can incorporate finding of the RAAs.
Regional capture and green street projects receive points in this category if the PCB risk area is within the project’s representative drainage area. LID retrofit projects receive points if the project parcel is a PCB risk area.

Table 4. PCB Risk Levels

<table>
<thead>
<tr>
<th>Interest Category</th>
<th>Interest Sub-Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High - High</td>
<td>Parcel has the highest risk for elevated POC concentrations, with either a history of PCB pollution or greater than 4 risk-factors</td>
</tr>
<tr>
<td></td>
<td>High - Moderate</td>
<td>Parcel has a high risk for elevated POC concentrations, with 2-4 risk-factors (usually unpaved areas and “poor” housekeeping)</td>
</tr>
<tr>
<td></td>
<td>High - Low</td>
<td>Parcel has a relatively high risk for elevated POC concentrations, with at least one risk-factor.</td>
</tr>
<tr>
<td></td>
<td>Redeveloped - High</td>
<td>Parcel has signs of redevelopment based on aerial analysis but is still a high risk for elevated POC concentrations based on risk-factors</td>
</tr>
<tr>
<td>Moderate</td>
<td>Moderate</td>
<td>Parcel has zero risk-factors associated with elevated POC concentrations or sediment runoff (fully paved, good housekeeping, etc)</td>
</tr>
<tr>
<td>Low</td>
<td>Redeveloped - Moderate</td>
<td>Parcel is redeveloped and has no more than one minor risk-factor</td>
</tr>
<tr>
<td></td>
<td>Redeveloped - Low</td>
<td>Parcel is redeveloped and has zero risk-factor associated with elevated POC concentrations or sediment runoff</td>
</tr>
</tbody>
</table>

4.4 Co-located Planned Projects

Higher priority scores will be given to project opportunities that may be implemented in parallel with new development and redevelopment projects currently in planning phase throughout the various jurisdictions within the County. Co-locating stormwater capture and treatment projects with other priority projects provides opportunities increases opportunities for cost-sharing and maximizes multiple benefits achieved by a single project.

The opportunity was given for each jurisdiction to submit projects to be considered for co-location with stormwater capture and green street projects. Through the survey, the County and cities submitted planned projects with relevant information, such as project description, contact information, and multiple benefits received from each project. A total of fifty-five projects were submitted from the various jurisdictions. Parcels and rights-of-way that are located near potential co-located projects are given higher priority, with additional points awarded for each benefit perceived to be an outcome of the project.

C/CAG, in coordination with the San Mateo County Office of Education, supported walk audits at schools throughout San Mateo County designed to identify recommended improvements for the Safe Routes to School program. These walk audits provide a variety of recommendations on projects that can increase safety for children walking or biking to school, including infrastructure improvements such as new crosswalks, pedestrian bulb-outs, sidewalks, and ADA-compliant curb ramps. These types of improvements are prime opportunities for incorporation of green streets, as any project that is tearing out and replacing curb and gutter is a chance for drainage
improvements. Pedestrian bulb-outs can be converted to vegetated curb extensions to capture and treat stormwater, new curb ramps can be created in conjunction with vegetated curb extensions, new sidewalks can be constructed of permeable pavements or incorporate sidewalk planters for stormwater management, and new crosswalks are opportunities for incorporation of vegetated curb extensions to reduce pedestrian crossing distances and increase visibility while also managing stormwater. These project opportunities are considered in the prioritization of rights-of-way.

4.5 Multiple Benefits

One of the objectives of project prioritization is to maximize the number of benefits received for each opportunity. While there are many direct benefits that result from satisfying the primary objectives, many ancillary benefits can be achieved to improve cost effectiveness. Mindful planning and design to include some of these ancillary benefits can aid in public acceptance, community engagement, and funding acquisition.

As part of the prioritization scoring criteria, each project will receive one (1) additional point for each multiple benefit identified from the following list:

1. Project is identified to augment local water supply through groundwater recharge or beneficial use.

2. Project is a source control of pollutants and wet-weather or dry-weather runoff volume.

3. Project reestablishes natural water drainage treatment and infiltration, or mimics natural pre-development drainage.

4. Project creates, enhances, or restores habitat and open space through stormwater management.

5. Project promotes community enhancement, which encompasses a variety of benefits, such as the beautification of neighborhoods, mitigation of heat island effect through urban greening, boosts property values, improves traffic, and promotes pedestrian use.

4.6 Final Priority Scoring

There are three separate priority scores: one score each for regional stormwater capture projects, green streets, and onsite LID retrofits. Three separate scoring systems are used because different conditions determine the suitability of a project type. Every screened parcel will be given a score for regional stormwater capture and a score for onsite LID retrofits. Every screened street right-of-way segment will be given a score for green streets. Each priority score is determined by summing all of the points assigned from the evaluated physical characteristics, proximity to areas of interest, potential for co-locating projects, and the various multiple benefits. A factor is assigned to each individual category to modify the weight given during the prioritization step. Given that these weight factors will greatly influence the prioritization, it is important that C/CAG review these factors prior to initiation of the prioritization process.
<table>
<thead>
<tr>
<th>Points</th>
<th>Weight Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Parcel Land Use</td>
<td>--</td>
</tr>
<tr>
<td>Impervious Area</td>
<td>X &lt; 40</td>
</tr>
<tr>
<td>Parcel Size (acres)</td>
<td>0.25 ≤ X &lt; 0.5</td>
</tr>
<tr>
<td>Hydrologic Soil Group</td>
<td>--</td>
</tr>
<tr>
<td>Slope (%)</td>
<td>5 &lt; X ≤ 10</td>
</tr>
<tr>
<td>Proximity to Flood-prone Channels (miles)</td>
<td>Not in sub-basin</td>
</tr>
<tr>
<td>Contains PCB Risk Areas</td>
<td>None</td>
</tr>
<tr>
<td>Currently planned by City or co-located with other City project</td>
<td>No</td>
</tr>
<tr>
<td>Augments water supply</td>
<td>No</td>
</tr>
<tr>
<td>Water quality source control</td>
<td>No</td>
</tr>
<tr>
<td>Reestablishes natural hydrology</td>
<td>No</td>
</tr>
<tr>
<td>Creates or enhances habitat</td>
<td>No</td>
</tr>
<tr>
<td>Community enhancement</td>
<td>No</td>
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</table>
Table 6. Parcel Prioritization Criteria for LID

<table>
<thead>
<tr>
<th>Parcel Land Use</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Weight Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impervious Area</td>
<td>X &lt; 40</td>
<td>40 ≤ X &lt; 50</td>
<td>50 ≤ X &lt; 60</td>
<td>60 ≤ X &lt; 70</td>
<td>60 ≤ X &lt; 80</td>
<td>80 ≤ X &lt; 100</td>
<td>--</td>
</tr>
<tr>
<td>Hydrologic Soil Group</td>
<td>--</td>
<td>D</td>
<td>Unknown</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>--</td>
</tr>
<tr>
<td>Slope (%)</td>
<td>5 &lt; X ≤ 10</td>
<td>4 &lt; X ≤ 5</td>
<td>3 &lt; X ≤ 4</td>
<td>2 &lt; X ≤ 3</td>
<td>1 &lt; X ≤ 2</td>
<td>0 &lt; X ≤ 1</td>
<td>--</td>
</tr>
<tr>
<td>Proximity to Flood-prone Channels (miles)</td>
<td>Not in sub-basin</td>
<td>3 &lt; X</td>
<td>--</td>
<td>1 &lt; X ≤ 3</td>
<td>--</td>
<td>X ≤ 1</td>
<td>2</td>
</tr>
<tr>
<td>Contains PCB Risk Areas</td>
<td>None</td>
<td>Redeveloped-Low</td>
<td>Redeveloped-Moderate</td>
<td>Moderate</td>
<td>High-Low / Redeveloped-High</td>
<td>High-High / High-Moderate</td>
<td>2</td>
</tr>
<tr>
<td>Currently planned by City or co-located with other City project</td>
<td>No</td>
<td>Yes</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Augments water supply</td>
<td>No</td>
<td>Yes</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Water quality source control</td>
<td>No</td>
<td>Yes</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<td>--</td>
</tr>
<tr>
<td>Reestablishes natural hydrology</td>
<td>No</td>
<td>Yes</td>
<td>--</td>
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<tr>
<td>Creates or enhances habitat</td>
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<tr>
<td>Community enhancement</td>
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### Table 7. Right-of-Way Prioritization Criteria for Green Streets

<table>
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<tr>
<th>Points</th>
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<td>Collector</td>
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<td>Alley</td>
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<td>Local</td>
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<tr>
<td><strong>Imperviousness (%)</strong></td>
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<td>High-Low / Redveloped-High</td>
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<td>High-High / High-Moderate</td>
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<td><strong>Currently planned by City or co-located with other City project</strong></td>
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<tr>
<td><strong>“Safe Routes to School” program</strong></td>
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<td><strong>Augments water supply</strong></td>
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<td><strong>Reestablishes natural hydrology</strong></td>
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<tr>
<td><strong>Creates or enhances habitat</strong></td>
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<td><strong>Community enhancement</strong></td>
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</table>
**Project Description:**

Carriage Crest Park was identified as a high opportunity site for a regional stormwater capture project. The site is owned by the City of Carson. The City intends to acquire or lease a portion of the neighboring parcel, location of the Color Spot Nurseries, to expand the park. A preliminary sizing analysis concluded the park expansion would provide adequate space for a structural BMP capable of treating the 85th percentile, 24-hour runoff event from a total of 1,118 acres. This configuration would maximize the urban area that benefits from the BMP and would also promote collaboration with neighboring jurisdictions.

The proposed project consists of an offline infiltration chamber below the ballfield of Carriage Crest Park and extended into the adjacent parcel. Stormwater would be diverted from the existing double box drain under South Figueroa Street to treat the design runoff volume. A diversion structure will be required to convey runoff from the box drain to the proposed structure. The invert of the existing storm drain is approximately 9 feet below ground surface and pumping may be required to lift the water to the BMP. If a geotechnical investigation finds that groundwater levels are sufficiently low in this area, then pumping may not be required and stormwater could be directed to the structure via gravity flow.
Carriage Crest Park was identified as a high opportunity site for a regional stormwater capture project due to its proximity to two large storm drains (and thus large treatment area) and potential for multi-jurisdictional partnership. The park is owned and operated by the City of Carson. The City intends to acquire or lease a portion of the neighboring parcel, location of the Color Spot Nurseries, to expand the park. A preliminary sizing analysis concluded the park expansion would provide adequate space for a structural BMP capable of treating the 85th percentile, 24-hour runoff event from the project capture area, a total of 1,118 acres. The project would intercept runoff that is typically received by Wilmington Drain and Machado Lake. This configuration would maximize the urban area that benefits from the BMP and would also promote collaboration with neighboring jurisdictions (Unincorporated Los Angeles County and the cities of Los Angeles and Torrance).
**DESIGN CONSIDERATIONS FOR REGIONAL STORMWATER CAPTURE**

**BMP Concept Description:**
The proposed concept for the Carriage Crest regional BMP consists of an offline infiltration gallery below the ballfield of Carriage Crest Park and extended into the adjacent parcel. The gallery would have a storage volume of 46.7 acre-feet and be constructed as either a concrete chamber or series of pipes. Stormwater would be diverted from the existing double 129” x 79” concrete box drain under South Figueroa Street to treat the 85th percentile, 24-hour runoff volume. A diversion structure will be required to convey runoff from the box drain to the proposed BMP. The diversion will be sized to accommodate the peak flow rate of 62 cubic feet per second. The invert of the existing storm drain is approximately 9 feet below ground surface and pumping may be required to lift the water to the BMP. If a geotechnical investigation finds that groundwater levels are sufficiently low in this area, then pumping may not be required and stormwater could be directed to the BMP via gravity flow. With pumping, excavation would only be necessary down to 10 feet below ground level. If gravity flow is used, excavation would be required down to 19 feet below the surface.

**DISCLAIMER:** All elements of this conceptual design are planning-level, based on desktop analysis. All assumptions and design parameters must be re-evaluated during the detailed design process.

**Multiple Benefits:**
- Flood control,
- Groundwater recharge,
- Pollutant load reductions,
- Park enhancements

**Considerations:**
- Existing ball diamond,
- Tree removal/relocation,
- Existing utilities

---

### Design Criteria

<table>
<thead>
<tr>
<th>Sizing Criteria</th>
<th>85th percentile, 24-hour storm event</th>
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</thead>
<tbody>
<tr>
<td>85th percentile, 24-hr precipitation (in)</td>
<td>0.89</td>
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<tr>
<td>Infiltration Rate (in/hr)</td>
<td>0.58</td>
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<tr>
<td>85th percentile, 24-hr runoff volume (ac-ft)</td>
<td>53.7</td>
</tr>
<tr>
<td>Volume infiltrated during 24-hr storm (ac-ft)</td>
<td>7</td>
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<tr>
<td>Peak Discharge, 85th percentile 24-hr storm (cfs)</td>
<td>62</td>
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</table>

1. Runoff volume was estimated using HydroCalc 0.3.1, which uses the Modified Rational Method (MODRAT) developed by LA County. Due to the large drainage area, a detailed subwatershed analysis should be used during actual design.

### BMP Characteristics

<table>
<thead>
<tr>
<th>BMP Type</th>
<th>Underground Infiltration Gallery</th>
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</thead>
<tbody>
<tr>
<td>BMP Footprint (acres)</td>
<td>6</td>
</tr>
<tr>
<td>Design Volume (ac-ft)</td>
<td>46.7</td>
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<tr>
<td>Required BMP Height (ft)</td>
<td>8 (concrete chamber) / 10 (pipe)</td>
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<tr>
<td>Depth of Excavation (ft)</td>
<td>19 (no pumping) / 10 (with pumping)</td>
</tr>
<tr>
<td>Diversion Structure</td>
<td>Required</td>
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<tr>
<td>Pump Structure</td>
<td>Subject to geotechnical investigation</td>
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2. Design volume takes into account the 85th percentile, 24-hour runoff volume and infiltration.
**Cost Estimate for Infiltration Gallery Concept**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT</th>
<th>UNIT COST</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>Excavation/Removal (10 ft depth)</td>
<td>96,800</td>
<td>CY</td>
<td>$50.00</td>
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<td>Diversion</td>
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<td>Pump Structure (62 cfs/40 MGD)</td>
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<td>EA</td>
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<td>Diversion Pipe (24&quot; RCP)</td>
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<td>LF</td>
<td>$200.00</td>
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<td>Subsurface Infiltration Structure</td>
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<td>Restoration (Landscaping/Ballpark)</td>
<td>261,360</td>
<td>SF</td>
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<td><strong>CONSTRUCTION SUBTOTAL</strong></td>
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<td>Mobilization (10% construction)</td>
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<td>Contingency (25% construction)</td>
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<td>Design (10% total)</td>
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<td><strong>TOTAL COST</strong></td>
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**Multi-Jurisdictional Regional Stormwater BMP**

Carriage Crest Park (City of Carson)

[Image of Hydrograph from Modified Rational Method (MODRAT, HydroCalc 0.3.1)]

[Image of Construction Concept Diagrams]

[Image of Infiltration Gallery Concept]

[Image of Example corrugated metal pipe configuration]

[Image of Example concrete chamber configuration]

[Image of Color Spot Nurseries: Street view looking Northwest from W Sepulveda Blvd]