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DRAFT FINAL MEMO

TO: Larry Lind, City of Los Altos

DATE: January 5, 2011

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JOB #: COLA.02.10

SUBJECT: City of Los Altos Trash Capture Plan – Draft Final Report

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1. Introduction / Background

1.1. Purpose of the Plan

This Trash Capture Plan has been created in response to requirements set forth in the new Municipal Regional Stormwater Permit, Provision C.10. Before now, the Permit has included regulations on a variety of pollutants that the City of Los Alto (City) has effectively complied with to improve the conditions of its receiving waters. The new permit now includes trash as one of these pollutants to be regulated. The City has retained Schaaf & Wheeler to prepare this Trash Capture Plan in an effort to comply with the regulations of the new Permit by creating a strategy to effectively reach required milestones within the allotted timeframes.

1.2. Brief Summary of the City of Los Altos (City)

The City of Los Altos is on the southern end of the San Francisco Peninsula in Santa Clara County. It is bordered by Los Altos Hills, Sunnyvale, Mountain View, Palo Alto, Cupertino, and Unincorporated Santa Clara County. Los Altos is relatively flat, with elevations ranging from 50 feet National Geodetic Vertical Datum (NGVD), to about 450 feet NGVD. Although open space is scattered throughout the City, the vast majority of Los Altos has been urbanized with various residential and commercial land uses. Runoff

generated within the City's boundary is conveyed through the City owned storm drain system that outfalls to four creeks (Hale, Permanente, Adobe, and Stevens) and then to the San Francisco Bay. Because the City of Los Altos is located at the toe of the Santa Cruz Mountains, the capacity of these drainage systems is linked to the slope of the land and influence of the creek channels.

1.3. Regulatory Background

The new NPDES permit has been issued, Order R2-2009-0074, dated October 14, 2009. As part of this new permit, trash reduction requirements have been implemented as outlined in Provision C.10. SCVURPPP oversees the implementation trash reduction requirements and reports to the Regional Board in behalf of all the individual Permitees.

1.3.1. NPDES Permit Requirements

1.3.1.1. Progress Report Feb 1, 2011

The NPDES permit requires each permittee to submit a progress report that indicates whether it is determining its baseline trash load and trash load reduction method individually or collaboratively with other permittees and a summary of the approach being used.

SCVURPPP is expected to provide the data and methodology upon which the baseline trash load calculations will be based. Los Altos will use this data together with their GIS data to make the calculations. Los Altos will submit the required progress report to SCVURPPP who will then compile the report with the reports from the other Permittees and submit them collectively.

1.3.1.2. Short-Term Plan by Feb 1, 2012

The NPDES Permit states that each Permittee shall submit a Short-Term Trash Load Reduction Plan, including an implementation schedule, to the Water Board by February 1, 2012. The Plan must describe control measures and BMPs, including any trash reduction ordinances, that are currently being implemented and the current level of implementation. Additional control measures and BMPs that will be implemented, and/or an increased level of implementation designed to attain a 40% trash load reduction from its MS4 by July 1, 2014 shall also be included. The Short-Term Plan shall account for the required mandatory minimum full trash capture device(s) and trash hot spot cleanup, described in Section 3 and 1.4 of this report, respectively. The City shall be responsible for completing the Short-Term Plan.

1.3.1.3. Baseline Load and Reduction Tracking Method by Feb. 1, 2012

Each Permittee shall determine the baseline trash load from its MS4 to establish the basis for trash load reductions and submit the determined load level to the Water Board by February 1, 2012, along with documentation of methodology used to determine the load level. The submittal shall also include a description of

the trash load reduction tracking method that will be used to account for trash load reduction actions and to demonstrate progress and attainment of trash load reduction levels. The submittal shall account for the drainage areas of a Permittee's jurisdiction that are associated with the baseline trash load from its MS4, and the baseline trash load level per unit area by land use type and drainage area characteristics used to derive the total baseline trash load level.

The Baseline Load and Trash Tracking Method report will be submitted by Los Altos or SCVURPPP and will not fall under the responsibility of the City. The City will be involved in a collaborative effort with SCVURPPP during this process for reasons explained throughout this report.

1.3.1.4. Full Capture Device treating 20 acres by July 1, 2014

Permittees shall install and maintain a mandatory minimum number of full trash capture devices by July 1, 2014. The City must install one or more trash capture device(s) that traps all particles retained by a 5 mm mesh screen with a design treatment capacity at least equal to the 1-year (generally 85th percentile), 1-hour storm for a 20 acre area of commercial land use .

1.3.1.5. Long-Term Plan by Feb 1, 2014

Each Permittee shall submit a Long-Term Trash Load Reduction Plan, including an implementation schedule, to the Water Board by February 1, 2014. The Plan shall describe control measures and BMPs, including any trash reduction ordinances, that are being implemented and the level of implementation. Any additional control measures and BMPs that will be implemented and/or an increased level of implementation designed to attain a 70% trash load reduction from its MS4 by July 1, 2017, and 100% by July 1, 2022, shall be included. The City shall be responsible for generating the Long-Term Plan.

1.3.1.6. 40% Reduction in Baseline by July 1, 2014

The Short-Term Trash Load Reduction Plan must be fully implemented to attain a 40% reduction by July 1, 2014.

1.3.1.7. 70% Reduction in Baseline by 2017

The Long-Term Trash Load Reduction Plan must be fully implemented to attain a 70% reduction by July 1, 2017 according to the current permit. However, since these deadlines fall after the issuance of the next permit, it is possible that this could change.

1.3.1.8. 100% Reduction in Baseline by 2022

The Long-Term Trash Load Reduction Plan must be fully implemented to attain a 100% reduction by July 1, 2022 according to the current permit. However, since these deadlines fall after the issuance of the next permit, it is possible that this could change.

1.3.1.9. Reporting Requirements

Permittees are required to submit annual reports to the Water Board showing progress toward meeting the regulatory requirements. In the past, the City has submitted annual reports to SCVURPPP as required by the Permit, who then submits a single annual report to the Water Board on behalf of all of the co-permittees. Annual reporting requirements specific to trash reduction include a summary of trash load reduction actions (control measures and BMPs) including: the types of actions and levels of implementation; the total trash loads and dominant types of trash removed by its actions; and the total trash loads and dominant types of trash for each type of action. Trash hot spot data (see Section 1.4) shall also be included. Beginning with the 2012 Annual Report, each Permittee shall report its percent annual trash load reduction relative to its baseline trash load.

The Permittees shall retain records for review, providing supporting documentation of trash load reduction actions. These records will also include volume and dominant type of trash removed from full trash capture devices, each Trash Hot Spot cleanup, and additional control measures or BMPs implemented. Data may be combined for specific types of full trash capture devices deployed in the same drainage area.

1.3.2. SCVURPPP's Role

1.3.2.1. Establish Baseline

Los Altos will submit the Progress Report to SCVURPPP as required by the Permit. This Progress Report will include a summary of the approach used to establish the baseline trash load.

Trash reduction goals in the NPDES permit are stated in terms of a percentage reduction and not volume. These reduction goals are intended to reflect the percentage of trash produced that will be captured. Therefore, a baseline trash load must be established to set the trash load currently being generated within the City limits. SCVURPPP is in the process of establishing data, reduction factors, and methodology upon which the Permittees will base their baseline calculations on.

It appears that SCVURPPP supply land use and other GIS data received by the Association of Bay Area Governments (ABAG). The City is in possession of GIS data that is greatly superior to this data. The City should use its own SDMP GIS data together with SCVURPPP's reduction factors and methodology to establish their baseline.

1.3.2.2. Establish Trash Load Reduction Tracking Method

SCVURPPP will determine the trash load reduction tracking method that will be used to account for trash load reduction actions. The City will need to apply this method to demonstrate progress and attainment of trash load reduction levels.

1.3.3. San Francisco Estuary Partnership's Role

1.3.3.1. General Program description

In October 2009, the San Francisco Estuary Partnership (SFEP) was awarded $5 million in federal stimulus funds (American Recovery and Reinvestment Act of 2009) to support a Bay Area-wide Trash Capture Demonstration Project. All Bay Area cities and counties that wish to participate will receive trash capture devices to retrofit existing storm drainage infrastructure. In addition to allowing municipalities try out different types of devices, the project will kick off compliance with new permit requirements and provide for monitoring and information sharing among agencies. This collaborative, regional project is funded through the State Water Resources Control Board's Clean Water State Revolving Fund.

1.3.3.2. City commitment deadline of January 1, 2011

In July, SFEP sent the City a contract which will need to be signed and returned to SFEP to secure the allotment of grant funds set aside for the City of Los Altos. This contract needs to be received by SFEP by January 1, 2011. SFEP has confirmed that there may be some leniency to this date if it is clear that the funds are desired; the City has begun the process of getting the contract signed, and a best possible effort is being made to get it returned as quickly as possible. If the City chooses not to sign the contract or does not take any action before the deadline, the money will be forfeited and reallocated to another municipality.

1.3.3.3. City allotment of $20,283

The SFEP grant funds have been divided among the various municipalities under the SFEP's stewardship. The allotment set aside for the City of Los Altos is $20,283.

1.4. Hot Spot Requirements

1.4.1. Description of NPDES requirements

Permittees shall cleanup selected Trash Hot Spots to a level of "no visual impact" at least one time per year for the term of the permit. Trash Hot Spots shall be at least 100 yards of creek length. Permittees shall quantify the volume of material removed from Trash Hot Spot cleanup and identify the dominant types of trash removed and their sources to the extent possible. Documentation shall include the trash condition before and after cleanup of the entire hot spot using photo documentation with a minimum of one photo per 50 feet of hot spot length. The City of Los Altos is required to select one Trash Hot Spot.

1.4.2. City Hot Spot: Stevens Creek just downstream of Highway 280

One Hot Spot has been identified for the City of Los Altos which is located on Stevens Creek just downstream of Highway 280. This spot lies on the City's boundary with Cupertino and the efforts to clean it are shared. Since freeways tend to be major trash generators, this is likely the source for the trash problem occurring in this area.

1.4.3. Scheduled for May and September

Trash cleanup for this Hot Spot has taken place in May and September 2010. It is expected that cleanups will occur once per summer in the future. This meets the NPDES requirement of one annual documented cleanup.

1.5. Current City Trash Activities

1.5.1. Parks

Trash clean up in parks is mostly outsourced. Contractors pick up trash daily during the summer and five days per week during the winter. City staff picks up trash the remaining two days during the winter.

1.5.2. Boulevards & Downtown

Boulevards and Downtown areas are inspected and cleaned up as necessary on a weekly basis by City staff. Contractor empties downtown trash cans on a daily basis. The Downtown Association also organizes cleanups.

1.5.3. Street Sweeping

All street sweeping is performed by a contractor and funded by the Solid Waste Program.

1.5.3.1. Residential

Street sweeping is completed once a month during the summer and twice a month during the winter months (December, January, February).

1.5.3.2. Civic Center, Downtown Plaza, Major Streets

Street sweeping is completed once a week and after special events.

1.5.4. Storm Water / Storm Drain Inlets

Storm drains are cleaned in the Fall and on an on-call basis. This is completed by City crews. Storm drain grates are lifted with the assistance of an electric crane and extended shovels are used to remove debris. VAC CON is used only for deep inlets. During heavy leaf season, crews supplement street sweeping by picking up leaves and storm debris with a tractor and dump trucks. Seasonal Storm Patrols also pick up debris.

2. Baseline Trash Load

2.1. Importance of Baseline Value

The baseline trash load is an estimate. It is improbable to physically measure how much trash the City generates; therefore, assumptions are used to estimate the load. This causes uncertainty in the baseline load and it may not accurately reflect how much trash is actually generated. It is critical that the baseline value established be accurate, and not be overestimated. If the value is overestimated, it will be impossible to reach the goals required by the permit. For example if the trash baseline for the City is set incorrectly high, then it would be possible for literally every piece of trash within the City limits to be collected and still not meet the reduction goals. In this scenario, despite reducing trash loads to zero within the City, the data would indicate non-compliance due to an inflated baseline value.

2.2. Volume per Unit Area

Based on draft documents available from SCVURPPP (see 2.4 for a detailed description), it is expected that SCVURPPP's baseline methodology will most likely be based primarily on land use. Each type of land use will be assigned a trash generation factor which states a volume of trash generated per area unit per time unit for that land use. These various trash generation factors would be applied across the City according to existing land use maps.

2.3. Composition of Trash in Relation to Land Use and Drainage Area Characteristics

In addition to the volume of trash, the composition of trash is largely dependent on land use as well. Commercial areas generate larger litter such as cups, wrappers, bags, etc., whereas residential areas produce smaller scraps of litter which become mixed with fallen leaves and branches. It is therefore valuable to focus efforts on commercial areas since a higher percentage of the debris collected will be trash.

2.4. SCVURPPP August Study

SCVURPPP issued a memorandum dated August 10, 2010 named "Preliminary Maps Illustrating Potential Trash Management Areas", outlining a preliminary approach to complying with the new requirements. This memo is understood to be considered a draft.

2.4.1. Summary of Methodology & Findings

This study was focused on providing data to help determine the best locations for trash capture device placement. The study assumed that all catch basins in the City have identical circular drainage areas. Each circular drainage area was intersected with available ABAG land use data. Trash loading rates were applied to land uses based on pilot studies in San Jose and Sunnyvale. The weighted trash rate for each catch basin was determined and ranked.

2.4.2. Discussion of Results

The methods used to determine trash loading and inlet potential capture volumes are reasonable in the absence of better data; however the City does have access to significantly better data. The City will therefore utilize its own SDMP GIS to determine rates and preferred locations for full capture treatment devices, producing maps that create a significantly more reliable approach to full capture device placement. Since the characteristics of Los Altos vary significantly from San Jose and Sunnyvale, this will be a better approach.

2.5. Implications for Tracking Methodology (i.e. implies tracking will need to be volumetric)

Though SCVURPPP did not discuss in their study what they intend to use as a tracking methodology, because the trash generation data was presented as volumes, the tracking method developed may also be volumetric. This would require careful bookkeeping and measuring to track all trash collected from the various methods of trash reduction. This could be problematic because trash capture devices and street sweeping collect more than just trash. Sticks, leaves, and other natural debris will be mixed with trash, particularly in a city like Los Altos where vegetation is plentiful. It is not known whether vegetative debris could be included in the trash volume or whether it must be separated out physically or estimated mathematically.

3. Full Capture Device

3.1. Deadline: July 1, 2014

The required full trash capture device(s) shall be installed and maintained by July 1, 2014. Schaaf & Wheeler recommends that the device be installed by the summer of 2012 so data from the following winter rainy season can demonstrate the 40% trash capture requirement. If the 40% is not reached, the City would have another summer to implement additional action items. This also gives another rainy season to document the trash capture rate.

3.2. Required Standards

The City must install one or more trash capture device(s) that traps all particles retained by a 5 mm mesh screen with a design treatment capacity at least equal to the 1-year, 1-hour storm for a 20 acre area of commercial land use. Statistically, the 1-year, 1-hour storm does not exist. The 85th percentile storm (1.17-year) is a more appropriate event for estimating runoff.

Though several alternatives for locations are provided, only one installation is required. Stated alternatives for locations and devices are included to provide options.

3.3. Recommended Location Alternatives

Four locations have been identified that could satisfy the capture requirements. Each has a minimum of 20 acres of contributing commercial land and each is located in either a parking lot or a very low use residential street (for ease of construction and maintenance). The choice as to which would be the preferred location should be based on cost,

efficiency, hydraulic effects, possession or ability to receive possession of an easement and the desire for publicity (grant funds require publicity in various forms). The choice may also be based on whether the City would prefer to go beyond the minimum short-term requirement and get closer to the ultimate 100% requirement by spending more upfront for a larger device. These locations are shown in Figure 1 and are described below. Pipe flows and dimensions at the device locations are included from the Draft Los Altos Stormdrain Master Plan (Schaaf & Wheeler, 2010).

- **Location #1** – *Calico Corners parking lot (4294 El Camino Real), right before the outfall to Adobe Creek.* This location could be advantageous in that it includes major arterial drainage that, though classified as commercial, typically generates even higher trash loads than commercial areas do. The drainage area is nearly 300 acres and would necessitate a large device with high upfront costs. However, this could be the more cost efficient route in the long term since it may meet most or all of the trash capture requirements, and having a single device could decrease O&M costs. The areas of commercial land use within the drainage area are in close proximity to the proposed device location; therefore, the majority of the trash entering the storm drain system will not have a significant distance to travel before reaching the device. This decreases the potential for blockage in the system. Potential hurdles for this location could include difficulty in attaining proper easements from the property owner and potential hydraulic effects on the system.

  A = 294 ac
  % Commercial ≈ 35%
  EXISTING Q10=138 cfs (peak flow for pipe "A2P-102_A2O-101")
  Future Q10=142 cfs
  Improved Q10=142 cfs
  Existing Pipe Diameter = 60-inches

- **Location #2** – *Mundell Way terminus, right before outfall to Adobe Creek*. The benefits of this location include the ability to provide a large device which covers a very large area (562 acres) similarly to Location #1. However, a smaller percentage of the area is commercial and this area resides upstream of a residential area, creating a long travel distance before the trash can be captured. The access and right-of-way provided at this location is likely the most beneficial of all four locations. Since the location is in the street, the City likely has full use of the street width to work with and, at the end of a cul-de-sac, there would be almost no traffic to contend with and most likely very few utilities conflicts. This location is not beneficial for public outreach and visibility will have to be provided via the media (newspapers, etc) instead of signage, should grant stipulations require it. Negative backwater effects on the system could also be a potential problem.

  A = 562 ac
  % Commercial ≈ 20%
  EXISTING Q10=**186 cfs** (peak flow for pipe "B1D-302_B1O-201")
  Future Q10=205 cfs
  Improved Q10=205 cfs

Existing Pipe Diameter = 66-inches

- **Location #3** – *View Street (anywhere).* The major benefit of this location is that the entire drainage area is commercial. If a smaller (less expensive) device is desired, this area would be optimal. Because View Street is residential, traffic should be minimal, allowing for ease of access and maintenance. Due to the proximity of the commercial area, the project would still be relatively visible. Keeping the device near the source of the problem decreases the potential for clogged pipes downstream. This location resides in the upper part of the watershed where slopes are steeper and the potential for negative backwater effects are minimal.

  A = 41 ac
  % Commercial = Almost 100%
  EXISTING Q10=**53 cfs** (peak flow for pipe "E2D-501_E2D-215")
  Future Q10=7 cfs
  Improved Q10=56 cfs
  Existing Pipe Diameter = 36-inches

- **Location #4** – Parking lot between Stuart's Apparel (157 Main Street) and Plaza South, before confluence with 30-inch stormdrain in San Antonio Road. This location has benefits similar to Location #3. The drainage area is smaller and so a smaller, less expensive device could be installed, with a corresponding decrease in treatment rate. Access and easements have the potential to be slightly more difficult than Location #3, though manageable. This location will likely be the most publicly visible.

  A = 23 ac
  % Commercial = 100%
  EXISTING Q10=**23 cfs** (peak flow for pipe "E2F-536_E2D-537")
  Future Q10=23 cfs
  Improved Q10=23 cfs
  Existing Pipe Diameter = 24-inches

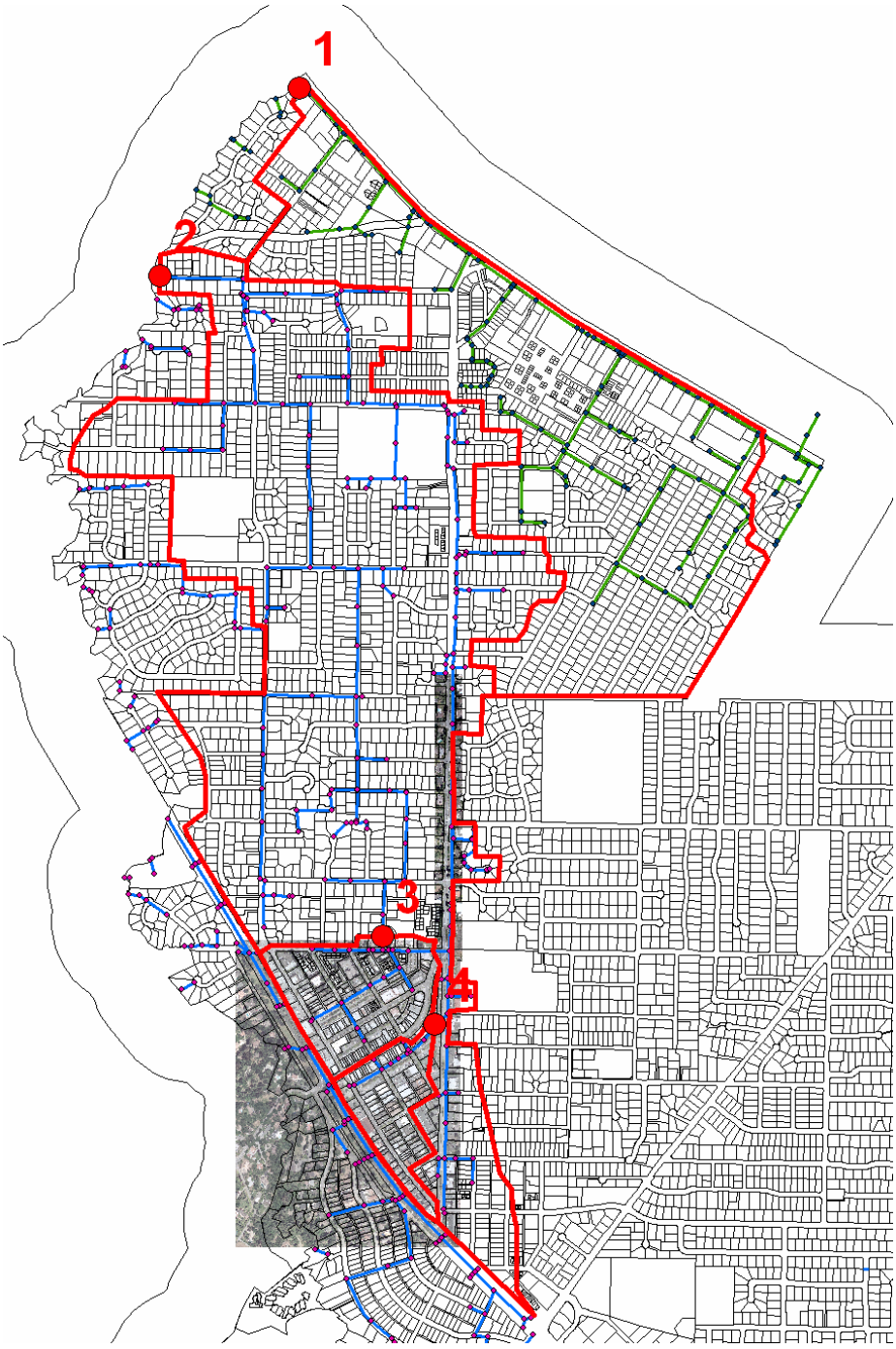

Figure 1: Possible Locations for Full Trash Capture Devices

3.4. Recommend Device Alternatives

3.4.1. Cost

The cost of the various trash capture devices is dependent upon the size, type, manufacturer, installation and other variables. Costs escalate as the capacity increases, though this is not normally a linear relationship. The cost per flow unit often decreases as the capacity increases. Different types of devices vary in cost

due to installation costs and quality since some devices require cast-in place vaults or significant depths and some devices remove fine sediments (treats the water to C.3 standards which are far beyond that required for NPDES trash capture). There is a significant variability in cost between brands. Device cost estimates are provided in Table 1.

3.4.2. O&M

O&M costs will likely be similar for all locations. Maintenance frequency would be similar for all of the locations. O&M procedures could be formulated after observing the performance of the device during the first year of operation.

3.4.3. Hydraulic Considerations

Trash capture devices disrupt the continuous flow within a pipe and therefore have the potential to create backwater effects within the stormdrain system. The extent of these effects will differ by model and will need to be evaluated at the design stage. Since backwater effects can induce drainage issues where the system is already at capacity, it is important from a public safety standpoint that these effects be evaluated before making a final decision on a specific device. The likelihood that backwater will be an issue decreases as the drainage area decreases and the average pipe slope increases. Therefore, smaller drainage areas higher in the watershed would be more like to avoid hydraulic problems. Inadequate O&M could have the potential to negatively impact the system hydraulically.

3.5. Ranking & Recommendation of Full Capture Device & Location

Preliminary cost estimates have been provided by several manufacturers of devices on the SF Bay Water Board Approved High Capacity Devices List (SFEP, 2010). Because the City does not have experience using any of these devices, it is not known how extensive maintenance will be. It may be best to install the smaller devices needed at Locations #3 and #4 first. Unexpected problems or maintenance issues that may be encountered would be on a smaller scale and the lessons learned could be applied on the larger, more expensive devices for Locations #1 and #2. The SFEP intends to track the performance of devices around the Bay. This data could be used to make educated decisions on the larger devices.

The four devices under consideration include the Kristar Swirl-Flo Screen Separator, the Kristar Nettech Gross Pollutant Trap, the Bio Clean Nutrient Separating Baffle Box, and the Roscoe Moss Storm Flo Screen. Each device has pros and cons that should be considered by the City. The preliminary cost estimates range from $5,500 - $35,200 per device for Locations #3 and #4. These costs do not include installation and some do not include key components such as vaults or lids. Maintenance costs have not been estimated. Table 1 shows the preliminary estimates of device costs.

Table 1: Preliminary Trash Capture Device

Device	Area 1	Area 2	Area 3	Area 4	Not Included
Kristar Nettech			$15,000	$15,000	Installation
Kristar SwirlFlo			$5,500	$5,500	Installation
BioClean Nutrient Separating Baffle Box	$137,000	$205,500	$35,200	$24,000	Installation, risers or lids
Roscoe Moss Storm Flo	$87,400	$131,500	$22,800	$13,100	Installation or vault

The City of Dublin estimates the total cost including installation has averaged 2 to 3 times the cost of the device alone. Kristar respresentative Sue Lillo though email correspondence agreed that this is a reasonable estimate for their devices. Dublin's maintenance has required one annual visit from a contracted maintenance company that charges approximately $2,500 per visit. Los Altos may find maintenance costs to be less expensive, since the maintenance may be able to be completed in house due to the anticipated purchase of a vac truck.

Based primarily on cost, Schaaf & Wheeler's recommendation would be to install a Kristar SwirlFlo in Area 3 first, then in Area 4 if necessary. Area 3 has a larger drainage area than Area 4 but can be treated with the same size unit; therefore, Area 3 has greater cost value. These devices will be located off-line to allow for adequate bypass. Area 3 is less likely to have right-of-way and utility conflicts. Further design should find it more feasible for construction. Based on Dublin's cost ratio, the estimated construction cost for Area 3 and 4 is $16,500 apiece.

The BioClean and Roscoe Moss devices, though more expensive, appear to have greater capacities which may decrease maintenance. There may be greater water quality benefits with the BioClean device because it is designed to capture fine sediments. If the City feels that improved water quality beyond the trash capture requirements is worth the extra cost, devices should be compared with that in mind.

Final design should include an analysis of backwater effects on the drainage system, adequacy of bypass structures and the effects on storm drain capacity. An operation and maintenance plan as well as a trash tracking plan should be established.

Local inlet filters may be considered in smaller areas, such as near schools or smaller commercial areas, were a large device is not feasible.. Local inlet filters generally have a higher maintenance cost per acre than large devices; however, they may prove valuable where the drainage areas aren't large enough to justify a large device. Inlet filter costs are approximately $300 each and maintenance costs are anticipated to be approximately $140 per year per inlet. Inlet filters may be an inexpensive option for increasing trash capture to reach a goal quickly.

3.6. The City of Los Altos has approximately $190,000 budgeted, not including SFEP grant money, over the next couple of years for the engineering design, purchase and installation of trash capture devices. This should be enough to install devices at both

Locations #3 and #4. However, only one is required for compliance. The additional device would increase trash capture rates. ***Schedule for Implementation (Construction Summer 2012)***

The chosen full trash capture device should be installed by the summer of 2012. This will provide time to collect performance data and take any addition actions necessary to meet the 40% benchmark on time.

3.7. Post-Construction Tracking

All trash removed from the trash capture device will be measured according to the tracking methodology that will be established and is a condition of the Permit. During the first winter after installation, maintenance should be completed frequently to both determine how effective the device is as well as help provide the data regarding how frequently maintenance should be performed. After the first winter, a more detailed O&M plan can be established.

4. Trash Reduction Requirements

4.1. Regulatory Summary Under City Responsibility

- Short-Term Reduction Plan by Feb. 1, 2012
- Long-Term Reduction Plan by Feb. 1, 2014
- Full Capture Device treating 20 acres by July 1, 2014
- 40% Reduction by July 1, 2014
- 70% Reduction by 2017
- 100% Reduction by 2022
- Annual Reporting

4.2. Implementation Scheduling and Milestones

4.2.1. Prioritized Trash Reduction Activities

The top priority will be to continue existing trash capture activities (outlined in Section 1.5) with the implementation of improved tracking of the trash capture as required by the Permit. The next priority will be installing the full trash capture device(s) as recommended. If these actions do not meet the prescribed benchmark, additional action items may be chosen by the City "buffet-style" as described in the Short Term Reduction Plan.

4.2.2. Tracking of Trash Capture (i.e. Reduction) After Completion of Each Activity

All trash captured must be tracked. At this point, it is assumed that the measuring will be volumetric. After each trash reduction activity, trash volumes should be measured, logged, and submitted to the City's Engineering Division. SCVURPPP is

in the process of setting forth the trash tracking methodology. Each submission may include the following information:

- Date
- Who performed the trash reduction activity
- Volume of trash
- Who measured the volume
- Dominant type of trash
- Percentage of actual trash (versus organics)
- Items counts

The exact method for tracking the trash collected is forthcoming. City supervisory staff will be responsible for maintaining the running log for each year and insuring that all data is complete and accurate.

4.2.3. Flexible Scheduling of Implementation Based on Tracking Results

With a running log of captured trash being kept by City supervisory staff, the City will be able to determine the trash deficit for the yearly reduction. This data is critical for the City to make certain goals are met. Because it is unknown how effective each trash capture activity will be, the plan will need to be flexible. It is expected that the plan will be in a continual state of flux and has been set up to be able to accommodate this. As trash data is collected, a greater or fewer number of trash collecting activities can be prescribed in order to meet trash goals within the specified time frames. The City will need to be vigilant in monitoring trash activities to ensure there is sufficient time to implement additional measures if necessary.

5. Short Term Trash Reduction Plan

5.1. 40% Trash Reduction by 2014

The Short Term Reduction Plan outlines how the City intends to reach the 40% reduction of the trash baseline by July 1, 2014. This plan must include all elements outlined in Section 1.3.1.2, including action items and an implementation schedule. This plan is due Feb. 1, 2012.

5.2. Options for Achieving 40%

5.2.1. All Existing Trash Activities

All existing trash activities will be continued as currently constituted.

5.2.2. Full Trash Capture Device (assume construction summer 2012)

A full trash capture device must be included in this plan as discussed in Section 3.

5.2.3. Possible Action Items

If the trash capture device is installed and existing trash activities diligently continued and tracking data indicates the 40% goal may not be met, addition action items may be implemented. These action items may be chosen "buffet-style" by City staff, meaning that any number, combination, or amount of them may be used at the discretion of the City to achieve the desired goal. These items include and may not be limited to the following:

- Additional full trash capture devices
- Increased street sweeping
- Increased trash walks including inspection and cleaning of ditches
- Increased stormdrain inlet cleaning
- First flush debris collection
- Others

5.3. Prioritize Options

The City has indicated that additional trash capture devices are preferred over all other options where major capture increases are needed to achieve required benchmarks. Other options are preferred where only small capture increases are needed.

5.4. Annual Schedule of Implementation (2012 – 2014)

Action Item	Schedule of Implementation
Current trash activities	Continual
Track capture	Continual
Install required trash capture device	By Summer 2012
Evaluate reduction level being achieved	Spring 2013
Implement additional action items if 40% is not achieved	Summer 2013
Submit Annual Report indicating achievement of 40% reduction	July 1, 2014

6. Long Term Trash Reduction

The Long Term Reduction Plan outlines how the City intends to reach the 70% reduction of the trash baseline by July 1, 2017 and 100% reduction by July 1, 2022. This plan must include all elements outlined in Section 1.3.1.5, including action items and an implementation schedule. This plan is due Feb. 1, 2014.

6.1. 70% Trash Reduction by 2017

6.1.1. Carry-over of un-used Short Term Trash Reduction Actions

Any alternative action items outlined in the Short Term Plan may be implemented in the Long Term Plan in greater quantity or frequency to achieve the higher reduction level. It may be that the actions taken in the implementation of the Short Term Plan

result in a higher reduction than anticipated. If 70% has already been achieved, this section of the Long Term Plan may be omitted.

6.1.2. Mechanical Device Options Analysis & Recommendation

Full trash capture devices in addition to those installed to reach the 40% reduction should be implemented. The decision of which devices to install and where should be based on the efficiency and maintenance track record for those installed for the 40% plan. If there is a large deficit to cover, the large devices for Areas 1 and/or 2 should be considered. If only the device in Area 3 is installed, Area 4 should first be considered. If Areas 3 and 4 have proved to remove much more than 40%, possible local inlet filters should be considered in lieu of large devices.

Data and experience received through the implementation of the Short-Term Plan should be used in the consideration of specific options. Manufacturers can provide additional data on the expected effects on storm drain capacity, operations and maintenance, costs, implementation schedule, etc. of any specific device.

6.2. 100% by 2022

6.2.1. Carry-over of un-used 70% Reduction Actions

Any alternative action items outlined in the Short Term Plan or the 70% reduction may be implemented in 100% reduction in greater quantity or frequency to achieve the higher reduction level. If 100% has already been achieved, this section of the Long Term Plan may be omitted.

6.2.2. Mechanical Device Options Analysis & Recommendation

Full trash capture devices in addition to those installed to reach the 70% reduction should be implemented. The plan as outlined for the 70% reduction should be followed, but to a greater degree to achieve 100%.

Data and experience received through the implementation of the Short-Term Plan should be used in the consideration of specific options. Manufacturers can provide additional data on the expected effects on storm drain capacity, operations and maintenance, costs, implementation schedule, etc. of any specific device.

7. Implementation

7.1. Proposed Schedule

The schedule through 2014 is outlined in Section 5.4. This schedule outlines the minimum that needs to be accomplished during that time frame. Beyond this, the detailed schedule will need to be evaluated based on the trash reduction results tracked by the implementation of the Short-Term Plan. Based on anticipated trash load reduction, action items should be employed every summer and tracked the following winter until the desired benchmarks are achieved.

7.2. Cost / Budget Implications / Schedule

There appears to be sufficient funds budgeted for the implementation of the Short-Term Plan, included devices for both Locations #3 and #4. Once the trash reduction data from the implementation of the Short-Term Plan is attained, an estimate of the extent of action items that will be required for the implementation of the Long-Term Plan, and thereby an estimate of the costs required, should be able to be approximated. These estimates can then be used to properly allocate funds for the Long-Term Plan to be spent 2014-2021. Since there are multiple years available to achieve the 70% and 100% reduction benchmarks, which action items are implemented and when (past the Short-Term Plan) may be adjusted to fit budget timing restraints.

7.3. Flow Chart

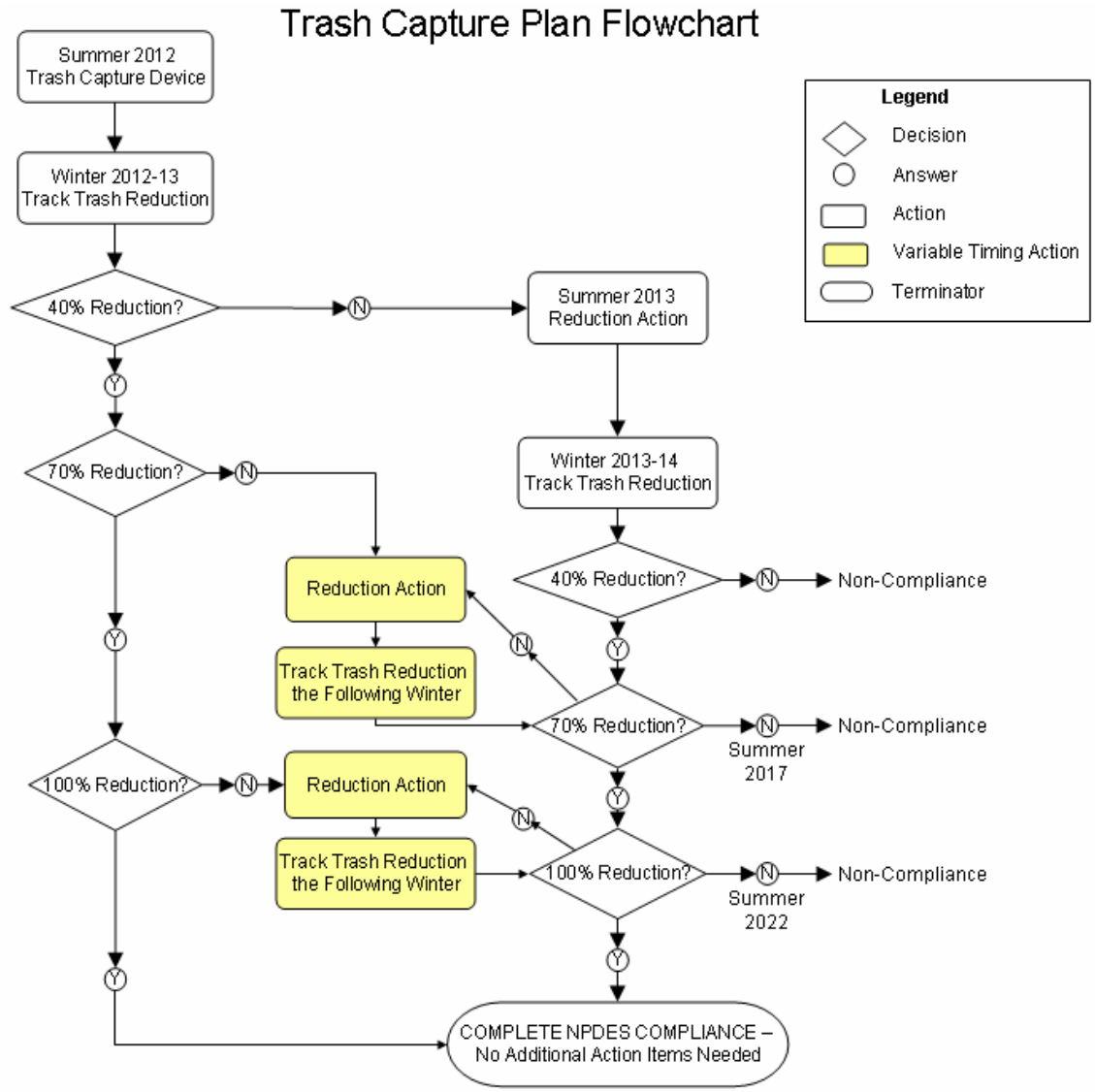

Figure 2: Trash Capture Plan Flowchart

7.4. Adjustment of Schedule as Necessary

Due to the nature of the reduction benchmarks, a portion of the schedule can be adjusted if needed, such as if budget is not yet available or if benchmarks are reached early. Where there are several years available to complete an item, the action is marked yellow in Figure 2. Though these actions items do not need to be completed until the deadlines shown, it is in the City's best interest to complete them early, on a yearly basis. This will give the City time to employ additional actions items on the yearly data tracking cycle until the desired benchmark is met. This should keep the City from finding themselves in a position of non-compliance.