REGULAR MEETING OF THE MILPITAS CITY COUNCIL AGENDA

TUESDAY, MAY 2, 2017

455 EAST CALAVERAS BLVD, MILPITAS, CA
6:00 P.M. (CLOSED SESSION) ● 7:00 P.M. (PUBLIC BUSINESS)

SUMMARY OF CONTENTS

I. CALL TO ORDER/ROLL CALL by the Mayor (6:00 p.m.)

II. ADJOURN TO CLOSED SESSION

(a) CONFERENCE WITH LABOR NEGOTIATORS - COLLECTIVE BARGAINING
Pursuant to California Government Code Section 54957.6
City Negotiators: Tom Williams, Tina Murphy
Employee Group: Milpitas Employees Association
Under Negotiation: Wages, Hours, Benefits, and Working Conditions

(b) CONFERENCE WITH LEGAL COUNSEL, ANTICIPATED LITIGATION
Pursuant to Government Code Section 54956.9(d)(4) – City as Plaintiff

(c) CONFERENCE WITH LEGAL COUNSEL, ANTICIPATED LITIGATION
Pursuant to Government Code Section 54956.9(d)(2) – City as Defendant

III. CLOSED SESSION ANNOUNCEMENT: Report on action taken in Closed Session, if required pursuant to Government Code Section 54957.1, including the vote or abstention of each member present

IV. PLEDGE OF ALLEGIANCE (7:00 p.m.)

V. INVOCATION (Councilmember Nuñez)

VI. SCHEDULE OF MEETINGS – COUNCIL CALENDAR May 2017

VII. PRESENTATIONS

- Proclaim May 2017 as *Mental Health Month*
- Proclaim May 2017 as *Building & Safety Month*
- Proclaim Affordable Housing Week for May 12 – 19, 2017
- Proclaim Public Service Recognition Week for May 7 – 13, 2017
- Proclaim Economic Development Week for May 7 – 13, 2017

VIII. PUBLIC FORUM

Members of the audience are invited to address the Council on any subject not on tonight's agenda. Speakers must come to the podium, state their name and city of residence for the Clerk's record, and limit their remarks to three minutes. As an item not listed on the agenda, no response is required from City staff or the Council and no action can be taken. However, the Council may instruct the City Manager to place the item on a future meeting agenda.

IX. ANNOUNCEMENTS

X. ANNOUNCEMENT OF CONFLICT OF INTEREST AND CAMPAIGN CONTRIBUTIONS

XI. APPROVAL OF AGENDA

XII. CONSENT CALENDAR (Items with asterisks*)

Consent calendar items are considered to be routine and will be considered for adoption by one motion. There will be no separate discussion of these items unless a member of the City Council, member of the audience, or staff requests the Council to remove an item from or be added to the consent calendar. Any person desiring to speak on any item on the consent calendar should ask to have that item removed from the consent calendar. If removed, this item will be discussed in the order in which it appears on the agenda.

XIII. APPROVAL OF COUNCIL MEETING MINUTES – April 18, 2017

XIV. PUBLIC HEARING

1. **Conduct Public Hearing and Introduce Ordinance No. 293 Restricting Expanded Polystyrene (EPS) Foam Food Ware Use and Adopt the Policy Restricting EPS Foam Food Ware Use at City Facilities and at City-Sponsored Events (Staff Contact: Leslie Stobbe, 408-586-3352)**

XV. UNFINISHED BUSINESS

2. **Approve Mid-Year Budget Appropriations Follow Up for the Fiscal Year 2016-17 Capital Improvement Program Budget (Staff Contact: Jane Corpus, 408-586-3125)**

3. **Per Request of Vice Mayor Grilli, Consider Request for More Than 4 Hours of Staff Time to Study and Return with an Ordinance Related to Wage Theft (Contact: Vice Mayor Grilli, 408-586-3031)**

4. **Approve Amendment No. 7 to the Consulting Services Agreement with Vali Cooper & Associates, Inc. to Extend the Term to January 31, 2018 and Increase the Compensation in the Additional Amount of $303,000 to Continue Support on the Silicon Valley Rapid Transit Program Berryessa Extension (SVBX) Project and Montague Expressway Widening Project, CIPs No. 4265 and No. 4179 (Staff Contact: Steve Chan, 408-586-3324)**

* 5. **Continue Milpitas Sports Center Artificial Turf Field Access Discussion (Staff Contact: Renee Lorentzen, 408-586-3409)**

* 6. **Receive the Monthly Update of the Odor Control Report (Staff Contact: Greg Chung, 408-586-3355)**

XVI. REPORT OF COUNCILMEMBER

7. **Per Request of Councilmember Nuñez, Receive Information on Silicon Valley Clean Energy Program (Contact: Councilmember Nuñez, 408-586-3023)**

XVII. NEW BUSINESS

* 8. **Receive City of Milpitas Investment Portfolio Status Report for the Quarter Ended March 31, 2017 (Staff Contact: Jane Corpus, 408-586-3125)**

* 9. **Receive Financial Status Report for the Nine Months Ended March 31, 2017 (Staff Contact: Jane Corpus, 408-586-3125)**

***10. Accept Donation of $3,000 to the Milpitas Fire Department for Office of Emergency Services and Appropriate Those Funds to the Office of Emergency Services for Purchase of a Shaker Trailer - an Emergency Preparedness Educational Tool (Staff Contact: Toni Charlop, 408-586-2801)**

XVIII. RESOLUTION

***11. Adopt a Resolution Authorizing Sole Source Purchase of a RapidView IBAK Closed Circuit Television All-In-One Sewer Inspection Vehicle for the Public Works Department from Jack Doheny Companies for $337,528 (Staff Contacts: James Levers, 408-586-2648 and Chris Schroeder, 408-586-3161)**

XIX. AGREEMENT & BID

***12. Approve Project Plans and Specifications, and Authorize Advertisement for Bid Proposals for Daniel Court Water Main and Services Replacement Projects No. 7110 and No. 7131 (Staff Contact: Steve Erickson, 408-586-3301)**

XX. REPORTS OF MAYOR & COUNCILMEMBERS – from the assigned Commissions, Committees and Agencies

XXI. ADJOURNMENT

KNOW YOUR RIGHTS UNDER THE OPEN GOVERNMENT ORDINANCE

Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions and other agencies of the City exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and the City operations are open to the people's review. For more information on your rights under the Open Government Ordinance or to report a violation, contact the City Attorney's office at Milpitas City Hall, 455 E. Calaveras Blvd., Milpitas, CA 95035

The Open Government Ordinance is codified in the Milpitas Municipal Code as Title I Chapter 310 and is available online at the City's website www.ci.milpitas.ca.gov by selecting the Milpitas Municipal Code link.

Materials related to an item on this agenda submitted to the City Council after initial distribution of the agenda packet are available for public inspection at the City Clerk's office at Milpitas City Hall, 3rd floor 455 E. Calaveras Blvd., Milpitas and on the City website. Phone 408-586-3040

All City Council agendas and related materials can be viewed online here: www.ci.milpitas.ca.gov/government/council/agenda_minutes.asp (select meeting date)

APPLY TO SERVE ON A CITY COMMISSION

Current Vacancies on
Arts Commission
Community Advisory Commission
Economic Development Commission
Emergency Preparedness Commission
Parks, Recreation and Cultural Resources Commission
Telecommunications Commission

Commission application forms are available online at www.ci.milpitas.ca.gov or at Milpitas City Hall. Contact the City Clerk's office at 408-586-3003 for more information.

If you need assistance, per the Americans with Disabilities Act, for any City of Milpitas public meeting, call the City Clerk at 408-586-3001 or send an e-mail to mlavelle@ci.milpitas.ca.gov prior to the meeting. You may request a larger font agenda or arrange for mobility assistance. For hearing assistance, headsets are available in the City Council Chambers for all meetings in that facility.

XIV. PUBLIC HEARING

1. Conduct Public Hearing and Introduce Ordinance No. 293 Restricting Expanded Polystyrene (EPS) Foam Food Ware Use and Adopt the Policy Restricting EPS Foam Food Ware Use at City Facilities and at City-Sponsored Events (Staff Contact: Leslie Stobbe, 408-586-3352)

Background: EPS is a petroleum-based, lightweight plastic material commonly used in a molded foam form as take-out food service ware by retail food vendors. Styrene, a component of EPS foam, was added to the list of chemicals known by the State of California to cause cancer by the Office of Environmental Health Hazard Assessment and as identified by the National Toxicology Program in April 2016. EPS is difficult and uneconomical to handle and recycle, especially if soiled by food. It easily breaks down into smaller pieces in the environment, making it difficult to clean up, and is often mistaken for food and ingested by birds and marine wildlife.

Two regional studies quantify the problems of EPS food ware in the local environment (both included with the Council agenda packet):

1. Bay Area Stormwater Management Agencies Association (BASMAA) - San Francisco Bay Area Stormwater Trash Generation Rates, prepared by EOA, Inc. in 2014 summarizes monitoring conducted in 2010-11 of trash in storm drains to establish baseline trash generation rates. Results indicate that "EPS food ware is roughly 6% of trash (by volume) observed in storm drains."

2. Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) - Storm Drain Trash Monitoring and Characterization Project Technical Report, prepared by EOA, Inc. 2016, summarizes the results of monitoring conducted in 2015-16 to evaluate whether reductions in EPS foam food ware and single-use carry-out bags have decreased. Results indicate that "there was a 74% decrease in the volume of EPS food service ware observed in the 53 sites in common between this Project and the BASMAA Trash Generation Rates Study (BASMAA 2014). This large decrease coincides with ordinances that have been adopted throughout most of the Santa Clara Valley."

Milpitas' Trash Reduction Efforts

On April 26, 2011, the Recycling & Source Reduction Advisory Commission (RSRAC) recommended the City develop an EPS ordinance as a low cost alternative to reduce environmentally harmful trash in local creeks and to meet litter reduction requirements based upon the Expanded Polystyrene Food Service Take-Out Container Study. On April 15, 2014, the City Council authorized staff to begin implementation of the Long-Term Trash Load Reduction Plan (Plan) as required by the Municipal Regional Stormwater Permit (MRP). On January 24, 2017, RSRAC recommended that the City also adopt an internal policy restricting EPS use on City property and at City-sponsored events. On April 25, 2017, the RSRAC recommended the City Council adopt an ordinance restricting the use of extended polystyrene (EPS) foam food ware take-out containers.

The MRP applies to 76 municipalities (cities, towns and counties) and flood control agencies (water districts) that discharge stormwater to San Francisco Bay. An updated MRP (Order R2-2015-0049) became effective on January 1, 2016. The MRP requires Permittees to demonstrate the following reductions in trash discharged from storm drain systems: 70% by July 2017; 80% by July 2019; and "No Visual Impact Equivalent" by July 2022. To establish a baseline for the City of Milpitas, the City developed a trash generation map that provides an estimate of the amount of trash discharged into the stormwater conveyance system, local creeks and channels. Additionally, the City developed and submitted the Plan listing trash load reduction actions that the City will implement between 2014 and 2022 to address mandated trash load reductions. This

Plan, presented to the City Council on April 15, 2014, includes but is not limited to these trash control actions:

- Installation and maintenance of full trash capture treatment devices in the City's storm drain system and channels.
- Enhanced inspections of businesses to ensure trash is managed properly and areas are litter free.
- Online outreach to residents and people working in Milpitas, including printed and electronic information of best management practices for businesses.
- Adoption of single-use carry-out bag Ordinance No. 287 effective January 1, 2016.
- Introduction of an ordinance restricting EPS foam food service ware and recommendation of City policy to restrict the use of consumer EPS products ("clamshells," plates and cups) at City facilities and events.

As a result of implementing the above actions, except the EPS ordinance, the City can reasonably expect a 70% trash reduction from stormwater in July 2017. In an effort to achieve the 80% compliance target by July 2019, staff recommends implementation of the proposed EPS ordinance and to increase the number of creek cleanups conducted by the City.

Community Outreach

To prepare the draft ordinance, a survey and meeting announcement were mailed to 376 food establishments, placed in the Chamber of Commerce's newsletter *Panorama*, and emailed to Chamber members. Results of that outreach and a summary of comments received will be presented at the public hearing. In addition, staff attended meetings with the California Restaurant Association on March 23, 2017 and with the Milpitas Chamber of Commerce Board on April 6, 2017. Further, staff has researched the viability of business cooperatives that provide reduced costs for container alternatives. This information can be provided to food establishment owners and managers as part of the outreach plan.

Proposed Actions

The proposed ordinance would prohibit all food vendors from providing EPS foam disposable food service ware to customers. This would include "take out" containers as well as the use of EPS foam disposable food ware for on-site consumption. Staff recommends the new ordinance become effective on July 1, 2018 to allow sufficient time for food establishments to deplete current inventories and for the outreach effort.

In addition, staff recommends establishing a policy that would prohibit use of EPS foam food ware at all City facilities, City-managed concessions, City-sponsored events and for any food vendors doing business with the City and by private persons at City rental facilities.

California Environmental Quality Act: The ordinance is exempt from CEQA pursuant to CEQA Guidelines Sections 15307 (actions by a Regulatory Agency for protection of the natural resources) and 15308 (actions by a Regulatory Agency for Protection of the Environment) because it is intended to reduce EPS litter and thereby reduce the risk of harm to aquatic wildlife and improve water quality in the Milpitas creeks and the Southern San Francisco Bay.

Alternative: If the Council does not adopt Ordinance No. 293 restricting the use of EPS foam disposable food service ware, the City faces non-compliance of meeting mandatory litter control requirements under its stormwater permit and to reduce environmentally harmful trash in storm drains and creeks.

Fiscal Impact: Adoption of the EPS ordinance would cost approximately $9,500 during FY 2017-18 to conduct outreach targeted to local food establishments ($5,500) and to conduct additional creek cleanups ($4,000). $9,500 is included in the proposed FY 2017-18 budget for Council's approval at a later date.

Adoption of the EPS policy would cost approximately an additional $730 annually for the Senior Center's Lunch Program to use EPS alternatives.

Recommendations:

1. Open the public hearing to receive comments.
2. Move to close the Public Hearing, following any comments from the public.
3. Waive the first reading beyond the title of Ordinance No. 293, following a reading of the title by the City Attorney.
4. Introduce Ordinance No. 293 restricting the use of EPS foam food ware.
5. Adopt a City policy restricting EPS foam food ware use at City facilities and at City-sponsored events.

Attachments:

a) Ordinance No. 293 for first reading
b) Policy to Restrict Expanded Polystyrene (EPS) Foam Food Ware Use at City Facilities
c) Food Establishment Stakeholder Survey
d) Survey Letter to Food Establishments
e) EPS Save the Date notice 4-12-17 meeting
f) Long-Term Trash Load Reduction Plan & Assessment
g) Stormwater Trash Generation Rates Final Report
h) Storm Drain Trash Monitoring & Characterization Project Technical Report
i) Expanded Polystyrene Food Service Take-Out Container Study
j) EPS Study Appendices
k) Letter Opposing ordinance - American Chemistry Council

XV. UNFINISHED BUSINESS

2. Approve Mid-Year Budget Appropriations Follow Up for the Fiscal Year 2016-17 Capital Improvement Program Budget (Staff Contact: Jane Corpus, 408-586-3125)

Background: At the City Council meeting on April 4, 2017, staff brought the mid-year appropriations for approval and Council directed staff to bring three capital projects recommended for mid-year appropriations to the scheduled community meeting on April 6. The capital projects were discussed at the community meeting with no objections.

The requested budget appropriations are deemed necessary at mid-year for the following budget for capital projects:

Capital Improvement Program (CIP) projects:

1. **Create a CIP Project for the purchase of a MedEvac Emergency Rescue Vehicle and a corresponding storage structure. The cost of $406,465 would be funded from the General Government CIP fund.** As occurs in all communities, in Milpitas first responders must be prepared to mitigate all potential threats to residents and critical infrastructures. The most serious threats may include natural disasters, violent crime, criminal mass casualty events such as active shootings, or other acts of terrorism. The majority of criminal offenders arrested in this community over the past few years do not have a Milpitas address. The current ease of transit through Milpitas via two major interstate highways, State Route 237 and Montague Expressway is certainly a contributing factor. And the ease and convenience of transit into Milpitas will be greatly enhanced when BART begins revenue service later this calendar year. To effectively plan and prepare, the City's exposure to crime must be viewed from a broad, regional perspective. The Milpitas Police Department maintains a highly trained Special Weapons and Tactics (SWAT) Team of fifteen (15) officers and sergeants to respond to high risk critical incidents. In addition to the previously mentioned threats, the SWAT Team is tasked with responding to all incidents requiring tactics and capabilities which exceed that of the average police officer on patrol, including hostage situations,

barricaded armed suspects, serving high-risk search and arrest warrants, or any incident involving suspects known to be violent and armed.

The Police Department does not have a reliable vehicle to protect the team and endangered citizens from ballistic and projectile attacks and enable SWAT officers the ability to treat injured citizens and/or bring medically trained professionals into danger areas with reasonable safety. The MedEvac is a complete tactical vehicle/ambulance with hardened walls and blast proof windows that protect passengers from high caliber ballistic and projectile attacks, which allows the SWAT Team to deploy directly into "hot zones." The vehicle provides advanced life saving features, such as space for two emergency litters (rescue baskets), adjustable overhead lighting, medical supply storage, IV hookups, and two jumbo oxygen tanks that will allow the team to provide aid and transport the critically wounded. The vehicle also has four-wheel drive capability to allowing staff to work off road or maneuver through road debris that may exist during a natural disaster. The vehicle can fit up to 10 SWAT Team members or up to 20 civilians in need of rescue from violent incidents or natural disasters. In order to extend the useful life of the MedEvac Emergency Rescue Vehicle, it should be stored indoors. Due to its size, it could not be stored in any existing facilities, so a dedicated storage structure is needed. The estimated cost of materials, labor, etc. for the storage structure is $25,000.

2. **Create a CIP Project for the purchase of an Interactive Learning Objectives (MILO) Range Theatre 180 System. The cost of $99,279 would be funded from the Equipment Replacement Fund ($83,204) and the General Government CIP fund ($16,075)**. The Milpitas Police Department maintains a highly trained police force and is often confronted with split-second decision-making when dealing with highly stressful critical incidents. In 2001, the Milpitas Police Department purchased and installed the Range 2000, which is an interactive range simulation system as part of the Firearms Training Program. Due to age, the Range 2000 system is now antiquated and several of its key components are no longer functional. The MILO Range Theatre System is an upgraded interactive video training simulator, similar to the Range 2000, and comes equipped with hundreds of scenarios. It is a comprehensive solution that is designed to allow trainers the ability to give presentations, conduct interactive testing and assessment and provide immersive hands-on scenario based exercises with detailed debriefings. It also provides training in the application of the use of force and the escalation/de-escalation during crisis situations.

3. **Increase budget appropriation in the amount of $200,000 for CIP No. 4273 Street Landscape Irrigation using one-time General Fund revenue from the sale of the McCandless property**. These funds will be used to purchase additional power equipment, vehicles and irrigation supplies necessary for Public Works staff to properly maintain and manicure the street landscaping medians and streetscapes. Due to the drought the City's landscape and irrigation systems need additional attention and restoration, this equipment will allow staff to most effectively and efficiently transport crews and equipment to the various locations to complete restoration of existing streetscape locations. As a result this appropriation will improve City streetscapes overall appearance, reduce irrigation leaks associated with disrepair irrigation systems and allow for more effective removal of nuisance weeds. Equipment and supplies purchases will include: two Ford F-250 Crew Cab with Utility box and lift gate, one Ford F-150 Regular Cab, one Big Tex 70SR dump trailer, dump trailer and various power tools. Staff requests these funds prior to next fiscal year to ensure ample attention prior to the start of summer season.

Fiscal Impact: The net impacts (use of funds) to the various requests noted above is as follows: Equipment Replacement Fund $83,204; General Government CIP Fund $422,540.

Recommendation: Approve the additional Fiscal Year 2016-17 mid-year budget appropriations as itemized in this report (and on Budget Change Form in agenda packet).

Attachments
a) Table
b) Budget Change Form

3. **Per Request of Vice Mayor Grilli, Consider Request for More Than 4 Hours of Staff Time to Study and Return with an Ordinance Related to Wage Theft (Contact: Vice Mayor Grilli, 408-586-3031)**

Background: At the April 4 City Council meeting, the Vice Mayor reported that she and Councilmember Phan had met with the Wage Theft Coalition of Santa Clara County recently. They both wish to request that the Council consider adopting a wage theft ordinance for the City of Milpitas. The topic was listed on the agenda for April 18, but not heard and was continued to this date.

Recommendation: Authorize staff to spend more than four hours of time to study the issue of wage theft in Milpitas, and direct the City Attorney to return to City Council with a wage theft ordinance for adoption.

Attachment: Report from Wage Theft Coalition

4. **Approve Amendment No. 7 to the Consulting Services Agreement with Vali Cooper & Associates, Inc. to Extend the Term to January 31, 2018 and Increase the Compensation in the Additional Amount of $303,000 to Continue Support on the Silicon Valley Rapid Transit Program Berryessa Extension (SVBX) Project and Montague Expressway Widening Project CIPs No. 4265 and No. 4179 (Staff Contact: Steve Chan, 408-586-3324)**

Background: On August 3, 2010, the City entered into a Master Agreement with the Santa Clara Valley Transportation Authority (VTA) for reimbursement of City work on the Silicon Valley Berryessa Extension (SVBX) project (BART). The Master Agreement allows reimbursement of City consultant costs for support services.

On November 20, 2013, the City entered into a consulting services agreement with Vali Cooper & Associates, Inc. in the amount of $19,760 to provide support services for the SVBX project through June 30, 2014. On January 21, 2014, the parties entered into Amendment No. 1 to increase the compensation by $75,000 to continue the support services. On June 3, 2014, the parties entered into Amendment No. 2 to increase the compensation by $158,240 and extended the term. On December 16, 2014, the parties entered into Amendment No. 3 to increase the compensation by $300,000 and extend the term through September 30, 2015. On September 15, 2015, the parties entered into Amendment No. 4 to increase the compensation by $310,000 and extend the term through October 31, 2016. On September 20, 2016, the parties entered into Amendment No. 5 to increase the compensation by $230,000 and extend the term through February 28, 2017. On February 1, 2017, the parties entered into Amendment No. 6 to extend the term through August 30, 2017.

Several phases of the SVBX work are in progress simultaneously, including relocation of existing utilities, installation of new utilities, track installation, parking garage, roadway, frontage, and station construction. The Montague Expressway Widening Project is scheduled to begin shortly and will also require engineering support services. Staff recommends Amendment No. 7 with Vali Cooper & Associates to perform additional services by continuing their support with the SVBX project through the end of April 30, 2018. Staff has negotiated a fee for these services not to exceed $303,000. Approval of this agreement amendment brings the total agreement amount with Vali Cooper to $1,396,000.

Fiscal Impact: None. Consultant expenses and City staff labor are reimbursable under the VTA Master Agreement for CIP No. 4265. Work performed on the Montague Expressway Widening

Project is charged to CIP No. 4179. Sufficient funds are available in the project budgets for these services.

Recommendation: Approve Amendment No. 7 to the agreement with Vali Cooper & Associates extending the term to January 31, 2018 in the additional amount of $303,000 for the Silicon Valley Berryessa (BART) Extension Project No. 4265 and Montague Expressway Widening Project No. 4179.

Attachment: Amendment No. 7 to Agreement with Vali Cooper & Associates, Inc.

*** 5. Continue Milpitas Sports Center Artificial Turf Field Access Discussion (Staff Contact: Renee Lorentzen, 408-586-3409)**

Background: On March 21, 2017, the City Council requested that staff return to the Council with information and data in regards to the impact on the Milpitas Sports Center Artificial Turf Field outdoor facility, should general public use be implemented. The Council requested information brought back include impact costs for additional staff and maintenance, affects to the lifespan of the turf, and the impacts of animals on the artificial material.

City staff spoke with several members of the public and youth sports organizations about access to the Milpitas Sports Center Artificial Turf fields and have scheduled a community meeting on Wednesday, May 24, 2017 at 6:30 PM to gather feedback on the current use and general public interest in the use of the space in formal setting. Feedback at this community meeting will provide additional information for staff's recommendation to City Council on this item.

Fiscal Impact: None

Recommendation: This topic will be continued to the June 6, 2017 City Council meeting.

Attachment: None

*** 6. Receive the Monthly Update of the Odor Control Report (Staff Contact: Greg Chung, 408-586-3355)**

Background: From March 10 through April 6, 2017, the Bay Area Air Quality Management District (BAAQMD) forwarded 118 complaints originating in Milpitas. 52 complaints identified a garbage odor, 3 complaints identified a sewage odor, 61 complaints did not identify an odor source, and 2 identified multiple odor sources. As of the last Council update, the City's odor reporting website has received 34 reported complaints.

California Environmental Quality Act: The item is exempt from CEQA as there will be no physical change to the environment.

Recommendation: Receive the monthly update of the odor control report.

Attachment: None

XVI. REPORT OF COUNCILMEMBER

7. Per Request of Councilmember Nuñez, Receive Information on Silicon Valley Clean Energy Program (Contact: Councilmember Nuñez, 408-586-3023)

Recommendation: Hear report of Councilmember Nuñez, who requested to have a report to the City Council from representatives of Silicon Valley Clean Energy.

Attachment: None

XVII. NEW BUSINESS

*** 8. Receive City of Milpitas Investment Portfolio Status Report for the Quarter Ended March 31, 2017 (Staff Contact: Jane Corpus, 408-586-3125)**

Background: In compliance with the State of California Government Code and the City's Investment policy, the City of Milpitas Investment Report for the quarter ended March 31, 2017 is submitted for the Council's review and acceptance.

The Portfolio Summary Report included in the Council's packet provides a summary of the City's investments by type. It lists the par value, market value, book value, percentage of portfolio, term, days to maturity and the equivalent yields for each type of investment. The Portfolio Details Report provides the same information for each individual investment in the City's portfolio as of March 31, 2017.

As of March 31, 2017, the principal cost and market value of the City's investment portfolio was $233,428,207 and $233,001,818 respectively. When market interest rates increase after an investment is purchased, the market value of that investment decreases. Conversely, when market interest rates decline after an investment is purchased, the market value of that investment increases. If the investments are not sold prior to the maturity date, there is no market risk. Therefore, in accordance with the City's investment policy, all investments are held until maturity to ensure the return of all invested principal.

The City's effective rate of return for the period ended March 31, 2017 was 1.00%. The comparative benchmarks for the same period were 0.82% for LAIF (Local Agency Investment Fund) and 0.94% for the 12-month average yield of the 2-year Treasury Note. The weighted average maturity of the portfolio was 416 days.

The investment portfolio is in compliance with the City's investment policy. A combination of securities maturing, new revenues, and tax receipts will adequately cover the anticipated cash flow needs for the next six months. Cash flow requirements are continually monitored and are considered paramount in the selection of maturity dates of securities.

The market values of the securities were provided by BNY Mellon, the safekeeping bank of the City's securities. All the securities owned by the City are held in the trust department of BNY Mellon under the terms of a custody agreement.

Four charts are included with the agenda packet that show investment by maturity levels, comparison of the City's portfolio yields to other benchmark yields as well as a trend of the type of securities in the City's portfolio, weighted average maturity and average yield.

Fiscal Impact: None

Recommendation: Receive the investment report for the quarter ended March 31, 2017.

Attachments
a) Table and 3 graphs
b) Portfolio Management Summary and details

*** 9. Receive Financial Status Report for the Nine Months Ended March 31, 2017 (Staff Contact: Jane Corpus, 408-586-3125)**

Background: This interim financial report places a focus on the City's major operating funds, including General, Water and Sewer. As of March 31, 2017, the General Fund received approximately $62.4 million in total revenue. This amount is $13.8 million more than the

revenues received for the same period in FY 2015-16 primarily due to the $7.2 million reimbursement for the purchase of the property sold to the Milpitas Unified School District. Other areas of increases were in property tax, the RPTTF distributions and sales tax revenue. Property tax revenue was up by about $1.0 million over last year due to continued assessed values growth and new construction impact. RPTTF revenue was up by about $1.1 million over last year due to the sale of two properties in the Successor Agency and the $1.1 million represents the City's share of the sale. Sales tax revenue was up by about $3.9 million from the same period last year. Staff anticipates that the overall General Fund revenue will be on track with the budget projection.

Overall City departments' expenditures for the nine month period were moderately below budgets at about 69.06% in contrast to 70.6% in the prior year. As noted, the City Attorney's office and Fire Department are slightly over their budgets due to charges that are reimbursable from third parties. A budget adjustment will be done at year end for monies received from developers for expenditures incurred by the City Attorney's office and monies received from the State of California for Fire Department overtime that was reimbursed for mutual aid.

Putting general revenues and expenditure projections together displays a balanced equation at the end of the year. With that said, cost and budgetary control remain key in maintaining a sound fiscal plan for this year and as the City moves forward.

Water and Sewer funds remains within the expected patterns in terms of revenue.

Fiscal Impact: None

Recommendation: Receive the financial status report for the nine months ended March 31, 2017.

Attachment: 3rd Quarter Revenues and Expenditure reports for FY 2016-17

***10. Accept Donation of $3,000 to the Milpitas Fire Department for Office of Emergency Services and Appropriate Those Funds to the Office of Emergency Services for Purchase of a Shaker Trailer - an Emergency Preparedness Educational Tool (Staff Contact: Toni Charlop, 408-586-2801)**

Background: The Milpitas Office of Emergency Services (OES) is running the kids' area of the Milpitas Chamber of Commerce 2017 International BBQ Festival. In the children's area, Milpitas OES wishes to provide a "Shaker Trailer" to teach the community about earthquake safety and preparedness. This year's children's area will have a focus on Emergency Preparedness Education in a fun, interactive setting that both children and their parents can learn from. Milpitas OES sought donations to assist with the cost of this unique educational tool.

Fiscal Impact: None.

Recommendation: to accept an anonymous donation of $3,000 to the Milpitas Fire Department to be deposited into the City's General Fund and appropriate the funds to the Fire Dept. Office of Emergency Services budget for the purchase of a shaker trailer from Big Shaker Enterprises LLC.

Attachment: Budget Change Form

XVIII. RESOLUTION

***11. Adopt a Resolution Authorizing Sole Source Purchase of a RapidView IBAK Closed Circuit Television All-In-One Sewer Inspection Vehicle for the Public Works Department from Jack Doheny Companies for $337,528 (Staff Contacts: James Levers, 408-586-2648 and Chris Schroeder, 408-586-3161)**

Background: Currently, more than 173 miles of sanitary sewer pipeline are owned and maintained by the City of Milpitas. The State Water Resources Control Board Order No. 2006-0003-DWQ requires sanitary sewer operators to develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Consistent with this order, the City of Milpitas Sanitary Sewer Management Plan section 4.3 states that the City shall establish a Closed Circuit Television (CCTV) program for assessing sanitary sewer pipelines.

Consistent with the City of Milpitas Sanitary Sewer Management Plan, and after evaluating multiple CCTV all-in-one sewer inspection vehicles on the market, including Envirosight, CUES, Pipe Vision, and RapidView IBAK, Public Works staff determined that the RapidView IBAK CCTV all-in-one sewer inspection vehicle best met the requirements of the Milpitas CCTV program. The Public Works Department recommends purchase of one complete RapidView IBAK CCTV all-in-one sewer inspection vehicle from Jack Doheny Companies. Subject to Milpitas Municipal Code Section I-2-3.09 Sole Source Procurement, the Purchasing Agent has determined that Jack Doheny Companies is the sole distributor in California of RapidView IBAK vehicles and products, and RapidView IBAK is the only manufacturer to offer such unique features, as the Orion® and Orpheus 2.0® zoom pan and tilt cameras, the only cameras upgradable to PANORAMO 360 degree digital pipe line scanning capability, T66 small camera and T76 large camera steerable tractors with anti-tilt compensation, BS7 vehicle mounted control panel for all systems, 2-axis high strength cable connections rated to 2,000 pounds and a ten year spare parts guarantee. RapidView IBAK also invented the sewer camera in 1957.

The RapidView IBAK CCTV all-in-one sewer inspection vehicle is mounted on a Ford E450 chassis and includes one Orion® and one Orpheus 2.0® zoom pan and tilt camera, one T66 small camera and one T76 large camera steerable tractor with anti-tilt compensation, BS7 vehicle mounted control panel for all systems, KW505 synchronized power reel with boom light, computer hardware, and Pipeline Assessment Certification Program (PACP) inspection software.

Fiscal Impact: None. Sufficient funding is available in the Capital Improvement Program Project No. 6119 for this purchase.

Recommendation: Adopt a resolution authorizing the purchase of one RapidView IBAK CCTV all-in-one sewer inspection vehicle from Jack Doheny Companies through a sole source purchase pursuant to Milpitas Municipal Code Section I-2-3.09 in the amount of $337,528.00.

Attachment: Resolution

XIX. AGREEMENT & BID

*12. Approve Project Plans and Specifications, and Authorize Advertisement for Bid Proposals for Daniel Court Water Main and Services Replacement Projects No. 7110 and No. 7131 (Staff Contact: Steve Erickson, 408-586-3301)

Background: Plans and specifications for the Daniel Court Water Main and Service Replacement Projects No. 7110 and No. 7131 have been completed. This project will provide for replacement of approximately 1,100 linear feet of 6-inch diameter asbestos cement pipe (ACP) water main, including replacement of water services, meters, and fire hydrants on both legs of Daniel Court.

The existing main, service laterals, and fire hydrants were installed in the early 1980s. Due to age and the type of pipe material, the pipe is now brittle and problematic requiring frequent repairs to

correct leaks and line breaks. Recent emergency repairs are resulting in a loss of water and service outage which is an inconvenience for customers.

Estimated cost of construction is approximately $800,000. A copy of the front cover of the project specifications is included in the Council's agenda packet and a complete set of the contract documents is available for review in the office of the City Engineer.

Alternative: Denial of this request would result in continuous emergency repairs and inconvenience to customers.

California Environmental Quality Act: The project is exempt under Section 15301 (Existing Facilities) of the CEQA Guidelines.

Fiscal Impact: Adequate funds are available in the project budget.

Recommendation: Approve the project contract documents for Daniel Court Water Main and Service Replacement Projects No. 7110 and No. 7131 and authorize advertisement for bid proposals.

Attachment: Plan Title Sheet

XX. REPORTS OF MAYOR & COUNCILMEMBERS – from the assigned Commissions, Committees and Agencies

XXI. ADJOURNMENT

NEXT REGULARLY SCHEDULED COUNCIL MEETING
TUESDAY, MAY 16, 2017

NEXT SPECIAL COUNCIL MEETING – BUDGET HEARING
THURSDAY, MAY 18, 2017

April 2017						
S	M	T	W	T	F	S
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June 2017						
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MILPITAS CITY COUNCIL CALENDAR

May 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 **7:00 PM**-Parks, Recreation & Cultural Resources Commission (GB)	**2** **6:00 PM**-Closed Session **7:00 PM**-City Council	**3** **2:00 PM**-Santa Clara VTA Monthly Briefing - Northeast Group (BN) (Santa Clara) **7:00 PM**-Community Advisory Commission (MG)	**4** **1:30 PM**-Santa Clara County Library Joint Powers Authority Board of Directors (GB) **5:30 PM**-Milpitas Chamber of Commerce Board (AP) **5:30 PM**-Santa Clara VTA Board of Directors **7:00 PM**-Bicycle Pedestrian Advisory Commission (MG)	**5** 	**6**
7	**8** **4:00 PM**-Economic Development Commission (AP)	**9** **6:30 PM**-Citizens Water Task Force	**10** **7:00 PM**-Planning Commission	**11** **4:00 PM**-Santa Clara VTA Policy Advisory Committee (BN) **6:00 PM**-Cities Assoc of SCC General Membership Meeting (MG) **7:00 PM**-Youth Advisory Commission (AP)	**12**	**13**
14	**15** **7:00 PM**-Telecommunications Commission (GB) **7:00 PM**-Library Advisory Commission (GB – Milpitas Library)	**16** **6:00 PM**-Closed Session **7:00 PM**-City Council	**17** **5:30 PM**-City Council Budget Hearing	**18** **10:00 AM**-Santa Clara VTA Congestion Management Program & Planning Committee (BN) **12:00 PM**-VTA Admin & Finance Committee (BN) **4:00 PM**-Treatment Plant Advisory Committee (MG – San Jose) **5:30 PM**-City Council Budget Hearing **7:00 PM**-Bay Area Water Supply Conserv Agency (RT) (Foster City) **7:00 PM**-Emergency Preparedness Commission (MG)	**19**	**20 and 21** **10 AM – 6PM** **INTERNATIONAL FESTIVAL & BBQ** **On Alder Dr (between McCarthy Blvd and Tasman Dr)** MILPITAS CHAMBER OF COMMERCE THE GATEWAY TO SILICON VALLEY
21 **See May 20Th Details**	**22** **7:00 PM**-Arts Commission (MG)	**23** **6:00 PM**-General Plan Advisory Committee – Topic: Noise and Safety	**24** **7:00 PM**-Planning Commission	**25** **4:00 PM**-SVRIA Board of Directors (MG) **6:00 PM**-Sister Cities Commission (AP)	**26**	**27**
28	**29** **MEMORIAL DAY** – City Hall Closed for Holiday 	**30**	**31**			

Printed 4/12/2017

Draft MEETING MINUTES
CITY OF MILPITAS

Minutes of:	**Regular & Special Meeting of Milpitas City Council**
Date:	**Tuesday, April 18, 2017**
Time:	**5:30 PM Closed Session / 7:00 PM Open**
Location:	**Council Chambers, Milpitas City Hall, 455 East Calaveras Blvd., Milpitas**

CALL TO ORDER

Mayor Tran called the meeting to order at 5:30 PM. City Clerk Mary Lavelle noted the roll.

PRESENT: Mayor Tran, Vice Mayor Grilli, Councilmembers Nuñez and Phan

ABSENT: Councilmember Barbadillo was absent at roll call. He participated in both the Closed and Open Sessions by telephone conference from his location in Mexico.

CLOSED SESSION

City Council convened in Closed Session to discuss five matters listed on the regular meeting agenda and one item on the special meeting agenda.

City Council then convened in Open Session at 7:06 PM.

ANNOUNCEMENT

City Attorney Chris Diaz announced to the audience that Councilmember Barbadillo was participating by telephone conference. Out of closed session, he announced that Rob Means had dropped his lawsuit against the City.

PLEDGE

Boy Scouts Troops No. 92 and No. 193 led the pledge of allegiance together.

INVOCATION

Councilmember Nuñez introduced Pastor Mark Simmons from Chris Community Church who offered a prayer to start the meeting. Mr. Simmons also promoted Milpitas Cares, an event for volunteers to do community service throughout Milpitas from April 21 – 30, 2017.

SCHEDULE OF MEETINGS

City Council reviewed the Council Calendar/Schedule of Meetings for April and May 2017 and no changes were noted.

PRESENTATIONS

Councilmember Phan commended Raghu Reddy, a Milpitas resident, upon his position as elected Chairman of Planning with the American Telugu Association, which recognized and honored the Indian heritage of residents in the bay area.

Councilmember Nuñez recognized Leif Juliussen who was recently chosen as "Firefighter of the Year" by the Knights of Columbus.

Mayor Tran also acknowledged Dem Nitafan as Citizen of the Year and John Muok as Police Officer of the Year, while those two men were not available to attend in person.

PUBLIC FORUM

Rob Means, 1421 Yellowstone resident, spoke about climate change and environment, with concerns about rising sea level. He read aloud from a scientific letter about ice melt.

Erica Stanojevic, a Santa Cruz resident, thanked the City Council for saying no to trains that came through with oil. She grew up in Milpitas and now lived in Santa Cruz, which declared to divest from big oil companies and big banks for nvironmental reasons.

Voltaire Montemayor, Milpitas resident, wished to address the fast-approaching minimum wage of $15 per hour. Everyone, especially small businesses, were worried. When people spend money, that helped the workers and people who lived here.

Robert Marini, Milpitas resident, attended a mediation meeting (about a lawsuit), and the attorney preesnt was another member of the same firm that City Attorney Chris Diaz was from. That seemed to be a conflict of interest, he felt.

Michael Tsai, Milpitas resident, asked City Council to look into expanding staff for economic development to additionally support current staff, to address new businesses and find economic sustainability. Also, the City needed to update the fleet for public safety. With population growth, an increase in the number of police officers along with a good ratio was needed, especially with BART coming in to Milpitas.

ANNOUNCEMENTS

City Manager Tom Williams announced that on May 2, City staff would bring back the Sports Center sports field use item to Council.

Vice Mayor Grilli thanked the community and staff for support, following the evening of April 4, when she had to leave the last Council meeting abruptly, after learning her brother was injured in a bicycle accident.

Councilmember Phan reported that he was absent last time because he was in economic development meetings overseas. Later, he would provide an update on that trip.

Mayor Tran announced his request for action on next Council agenda: (1) to ask the Recreation Services Department to explore waiving all fees for veterans for the Sports Center, Senior Center, and Community Center. Vice Mayor Grilli asked if that was lengthly work and so was he asking for more than four hours of staff time to be approved. The City Manager replied that step was according to city policy to reuqest approval for staff time on that subject.

Mayor Tran also asked for an item on the next agenda to schedule having an independent performance review of the City Manager, and to vote on it during the public portion of the Council meeting. Mayor Tran felt this was an allowable action per the Attorney General.

Councilmember Nuñez asked the City Manager, on the next meeting regarding sports fields, whether that would be a report. He wanted to understand if there was a process on this type of request and tracking those items due to come back to the Council for action or reporting.

ANNOUNCEMENT OF CONFLICT OF INTEREST AND CAMPAIGN CONTRIBUTIONS

City Attorney Diaz asked Councilmembers if they had any personal conflicts of interest or reportable campaign contributions. None were reported.

City Attorney Diaz recommended a roll call vote, out loud, for every item on this agenda since one member was participating on the phone. He would ask for each roll call vote.

APPROVAL OF AGENDA

Motion: to approve the meeting agenda for April 18, 2017

City Manager Williams requested to move item no. 5 (MUSD enrollment) to be heard first.

Mayor Tran wanted to hear the Chamber BBQ item (no. 4) immediately after that.

Vice Mayor Grilli asked to remove agenda item no. 8 (affordable housing report) for which the Council would need plenty of time for discussion, not late in the evening. She asked to move this topic to another meeting date in the future and allow staff to determine which date.

Motion/Second: Vice Mayor Grilli/Councilmember Phan

Motion carried by a vote of: AYES: 5
NOES: 0

CONSENT CALENDAR

Motion: to approve the consent calendar for April 18, 2017, as amended

Councilmember Nuñez requested to remove agenda items no. 3 (mid-year budget), no. 9 (Calaveras Road repair), no. 10 (Grand Jury response letter) and no. 16 (Amendment to Agreement with Vali Cooper) from consent.

Motion/Second: Vice Mayor Grilli/Councilmember Nuñez

Motion carried by a vote of: AYES: 5
NOES: 0

MEETING MINUTES

Motion: to approve the City Council meeting minutes of March 29 and April 4, 2017

Motion/Second: Councilmember Phan/Councilmember Nuñez

Motion carried by a vote of: AYES: 5
NOES: 0

* 6. Commission

Per recommendation of Mayor Tran, re-appointed Ricardo Ablaza to a new 3-year term, on the Economic Development Commission, which will expire in April of 2020.

*11. Resolution

Adopted Resolution No. 8654 granting initial acceptance of public improvements for the Cobblestone Subdivision at 375 Los Coches Street by Tri Pointe Homes, Inc. and approving a reduction of improvement security for faithful performance.

*12. Resolution

Adopted Resolution No. 8655 granting initial acceptance of public improvements for the PACE Subdivision at 300, 324-368 Montague Expressway by Contour Trade Zone, LLC and approving a reduction of improvement security for the faithful performance; and authorized the City Manager to execute a Maintenance Agreement for Public Improvements for this project.

*13. Resolution

Adopted Resolution No. 8656 to transfer a total of $930.80 in unclaimed checks and credits, per the list generated by the City's Finance Department, to the General Fund in accordance with Standard Operating Procedure No. 26-1.

*14. Resolution

Adopted Universal Resolution No. 8657 designating the City Manager as the authorized agent to execute for, and on behalf of, the City of Milpitas for the purposes of obtaining federal and state financial assistance.

*15. Resolution

Adopted Resolution No. 8658 approving Site Development Permit No. SD16-0005 to construct a new hillside home on a vacant 1.5 acre site located at 1639 Calera Creek Heights Drive.

PUBLIC HEARING

1. Approve CIP FY 2017-18

Public Works Director Nina Hawk presented the proposed Capital Improvements Program (CIP) for FY 2017-2022 along with the request to approve the first year, 2017-18. She defined what a CIP was, the past projects accomplished, those anticipated in the coming year and staff recommendations for adopting the five-year plan while funding the first year. There were eleven reasons displayed for a CIP and Ms. Hawk reviewed those, describing four main steps in the CIP cycle. Many CIP projects and funding sources were identified. She listed two additional community meetings held on April 6 and April 11, where no opposition or comments were made by the public. $59,633,549 was the amount requested for funding in the first year of the 5-year CIP.

City Council voted to open the public hearing for comments.

Richard Santos, a Director of the Santa Clara Valley Water District, strongly supported the Council's approval of the CIP, especially for the water-related projects. It was important to invest now in recycling infrastructure, along with other important projects noted.

Voltaire Montemayor, Milpitas resident, said this was the beef of the City money and his taxes in the city. Grants were helpful and he was in favor of the CIP.

Joseph Weinstein, 66 Hamilton Ave. resident, thanked the City Council. The matter of Calaveras Blvd. widening was a health and safety issue, and with Measure B funds available, the City should go after that. He refuted that there was enough money to pay for the recycled water project, noting that ratepayers only paid a small portion of that project. He urged the Council to protect potable water supply by using more recycled water.

Robert Marini, Milpitas resident, said residents did not approve of the report by Nina Hawk. Residents did ask some questions (at public meetings he'd attended). He wished to distribute tables that purported to show from the Urban Water Management Report the loss of more potable water by use of recycled water.

(1) Motion: to close the public hearing, following four speakers

Motion/Second: Councilmember Nuñez/Vice Mayor Grilli

Motion carried by a vote of: AYES: 5
NOES: 0

Mayor Tran was very excited with this CIP and offered his compliments to staff. He urged funding for Fire Station 2 improvements in the coming fiscal year. He asked for a staff description on how funding was planned for Project 3403 and staff responded.

City Manager Williams responded to the Mayor's comments, when the Mayor said the original draft CIP showed zero funds for this project. Mr. Williams replied that it had not changed since the study session on the CIP.

Councilmember Phan asked a question to Director Richard Santos: how much had his agency invested in recycled water infrastructure? Mr. Santos replied that $1 billion was invested with San Jose on a nearby purification plant. Mr. Phan also asked him about a desalinization project.

Next, Councilmember Phan asked Ms. Hawk, regarding CIP 4273, if other funding sources were found, was the unused funding from the project going back into the General Fund? Ms. Hawk replied that all the money was being utilized. Mr. Phan asked if there was any backlog in street repair projects and staff replied there was an identified backlog of sidewalk repairs that were now caught up, and she discussed pothole repair work. $100,000 for supplies to go with a new truck on order was the funding for taking care of potholes. He wanted to know if the City had considered a bond issue to pay for some projects.

Councilmember Nuñez asked about the Mid-Town Specific Plan update and projects in that area. Planning Director Brad Misner addressed the need and reasons for an update to that plan, which had been predicated on Redevelopment Agency funds that no longer exist. Mr. Nuñez asked about technology projects and overall needs. Information Services Director Mike Luu described two specific CIP projects, for express permitting in the Building Department and one other for streamlining.

Councilmember Nuñez asked about parks and updates. Recreation Director Renee Lorentzen reported there were 32 parks in the Parks Master Plan, and a few newer ones were added since that 2009 Plan. She detailed some health and safety work on parks. Mr. Nuñez asked about use of artificial turf to be installed in any parks and costs to consumers for recycled water. Ms. Hawk provided detailed explanation of recycled water and how it was funded.

Vice Mayor Grilli thanked staff and Mr. Santos for their vision, on the city's infrastructure and stated that recycled water was a very important item for the future. She inquired about International Park, and what the city was doing with that. Ms. Lorentzen reported that the

CIP was recommended to be closed and the funds would go to a MidTown Park.

Mayor Tran supported the needed recycled water project. Residents wanted to see water rates be the best value for them. He was very encouraged with the pipeline and costs paid by grants, reimbursements and developers' fees. He did not want residents to cover all those costs. He was not supportive of bonds, in general and wanted to pay-as-we-go for water projects, if possible.

The Mayor asked about residents having access to a recycled water line, noting the higher costs for water. The Public Works Director identified the major benefits of that water and funding those lines by bond financing. Mr. Tran stated that drought taught the region that people needed to change how they accessed and used water, knowing that conservation was important. He wanted to know what the School District was doing in concert with the City for recycled water. He was opposed to the recycled water project and especially the cost of it. He would not get any recycled water to his house, so he did not get any benefit.

Councilmember Phan stated his support for a bond, while interest rates were very low on the market right now.

Councilmember Nuñez spoke of the area where drivers exited I-880 to Great Mall parkway, toward car dealers. It needed a lot of improvement appearance-wise. He wanted to know if that route could be changed and add it to the list of CIPs. Staff replied yes. He asked if affordable housing was part of the CIP and staff replied, not really.

Councilmember Barbadillo said on the recycled water, it was the only item he agreed with the Water District on. That CIP was for the long term, with future benefits to residents. He talked about why potable water costs went down if more recycled water was used. Ms. Hawk responded to him about discretionary projects on the summary and those not recommended for funding. Mr. Barbadillo asked about funding as the Mayor had asked about for Fire Station 2 and the other stations.

Councilmember Barbadillo asked some questions about the timeline for buildout of the Transit Area and Mr. Williams replied, 10-15 years until completion. He felt the staff should find a way to fund Fire Station 2 improvements sooner than planned. Mr. Williams noted then another project would not get funded and a need to re-prioritize projects.

(2) Motion: to adopt Resolution No. 8653 approving the 5-Year Capital Improvement Program for Fiscal Year 2017-22, including approval for funding year one FY 2017-18 in the total amount of $59,633,540

Motion/Second: Councilmember Nuñez/Vice Mayor Grilli

Motion carried by a vote of: AYES: 5
NOES: 0

UNFINISHED BUSINESS

2. Ordinance No. 41.12

Planning Director Brad Misner reminded Councilmembers they had requested information on what work the Planning Commission did, and he was prepared with a listing of the duties and responsibility of Planning Commissioners on current planning and long range planning. He had information available on how much compensation other cities paid to Commissioners.

Planning Commission Chair Sudhir Mandal came to the podium to describe the value that the Commission brought to the City's business. Commissioners did a thorough review of all projects brought before them for a decision and that included site visits on their own. Members attended training classes. Special projects were done by dedicated people who served on the Commission and who really cared about this City.

Councilmember Phan felt it was a large increase in the pay amount, budget-wise. It was a large total number as reported by Mr. Misner and Mr. Phan did not know if he could support the increase.

Councilmember Nuñez asked about Commissioners' suggestions for possible changes, e.g. term limits. Mr. Misner reported that the Commissioner was working on recommended changes to their by-laws. Mr. Nuñez sought more information about Planning Commission pay, especially as compared to other cities.

Vice Mayor Grilli was one of two Councilmember who voted against the proposal last year. Staff report then did not convince her last year to increase the Commissioner pay and she still opposed the proposed increase.

Councilmember Phan said the original increase amount was too liberal and he did not support a higher amount. Maybe it could increase more slowly over time but for now he was opposed going from $25 per meeting to $100.

Mayor Tran said he would like the stipends competitive with the region. He had not received that information and needed that to be able to decide.

Councilmember Barbadillo commented that it was public service for the Commissioners to the city. This money was only a token for their work and had been paid $25 since 1964. It was appreciation from the City for the increase approved last year. He was supportive.

Councilmember Nuñez felt the work and time put in on the Planning Commission was similar to what he did for the Santa Clara Valley Transportation Authority Board of Directors every week. He got $100 for a meeting he attended for that agency.

Motion: move this subject to a future meeting date – at staff discretion - with further supplemental information provided by staff, including a survey of other cities, any changes in by-laws and statutes in the municipal code

Motion/Second: Councilmember Tran/Councilmember Nuñez

AYES: 4
NOES: 1 (Grilli)

3. Mid-Year Budget Approval for 3 CIPs

This item was not heard and would be moved to the next regular Council meeting.

4. Chamber BBQ

Planning Director Brad Misner recalled that following the previous City Council meeting, Councilmembers had wanted to ask the Chamber staff some questions. Chamber CEO Mark Tiernan was available at this meeting.

Councilmember Nuñez discussed that previous expenses and anticipated profits this year, compared to those amounts requested for funding by the City. Mr. Misner reviewed what information that Council had sought.

Mayor Tran called up Chamber of Commerce Executive Mark Tiernan to the podium. Mr. Tiernan explained information provided on this date by email to staff and City Council.

Councilmember Barbadillo thanked the Chamber for the material. Mr. Tiernan said the Chamber anticipated better weather this year (no rain as last year) and did not want to over-anticipate costs in order to maximize income with anticipating 10-15% increase in revenue. New potential sponsors were about to sign on to the event too. The Chamber staff questioned the figure in staff report on costs for business licenses for vendors since the Chamber estimated it would be closer to $3500 not $8000.

Councilmember Barbadillo wanted clarity on whether this was a true partnership or a sponsorship by the City for this event based on budget figures presented.

Mayor Tran invited speakers from the audience.

Voltaire Montemayor, Milpitas resident, totally favored this action and supported the BBQ Festival event.

Vice Mayor Grilli had some concerns about the total amount asked to be waived. In the future, if asked, this must be talked about months ahead of time and find a way to have a true partnership. She felt she did not have a choice but to support this.

Councilmember Phan agreed with the Vice Mayor about future collaboration. He was supportive of the partnership with Chamber. He asked more questions about business license fees for those that did business in the City.

Councilmember Nuñez noticed this was much different than four years ago (first BBQ). This really wasn't a partnership with the City, he felt. The amount of money left at the end did not help the Chamber all that much toward operating. The City needed to work with the Chamber to make this better next year.

Councilmember Phan would like a follow up after the festival, and identify what could be improved on and what went well and challenges that the City could help with in future.

Councilmember Nuñez said a true team would include having a City department head be part of that report. Mr. Nuñez asked if non-profits were charged to have a booth at the Festival. Mr. Tiernan replied no, explaining that ten booths set aside for BBQ competition and if not filled, then the Chamber reached out to non-profits to use at no cost.

Motion:
1) Approve the request from the Milpitas Chamber of Commerce for City services and authorization to use of the City's name and logo for promotional and marketing materials for the 2017 International BBQ and Festival on May 20 - 21, 2017.
2) Furthermore, direct the formation of an equal partnership between the City of Milpitas and the Chamber of Commerce for the planning of this event in future years and not scheduled to be in conflict with other events in neighboring communities.

Motion/Second: Vice Mayor Grilli/Councilmember Phan

AYES: 5
NOES: 0

Due to the late hour, discussion of completion or continuing agenda items was held.

Mayor Tran stated he would like to continue and discuss item number 2 and then end this meeting.

Motion: to roll over any issue that was not time sensitive (excepting the Planning Commission pay hike)

Mr. Williams stated that agenda items no. 9 and no. 10 were time sensitive and required decisions at this meeting.

Motion/Second: Vice Mayor Grilli/Councilmember Phan

AYES: 5
NOES: 0

5. Vietnam Flag

This matter was heard first, prior to the CIP public hearing.

City Attorney Chris Diaz began to give a report to Council, and a Vietnamese translator was brought to the podium to translate his report for the benefit of members of the audience. Mr. Diaz summarized action by the San Jose City Council with regard to banning the socialist republic of Vietnam flag. He reviewed current City of Milpitas flag policy.

He defined three options for the City Council. Option 1 – preserve the existing flag policy in the municipal code, and adopt a resolution similar to City of San Jose. Option 2 – eliminate the current flag policy and adopt the same resolution as San Jose. Option 3 – maintain the current policy and adopt a resolution only promoting Vietnam Heritage and Freedom Flag. There was no staff recommendation as this matter was at the discretion of the City Council.

Councilmember Phan thanked the City Attorney for his work on his request. He wanted to hear from the public first.

Mayor Tran invited speakers to the podium. The Vietnamese translator assisted those who required her service.

Ha Phan, Milpitas resident, spoke in favor of banning the flying of the socialist Republic flag. She wanted a resolution adopted to that effect.

Voltaire Montemayor, resident, favored banning of the Vietnamese Republic flag and he supported the Heritage and Freedom flag to be flown.

Dan Nguyen referred to actions in 1975 in Vietnam. He wanted to prohibit flying of the red flag anywhere in the city. He spoke of refugees in Milpitas and San Jose, and that the flag made him sick and depressed.

Minh Duc Dao thanked the Council for honoring people in Milpitas, spoke of loss when Vietnam began to fly the red socialist flag there, many people had to flee. He was happy living in this country and wanted the Council to prohibit the flying of red flag.

Jan Cung asked Council to look at the communist countries now, and what they did to their people and how they treated their country's people and the earth. Recognize the Freedom flag and ignore the communists, he asked.

Pham Sun, 80 years old, was a victim of communists all his life and was happy he came to America to live. He asked to adopt a resolution to prohibit presence of the communist flag.

Nguyen Song Tran expressed his feeling when he saw that flag in this country. He was a former soldier of Vietnam forces and battled always against that red flag. He could not tolerate the flying and sight of the communist flag. Please adopt a resolution to prohibit flying the red flag.

Long Nguyen, asked what officials would think if they saw the Nazi flag flying? Would they be intimidated or hurt? That was the same feeling of Vietnamese here when they saw the red communist flag. He recommended Option No. 2 by the City Attorney.

Khanh Nguyen, local resident, said he suffered a lot and came to this country to rebuild his life. Communists ruled after 42 years and did not treat the people fair there.

Councilmember Phan thanked all the members of the public who came down here to speak from the heart. If current flag policy was maintained, there was a legal risk in future. City Attorney remarked there was little basis for the Council to say no to a request that came before Council at a public hearing. Council could not deny a request for content, and if it didn't incite violence, it would be approved.

Councilmember Phan felt the safest option was to do away with flag policy. The City Attorney replied, not necessarily. There had never been a request for any controversial flag to be flown in the City. Mr. Phan noted that allowing the possibility of the socialist flag could potentially incite violence. The symbolism could incite violence, arson and bad treatment. He would not want violence to happen here. He sought to revise the policy. There was a mental health factor and the policy would affect those who served in American forces in Vietnam along with Vietnamese living here. The Council owed it to veterans to not allow the display of the socialist flag.

Councilmember Nuñez asked about the order of the options presented. Option 1 was the most feasible, the City Attorney said.

Mr. Nuñez asked how speech was defined in the law, and Mr. Diaz enumerated.

Vice Mayor Grilli asked the City Attorney if that was only on City property (Option 2) and he said yes. She asked the City Manager about the process with flags, when a ground ceremony happened at City Hall.

Mayor Tran said there needed to be a way recognize the communities of Milpitas, including Farmworkers or other diverse groups.

Councilmember Barbadillo said Milpitas had the flag ordinance for a while, the City had not encountered any issues around free speech. Mr. Diaz responded about San Jose's policy and the possibility of risk. Mr. Barbadillo spoke about Option 3 and he wanted to adopt the Resolution as described.

Vice Mayor Grilli stated she could not support Option 2. She was part of the community when the original policy was created, and she helped at some ground ceremonies. In the current policy, flags did not stay up flying, rather it was only during the ceremony.

Councilmember Phan would like to amend the flag policy, not eliminate it. He did not want to cut off ground level ceremonies.

Councilmember Nuñez asked about friendship cities and what about their flags. Mr. Diaz read from the current City policy.

Raising of the Heritage Flag was the important piece, Councilmember Nuñez felt, and also banning the socialist flag.

Mayor Tran supported Mr. Phan and Mr. Nuñez, in terms of amending the policy. The policy must protect the City from any risk, an important point. The City was home to over 10,000 Vietnamese people who were refugees and legal immigrants. He was the liaison to the Veterans Commission and a military member himself, so he spoke of 58,000 Americans who lost their lives during the Vietnam war.

Vice Mayor Grilli asked, when amending the policy, would that that still leave it open to a Councilmember to bring forward a flag-flying request from a resident? The City Attorney said he could look into that.

Councilmember Phan suggested to include in the policy the participation of the Sister Cities Commission. What they recommended would go to City Council, who finally decide the policy. It would ultimately allow for flags to be flown. Then, he discussed identity of the Vietnamese community and their liberties.

<u>Motion</u>:
The City Attorney said he was looking for motion related to Option 2. It would need to address and preserve sister cities' flags, consider friendship cities, look into other locations to fly flags, have the issue under the City's control, to allow private requests, and have the Sister Cities Commission have some review of sister cities' flags.

Councilmember Phan said he would move what Mr. Diaz just said, and to request to return with a policy, endeavoring to bring it back for the second meeting in May to get consensus. Then the Attorney could bring a resolution back after that.

Mr. Phan further understood this topic to be delicate and the need to be in conformance with law. If there was any issue with the ordinance the City Attorney brings back, they can revise it and return. He wanted staff to return with an ordinance for Council to consider.

Motion/Second: Councilmember Phan/Vice Mayor Grilli

City Attorney Diaz repeated what he understood as the motion and said he would come back at the second meeting in May.

Motion carried by a vote of: AYES: 4
NOES: 1 (Barbadillo)

City Council took a break at 9:45 PM and returned at 9:50 PM.

REPORT

7. Wage Theft

This item was not heard and would be continued to the next meeting.

NEW BUSINESS

8. Affordable Housing

This item was continued to a future City Council meeting.

9. Calaveras Road repair

Councilmember Nuñez asked if the figures in the report were for the total costs of that project. He wanted to know why it was on agenda here as a Capital Improvement Program project and not presented with the budget.

Public Works Director Nina Hawk explained that it met criteria as a CIP and was requested for the current fiscal year (not the future FY 2017-18). The CIP could carry the dollars forward into a future year for expenditures on the project work.

Motion: to receive this report on Emergency Repair of Calaveras Road, to approve a new Capital Improvement Project titled Calaveras Road Repair - Project No. 4285, to approve the budget appropriation of $1.2 million from Transient Occupancy Tax into Project No. 4285 and authorize staff to pay invoices up to $1.2 million for the project

Motion/Second: Councilmember Nuñez/Vice Mayor Grilli

Motion carried by a vote of: AYES: 5
NOES: 0

10. Update Response to Civil Grand Jury

Human Resources Director Tina Murphy explained that the City was asked in a letter from the County Civil Grand Jury to provide an update to responses to the 2011-2012 Grand Jury regarding recommendations on the pension program.

Councilmember Nuñez said he disagreed with the written response. For example, the report stated that several cities had filed for bankruptcy and he disagreed with the County's statement on that. Ms. Murphy offered to discuss where he had comments and questions.

Councilmember Phan asked about the time frame when the City was asked to respond to the Grand Jury. He also asked what authority the Grand Jury had with these pension matters.

City Attorney Diaz explained the mandate and operations of a county civil grand jury and its duties. Prudent actions were recommended and it was useful for the City to respond to a letter from that entity.

Motion: to approve written response letter for the Mayor's signature to the 2016-2017 Santa Clara County Civil Grand Jury Request regarding Pension and Other Post Employment Benefits

Motion/Second: Councilmember Nuñez/Councilmember Phan

Motion carried by a vote of: AYES: 5
NOES: 0

16. Amendment No. to Agreement with Vali Cooper

This item was not heard and would be continued to the next meeting date.

REPORTS

None provided.

ADJOURNMENT

Mayor Tran adjourned the City Council meeting (regular and special) on Wednesday, April 19, 2017 at 1:30 AM.

Meeting minutes respectfully submitted by
Mary Lavelle, City Clerk

List of Attachments for Item No. 1

Expanded Polystyrene (EPS) Foam Food Ware

Attachments:

1A	Ordinance No. 293 (First Reading)
1B	City Policy to Restrict Expanded Polystyrene (EPS) Foam Food Ware Use at City Facilities
1C	Food Establishment Stakeholder Survey
1D	Survey Letter to Food Establishments
1E	EPS Save-the-Date Notice – April 12, 2017 Meeting
1F	Long-Term Trash Load Reduction Plan & Assessment
1G	Stormwater Trash Generation Rates Final Report
1H	Storm Drain Trash Monitoring & Characterization Project Technical Report
1I	Expanded Polystyrene Food Service Take-Out Container Study
1J	EPS Study Appendices
1K	Letter Opposing the Proposed Ban – American Chemistry Council

REGULAR

NUMBER: 293

TITLE: AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MILPITAS ADDING CHAPTER 8 OF TITLE III OF THE MILPITAS MUNICIPAL CODE RELATING TO THE PROHIBITION OF EXPANDED POLYSTYRENE (EPS) FOAM FOOD SERVICE WARE

HISTORY: This Ordinance was introduced (first reading) by the City Council at its meeting of _____, upon motion by _____ and was adopted (second reading) by the City Council at its meeting of _____, upon motion by _____. The Ordinance was duly passed and ordered published in accordance with law by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

_____
Mary Lavelle, City Clerk

APPROVED:

_____
Rich Tran, Mayor

APPROVED AS TO FORM:

_____
Christopher J. Diaz, City Attorney

RECITALS AND FINDINGS:

WHEREAS, plastic debris and, in particular, expanded polystyrene foam ("EPS") is a distinctive litter concern because it is lightweight, floats, breaks down into small pieces, and readily travels from land to inland waterways and out to the ocean where it can be mistaken for food by birds and other marine wildlife; and

WHEREAS, the Bay Area Stormwater Management Agencies Association (BASMAA) found in its May 2014 study *San Francisco Bay Area Stormwater Trash Generation Rates* that EPS disposable food service ware comprises 6% by volume of trash observed in storm drains; and

WHEREAS, the Santa Clara Valley Urban Runoff Pollution Prevention Program found in its September 2016 study *Storm Drain Trash Monitoring and Characterization Project – Technical Report* that "…there was a 74% decrease in the volume of EPS food service ware observed in the 53 sites in common between this Project and the BASMAA Trash Generation Rates Study (BASMAA 2014). This large decrease coincides with ordinances that have been adopted throughout most of the Santa Clara Valley."; and

WHEREAS, EPS disposable food service ware is currently used by some food vendors in Milpitas; and

WHEREAS, the proposed prohibition of EPS disposable food service ware would require food vendors to use alternative food service ware that will result in a reduction of EPS litter, reduce the risk of harm to aquatic wildlife, and improve water quality in the Milpitas creeks and the Southern San Francisco Bay; and

NOW, THEREFORE, the City Council of the City of Milpitas does ordain as follows:

SECTION 1. RECORD AND BASIS FOR ACTION

The City Council has duly considered the full record before it, which may include but is not limited to such things as the City staff report, testimony by staff and the public, and other materials and evidence submitted or provided to the City Council. Furthermore, the recitals set forth above are found to be true and correct and are incorporated herein by reference.

SECTION 2. CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS

The City Council hereby finds that the Ordinance is exempt from review under the California Environmental Quality Act ("CEQA") pursuant to a Class 7 categorical exemption (State CEQA Guidelines, § 15307), which consists of actions by a regulatory agency for protection of the natural resources, and also a Class 8 categorical exemption (State CEQA Guidelines, § 15308), which consists of actions by a regulatory agency for protection of the environment. The City Council hereby determines that the prohibition of EPS foam food service ware qualifies for Class 7 and Class 8 exemptions because it involves a reduction in EPS litter and risk of harm to aquatic wildlife, and an improvement in water quality in the Milpitas creeks and the Southern San Francisco Bay. Thus, the Ordinance is exempt from CEQA pursuant to State CEQA Guidelines, section 15307 and 15308. Each exemption is separately and independently sufficient to exempt the entire ordinance from CEQA. To the extent that the Class 7 and Class 8 categorical exemptions apply to the Ordinance, the City Council hereby finds and determines that none of the exceptions to the categorical exemptions outlined in State CEQA Guidelines section 15300.2 applies.

SECTION 3. AMENDMENT OF MULPITAS MUNICIPAL CODE

Chapter 8 of Title III of the Milpitas Municipal Code is hereby added with the text below to read as follows:

Chapter 8

PROHIBITION OF EXPANDED POLYSTYRENE (EPS) FOAM FOOD SERVICE WARE

Sections:

III-8-1	**Findings and Purpose**
III-8-2	**Definitions**
III-8-3	**Polystyrene Foam Disposal Food Service Ware Prohibition**
III-8-4	**Temporary Exemptions to Polystyrene Foam Disposal Food Service Ware Prohibition**
III-8-5	**Enforcement**

Section 1 Findings and Purpose

III-8-1.00

The City Council finds and determines that the regulation of expanded polystyrene (EPS) foam food service ware is necessary to protect the public health, safety and welfare based on the following reasons:

A. Plastic debris and, in particular, expanded polystyrene foam ("EPS") is a distinctive litter concern because it is lightweight, floats, breaks down into small pieces, and readily travels from land to inland waterways and out to the ocean where it can be mistaken for food by birds and other marine wildlife;

B. The Bay Area Stormwater Management Agencies Association (BASMAA) found in its May 2014 study San Francisco Bay Area Stormwater Trash Generation Rates that EPS disposable food service ware comprises 6% by volume of trash observed in storm drains; and

C. The Santa Clara Valley Urban Runoff Pollution Prevention Program found in its September 2016 study Storm Drain Trash Monitoring and Characterization Project – Technical Report states "…there was a 74% decrease in the volume of EPS food service ware observed in the 53 sites in common between this Project and the BASMAA Trash Generation Rates Study (BASMAA 2014). This large decrease coincides with ordinances that have been adopted throughout most of the Santa Clara Valley."; and

D. EPS disposable food service ware is currently used by some food vendors in Milpitas; and

E. The proposed prohibition of EPS disposable food service ware would require food vendors to use alternative food service ware that will result in a reduction of EPS litter, reduce the risk of harm to aquatic wildlife, and improve water quality in the Milpitas creeks and the Southern San Francisco Bay.

This City Council does, accordingly, find and declare that it should restrict the provision of EPS foam food service ware.

Section 2 Definitions

III-8-2.00

The definitions set forth in this Section shall govern the application and interpretation of this Chapter.

A. "Disposable food service ware" means single-use disposable products used in the restaurant and food service industry for serving prepared food and includes, but is not limited to, plates, trays, cups, bowls, and hinged or lidded containers (clamshells). Disposable food service ware does not include straws, utensils, drink lids, or ice chests.

B. "Food vendor" means any establishment located in the City of Milpitas that sells or otherwise provides prepared food for consumption on or off its premises, and includes, but is not limited to, any shop, sales outlet, restaurant, bar, pub, coffee shop, cafeteria, caterer, convenience store, liquor store, grocery store, supermarket, delicatessen, mobile food truck, vehicle or cart, or roadside stand.

C. "Polystyrene foam" means a thermoplastic petrochemical material made from a styrene monomer and expanded or blown using a gaseous agent (expanded polystyrene) including, but not limited to, fusion of polymer spheres (expandable bead polystyrene), injection molding, form molding, and extrusion-blow molding (extruded foam polystyrene). "Polystyrene foam" is commonly made into disposable food service ware products. "Polystyrene foam" does not include clear or solid polystyrene (oriented polystyrene).

D. "Prepared food" means food or beverages that are packaged, cooked, chopped, sliced, mixed, brewed, frozen, squeezed or otherwise prepared on the premises. "Prepared food" does not include (1) any raw, uncooked meat products, fruits, or vegetables, unless it is intended for consumption without further preparation; or (2) prepackaged food that is delivered to the food vendor wholly encased, contained or packaged in a container or wrapper, and sold or otherwise provided by the food vendor in the same container or packaging.

Section 3 Polystyrene Foam Disposal Food Service Ware Prohibition

III-8-3.00

No food vendor shall sell or otherwise provide prepared food in polystyrene foam disposable food service ware on or after July 1, 2018.

Section 4 Temporary Exemptions to Polystyrene Foam Disposal Food Service Ware Prohibition

III-8-4.00

A. A food vendor may seek a grace period from the prohibition under Section III-8-3.00 due to a "unique packaging hardship" under Subsection B of this Section, or the grace period for "unused inventory" under Subsection C of this Section.

B. The food vendor must demonstrate that no reasonably feasible alternative exists to a specific and necessary polystyrene foam disposable food service ware to qualify for a "unique packaging hardship" exemption.

C. The food vendor must demonstrate that before December 31, 2017, it purchased the polystyrene foam food service ware, which cannot be returned to the distributor, and, despite the food vendor's best efforts, will remain in inventory on July 1, 2018, to qualify for an "unused inventory" grace period.

D. Food vendors may submit a written application for grace period on a form provided by the Engineering Department. The City Engineer or his or her designee may require the applicant to submit additional information or documentation to make a determination regarding the grace period request. A request for grace period under Subsection B shall be reviewed upon a case-by-case basis, and may be granted in whole or in part, with or without conditions, for a period of up to twelve (12) months. A food vendor must apply for a new grace period under Subsection B no later than sixty (60) days prior to the expiration of the then-current grace period to preserve a continuous exemption status. A request for grace period under Subsection C shall be reviewed upon a case-by-case basis, and may be granted in whole or in part, with or without conditions, for a period of up to three (3) months or to October 1, 2018, whichever comes first. The determination of the City Engineer or designee shall be final and is not subject to appeal.

Section 5 Enforcement

III-8-5.00

In addition to any other remedy available at law, the City may enforce any violation of this Chapter pursuant to Section I-1-4.09 of the Milpitas Municipal Code or by administrative citation pursuant to Title I, Chapter 21 of the Milpitas Municipal Code.

SECTION 4. SEVERABILITY

The provisions of this Ordinance are separable, and the invalidity of any phrase, clause, provision or part shall not affect the validity of the remainder.

SECTION 5. EFFECTIVE DATE AND POSTING

In accordance with Section 36937 of the Government Code of the State of California, this Ordinance shall take effect thirty (30) days from and after the date of its passage. The City Clerk of the City of Milpitas shall cause this Ordinance or a summary thereof to be published in accordance with Section 36933 of the Government Code of the State of California.

SECTION 6. NOTICE OF EXEMPTION

The City Council hereby directs staff to prepare and file a Notice of Exemption with the Santa Clara County Office of the County Clerk-Recorder within five (5) working days of the adoption of this Ordinance.

City of Milpitas
Policy Relating to
Expanded Polystyrene (EPS) Foam Food Ware Use at City Facilities

Background

On April 15, 2014, the Milpitas City Council approved the Long-term Trash Load Reduction Plan, which included achieving reduction levels of 40% by July 1, 2014, 70% by July 2017 and no visual impact by July 2022. The Plan also established trash control measures to reduce the amounts of trash flowing into local creeks and waterways. The Recycling & Source Reduction Advisory Commission (RSRAC) recommended at its October 25, 2016 meeting that the City of Milpitas adopt an internal policy eliminating EPS use on City property and at City-sponsored events.

In addition, the City's Environmentally Preferable Procurement Policy seeks to ensure procurement of services and products that reduce toxicity, conserve national resources, materials and energy and, maximize recyclability and recycled content.

Purpose

This policy prohibits the use of expanded polystyrene (EPS) foam food ware at City facilities and at City-sponsored events. The purpose of this policy is to further the City's litter reduction goals, to support the City's Environmental Preferable Procurement Policy, and to help protect the health and welfare of our community by prohibiting the use of EPS food service ware on all City property.

Definitions

The following definitions apply for all purposes under this policy:

A. "Disposable food service ware" means single-use disposable products used in the restaurant and food service industry for serving prepared food and includes, but is not limited to, plates, trays, cups, bowls, and hinged or lidded containers (clamshells). Disposable food service ware does not include straws, utensils, drink lids, or ice chests.

B. "Polystyrene foam" or "EPS" means a thermoplastic petrochemical material made from a styrene monomer and expanded or blown using a gaseous agent (expanded polystyrene) including, but not limited to, fusion of polymer spheres (expandable bead polystyrene), injection molding, form molding, and extrusion -blow molding (extruded foam polystyrene). "Polystyrene foam" is commonly made into disposable food service ware products. "Polystyrene foam" does not include clear or solid polystyrene (oriented polystyrene).

C. "Prepared food" means food or beverages that are packaged, cooked, chopped, sliced, mixed, brewed, frozen, squeezed or otherwise prepared on the premises. "Prepared food" does not include (1) any raw, uncooked meat products, fruits, or vegetables, unless it is intended for consumption without further preparation; or (2) prepackaged food that is delivered to the food vendor wholly encased, contained or packaged in a container or wrapper, and sold or otherwise provided by the food vendor in the same container or packaging.

Policy

1. Use of EPS Foam Disposable Food Service Ware at City Facilities Is Prohibited.

The use of EPS foam disposable food service ware within all City facilities, at City-managed concessions, City-sponsored events, or by any food vendors doing business with the City is prohibited. This policy applies to both food service provided by the City or its vendors, as well as to any vendors, caterers, or members of the public who sell or distribute prepared food at private events held at City facilities that are available for rental. This policy does not apply to use of public parks on a non-rental basis by members of the public.

2. City Purchase of Disposable Food Service Ware

The City of Milpitas shall not purchase EPS foam disposable food service ware. This applies to the City's own direct purchases of food ware and indirectly through the purchase of catering services for its facilities. The City shall use reusable food ware when possible, and must otherwise purchase and use only recyclable or compostable (plastic or paper) food ware. When placing catering or food delivery orders for meetings and events, the City staff shall remind prepared food vendors of this policy, and require that vendors do not use EPS foam for food delivery or service items.

3. Materials Management for Events

The City of Milpitas maintains indoor and outdoor event policies to reduce waste and maximize materials recovery at City-sponsored events. The use and distribution of EPS foam disposable food service ware at City-sponsored events is prohibited. The City also requires that all events held at City facilities offer adequate recycling and garbage collection services. To support successful materials management, the City provides recycling and garbage containers inside its facility rooms and auditoriums available for rental. Event organizers are required to ensure that no EPS foam disposable food service ware is delivered or used by vendors or guests, and to assist with recycling materials accepted by the City's recycling program.

4. Responsibility

All City of Milpitas departments shall identify uses of disposable food ware and purchase alternatives to EPS foam food ware that are reusable and / or recyclable whenever possible.

CITY OF MILPITAS

455 EAST CALAVERAS BOULEVARD, MILPITAS, CALIFORNIA 95035-5479
GENERAL INFORMATION: 408-586-3000, TDD: 586-3013, www.ci.milpitas.ca.gov

EXPANDED POLYSTRENE ORDINANCE
FOOD ESTABLISHMENT STAKEHOLDER SURVEY

Please complete and mail this survey in the enclosed self-addressed, postage paid envelope by Friday, April 7, 2017. The City of Milpitas is considering a ban on the use of expanded polystyrene (EPS) foam food take-out containers. Currently, over 80 jurisdictions in California have banned or implemented programs that prohibit the use of EPS foam food take-out containers because of the impacts of EPS litter on the environment. Responses from this survey will help the City identify and evaluate economic and administrative concerns.

1. Please complete this information:
   - ☐ Your Name: _____
   - ☐ Business Name: _____
   - ☐ Phone Number: _____
   - ☐ Email Address: _____
   - ☐ Best Day and Time to Visit You: _____
2. Are you a:
   - ☐ Business Owner ☐ Manager ☐ Assistant Manager
   - ☐ Other Title: _____
3. Business type:
   - ☐ Bar / Pub
   - ☐ Cafeteria
   - ☐ Caterer
   - ☐ Coffee Shop
   - ☐ Convenience / Liquor Store
   - ☐ Grocery Store / Supermarket
   - ☐ Mobile Food Truck, Vehicle or Cart
   - ☐ Restaurant / Delicatessen
   - ☐ Retail Food Vendor
   - ☐ Retail Shop / Sales Outlet
   - ☐ Other: _____
4. Does your business have an environmental corporate policy?
   - ☐ Yes
   - ☐ No
5. What is your business' stance on environmental initiatives?
   - ☐ No opinion, no interest
   - ☐ Somewhat involved and supportive
   - ☐ Extremely environmentally conscious
   - ☐ Don't know

Survey Continued on Reverse Side

6. Do you think that EPS containers (Styrofoam™ cups, clamshells, plates, and other items) litter the environment?

   ☐ Yes ☐ No ☐ Somewhat

7. Does your business currently use EPS foam food containers for take-out?

   ☐ Yes
   ☐ No

8. If 'No' to Item 7, what material type(s) of take-out containers does your business use?

   ☐ Paper
   ☐ Compostable Fiber
   ☐ Recyclable Plastic
   ☐ Aluminum (foil and/or containers)
   ☐ None
   ☐ Other: _____

9. How much of an increase in your purchasing costs <u>per month</u> do you expect alternative containers would cost?

   ☐ $0 – 250
   ☐ $250 – 500
   ☐ $500 – 750
   ☐ $750 – 1,000
   ☐ $1,000 – 1,500
   ☐ $1,500 – 2,000
   ☐ $2,500 – 3,000
   ☐ More

10. Does your current food service ware provider offer alternatives to EPS foam food take-out containers?

    ☐ Yes ☐ No ☐ Don't know

11. Do you think the City of Milpitas should prohibit food establishments from providing EPS foam food take-out containers to customers?

    ☐ Yes
    ☐ No

12. Please rank the following services from 1 to 4, with <u>1 as the ***most helpful*** and 4 as the ***least helpful*** for your business:</u>

    ___ Staff training
    ___ Free posters and flyers to inform customers
    ___ Guide for acceptable alternatives
    ___ Public outreach and advertising

13. Is there anything else you would like to tell us?

    _____

    _____

    _____

    _____

    _____

CITY OF MILPITAS

455 EAST CALAVERAS BOULEVARD, MILPITAS, CALIFORNIA 95035-5479
GENERAL INFORMATION: 408-586-3000, TDD: 586-3013, www.ci.milpitas.ca.gov

March 30, 2017

Dear Milpitas Business Owner / Manager:

The City of Milpitas is considering an ordinance prohibiting food establishments from dispensing expanded polystyrene (EPS) foam food take-out containers. The proposed EPS ordinance would potentially take effect beginning on January 1, 2018, and it would require food establishments to replace EPS with readily-recyclable or compostable alternative food service ware by that date. The purpose of this EPS ordinance is to reduce EPS litter, improve water quality in Milpitas creeks and the Southern San Francisco Bay, and comply with regional water quality control requirements.

To best identify and evaluate economic and administrative concerns surrounding the proposed EPS ordinance, we ask that you **please complete and mail the following survey in the enclosed self-addressed, postage-paid envelope by *Friday, April 7, 2017***.

In addition, please attend the **EPS Ordinance Food Establishment Stakeholder Meeting** on **Wednesday, April 12, from 2:00 p.m. – 3:00 p.m.** at **Milpitas City Hall, 1st Floor Committee Meeting Room**. This meeting will include a brief presentation and open discussion to address questions and concerns about the prohibition of EPS foam food take-out containers.

The City of Milpitas values your business and we truly appreciate your feedback. Thank you for giving us the opportunity to serve you, and thank you in advance for your commitment to participate. If you have any additional questions or concerns, feel free to contact me directly.

Sincerely,

Leslie Stobbe
Public Information Specialist
Engineering Department
(408) 586-3352
lesliestobbe@ci.milpitas.ca.gov

SAVE THE DATE

EPS Ordinance Food Establishment Stakeholder Meeting

WHEN

Wednesday, April 12, 2017
2:00 p.m. - 3:00 p.m.

WHERE

Milpitas City Hall
1st Floor Committee Meeting Room

455 E Calaveras Blvd, Milpitas

Questions? Contact our Reuse Line at (408) 586-2680

1F

Long-Term Trash Load Reduction Plan and Assessment Strategy

City of Milpitas
CALIFORNIA

Submitted by:

City of Milpitas

455 E. Calaveras Blvd.

Milpitas, CA 95035

In compliance with Provisions C.10.c of Order R2-2009-0074

January 27, 2014

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CITY OF MILPITAS
LONG-TERM TRASH LOAD REDUCTION PLAN AND ASSESSMENT STRATEGY

CERTIFICATION STATEMENT

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature by Duly Authorized Representative:

For Thomas C. Williams
City Manager

January 27, 2014

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Abbreviations

BASMAA	Bay Area Stormwater Management Agencies Association
BID	Business Improvement District
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CDS	Continuous Deflection Separator
CEQA	California Environmental Quality Act
CY	Cubic Yards
DPW	Department of Public Works (DPW)
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GIS	Geographic Information System
MRP	Municipal Regional Stormwater NPDES Permit
MS4	Municipal Separate Storm Sewer System
MUSD	Milpitas Unified School District
NGO	Non-Governmental Organization
NPDES	National Pollutant Discharge Elimination System
Q	Flow
SFRWQCB	San Francisco Regional Water Quality Control Board
SWRCB	State Water Resource Control Board
TMDL	Total Maximum Daily Load
URO	Urban Runoff
USEPA	United States Environmental Protection Agency
Water Board	San Francisco Regional Water Quality Control Board
WDR	Waste Discharge Requirements

PREFACE

This Long-Term Trash Load Reduction Plan and Assessment Strategy (Long-Term Plan) is submitted in compliance with provision C.10.c of the Municipal Regional Stormwater NPDES Permit (MRP) for Phase I communities in the San Francisco Bay (Order R2-2009-0074). The Long-Term Plan was developed using a regionally consistent outline and guidance developed by the Bay Area Stormwater Management Agencies Association (BASMAA) and reviewed by San Francisco Bay Regional Water Quality Control Board staff. The Long-Term Plan is consistent with the Long-Term Trash Load Reduction Framework developed in collaboration with Water Board staff. Its content is based on the City of Milpitas' current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with Municipal Separate Storm Sewer (MS4) discharges. This Long-Term Plan is intended to be iterative and may be modified in the future based on information gained through the implementation of trash control measures. The City of Milpitas therefore reserves the right to revise or amend this Long-Term Plan at its discretion. If significant revisions or amendments are made by the City, a revised Long-Term Plan will be submitted to the Water Board through the City's annual reporting process.

1.0 INTRODUCTION

1.1 Purpose of Long-Term Trash Reduction Plan

The Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit for Phase I communities in the San Francisco Bay (Order R2-2009-0074), also known as the Municipal Regional Permit (MRP), became effective on December 1, 2009. The MRP applies to 76 large, medium and small municipalities (cities, towns and counties) and flood control agencies in the San Francisco Bay Region, collectively referred to as Permittees. Provision C.10.c of the MRP requires Permittees to submit a *Long-Term Trash Load Reduction Plan* (Long-Term Plan) by February 1, 2014. Long-Term Plans must describe control measures that are currently being implemented, including the level of implementation, and additional control measures that will be implemented and/or increased level of implementation designed to attain a 70% trash load reduction by July 1, 2017, and 100% (i.e., “No Visual Impact”) by July 1, 2022.

This Long-Term Plan is submitted by the City of Milpitas in compliance with MRP provision C.10.c. Consistent with provision C.10 requirements, the goal of the Long-Term Plan is to solve trash problems in receiving waters by reducing the impacts associated with trash in discharges from the City of Milpitas municipal separate storm sewer system (MS4) that are regulated by NPDES Permit requirements. The Long-Term Plan includes:

1. Descriptions the current level of implementation of trash control measures, and the type and extent to which new or enhanced control measures will be implemented to achieve a target of 100% (i.e. full) trash reduction from MS4s by July 1, 2022, with an interim milestone of 70% reduction by July 1, 2017;
2. A description of the *Trash Assessment Strategy* that will be used assess progress towards trash reduction targets achieved as a result of control measure implementation; and,
3. Time schedules for implementing control measures and the assessment strategy.

The Long-Term Plan was developed using a regionally consistent outline and guidance developed by the Bay Area Stormwater Management Agencies Association (BASMAA) and reviewed by the San Francisco Bay Regional Water Quality Control Board (Water Board) staff. The Long-Term Plan is consistent with the Long-Term Trash Load Reduction Framework (see section 1.2.1) developed in collaboration with Water Board staff. Its content is based on the City of Milpitas current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with Municipal Separate Storm Sewer (MS4) discharges. The Long-Term Plan builds upon trash control measures implemented by the City of Milpitas prior to the adoption of the MRP and during the implementation of the Short-Term Trash Load Reduction Plan submitted to the Water Board on February 1, 2012.

1.2 Background

1.2.1 Long-Term Trash Load Reduction Plan Framework

A workgroup of MRP Permittee, Bay Area countywide stormwater program staff and Water Board staff met between October 2012 and March 2013 to better define the process for

developing and implementing Long-Term Plans, methods for assessing progress toward reduction goals, and tracking and reporting requirements associated with provision C.10. Through these discussions, an eight-step framework for developing and implementing Long-Term Plans was created by the workgroup (Figure 1).

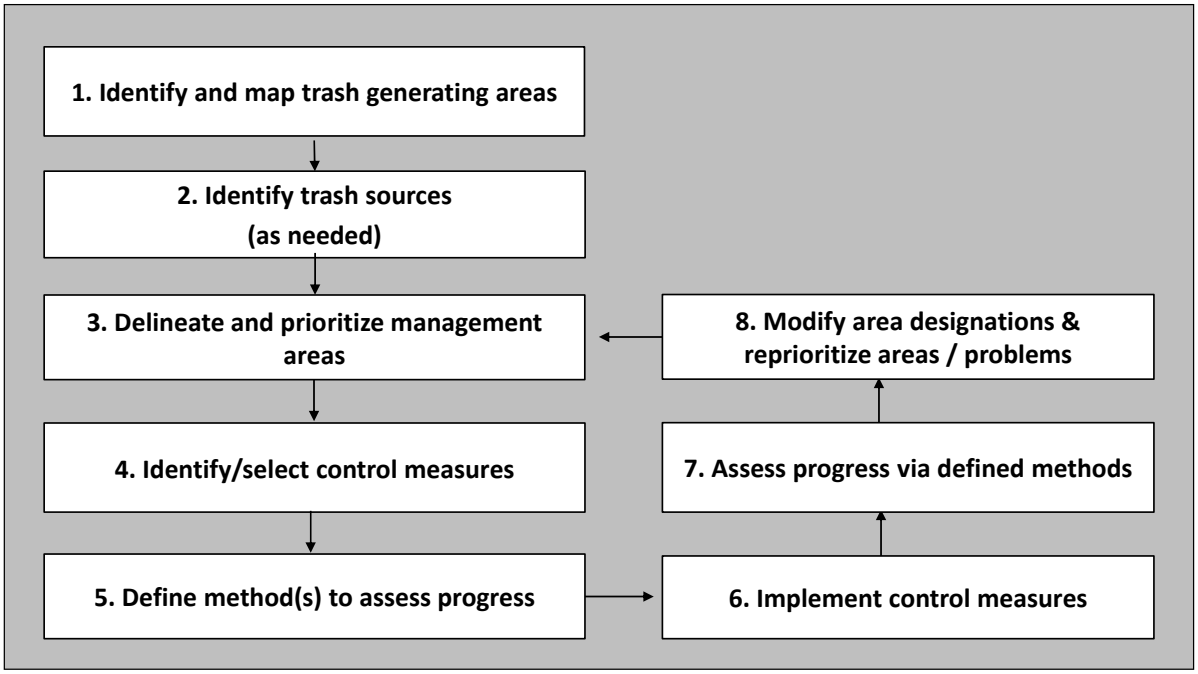

Figure 1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

The workgroup agreed that as the first step in the framework, Permittees would identify very high, high, moderate, and low trash generating areas in their jurisdictional areas. Trash generation rates developed through the *BASMAA Baseline Trash Generation Rates Project* (as discussed below) were used as a starting point for differentiating and delineating land areas with varying levels of trash generation. Permittees would then use local knowledge and field and/or desktop assessments to confirm or refine the level of trash generation for specific areas within their jurisdiction. Each Permittee would then develop a map depicting trash generation categories within their jurisdiction.

As a next step, Permittees would then delineate and prioritize Trash Management Areas (TMAs) where specific control measures exist or are planned for implementation. TMAs delineated by Permittees are intended to serve as reporting units in the future. Reporting at the management area level provides the level of detail necessary to demonstrate implementation and progress towards trash reduction targets.

Once control measures are selected and implemented, Permittees will evaluate progress toward trash reduction targets using outcome-based assessment methods. As the results of the progress assessments are available, Permittees may choose to reprioritize trash management areas and associated control measures designed to improve trash reduction within their jurisdictions.

1.2.2 BASMAA Generation Rates Project

Through approval of a BASMAA regional project in 2010, Permittees agreed to work collaboratively to develop a regionally consistent method to establish trash generation rates within their jurisdictions. The project, also known as the *BASMAA Trash Generation Rates Project* (Generation Rates Project) assisted Permittees in establishing the rates of trash generation and identifying very high, high, moderate and low trash generating areas.

The term "trash generation" refers to the rate at which trash is produced or generated onto the surface of the watershed and is potentially available for transport via MS4s to receiving waters. Generation rates do not explicitly take into account existing control measures that intercept trash prior to transport. Generation rates are expressed as trash volume/acre/year and were established via the Generation Rates Project.

In contrast to trash generation, the term "trash loading" refers to the rate at which trash from MS4s enters receiving waters. Trash loading rates are also expressed as trash volume/acre/year and are equal to or less than trash generation rates because they account for the effects of control measures that intercept trash generated in an area before it is discharged to a receiving water. Trash loading rates are specific to particular areas because they are dependent upon the effectiveness of control measures implemented within an area. Figure 2 illustrates the difference between trash generation and loading.

Figure 2. Conceptual model of trash generation, interception and load.

Trash generation rates were estimated based on factors that significantly affect trash generation (i.e., land use and income). The method used to the establish trash generation rates for each Permittee builds off "lessons learned" from previous trash loading studies conducted in urban areas (Allison and Chiew 1995; Allison et al. 1998; Armitage et al. 1998; Armitage and Rooseboom 2000; Lippner et al. 2001; Armitage 2003; Kim et al. 2004; County of Los Angeles 2002, 2004a, 2004b; Armitage 2007). The method is based on a conceptual model developed as an outgrowth of these studies (BASMAA 2011b).

Trash generation rates were developed through the quantification and characterization of trash captured in Water Board-recognized full-capture treatment devices installed in the San Francisco Bay area. Trash generation rates estimated from this study are listed for each land use type in Table 1. Methods used to develop trash generation rates are more fully described in BASMAA (2011b, 2011c, and 2012).

Table 1. San Francisco Bay Area trash generation rates by land use (gallons/acre/year).

Land Use	Low[b]	Best[b]	High[b]
Commercial & Services	0.7	**6.2**	17.3
Industrial	2.8	**8.4**	17.8
Residential[a]	0.3 - 30.2	**0.5 - 87.1**	1.0 - 257.0
Retail[a]	0.7 - 109.7	**1.8 - 150.0**	4.6 - 389.1
K-12 Schools	3	**6.2**	11.5
Urban Parks	0.5	**5.0**	11.4

[a] For residential and retail land uses, trash generation rates are provided as a range that takes into account the correlation between rates and household median income.

[b] For residential and retail land uses: Low = 5% confidence interval; Best = best fit regression line between generation rates and household median income; and, High = 95% confidence interval. For all other land use categories: High = 90th percentile; Best = mean generation rate; and, Low = 10th percentile.

1.2.3 Short-Term Trash Load Reduction Plan

In February 2012, the City of Milpitas developed a Short-Term Plan that described the current level of control measures implementation and identified the type and extent to which new or enhanced control measures would be implemented to attain a 40% trash load reduction from its MS4 by July 1, 2014. Since that time, the City of Milpitas has begun to implement its short-term plan. Control measures implemented to date via the short-term trash reduction plan are:

- Single-use Carry Our Bag Ordinance: After presenting a Milpitas-specific study in April 2011 and Council approval to proceed as a study area with the EIR process offered by San Mateo County, the Milpitas City Council denied approval of the model ordinance by a 3 – 2 vote. Staff may seek Council approval to conduct an EIR to again present a modified ordinance within the time frame of the upcoming permit.
- Polystyrene Foam Food Service Ware Ordinance: After presenting a Milpitas-specific study in April 2011 and receiving concerns of negative impacts to small businesses, staff decided to postpone presenting this ordinance to the Milpitas City Council. Staff may seek Council approval to conduct an EIR to again present a modified ordinance within the time frame of the upcoming permit.
- Public Education and Outreach: Maintained annual outreach described in annual reports while adding URO messages at special events and to citywide mailings. Posted watershed awareness signs among creek areas and culverts.
- Full Capture Devices: With use of a $76,000 grant from the San Francisco Estuary Project, the City of Milpitas purchased a custom, fabricated full trash capture device at its Wrigley-Ford Pump Station. Installation, estimated at $10,000 by the fabricator, was installed by the Department of Public Works.
- Uncovered Load Management: Increased awareness to cover loads while hauling on bi-weekly Household Dump Days (free landfill access offered to residents). Coordinated with police department to write citations for uncovered loads.
- Anti-littering and Illegal Dumping Enforcement Activities: Began annual visual assessments of management areas including reporting of excess litter and illegal dumping on private property.
- Enhances Private / Public Container Management: Ongoing work with contracted hauler to retrofit closing lids on front-end load bins.

- On Land Trash Pickup: 1) Targeted two open lots on private property for litter and illegal dumping abatement; 2) Established two joint use agreements between the Santa Clara Valley Water District and developers that require trail maintenance and cleanups for creeks adjacent to developments.
- Creek / Channel / Shoreline Cleanups: Continued annual creek cleanups and reporting of four “hot spots” including anti-litter outreach.

Control measures described in this Long-Term Plan build upon actions taken to-date via City of Milpitas Short-Term Plan. A full description of control measures implemented via short and long-term plans is included in section 3.3. Outcomes associated with short-term plan implementation will be reported in the City of Milpitas Fiscal Year 2013-14 Annual Report, scheduled for submittal to the Water Board by September 15, 2014.

1.3 Organization of Long-Term Plan

This Long-Term Plan is organized into the following sections:

1.0 Introduction;

2.0 Scope of the Trash Problem;

3.0 Trash Management Areas and Control Measures;

4.0 Progress Assessment Strategies; and

5.0 References

Section 2.0 is intended to provide a description of the extent and magnitude of the trash problem in the City of Milpitas. Control measures that will be implemented by City of Milpitas as a result of this Long-Term Plan are described in Section 3.0. Section 4.0 describes the methods that will be used to assess progress toward trash reduction targets.

2.0 SCOPE OF THE TRASH PROBLEM

2.1 Permittee Characteristics

Incorporated January 26, 1954, the City of Milpitas is located in Santa Clara County, and has a jurisdictional area of 8,640 acres. According to the 2010 Census, it has a population of 66,790, with a population density of 4,947.4 people per square mile and average household size of 3.34. Of the 66,790 residents who call the City of Milpitas home, 22.9% are under the age of 18, 8.9% are between 18 and 24, 32.7% are between 25 and 44, 26% are between 45 and 64, and 9.5% are 65 or older. The median household income was $94,589 in 2010. The City of Milpitas is home to an array of high technology firms and retail centers. High tech companies, although located in commercial areas and assigned a medium trash generation category (yellow), are well designed with trash cans for employees and visitors and well maintained with regular cleaning of parking lots. Retail centers and some commercial areas in contrast have visible litter and trash handling problems. Milpitas is also surrounded by state-owned freeways and roads that contribute to litter in creeks (especially Coyote Creek under SE-237) and roadway litter.

Land uses within the City of Milpitas depicted in ABAG (2005) are provided in Table 2. The City of Milpitas is comprised of seven land uses. These include commercial and services, industrial, residential, retail, K-12 schools, urban parks and hillsides open space.

Table 2. Percentages of the City of Milpitas' jurisdictional area[1] within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (Acres)	% of Jurisdictional Area
Commercial and Services	**1,104.0**	**13.5%**
Industrial	**972.4**	**11.9%**
Residential	**2,972.3**	**36.4%**
Retail	**462.4**	**5.7%**
K-12 Schools	**239.9**	**2.9%**
Urban Parks	**169.3**	**2.1%**
Other (open space / hillsides)	**2,236.9**	**27.4%**

2.2 Trash Sources and Pathways

Trash in San Francisco Bay Area creeks and shorelines originates from a variety of sources and is transported to receiving waters by a number of pathways (Figure 3). Of the four source categories, pedestrian litter includes trash sources from high traffic areas near businesses and schools, transitional areas where food/drinks are not permitted (e.g. bus stops), and from public

[1] A Permittee's jurisdictional area is defined as the urban land area within a Permittee's boundary that is not subject to stormwater NPDES Permit requirements for traditional and non-traditional small MS4s (i.e. Phase II MS4s) or the California Department of Transportation, or owned and maintained by the State of California, the U.S. federal government or other municipal agency or special district (e.g., flood control district).

or private special events with high volumes of people. Trash from vehicles occurs due to littering from automobiles and uncovered loads. Inadequate waste container management includes sources such as overflowing or uncovered containers and dumpsters as well as the dispersion of household and business-related trash and recycling materials before, during, and after collection. On-land illegal dumping of trash is the final source category.

Trash is transported to receiving waters through three main pathways: 1) Stormwater Conveyances; 2) Wind; and, 3) Direct Dumping. Stormwater or urban runoff conveyance systems (e.g., MS4s) consist of curbs/gutters, and pipes and channels that discharge to urban creeks and the San Francisco Bay shorelines. Wind can also blow trash directly into creeks or the Bay. Lastly, trash in receiving waters can also originate from direct dumping into urban creeks and shorelines.

This Long-term Plan and associated trash control measures described in Section 3.0 are focused on reducing trash from one of the transport pathways illustrated in Figure 3– **stormwater conveyances**. Specifically, the Long-term Plan is focused on reducing the impacts of discharges from MS4s to San Francisco Area receiving waters and the protection of associated beneficial uses.

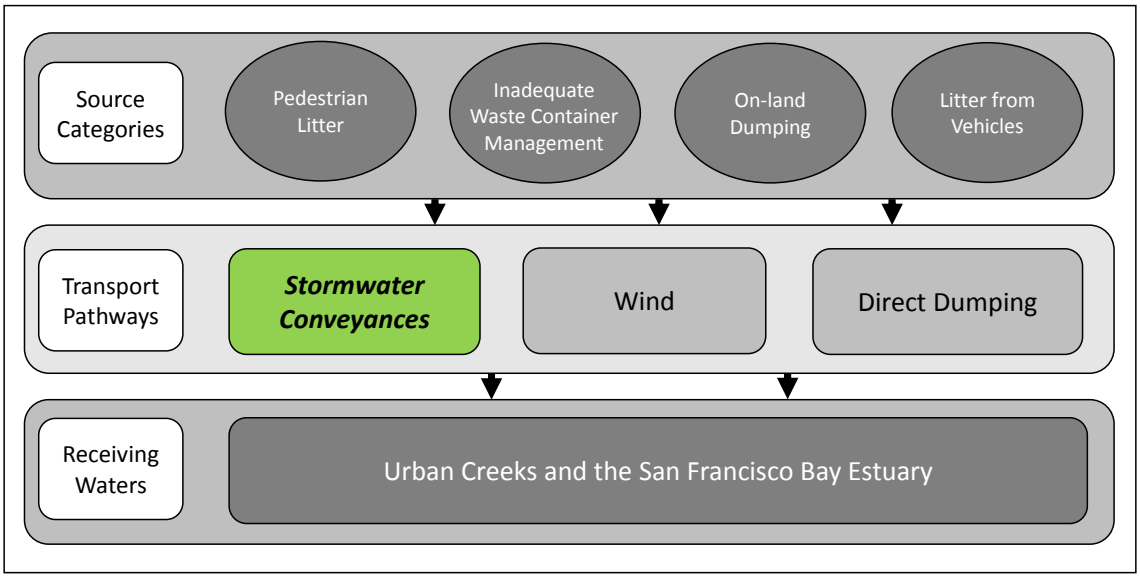

Figure 3. Trash sources categories and transport pathways to urban creeks.

Regarding wind and direct dumping transport pathways, the City of Milpitas will concentrate on the few open lots of private property that accumulate litter and attract illegal dumping. This will begin with direct contact of property owners, issuance of Notice of Violation letters for cleanup and possible fines and administrative action.

2.3 Trash Generating Areas

2.3.1 Generation Categories and Designation of Areas

The process and methods used to identify the level of trash generation within the City of Milpitas are described in this section and illustrated in Figure 4.

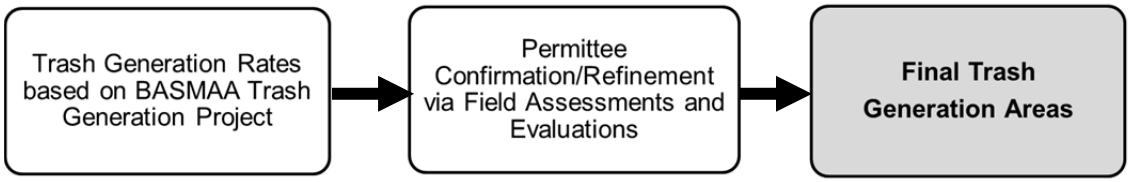

Figure 4. Trash sources categories and transport pathways to urban creeks.

As a first step, trash generation rates developed through *the BASMAA Trash Generation Rates Project* were applied to parcels within the City of Milpitas based on current land uses and 2010 household median incomes. A Draft Trash Generation Map was created as a result of this application. The draft map served as a starting point for the City of Milpitas to identify trash generating levels. Levels of trash generation are depicted on the map using four trash generation rate (gallons/acre/year) categories that are symbolized by four different colors illustrated in Table 3.

Table 3. Trash generation categories and associated generation rates (gallons/acre/year).

Category	Very High	High	Moderate	Low
Generation Rate (gallons/acre/year)	**> 50**	**10-50**	**5-10**	**< 5**

The City of Milpitas then reviewed and refined the draft trash generation map to ensure that trash generation categories were correctly assigned to parcels or groups of parcels. City staff refined maps using the following process:

1. Based upon our knowledge of trash generation and problem areas within the City, staff identified areas on the draft map that potentially had incorrect trash generation category designations.
2. Trash generation category designations initially assigned to areas identified in step #1 were then assessed and confirmed/refined by the City using the methods listed below.

   a. On-Land Visual Assessments

   To assist Permittees with developing their trash generation maps, BASMAA developed a *Draft On-land Visual Trash Assessment Protocol (Draft Protocol).* The Draft Protocol entails walking a street segment and visually observing the level of trash present on the roadway, curb and gutter, sidewalk, and other areas adjacent to the street that could potentially contribute trash to the MS4. Based on the level

of trash observed, each segment (i.e., assessment area) was placed into one of four on-land assessment condition categories that are summarized in Table 4. Using the Draft Protocol the City of Milpitas assessed a total of 20 areas to assist in conducting/refining trash generating area designations.

Table 4. Definitions of on-land trash assessment condition categories.

On-land Assessment Condition Category	Summary Definition
A (Low)	Effectively no trash is observed in the assessment area.
B (Moderate)	Predominantly free of trash except for a few pieces that are easily observed.
C (High)	Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
D (Very High)	Trash is continuously seen throughout the assessment area, with large piles and a strong impression of lack of concern for litter in the area.

b. Querying Municipal Staff or Members of the Public

During the on-site assessments, staff made notations of litter / trash locations (such proximity to trash enclosures, convenience stores or fast food establishments). Where possible during this activity, and especially in areas reported for cleanup, business managers or employees were sought out to determine the path employees took to enclosures and, in the case of large developments with problems, which enclosures belonged to each business. On some occasions, pedestrians were asked about their opinions of the usual condition of parking lots around retail establishments. Except to determine if a high-trash problem area had previous citations or enforcement action, few private development areas lead to a query of municipal staff.

c. Reviewing Municipal Operations Data

Primarily, the Code Enforcement Section's case load software, "Track It" was used to determine if a problem site from the on-site assessments had a previous citation of Notice of Violation. "Track It" is also used to open and document action of new cases stemming from on-site assessments. Staff was then able to refine map areas, especially those with retail businesses, based on where a concentration of violations had been reported in the past.

d. Viewing Areas via Goggle Maps – Street View

Overhead Google Maps were used to locate areas and confirm a specific, physical site within the map location. Staff experimented with street view maps and abandoned its use. Street views were either too old (facades or buildings / parcels had changed) or not enough visual data could be determined to show litter and illegal dumping.

3. Based on assessments conducted to confirm/refine trash generation category designations, the City created a final trash generation map that depicts the most current understanding of trash generation within the City of Milpitas. The City documented this process by tracking the information collected through the assessments and subsequent refinements to the Draft Trash Generation Map. The City of Milpitas Final Trash Generation Map is included as Figure 5.

2.3.2 Summary of Trash Generating Areas and Sources

Summary statistics for land use and trash generation categories generated through the mapping and assessment process are presented in Table 5.

Table 5. Percentage of jurisdictional area within the City of Milpitas assigned to each trash generation category.

Trash Generation Category	Jurisdictional Area (Acres)	Commercial and Services	Industrial	Residential	Retail	K-12 Schools	Urban Parks	Other
Very High	***2.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***100%***
High	***43.8***	***0.0***	***0.0***	***0.0***	***38.8%***	***0.0***	***0.0***	***61.2%***
Medium / High	***43.8***	***0.0***	***0.0***	***88.9%***	***8.8%***	***0.5%***	***0.8%***	***1.0%***
Medium	***2,812.1***	***38.3%***	***34.6%***	***3.7%***	***9.3%***	***8.5%***	***5.7%***	***0.1%***
Low / Medium	***190.3***	***7.9%***	***0.4%***	***1.5%***	***89.8%***	***0.0***	***0.0***	***0.5%***
Low	***5,065.2***	***0.3%***	***0.0***	***55.8%***	***0.2%***	***0.0***	***0.2%***	***43.5%***

An example of how to interpret the Milpitas data:

Of the 43.8 acres in the medium / high trash generation category, 88.9% are residential. Note that the low category has 5,065.2 acres.

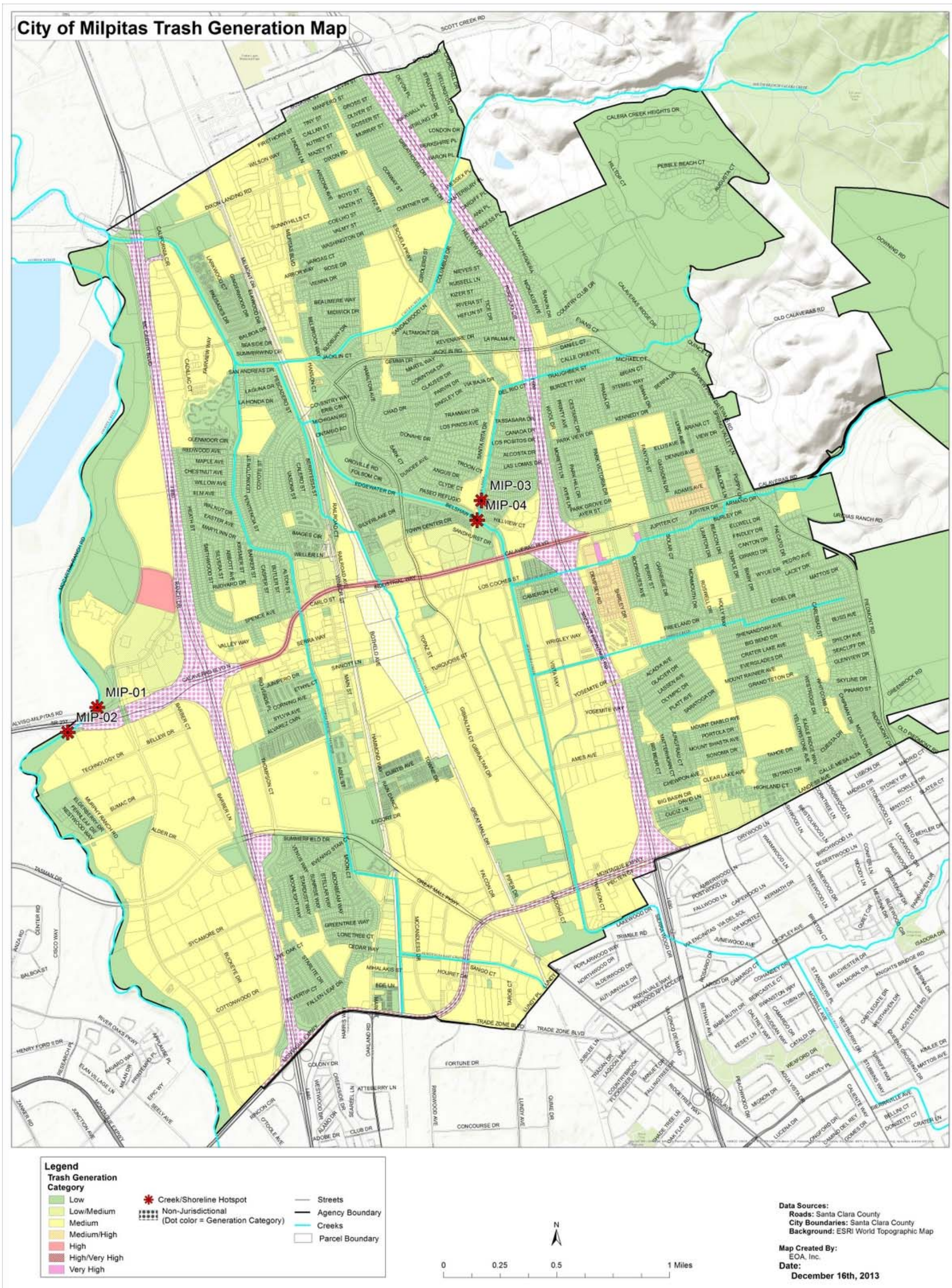

Figure 5. City of Milpitas Final Trash Generation Map

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3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES

3.1 Introduction

This section describes the control measures that the City of Milpitas has or plans to implement to solve trash problems and achieve a target of 100% (i.e. full) trash reduction from their MS4 by July 1, 2022. The selection of control measures described in this section is based on the City of Milpitas' current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with MS4 discharges. Information on the effectiveness of some trash control measures is currently lacking and therefore in the absence of this information, the City of Milpitas based its selection of control measures on existing effectiveness information, their experience in implementing trash controls and knowledge of trash problems, and costs of implementation. As knowledge is gained through the implementation of these control measures, the City of Milpitas may choose to refine their trash control strategy described in this section. If significant revisions or amendments are made, a revised Long-Term Plan will be submitted to the Water Board through the City of Milpitas' annual reporting process.

3.2 Management Area Delineation and Prioritization

Consistent with the long-term plan framework, the City of Milpitas delineated and prioritized trash management areas (TMAs) based on the geographical distribution of trash generating areas, types of trash sources, and current or planned control measure locations. TMAs are intended to form the management units by which trash control measure implementation can be tracked and assessed for progress towards trash reduction targets. Once delineated, TMAs were also prioritized for control measure implementation. The City of Milpitas' primary management areas were selected based on the spatial distribution of trash generating areas and the location of specific existing or planned management actions within City's jurisdiction. City staff used the following procedure to designate TMAs:

- Outline separate areas in large retail, commercial and residential sections.
- Further delineate areas in retail and commercial sections that are 1) easily defined by streets, 2) within a named section (Great Mall, McCarthy Ranch), 3) large church properties, 4) owned by the Milpitas Unified School District, and 5) public parks maintained by the City of Milpitas.
- In some sections, further break into smaller areas where there are more parcels and balance these with larger areas that have larger-sized parcels.

A map depicting the City of Milpitas' TMAs is included as Figure 6.

Table 6. Jurisdictional area and percentage of each Trash Management Area (TMA) comprised of trash generation categories

TMA	Jurisdictional Area (Acres)	Trash Generation Category					
		Very High	High	Medium / High	Medium	Low / Medium	Low
1A	1.4	100.0%	0.0	0.0	0.0	0.0	0.0
1B	0.6	100.0%	0.0	0.0	0.0	0.0	0.0
1C	17.0	100.0%	0.0	0.0	0.0	0.0	0.0
1D	28.1	0.0	100.0%	0.0	0.0	0.0	0.0
1E	15.4	0.0	100.0%	0.0	0.0	0.0	0.0
2	49.8	0.0	0.0	0.0	60.5%	38.8%	0.7%
3	216.0	0.0	0.0	0.0	92.8%	5.8%	1.4%
4	124.0	0.0	1.6%	0.0	65.2%	29.1%	4.2%
5	27.3	0.0	0.0	0.0	98.6%	0.0	1.4%
6	56.6	0.0	11.6%	0.0	88.4%	0.0	0.0
7	100.9	0.0	0.0	0.0	41.0%	59.1%	0.0
8	158.6	0.0	0.0	0.0	81.0%	10.7%	8.3%
9	307.0	0.0	0.0	0.0	95.1%	0.0	4.9%
10	87.8	0.0	0.0	0.0	100.0%	0.0	0.0
11	133.2	0.0	0.0	0.0	100.0%	0.0	0.0
12	188.2	0.0	0.0	0.0	98.0%	0.7%	1.3%
13	259.4%	0.0	0.0	0.0	96.3%	0.3%	3.5%
14	301.5	0.0	0.0	0.0	100.0%	0.0	0.0
15	189.4	0.0	0.0	0.0	98.0%	0.0	2.0%
16	15.6	0.0	0.0	0.0	100.0%	0.0	0.0
17	235.8	0.0	0.0	0.0	100%	0.0	0.0
18	138.5	0.0	0.0	0.2%	96.0%	0.3%	3.4%
19	559.3	0.0	2.0%	0.0	83.3%	1.0%	13.7%
20	4945.9	0.0	0.0	0.0	0.3%	0.0	99.7%

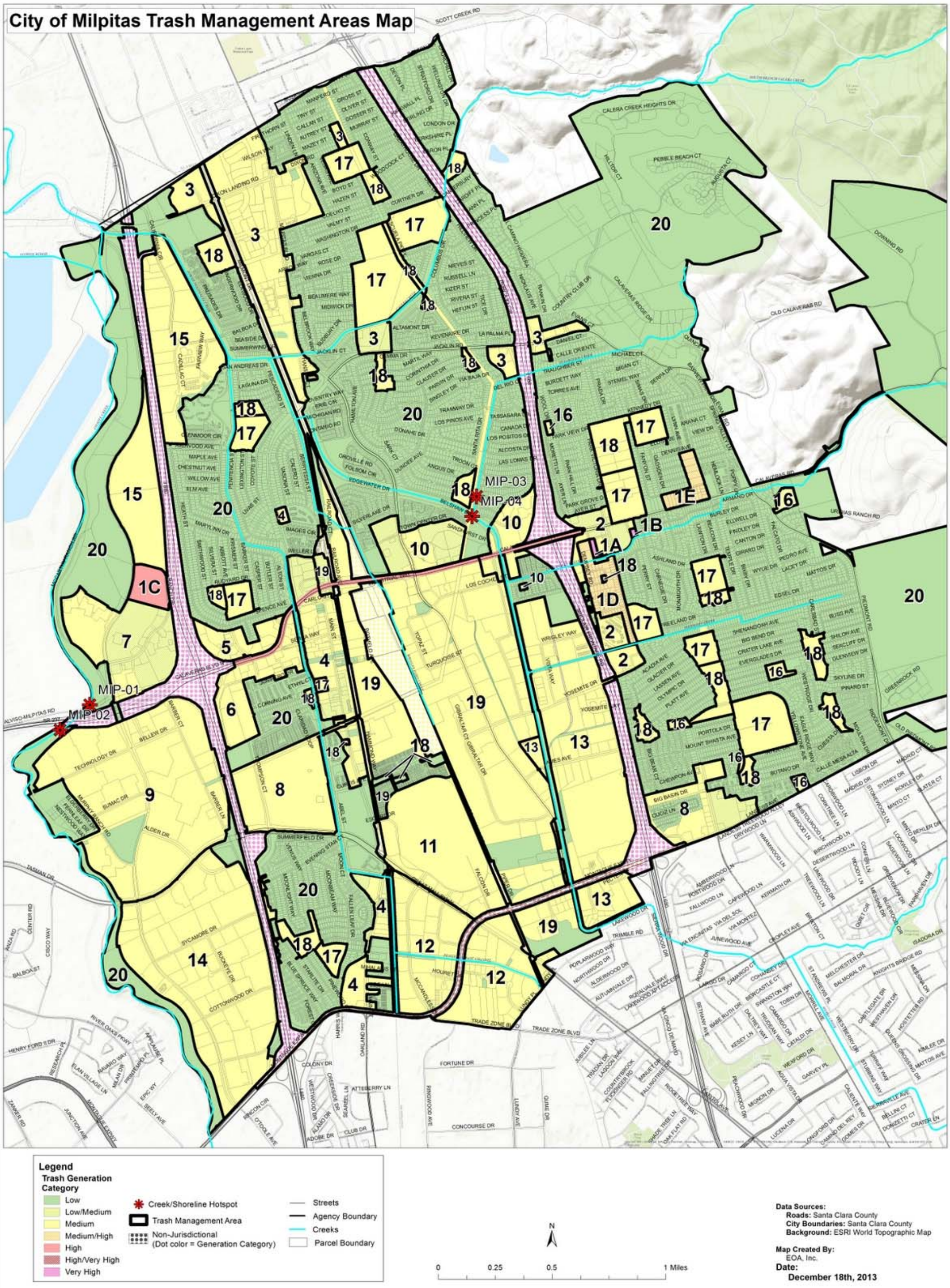

Figure 6. Trash Management Area Map for the City of Milpitas.

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3.3 Current and Planned Trash Control Measures

Trash Management Areas (TMAs) within the City of Milpitas are divided into 20 sections. Each section contains a specific use and may be further delineated to create manageable sections to provide outreach to businesses, property owners, and / or multi-family residents. Each section will include pre and post visual assessments of enacted control measures annually in July-August. TMAs are also grouped and staggered from FY2014-15 through FY 2021-22 for specific focus of control measures. The types of control measures currently being implemented are:

- Anti-littering and Illegal Dumping Enforcement Activities (includes first site assessments of 20 TMAs in May 2013 and then occurring annually in July-August through 2022)
- Full Capture Treatment Device Installed at Wrigley-Ford Pump Station
- Enhanced Private / Public Container Management
- On-Land Trash Pickup (limited areas)
- Creek / Channel / Shoreline Cleanups (four designated creek "hot spots")

The types of control measures planned for all management areas are:

- Participation in a CalRecycle competitive grant for a three-year public information campaign about proper handling of used motor oil targeted to young Spanish-speaking men, 18 – 34 (a tie-in to expand a County of Santa Clara / City of San Jose campaign). Submission deadline is January 28, 2014. City of Milpitas submitted a grant application authorization letter to the County of Santa Clara and will update grant status in the FY2013-14 Annual Report.
- Annual citywide visual assessments with code enforcement follow-up conducted by TMA each July-August.
- Possible re-introduction of a Single-use Carry Out Bag Ordinance
- Possible introduction of a Polystyrene Foam Food Service Ware Ordinance
- Targeted Public Information and Outreach for Businesses and Residents
- Increased information to residents about removing cars on Street Sweeping service days, proper use of yard trimmings recycling carts and annual newsletters.

3.3.1 Trash Management Area #1A & B, C, D, E

1A & B – Open Private Property Lots: These two properties (noted in purple to the central-east portion of the City of Milpitas) collect wind-blown litter from nearby retail and grocery stores and attract illegal dumping. Both are designated as a top priority due to the ongoing nature of litter and trash problems and also the proximity to low income housing that appears to attract "move-out" illegal dumping (furniture, tires, car parts, etc.). The primary approach to address these issues will be 1) direct contact and enforcement with property owners and, 2) direct contact with adjacent charity and retail stores to address housekeeping problems. To the open lot property owners, letters and photos will be sent including ideas for continuous abatement (such as monthly cleanups) and possible enforcement actions for non-compliance. A secondary approach will occur when outreach is sent to the nearby low-income housing units located in 1D and 1E. Site assessments with code enforcement reporting and actions will occur annually through July-August 2022.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): Both parcels received informal contact from the City of Milpitas with a request to cleanup litter and debris from illegal dumping. These problems were usually abated upon request of the property owner. The property owner of Area 1A was fined with an administrative hearing held.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Both properties received two follow-ups from Utility Engineering and Code Enforcement staff. A community litter pickup was conducted on Area 1A in conjunction with the 9/21/13 Creek (Coastal) Cleanup Day (amounts were not reported as part of this annual event of "hot spot" cleanups), with over two cubic yards of trash and dumped debris collected.

3) Actions planned for future implementation between July 2014 and July 2022: Site assessments to determine levels of trash and debris. Hire temporary code enforcement personnel devoted to site inspections and follow-through to compliance. Follow through will include written notice to property owners requiring immediate cleanup to administrative hearing for non-compliance. Includes photos and ideas for continuous abatement (such as monthly cleanups, use of volunteer groups, and coordination with adjacent businesses). Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Both open lots have adjacent retail businesses and parking lots that are sources of business-generated waste debris and pedestrian litter.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: As part of the site assessments, check adjacent business solid waste bins for lids that close automatically during the collection service. Work with contracted hauler to swap bins / repair lids as needed.

On-Land Trash Pickup
Community volunteer groups can be used to pickup litter and light debris from both sites when permission is obtained by the property owner.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: A cleanup of Area 1A was conducted on 9/21/13. The group collected over two cubic yards of trash and debris.

3) Actions planned for future implementation between July 2014 and July 2022: Continue offering one free annual cleanup to Area 1A and start with Area 1B in conjunction with Creek (Coastal) Cleanup Day.

Targeted Public Education and Outreach for Businesses
As part of targeted outreach to businesses and property owners, the businesses adjacent to these open lots will receive information about litter abatement and housekeeping practices.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Both open parcels are located along commercial streets that receive street sweeping services once a week. There is 'no parking' signage on adjacent streets at these parcels. TMA #1 A and B each face a street and a parking lot; the curb in front of both parcels is accessed by the street sweeper.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

1C – Walmart Shopping Center
Reinforcement of responsibility to keep parking lot free of litter, solid waste enclosures clean and prohibited storage near storm drains will occur on an annual basis through July-August 2002.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessment in May 2013 resulted in code enforcement action that cleaned-up the store entrance area and parking lot, including retail shelves and other furniture debris stored around a storm drain.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash in parking lot. Ongoing annual site assessments will occur through July-August 2022. Hire temporary

code enforcement personnel devoted to site inspections and follow-through to compliance.

Enhanced Private / Public Container Management
This parking lot has adjacent food establishments, including one inside WalMart, that are sources of pedestrian and vehicle-generated waste.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessment in May 2013 resulted in code enforcement action that cleaned-up WalMart's solid waste enclosure areas.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to enclosure areas with follow-up to include code enforcement follow-up and swapping bins / repairing lids as needed.

Targeted Public Education and Outreach for Businesses
As part of targeted outreach to businesses and property owners, the businesses adjacent to these open lots will receive information about litter abatement and housekeeping practices.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area 1C is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

1D & E – Low Income Multi-Family Housing
Both of these areas have trash in gutters and on properties, particularly around solid waste bins.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): Limited to code enforcement response based on complaints from residents.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessment in May 2013 to identify problems. Two properties were reported for overflowing bins resulting in an increase in service frequencies.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual area assessment in July-August 2013 to identify specific problem sites for code enforcement action. Ongoing annual site assessments will occur through July-August 2022. Hire temporary code enforcement personnel devoted to site inspections and follow-through to compliance.

Enhanced Private / Public Container Management
Most common problems are properties that have service frequencies set too low for amount of garbage generated by residents in multi-family units. This results in overflowing garbage bins and contaminated recycling.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Service levels were reviewed in both areas with required increases in garbage service and contact directly with property owners and tenants to reduce contamination in recycling bins.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Continued site visits by the contracted haulers Commercial Recycling Representative (a contractually required position by the City) to properties with high contamination in no cost recycle bins, a first indicator that volume based garbage services are too low.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual area assessment in July-August 2014 to identify specific problem sites for code enforcement action.

Targeted Public Education and Outreach to Multi-family Property Owners and Residents
The City of Milpitas mails an annual brochure to property owners and residents about recycling services. This mailer will be changed to include anti-litter and proper garbage service handling messages.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Began inserting urban runoff pollution prevention messages to door hangers and mailers.

3) Actions planned for future implementation between July 2014 and July 2022: Include anti-litter and urban runoff messages with the annual recycling mailer to property owners and residents.

Street Sweeping

Multi-family complexes are included in residential neighborhoods that receive bi-monthly street sweeping. These areas have a high concentration of cars on the street that often block street sweeper access to the curb.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Bi-weekly street sweeping.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Conduct the second annual area assessment in July-August 2014 on street sweeping days to determine the problem on cars left on the street. Include these areas in separate citywide outreach about street sweeping.

3) Actions planned for future implementation between July 2014 and July 2022: Continue annual site assessment and code enforcement reporting in July-August of each year.

3.3.2 Area #2 – Small Retail Areas

This area includes three separate sub-areas, with two adjacent to each other, retail "strip malls" constructed in the 1970s. One sub-area houses a charity store that directly contributes to problems in Area 1A. Another sub-area houses an ethnic grocery store that contributes to problems in Area 1B. Common problems are pedestrian and vehicular litter. Two of the three areas have difficulties with generated trash management due to small enclosures.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Periodic code enforcement actions based upon neighborhood complaints.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in code enforcement action that cleaned-up the parking lot at a charity store site.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash in parking lots. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management

When issues with trash management are reported as part of the site assessments, property owners and retail tenants need to be advised of code violations and given housekeeping and maintenance tips to improve container management.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Code enforcement response based upon neighborhood complaints.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in code enforcement action that cleaned-up the enclosure at the charity store site.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual area assessment in July-August 2014 to identify specific problem sites for code enforcement action.

Targeted Public Education and Outreach to Property Owners and Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #2 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.3 Area #3 – Medium Commercial Area (Milmont / Dixon Landing / Milpitas Blvd.)

This area includes a large ethnic grocery store with restaurants, 1980s retail "strip malls" and small office buildings. Problems vary by site, with concentration needed at the ethnic store and restaurants. Enclosures at the older retail sites are small and require improved use of housekeeping methods. Overall litter sources are vehicular and business trash management.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): Limited to ethnic grocery store based on neighborhood complaints.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013. No code violations were found.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash in parking lots.

Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Container management and regularly applied housekeeping procedures are key to solving trash and litter problems with all businesses in Area #3.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Limited to enforcement actions taken with the ethnic grocery store.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in no further actions.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual area assessment in July-August 2014 to identify specific problem sites for code enforcement action.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #3 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.4 Area #4 – Midtown (Main Street)

The Midtown area comprises many small businesses on individual lots. This area is predominately clean of pedestrian and vehicular litter. Although enclosure areas are small or

non-existent here, the small businesses accomplish an excellent job of keeping containers clean and free of debris. There are a few businesses that accumulate non-putrescible waste. TMA #4 is partially treated by full-capture treatment serving all of, and reference in, TMA #19.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in code enforcement follow-up to abate two instances of accumulated waste / illegal storage.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation by businesses. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Although lots are small and enclosure areas limited, businesses in Area #4 are adept at managing trash areas.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in no further actions.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual area assessment in July-August 2014 to identify specific problem sites for code enforcement action.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #4 is located along commercial streets that receive street sweeping services once a week. There is ‘no parking’ posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.5 Area #5 – Medium Commercial Area (North of Calaveras Blvd.)

This area is a 1970s-style retail and restaurant layout that has been improved in some areas to accommodate increased storage for solid waste containers. Some litter accumulates in planting areas, but the parking lot is predominately free of loose trash. The west side of the development has limited storage area for the individual garbage bins resulting in temporary storage of trash along the back of the stores. There is a predominance of restaurants at this site.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in verbal request to property management and subsequent compliance to cleanup litter in planting areas.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and planting areas. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management

The east side of this development presents a space limitation problem for solid waste containers. Since store and restaurant personnel must walk trash bags among the back of the structure to trash and recycle bins, there is often short-term storage along the back, outside of the structure.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Limited to increasing storages areas for solid waste containers (were possible) and increasing trash service frequencies for the grocery store and restaurants throughout the development.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in verbal request and subsequent compliance to stop storing trash bags behind stores and restaurants.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #4 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.6 Area #6 – Medium Commercial Area with Some Light Industrial (South of Calaveras Blvd.)

This area includes retail commercial with restaurants and stores, and industrial buildings along I-880. The retail includes stores, restaurants and small businesses. This portion of Area #6 was found to be mostly free of litter with trash cans located outside of businesses. All solid waste containers are housed within enclosures and well maintained. Parking lots for the adjacent industrial businesses are very clean, including solid waste enclosures.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Area #6 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #6 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.7 Area #7 – McCarthy Ranch Retail / Commercial Mix

This area is relatively free of pedestrian and vehicular litter in parking lots with the exception of smaller sections surrounding fast food restaurants. Sections in front of and to the rear of the retail stores are very clean. Solid waste enclosures are spread throughout the development and

shared by various stores. These appear clean and well maintained. Food establishments have separate enclosures that are surrounded by some litter.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Area #7 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #7 is located along commercial streets that receive street sweeping services once a week. There is ‘no parking’ posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.8 Area #8 – Medium Commercial Area (adjacent east of I-880)

This area mostly consists of research and development firms and fulfillment centers. It is free of pedestrian and vehicular litter. It is a well-designed area with adequate storage area for solid waste containers. There is some temporary illegal outdoor storage of accumulated waste at the fulfillment centers.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management

Area #8 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses

Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #8 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.9 Area #9 – Large Commercial Area (adjacent west of I-880)

This is a newly-developed area, exclusively supporting research and development high tech firms. It is free of pedestrian and vehicular litter. It is a well-designed area with adequate storage area for solid waste containers.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Area #9 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #9 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.10 Area #10 – Milpitas Town Center plus retail adjacent to Hillview Blvd.

This is an area of three developments. Two are redeveloped with enhanced site improvements supporting public trash cans and adequate storage for solid waste containers. Two of the three are mostly free of litter. The third, houses a stand-alone corner restaurant, has some trash throughout the parking lot, planting areas and a messy enclosure area. A portion of TMA #10 is treated by the full-capture treatment serving all of, and referenced in, TMA #19.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in verbal request to property management of the stand-alone corner restaurant and subsequent compliance to cleanup litter in planting

areas. Enclosure area was locked upon follow-up site check, but trash around it was abated.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and planting areas. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Two of the three sites in this area have adequate enclosure areas that are well maintained. Also, both have public trash cans available to the public. The stand-alone corner restaurant has a limited solid waste enclosure area. Restaurant personnel must walk trash bags along the back of the structure to trash and recycle bins, which may create some of the trash leading to the enclosure.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in verbal request and subsequent compliance to cleanup parking lot and enclosure area of the standalone restaurant.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #10 is located along commercial streets that receive street sweeping services once a week. There is ‘no parking’ posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.11 Area #11 – Great Mall of the Bay Area

This area houses the largest shopping mall and adjacent parking lots in the City of Milpitas. Divided into 10 service zones for solid waste services, it is well maintained in most enclosures (or zones). Parking lots are mostly free of pedestrian litter, with more litter in the areas leading up to the food court entrance. Most notably, there are large amounts of cigarette butts at most of the mall entrances.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in no actions taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and planting areas. Code enforcement follow-up – with special attention given to the problem of cigarette butts at entrances – and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management

Compactors are housed in the service zones for recycling and garbage collection. One restaurant and the movie theatres have separate enclosures. Service zones are clean and well maintained. One exception is the enclosure serving the food court that has markings of grease and other liquids from food service on the asphalt. The separate restaurant and movie theatre enclosures are clean and well maintained.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulting in verbal request and subsequent compliance to cleanup parking lot and enclosure area of the standalone restaurant.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses

Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #11 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.12 Area #12 – Large Commercial Area (bisected by Montague Expy at southern border)

This area exclusively supports research and development high tech firms. It is free of pedestrian and vehicular litter. It is a well-designed area with adequate storage area for solid waste containers.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Area #12 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #12 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.13 Area #13 – Large Commercial / Industrial Mix (adjacent west of I-680)

This area is predominately light industrial and high tech research and development firms. It is free of pedestrian and vehicular litter. It is a well-designed area with adequate storage area for solid waste containers.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Area #13 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #13 is located along commercial streets that receive street sweeping services once a week. There is ‘no parking’ posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.14 Area #14 – Large Commercial / Industrial Mix (adjacent south of Tasman; west of I-880)

This is a newly developed area that predominately supports high tech research and development firms. It is free of pedestrian and vehicular litter. It is a well-designed area with adequate storage area for solid waste containers.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management

Area #14 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses

Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping

Area #14 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.15 Area #15 – Medium Commercial Area (north of Area 1C & west of I-880)

This area is a newly developed area that houses high tech firms and other business offices. Located north of McCarthy Ranch Retail Center and WalMart, limited amounts of vehicular litter along public right-of-ways occur. The developments are well designed and provide adequate space for solid waste enclosures. On-property assessments found these businesses to be immaculately maintained with trash cans at entrances for employees and visitors.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management

Area #15 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses

Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #15 is located along commercial streets that receive street sweeping services once a week. There is 'no parking' posted along these streets and curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.16 Areas #16 – Large Churches

There are three large church properties located with single family residential areas. All are well maintained with adequate recycling and garbage services.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
Church properties designated as Areas #16 have adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach to Churches
Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Church properties designated as Areas #16 are located along single family residential streets that receive bi-weekly street sweeping services. 'No parking' posting in front of these parcels varies, however curbs are accessed by the street sweeper. Effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once Bi-weekly service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.17 Areas #17 – Milpitas Unified School District (MUSD) Properties

School properties are remarkably free of litter at the elementary and middle school levels. Milpitas has one large high school (3,000 students) that has some litter along fences and surrounding areas. This mostly consists of pedestrian litter and cigarette butts. All schools have adequate space for recycling and garbage containers and are well maintained by MUSD custodial staff.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management
MUSD properties designated as Areas #17 have adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

On-Land Trash Pickup
There are no specific projects at this time. However City of Milpitas staff will work closely with Milpitas High School administration to provide incentives (gift certificates, program funding) to extracurricular student groups to conduct annual cleanups of pedestrian areas surrounding the school with a special focus on collecting small trash pieces and cigarette butts.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None

3) Actions planned for future implementation between July 2014 and July 2022: Annual contact with school administrators to offer incentives for extracurricular student groups that conduct a cleanup.

Targeted Public Education and Outreach for Schools
School maintenance and operations staff provide recycling and garbage services similar to those of office buildings. Factsheets for these types of businesses can be distributed to custodians through the MUSD Director of Transportation and Operations.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None

3) Actions planned for future implementation between July 2014 and July 2022: City staff will research possibility of providing SCVURPPP awareness and training to MUSD operations staff. Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
School properties designated as Areas #17 are located along residential that receive bi-weekly street sweeping services and commercial streets that receive weekly sweeping. Predominately, 'no parking' posting on streets surrounding schools exists. Curbs are accessed by the street sweeper and effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once Bi-weekly service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.18 Areas #18 – City of Milpitas Parks

Public parks are operated by the City of Milpitas and maintained by outsourced services. The City of Milpitas is extremely proud of the clean conditions that exist throughout the year. Public trash carts are situated in every park for easy disposal around picnic areas and along trails. Three parks of TMA #18 are treated by full-capture treatment serving all of, and reference in, TMA #19.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): Consistent on-site clean up by City Public Works Department.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None

3) Actions planned for future implementation between July 2014 and July 2022: Semi-annual inspections conducted by the Public Works Department to maintain service levels provided by the contractor.

Enhanced Private / Public Container Management
The City upgraded to semi-automated garbage collection services in 1999 and deployed garbage carts at greater locations than previous smaller garbage cans.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): The amount of garbage carts were increased and re-situated in all parks.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: None.

On-Land Trash Pickup
There are no specific projects at this time. However City of Milpitas staff will work closely with its contractor for park maintenance to provide cleanup of overflowing trash carts and other isolated litter incidents. Additionally, DPW crews are deployed when illegal dumping is reported.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Park maintenance procedures for weekly garbage collection of carts within each park. Immediate cleanup response to reports of illegal dumping.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Park maintenance outsourced to reduce costs and increase maintenance efficiencies.

3) Actions planned for future implementation between July 2014 and July 2022: None.

Street Sweeping
Public parks designated as Areas #18 are primarily located along residential streets that receive bi-weekly street sweeping services. 'No parking' posting varies along streets adjacent to parks. Curbs are accessed by the street sweeper and effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once Bi-weekly service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.19 Area #19 – Total Trash Capture Area (commercial areas with flows to Wrigley – Ford Pump Station)

Two trash full‐capture treatment devices were installed within this stormwater pump station, and manufactured by the Roscoe Moss Company. The Short-term Plan originally targeted two other pump stations, McCarthy and Bellevue, but it was determined that Wrigley-Ford offered the most access for installation while serving the greatest area, 551 acres or 17.8% of the City of Milpitas. See Figure 7 – Trash Full Capture Treatment Device Map for the service area. Installation was completed in October 2012.

Storm Flo Panel Screens, which are metallic, louver panels were installed in the inclined flat form. This form involved installation of individual louver panel screens side‐by‐side to span

the width of the detention basin and/or forebay. Commercially available louvers have slot widths of 3” and openings of 0.200” that would permit passage of stormwater but retain trash and debris measuring 0.200” (5mm) and larger. Another form, the cylindrical form (i.e., Storm Flo Screen) has been installed as in‐line trash management devices within California.

Storm Flo Panel Screens were mounted horizontally or vertically to cover the area designed for treatment. They were mounted on H‐beam supports that are anchored in concrete at the base. Individual panel dimensions are 8 ft x 5 ft with a 1/4” thickness and were also custom made, up to 8 ft x 10 ft with a 3/8” thickness.

Wrigley-Ford Pump Station receives a weekly visual site check. An inspection is conducted after each rain event. However, there were only two large rain events since installation: weeks of 12/04/12 and 12/26/12. No maintenance, other than graffiti removal, was conducted as of 1/17/14 due to low material load.

This is a newly developed commercial area that predominately supports high tech research and development firms. There are islands of residential redevelopment in recent years. It is free of pedestrian and vehicular litter. It is a well-designed area with adequate storage area for solid waste containers. This area also includes one-half of the Great Mall of the Bay Area’s parking lot. For this reason, all of the Great Mall will be incorporated in activities and outreach for TMA #11.

Anti-littering and Illegal Dumping Enforcement Activities

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Although this is a full-trash capture area, a second annual site assessment in July-August 2014 to inspect for litter and trash accumulation in parking lots and solid waste enclosures. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Enhanced Private / Public Container Management

Area #19 has adequate storage and solid waste services, including properly sized bins with lids that close during service delivery.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Site assessments in May 2013 resulted in no action taken.

3) Actions planned for future implementation between July 2014 and July 2022: Second annual site assessment in July-August 2014 to inspect for litter and proper trash handling. Code enforcement follow-up and actions taken as needed. Ongoing annual site assessments will occur through July-August 2022.

Targeted Public Education and Outreach for Businesses

Targeted outreach to businesses and property owners will include general information about housekeeping tips and requirements for bin management and litter abatement.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: None.

3) Actions planned for future implementation between July 2014 and July 2022: Factsheets of how-to information to accompany code enforcement actions. Includes new annual mailing to all businesses.

Street Sweeping
Area #19 is located along commercial streets that receive street sweeping services once a week. The outside perimeters of the residential housing with private streets located to the north of this area are adjacent to stretches of commercial streets. Curbs are accessed by the street sweeper and effective parking enforcement is provided by the Milpitas Police Department.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Once per week service.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: No change.

3) Actions planned for future implementation between July 2014 and July 2022: No change.

3.3.20 Area #20 – Single Family Residential

These neighborhoods represent the highest land use in the City of Milpitas with moderate to high income households. The areas are predominately free of pedestrian and vehicular litter as well as illegal dumping. There are few trash handling problems even though City of Milpitas solid waste services use a combination of carts and optional customer-supplied cans. The largest problem is leaves and other small debris in the fall and winter. Residents are advised to use their yard trimmings recycling carts to help keep streets clean as well as to move cars on street sweeping days.

Anti-littering and Illegal Dumping Enforcement Activities
1) Actions initiated prior to and continued after the MRP effective date (December 2009): Limited to code enforcement response based on complaints from residents.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Continue code enforcement response based in complaints.

3) Actions planned for future implementation between July 2014 and July 2022: Continue code enforcement response based in complaints.

Enhanced Private / Public Container Management

The only problem is with limited numbers of households that use garbage cans with lids that are not tightly set or too damaged to continue use.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Non-collection notices issued by contracted hauler and placed on cans. In most cases, the garbage is collected with the notice left on the can.

3) Actions planned for future implementation between July 2014 and July 2022: Continue issuance of non-collection notices.

Targeted Public Education and Outreach to Multi-family Property Owners and Residents

The City of Milpitas mails an annual newsletter to residents about recycling services. This mailer will be changed to include anti-litter and proper garbage service handling messages.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Began inserting urban runoff pollution prevention messages to door hangers and mailers.

3) Actions planned for future implementation between July 2014 and July 2022: Include anti-litter and urban runoff messages with the annual recycling mailer to property owners and residents. Coordinate with street sweeping services to promote proper use of the Yard Trimmings Recycling Program.

Street Sweeping

Single family neighborhoods receive bi-weekly street sweeping in 10 service areas. There are five neighborhoods with old growth sycamore trees that are swept weekly in November and December. There is ‘open parking’ with no street sweeping signage. Parking enforcement (abandoned cars, neighbors not moving cars on sweep days, etc.) is handled on a complaint / call-in basis by Neighborhood Preservation / Code Enforcement. Approximately 25 – 30% of curbs are not effectively accessed by the sweeper due to parked cars.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Bi-weekly street sweeping and weekly service in five neighborhoods for two months. Annual mailing of street sweeping calendar in early January. Street sweeping articles placed in annual newsletters.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Continued bi-weekly street sweeping and weekly service in five neighborhoods for two months and street sweeping articles placed in annual newsletters. Addition of doorhanger distributions to problem service areas, and full-page print advertising in *The Milpitas Post* on a quarterly basis.

3) Actions planned for future implementation between July 2014 and July 2022: Continue bi-weekly street sweeping and weekly service in five neighborhoods; doorhanger distributions to problem service areas; street sweeping articles placed in annual newsletters, and full-page print advertising in *The Milpitas Post* on a quarterly basis. Expanded outreach of new messages about using the Yard Trimmings Recycling Program, not piling leaves in streets, and keeping cars off the street on sweep days.

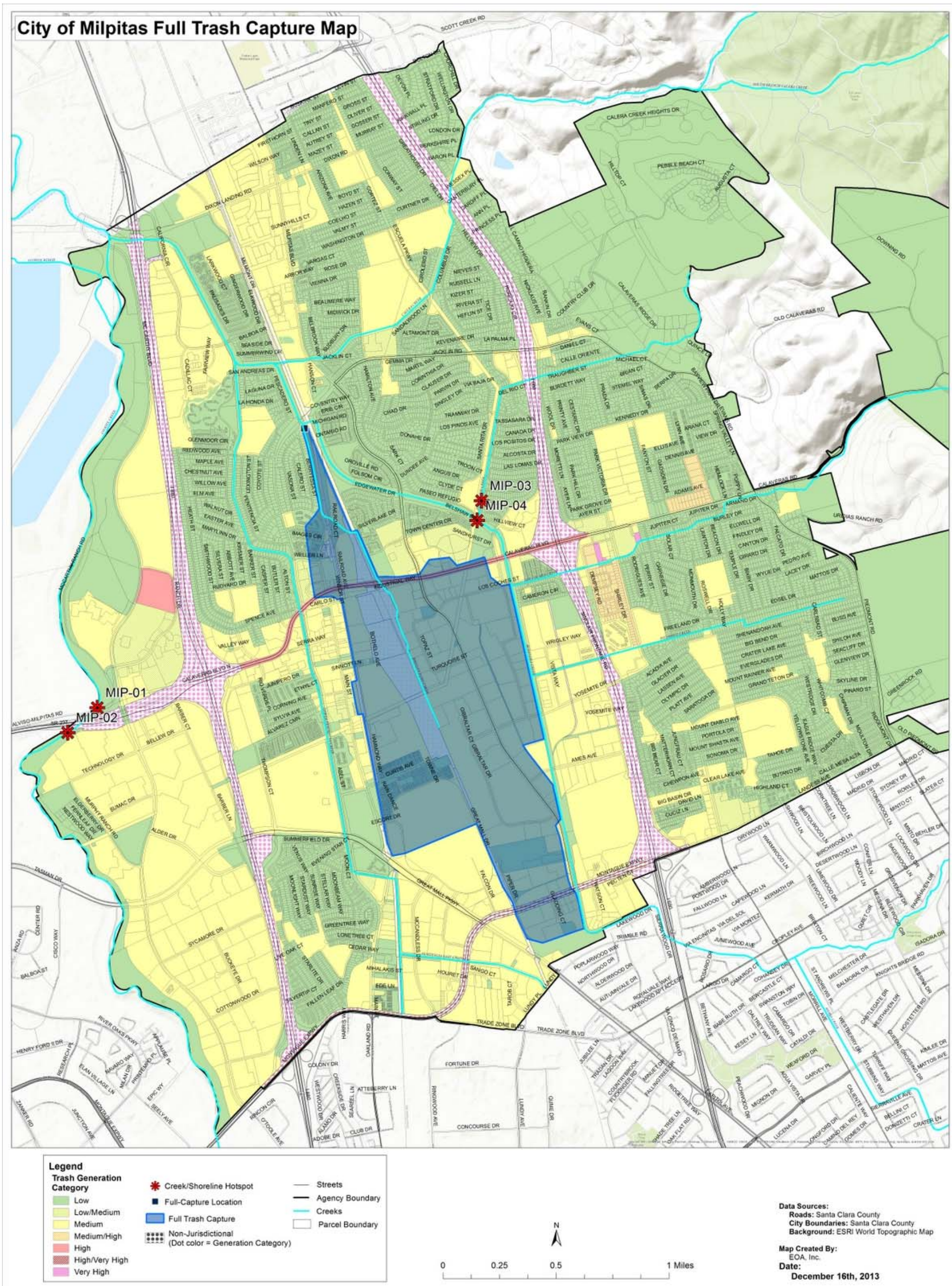

Figure 7. Trash Full Capture Device Map for the City of Milpitas.

3.3.21 Jurisdiction-wide Control Measures

Litter from pedestrian and vehicular litter is the predominant trash problems that need to be addressed, particularly in commercial / retail areas with food establishments. The general approach to addressing these issues are citywide ordinances restricting single-use carryout bags, polystyrene foam food service ware, and a dovetailed approach of public education and outreach that incorporates regional and local campaigns.

Single-use Carryout Bag Policies

After presenting a Milpitas-specific study in April 2011 and Council approval to proceed as a study area with the EIR process offered by San Mateo County, the Milpitas City Council denied approval of the model ordinance by a 3 – 2 vote in December 2013. Staff may seek Council approval to conduct an EIR to again present a modified ordinance within the time frame of the upcoming permit.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Conducted a study of single-use bag ordinances, the effect in other jurisdictions, and a personal interview survey of 24 small businesses and statistically-reliable phone survey of Milpitas residents. Informed City Council of the need to meet trash load reduction requirements and introduce an ordinance restricting single-use bags.

3) Actions planned for future implementation between July 2014 and July 2022: Conduct a modified or new EIR and introduce a modified ordinance to the City Council by June 2015.

Polystyrene Foam Food Service Ware Policies

After presenting a Milpitas-specific study in April 2011 and receiving concerns of negative impacts to small businesses, staff decided to postpone presenting this ordinance to the Milpitas City Council. Staff will conduct an EIR and present an ordinance similar to neighboring communities by June 2016.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): None.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Conducted a study of polystyrene foam food service ware ordinances, the effect in other jurisdictions, and a personal interview survey of 25 small businesses and statistically-reliable phone survey of Milpitas residents. Informed City Council of the need to meet trash load reduction requirements.

3) Actions planned for future implementation between July 2014 and July 2022: Conduct an EIR and introduce an ordinance to the City Council by June 2016.

Public Education & Outreach Programs

Maintain annual outreach described in annual reports while adding anti-litter and trash reduction messages at special events and in citywide mailings supporting the commercial and residential recycling programs.

1) Actions initiated prior to and continued after the MRP effective date (December 2009): Limited to urban runoff messages supporting publicity for household hazardous waste collection events and Pollution Prevention Week promotions.

2) Actions initiated after the MRP effective date and implemented prior to July 1, 2014: Increased outreach to include door-to-door distributions of safe product alternatives and anti-litter to both single and multi-family households twice per year (June for HHW events and September for creek cleanups). Staff support and local implementation of SCVURPPP campaigns,

3) Actions planned for future implementation between July 2014 and July 2022: Continue actions in item 2 and include anti-litter information to annual citywide recycling program publications (single and multi-family, commercial recycling programs).

3.3.22 Creek and Shoreline Hot Spot Cleanups

The City of Milpitas conducts annual creek cleanups of four sites: two combined sites along Coyote Creek, and one site each at the confluence of Berryessa and Tularcitos Creeks. The locations are shown on the trash generation / management areas map for the City of Milpitas. Below is a description of dominant trash / litter pathways and sources and the amount of trash generally removed from each site. There were no cleanup actions taken prior to the MRP effective date at the Coyote Creek sites. Annual litter pickups at the adjacent park to Tularcitos Creek and trails of Berryessa Creek were conducted annually since 1985. However, these were not concentrated creek cleanups until these areas were declared “hot spots” as part of the MRP. Aside from the hot spot cleanups, no new or enhanced actions have been taken after the MRP effective date.

Coyote Creek, MIP01 & MIP02 (TMA #20): This area is underneath bridges of SR-237 and stretches beyond tunnel pathways to include trails and creek-side landscape, rock walls and the trail head. Both areas average two to three cubic yards of trash removal per annual cleanup. The five most prevalent trash types are convenience / fast food items, bottles and cans, paper and cardboard, mattresses and plastic bags. Trash sources are predominately vehicular litter and illegal dumping.

Tularcitos Creek, MIP03 (TMA #20): This area is adjacent to a city park that includes a softball field. It averages about one cubic yard of trash removal per annual cleanup. The five most prevalent trash types are bottles, aluminum cans, convenience / fast food items, plastic bags and paper and cardboard.

Berryessa Creek, MIP04 (TMA #20): This area is adjacent to a shopping center and includes creek side trails and a pedestrian bridge. It averages one to two cubic yards of trash removal per annual cleanup. The five most prevalent trash types are bottles, aluminum cans, convenience / fast food items, plastic bags and Styrofoam. Trash sources are predominately pedestrian litter.

3.3.23 Summary of Trash Control Measures

Below is a listing of trash control measures for each of the 20 management areas in the City of Milpitas. Control measures listed below are believed to achieve the full trash reduction level possible in each management area.

Trash Management Area 1.A & 1.B

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management (of adjacent shopping centers contributing to windblown litter)
- On-Land Trash Pickup
- Targeted Outreach Specific to Open-lot Property Owners
- Weekly Street Sweeping

Trash Management Area 1.C

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 1.D

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for multi-family property owners and residents.
- Bi-weekly Street Sweeping

Trash Management Area 1.E

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for multi-family property owners and residents.
- Bi-weekly Street Sweeping

Trash Management Area 2

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 3

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 4

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management

- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 5

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 6

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 7

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 8

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 9

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 10

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 11

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management

- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 12

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 13

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 14

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 15

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 16

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses (large church properties)
- Bi-weekly Street Sweeping

Trash Management Area 17

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- On-Land Trash Pickups
- Targeted Public Education and Outreach for Schools
- Combined Weekly and Bi-weekly Street Sweeping

Trash Management Area 18

- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)

- Enhanced Private / Public Container Management
- On-Land Trash Pickups (as needed for isolated litter incidents)
- Combined Weekly and Bi-weekly Street Sweeping

Trash Management Area 19

- Full-Capture Treatment Devices (Wrigley-Ford Pump Station)
- Anti-littering and Illegal Dumping Enforcement Activities (includes annual site assessments in July-August that will occur through July-August 2022)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Weekly Street Sweeping

Trash Management Area 20

- Anti-littering and Illegal Dumping Enforcement Activities (excludes annual site assessment)
- Enhanced Private / Public Container Management
- Targeted Public Education and Outreach for Businesses
- Bi-weekly Street Sweeping

3.4 Control Measure Implementation Schedule

With 20 active trash management areas, the City of Milpitas will take every opportunity to provide information to residents and businesses. In commercial areas, this will involve annual site assessments in July-August that will occur through July-August 2022, an annual newsletter, and factsheets for businesses with code violations. Targeted multi-family housing with litter and trash handling problems will receive annual site assessments in July-August, an annual newsletter for residents and property owners, and direct coordination with property owners that have trash handling and litter problems. To accomplish this in both the commercial and targeted residential areas, outreach and awareness campaigns may or may not overlap site assessments and contact with businesses and property owners that have code violations. To address this, factsheets will be available for businesses and additional recycling program and housekeeping tips will be given to property owners.

Table 7. City of Milpitas trash control measure implementation schedule.

Note: After FY 2014-15, all TMAs continue to receive the annual site assessment, with follow-up code enforcement actions as necessary and jurisdiction-wide public education outreach. Each 'X' represents when a control measure is implemented. Control measures are staggered to provide Milpitas staff reasonable time to focus on TMAs and control measures in a fiscal year. No change in street sweeping schedules.

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
TMA 1A & 1B														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X	X			X			X	
Enhanced Private / Public Container Mgmt.							X			X			X	
On-land Trash Pickup							X	X		X			X	
TMA 1C														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X	X			X			X	
Enhanced Private / Public Container Mgmt.							X			X			X	
Targeted Public Education & Outreach							X			X			X	
TMA 1D														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X	X			X			X	
Enhanced Private / Public Container Mgmt.					X	X	X			X			X	
Targeted Public Education & Outreach							X			X			X	
TMA 1E														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X	X			X			X	
Enhanced Private / Public Container Mgmt.					X	X	X			X			X	
Targeted Public Education & Outreach							X			X			X	
TMA #2														

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X			X		X	
Enhanced Private / Public Container Mgmt.					X	X		X			X		X	
Targeted Public Education & Outreach					X	X		X			X		X	
TMA #3														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X			X		X	
Enhanced Private / Public Container Mgmt.								X			X		X	
Targeted Public Education & Outreach								X			X		X	
TMA #4														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X			X		X	
Enhanced Private / Public Container Mgmt.								X			X		X	
Targeted Public Education & Outreach								X			X		X	
TMA #5														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X			X		X	
Enhanced Private / Public Container Mgmt.								X			X		X	
Targeted Public Education & Outreach								X			X		X	
TMA #6														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X			X		X	
Enhanced Private / Public Container Mgmt.								X			X		X	
Targeted Public Education & Outreach								X			X		X	
TMA #7														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X			X		X	
Enhanced Private / Public Container Mgmt.								X			X		X	

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Targeted Public Education & Outreach								X			X		X	
TMA #8														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X					X
Enhanced Private / Public Container Mgmt.									X					X
Targeted Public Education & Outreach									X					X
TMA #9														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X					X
Enhanced Private / Public Container Mgmt.									X					X
Targeted Public Education & Outreach									X					X
TMA #10 (same schedule as TMAs 2 – 7)														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X			X		X	
Enhanced Private / Public Container Mgmt.								X			X		X	
Targeted Public Education & Outreach								X			X		X	
TMA #11														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X			X		X
Enhanced Private / Public Container Mgmt.									X			X		X
Targeted Public Education & Outreach									X			X		X
TMA #12														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X			X		X
Enhanced Private / Public Container Mgmt.									X			X		X
Targeted Public Education & Outreach									X			X		X
TMA #13														

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X			X		X
Enhanced Private / Public Container Mgmt.									X			X		X
Targeted Public Education & Outreach									X			X		X
TMA #14														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X			X		X
Enhanced Private / Public Container Mgmt.									X			X		X
Targeted Public Education & Outreach									X			X		X
TMA #15														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X			X		X
Enhanced Private / Public Container Mgmt.									X			X		X
Targeted Public Education & Outreach									X			X		X
TMA #16														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X	X			X			X	
Enhanced Private / Public Container Mgmt.							X			X			X	
Targeted Public Education & Outreach							X			X			X	
TMA #17 (MUSD)														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X	X		X		X		X	
Enhanced Private / Public Container Mgmt.							X		X		X		X	
On-Land Trash Pickups							X		X		X		X	
Targeted Public Education & Outreach							X		X		X		X	
TMA #18 (City Parks)														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X		X				X		

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Enhanced Private / Public Container Mgmt.								X				X		
On-Land Trash Pickups								X				X		
TMA #19 (Trash Capture Area)														
Anti-littering and Illegal Dumping Enforcement Activities (annual site assessment)					X	X			X			X		X
Enhanced Private / Public Container Mgmt.									X			X		X
Targeted Public Education & Outreach									X			X		X
TMA #20 (Single Family Residential – Green)														
Anti-littering and Illegal Dumping Enforcement Activities (as reported)		X	X	X	X	X	X	X	X	X	X	X	X	X
Enhanced Private / Public Container Mgmt.		X	X	X	X	X	X	X	X	X	X	X	X	X
Targeted Public Education & Outreach		X	X	X	X	X	X	X	X	X	X	X	X	X
Jurisdiction-wide Control Measures														
Single-use Carry Out Bag Ordinance														
Polystyrene Foam Food Service Ware Ordinance														
Public Education and Outreach to Businesses and Residents					X	X	X	X	X	X	X	X	X	X
Creek and Shoreline Hot Spot Cleanups														
Coyote Creek, MIP01		X	X	X	X	X	X	X	X	X	X	X	X	X
Coyote Creek, MIP02		X	X	X	X	X	X	X	X	X	X	X	X	X
Tularcitos Creek, MIP03		X	X	X	X	X	X	X	X	X	X	X	X	X
Berryessa Creek, MIP04		X	X	X	X	X	X	X	X	X	X	X	X	X

[a]July 1, 2014 40% trash reduction target
[b]July 1, 2017 70% trash reduction target
[c]July 1, 2022 100% trash reduction target

4.0 PROGRESS ASSESSMENT STRATEGY

Provision C.10.a.ii of the MRP requires Permittees to develop and implement a 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 targets. Early into the MRP, Permittees decided to work collaboratively to develop a trash load reduction tracking method through the Bay Area Stormwater Management Agencies Association (BASMAA). Permittees, Water Board staff and other stakeholders assisted in developing Version 1.0 of the tracking method. On behalf of all MRP Permittees, the Bay Area Stormwater Management Agencies Association (BASMAA) submitted Version 1.0 to the Water Board on February 1, 2012.

The Trash Assessment Strategy (Strategy) described in this section is intended to serve as Version 2.0 of the trash tracking method and replace version 1.0 previously submitted to the Water Board. The Strategy is specific to Permittees participating in the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), including the City of Milpitas. The City intends to implement the Strategy in phases and at multiple geographical scales (i.e., jurisdiction-wide and trash management area) in collaboration with SCVURPPP. Pilot implementation is scheduled for the near-term and as assessment methods are tested and refined, the Strategy will be adapted into a longer-term approach. The Strategy selected by the City of Milpitas is described in the following sections.

4.1 SCVURPPP Pilot Assessment Strategy

The following SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP Pilot Strategy) was developed by SCVURPPP on behalf of the City of Milpitas and other Santa Clara Valley Permittees. The SCVURPPP Pilot Strategy will be implemented at a pilot scale on a countywide basis and includes measurements and observations in the City of Milpitas.

4.1.1 Management Questions

The SCVURPPP Pilot Strategy is intended to answer the following core management questions over time as trash control measures outlined in section 3.0 are implemented and refined:

- Are the MS4 trash load reduction targets being achieved?
- Have trash problems in receiving waters been resolved?
- If trash problems in receiving waters exist, what are the important sources and transport pathways?

The SCVURPPP Pilot Strategy, including indicators and methods, is summarized in this section and fully described in the SCVURPPP Pilot Trash Assessment Strategy, a compendium document submitted to the Water Board on February 1, 2014 on behalf of all SCVURPPP Permittees (SCVURPPP 2014).

4.1.2 Indicators of Progress and Success

The management questions listed in the previous section will be addressed by tracking information and collecting data needed to report on a set of key environmental indicators. Environmental indicators are simple measures that communicate what is happening in the environment. Since trash in the environment is very complex, indicators provide a more practical and economical way to track the state of the environment than if we attempted to record every possible variable.

With regard to municipal stormwater trash management, indicators are intended to detect progress towards trash load reduction targets and solving trash problems. Ideally, indicators should be robust and able to detect progress that is attributable to multiple types of trash control measure implementation scenarios. Assessment results should also provide Permittees with an adequate level of confidence that trash load reductions from MS4s have occurred, while also assessing whether trash problems in receiving waters have been resolved. Indicators must also be cost effective, relatively easy to generate, and understandable to stakeholders.

Primary and secondary indicators that SCVURPPP Permittees will use to answer core management questions include:

Primary Indicators:

1-A Reduction in the level of trash present on-land and available to MS4s
1-B Effective full capture device operation and maintenance

Secondary Indicators:

2-A Successful levels of trash control measures implementation
2-B Reductions in the amount of trash in receiving waters

In selecting the indicators above, the City of Milpitas in collaboration with SCVURPPP and other SCVURPPP Permittees recognize that no one environmental indicator will provide the information necessary to effectively determine progress made in reducing trash discharged from MS4s and improvements in the level of trash in receiving waters. Multiple indicators were therefore selected.

The ultimate goal of municipal stormwater trash reduction strategies is to reduce the impacts of trash associated with MS4s on receiving waters. Indicators selected to assess progress towards this goal should ideally measure outcomes (e.g., reductions in trash discharged). The primary indicators selected by SCVURPPP are outcome-based and include those that are directly related to MS4 discharges. Secondary indicators are outcome or output-based and are intended to provide additional perspective on and evidence of, successful trash control measure implementation and improvements in receiving water condition with regard to trash.

As described in Section 2.2, trash is transported to receiving waters from pathways other than MS4s, which may confound our ability to observe MS4-associated reductions in creeks and shorelines. Due to this challenge of linking MS4 control measure implementation to receiving water conditions, the receiving water based indicator is currently considered a secondary indicator. Evaluations of data on the amount of trash in receiving waters that are conducted over time through the Pilot Assessment Strategy will assist the City of Milpitas in further determinations of the important sources and pathways causing problems in local creeks, rivers and shorelines.

4.1.3 Pilot Assessment Methods

This section briefly summarizes the preliminary assessment methods that City of Milpitas will implement through the SCVURPPP Pilot Strategy to generate indicator information described in the previous section. Additional information on each method can be found in the SCVURPPP Pilot Trash Assessment Strategy submitted to the Water Board by SCVURPPP on behalf of the City of Milpitas.

1-A. On-land Visual Assessments

As part of the Trash Generation Map assessment and refinement process (see Section 2.3.1), a draft on-land visual assessment method was developed to assist Permittees in confirming and refining trash generating area designations (i.e., very high, high, moderate and low trash generating categories). The draft on-land visual assessment method is intended to be a cost-effective tool and provide Permittees with a viable alternative to quantifying the level of trash discharged from MS4s. As part of BASMAA's *Tracking California's Trash* grant received from the State Water Resources Control Board (see Section 4.2), quantitative relationships between trash loading from MS4s and on-land visual assessment condition categories will be established. Condition categories defined in the draft on-land assessment protocol are listed in Table 8

Table 8. Trash condition categories used in the draft on-land visual assessment protocol.

Trash Condition Category	Summary Definition
A (Low)	Effectively no trash is observed in the assessment area.
B (Moderate)	Predominantly free of trash except for a few pieces that are easily observed.
C (High)	Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
D (Very High)	Trash is continuously seen throughout the assessment area, with large piles and a strong impression of lack of concern for litter in the area.

On-land visual assessments will be conducted in trash management areas within the City of Milpitas as part of the SCVURPPP Pilot Trash Assessment Strategy. On-land assessments are intended to establish initial conditions and detect improvements in the level of trash available to MS4s over time. More specifically, on-land visual assessment methods will be conducted in areas not treated by trash full capture devices in an attempt to evaluate reductions associated with other types of control measures. Assessment methods for areas treated by full capture devices are described in this next section.

Given that the on-land assessment method and associated protocol have not been fully tested and refined, initial assessments will occur at a pilot scale in the City of Milpitas and in parallel to the *Tracking California's Trash* project. The frequency of assessments and number of sites where assessments will occur during the pilot stage are more fully described in the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014).

1-B. Full Capture Operation and Maintenance Verification

Consistent with the MRP, adequate inspection and maintenance of trash full capture devices is required to maintain full capture designation by the Water Board. The City of Milpitas is

currently developing an operation and maintenance verification program (Trash O&M Verification Program), via SCVURPPP, to ensure that devices are inspected and maintained at a level that maintains this designation.

The SCVURPPP Trash O&M Verification Program will be modeled on the current O&M verification program for stormwater treatment controls implemented consistent with the Permit new and redevelopment requirements. Additional details regarding the Trash O&M Verification Program can be found in the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014).

2-A. Control Measure Effectiveness Evaluations

In addition to on-land trash assessments and full capture operation and maintenance verification, the City of Milpitas will also conduct assessments of trash control measures implemented within their jurisdictional area. Assessment methods will be selected based on trash sources and the type of control measure being implemented. Control measure effectiveness evaluations are more fully described in the SCVURPPP Pilot Trash Assessment Strategy. The following are example assessment methods that may be used to demonstrate successful control measure implementation and progress towards trash reduction targets:

- Product-related Ordinances – Annually tracking and reporting the % of businesses in compliance with the ordinance and the percentage requiring a response.
- Street Sweeping – Reporting the frequency of sweeping and ability to sweep to the curb in specific areas where enhanced sweeping is implemented; and/or documenting the level of trash on streets directly after street sweeping during wet and dry weather seasons.
- Public/Private Trash Container Management – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and documenting conditions around public trash containers before and after implementing enhanced control measures.
- Targeted Outreach and Enforcement – Reporting the magnitude and extent of enhanced actions; tracking and reporting the % increase in enforcement actions; and/or visually assessing and documenting the conditions in targeted areas before and after implementing control measures.
- Public Outreach Campaigns – Reporting the magnitude and extent of enhanced actions, and/or conducting pre and post campaign surveys.
- On-land Cleanups and Enforcement – Reporting the magnitude and extent of enhanced actions; visually assessing and documenting the conditions in targeted areas before and after control measure implementation; and/or tracking the volumes of trash removed.
- Illegal Dumping Prevention – Reporting the magnitude and extent of enhanced actions; and/or tracking and reporting improvements in the number of incidents.
- Business Improvement Districts – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and documenting the conditions in BID areas before and after implementing control measures.
- Prevention of Uncovered Loads - Reporting the magnitude and extent of enhanced actions; tracking and reporting the decreases in the number of incidents; and/or

visually assessing and documenting the conditions in targeted areas before and after implementing control measures.

- Partial Capture Devices – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and the amount of trash in storm drains or downstream of partial capture devices.

2-C. Receiving Water Condition Assessments

The ultimate goal of stormwater trash management in the Bay Area is to significantly reduce the amount of trash found in receiving waters. In the last decade, Santa Clara Valley Permittees and volunteers have collected data on the amounts of trash removed during cleanup events. More recently, Permittees have conducted trash assessments in creek and shoreline hotspots using standardized assessment methods. In an effort to answer the core management question *Have trash problems in receiving waters been resolved?,* the City of Milpitas plans to continue conducting receiving water condition assessments at trash hot spots a minimum of one time per year. Assessment will be conducted consistent with Permit hot spot cleanup and assessment requirements. Additional information on receiving water assessment methods can be found in the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014).

4.2 BASMAA "Tracking California's Trash" Project

The SCVURPPP Pilot Assessment Strategy described in the previous section recognizes that outcome-based trash assessment methods needed to assess progress toward trash reduction targets are not well established by the scientific community. In an effort to address these information gaps associated with trash assessment methods, the Bay Area Stormwater Management Agencies Association (BASMAA), in collaboration with SCVURPPP, the 5 Gyres Institute, San Francisco Estuary Partnership, the City of Los Angeles, and other stormwater programs in the Bay Area, developed the *Tracking California's Trash* Project. The Project is funded through a Proposition 84 grant awarded to BASMAA by the State Water Resources Control Board (SWRCB) who recognized the need for standardized trash assessment methods that are robust and cost-effective.

The Project is intended to assist BASMAA member agencies in testing trash assessment and monitoring methods needed to evaluate trash levels in receiving waters, establish control measures that have an equivalent performance to trash full capture devices, and assess progress in trash reduction over time. The following sections provide brief descriptions of tasks that BASMAA will conduct via the three-year Project. Full descriptions of project scopes, deliverables, and outcomes will be developed as part of the task-specific Sampling and Analysis Plans required by the SWRCB during the beginning of the Project. The Project is currently underway and will continue through 2016.

4.2.1 Testing of Trash Monitoring Methods

BASMAA and the 5 Gyres Institute will evaluate the following two types of assessment methods as part of the Project:

- **Trash Flux Monitoring –** Trash flux monitoring is intended quantify the amount of trash flowing in receiving waters under varying hydrological conditions. Flux monitoring will be tested in up to four receiving water bodies in San Francisco Bay and/or the Los Angeles areas. Methods selected for evaluation and monitoring will be based on a literature review conducted during this task and through input from technical advisors and stakeholders. Monitoring is scheduled to begin in 2014 and will be completed in 2016.
- **On-land Visual Assessments –** As part of the Project, BASMAA will also conduct an evaluation of on-land visual assessment methods that are included in the SCVURPPP Pilot Assessment Strategy. The methods are designed to determine the level of trash on streets and public right-of-ways that may be transported to receiving waters via MS4s. BASMAA plans to conduct field work associated with the evaluation of on-land visual assessment at a number of sites throughout the region. To the extent practical, sites where the on-land methods evaluations take place will be coordinated with trash flux monitoring in receiving waters. On-land assessments will occur in areas that drain to trash full capture devices, and all sites will be assessed during wet and dry weather seasons in order to evaluate on-land methods during varying hydrologic conditions. Monitoring is scheduled to begin in 2014 and will be completed in 2016.

4.2.2 Full Capture Equivalent Studies

Through the implementation of BASMAA's *Tracking California's Trash* grant-funded project, a small set of "Full Capture Equivalent" projects will also be conducted in an attempt to demonstrate that specific combinations of control measures will reduce trash to a level equivalent to full capture devices. Initial BMP combinations include high-frequency street sweeping, and enhanced street sweeping with auto-retractable curb inlet screens. Other combinations will also be considered. Studies are scheduled to begin in 2014 and will be completed in 2016.

4.3 Long-Term Assessment Strategy

The City of Milpitas is committed to implementing standardized assessment methods post-2016 based on the lessons learned from pilot assessments and studies that will occur between 2014 and 2016. Assessment activities described in the previous sections will evaluate the utility of different assessment methods to demonstrate progress towards trash reduction targets and provide recommended approaches for long-term implementation. Lessons learned will be submitted to the Water Board with the FY 2015-2016 Annual Report and a revised Strategy will be developed and submitted, if necessary. The revised Strategy will include agreed upon assessment methods that will be used to demonstrate progress during the remaining term of trash reduction requirements. Reporting using the new/revised methods will begin with the FY 2016-17 Annual Report.

4.4 Implementation Schedule

The implementation schedule for the SCVURPPP Pilot Implementation Strategy, BASMAA's Tracking California's Trash project, and the Long-Term Assessment Strategy are included in Table 9. Load reduction reporting milestones are also denoted in the table. The schedule is consistent with the need for near-term pilot assessment results to demonstrate progress toward short-term targets, while acknowledging the need for testing and evaluation of assessment methods and protocols prior to long-term implementation. For more detailed information on implementation timelines, refer to the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014) and monitoring plans developed as part of BASMAA's Tracking California's Trash project.

Table 9. The City of Milpitas trash progress assessment implementation schedule.

Trash Assessment Programs and Methods	Prior to FY 2013-14	Fiscal Year								
		2013-14[a]	2014-15	2015-16	2016-17[b]	2017-18	2018-19	2019-20	2020-21	2021-22[c]
Pilot Trash Assessment Strategy (SCVURPPP)										
On-land Visual Assessments										
Initial (Baseline) Assessments	X									
Pilot Progress Assessments		X	X	X	X					
Full Capture Operation and Maintenance Verification			X	X	X					
Control Measure Effectiveness Evaluations	X	X	X	X	X					
Receiving Water Condition Assessments	X	X	X	X	X					
Tracking California's Trash Project (BASMAA)										
Testing of Trash Monitoring Methods										
Trash Flux Monitoring Protocol Testing			X	X	X					
On-land Visual Assessment Evaluations			X	X	X					
Full Capture Equivalent Studies			X	X	X					
Additional Assessments (City of Milpitas)										
Annual Site Assessments by TMA (July-August)		X	X	X	X	X	X	X	X	X
Long-Term Trash Assessment Strategy (SCVURPPP)						X	X	X	X	X

[a]July 1, 2014 40% trash reduction target
[b]July 1, 2014 70% trash reduction target
[c]July 1, 2022 100% trash reduction target

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San Francisco Bay Area Stormwater Trash Generation Rates

Final Technical Report

Prepared for:

Bay Area Stormwater Management Agencies Association (BASMAA)

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June 20, 2014

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LIST OF ABBREVIATIONS

ABAG	Association of Bay Area Governments
AP	Accumulation Period
BASMAA	Bay Area Stormwater Management Agencies Association
BMP	Best Management Practice
CRV	California Redemption Value
gal	Gallon
GIS	Geographic Information System
mm	millimeter
MRP	San Francisco Bay Area Municipal Regional Stormwater NPDES Permit
MS4s	Municipal Separate Storm Sewer Systems
NPDES	National Pollutant Discharge Elimination System
NWS	National Weather Service
RPD	Relative Percent Difference
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
yr	Year

EXECUTIVE SUMMARY

San Francisco Bay urban creeks and shorelines are impacted by trash/litter that is transported by stormwater and wind from urbanized areas or directly dumped into these water bodies. Trash provisions in the Municipal Regional Stormwater NPDES Permit for the San Francisco Bay Area require municipalities to reduce trash from their stormwater discharges to a point of "no adverse impacts" to water bodies by 2022. In 2010, Bay Area municipalities began a collaborative approach to establish stormwater trash generation rates that could serve as the baseline by which progress towards trash reduction goals could be evaluated. Based on the resources available, the trash generation project was intended to develop first-order estimates of trash generation in Bay Area urban areas.

As a first step, the Bay Area Stormwater Management Agencies Association (BASMAA) conducted a literature review of previous trash generation studies and developed a simple conceptual model of trash generation and loading. A project-specific sampling and analysis plan was then developed. The plan describes the monitoring and characterization methodology, which was designed to test the conceptual model and the importance of a number of factors that may influence trash generation. The methods employed incorporated lessons learned from trash generation studies conducted in urbanized areas in the U.S. and worldwide. Trash data collected during a large study conducted in the Los Angeles region was analyzed as part of the Bay Area project and the results indicated that no relationship between trash generation in that region (as measured by the amount of trash in "full capture" storm drain inlet devices) and the amount, intensity or duration of rainfall was apparent. Correlations between rainfall and trash generation were neither strong ($r>0.8$) nor significant ($p<0.05$). Trash transport processes other than stormwater runoff, such as wind, direct dumping into inlets, or street sweepers pushing trash into inlets could have played an important role in the amount of trash measured in inlets during the study. This finding assisted BASMAA in conducting a less intensive study in the Bay Area, which reduced project costs.

Between 2010 and 2011, over 150 trash full capture devices located in Bay Area storm drain inlets were monitored for trash. Trash and debris was intercepted, collected and characterized three to four times at each inlet/site. Monitoring sites represented seven different land use classes and a range of household income levels. Trash volumes measured during the course of the study were used to calculate annual generation rates for each site. The range of generation rates for sites within the residential and retail land uses classes were then compared to over 30 factors, such as population density, income, and drainage area, that were thought to potentially influence trash generation. Significant correlations were observed between residential and retail trash generation rates and many of the influential factors evaluated. Median household income was identified as the most consistent predictor of trash generation in areas draining predominantly retail or residential land uses, and therefore was incorporated into trash generation rates for these land use categories. Best estimates for trash generation rates in the Bay Area ranged from 0.5 to 150 gallons/acre per year, depending on the land use and the median household income level. These rates were not found to be significantly different than those recently developed for the Los Angeles region.

To develop an initial preliminary estimate of the total amount of trash generated in each Bay Area municipality, trash generation rates were then applied to land areas via GIS. Land areas were then grouped into four categories (very high, high, moderate and low) based on generation rate, and assigned corresponding colors that were subsequently illustrated on trash generation maps. Maps and generation rate categories were then reviewed and refined by municipalities to ensure that modeled trash generation rates were correctly assigned to parcels or groups of parcels. Where appropriate, municipalities refined the generation rate categories based on their current

knowledge of trash generation and problem areas within their jurisdictional boundaries and on-land visual assessments. The resulting maps and associated trash generation formed the best baseline estimate of trash generated in the urban portions of the Bay Area and, unless intercepted, available for transport to receiving waters via stormwater conveyances.

1.0 INTRODUCTION

Trash (i.e., litter, floatables, marine debris, gross pollutants, or municipal solid waste) has become an increasingly serious waste management and environmental problem in urbanized areas in the United States and around the world (Laist 1987; Bjorndal et al. 1994; Laist and Liffmann 2000; Islam and Tanaka 2004; Sheavly and Register 2007; Moore 2008; von Saal et al. 2008). As illustrated in Figure 1.1, in 2012 over 250 million tons of trash was generated in the U.S. (USEPA 2014). An estimated 3.5 million tons of trash are annually generated in the San Francisco Bay Area (Bay Area). Urban trash includes food and beverage containers (e.g., plastic bags and bottles) and packaging, cigarette butts, food waste, construction and landscaping materials, furniture, electronics, tires, and hazardous materials (e.g., paint and batteries). Successful municipal recycling and composting programs have recently decreased the per capita generation rate, however each person in the U.S. still generates more than 4 pounds of trash each day.

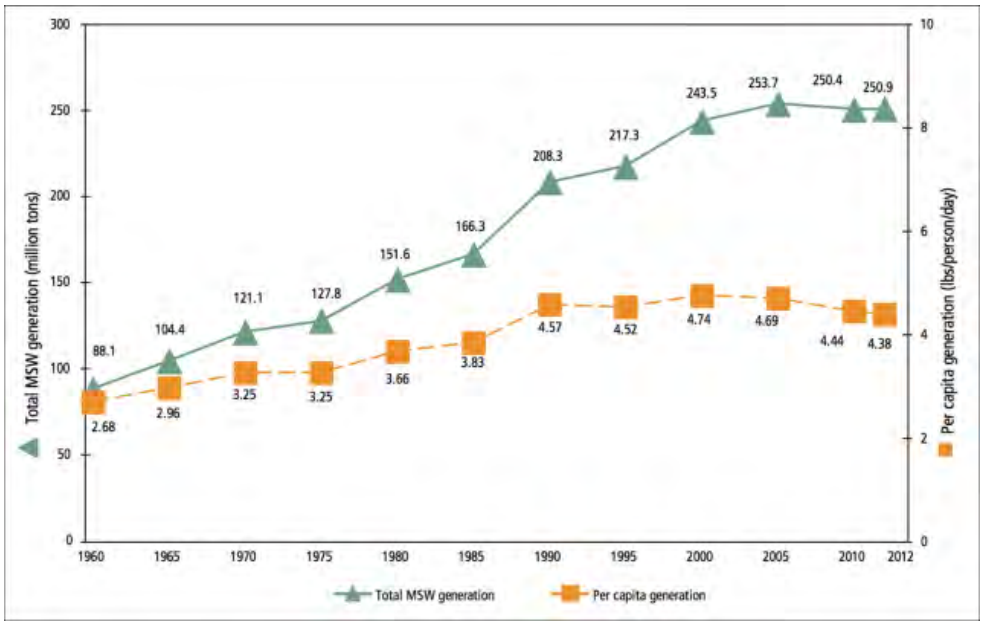

Figure 1.1.. Municipal solid waste generation in the U.S. between 1960 and 2012 (USEPA 2013).

The vast majority of trash generated in the U.S. is collected, transported and disposed of properly through solid waste management processes and facilities. A portion of the trash generated, however, ends up on the urban landscape and makes its way to local creeks, rivers, lakes, bays and estuaries, and is eventually transported to the Pacific or Atlantic Oceans. While in these water bodies trash can adversely affect humans, fish, and wildlife (Bjorndal et al. 1994; Islam and Tanaka 2004; Moore 2008; von Saal et al. 2008). Diapers, medical waste (e.g., used hypodermic needles and pipettes), and human or pet waste discarded in water bodies can threaten the health of people who use them for recreation, while broken glass or sharp metal fragments in streams can cause puncture or laceration injuries. Additionally, floatable trash can inhibit the growth of aquatic vegetation, decreasing spawning areas and habitats for fish and other living organisms, and can harbor organic contaminants that can enter the aquatic food web via ingestion by fish and wildlife (Bjorndal et al. 1994; Boergera 2010). Wildlife living in creeks, rivers and riparian areas can also be injured or killed by ingesting or becoming entangled in floating trash (Laist and Liffmann 2000). Floating debris that is not trapped or removed in urban water bodies will eventually end up on the beaches or in the open ocean, spoiling shoreline areas and degrading coastal waters where marine

mammals, turtles, birds, fish, and crustaceans can be affected by entanglement or ingestion (Bjorndal et al. 1994; Boergera 2010).

In response to concerns about urban trash impacts on receiving water bodies in the Bay Area, the San Francisco Bay Regional Water Quality Control Board (Water Board) listed a number of urban creeks and shorelines as impaired consistent with Section 303(d) of the Federal Clean Water Act. Subsequently, trash reduction requirements were included in the Municipal Regional Stormwater NPDES Permit for Phase I communities in the Bay Area (Order R2-2009-0074), also known as the Municipal Regional Permit (MRP). These provisions require Bay Area municipalities to reduce trash from their Municipal Separate Storm Sewer Systems (MS4s) by 40 percent before July 1, 2014, 70 percent by 2017, and to a point of "no adverse impacts" to water bodies by 2022 (SFBRWQCB 2009). To establish a baseline, each municipality was also required to develop an estimate of the amount of trash discharged from its stormwater conveyance system circa 2011.

Figure 1.2. Storm drain inlet in San Francisco Bay Area and trash accumulation in Coyote Creek (San Jose) in 2008.

This report[1] describes the methodology used to develop stormwater trash generation rates and the final results of the BASMAA *Baseline Trash Generation Rates Project*, which provides information to assist Bay Area municipalities to identify high trash generating areas and estimate baseline trash loads from their municipal stormwater conveyance systems. The method utilized was intended to be cost-effective and regionally consistent, but provide an adequate level of confidence in trash generation estimates, while acknowledging that the variability in trash generation rates is somewhat inherent to this material.

The collaborative project was managed through the Bay Area Stormwater Management Agencies Association[2] (BASMAA), with oversight from BASMAA's Trash Committee and Board of Directors. The project included participation from city and county representatives, and staff from the Water

[1] This report is intended to supersede the information contained within the *Preliminary Trash Baseline Generation Rates for San Francisco Bay Area MS4s - Technical Memorandum* submitted to the Water Board on February 1, 2012 (BASMAA 2012).

[2] The Bay Area Stormwater Management Agencies Association is a 501(c)(3) non-profit organization comprised of the municipal stormwater programs in the San Francisco Bay Area. The BASMAA programs supporting implementation of the Municipal Regional Stormwater NPDES Permit No. CAS612008 (MRP) include all 76 identified MRP municipalities and special districts, the Alameda Countywide Clean Water Program (ACCWP), Contra Costa Clean Water Program (CCCWP), the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), the Fairfield-Suisun Urban Runoff Management Program (FSURMP), the City of Vallejo and the Vallejo Sanitation and Flood Control District (VSFCD).

Board and non-governmental organizations. The project was managed by EOA, Inc. with assistance from Cascadia Consulting Group. The project included the following tasks:

1. Conduct review of the worldwide literature on trash/litter studies;
2. Develop a conceptual model that depicts the current understanding of factors that influence the amounts of trash in stormwater conveyances;
3. Develop and implement a cost-effective optimized sampling and analysis plan that provides data of known quality that can be used to establish trash generation rates for all applicable Bay Area municipalities;
4. Test the conceptual model through statistical evaluations of the data collected to determine the most influential factors affecting trash generation;
5. Develop a set of trash generation rates based on statistical evaluations that to the extent possible explain the variability in trash generation; and,
6. Provide tools and guidance to Bay Area municipalities that allow the effective application of trash generation rates towards developing estimates of trash generated in their jurisdictional areas and identifying high priority trash problem areas.

1.1 Trash Sources, Pathways and Influencing Factors

1.1.1 Defining Urban Trash

The Bay Area is known as one of the epicenters of the environmental movement in the U.S and the world. With regards to municipal stormwater, the first National Pollutant Discharge Elimination System (NPDES) permit in the nation was issued to Bay Area municipalities in the early 1990's. These permits generally focused on implementing control measures (also known as Best Management Practices or BMPs) associated with all types of stormwater pollutants and did not require management actions directed at specific pollutants of concern (e.g., urban trash).

Despite the implementation of stringent municipal stormwater control and solid waste management programs, trash continues to reach receiving waters through stormwater conveyance systems and other pathways. The expanding population and consumer culture has likely exacerbated this issue by continuing to create a massive demand for non-durable or disposable products, most of which are smaller in size, relatively light weight, not recyclable, and can easily find their way into water bodies.[3] Based on previous studies carried out in the U.S. and around the world, products and packaging made of plastic frequently comprise the majority of trash found in creeks, rivers and lakes, beaches and oceans (Redford et al. 1992; Cornelius et al. 1994; Allison and Chiew 1995; Armitage and Rooseboom 2000; Marais and Armitage 2003; Ocean Conservancy 2013). These products include single-use bags, packaging and films, containers, bottles, and polystyrene products/packaging. Products made of paper, metal, glass and other materials are typically observed less frequently, with the exception of cigarettes which generally are the most frequently observed item (by count) in most cleanup or assessment events.

Previous studies have developed varying definitions of "urban trash" or litter, but generally agree that vegetative debris, street dirt, sand, and sediment are not defined as trash. For the purposes of

[3] 9% of the total plastic waste generated in 2012 was recovered for recycling (USEPA 2014)

this study, urban trash is defined as all human-made materials, excluding sediments, sand, vegetation, oil and grease, and exotic species that cannot pass through a 5 millimeter (mm) mesh screen.

1.1.2 Trash Sources and Pathways

Once it enters the urban landscape, trash can be transported to water bodies via stormwater conveyances and wind. Trash can also directly enter water bodies via illegal dumping. Sources of urban trash fall into four distinct categories: pedestrian litter, vehicles, inadequate waste container management, and illegal dumping. These source categories and the transport pathways through which trash reaches receiving waters is depicted in Figure 1.3. Although studies in other parts of California (Los Angeles County 2004a,b; Kim et al. 2004) and the U.S. and the world (Allison et al. 1998a; Armitage and Rooseboom 2000; Armitage 2007; Cornelius et al. 1994; Marais et al. 2004) have attempted to quantify the contributions of urban trash from various transport pathways, prior to this study there has been little effort to do so in the Bay Area. This study is therefore the first attempt to develop estimates of the amount of trash generated in the urban Bay Area and available for transport to water bodies via stormwater conveyance systems. Bay Area trash generation rates developed through this project are intended to serve as first-order estimates and assist Bay Area municipalities in identifying urban areas that likely generate high levels of trash.

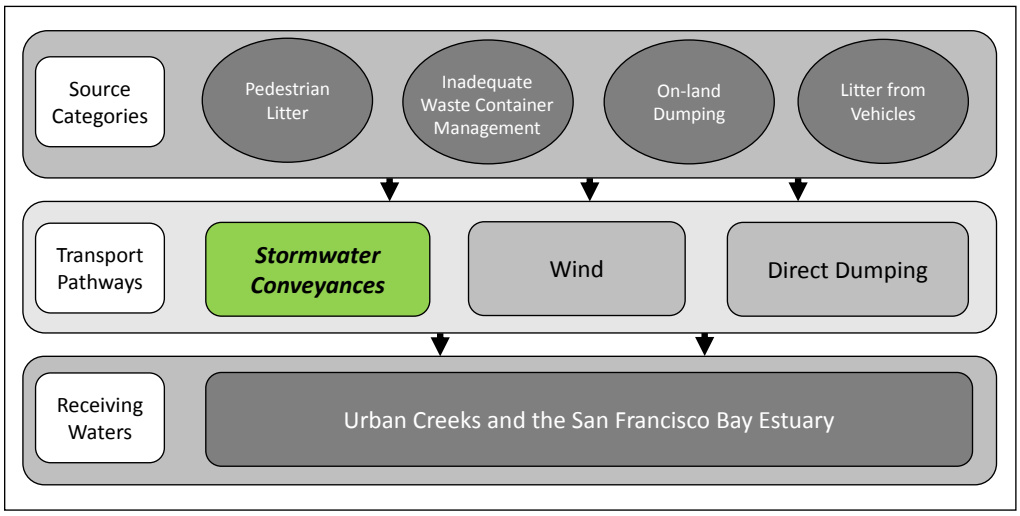

Figure 1.3. Potential trash sources and transport pathways, including stormwater conveyances, to urban creeks and shorelines.

1.1.3 Factors Potentially Influencing Trash in Stormwater Conveyances

Previous studies have concluded the rate at which trash is deposited on the landscape and transported to water bodies via stormwater, as well as the composition of trash is highly variable and likely depends on a large number of factors (Armitage and Rooseboom 2000; Los Angeles County 2004a,b). Based on previous research (see BASMAA 2011a), variables that may govern the amount of trash in stormwater include:

- **Type of Land Use and Businesses** – previous studies have shown that retail/commercial and industrial areas generally produce higher trash loading rates than residential areas.
- **Population Density**– higher densities of people living in areas generally implies greater human activity and therefore higher trash loading rates.

- **Income Level of the Community** – based on the results of previous studies, it is hypothesized that lower income areas are more likely to have higher levels of trash deposited onto the landscape and available for transport to urban receiving waters, compared to areas with higher incomes.
- **Rainfall/Runoff Patterns** – Litter will accumulate on the landscape until it is either cleaned up, intercepted via street sweepers or other maintenance activities, or transported to conveyances via stormwater runoff. Long dry spells give greater opportunity for management actions to take place, but also greater opportunity for trash to accumulate and be swept down the stormwater conveyance system via runoff.
- **Street Sweeping Effectiveness** – Street sweeping is performed at varying frequencies and efficiencies in Bay Area municipalities. Based on the literature, the more frequent sweeping is conducted, and the greater the ability to reach the curb where litter accumulates, the greater the likelihood of intercepting trash that accumulates on the street surface prior to it entering storm drains.
- **Level of Vehicular Traffic –**litter from vehicles and uncovered loads disperse trash onto the watershed landscape. Therefore, it is hypothesized that the greater the number of vehicles that travel through a community, the higher the trash loading rates.
- **Level of Environmental Concern in the Community –** communities with a greater percentage of individuals with more established environmental ethics, for example a willingness to recycle, compost and minimize waste, will likely have less trash accumulate on the landscape.

1.2. Lessons Learned from the Los Angeles Region

Prior to the listing of Bay Area water bodies as impaired by trash, the Los Angeles Regional Water Quality Control Board identified the Los Angeles River, Ballona Creek and other water bodies as impaired by this pollutant. These listings in the LA region spawned baseline trash generation monitoring in the Los Angeles River and Ballona Creek watersheds to determine the amount of trash discharged from stormwater conveyance systems to these water bodies. Trash monitoring was conducted by the County of Los Angeles between 2002 and 2004. Data generated through this project were used to develop trash generation rates incorporated into the Total Maximum Daily Load (TMDL) for each of these two water bodies.

In total, the County of Los Angeles selected and monitored trash generation in 175 sites. Each site was comprised of 2 to 5 storm drain inlets (590 in total) equipped with full capture devices. Each site was also identified as draining one of five land use classes (commercial, industrial, high density single family residential, low density single family residential, and open space/urban parks). County staff identified the drainage area for each storm drain inlet included in the study. Trash intercepted by full capture devices during consecutive wet or dry weather events[4] was removed, dried, and weighed. Volume was also measured, but only during the second year of sampling (storm events 10-17 and dry events 2-3). The weight or volume of all trash removed from inlets within the same land use class was then summed and divided by the total number of days trash accumulated at the sites. The results were daily trash generation rates (gal or lbs/acre) for each land use class.

[4] Ballona Creek = 15 wet and 3 dry weather events; Los Angeles River = 17 wet and 3 dry weather events.

In an effort to evaluate lessons learned in the Los Angeles region, trash data were obtained from the County of Los Angeles and reviewed prior to the development of the conceptual model of trash generation and loading described in the next section. Because the data from the Los Angeles region were collected using methods similar to those proposed for the Bay Area study, the data were evaluated to inform Bay Area sampling design. Specifically, data collected in the Los Angeles region were evaluated for variance in trash generation rates within each land use class, and the effects of antecedent dry weather and accumulation periods on trash generation. Because the effects of rainfall volumes and intensities for each storm and site combination were not evaluated in Los Angeles project reports (Los Angeles County 2004a,b), BASMAA was interested in identifying whether storm size and intensity affected trash generation in the Los Angeles study and should therefore be considered in the Bay Area sampling design.

To evaluate the effects of rainfall and other potentially influential factors (see Table 2.4) on trash generation, BASMAA acquired rainfall volumes and intensities from local rainfall gages in closest proximity to each site monitored in the Los Angeles region. Pearson correlation coefficients were then calculated for trash generation rates in combination with each of these factors. The following findings were developed based on the evaluation of Los Angeles regional trash generation data presented in Los Angeles County (2004a,b):

- Monitoring and trash characterization methodologies utilized during the project were not well documented in the project plans or reports. The quality of the data reviewed is therefore unknown. Inconsistencies in methods could have led to unexplainable data and reduced the ability to observe relationships between trash generation and other factors (e.g., rainfall).
- The project yielded average (mean) trash generation rates for five land use classes listed in Table 1.1.
- Generation rates for the Los Angeles region did not explicitly consider the effects that existing control measure implementation or other factors (e.g., income, population density, proximity to retail land uses) may have had on these rates. Specifically, although the level of street sweeping differed among the sites, differences in levels of trash intercepted as a result of this control measure were not accounted for in the trash generation rates established. The effects of street sweeping could not be evaluated by BASMAA due to the lack of readily available information on street sweeping programs in the Los Angeles region.
- Based on the correlation analysis conducted by BASMAA, neither strong ($r>0.7$) nor significant ($p<0.05$) relationships were observed between trash generation and factors such as hydrology, household income, property value, population density, level of education and other demographics.
- Limited analyses and interpretation of the trash data were conducted by the County of Los Angeles. Specifically, variability in generation rates over time as a function of the intensity and duration of storm events were not fully evaluated. To analyze the data further and assess relationships between rainfall and trash generation, BASMAA compiled rainfall data associated with each site and event.

  Based on the BASMAA's analysis, daily trash generation rates (lbs/acre) were shown to have varied significantly during over the course of the Los Angeles region project. Figures 1.4 (A) and (B) illustrate the daily trash generation rates for Ballona Creek and the Los Angeles River sites, respectively, in comparison to rainfall volume for each event monitored. Generation rates (volume) for all wet and dry weather events in both watersheds are listed in Table 1.2. Based on comparisons between rainfall and trash generation, the amount of

trash observed at sites in the Los Angeles region appears to be unrelated to the amount, intensity and duration of rainfall at a site. Correlations between rainfall and trash generation were neither strong (i.e., r >0.7) nor significant (i.e., p<0.05). Trash transport processes other than stormwater runoff, such as wind, direct dumping into inlets, or street sweepers pushing trash into inlets could have played an important role in the amount of trash measured in inlets during the study.

Table 1.1. Los Angeles region trash generation rates in volume and weight by land use class.

Land Use	Annual Trash Generation Rates	
	Volume (gal/acre)	Weight (lbs/acre)
Commercial	14.77	22.12
High Density Single Family Residential	5.57	10.82
Industrial	15.33	21.58
Low Density Single Family Residential	3.03	9.47
Open Space/Parks	5.81	16.58

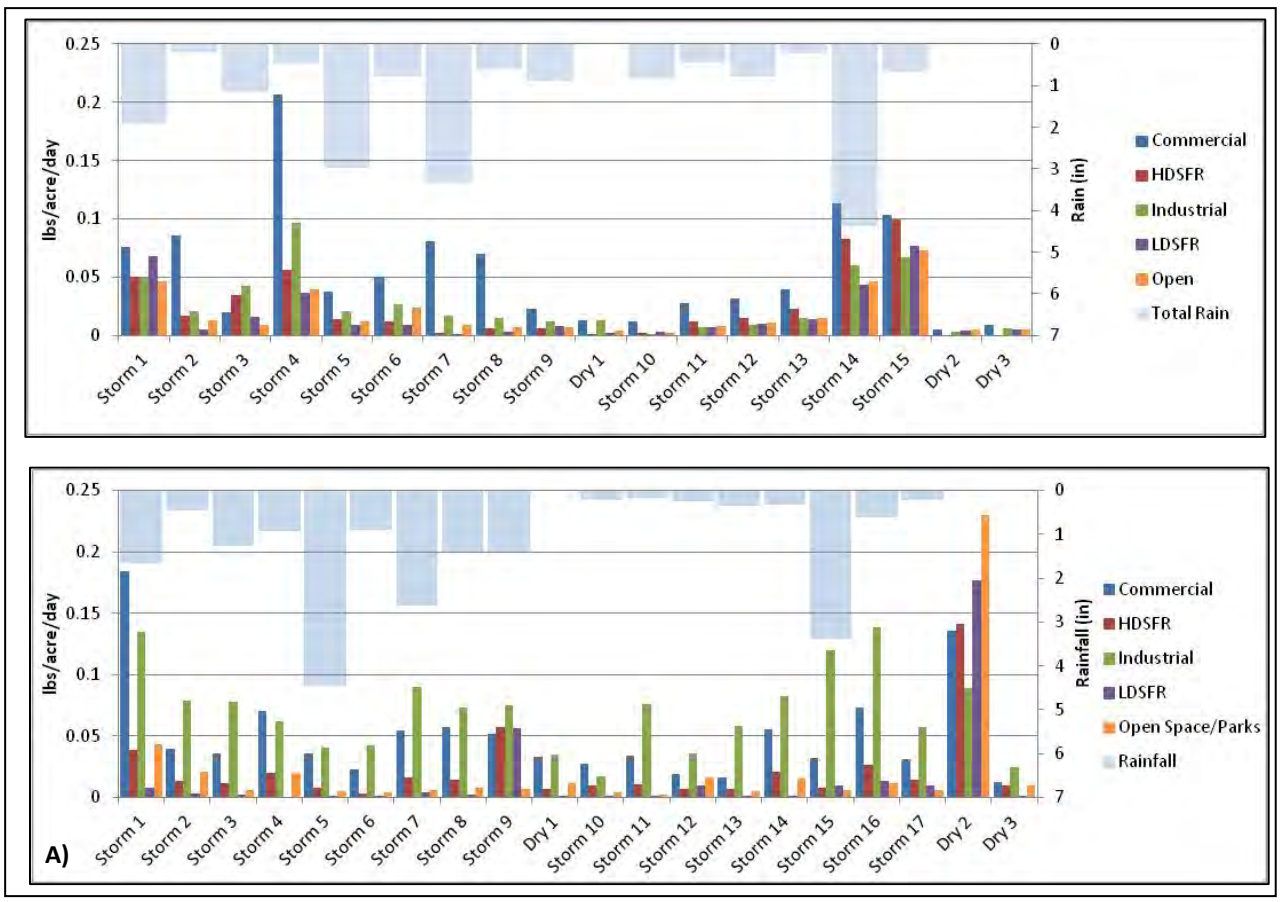

Figure 1.4. Daily trash generation rates by land use for dry and wet weather (storm) monitoring events in the Ballona Creek (A) and Los Angeles River (B) watersheds.

Table 1.2. Daily trash generation rates (gal/acre) for wet and dry weather in the Los Angeles region.

Weather	Min	25%	Median	Mean	75%	Max	Std Dev
Wet (Storm Events)	0	0.007	0.012	**0.020**	0.024	0.169	0.023
Dry (Dry Weather)	0.003	0.006	0.009	**0.023**	0.006	0.173	0.026

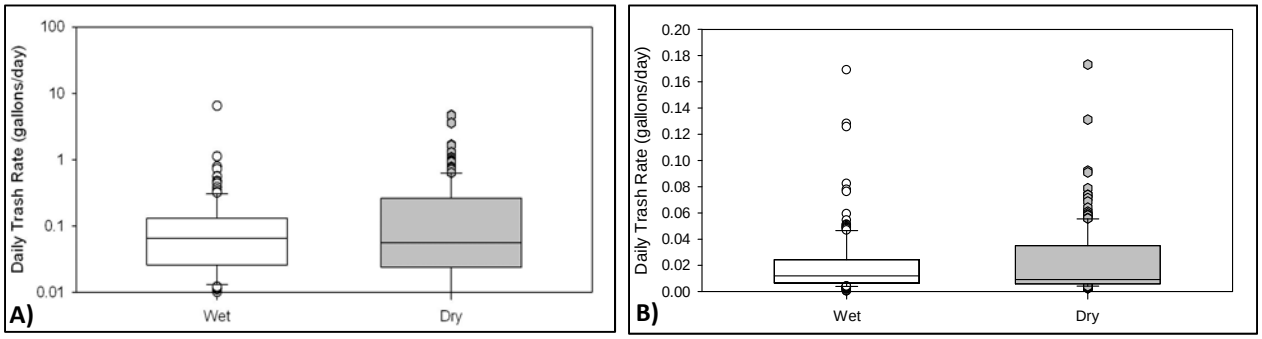

Figure 1.5. Ranges of daily trash generation rates among dry and wet weather monitoring events. Generation rates by weight (A) and volume (B). Note: volume was only recorded during the second year of the study.

1.3 Conceptual Model of Trash Generation and Loading

Based on the results of the literature review conducted by BASMAA (2011a) and the evaluation of Los Angeles region trash data, a conceptual model of trash generation and loading to stormwater conveyance systems was developed by BASMAA (Figure 1.5). The conceptual model identifies factors, both anthropogenic and natural, that through previous studies have been shown to influence the trash generation and loading from stormwater conveyances to receiving waters. This conceptual model served as the foundation for testing assumptions, assessing the importance of such factors, and developing trash generation rates presented in this report. The conceptual model assumes that the amount of trash discharged from stormwater conveyances (i.e. MS4 Trash Load) is primarily governed by the level of:

- **Trash Generation** - the amount of trash that is generated (i.e., deposited onto the urban landscape) in a specific geographical area; and,
- **Trash Interception** – the percentage of trash generated in an area that is intercepted through control measures (e.g., street sweeping) prior to being discharged via municipal stormwater conveyance systems.

The model is intended to be testable through the evaluation of data collected through the Bay Area trash generation project. As additional information on trash generation, control measure performance, and trash loading from stormwater is collected, the conceptual model may be revised.

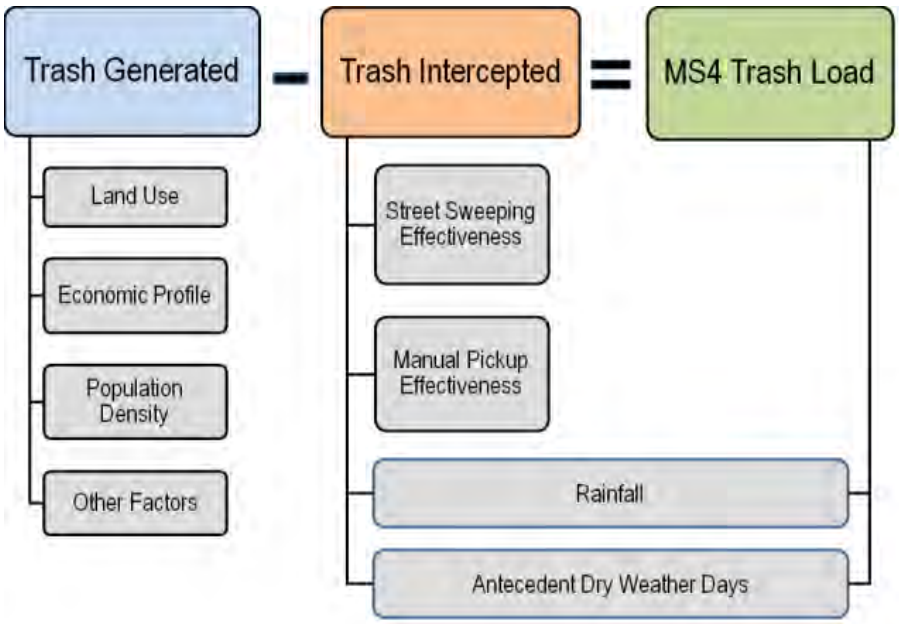

Figure 1.5. Conceptual model of trash generation and loading from Bay Area Stormwater Conveyances (i.e., MS4s).

2.0 MONITORING DESIGN AND METHODS

Site selection and monitoring procedures employed by BASMAA during the *Bay Area Trash Generation Rates Project* are fully described in the project's Sampling and Analysis Plan (BASMAA 2011b). These methods were developed based on an extensive review of national and international literature (BASMAA 2011a) and were used to provide reasonable first-order estimates of trash generation in the urban portions of the Bay Area available for transport to Bay Area water bodies via stormwater conveyance systems. The project was designed in 2010 and conducted between early 2011 and early 2012. The project's monitoring schedule was constrained to roughly one year due to the need to meet regulatory deadlines described in the MRP (SFBRWQCB 2009).

2.1 Monitoring Site Selection

Project resources were available to monitor and characterize trash and debris collected from roughly 160 sites. Ideal site characteristics were identified *apriori* based on the findings from a number of recent similar studies, which determined that household income and land use are likely important factors that could affect the rate at which trash is generated (Los Angeles County 2002, 2004a,b; Armitage et al. 1998; Marais et al. 2004). Monitoring site categories (i.e., strata) were developed to test the relative importance of these and other characteristics that may influence trash generation (Table 2.1) and assist municipalities in differentiating high, moderate and low trash generating areas.

Table 2.1. Land use and household median income categories used to form monitoring strata.

Monitoring Category	Category Description	Urban Area Associated with MRP	
		Acres	%
Land Use			
Residential	Residential areas with high, medium or low densities. Includes both single and multi-family residences.	342,356	63%
Retail and Wholesale	Retail and wholesale businesses (may include post offices and hotels).	21,249	4%
Commercial, Services and Offices	Combines 30 ABAG land use categories that include local government, education, research centers, offices, churches, and hospitals	36,256	7%
Industrial	Light, heavy and unspecified industrial land uses, including facilities devoted to warehousing, food processing, heavy fabrication, making and assembling parts, processing of basic raw materials.	45,988	8%
Urban Parks	All leisure, ornamental, zoological and botanical parks. Cemeteries, golf courses, and regional parks are not included in this land use.	14,350	3%
K-12 Schools	Public and private elementary, middle and high schools.	18,413	3%
Other	All land use categories not included above, including open space, universities, transportation facilities (e.g., freeways), and open space.	65,603	12%
Household Median Income (2010 Census)			
Higher Income	Annual household median income of greater than $100,000	239,187	44%
Moderate Income	Annual household median income between $50,000 and $100,000	245,171	45%
Lower Income	Annual household median income less than $50,000	59,857	11%

The most accurate and current land use information for the Bay Area was acquired from the Association of Bay Area Governments (ABAG). Over 100 land use classes were included in the ABAG Geographic Information System (GIS) land use data layer. To develop a more manageable number of land use strata, land use classes in the ABAG data layer were combined into seven broad land use strata: 1) residential, 2) retail and wholesale, 3) commercial, services and offices, 4) industrial (heavy and light), 5) urban parks, 6) K-12 schools, and 7) other (e.g., open space). Land use strata utilized during the study were developed in a manner that closely resembles the strata selected by the County of Los Angeles for its Trash Baseline Monitoring Study conducted in the Los Angeles River and Ballona Creek watersheds, and subsequently used for TMDL development.[5]

The most readily available (2010) U.S. Census data were used to identify median household incomes for census block groups within the Bay Area (US Census Bureau 2011). Data were compiled into three categories based on household median income brackets: 1) greater than $100,000, 2) $50,000 to $100,000, and 3) less than $50,000.

In order to adequately test the conceptual model presented in section 1.3, monitoring site selection was constrained to sites depictive of areas with single land use and income characteristics. Additionally, the study strived to capture trash generated from these land use/income areas with a high level of efficiency. Similar to the Los Angeles study (Los Angeles County 2002), full capture devices recognized by the Water Board[6] were selected as monitoring sites because they have the most well-documented capture efficiencies compared to other trash control measures (e.g., street sweeping). Full capture devices include both large and small devices that intercept trash from relatively large (>20 acres) or relatively small (<5 acres) drainage areas. Although municipalities had installed both large and small devices, small full capture devices were selected as monitoring points for the study because their drainage areas are typically depictive of a single land use/income stratum, which allowed for more robust testing for importance of potential factors affecting trash generation.

Each monitoring site selected was comprised of a single storm drain inlet, equipped with a small trash full capture device (Figure 2.1) treating a small drainage area with a relatively homogenous land use and income characteristic. Specific types and associated manufacturers of small trash capture devices utilized during the study included: Stormtek™ Catchbasin Connector Pipe Screens (Advanced Solutions, Inc.); Connector Pipe Screens (West Coast Storm, Inc.); and Triton Bioflex Drop Inlet Trash Guard (Revel Environmental Manufacturing, Inc.).

The number of monitoring sites selected to represent each land use/income stratum was constrained by project resources, but the distribution of sites was informed by the relative variance in trash generation rates observed during trash loading studies in the Los Angeles region (Los Angeles County 2002, 2004a,b). Los Angeles monitoring data showed the highest variance in trash generation within the retail land use stratum, and therefore the highest percentage of monitoring sites (38%) in the Bay area study were dedicated to represent this land use category. The number of sites selected to represent other land use/income strata were based on available project resources in addition to the variance observed in Los Angeles data, as applicable.[7]

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[5] Some land uses included in the Bay Area study had a higher resolution (e.g., retail/wholesale and industrial) compared to studies conducted in the Los Angeles region.

[6] A device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design capacity of not less than the peak flow rate resulting from a one-year, one-hour, storm in the sub-drainage area.

[7] Household median income was not considered in the County of Los Angeles study.

Figure 2.1. Example storm drain inlet screen utilized as a monitoring site.

A total of 159 monitoring sites (Figure 2.2) were selected from the pool of roughly 600 sites equipped with small trash full capture devices at the time the study commenced. Sites were located in four Bay Area counties (Alameda, Contra Costa, San Mateo, and Santa Clara), representing the seven land use classes and three income categories (Table 2.2). Land use and income characteristics of each of the 600 plus potential sites were determined by calculating the dominant land use class and spatially-weighted average household median income within a 2 and 5-acre buffer around each site. Potential sites were screened by determining whether a single land use comprised greater than 70% within both 2 and 5 acre buffered areas around the site. Sites that met these criteria were further considered and land uses for each site were further evaluated via field visits and/or Google Street View to confirm land use designations. The remaining sites were further screened in consideration of the following additional requirements for inclusion in the study:

- A correctly installed and operational full-capture device (as defined by the MRP) within the municipally owned stormwater conveyance system;
- Known installation and past maintenance dates;
- Willingness of the municipality to clean out and transport material from the site to a central characterization location in a timeframe indicated by the Project Manager; and
- Limited to no contribution of trash to the site originating from areas outside of a municipality's jurisdiction (e.g., no trash from State or Federally owned freeways or highways).

Final site selection was based on the intent to achieve project goals identified in the project Sampling and Analysis Plan (BASMAA 2011b) and the desire to spatially balance sites throughout the Bay Area. The 159 monitoring sites (see Appendix A) that resulted from the site selection process described above were selected for inclusion in the project to allow BASMAA and MRP Permittees to:

- Gain a better understanding of the degree to which land use, population density, incomes level, and other factors influence trash generation;
- Provide a starting point for identifying the ranges of trash generation in Permittee jurisdictional areas, including high trash generating areas that should be considered for enhanced/new trash control measure implementation; and,

- Establish a relatively accurate estimate of the ranges and average amounts of trash per unit area that are generated on an annual basis in the Bay Area and potentially available for interception by stormwater control measures or transport to stormwater conveyances.

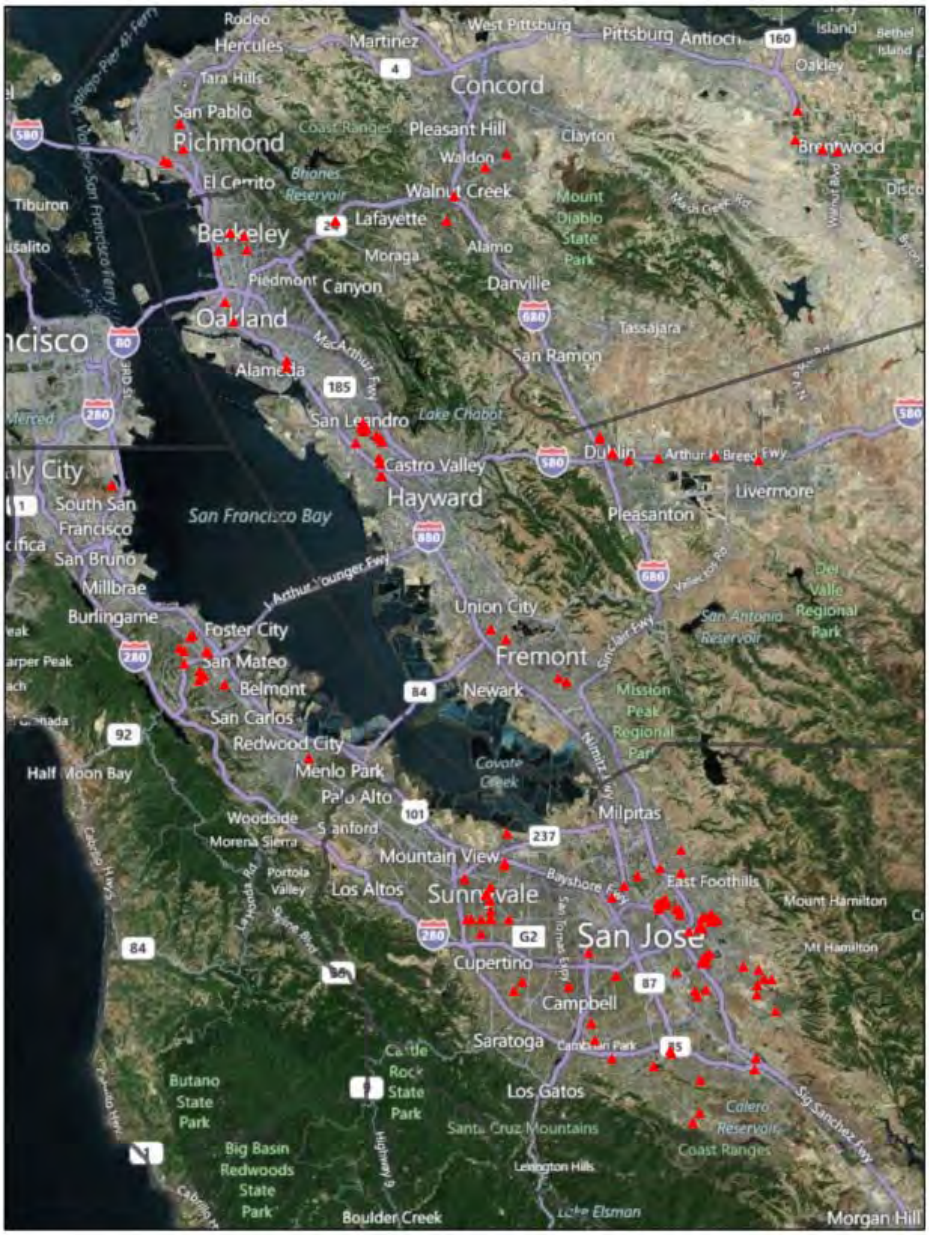

Figure 2.2. Monitoring sites included in the San Francisco Bay Area Trash Generation Rates Project.

Table 2.2. Numbers of sites in each land use and household median income monitoring stratum.

Land Use	Median Household Income		
	Low (<$50K)	**Medium** ($50-100K)	**High** (>$100K)
Residential	10	27	12
Commercial, Services and Offices	3	12	4
Retail and Wholesale	30	28	4
Industrial	13		
Urban Parks	3		
K-12 Schools	10		
Expressways	3		
Total # of Sites	**159**		

2.2 Sampling and Characterization Methodology

2.2.1 Sampling Procedure

During each sampling event, all trash and debris (e.g., sediment, vegetation, rocks, bugs, etc.) were removed and placed in large, plastic garbage bags and transported to the central site located at the City of San Jose's Mabury Corporation Yard. Participating municipalities were responsible for cleaning of inlets and transporting all material to the centralized location where the material was characterized. Standard operating procedures for removing material from each device, containing the material removed, and recording site/field information and chain-of-custody were developed by BASMAA (2011b) as part of the study and utilized by municipal staff and contractors. Exact cleanout dates and any issues associated with the devices (e.g., damaged screens, observations of flows bypassing devices) were recorded by municipal staff or third party contractors responsible for cleaning of the devices. To ensure monitoring occurred during similar timeframes, the Project Manager scheduled cleanout events for all sites during the same week.

2.2.2 Characterization Procedure

Trash Classification System

Once the material cleaned from monitoring sites was received at the centralized characterization location, trash was separated from other debris using standard operating procedures developed by BASMAA (2011b). A third party contractor, Cascadia Consulting Group, was employed to conduct all trash characterization activities. Cascadia staff characterized all trash using the trash classification system presented in Table 2.3.

Table 2.3. Trash characterization classification system utilized during the study.

Main Categories	Subcategories	Description and Examples
Plastic	Recyclable beverage containers	Recyclable beverage containers labeled with a California Redemption Value (CRV). Includes all plastic and glass redeemable water, soda and juice bottles.
	Single-use plastic grocery bags	Includes all single use plastic bags that have handles and are typically distributed at point-of-sale. Single use plastic bags used to distribute or hold produce, newspapers, sandwiches and parking tickets were not included in this category.
	Polystyrene foam food ware	Expanded polystyrene foam food and beverage ware includes all disposable containers, bowls, plates, trays, cartons, cups, and other items made of expanded polystyrene designated for one-time use for prepared foods. Food and beverage ware includes service ware distributed for takeout foods and leftovers from partially consumed meals prepared by food providers.
	Other plastic materials/items	Includes all other trash items made of any form of plastic, including but not limited to food and candy packaging, straws, lids, and bottle tops. Includes hard plastic and plastic film.
Paper	NA	Any item made of paper, including but not limited to newspaper, magazines, and receipts.
Metal	NA	Any item or fragments of items made of metal.
Miscellaneous Trash	NA	Any other item or fragment of an item that does not fit into one of the 4 main trash categories listed above. Includes but is not limited to, cigarette butts, and items made of rubber, fabric or other hybrid materials.
Debris	NA	All material not characterized as trash. Includes sand, sediment and vegetation.

Trash Measurement

Trash and debris removed from each storm drain inlet during each sampling event was sorted based on the project's trash classification system and placed into containers between 32 ounces and 5 gallons in size (depending on the volume of the material). For each type of category of trash and debris, material was weighed and volumes were recorded consistent with SOPs standardized field data sheets developed by BASMAA (2011b) as part of the study. All item identified as recyclable beverage containers, single-use plastic grocery bags, or polystyrene foam food ware were also counted and recorded. Measurements procedures generally included the following steps:

- **Volume**: Using the appropriate size containers, measure and record the total uncompacted volume of each of the seven trash categories and debris for each site. When a bucket of trash or debris is partially full, use a tape measure, ruler or yardstick to estimate its total volume. The lowest reporting limit for total volume determination for trash or debris is 0.031 gallons for samples less than 4 ounces but greater than zero. Sites that do not contain one or more trash categories or debris are recorded as zero.
- **Weight**: Weigh each full and partially full container and record total weight (bucket and trash/debris) for each. Weigh each empty bucket used to contain trash or debris for a specific site and subtract the bucket weight from the total weight. Weight should be reported in increments of 0.01 pound (e.g., 1.03, 8.33).
- **Item Count**: Count the number of recyclable beverage containers, single-use plastic grocery bags, and polystyrene foam food ware items. Record all item counts.
- **Disposal**: After all measurements and records have been made for trash and debris, place all trash in disposal containers and/or bags unless instructed to save trash for future

characterization. Recycle all recyclables and place all compostable debris in compost containers.

All data recorded on field data sheets were transferred into a project database. To ensure that all data were transferred correctly, quality assurance and control checks were performed during and following data entry. Figure 2.3 illustrates the sorting and measurement procedures implemented.

Figure 2.3. Trash sorting (left) and characterization (right).

2.3 Data Analysis Methods

The following section briefly summarizes the data analysis methods used to derive trash generation rates for Bay Area municipal stormwater programs. The selection of data analysis methods was based on project goals and the availability of information needed to perform these analyses.

2.3.1 Trash and Debris Generation Rates

Generation Rates vs. Loading Rates

Prior to describing the process used to develop trash generation rates for the Bay Area, a key concept included in the conceptual model is reviewed here - the difference between trash and debris generation and loading rates. For the purposes of the study, the term **generation** is defined as the rate at which trash or debris is generated onto the urban watershed under a scenario where trash is not intercepted via stormwater control measures (e.g., street sweeping) prior to being discharged from stormwater conveyances systems to water bodies. In contrast, the term **loading** is defined as the rate at which trash is discharged from stormwater conveyances systems to water bodies after some level interception has occurred via control measures. In other words, the difference between generation and loading is interception (see Figure 1.1).

Calculation of Generation Rates

The following summarizes the data analysis process used to develop trash generation rates for each site monitored during the study. Although the study was designed to account for as many factors as possible that could affect the amount of trash observed at a site, the level of control measure implementation varied by monitoring site and may have biased the data. In particular, street sweeping frequency and the ability of a sweeper to sweep to the curb varied among sites monitored. Based on the findings of the literature review (BASMAA 2011a), it is likely that sweeping efficiencies affect the amount of trash observed in storm drain inlets (Armitage et al. 1998; Marais et al. 2004). Therefore, before comparisons of trash monitoring data between sites

were made, the effect of street sweeping at each of the monitoring sites was taken into account in calculating each site's trash generation rate.

A site-specific trash generation rate was developed for each site in the following manner:

- **Loading Rate** – For each site, the total volume of trash observed during all sampling events was divided by the sum of all accumulation periods. Trash accumulation periods for each sampling event were defined as the number of days between the previous cleanout (or installation) and the monitoring (cleanout) event. Installation and cleanout dates were provided by participating municipalities or third party contractors responsible for installation and/or cleanout of devices. The daily accumulation rate (gallons/day) was then multiplied by 365 to establish an annual trash loading rate for each site.[8] The trash loading rate was then divided by the site drainage area to establish an annual loading rate per unit area (gallons/acre) for each site. Drainage areas were delineated using a standardized method, which involved an experienced field survey staff reviewing available site drainage maps and visiting each monitoring site where hydrological drainage areas were delineated based on site topography and the flow direction of the stormwater conveyance system.
- **Street Sweeping Effectiveness (Interception)** – The effectiveness of a street sweeping program to intercept trash at a site is an important concept, but is challenging to establish and is likely to be site/event-specific. That said, street sweeping appears to be an important factor to consider when assessing trash generation and loading from an area (see BASMAA 2011a). In an effort to normalize the varying effects of street sweeping at each site, the total number of wet weather days (i.e., days with >0.2 inches of rain observed in the nearest rainfall gage) that occurred during the total accumulation period at a site was calculated and used to develop a "storm frequency" metric. Rainfall data were obtained from flood control districts in Alameda, Contra Costa and Santa Clara Counties, the National Weather Service (NWS) and regional airports. For each monitoring site, the closest proximity rainfall gage was selected. Rainfall totals for 24-hour periods and rainfall intensity[9], as well as antecedent dry weather days[10] were determined from these records for each site during each accumulation period. The storm frequency for each site was then used as an input to the very simple street sweeping effectiveness curve (Figure 2.4) along with the level of parking enforcement (i.e., ability to sweep to the curb) and street sweeping frequency present. The result is a relatively simple estimate of the street sweeping effectiveness at each monitoring site.[11]
- **Generation Rate** – An annual trash generation rate (gallons/acre) was then calculated for each monitoring site by multiplying the trash loading rate (see step #1) by the inverse of the street sweeping effectiveness metric calculated for the site.

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[8] Given that significant differences between dry and wet season generation rates were not observed in the Los Angeles region data (see Section 1.2), a single annual loading rate was developed for each site monitoring, as opposed to separate wet and dry season rates.
[9] Greatest rainfall intensity in a 24-hour period.
[10] Antecedent dry weather days are those with less than 0.2 inches of rainfall per day.
[11] For each monitoring site, street sweeping frequency and parking enforcement data were obtained through a combination of municipal staff queries, field observations and searching municipal websites. Parking enforcement, or the equivalent, was defined as the ability of a street sweeper to sweep to the curb. Streets were identified as having parking enforcement or equivalent if: 1) Posted signs restricted parking during sweeping times; 2) Parking is actively enforced by local law enforcement; 3) Sweeping occurred while cars are not parked on the street (i.e., very early morning); 4) Parking is consistently absent on both sides of the street; or, 5) Parking is available but unused due to alternate and/or preferred parking areas (e.g., driveways and garages in residential areas). The estimated effectiveness of street sweeping during the study was based on a curve adapted from Armitage (2001), which incorporates rainfall during the accumulation period at each site.

The generation rate development process is illustrated in Equation 1.

$$R = \frac{(\mathrm{V}-\mathrm{D})/\mathrm{A}}{1-\mathrm{E}} \tag{1}$$

where:

R	=	annual site-specific trash generation rate (gal/acre)
V	=	total trash volume observed during the study (gallons)
D	=	total accumulation period during the study (days)
A	=	drainage area (acres)
E	=	estimated street sweeping effectiveness at a site (fraction), as determined from Figure 3.2.

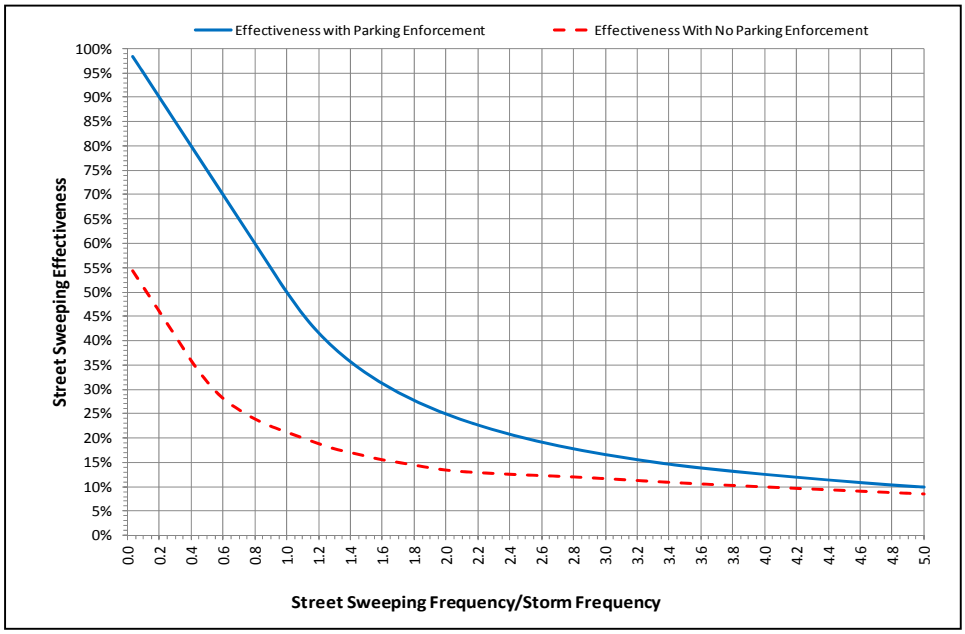

Figure 2.4. Street sweeping effectiveness curve based on level of parking enforcement and the ratio of street sweeping frequency to storm frequency (adapted from Armitage 2001).

2.3.2 Influential Factor Analyses

Based on the findings of the literature review, a number of factors other than land use can influence the rate at which trash is generated onto the urban landscape and available for transport to the stormwater conveyance system. These factors include hydrology/rainfall (Kim et al. 2004) and income/poverty levels (Marais et al. 2004). In an effort to identify one or more factors that correlate with trash generation rates, correlation analyses (e.g., single and multiple regressions) were conducted to assist municipalities in differentiating high, moderate and low trash generating areas. The potential influential factors evaluated as part of this analysis are listed in Table 2.4.

Table 2.4. Factors evaluated to assess correlations with trash generation in Los Angeles and San Francisco Bay urban areas.

Hydrology	**Population Density (5 & 15 Acre Buffers)**
Drainage Area	Density in Surrounding Area
# Wet Weather Days	Density in Surrounding Residential Area
Rainfall Intensity	**Income (5 & 15 Acre and 1-mile Buffers)**
# Antecedent Dry Weather Days	Median Household Income
Home/Household (5 & 15 Acre Buffers)	% in Poverty
Median Home Value	% 0-17 Ages In Poverty
% Of Households in Single Family Attached Homes	# in Poverty Per Acre
% Of Households in Single Family Detached Homes	**Family/Age Demographics (5 & 15 Acre Buffers)**
% Of Households In Multi-Family Buildings	% 10-29 Age Males
Median # of Rooms	% 10-29 Age Females
Median Rent	% Households That Are Families
Educational Factors (5 & 15 Acre Buffers)	% Households Not Families
% No High School Diploma	Average Household Size
% High School Diploma	Average Family Size
% Some College	**Other Factors**
% Bachelors Degree	# Lanes in Adjacent Roadway
% Advanced Degree	# Of Trash Generating Businesses Within (2 & 5 Acre Buffers)

Factors associated with home/households, education, population density, income, and family/age demographics were calculated for the land areas within 5 and 15-acre buffers around each Bay Area monitoring site. Correlations of single and multiple factors and trash generation rates were evaluated at both spatial scales. Information on home/household, educational, population density, income and family/age demographic factors was derived via U.S. Census Bureau's 2006-2010 census block group GIS data layers (US Census Bureau 2011), the highest resolution data available. Figure 3.2 illustrates the census block group level of the Census data that was used in the analysis. When a buffer around each site fell on top of a single census block group, the buffer was assigned the statistic associated with that factor. When a buffer fell on top of multiple census block groups, the statistic for that influential factor was weighted based on the proportion of the buffered area that was in each census block group.

The number of lanes in the roadways adjacent to each site was documented based on a combination of field visits and examinations via Google Earth.™ Although desirable, no readily available data sources regarding vehicular traffic were available during the project. The number of trash generating businesses (i.e., fast food restaurants, cafes, convenience stores) and bus stops were also identified for the surrounding area of each site using the latest version of Google Earth.™

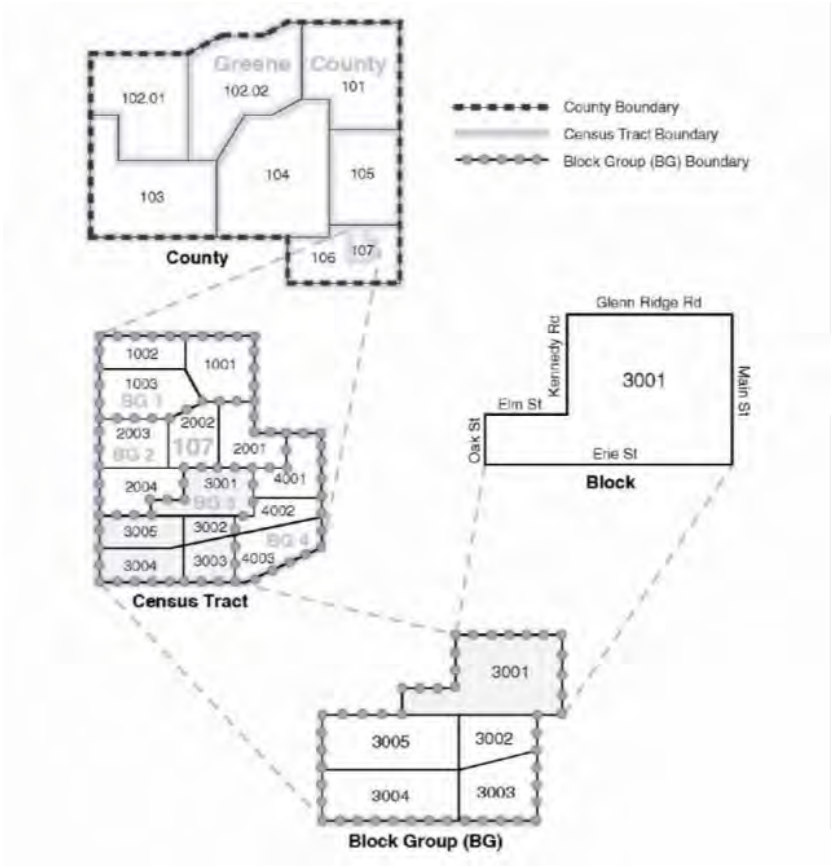

Figure 3.2. Geographic relationships between County, Census Tract, Block Groups and Blocks (US Census Bureau 2011).

2.4 Validation of Trash Generation Rates

To evaluate the accuracy of trash generation rates derived via the monitoring of 159 small full capture devices, rates were applied to two areas draining into large full capture devices (i.e., hydrodynamic separators) located in the cities of Dublin and San Jose. Generation rates were adjusted using the street sweeping effectiveness curve (Figure 2.3) to account for the interception of trash via existing street sweeping that occurred in the drainage areas during the accumulation period. The adjustment resulted in a trash load estimate for each drainage area. The load estimate for each site was then compared to the amount of trash removed from each large full capture device during a single cleaning event that included the cleaning of the screen (floating trash) and the sump (heavier trash). Standard cleaning protocols were used during the maintenance of the hydrodynamic separators.

2.5 Quality Assurance and Control Procedures

Quality assurance procedures were implemented throughout the project to ensure that data of known quality were obtained. All field personnel used standardized field forms and monitoring procedures developed by BASMAA (2011b) when removing trash and debris from monitoring sites. The procedures included a specified labeling protocol of bags of trash and debris and mandatory cleaning instructions. A training event was also conducted for field crews to ensure proper

understanding of field monitoring and quality control procedures. As appropriate, the following errors were identified during the study and associated data were qualified appropriately:

- **Installation Errors** – devices that were installed incorrectly or in the wrong location;
- **Maintenance Errors** – trash and debris were removed from the incorrect site and as a result, a storm drain inlet without a device was cleaned;
- **Book-keeping Errors** – the location of the device that was monitored, or the cleanout date could not be confirmed;
- **Land Use Errors** – following delineation of the site drainage area and land use analysis, the site could not be defined as depicting a single land use category; and,
- **Jurisdictional Errors** – sites included streets swept by the California Department of Transportation and not a municipality.

Quality assurance procedures performed during trash characterization included oversight by two project managers, and reweighing/measurements of material to ensure consistency, accuracy and completeness. Trash and debris from 10% of samples were reweighed and measured. Relative percent difference (RPD) calculations were used to assess the accuracy of measurements.

3.0 MONITORING AND CHARACTERIZATION RESULTS

3.1 Statement of Data Quality

A comprehensive quality assurance and control (QA/QC) program was implemented by BASMAA, covering all aspects of trash monitoring and characterization. All QA/QC procedures were implemented and monitoring was performed according to protocols specified in the SAP (BASMAA 2011b). All data and associated information on trash captured via monitored full capture treatment devices at project sites were compiled into a project database. Data underwent quality assurance checks prior to being utilized for generation rate calculation. Any data deemed suspect was checked and either corrected or removed from the dataset if the data quality could not be verified.

For the vast majority of data collected during the project, field monitoring procedures were followed and no issues were observed. Five of the 159 monitored sites, however, were removed because after further analysis they were not representative of the land uses they were intended to represent or they did not represent a single land use class. Three of these sites were put into a new category called "expressways" which represent large arterial roads where the trash sources are independent of surrounding land uses.

With regard to assessing the precision of the trash characterization methods that were utilized as part of the study, trash and debris samples from 65 sites/events were measured again by a separate individual. In comparison to the volume of samples originally measured, nearly all samples that were remeasured were within 10% of the original result. The level of precision was considered adequate for the characterization of this material and therefore, no samples were discarded. All results of QA/QC assessments to evaluate precision are included in Appendix B.

3.2 Trash and Debris Volumes, Weights and Item Counts

3.2.1 Summary for All Events

Sampling of installed small full capture devices included in the study occurred between May 2011 and April 2012 during four events (Table 3.1). A total of 159 sites were sampled as part of the study. Up to four sampling (cleanout) events were conducted at each site. The average period of trash accumulation at each site was roughly three months, with 90% of the accumulation periods lasting at least two months before trash was removed and characterized (Table 3.2). Rainfall totals and intensities varied among sites and during accumulation periods. Rainfall totals and intensities during accumulation periods averaged 4.55 inches per accumulation period and 0.90 inches per rain event, respectively.

Table 3.1. Number of sites sampled during each of four sampling events.

Monitoring Event	# Sites Sampled During a Previous Event	Additional # Sites Sampled During the Event	Total Sites Sampled During the Event
#1 (May 25-26, 2011)	NA	71	**71**
#2 (Sept 20-23, 2011)	68	81	**149**
#3 (Jan 17-20, 2012)	145	7	**152**
#4 (April 17-20, 2012)	153	0	**153**

Table 3.2. Descriptive statistics for trash monitoring data collected and rainfall documented during four sampling events (May 2011 – April 2012).

Statistic	During All Accumulation Periods (AP)					Volume (gallons)		Weight (lbs)	
	Days	*Total Rainfall (in/AP)*	*Rainfall Intensity (in/day)*	*# Wet Days[a] During AP*	*# Dry Days[b] During AP*	*Trash*	*Debris*	*Trash*	*Debris*
Maximum	355	25.16	8.45	39	331	42.8	65.2	29.6	273.8
75th %	125	6.02	1.01	10	118	2.3	11.1	1.7	42.0
Median	99	3.64	0.81	6	92	1.0	6.3	0.7	22.3
Mean	105	4.55	0.90	7	99	1.8	8.9	1.5	32.7
25th %	92	1.54	0.61	2	76	0.4	3.4	0.2	11.0
Minimum	16	0.00	0.00	0	4	0.0	0.0	0.0	0.0

[a] Defined as a 24-hour period with greater than 0.2 inches of rain.
[b] Defined as a 24-hour period with less than 0.2 inches of rain.

The study yielded the measurement and characterization of 5,458 gallons of material (i.e., trash and debris) weighing 17,435 pounds (Table 3.2). As illustrated in Figure 3.3, 17% of all material measured by volume and 4% by weight was identified as trash. The remaining portion was debris (e.g., vegetation, sand, sediment). Of all trash characterized, roughly 70% by volume and 50% by weight was identified as plastic (i.e., single use plastic grocery bags, recyclable beverage containers, expanded polystyrene foam food ware, and other miscellaneous plastic). These percentages are similar to those observed in recent studies in the U.S. and worldwide (Lippner et al 2000; Lewis 2002; Marais et al. 2004, Ocean Conservancy 2013). A total of 279 CRV beverage containers, 539 single use plastic grocery bags, and 1,011 expanded polystyrene food service ware items were identified during the study. Characterization data for each site and event are provided in Appendix C.

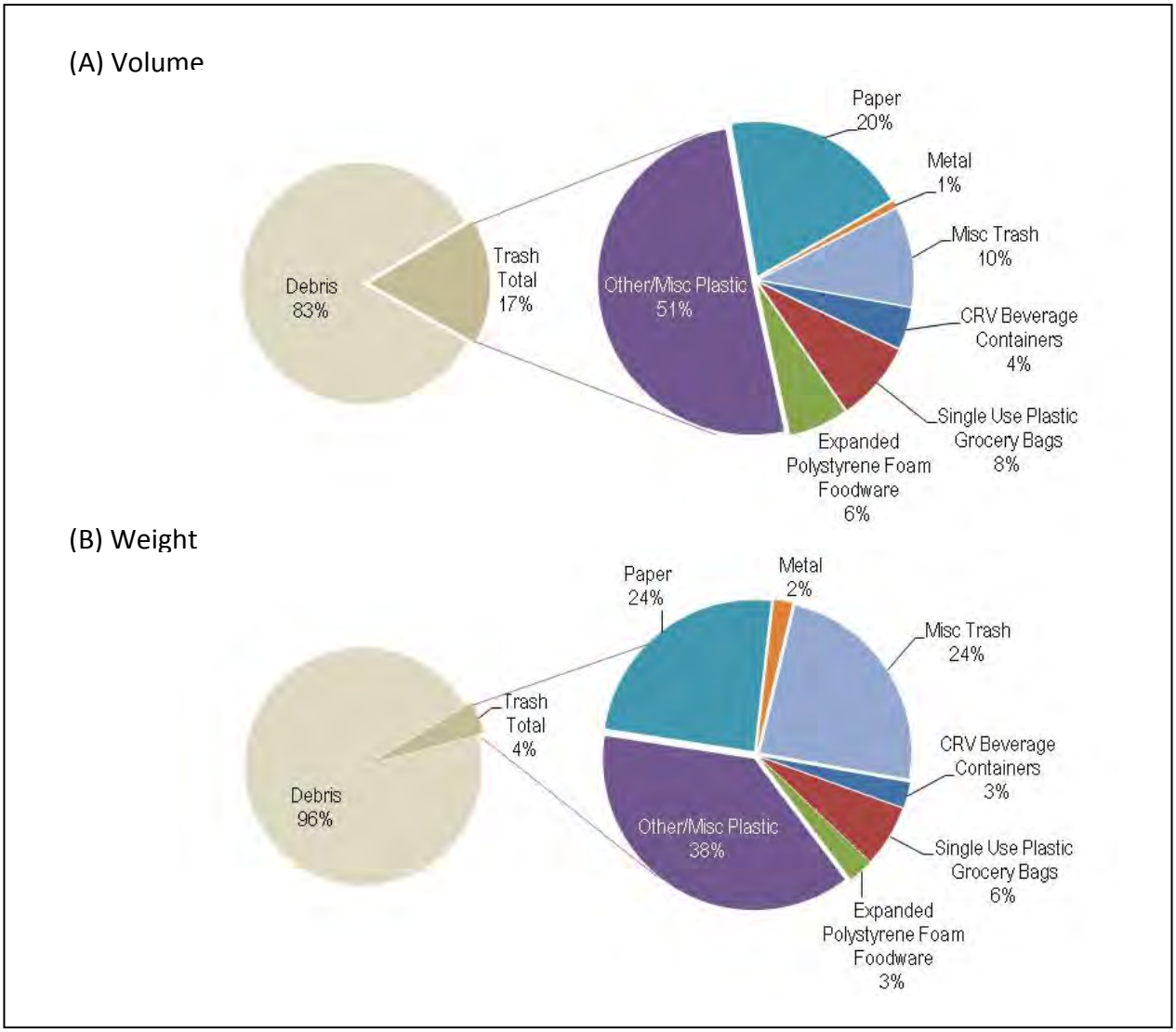

Figure 3.2. Percent of trash and debris by (A) volume and (B) weight that was characterized during the study.

Table 3.3. Number of CRV beverage containers, single use plastic grocery bags, and expanded polystyrene food service ware items identified during each sampling event.

Sampling Event	Recyclable Beverage Containers (CRV-labeled)	Single Use Plastic Grocery Bags	Expanded Polystyrene Food and Beverage Ware
# 1	63	77	102
# 2	96	229	670
# 3	68	150	121
# 4	52	83	118
Total	**279**	**539**	**1,011**

3.2.2 Trash and Debris by Monitoring Event

The following summarizes the four monitoring events conducted as part of this study:

- **Event #1:** The first monitoring event was timed to encompass the 2010-2011 wet weather season (November through April). A total of 71 monitoring sites were sampled between May 16 and 18, 2011. For this event, the accumulation period ranged between 66 to 257 days, depending on the date of device installation/maintenance. Between 3 and 14 inches of rainfall was observed at rainfall gages near the sites during the accumulation periods. The number of wet weather days during these accumulation periods ranged between 5 and 22.

- **Event #2:** The second monitoring event was conducted between September 8 and 15, 2011 and was timed to depict trash generation during the 2011 dry weather season (May through October). In addition to 68 of the 71 sites monitored during the first event, several additional sites were included in the second event, bringing the total number to 149. For the second event, accumulation periods ranged from 36 to 355 days. Though this monitoring event occurred during the dry season, two unseasonable storm events in early and late June resulted in rainfall at all sites where devices were installed prior to June 2011. Additionally, due to the extended accumulation periods at some sites, rainfall events from the previous wet season were included for these sites. As a result, rainfall totals at gages near the 149 monitoring sites ranged from 0 to 15 inches during the second event. Sites sampled in event number two also had between 0 to 24 wet weather days during the accumulation periods. Rainfall was not observed during accumulation periods for those sites where devices were installed after June 2011.

- **Event #3:** The third monitoring event was timed to encompass the first portion of the 2011-2012 wet weather season (November through January). A total of 152 monitoring sites were sampled between January 17 and 20, 2012 for this event. Accumulation periods ranged between 16 to 126 days. Between 0 and 4 inches of rainfall was observed at rainfall gages near the sites. The number of wet weather days during these accumulation periods ranged between 0 and 8 days.

- **Event #4:** The fourth monitoring event was timed to encompass the last portion of the 2011-2012 wet weather season (February through mid-April). A total of 153 monitoring sites were sampled between April 17 and 20, 2011 for this event. The accumulation period ranged between 82 and 218 days for this event. Between 4 and 17 inches of rainfall was observed during the accumulation periods at rainfall gages near sampling sites. The number of wet weather days during these accumulation periods ranged between 7 and 20, depending on the site.

The volume of trash removed and characterized from each storm drain during a single event ranged from 0 to 42.8 gallons (see Table 3.4). The relative levels of trash types observed during each event are listed in Table 3.5. The number of CRV beverage containers, single use plastic grocery bags, and expanded polystyrene food service ware items that were identified during each event are presented in Table 3.5.

Table 3.4. Descriptive statistics for trash monitoring data collected and rainfall documented during each of four sampling events (May 2011 – April 2012).

Event	Average # of Accumulation Days	Average Total Rainfall (in)	Average % Wet Days[a]	Average % Dry Days[b]
#1	113	8.56	11.5%	88.5%
#2	121	2.10	2.5%	97.5%
#3	94	1.82	3.2%	96.8%
#4	99	7.67	12.1%	87.9%

[a] Defined as a 24-hour period with greater than 0.2 inches of rain.
[b] Defined as a 24-hour period with less than 0.2 inches of rain.

Table 3.5. Relative percentages of trash and debris by weight and volume observed during each of the four sampling events.

Material Type	Event #1		Event #2		Event #3		Event #4	
	Weight	Volume	Weight	Volume	Weight	Volume	Weight	Volume
Debris	**94.6%**	**74.3%**	**94.3%**	**73.4%**	**96.2%**	**88.8%**	**97.6%**	**86.2%**
Trash	**5.4%**	**27.4%**	**5.7%**	**26.1%**	**3.8%**	**10.5%**	**2.4%**	**12.6%**
Plastics	**3.0%**	**15.1%**	**2.7%**	**7.0%**	**1.5%**	**2.2%**	**0.3%**	**3.4%**
Recyclable beverage containers (CRV)	*0.1%*	0.7%	*0.2%*	0.8%	*0.1%*	0.3%	*0.1%*	0.5%
Single-use plastic grocery bags	*0.2%*	1.2%	*0.3%*	2.2%	*0.1%*	1.0%	*0.1%*	1.0%
Polystyrene foam food service ware	*0.1%*	0.5%	*0.1%*	2.0%	*0.0%*	0.5%	*0.0%*	0.9%
Other plastic materials/items	*2.5%*	12.7%	*2.1%*	2.0%	*1.3%*	0.5%	*0.0%*	0.9%
Paper	**1.4%**	**7.2%**	**1.3%**	**12.4%**	**1.2%**	**5.8%**	**0.7%**	**7.6%**
Metal	**0.1%**	**0.4%**	**0.2%**	**6.6%**	**0.1%**	**2.4%**	**0.1%**	**1.6%**
Miscellaneous Trash	**0.9%**	**4.8%**	**1.5%**	**0.2%**	**0.9%**	**0.1%**	**1.3%**	**0.1%**

3.3 Density of Trash

As described in previous sections, both weights and volumes of trash were measured during the study. Because samples contained varying levels of moisture and were comprised of varying levels of low and high density items, the correlation between weight and volume is relatively moderate (r2 = 0.55) but still significant ($p<0.05$). Based on the linear regression presented in Figure 3.3, the average density of trash observed in storm drain inlets was 0.68 lbs to each gallon of material.

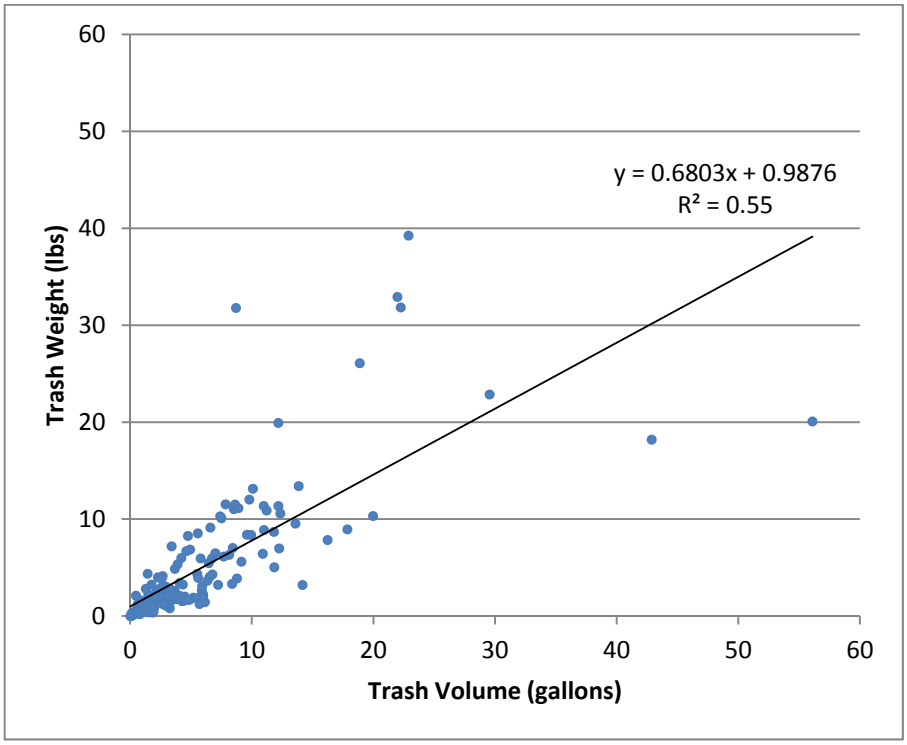

Figure 3.3. Linear regression of trash volumes and weights measured from 159 Bay Area monitoring sites.

4.0 DISCUSSION OF TRASH DATA

The goals of the *BASMAA Trash Generation Rates Project* were to: 1) develop a set of first-order trash generation rates that are based on statistical evaluations that, to the extent possible, explain the variability in trash generation with Bay Area municipalities, and 2) to provide information, tools, and guidance to Bay Area municipalities that allows the effective application of trash generation rates towards identifying high priority trash problem areas where enhanced control measure should be considered. The following sections describe the results of data analyses that were used to achieve these goals.

Trash generation rates are inherently variable and dependent on a number of factors, including the number and type of trash sources and the degree of control measure implementation. Additionally, the accuracy of trash generation rates is constrained by the current precision in sampling and characterization methodologies, the spatial and temporal variability in the amounts of trash available for transport to stormwater conveyance systems, and the accuracy of the methods used to normalize trash data to account for control measures (i.e., street sweeping). The trash generation rates presented at the end of this section are based on results of the analyses conducted during the project. They should be considered first-order estimates that are intended to provide Bay Area municipalities a starting point for identifying areas that generate adverse levels of trash. As described in section 5.0, trash generation rates presented may not be applicable to all land areas and should be refined based on site-specific knowledge of trash problems.

The methodologies described in section 2.3 were used to develop trash generation rates for the Bay Area. These methods attempt to account for the estimated effects of street sweeping that occurred around the monitoring site during the study. Rates are based on volume (gallons/acre – year), which was chosen as the standard measurement unit for Bay Area trash generation rates for a number of reasons. First, municipal solid waste is typically measured in volume due to the wide range of trash densities attributable to different types of materials that collectively make up trash. Secondly, the general public associates trash with volume. Residential, commercial and public garbage cans and recycling bins are measured in gallons and provide the public with clearer understanding of the amount of trash generated, in comparison to weight or item count. Lastly, a majority of the trash observed in stormwater, such as polystyrene foam, chip and candy wrappers, and single use plastic grocery bags, are made of made of lightweight and mobile plastic material. Weight measurements bias towards heavier, less mobile and less prevalent types of materials and therefore are not representative of trash items made of plastic. Thus the use of weight as the primary metric can skew the full picture of the level and types of trash observed in stormwater, potentially focusing municipalities away from controlling more prevalent types of trash, such as plastics.

4.1 Temporal Variability in Trash Generation

Based on the results of focused studies conducted at single stormwater outfalls during defined storm events, the level of trash transported through a stormwater conveyance system has been shown to increase with rainfall and runoff (Kim et al. 2004; Allison et al. 1998a; Allison and Chiew 1995). However, the Los Angeles region dataset suggests that the differences in trash generation are inconsistent from event to event, and indiscernible between wet and dry periods. To evaluate the degree of variability of trash generated among sampling events in the Bay Area and assess whether a relationship between rainfall/runoff and trash generation is observable, all sites monitored during all four sampling events (n=58) were grouped by event and plotted as box whisker plots (Figure 3.4). Additionally, parametric (t-tests) and non-parametric (Mann-Whitney)

statistical tests were used to identify whether significant differences in trash generation rates were apparent among sampling events, which ranged in rainfall intensities and volumes.

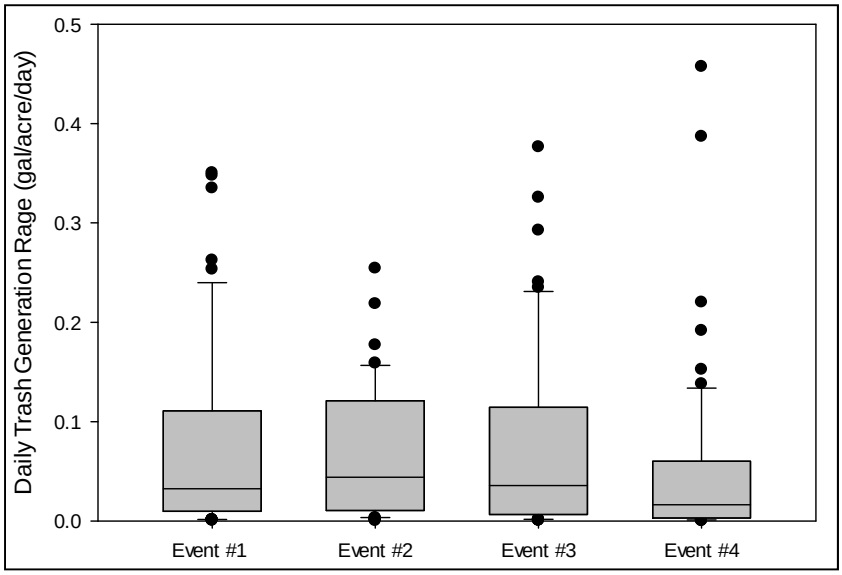

Figure 4.1. Ranges and medians (horizontal line in box) of trash generation for 58 sites monitored during all events. The statistical minimum (lower whisker) and maximum (upper whisker), 25th percentile (lower box), median (box midline) and 75th percentile (upper box) are presented. Circles are statistical outliers.

Although trash generation fluctuated at the sites monitored during the course of the Bay Area study (i.e., all four events), differences in trash generation rates for this set of sites were not observed at statistically significant levels ($p<0.05$). This result suggests that trash generation as measured in storm drain inlets does not significantly vary over the course of a year, even though trash is transported to receiving waters from stormwater conveyances to water bodies predominately during storm events (Allison et al. 1998b; Allison and Chiew 1995). Although detecting incremental changes in trash generation and loading at a site may be hampered by high levels of temporal variability, this finding provides evidence that trash generation at a site can be relatively consistent and therefore municipalities may be able to observe moderate changes in trash generation as enhanced trash control measures are implemented within a management area.

4.2 Factors Influencing Trash Generation

Based on the conceptual model of MS4 trash loading presented in Figure 1.5, a number of factors (e.g., land use, economic profile, and rainfall) may affect trash generation and loading. To assess the relationship between each factor (or combinations of factors) and trash generation, influential factor analyses were conducted as described in Section 2.3. Statistical differences in trash generation rates among land use uses were evaluated and single and multiple regression analyses were conducted to assess relationships between other potential influential factors and trash generation. The results of these analyses are presented in the following sections.

4.2.1 Land Use

Land use is often used as a surrogate for stormwater pollutant generation and loading. Most researchers and municipalities that have attempted to develop trash generation rates have used land use as the primarily indicator of the magnitude of trash in urban areas (Cornelius et al. 1994; Allison and Chiew 1995; Allison et al. 1998a,b; Lippner et al 2000; Los Angeles 2004a,b; Marais et al. 2004; Armitage 2007). To assess the range and differences in trash generation rates by land use, box-whisker plots illustrating the ranges and medians of trash generation were developed for each land use class (Figure 4.2). Additionally, parametric (t-tests) and non-parametric (Mann-Whitney) statistical tests were used to identify whether significant differences in trash generation rates were apparent among land use classes.

As illustrated in Figure 4.2, trash generation rates of Bay Area sites within each land use class were highly variable, ranging over one to three orders-of-magnitude (see whiskers of box-whiskers plots in Figure 4.2). This variability was also illustrated through the results of parametric and non-parametric statistical tests, which indicated that significant differences ($p<0.05$) in trash generation rates were not apparent between land use classes. The lack of observed differences in rates between land uses suggests that other factors may be as (or more) influential on trash generation than land use. Most specifically, the highest coefficients of variation in generation rates were observed for residential and retail land use sites (Table 3.6), which suggests that other influential factors should be evaluated for these two land use classes.

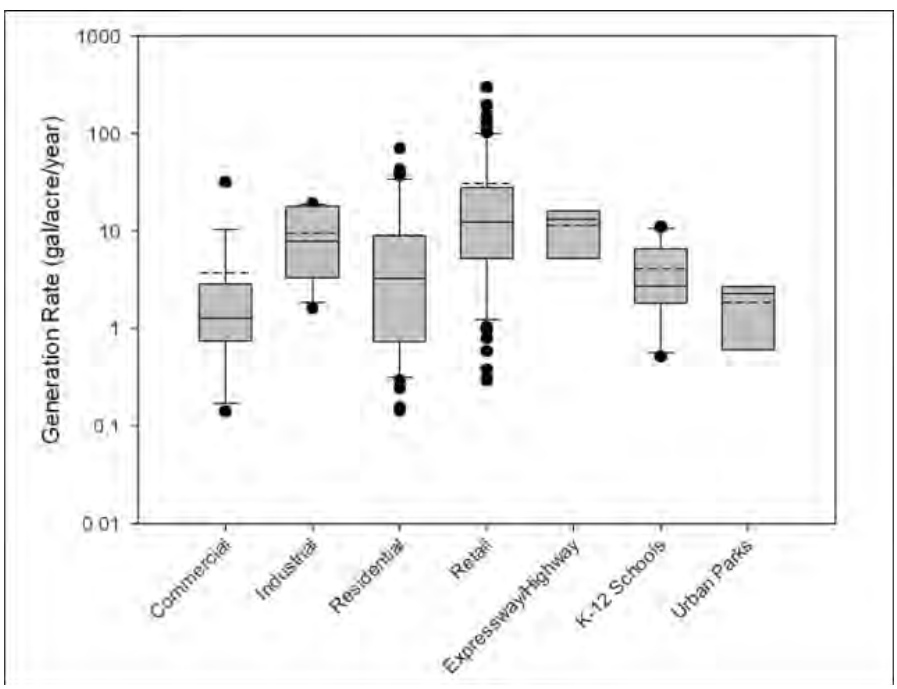

Figure 4.2. Ranges of trash generation rates by land use class. The statistical minimum (lower whisker) and maximum (upper whisker), 25th percentile (lower box), median (horizontal line), mean (dashed line), and 75th percentile (upper box) are presented. Circles are statistical outliers.

4.2.2 Other Factors

Previous studies have shown that factors other than land use can influence the magnitude of trash generated from a particular land area (Marais et al. 2004). In particular, researchers have shown that factors associated with hydrology and rainfall, population density and demographics, and trash sources correlate well (positively or negatively) with trash generation. However, correlative factors described in previous studies may be region-specific and the applicability to the Bay Area is largely unknown. Establishing specific relationships between trash generation and influential factors in the Bay Area is of particular interest to municipalities. For example, the variability of trash generation rates in residential and retail land use sites is of particular interest, as residential land uses comprise the majority of urban land area in the Bay Area, and trash generation appears to be greatest in retail land use areas. Better identification of factors that influence trash generation in these two land use classes may help focus limited public resources towards areas generating disproportionately high levels of trash.

In an effort to identify the most important factors that may affect trash generation in Bay Area residential and retail land use areas, the trash generation rates observed in each land use class were compared to 30 factors. Single factor and multiple factor regression analyses were performed to identify which factor (or set of factors) best explains the variability in generation rates. Results of the analysis are presented in Table 4.1.

Significant correlations ($p<0.05$) were observed between residential and retail trash generation rates and many of the influential factors evaluated. Strong correlations ($r > 0.80$) were not observed, however, between trash generation rates and any single influential factor.

For retail sites, although many variables correlated with generation rates, the log of the household median income within a mile area of sites best explained the variation in trash generation. Combining other variables (via multiple regression) to the median income variable provided no better correlation with trash generation (see Appendix D), with the exception of the number of fast food restaurants within a mile of a retail monitoring site. This suggests that among the factors examined, median household income is the best predictor of trash generation in the retail land use category (i.e., high income, lower trash generation), in combination with presence of fast food restaurants within the vicinity. This relationship between fast food restaurants and trash generation is not surprising, given that a substantial portion of the trash characterized was associated with disposable plastic food service ware likely originating from fast food restaurants.

Similar to retail land uses, trash generation in residential land use areas also correlated with many factors. Of these, the percentage of individuals with no high school diploma in the area around the site, the number of males and individuals between the ages of 10 and 29 living near a site, and the household median income (logged) at the scale of a 5 acres around the site best explained the trash rates observed at residential sites.

Table 4.1. Pearson correlation coefficients (r) for trash generation and influential factors. Only those factors exhibiting significant correlations ($p < 0.05$) with trash generation rates in residential and retail land use areas are shown. Factors exhibiting moderate/strong positive ($r > 0.6$) or negative ($r < -0.6$) correlations are bolded. Factors selected as the basis for trash generation rates in each land use class are in red.

Influential Factor	Residential Land Use		Retail Land Use	
	Annual Trash Rate (gal/acre)	Log Annual Trash Rate (gal/acre)	Annual Trash Rate (gal/acre)	Log Annual Trash Rate (gal/acre)
Home/Household (5 & 15 Acre Buffers)				
Median Home Value (5 Acre Buffer) - 2010 Census	-0.45	-0.53	-0.36	-0.57
Median Home Value (15 Acre Buffer) - 2010 Census	-0.46	-0.56	-0.36	-0.57
Log Median Home Value (5 Acre Buffer) - 2010 Census	-0.45	-0.54	-0.37	-0.54
Log Median Home Value (15 Acre Buffer) - 2010 Census	-0.46	-0.56	-0.37	-0.55
% Of Households in Single Family Detached Homes (5 Acre Buffer)	-0.33	-0.49	--	--
% Of Households In Multi-Family Buildings (5 Acre Buffer)	0.43	0.56	--	--
Median # of Rooms (5 Acre Buffer)	-0.55	**-0.73**	--	-0.41
Median Rent (5 Acre Buffer)	**-0.72**	**-0.72**	-0.33	-0.43
Educational Factors (5 & 15 Acre Buffers)				
% No High School Diploma (5 Acre Buffer)	**0.74**	**0.81**	0.27	0.56
% No High School Diploma (15 Acre Buffer)	**0.74**	**0.80**	0.27	0.56
% High School Diploma (5 Acre Buffer)	0.42	0.53	0.34	0.54
% Some College (5 Acre Buffer)	-0.51	-0.44		
% Bachelor's Degree (5 Acre Buffer)	**-0.64**	**-0.73**	-0.30	-0.57
% Advanced Degree (5 Acre Buffer)	-0.58	**-0.72**	-0.31	-0.56
Population Density (5 & 15 Acre Buffers) - People/acre				
Census Block Density in Surrounding Area (5 Acre Buffer)	0.39	0.56	--	--
Census Block Density in Surrounding Area (15 Acre Buffer)	0.35	0.56	--	--
Density in Surrounding Residential Area (5 Acre Buffer)	0.53	**0.68**	--	0.32
Density in Surrounding Residential Area (15 Acre Buffer)	0.44	0.59	--	--
Income (5 & 15 Acre and 1 mile Buffers)				
Median Household Income (5 Acre Buffer)	-0.60	**-0.70**	-0.28	-0.52
Median Household Income (15 Acre Buffer)	**-0.60**	**-0.70**	-0.27	-0.52
Median Household Income (1 Mile Buffer)	-0.58	**-0.69**	-0.30	-0.57
Log Median Household Income (5 Acre Buffer)	**-0.70**	**-0.73**	-0.27	-0.51
Log Median Household Income (15 Acre Buffer)	**-0.70**	**-0.73**	-0.27	-0.52
Log Median Household Income (1 Mile Buffer)	**-0.61**	**-0.71**	-0.33	**-0.60**
% in Poverty (5 Acre Buffer)	**0.66**	**0.60**	--	0.38
% in Poverty (15 Acre Buffer)	**0.67**	**0.60**	--	0.38
# Individuals in Poverty Per Acre (5 Acre Buffer)	**0.66**	**0.64**	--	--
% Income <$10K/year (5 Acre Buffer)	**0.65**	0.54	--	--
% Income <$10K/year (15 Acre Buffer)	**0.67**	0.54	--	--
% Income <$15K/year (5 Acre Buffer)	**0.66**	0.52	--	0.39
% Income <$15K/year (15 Acre Buffer)	**0.66**	0.51	--	0.40
% Income <$20k/year (5 Acre Buffer)	**0.61**	0.52	--	0.44
% Income <$20k/year (15 Acre Buffer)	**0.62**	0.52	--	0.44
% Income <$25k/year (5 Acre Buffer)	0.56	0.51	--	0.42
% Income <$30k/year (5 Acre Buffer)	0.52	0.51	--	0.41
% income > $150K/year (5 Acre Buffer)	-0.56	**-0.69**	-0.28	-0.55
% income > $150K/year (15 Acre Buffer)	-0.56	**-0.68**	-0.28	-0.56
% income > $200K/year (5 Acre Buffer)	-0.45	-0.58	-0.29	-0.54
% income > $200K/year (15 Acre Buffer)	-0.46	-0.59	-0.29	-0.54
Family/Age Demographics (5 & 15 Acre Buffers)				
% 10-29 Age Males (5 Acre Buffer)	**0.71**	**0.78**	0.29	0.45
# Males aged 10-29 in Census Blocks (5 Acre Buffer)	0.45	0.59	--	--
% 10-29 Age Females (5 Acre Buffer)	**0.69**	**0.77**	--	0.40
# Transit Stops (5 Acre Buffer)	--	--	--	0.30
# Transit Stops (15 Acre Buffer)	--	--	--	0.26

Of the influential factors evaluated for residential and retail sites, household income was the single factor that correlated well with both land uses, although at different spatial scales. The relationships observed between household income and trash generation for these land uses are presented in Figure 4.3. Although the correlations are of moderate strength (r^2 <0.5), income within an area appears to be one of the most consistent predictor of trash generation within Bay Area residential and retail land areas. This influential factor was therefore incorporated into trash generation rates for residential and retail land uses to help municipalities differentiate levels of trash generation in these land areas types.

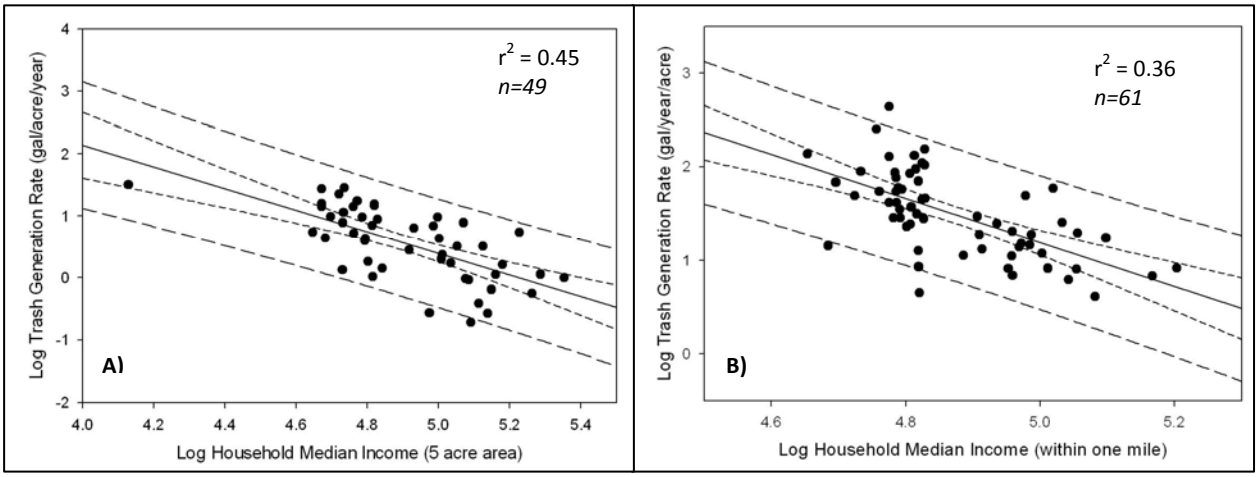

Figure 4.3. Linear regressions between Bay Area trash generation rates and household median income in residential (A) and retail (B) land use areas surrounding monitoring sites. 95th percentile confidence intervals (dotted line) and 95th percentile prediction intervals (dashed lines) are also shown.

Drainage Area, Accumulation Period and Rainfall

A significant correlation was not found between the size of the area draining to an inlet and the amount of trash observed in the inlet during the study. Conceptually, under uniform trash generation in an area draining (i.e., hydrologically connected) to a storm drain inlet and uniform transport to the inlet, one would expect that the level of trash measured in the inlet should change proportionately to the size of the drainage area. However, trash is not uniformly generated within a drainage area due to varying sources and areas of accumulation and capture. It is therefore not surprising that drainage area did not correlate well with the generation rates of Bay Area sites within a land use class. Drainage area, however, must be considered in the calculation of trash generation rates from a practical standpoint. In order to develop loading estimates and geographically illustrate the varying levels of trash generation in a municipality, trash generation rates must incorporate the concept of land or drainage area. Therefore, generation rates for each monitoring site were derived in consideration of the area draining to the inlet. This is a similar process used to develop loading estimates for other types of stormwater pollutants.

Similar to drainage area, the trash accumulation period (i.e., days between cleanouts) did not correlate well with trash generation. Based on linear regression analysis, no significant correlations were observed between these variables. All other things being equal, one would expect that the greater the accumulation period, the greater the volume of trash observed in the inlet. However,

trash that accumulates on a street may be intercepted prior to or during transport to an inlet, depending on the timing of rainfall/runoff events and the level of control measure implementation, and importance and proximity of sources to an inlet may vary between sites regardless of the period of accumulation. Thus, the sources and the level of interception may mask the importance of accumulation. Accumulation period, however, must also be considered in the calculation of trash generation rates from a practical standpoint. In order to develop annual loading estimates, trash generation rates must incorporate the concept of time. Daily generation rates were therefore derived for each site and for a single land use, used to calculate annual trash generation rates.

Although for many pollutants, the rainfall-runoff process governs the transport of the constituent through the stormwater conveyance system to receiving waters, the *BASMAA Trash Generation Rates Project* was not designed to assess the effects of rainfall intensity, duration and volume on the trash generation. The results of the analysis of Los Angeles Region data, the effects of rainfall on trash observed in storm drain inlets were not entirely clear. As described in section 1.2 the amount of trash observed in inlets in the Los Angeles Region did not correlate well with the intensity or volume of rainfall during the accumulation periods. Clearly this was a challenging analysis to conduct, considering the variability in trash sources and control measure implementation, and the findings should be considered provisional, however conceptually it may make sense. The trash captured in an inlet could have been transported via a number of mechanisms in addition to stormwater runoff, including wind, direct dumping or littering into the inlet, and street sweepers pushing trash into inlets. Additionally, full capture devices in the inlets have a designed capacity and typically only capture trash up to a specific rainfall amount and intensity. Therefore, the effects of larger storms exceeding the design capacity of the inlet device may not be observed when measuring trash in the inlet.

4.3 Final Baseline Trash Generation Rates

Based on the monitoring and analyses described in the previous sections, annual trash generation rates (gal/acre) for Bay Area stormwater were developed for seven land use classes. High, “best”, and low generation rates for each land use class are presented in Table 4.2. With the exception of residential and retail uses, best generation rates are represented by the mean generation rate for that land use. Low and high rates are represented by the 10th and 90th percentiles of the Bay Area data, respectively. For residential and retail land uses, best generation rates are represented by the “best fit” regression line based on the household median income in the area surrounding a site or parcel. Low and high generation rates are represented by the 5th and 95th confidence intervals, respectively.

Table 4.2. San Francisco Bay Area annual trash generation rates for stormwater (gal/acre).

Land Use	Low[b]	Best[b]	High[b]
Commercial & Services	0.7	**6.2**	17.3
Industrial	2.8	**8.4**	17.8
Residential[a]			
Less than $50,000/yr	2.8-30.2	**8.2-87.1**	24.2-257
$50,000-$100,000/yr	0.9-2.8	**2.5-8.2**	7.4-24.2
Greater than $100,000/yr	0.3-0.9	**0.5-2.5**	1.0-7.4
Retail[a]			
Less than $50,000/yr	10.4-110	**78.2-150**	202-389
$50,000-$100,000/yr	2.1-10.4	**15.5-78.2**	40.0-202
Greater than $100,000/yr	0.7-2.1	**1.8-15.5**	4.6-40.0
K-12 Schools	3	**6.2**	11.5
Urban Parks	0.5	**5.0**	11.4

[a] For residential and retail land uses, trash generation rates are provided as a range, which takes into account the correlation between rates and household median income.
[b] For residential and retail land uses: Low = 5% confidence interval; Best = best fit regression line between generation rates and household median income; and, High = 95% confidence interval. For all other land use categories: High = 90th percentile; Best = mean generation rate; and, Low = 10th percentile.

4.4 Validation of Trash Generation Rates

The trash generation rates presented in Table 4.3 were applied to the land areas draining to two large full capture devices (i.e., hydrodynamic separators) located in the cities or Dublin and San Jose. Generation rates were adjusted using the street sweeping effectiveness curve (Figure 2.3) to account for the interception of trash via existing street sweeping that was predicted to occur in the drainage areas during the accumulation periods. The trash loads for each area that were estimated using this method are presented in Table 4.4. The volume of trash removed during one cleanout of each full capture device (see Table 4.3) was then compared to the estimated trash load estimate for each area. The results indicate that, as expected, the Bay Area trash generation rates are moderately accurate (i.e., within one order-of-magnitude) in predicting the levels of trash discharged from stormwater conveyances.

A number of factors can account for differences between the estimated and observed trash loads from the two drainage areas. An important factor that is difficult to account for is on-land cleanups that remove trash before it enters the storm drainage system. The San Jose hydrodynamic separator catchment has mostly industrial and K-12 school land uses, while the Dublin catchment has mostly retail and residential land uses. It is likely that both of these areas have significant on-land cleanups by property owners and managers. Another important factor specific to the cleanout period was that November through February was an extremely dry, which may not have mobilized as much trash as during a period with average rainfall. A third factor is that trash generation rates could be over-predicted in the two study catchments since there have been no on-land assessments in these areas to verify the trash generation rates. The San Jose catchment is in a fairly clean part of San Jose, and the City of Dublin is regarded as having much less of a trash problem as other cities.

Table 4.3. Comparison of estimated trash loading based on trash generation rates and predicted street sweeping effectiveness, and trash observed in large full capture devices.

Drainage Area/Treatment Device	Acres Treated	Estimated Trash Load (gal/year)	Observed Trash Load (gal/year)	Relative Percent Difference
Dublin Hydrodynamic Separator	42.4	**226** (150-733)	35	85%
San Jose Hydrodynamic Separator	47.8	**168** (140-774)	22	87%

4.5 Comparison Between Bay Area and Los Angeles Regions

Comparisons between Bay Area rates and those developed for the Los Angeles region may provide information to other municipalities with regard to the precision of trash estimates. To provide a fair comparison between the two sets of rates, the Bay Area generation rates presented in Table 4.3 had to be normalized to the Los Angeles dataset. Specifically, Bay Area trash generation rates derived through this project explicitly account for the (predicted) trash reduction associated with street sweeping, while Los Angeles rates do not. The normalization process provides a trash "loading rate" that then can be compared to the Los Angeles region data. The comparison between trash loading rates is illustrated in Figure 4.4.

In summary, Los Angeles and Bay Area trash generation rates for similar land uses are not significantly different ($p<0.05$). Additionally, the coefficients of variation for the two datasets were similar, suggesting that variability in stormwater trash monitoring is inherent to this pollutant, regardless of what urbanized area the monitoring occurs. Similarities in the rates and the variability of rates within a land use type also suggests that the limited resources expended on the Bay Area project, in comparison to the Los Angeles region, was likely an efficient use of public agency resources. Bay Area municipalities were able to learn from the extensive efforts of the Los Angeles region and as a result, optimize their sampling design to reduce project costs.

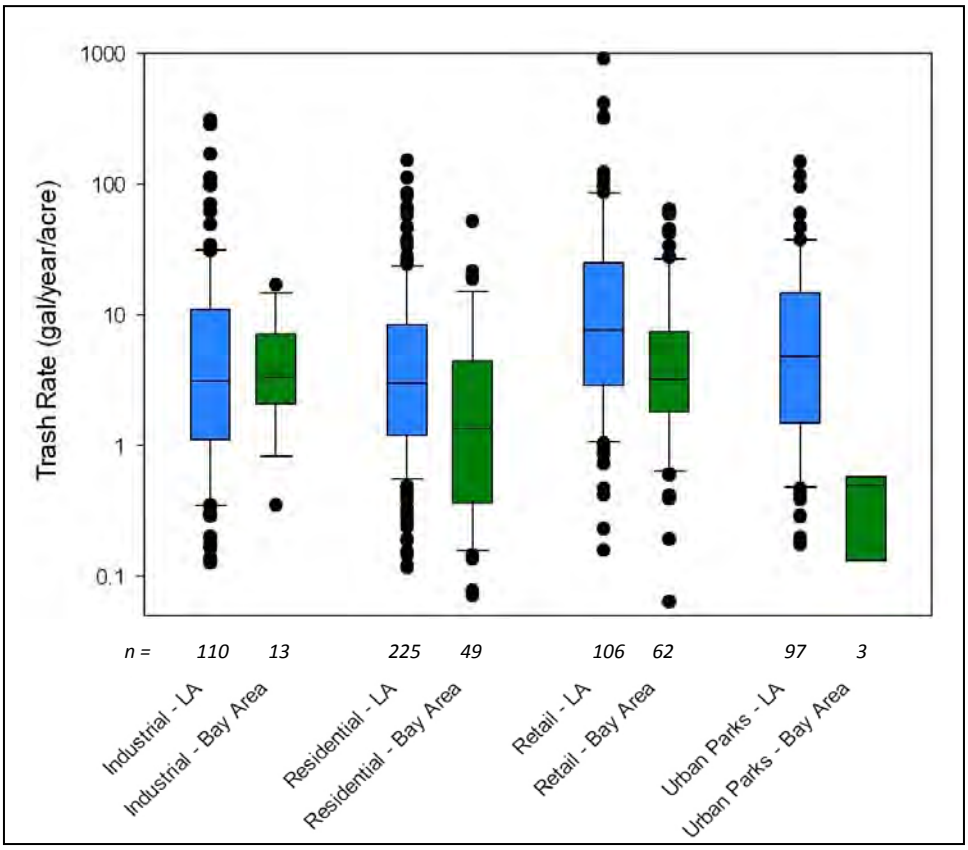

Figure 4.4. Ranges and median (vertical line) trash loading rates for by land use class for the San Francisco Bay Area and Los Angeles regions. The statistical minimum (lower whisker) and maximum (upper whisker), 25th percentile (lower box), median (horizontal line), mean (dashed line), and 75th percentile (upper box) are presented. Circles are statistical outliers.

4.6 Conclusions and Uncertainties

Based on the results of the analyses presented, the *BASMAA Trash Generation Rates Project* provides adequate first-order estimates of trash generation for stormwater conveyance systems. By including income as a factor that helps differentiate trash generation in residential and retail land areas, the project has likely given municipalities a more refined tool that can aide in more precisely identifying areas generating disproportionate levels and trash, and in need of enhanced trash control measures. That said, trash generation can be site specific and therefore rates developed through the project should be applied cautiously by municipalities and to the extent possible, verified based on existing knowledge of trash problem areas within their agencies and/or through field assessments, such as those described section 5.0.

The following are assumptions and uncertainties identified during the implementation of the project. These assumptions and uncertainties should be considered during the application of the results and conclusions presented herein.

- Bay Area trash generation rates presented this report were based on limited data collected over the course of roughly one year (2011-2012). Trash generation rates presented are therefore depictive of the year monitoring occured, and may or may not be applicable to other timeframes.

- Trash full capture devices utilized during the course of the study were designed to meet the design standard for full capture devices set by the San Francisco Bay Water Board via the MRP. Trash devices likely do not capture all trash that enters the stormwater system from the associated drainage area. Full capture devices, however, do provide an acceptable of level of stormwater trash management, as indicated by the Water Board and in the MRP. For the purposes of this study, it was assumed that the amount of trash collected from a properly maintained full capture device was depictive of the amount of trash generated during the associated accumulation period.

- A rainfall volume of 0.2 inches of rain in 24 hours observed in the nearest rainfall gage was assumed to have an intensity that would effectively transport trash to a monitoring site. Unless this volume of rainfall occurred over a short period of time (e.g., < 4 hours), this intensity is likely an overestimate of trash transportability. Additionally, the trash transport process that occurs via rainfall/runoff events is likely to be trash type and area specific.

- Although trash estimates are of a known quality, procedures for measuring trash in stormwater conveyances have yet to be developed. Use of alternative characterization methods in the future would likely yield different trash generation rates than presented in this report.

5.0 APPLICATION OF TRASH GENERATION RATES

5.1 Trash Condition Categories and Initial Mapping

Best estimates for trash generation rates range from 0.5 to 150 gallons/acre per year, depending on the land use and the median household income level (applicable to residential and retail land uses). To develop an initial preliminary estimate of the total amount of trash generated in each Bay Area municipality's jurisdictional area, "best" trash generation rates presented in Table 4.4 were applied to all jurisdictional parcels based on current land uses and median household incomes, where applicable. Because trash generation rates are variable and range over two orders-of-magnitude, rates were grouped into four categories and assigned corresponding colors as illustrated in Table 5.1. Color-coded preliminary trash generation maps were then created for each municipality using trash generation categories. Preliminary maps depicted the generation rate (by color) of each parcel in the municipality's jurisdictional area.

Table 5.1. Trash generation categories and associated generation rates (gallons/acre/year).

Category	Low	Moderate	High	Very High
Generation Rate (gallons/acre/year)	**< 5**	**5-10**	**10-50**	**50-150**

5.2 Initial Assessments and Refinement of Maps

Because trash generation can substantially vary within a land use and/or income class (see Figures 4.2 and 4.4) based on site-specific sources and characteristics, preliminary maps derived based on "best" trash generation rate estimates were reviewed and refined by municipalities to ensure that trash generation categories were correctly assigned to parcels or groups of parcels. Municipalities refined the preliminary trash generation maps based on their current knowledge of trash generation and problem areas within their jurisdictional boundaries and assessments conducted after receiving the maps. Types of assessments conducted by Bay Area municipalities included:

- On-land visual trash assessments using the *Draft On-land Visual Trash Assessment Protocol (Draft Protocol)* developed in by Bay Area municipalities;
- Queries of municipal staff or members of the public;
- Reviews of municipal operations data; and
- Observations of the levels of trash in a specific via Goggle Maps – Street View.™

Each municipality documented their assessment results and refined the preliminary maps based on their observations of trash levels in specific areas. As a result, final trash generation maps were developed that depict the most current understanding of trash generation within each municipality. Final maps were then submitted to the Water Board by municipalities with their Long-Term Trash Reduction Plans.

5.3 Delineation of Trash Management Areas

Final trash generation maps were then used by municipalities, in combination with other information on trash sources and current and future control measures, to delineate and prioritized trash management areas (TMAs). TMAs are intended to form the management units by which trash control measure implementation can be tracked and assessed for progress towards trash reduction targets. Once delineated, TMAs were also prioritized for control measure implementation by municipalities. A map depicting the each TMA for each municipality was also included in Long-Term Trash Reduction Plans.

5.4 Baseline Trash Generation

Based on the application of the trash generation rates by municipalities, urban areas under the jurisdiction of Bay Area municipalities that are regulated by the Municipal Stormwater Regional NPDES Permit generate a best estimate of 3.2 million gallons of trash each year (+/- 50%). A portion of this trash is intercepted by existing stormwater control measures (e.g., street sweeping), while the remaining may be discharged to local water bodies via the stormwater conveyance system. An estimated 64% of the jurisdictional urban land area generates trash at a low level (< 5 gal/acre). The remaining 36% generates a level of trash that if not reduced or intercepted, may be transported via stormwater to local creeks and rivers, the San Francisco Bay, and eventually the Pacific Ocean. There, trash generated at these levels may cause adverse impacts to beneficial uses of these water bodies.

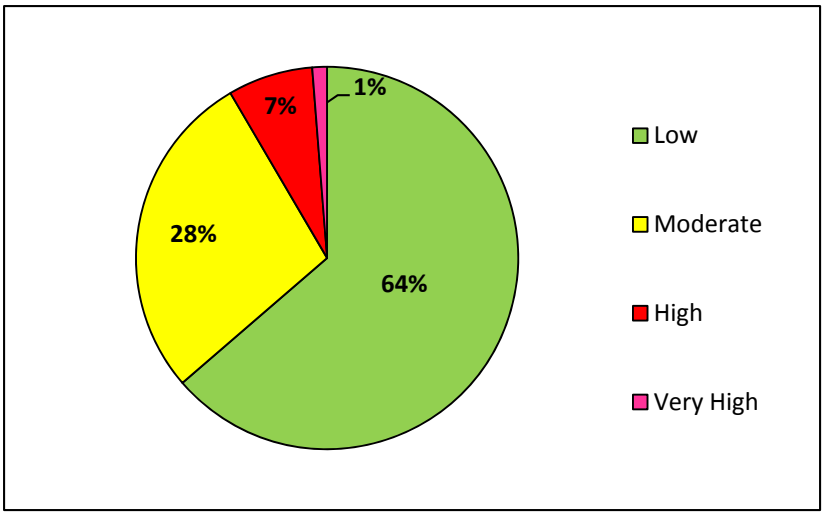

Figure 5.1. Percentages of land area within applicable Bay Area municipal jurisdictions that have been identified in 2013 as generating low, moderate, high and very high levels of trash.

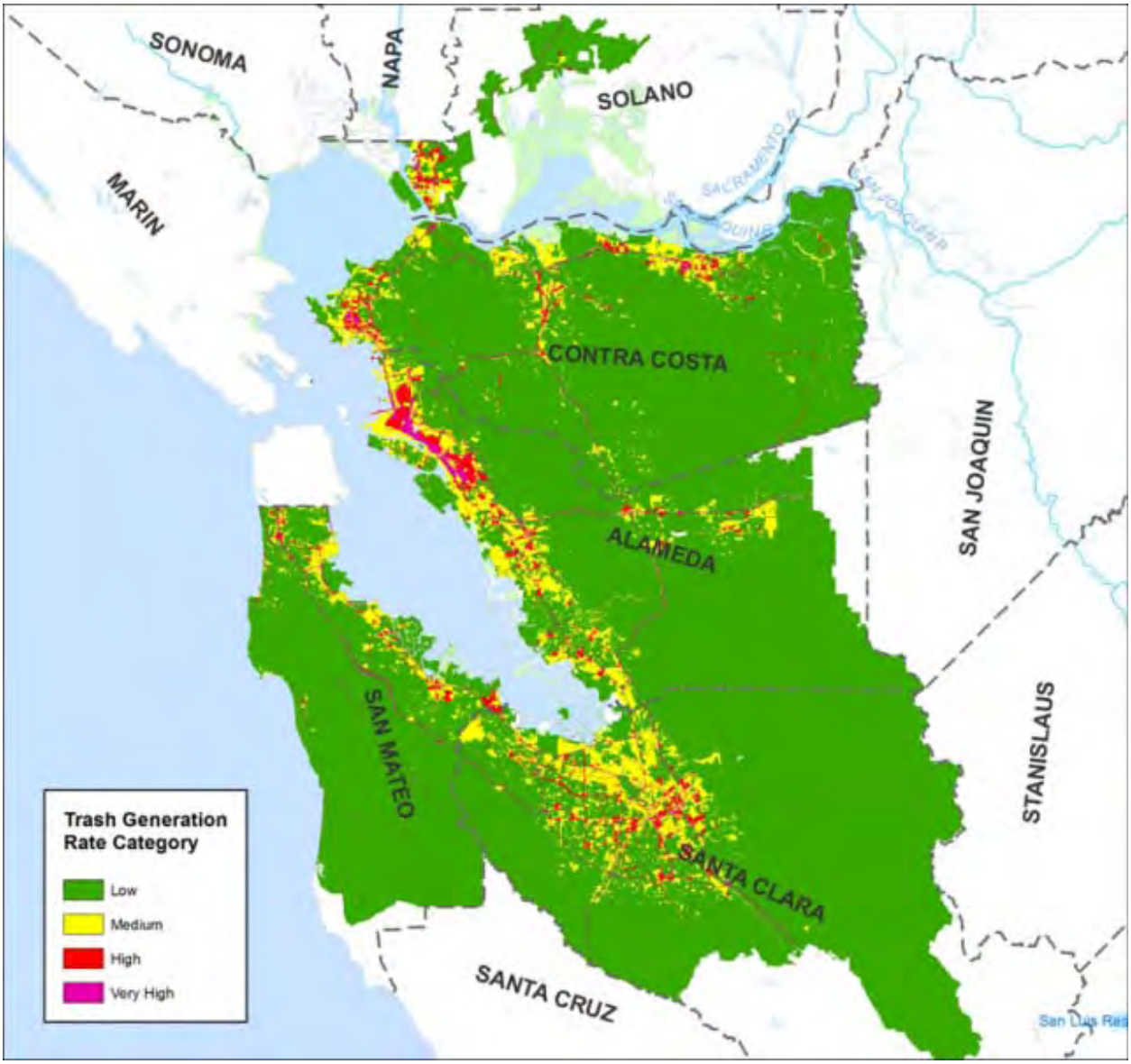

Figure 5.2. Regional map of annual stormwater trash generation in the San Francisco Bay Area.

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7.0 GLOSSARY

Best Management Practice (BMP): Any activity, technology, process, operational method or measure, or engineered system, which when implemented prevents, controls, removes, or reduces pollution. A BMP is also referred to as a control measure.

Bypass: The intentional diversion of waste streams from any portion of a treatment (or pretreatment) facility.

Conceptual Model: A model that explicitly describes and graphically represents all existing knowledge on the sources of a pollutant, its fate and transport, and its effects in the ecosystem.

Discharge: A release or flow of stormwater or other substance from a stormwater conveyance system.

Effectiveness (with regard to treatment BMPs): A measure of how well a BMP system meets its goals for all storm water flows reaching the BMP site, including flow bypasses.

Full Capture Device: A single device or series of devices that can trap all particles retained by a 5 mm mesh screen, and has a treatment capacity that exceeds the peak flow rate resulting from a one-year, one-hour storm in the subdrainage area treated by the BMP.

Generation Rate – The amount of trash that is annually generated per acre of urban land.

Gross Solids: Gross solids are litter, trash, leaves, and large coarse sediments that travel, as either floating debris or bed loads, in stormwater conveyance systems. Sometimes referred to as gross pollutants.

Jurisdictional Areas: All urban land areas within a Permittee's geographical boundary that are directly subject to MRP requirements. Land use areas not included as jurisdictional areas include: Federal and State of California Facilities and Roads (e.g., Interstates, State Highways, Military Bases, Prisons); Roads Owned and Maintained by other municipalities (e.g., Unincorporated Counties); Public and Private Colleges and Universities; Non-urban Land Uses (e.g., agriculture, forest, rangeland, open space, wetlands, water);; Communication or Power Facilities (e.g., PG & E Substations); Water and Wastewater Treatment Facilities; and, Other Transportation Facilities (e.g., airports, railroads, and maritime shipping ports).

Litter: As defined by California Code Section 68055.1(g), litter means all improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials, thrown or deposited on the lands and water.

Loading Rate – The total amount of trash annually discharged from an MS4 per acre of urban land.

Municipal Separate Storm Sewer System (MS4): "a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created to or pursuant to state law) including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States. (ii) Designed or used for collecting or conveying stormwater; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2." (40 CFR 122.26(b)(8))

Outfall: The discharge point of a water conveyance system (e.g. pipes) to a receiving water body

Overflow: To be filled beyond the design capacity of a BMP.

Performance (with regard to treatment BMPs): A measure of how well a treatment BMP meets its goals for storm water that flows through, or is processed by it.

Pollutant: A substance introduced into the environment that adversely affects or potentially affects the usefulness of a resource.

Pollutant Load: The mass of a pollutant discharged into or from a receiving water body.

Receiving Waters: Natural water bodies receiving discharges from municipal stormwater drainage systems.

Stormwater: Runoff from roofs, roads and other surfaces that is generated during rainfall and snow events and flows into a stormwater drainage system.

Storm Drain Inlet: Part of the stormwater drainage system where surface runoff enters the underground conveyance system. Includes side inlets located adjacent to curbs and grate inlets located on the surface of a street or parking lot.

Storm Drain Insert: A device (e.g., screen or basket) designed to capture trash capture within a storm drain inlet.

Stormwater Conveyance System: Any pipe, ditch or gully, or system of pipes, ditches, or gullies, that is owned or operated by a governmental entity and used for collecting and conveying stormwater.

Trash: Man-made litter (as defined by California Code Section 68055.1g) that cannot pass through a 5 mm mesh screen. Excludes sediments, sand, vegetation, oil and grease, and exotic species.

Trash Dispersal: Inadvertent distribution of trash in the environment due to improper handling and transportation.

Urban Runoff: All flows in a stormwater drainage system and consists stormwater (wet weather flows) and non-storm water illicit discharges (dry weather flows).

Watershed: A defined area of land that catches rain and snow and drains or seeps into a marsh, stream, river, lake or groundwater.

APPENDIX A

MONITORING SITE DESCRIPTIONS

Appendix A – Summary information for each Bay Area trash monitoring site.

BASMAA Site ID	City	County	Latitude	Longitude	Days between Street Sweeping	Parking Restrictions?	5 Acre Buffer Around Site			Final Land Use Designation
							Household Median Income ($)	Median Home Value ($)	Population Density (people/acre)	
BE01	Brisbane	San Mateo	37.6800433	-122.398491	None	No	58,600	329,108	15.56	Residential
BK01	Berkeley	Alameda	37.8575578	-122.267718	3.5	Yes	35,100	321,369	20.25	Retail
BK02	Berkeley	Alameda	37.867339	-122.270332	None	Yes	13,300	275,000	30.56	K-12 School
BK03	Berkeley	Alameda	37.8700233	-122.284121	1.4	Yes	28,900	264,025	23.84	Retail
BK04	Berkeley	Alameda	37.856525	-122.294893	15.0	No	33,800	267,388	0.43	Industrial
BR01	Brentwood	Contra Costa	37.9617959	-121.735343	7.0	Yes	78,300	233,844	6.21	Retail
BR02	Brentwood	Contra Costa	37.9399673	-121.737765	14.0	Yes	77,800	249,182	5.44	Retail
BR04	Brentwood	Contra Costa	37.9313448	-121.696719	7.0	Yes	68,200	207,521	9.51	Expressway
DN01	Dublin	Alameda	37.7040653	-121.914894	7.0	Yes	72,100	303,100	4.67	Urban Park
DN02	Dublin	Alameda	37.7038552	-121.914000	7.0	Yes	72,100	303,100	4.67	Urban Park
DN03	Dublin	Alameda	37.7168393	-121.926655	7.0	Yes	76,100	285,881	9.56	Residential
DN04	Dublin	Alameda	37.7148072	-121.927213	15.0	Yes	74,300	286,167	10.31	Residential
FR01	Fremont	Alameda	37.5713306	-122.032283	30.0	Yes	75,300	352,856	12.74	Commercial
FR02	Fremont	Alameda	37.5635784	-122.017318	30.0	Yes	66,700	353,884	13.42	K-12 School
FR03	Fremont	Alameda	37.5344424	-121.966593	30.0	Yes	39,800	308,737	26.40	Retail
FR04	Fremont	Alameda	37.5317093	-121.958809	30.0	Yes	51,400	303,523	14.04	Retail
LV01	Livermore	Alameda	37.7014976	-121.814612	7.0	Yes	97,400	394,976	1.16	Commercial
LV02	Livermore	Alameda	37.6991667	-121.773356	7.0	Yes	98,100	447,696	4.17	Retail
OK01	Oakland	Alameda	37.7738741	-122.229106	None	Yes	31,800	139,883	8.68	Retail
OK02	Oakland	Alameda	37.7693201	-122.229103	None	Yes	32,400	89,283	4.82	Industrial
OK03	Oakland	Alameda	37.8178349	-122.288799	7.0	Yes	27,700	112,641	9.92	Industrial
OK04	Oakland	Alameda	37.8031197	-122.280906	7.0	Yes	13,700	187,562	14.62	Retail
OR01	Orinda	Contra Costa	37.8784151	-122.182948	7.0	Yes	103,000	580,049	1.09	Retail
OR02	Orinda	Contra Costa	37.879116	-122.182117	7.0	Yes	110,500	609,026	2.13	Retail
PL01	Pleasanton	Alameda	37.700277	-121.870222	15.0	Yes	99,300	432,842	8.19	Retail
PL02	Pleasanton	Alameda	37.6991506	-121.898325	7.0	Yes	71,100	352,816	1.64	Commercial

BASMAA Site ID	City	County	Latitude	Longitude	Days between Street Sweeping	Parking Restrictions?	5 Acre Buffer Around Site			Final Land Use Designation
							Household Median Income ($)	Median Home Value ($)	Population Density (people/acre)	
RI01	Richmond	Contra Costa	37.9330152	-122.329212	7.0	Yes	40,700	145,898	14.10	Retail
RI02	Richmond	Contra Costa	37.9224752	-122.34367	30.0	Yes	14,400	123,941	1.60	Residential
RI03	Richmond	Contra Costa	37.92417	-122.34781	7.0	Yes	15,700	130,490	2.58	Retail
SJ01	San Jose	Santa Clara	37.3673152	-121.863475	30.0	No	54,800	306,601	14.23	Industrial
SJ03	San Jose	Santa Clara	37.3671282	-121.863339	30.0	No	54,800	306,601	14.23	Industrial
SJ04	San Jose	Santa Clara	37.3666134	-121.864229	30.0	No	54,800	306,602	14.23	Industrial
SJ05	San Jose	Santa Clara	37.3661067	-121.865204	30.0	No	54,800	306,601	14.23	Industrial
SJ06	San Jose	Santa Clara	37.3648258	-121.867169	30.0	No	48,700	282,322	10.56	Industrial
SJ07	San Jose	Santa Clara	37.364367	-121.870853	7.0	Yes	39,000	239,479	4.07	Industrial
SJ08	San Jose	Santa Clara	37.3629939	-121.869516	7.0	No	39,000	239,479	4.07	Industrial
SJ09	San Jose	Santa Clara	37.3598064	-121.869452	7.0	Yes	39,000	239,479	4.07	Industrial
SJ10	San Jose	Santa Clara	37.3598877	-121.869316	7.0	Yes	39,000	239,479	4.07	Industrial
SJ11	San Jose	Santa Clara	37.3633236	-121.86296	30.0	Yes	54,800	306,601	14.23	Residential
SJ12	San Jose	Santa Clara	37.363318	-121.862785	30.0	Yes	54,800	306,601	14.23	Residential
SJ13	San Jose	Santa Clara	37.3559467	-121.849178	None	No	63,500	278,134	26.04	Retail
SJ14	San Jose	Santa Clara	37.3532784	-121.828054	None	No	78,600	278,678	19.37	Commercial
SJ15	San Jose	Santa Clara	37.3475829	-121.829624	30.0	Yes	39,500	279,392	29.40	Residential
SJ16	San Jose	Santa Clara	37.346901	-121.829108	30.0	Yes	39,500	279,392	29.40	Residential
SJ17	San Jose	Santa Clara	37.3464875	-121.828716	30.0	Yes	39,500	279,392	29.40	Residential
SJ18	San Jose	Santa Clara	37.3450138	-121.827593	30.0	Yes	55,300	281,025	29.68	Residential
SJ19	San Jose	Santa Clara	37.3535356	-121.823259	7.0	Yes	72,200	282,250	19.56	Retail
SJ20	San Jose	Santa Clara	37.3559263	-121.819295	7.0	Yes	67,400	280,414	20.46	Retail
SJ21	San Jose	Santa Clara	37.35635	-121.819027	7.0	Yes	67,300	274,135	19.68	Retail
SJ22	San Jose	Santa Clara	37.3501779	-121.819488	30.0	No	64,600	286,314	21.92	Residential
SJ23	San Jose	Santa Clara	37.3500944	-121.819201	30.0	Yes	69,200	286,280	21.79	Residential
SJ24	San Jose	Santa Clara	37.3515836	-121.814805	22.0	Yes	74,500	282,950	22.53	Residential
SJ25	San Jose	Santa Clara	37.3516472	-121.812872	30.0	Yes	73,600	281,842	26.26	Residential
SJ26	San Jose	Santa Clara	37.3516813	-121.81274	30.0	Yes	73,300	281,908	26.46	Residential

BASMAA Site ID	City	County	Latitude	Longitude	Days between Street Sweeping	Parking Restrictions?	5 Acre Buffer Around Site			Final Land Use Designation
							Household Median Income ($)	Median Home Value ($)	Population Density (people/acre)	
SJ27	San Jose	Santa Clara	37.3196467	-121.828033	30.0	Yes	43,000	197,265	20.91	Retail
SJ28	San Jose	Santa Clara	37.3195129	-121.82705	30.0	Yes	43,000	197,265	20.91	Retail
SJ29	San Jose	Santa Clara	37.3188384	-121.823361	30.0	Yes	45,500	207,563	19.93	Retail
SJ30	San Jose	Santa Clara	37.3216873	-121.827154	7.0	Yes	50,000	248,717	25.14	Retail
SJ31	San Jose	Santa Clara	37.3226899	-121.826055	7.0	Yes	55,900	280,203	23.03	Retail
SJ32	San Jose	Santa Clara	37.3228181	-121.824956	7.0	Yes	62,100	307,941	14.74	Retail
SJ33	San Jose	Santa Clara	37.3240215	-121.823745	7.0	Yes	59,500	297,546	18.62	Retail
SJ34	San Jose	Santa Clara	37.3264525	-121.820177	7.0	No	63,400	290,631	6.10	Retail
SJ35	San Jose	Santa Clara	37.3127895	-121.852403	19.0	Yes	42,100	197,165	3.10	Industrial
SJ36	San Jose	Santa Clara	37.2980986	-121.834462	30.0	Yes	45,300	280,984	26.11	Residential
SJ37	San Jose	Santa Clara	37.2990284	-121.823844	30.0	Yes	91,300	365,355	10.30	Retail
SJ38	San Jose	Santa Clara	37.2940736	-121.832062	30.0	Yes	59,100	264,837	12.14	Expressway
SJ39	San Jose	Santa Clara	37.3161756	-121.787906	30.0	Yes	91,500	420,389	18.58	Residential
SJ40	San Jose	Santa Clara	37.3141199	-121.773313	30.0	No	151,100	626,206	3.23	Retail
SJ41	San Jose	Santa Clara	37.3069087	-121.760652	30.0	Yes	151,100	626,207	22.76	Residential
SJ42	San Jose	Santa Clara	37.3072721	-121.767651	30.0	Yes	151,100	626,206	10.72	Residential
SJ43	San Jose	Santa Clara	37.3024056	-121.774154	7.0	Yes	127,600	559,214	3.69	Urban Park
SJ44	San Jose	Santa Clara	37.2950255	-121.774992	30.0	Yes	133,800	716,435	3.43	Residential
SJ45	San Jose	Santa Clara	37.2827493	-121.756493	30.0	Yes	77,200	463,452	4.32	Residential
SJ46	San Jose	Santa Clara	37.2472836	-121.775798	7.0	Yes	123,200	514,769	0.79	Commercial
SJ47	San Jose	Santa Clara	37.2388143	-121.777038	7.0	Yes	91,000	408,834	1.77	Commercial
SJ48	San Jose	Santa Clara	37.2305466	-121.829577	30.0	Yes	104,100	443,946	7.93	Residential
SJ49	San Jose	Santa Clara	37.205767	-121.83005	30.0	Yes	199,500	607,241	10.27	Residential
SJ50	San Jose	Santa Clara	37.1983281	-121.836634	30.0	Yes	122,000	687,526	0.61	Residential
SJ51	San Jose	Santa Clara	37.2408624	-121.874388	30.0	Yes	179,500	661,606	5.40	Expressway
SJ52	San Jose	Santa Clara	37.2504856	-121.857384	7.0	Yes	79,900	351,610	12.71	Retail
SJ53	San Jose	Santa Clara	37.252582	-121.858634	7.0	Yes	71,500	348,368	10.18	Retail
SJ54	San Jose	Santa Clara	37.2464526	-121.914805	30.0	Yes	81,400	410,235	10.82	Residential

BASMAA Site ID	City	County	Latitude	Longitude	Days between Street Sweeping	Parking Restrictions?	5 Acre Buffer Around Site			Final Land Use Designation
							Household Median Income ($)	Median Home Value ($)	Population Density (people/acre)	
SJ55	San Jose	Santa Clara	37.2603655	-121.931467	None	Yes	91,700	425,768	8.38	Retail
SJ56	San Jose	Santa Clara	37.2734884	-121.934588	7.0	Yes	91.000	578,490	9.47	Retail
SJ57	San Jose	Santa Clara	37.3095093	-121.910966	30.0	Yes	49,100	590,194	19.13	Residential
SJ58	San Jose	Santa Clara	37.3013655	-121.956649	30.0	Yes	70,700	442,993	33.13	Residential
SJ59	San Jose	Santa Clara	37.3010161	-121.956537	30.0	Yes	63,100	409,119	41.90	Residential
SJ61	San Jose	Santa Clara	37.2980317	-122.009553	30.0	Yes	110,700	657,916	13.69	Residential
SJ62	San Jose	Santa Clara	37.3269523	-121.937262	30.0	No	71,700	445,541	9.65	Commercial
SJ64	San Jose	Santa Clara	37.3427565	-121.840254	30.0	Yes	48,800	288,476	32.88	Residential
SJ65	San Jose	Santa Clara	37.3683725	-121.91488	7.0	Yes	60,100	322,006	5.76	Commercial
SJ66	San Jose	Santa Clara	37.3770897	-121.902718	7.0	Yes	64,400	902,073	4.08	Commercial
SJ69	San Jose	Santa Clara	37.3849432	-121.890507	7.0	Yes	87,900	394,243	20.70	Residential
SJ70	San Jose	Santa Clara	37.390614	-121.868376	30.0	Yes	68,000	370,810	12.45	Residential
SJ71	San Jose	Santa Clara	37.3872284	-121.848298	30.0	Yes	111,500	427,209	19.28	Residential
SJ72	San Jose	Santa Clara	37.4046194	-121.84836	30.0	Yes	183,300	429,341	0.67	Residential
SJ73	San Jose	Santa Clara	37.3453376	-121.8311990	30.0	Yes	60,400	281,792	29.81	Residential
SJ74	San Jose	Santa Clara	37.3601419	-121.852868	30.0	Yes	54,800	225,893	44.15	Residential
SJ75	San Jose	Santa Clara	37.3601688	-121.852999	30.0	Yes	55,000	226,376	44.00	Residential
SJ76	San Jose	Santa Clara	37.3593987	-121.849809	30.0	Yes	55,700	233,963	40.39	Residential
SL01	San Leandro	Alameda	37.7222312	-122.154543	7.0	Yes	41,500	228,423	12.89	Retail
SL02	San Leandro	Alameda	37.7227843	-122.156291	2.3	Yes	42,400	238,879	8.40	Retail
SL03	San Leandro	Alameda	37.7006775	-122.140227	7.0	Yes	43,600	214,120	19.92	Retail
SL04	San Leandro	Alameda	37.696377	-122.139112	7.0	Yes	46,400	215,957	20.09	Retail
SL05	San Leandro	Alameda	37.7206276	-122.154863	30.0	No	39,800	207,168	22.00	Residential
SL06	San Leandro	Alameda	37.7222674	-122.153975	None	No	41,200	224,738	14.47	Retail
SL07	San Leandro	Alameda	37.7222314	-122.153707	None	No	40,900	221,538	15.84	Retail
SL08	San Leandro	Alameda	37.7221845	-122.151888	30.0	No	41,100	202,658	18.01	Residential
SL09	San Leandro	Alameda	37.7225592	-122.152686	2.3	Yes	41,300	224,584	17.53	Retail
SL10	San Leandro	Alameda	37.7228898	-122.152863	2.3	No	42,000	245,405	16.57	Retail

BASMAA Site ID	City	County	Latitude	Longitude	Days between Street Sweeping	Parking Restrictions?	5 Acre Buffer Around Site			Final Land Use Designation
							Household Median Income ($)	Median Home Value ($)	Population Density (people/acre)	
SL11	San Leandro	Alameda	37.7236163	-122.153797	2.3	No	42,600	265,448	15.21	Retail
SL12	San Leandro	Alameda	37.723033	-122.154898	2.3	Yes	42,400	238,879	8.40	Retail
SL13	San Leandro	Alameda	37.7243364	-122.155041	2.3	Yes	42,500	259,170	13.60	Retail
SL14	San Leandro	Alameda	37.7244931	-122.157404	2.3	Yes	42,400	238,878	8.40	Retail
SL15	San Leandro	Alameda	37.7250129	-122.155649	7.0	Yes	41,000	227,262	16.99	Retail
SL16	San Leandro	Alameda	37.7254421	-122.154548	7.0	Yes	40,000	221,506	22.82	Commercial
SL17	San Leandro	Alameda	37.7261607	-122.15451	2.3	Yes	37,900	174,457	24.13	Commercial
SL18	San Leandro	Alameda	37.7269297	-122.156099	30.0	Yes	37,900	174,457	24.13	Retail
SL19	San Leandro	Alameda	37.7174989	-122.142951	7.0	Yes	42,900	223,800	13.79	K-12 School
SL20	San Leandro	Alameda	37.7152712	-122.13972	19.0	No	42,300	215,491	16.04	K-12 School
SL21	San Leandro	Alameda	37.7133974	-122.137278	25.0	No	43,000	209,418	19.09	Residential
SL22	San Leandro	Alameda	37.7128307	-122.136441	19.0	Yes	45,400	204,174	18.34	K-12 School
SL23	San Leandro	Alameda	37.7121131	-122.162207	7.0	Yes	56,500	225,778	6.43	Retail
SL24	San Leandro	Alameda	37.6867612	-122.138721	7.0	Yes	43,000	215,947	12.28	Retail
SL25	San Leandro	Alameda	37.6867421	-122.137036	7.0	Yes	45,000	210,869	10.07	Retail
SM01	San Mateo	San Mateo	37.539775	-122.313828	15.0	Yes	72,100	634,978	10.27	K-12 School
SM02	San Mateo	San Mateo	37.5456738	-122.328257	15.0	Yes	119,500	818,669	9.80	Residential
SM03	San Mateo	San Mateo	37.535716	-122.310821	15.0	Yes	87,800	575,777	10.88	Residential
SM04	San Mateo	San Mateo	37.5364655	-122.309062	15.0	Yes	77,800	575,450	13.11	Residential
SM05	San Mateo	San Mateo	37.5548711	-122.328482	15.0	Yes	119,600	984,379	9.39	Residential
SM06	San Mateo	San Mateo	37.5571919	-122.33249	15.0	Yes	122,000	987,270	9.12	Residential
SM07	San Mateo	San Mateo	37.5654409	-122.322621	None	Yes	47,000	562,685	15.13	Retail
SM08	San Mateo	San Mateo	37.567275	-122.320053	15.0	Yes	54,800	381,279	19.80	Retail
SM09	San Mateo	San Mateo	37.5550944	-122.307036	15.0	Yes	61,300	337,711	12.59	Retail
SM10	San Mateo	San Mateo	37.5538806	-122.305589	15.0	Yes	60,100	415,556	5.84	Retail
SM11	San Mateo	San Mateo	37.5299252	-122.289714	2.3	Yes	47,400	569,632	13.42	Retail
SM12	San Mateo	San Mateo	37.5326694	-122.314314	15.0	No	90,000	554,082	7.63	K-12 School
SP01	San Pablo	Contra Costa	37.9520228	-122.332927	7.5	Yes	33,600	114,162	14.89	Retail

BASMAA Site ID	City	County	Latitude	Longitude	Days between Street Sweeping	Parking Restrictions?	5 Acre Buffer Around Site			Final Land Use Designation
							Household Median Income ($)	Median Home Value ($)	Population Density (people/acre)	
SU01	Sunnyvale	Santa Clara	37.41715	-122.016317	14.0	Yes	59,100	237,178	0.14	Commercial
SU02	Sunnyvale	Santa Clara	37.3830632	-122.057087	14.0	No	68,800	586,000	44.84	Residential
SU03	Sunnyvale	Santa Clara	37.395024	-122.018279	14.0	Yes	57,000	349,259	20.94	K-12 School
SU04	Sunnyvale	Santa Clara	37.3930084	-122.01894	14.0	No	57,100	347,387	21.15	K-12 School
SU05	Sunnyvale	Santa Clara	37.3762517	-122.031872	14.0	Yes	52,900	374,423	13.10	Retail
SU06	Sunnyvale	Santa Clara	37.3716592	-122.036414	14.0	Yes	70,700	471,945	9.10	Commercial
SU07	Sunnyvale	Santa Clara	37.366606	-122.03247	14.0	Yes	81,900	582,349	14.44	Retail
SU08	Sunnyvale	Santa Clara	37.358746	-122.03212	14.0	Yes	93,100	479,457	16.68	Residential
SU09	Sunnyvale	Santa Clara	37.351987	-122.014433	14.0	Yes	74,700	513,146	17.27	Retail
SU10	Sunnyvale	Santa Clara	37.351998	-122.031558	14.0	Yes	89,300	458,481	17.42	Retail
SU11	Sunnyvale	Santa Clara	37.35225	-122.032711	14.0	Yes	113,700	516,516	12.01	K-12 School
SU12	Sunnyvale	Santa Clara	37.351908	-122.041637	14.0	Yes	100,700	570,060	9.46	Commercial
SU13	Sunnyvale	Santa Clara	37.351993	-122.050765	14.0	Yes	101,500	616,905	9.55	Commercial
SU14	Sunnyvale	Santa Clara	37.351936	-122.055148	14.0	No	107,300	622,533	8.94	Commercial
SU15	Sunnyvale	Santa Clara	37.341187	-122.041562	14.0	No	112,900	535,536	25.76	Retail
SU16	Sunnyvale	Santa Clara	37.3702605	-122.036862	14.0	Yes	71,000	472,104	9.11	Commercial
WC01	Walnut Creek	Contra Costa	37.9292391	-122.01605	15.0	Yes	96,600	411,348	5.86	Retail
WC02	Walnut Creek	Contra Costa	37.9189733	-122.037708	7.0	Yes	69,400	351,131	8.80	Retail
WC03	Walnut Creek	Contra Costa	37.8973722	-122.06758	2.3	Yes	48,600	273,143	9.78	Commercial
WC04	Walnut Creek	Contra Costa	37.8790529	-122.074842	30.0	Yes	95,600	351,313	6.48	Commercial
WC05	Walnut Creek	Contra Costa	37.91882	-122.08328	30.0	Yes	88,900	384,472	5.09	Residential

APPENDIX B

QUALITY ASSURANCE

RELATIVE PERCENT REDUCTION CALCULATIONS

Appendix B. Relative Percent Differences (<MDL = ½ MDL) between trash volumes measured in samples and duplicates collected at applicable sampling sites.

Event 1

Site ID	Sample Volume (gallons)	Duplicate Volume (gallons)	Relative Percent Difference
EVENT #1			
OK02	8.90	8.17	-8.2%
SJ05	9.36	8.96	-4.3%
SJ25	19.30	18.95	-1.8%
SJ31	11.34	10.49	-7.5%
SL02	6.52	6.81	4.5%
SL03	9.35	9.59	2.5%
SL04	20.91	19.65	-6.0%
SM01	20.79	19.50	-6.2%
		Mean	***-3.4%***
EVENT #2			
OK02	18.54	18.00	-2.9%
OK04	9.44	8.87	-6.0%
RI01	72.85	72.78	-0.1%
RI02	21.21	20.06	-5.4%
SJ11	7.75	5.72	-26.2%
SJ12	4.81	5.01	4.2%
SJ29	8.91	7.16	-19.6%
SJ30	11.53	10.68	-7.4%
SJ31	11.05	9.37	-15.2%
SJ51	8.92	8.24	-7.6%
SJ74	6.17	5.98	-3.1%
SL09	12.53	11.41	-9.0%
SL11	11.17	10.62	-4.9%
SL23	15.91	15.59	-2.0%
SL25	25.42	25.35	-0.3%
SM12	23.91	22.38	-6.4%
SP01	42.39	38.38	-9.5%
SU03	23.84	22.51	-5.6%
WC01	28.21	27.75	-1.7%
Mean			***-6.8%***
EVENT #3			
BK02	30.63	30.92	0.9%
BR04	15.36	14.76	-3.9%
FR04	12.45	12.10	-2.9%
RI01	43.42	44.02	1.4%
RI02	15.18	16.25	7.0%
RI03	15.63	15.16	-3.0%
SJ07	9.49	9.17	-3.3%
SJ17	9.51	9.44	-0.7%
SJ21	11.40	11.41	0.1%

Site ID	Sample Volume (gallons)	Duplicate Volume (gallons)	Relative Percent Difference
SJ28	13.82	13.82	0.0%
SJ38	15.79	14.82	-6.2%
SJ42	4.76	4.70	-1.3%
SL10	18.64	18.64	0.0%
SL21	8.05	7.88	-2.1%
SM01	16.78	16.33	-2.7%
SM03	38.00	37.64	-0.9%
SM07	19.31	19.26	-0.2%
SP01	40.25	44.69	11.0%
SU04	15.87	15.63	-1.5%
		Mean	***-0.4%***
EVENT #4			
FR03	2.90	2.91	0.4%
OK02	14.46	14.40	-0.4%
RI03	16.35	16.35	0.0%
SJ12	6.30	6.21	-1.4%
SJ13	14.16	14.02	-1.0%
SJ15	4.16	4.02	-3.5%
SJ16	6.39	6.39	0.0%
SJ22	22.79	22.65	-0.6%
SJ30	11.94	11.74	-1.6%
SJ38	3.62	3.62	0.0%
SJ46	4.62	4.44	-3.8%
SL04	9.96	9.87	-0.9%
SL05	8.30	8.33	0.3%
SL13	6.08	6.04	-0.6%
SL16	3.40	3.20	-5.9%
SL25	20.25	19.66	-2.9%
SM07	14.46	14.23	-1.6%
SP01	11.39	11.16	-2.1%
SU03	10.67	10.67	0.0%
		Mean	***-1.3%***

APPENDIX C

MONITORING RESULTS BY EVENT AND SITE

Appendix C - Monitoring Results Trash Characterization Volumes (gallons)

Event 1 (May 2011) Volumes (Gallons)

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Single Use Plastic Grocery Bags	Expanded Polystyrene Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
BK01	1.07	0.10				0.05	0.02	0.02	0.02	1.17
BK02	3.93	4.37	1.00	0.45	0.02	2.14	0.45	0.02	0.28	8.30
BK03	2.86	1.05			0.02	0.34	0.67	0.02	0.02	3.91
BK04	3.93	0.91				0.67	0.17	0.02	0.06	4.84
DN01	2.14	0.08				0.05	0.02		0.02	2.22
DN02	7.32	0.37				0.28	0.05		0.04	7.69
DN03	24.64	0.96				0.89	0.05		0.02	25.60
DN04	17.14	0.89	0.13			0.54	0.11	0.02	0.10	18.03
FR01	1.43	0.83				0.67	0.05		0.11	2.26
FR02	5.00	0.42				0.34	0.05	0.02	0.02	5.42
FR03	1.79	0.56		0.15		0.34	0.02		0.05	2.34
FR04	5.00	1.78		0.23		0.89	0.56	0.02	0.09	6.78
LV01	18.57	0.22	0.06			0.10	0.04		0.03	18.80
LV02	2.14	0.29				0.15	0.11	0.02	0.02	2.44
OK01	1.79	2.79		0.44	0.06	1.79	0.33	0.06	0.11	4.58
OK02	6.16	2.37			0.02	1.61	0.61	0.03	0.11	8.53
OK03	0.18	0.05				0.02		0.02	0.02	0.23
OK04	3.93	1.87		0.15	0.02	1.07	0.45		0.18	5.80
PL01	2.14	0.37				0.11	0.17	0.02	0.08	2.52
PL02	4.11	0.28				0.17	0.08	0.02	0.02	4.38
SJ01	7.68	4.86	0.89		0.78	2.50	0.40	0.02	0.28	12.54
SJ03	3.93	1.11		0.17	0.34	0.56	0.02	0.02	0.02	5.04
SJ04	10.36	2.47	0.20		0.02	1.00	0.13	0.02	1.11	12.82
SJ05	5.71	3.44	0.09		0.44	2.68	0.16		0.07	9.16
SJ06	0.00	0.69			0.02	0.23	0.44			0.69
SJ07	1.79	0.99	0.26			0.71			0.02	2.78
SJ08	5.36	3.09	0.34	0.22	0.44	1.79	0.28		0.02	8.45
SJ09	0.71	0.23				0.20	0.02		0.02	0.94
SJ10	2.86	0.66			0.17	0.45	0.02		0.02	3.51
SJ11	6.07	4.88	1.33	0.89	0.44	1.79	0.08	0.02	0.34	10.96
SJ12	3.75	1.95		0.11		1.61	0.17		0.06	5.70
SJ13	4.11	2.56	0.13	0.02	0.33	1.61	0.28		0.20	6.67
SJ14	5.54	2.36		0.10	0.13	1.79	0.28		0.06	7.89
SJ15	1.43	3.20	0.69	0.28	0.28	1.43	0.34		0.17	4.62
SJ16	1.61	2.36	0.22	0.17	0.11	1.43	0.33	0.02	0.08	3.96
SJ17	2.68	2.58	0.02	0.13	0.67	1.43	0.28		0.06	5.26

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Single Use Plastic Grocery Bags	Expanded Polystyrene Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
SJ18	0.02	0.55				0.45	0.08		0.02	0.56
SJ19	28.57	12.17	7.51	0.44	0.67	2.86	0.23	0.02	0.44	40.74
SJ20	25.00	6.25	1.94	0.02	0.39	2.95	0.44	0.02	0.50	31.25
SJ21	13.57	2.69	0.11	0.11	0.11	1.79	0.22	0.02	0.33	16.26
SJ22	5.54	3.42	0.64		0.10	2.05	0.44	0.02	0.17	8.96
SJ23	8.66	1.96	0.13	0.28	0.13	1.16	0.17	0.02	0.09	10.62
SJ24	7.50	1.96				1.61	0.11	0.02	0.22	9.46
SJ25	15.40	3.72	0.19	0.72	0.20	1.79	0.44	0.02	0.36	19.12
SJ26	10.00	1.69	0.09	0.23		1.25	0.05	0.02	0.05	11.69
SJ27	7.32	4.84	0.09	0.67	0.56	2.86	0.44		0.22	12.16
SJ28	10.18	2.58		0.06	0.22	1.25	1.00		0.06	12.76
SJ29	7.50	2.25		0.56		1.25	0.33		0.11	9.75
SJ30	6.96	2.99			0.17	2.14	0.44	0.02	0.22	9.96
SJ31	7.41	3.72	0.16	0.22	0.20	2.41	0.50		0.23	11.13
SJ32	8.39	2.41	0.16	0.28		1.43	0.26		0.28	10.80
SJ33	9.11	1.60			0.06	0.89	0.10		0.56	10.71
SJ34	8.57	1.73		0.44	0.07	1.07	0.05		0.10	10.30
SL01	1.07	0.47			0.06	0.28	0.08	0.02	0.04	1.54
SL02	2.59	4.08	0.09	0.02	0.26	3.21	0.23	0.07	0.20	6.67
SL03	8.04	1.44		0.28	0.17	0.11	0.83	0.02	0.03	9.47
SL04	18.75	1.53				0.67	0.14	0.11	0.61	20.28
SM01	18.26	1.89		0.67		0.94	0.14		0.14	20.15
SM02	5.36	1.11	0.47	0.15		0.40	0.08		0.02	6.46
SM03	5.00	0.36				0.23	0.11		0.02	5.36
SM04	1.07	0.03					0.02		0.02	1.10
SM05	0.54	0.02				0.02				0.55
SM06	4.64	0.03						0.02	0.02	4.67
SM07	3.21	6.04	0.19	1.33	0.08	2.50	1.78		0.17	9.26
SM08	2.50	0.89			0.02	0.54	0.22		0.11	3.39
SM09	2.14	0.14				0.08	0.05		0.02	2.28
SM10	2.50	1.20	0.13			0.71	0.17	0.02	0.17	3.70
SM11	5.71	0.28				0.11	0.11	0.05		5.99
SM12	3.75	0.51		0.17		0.23	0.10		0.02	4.26
SU01	11.61	0.19				0.17			0.02	11.79
SU02	29.64	4.51	0.50	0.02	0.33	2.86	0.34	0.02	0.44	34.15

Event 1 (May 2011) Weights (lbs)

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
BK01	13.05	0.28				0.08	0.04	0.1	0.06	13.33
BK02	27.68	3.68	0.26	0.26	0.01	1.44	0.64	0.01	1.06	31.36
BK03	19.1	1.18			0.01	0.31	0.69	0.08	0.09	20.28
BK04	38.17	1.38				0.37	0.59	0.08	0.34	39.55
DN01	7.55	0.07				0.02	0.03		0.02	7.62
DN02	50.8	0.39				0.23	0.07		0.09	51.19
DN03	105.58	0.6				0.48	0.08		0.04	106.18
DN04	71.85	0.4	0.05			0.2	0.02	0.07	0.06	72.25
FR01	10.62	0.22				0.1	0.03		0.09	10.84
FR02	33.13	0.73				0.5	0.16	0.03	0.04	33.86
FR03	14.59	0.63		0.1		0.28	0.08		0.17	15.22
FR04	39.01	3.57		0.29		0.73	2.26	0.01	0.28	42.58
LV01	128.43	0.3	0.05			0.12	0.1		0.03	128.73
LV02	9.62	0.35				0.18	0.12	0.01	0.04	9.97
OK01	17.09	5.08		0.16	0.06	2.4	1.55	0.31	0.6	22.17
OK02	38.975	2.775			0.005	1.02	1.13	0.33	0.29	41.75
OK03	2.05	0.14				0.01		0.12	0.01	2.19
OK04	19.91	1.33		0.03	0.01	0.61	0.57		0.11	21.24
PL01	23.82	0.88				0.19	0.5	0.02	0.17	24.7
PL02	10.5	0.24				0.12	0.07	0.01	0.04	10.74
SJ01	38.74	2.67	0.3		0.14	1.08	0.59	0.12	0.44	41.41
SJ03	18.4	0.86		0.19	0.06	0.57	0.03	0.01	0	19.26
SJ04	49.81	1.4	0.09		0.02	0.45	0.2	0	0.64	51.21
SJ05	45.57	3.135	0.03		0.065	2.67	0.23		0.14	48.705
SJ06	0	0.47			0.01	0.35	0.11			0.47
SJ07	6.52	0.51	0.08			0.43			0	7.03
SJ08	35.98	5.48	0.71	0.23	0.13	3.08	1.3		0.03	41.46
SJ09	3.19	0.23				0.22	0		0.01	3.42
SJ10	13.24	0.48			0.07	0.28	0.11		0.02	13.72
SJ11	42.36	4.63	0.34	0.58	0.13	2.58	0.17	0.02	0.81	46.99
SJ12	24.65	3.38		0.1		2.61	0.39		0.28	28.03
SJ13	22.28	2.84	0.04	0.03	0.06	1.09	0.93		0.69	25.12
SJ14	45.08	3.92		0.21	0.13	3	0.42		0.16	49
SJ15	8.28	3.21	0.2	0.15	0.05	1.99	0.5		0.32	11.49
SJ16	8.79	2.49	0.09	0.16	0.01	0.97	0.9	0.06	0.3	11.28
SJ17	16.98	2.19	0.02	0.12	0.05	0.96	0.86		0.18	19.17
SJ18	0.03	0.48				0.31	0.17		0	0.51
SJ19	177.36	5.23	0.12	0.06	0.31	3.2	0.44	0.03	1.07	182.59

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
SJ20	166.04	9.58	0.06	0.01	0.11	6.05	1.625	0.05	1.675	175.62
SJ21	111.06	4.98	0.29	0.06	0.14	2.73	0.59	0.16	1.01	116.04
SJ22	47.28	5.89	0.21		0.03	2.87	1.89	0.03	0.86	53.17
SJ23	68.98	2.31	0.04	0.32	0.1	1.34	0.17	0.02	0.32	71.29
SJ24	58.1	4.84				1.62	0.21	0.04	2.97	62.94
SJ25	120.95	5	0.165	0.34	0.05	2.515	0.83	0.005	1.095	125.95
SJ26	64.29	1.65	0.06	0.34		0.98	0.1	0.05	0.12	65.94
SJ27	42.65	5.37	0.05	0.31	0.14	3.11	0.87		0.89	48.02
SJ28	52.12	3.7		0.02	0.1	0.83	2.48		0.27	55.82
SJ29	45.18	2.16		0.17		1.04	0.61		0.34	47.34
SJ30	42.02	4.36			0.07	1.31	0.96	0	2.02	46.38
SJ31	45.9	7.15	0.095	0.11	0.86	3.885	1.505		0.695	53.05
SJ32	44.14	2.63	0.07	0.13		1.19	0.56		0.68	46.77
SJ33	46.15	1.62			0.09	0.78	0.13		0.62	47.77
SJ34	50.93	2.22		0.37	0.04	1.42	0.12		0.27	53.15
SL01	6.09	0.44			0.01	0.16	0.12	0.02	0.13	6.53
SL02	7.23	4.105	0.45	0.065	0.03	2.21	0.59	0.23	0.53	11.335
SL03	26.11	1.125		0.015	0.03	0.03	0.925	0.055	0.07	27.235
SL04	119.89	2.165				0.535	0.26	0.31	1.06	122.055
SM01	73.975	1.545		0.295		0.685	0.225		0.34	75.52
SM02	31.78	1.5	0.33	0.44		0.43	0.24		0.06	33.28
SM03	17.21	0.64				0.26	0.28		0.1	17.85
SM04	13.06	0.05					0.04		0.01	13.11
SM05	1.44	0.02				0.02				1.46
SM06	42.39	0.02						0.01	0.01	42.41
SM07	18.37	14.24	0.1	1.53	0.01	2.95	8.95		0.7	32.61
SM08	11.11	1.79			0.02	0.56	0.88		0.33	12.9
SM09	12.79	0.3				0.15	0.14		0.01	13.09
SM10	10.38	1.43	0.02			0.77	0.32	0.02	0.3	11.81
SM11	20.2	0.29				0.04	0.19	0.06		20.49
SM12	32.43	1.04		0.17		0.37	0.31		0.19	33.47
SU01	78.49	0.36				0.35			0.01	78.85
SU02	188.57	5	0.26	0.04	0.09	2.77	0.65	0.04	1.15	193.57

Event 2 (September 2011) Volumes (Gallons)

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
BE01	11.07	0.52			0.22	0.17	0.02		0.11	11.59
BK01	2.68	0.78				0.44	0.22		0.11	3.46
BK02	15.36	4.68		0.67	0.02	2.00	1.67		0.33	20.04
BK03	11.25	2.77			0.11	1.33	1.22	0.03	0.08	14.02
BK04	6.61	1.92		0.22	0.02	0.56	0.89	0.02	0.22	8.53
BR01	5.18	2.19		0.56	0.05	0.67	0.67	0.03	0.22	7.36
BR02	11.43	2.41	0.13		0.44	1.44	0.22		0.17	13.84
BR03	6.43	0.92	0.25			0.22	0.33		0.11	7.35
BR04	6.43	3.09	0.09	0.33	1.00	1.33			0.33	9.52
DN01	5.00	0.05				0.02	0.02		0.02	5.05
DN02	10.89	0.80			0.02	0.44	0.22	0.02	0.10	11.69
DN03	12.68	1.90		0.22	0.02	1.33	0.22		0.11	14.58
DN04	6.25	0.41			0.03	0.33	0.03		0.03	6.66
FR01	2.14	0.34			0.02	0.06	0.22	0.03	0.03	2.49
FR02	10.54	0.87		0.11	0.06	0.33	0.33	0.02	0.03	11.41
FR03	3.39	0.98			0.02	0.78	0.02		0.17	4.37
FR04	6.61	2.89			0.11	2.50	0.06		0.22	9.50
LV01	16.61	0.17				0.11	0.03		0.04	16.78
LV02	2.14	0.78				0.44	0.22	0.11		2.92
OK01	1.96	2.68		0.67	0.22	1.33	0.22	0.01	0.22	4.64
OK02	9.87	8.41	0.05	1.06	1.06	2.50	3.39	0.02	0.33	18.27
OK03	3.57	0.78			0.05	0.44	0.22	0.02	0.05	4.35
OK04	5.63	3.53		0.22	0.19	1.28	1.58		0.25	9.15
OR01	0.20	0.30				0.17	0.11	0.03		0.50
OR02	1.61	0.30				0.22	0.05		0.03	1.90
PL01	2.32	0.88			0.05	0.44	0.11	0.05	0.22	3.20
PL02	3.57	0.23				0.11	0.05	0.02	0.05	3.80
RI01	30.00	42.82	0.13	4.00	3.78	25.00	9.12	0.02	0.78	72.82
RI02	10.71	9.92	1.34	0.67	0.17	5.00	1.31	0.02	1.42	20.63
RI03	3.93	7.15	0.68	0.22	1.33	1.78	1.78	0.03	1.33	11.08
SC01	3.21	8.74		0.22	0.78	3.75	3.39	0.04	0.56	11.95
SJ01	3.39	0.92	0.09		0.02	0.67	0.11	0.02	0.02	4.31
SJ03	3.39	2.73	0.26	0.22	0.11	1.89	0.22		0.03	6.13
SJ04	8.75	1.05	0.29		0.05	0.56	0.11	0.02	0.03	9.80
SJ05	7.68	0.35				0.11	0.22		0.02	8.03
SJ06	1.07	4.12	0.55		0.22	1.56	1.78		0.02	5.19
SJ07	3.75	2.28	0.26		0.02	1.56	0.22	0.11	0.11	6.03
SJ08	6.79	4.79		1.11	0.67	1.78	1.11		0.13	11.58

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ09	0.71	0.15				0.03	0.10		0.03	0.86
SJ10	0.71	1.13			0.02	1.00			0.11	1.84
SJ11	4.55	2.18		0.28	0.67	0.61	0.22	0.02	0.39	6.74
SJ12	1.52	3.40		0.44	0.04	1.06	0.28	0.36	1.22	4.91
SJ13	6.96	4.59		0.02	0.56	2.00	1.56	0.02	0.44	11.55
SJ14	6.07	3.03	0.09	0.22	0.05	0.67	0.22		1.78	9.10
SJ15	0.89	3.00		0.56	0.33	1.67	0.33		0.11	3.89
SJ16	1.07	6.75	0.36	0.11	0.89	3.93	0.78	0.02	0.67	7.82
SJ17	1.61	1.61			0.22	1.11	0.22		0.05	3.21
SJ19	4.11	3.07	0.18		0.67	0.89	1.00		0.33	7.18
SJ20	13.04	2.78		0.11	0.22	1.72	0.33	0.06	0.33	15.81
SJ21	3.04	2.48	0.37		0.11	1.56	0.22		0.22	5.51
SJ22	7.68	5.07		1.11	0.02	3.04	0.44	0.02	0.44	12.75
SJ23	4.82	1.79		0.11		0.44	0.11	0.02	1.11	6.61
SJ24	1.96	2.84	0.40	0.56	0.22	0.89	0.33		0.44	4.80
SJ25	6.96	2.89	0.89		0.22	1.33	0.22		0.22	9.85
SJ26	7.32	2.36		0.44	0.02	1.78	0.08		0.05	9.68
SJ27	1.79	2.59		0.11	0.02	1.44	0.89	0.02	0.11	4.37
SJ28	5.36	2.24	0.13		0.56	1.22	0.22		0.11	7.60
SJ29	4.82	3.22	0.13	0.94	0.11	1.25	0.56		0.22	8.04
SJ30	7.86	3.24		0.11	0.02	1.11	1.94		0.06	11.10
SJ31	3.48	6.73		0.17	0.50	1.83	4.02	0.02	0.19	10.21
SJ32	6.43	1.74	0.25		0.05	0.78	0.44		0.22	8.17
SJ33	4.64	3.02		0.11	0.02	1.33	1.44		0.11	7.66
SJ34	3.93	1.77	0.13	0.02	0.05	1.44	0.02		0.11	5.70
SJ35	3.39	2.51			0.33	1.67	0.22	0.06	0.22	5.90
SJ36	6.96	1.40		0.22	0.44	0.56	0.05	0.02	0.11	8.36
SJ37	4.64	1.13		0.33	0.11	0.56	0.02		0.11	5.77
SJ38	6.25	9.94		1.11	0.22	3.04	5.00	0.02	0.56	16.19
SJ39	2.14	1.79		0.67	0.11	0.89		0.02	0.11	3.94
SJ40	1.25	1.83			0.11	0.44	1.22		0.05	3.08
SJ41	2.68	0.04				0.03			0.02	2.72
SJ42	3.04	0.03				0.02		0.02		3.07
SJ43	3.04	0.51	0.09		0.02	0.22	0.11	0.02	0.05	3.54
SJ44	1.07	0.12				0.02			0.10	1.19
SJ46	1.43	0.51		0.44	0.02	0.02	0.02		0.02	1.94
SJ47	3.93	0.00								3.93
SJ48	3.93	0.02				0.02				3.94
SJ49	3.21	0.08			0.05	0.02	0.02			3.30

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ50	3.21	0.24				0.22			0.02	3.45
SJ51	8.04	0.55				0.02	0.39		0.14	8.58
SJ52	2.50	0.82			0.02	0.67	0.02	0.02	0.11	3.32
SJ53	2.86	2.22			0.11	1.67	0.33		0.11	5.08
SJ54	4.82	0.02			0.02					4.84
SJ55	0.71	1.28	0.06			0.44	0.33		0.44	2.00
SJ56	6.43	2.33			0.11	1.44	0.33		0.44	8.76
SJ57	3.57	0.13				0.11			0.02	3.70
SJ58	2.50	1.03		0.11	0.02	0.67	0.22		0.02	3.53
SJ59	4.11	1.02		0.22		0.78	0.02			5.12
SJ60	1.96	0.29		0.22	0.02	0.06				2.26
SJ61	4.29	0.26				0.22	0.02		0.03	4.55
SJ62	2.86	0.70			0.02	0.56	0.02		0.11	3.56
SJ64	4.11	2.35	0.23	0.11	0.02	1.11	0.78		0.11	6.46
SJ65	5.36	0.92			0.44	0.44	0.02		0.02	6.28
SJ66	1.79	0.35		0.11		0.11	0.11		0.02	2.13
SJ67	4.29	1.24			0.03	0.33	0.78	0.02	0.09	5.53
SJ68	0.89	0.14				0.11	0.02		0.02	1.04
SJ69	1.79	1.16		0.22	0.02	0.89	0.02		0.02	2.94
SJ70	2.32	0.06			0.02	0.02	0.02		0.02	2.38
SJ71	2.50	0.14			0.02	0.02			0.11	2.64
SJ72	5.71	0.92			0.02	0.78	0.11		0.02	6.63
SJ73	5.71	1.25			0.11	1.00	0.13		0.02	6.97
SJ74	4.82	1.25	0.26	0.17	0.17	0.39	0.11	0.02	0.14	6.07
SJ75	4.82	0.60			0.11	0.44		0.02	0.03	5.42
SJ76	5.36	3.63	0.40	0.33	1.00	1.78	0.11		0.02	8.99
SL01	4.64	1.22			0.05	0.50	0.56		0.11	5.86
SL02	4.82	1.68			0.44	0.56	0.56	0.02	0.11	6.50
SL03	11.79	3.29		0.33	0.33	1.67	0.78	0.02	0.17	15.08
SL04	10.89	2.36		0.22	0.22	1.33	0.33	0.03	0.22	13.25
SL05	1.43	1.27				1.11	0.11		0.05	2.70
SL06	11.79	2.34			0.05	1.22	1.00	0.02	0.06	14.13
SL07	6.96	1.59	0.09	0.78		0.44	0.22		0.05	8.55
SL08	5.36	0.19				0.11	0.05	0.02	0.02	5.55
SL09	8.30	3.67	0.13	0.78	0.02	1.06	1.50		0.19	11.97
SL10	6.43	0.92			0.02	0.44	0.33	0.02	0.11	7.35
SL11	8.84	2.06		0.39		0.50	1.11	0.02	0.04	10.90
SL12	3.04	1.36			0.11	0.67	0.56		0.03	4.39
SL13	25.71	2.54			0.02	1.00	1.33	0.03	0.17	28.25

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SL14	3.75	1.40			0.05	0.67	0.44	0.02	0.22	5.15
SL15	4.11	2.79		0.33	0.02	0.33	2.00		0.11	6.90
SL16	1.43	0.54			0.02	0.44	0.05	0.02	0.02	1.97
SL17	0.54	0.26	0.07		0.02	0.11	0.03	0.02	0.03	0.79
SL18	8.57	8.08		0.67	0.44	1.00	1.33	0.02	4.62	16.65
SL19	10.18	2.01			0.05	1.11	0.78	0.03	0.05	12.19
SL20	9.46	2.46		0.33	0.11	1.33	0.56	0.02	0.11	11.92
SL21	4.29	0.61			0.02	0.17	0.33		0.09	4.90
SL22	1.96	3.03			0.03	0.78	2.00		0.22	4.99
SL23	13.53	2.22	0.13		0.03	1.61	0.19	0.03	0.22	15.75
SL24	5.18	1.90			0.11	1.22	0.22	0.02	0.33	7.08
SL25	18.39	6.99	0.26	0.94	1.44	2.95	1.06	0.03	0.31	25.39
SM01	10.36	2.72		0.11	0.05	1.78	0.67		0.11	13.07
SM02	20.54	0.61			0.02	0.44	0.11	0.02	0.03	21.15
SM03	8.93	0.60			0.02	0.33	0.22		0.03	9.52
SM04	4.64	0.72		0.22	0.02	0.44			0.04	5.36
SM05	18.04	0.52			0.17	0.28	0.06		0.02	18.55
SM06	11.96	0.61				0.56	0.03	0.02	0.02	12.58
SM07	8.21	7.67	0.20	0.89	1.67	2.68	1.67	0.02	0.56	15.88
SM08	2.32	1.65			0.03	0.78	0.17	0.02	0.67	3.97
SM09	9.29	0.44			0.06	0.33	0.02	0.02	0.02	9.72
SM10	5.71	0.59			0.02	0.44	0.02		0.11	6.30
SM11	16.25	0.99		0.22	0.05	0.22	0.44	0.02	0.04	17.24
SM12	20.27	2.88		0.39	0.22	1.97	0.14	0.02	0.14	23.14
SP01	23.04	17.35	0.33	0.89	0.67	6.09	7.59	0.02	1.78	40.39
SU01	4.82	1.17			0.02	1.11	0.02	0.02	0.02	6.00
SU02	11.43	3.24	0.23	0.56	0.02	1.33	0.22	0.11	0.78	14.67
SU03	19.11	4.07	0.31	0.72	0.12	1.94	0.72	0.09	0.17	23.18
SU04	16.07	2.15	0.13	0.44	0.11	1.22	0.02		0.22	18.22
WC01	26.21	1.77		0.19	0.04	0.61	0.33	0.02	0.58	27.98
WC02	9.11	0.90	0.25	0.22	0.02	0.33	0.03	0.03	0.03	10.00
WC03	2.32	1.14		0.22	0.11	0.44	0.33		0.03	3.46
WC04	28.04	0.36			0.01	0.28	0.02	0.02	0.04	28.39

Event 2 (September 2011) Weight (lbs)

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
BE01	59.52	0.21			0.05	0.09	0.01		0.07	59.73
BK01	18.46	1.31				0.55	0.64		0.12	19.77
BK02	17.61	2.05		0.10	0.01	0.39	0.25		1.30	19.66
BK03	26.31	1.20			0.01	0.50	0.36	0.21	0.12	27.51
BK04	43.91	2.59		0.24	0.01	0.64	1.23	0.00	0.47	46.50
BR01	26.14	0.92		0.05	0.01	0.14	0.44	0.16	0.13	27.05
BR02	40.32	1.18	0.04		0.04	0.07	0.99		0.05	41.49
BR03	4.47	0.22	0.12			0.05	0.04		0.02	4.68
BR04	9.55	0.54	0.04	0.03	0.16	0.21			0.11	10.08
DN01	5.89	0.06				0.03	0.02		0.02	5.95
DN02	20.94	0.46			0.00	0.25	0.12	0.01	0.09	21.40
DN03	41.71	0.70		0.07	0.00	0.25	0.29		0.10	42.41
DN04	14.52	0.18			0.01	0.11	0.01		0.05	14.69
FR01	5.89	0.25			0.00	0.05	0.08	0.09	0.04	6.15
FR02	32.68	0.44		0.04	0.04	0.17	0.17	0.00	0.03	33.12
FR03	19.71	1.07			0.01	0.74	0.02		0.31	20.78
FR04	49.84	3.47			0.04	2.86	0.11		0.47	53.31
LV01	121.69	0.35				0.10	0.05		0.20	122.04
LV02	5.00	0.39				0.17	0.16	0.06		5.39
OK01	16.43	4.81		1.02	0.20	2.73	0.39	0.12	0.36	21.24
OK02	23.17	3.11	0.05	0.18	0.10	0.63	1.53	0.01	0.62	26.28
OK03	7.75	0.25			0.00	0.15	0.04	0.00	0.06	8.00
OK04	11.23	0.71		0.01	0.01	0.25	0.34		0.11	11.94
OR01	0.58	0.03				0.01	0.02	0.00		0.61
OR02	2.46	0.06				0.05	0.00		0.01	2.52
PL01	13.45	1.69			0.02	0.83	0.22	0.35	0.27	15.14
PL02	10.07	0.28				0.09	0.14	0.03	0.02	10.35
RI01	27.00	12.39	0.03	1.73	0.48	4.36	5.33	0.09	0.37	39.39
RI02	20.33	16.49	0.55	0.32	0.04	4.04	6.26	0.01	5.29	36.82
RI03	15.68	6.24	0.09	0.12	0.16	1.35	1.16	0.28	3.10	21.93
SC01	8.53	2.29		0.03	0.10	0.64	1.17	0.07	0.27	10.82
SJ01	4.54	0.16	0.04		0.01	0.08	0.02	0.01	0.00	4.70
SJ03	16.88	0.72	0.05	0.06	0.02	0.55	0.03		0.01	17.60
SJ04	26.26	1.11	0.95		0.00	0.10	0.02	0.01	0.03	27.37
SJ05	4.75	0.08				0.02	0.06		0.00	4.83
SJ06	0.37	0.49	0.17		0.01	0.16	0.15		0.00	0.86
SJ07	23.31	1.72	0.07		0.01	1.15	0.30	0.07	0.12	25.03
SJ08	22.07	1.31		0.15	0.09	0.43	0.48		0.16	23.38

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ09	0.84	0.11				0.00	0.01		0.10	0.95
SJ10	3.42	0.39			0.01	0.29			0.09	3.81
SJ11	26.22	1.86		0.17	0.12	0.46	0.35	0.01	0.76	28.08
SJ12	3.05	3.11		0.05	0.00	0.38	0.07	1.15	1.46	6.16
SJ13	11.01	1.78		0.02	0.10	0.45	0.89	0.04	0.28	12.79
SJ14	14.69	4.83	0.48	0.06	0.00	0.10	0.03		4.16	19.52
SJ15	2.82	1.62		0.20	0.10	0.89	0.27		0.16	4.44
SJ16	3.93	2.89	0.17	0.02	0.05	1.77	0.19	0.00	0.69	6.82
SJ17	7.01	0.66			0.02	0.51	0.10		0.03	7.67
SJ19	22.38	1.04	0.07		0.04	0.43	0.33		0.17	23.42
SJ20	48.39	3.05		0.05	0.09	1.63	0.60	0.11	0.57	51.44
SJ21	17.82	2.85	0.15		0.04	1.98	0.24		0.44	20.67
SJ22	37.92	5.22		0.71	0.00	2.07	0.49	0.01	1.94	43.14
SJ23	32.55	3.72		0.07		0.77	0.09	0.08	2.71	36.27
SJ24	11.89	1.95	0.08	0.28	0.02	0.96	0.19		0.42	13.84
SJ25	19.40	0.74	0.18		0.02	0.32	0.13		0.09	20.14
SJ26	35.62	1.53		0.30	0.02	1.00	0.12		0.09	37.15
SJ27	5.81	0.88		0.02	0.05	0.50	0.24	0.01	0.06	6.69
SJ28	22.07	1.45	0.06		0.24	0.85	0.17		0.13	23.52
SJ29	16.60	2.52	0.03	0.16	0.01	1.66	0.29		0.39	19.12
SJ30	8.31	1.18		0.03	0.01	0.26	0.84		0.04	9.48
SJ31	2.18	1.53		0.01	0.02	0.28	1.11	0.05	0.06	3.71
SJ32	8.88	0.64	0.10		0.01	0.20	0.19		0.14	9.52
SJ33	1.97	0.34		0.01	0.00	0.13	0.17		0.03	2.31
SJ34	20.84	1.65	0.03	0.11	0.03	1.28	0.10		0.10	22.49
SJ35	19.15	4.59			0.10	1.28	0.23	2.58	0.40	23.74
SJ36	43.91	1.41		0.36	0.06	0.63	0.04	0.01	0.31	45.32
SJ37	31.37	1.23		0.21	0.05	0.88	0.01		0.08	32.60
SJ38	13.71	2.14		0.14	0.03	0.62	0.94	0.02	0.39	15.85
SJ39	1.84	0.33		0.09	0.01	0.11		0.01	0.11	2.17
SJ40	5.27	0.74			0.02	0.54	0.12		0.06	6.01
SJ41	12.94	0.01				0.01			0.00	12.95
SJ42	14.78	0.07				0.06		0.01		14.85
SJ43	13.42	0.16	0.03		0.01	0.05	0.02	0.02	0.03	13.58
SJ44	3.18	0.68				0.02			0.66	3.86
SJ46	8.72	0.43		0.28	0.04	0.04	0.01		0.06	9.15
SJ47	2.13	0.00								2.13
SJ48	0.81	0.00				0.00				0.81
SJ49	19.05	0.03			0.03	0.00	0.00			19.08

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ50	20.50	0.31				0.20			0.11	20.81
SJ51	3.53	0.06				0.01	0.04		0.02	3.59
SJ52	13.07	0.43			0.02	0.27	0.00	0.00	0.14	13.50
SJ53	9.08	0.57			0.01	0.34	0.17		0.05	9.65
SJ54	24.88	0.00			0.00					24.88
SJ55	5.44	3.63	0.06			0.19	0.11		3.27	9.07
SJ56	9.55	0.90			0.01	0.25	0.05		0.59	10.45
SJ57	20.90	0.13				0.13			0.00	21.03
SJ58	13.14	0.73		0.06	0.00	0.45	0.22		0.00	13.87
SJ59	16.88	0.48		0.07		0.41	0.00			17.36
SJ60	0.95	0.03		0.02	0.00	0.01				0.98
SJ61	17.97	0.20				0.10	0.00		0.10	18.17
SJ62	21.97	0.64			0.00	0.48	0.00		0.16	22.61
SJ64	3.83	0.75	0.26	0.03	0.01	0.12	0.11		0.22	4.58
SJ65	30.37	0.73			0.07	0.56	0.07		0.03	31.10
SJ66	5.80	0.27		0.08		0.08	0.08		0.03	6.07
SJ67	1.45	0.16			0.01	0.03	0.09	0.01	0.02	1.61
SJ68	2.35	0.14				0.11	0.00		0.03	2.49
SJ69	1.53	0.22		0.12	0.00	0.06	0.02		0.02	1.75
SJ70	2.99	0.05			0.01	0.01	0.00		0.03	3.04
SJ71	15.04	0.40			0.00	0.06			0.34	15.44
SJ72	4.87	0.09			0.02	0.06	0.01		0.00	4.96
SJ73	1.57	0.06			0.01	0.03	0.02		0.00	1.63
SJ74	19.74	0.75	0.13	0.13	0.03	0.21	0.05	0.00	0.20	20.49
SJ75	21.85	0.36			0.04	0.27		0.02	0.03	22.21
SJ76	28.33	1.82	0.13	0.33	0.15	1.07	0.10		0.04	30.15
SL01	5.16	0.16			0.00	0.06	0.07		0.03	5.32
SL02	4.14	0.14			0.02	0.05	0.04	0.02	0.01	4.28
SL03	39.55	3.39		0.02	0.10	2.25	0.75	0.01	0.26	42.94
SL04	56.29	2.74		0.07	0.05	1.41	0.43	0.17	0.62	59.02
SL05	1.10	0.11				0.07	0.02		0.02	1.21
SL06	7.39	0.27			0.00	0.11	0.13	0.01	0.02	7.66
SL07	9.65	0.62	0.44	0.07		0.03	0.04		0.04	10.27
SL08	14.97	0.09				0.05	0.03	0.01	0.00	15.06
SL09	5.35	1.62	0.07	0.04	0.01	0.17	1.28		0.06	6.97
SL10	3.73	0.15			0.00	0.10	0.03	0.00	0.02	3.88
SL11	5.77	0.31		0.03		0.06	0.09	0.10	0.04	6.08
SL12	1.72	0.15			0.01	0.04	0.09		0.01	1.87
SL13	12.46	0.53			0.00	0.13	0.18	0.18	0.04	12.99

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SL14	13.33	0.61			0.00	0.17	0.30	0.00	0.14	13.94
SL15	3.03	0.59		0.03	0.00	0.03	0.50		0.03	3.62
SL16	2.50	0.08			0.00	0.05	0.01	0.01	0.01	2.58
SL17	4.89	0.09	0.01		0.00	0.03	0.00	0.01	0.04	4.98
SL18	29.30	4.61		0.07	0.01	0.16	0.26	0.03	4.08	33.91
SL19	14.17	0.56			0.01	0.31	0.14	0.07	0.03	14.73
SL20	29.94	1.15		0.05	0.01	0.51	0.43	0.01	0.14	31.09
SL21	7.75	0.10			0.00	0.03	0.04		0.03	7.85
SL22	4.82	1.34			0.00	0.11	1.09		0.14	6.16
SL23	125.00	4.02	0.06		0.03	2.45	0.27	0.37	0.84	129.02
SL24	23.84	2.04			0.02	1.10	0.35	0.01	0.56	25.88
SL25	25.90	2.95	0.14	0.06	0.21	0.80	0.60	0.20	0.95	28.85
SM01	17.11	0.71		0.02	0.00	0.43	0.23		0.04	17.82
SM02	152.24	0.90			0.00	0.56	0.32	0.01	0.02	153.15
SM03	28.29	0.67			0.02	0.11	0.48		0.07	28.96
SM04	42.35	1.13		0.65	0.00	0.47			0.02	43.48
SM05	133.28	0.35			0.05	0.15	0.06		0.10	133.63
SM06	94.14	0.64				0.52	0.09	0.02	0.01	94.78
SM07	14.71	6.55	0.07	0.45	0.13	1.13	3.96	0.02	0.80	21.25
SM08	10.62	1.87			0.01	0.47	0.14	0.06	1.20	12.49
SM09	57.81	0.64			0.05	0.42	0.11	0.01	0.06	58.45
SM10	30.91	0.80			0.01	0.44	0.03		0.33	31.71
SM11	21.03	0.20		0.04	0.00	0.05	0.09	0.01	0.02	21.23
SM12	138.55	2.67		0.16	0.10	1.74	0.13	0.02	0.54	141.22
SP01	19.24	3.24	0.08	0.08	0.08	0.84	1.67	0.00	0.50	22.48
SU01	7.35	0.27			0.00	0.10	0.00	0.17	0.00	7.61
SU02	39.93	2.21	0.06	0.20	0.00	0.35	0.06	0.20	1.34	42.14
SU03	42.01	1.41	0.22	0.07	0.02	0.67	0.24	0.11	0.10	43.42
SU04	77.06	3.36	0.08	0.35	0.08	2.13	0.03		0.69	80.42
WC01	42.05	0.68		0.01	0.00	0.17	0.20	0.00	0.30	42.73
WC02	62.59	0.55	0.13	0.08	0.00	0.29	0.01	0.01	0.04	63.14
WC03	4.34	0.22		0.05	0.01	0.06	0.08		0.02	4.56
WC04	137.97	0.28			0.01	0.14	0.04	0.01	0.08	138.25

Event 3 (January 2012) Volumes (Gallons)

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
BK01	10.00	7.77				1.11	4.64	0.02	2.00	25.54
BK02	24.91	5.86	0.13	1.11	0.05	2.89	1.50	0.02	0.17	36.63
BK03	14.02	1.17	0.05			0.44	0.56	0.02	0.10	16.35
BK04	8.48	1.57		0.06	0.06	0.89	0.33	0.02	0.22	11.62
BR01	10.63	0.72	0.09			0.39	0.17	0.02	0.06	12.07
BR02	31.88	1.86			0.56	0.89	0.33		0.09	35.60
BR04	13.71	1.35		0.11	0.13	0.75	0.18	0.02	0.17	16.41
DN01	5.00	0.05				0.02	0.02		0.02	5.09
DN02	5.98	0.12				0.09	0.02		0.02	6.22
DN03	43.48	0.31	0.13			0.11	0.05		0.02	44.10
DN04	26.52	0.49		0.33		0.11	0.02	0.02	0.02	27.51
FR01	18.30	0.38				0.22	0.11		0.05	19.06
FR02	25.71	0.66				0.50	0.11		0.05	27.04
FR03	31.96	3.67		0.44	0.44	1.44	0.89	0.11	0.33	39.30
FR04	10.36	1.92			0.22	1.44	0.11	0.02	0.13	14.19
LV01	18.39	0.56				0.33	0.11		0.11	19.50
LV02	31.79	1.33				1.00	0.22	0.06	0.05	34.44
OK01	4.38	2.37	0.09	0.44		1.06	0.72		0.05	9.11
OK02	42.77	14.92	0.13	0.44	0.44	10.00	2.89	0.13	0.89	72.61
OK03	4.91	1.96				0.89	0.94	0.02	0.11	8.84
OK04	18.21	2.61		0.22		1.78	0.56		0.05	23.43
OR01	2.86	0.14				0.02	0.11		0.02	3.14
OR02	3.75	0.84				0.44	0.33	0.02	0.05	5.44
PL02	37.68	0.82				0.22	0.56		0.04	39.31
RI01	33.88	9.84		2.00	0.56	4.67	2.39		0.22	53.56
RI02	9.73	5.98	0.09	0.83	0.11	3.50	0.78	0.33	0.33	21.70
RI03	7.32	8.07	0.23	2.00		3.50	1.56	0.02	0.78	23.47
SJ01	1.43	1.14		0.22	0.11	0.61	0.17	0.02	0.02	3.71
SJ03	2.50	0.59			0.11	0.22	0.22	0.02	0.02	3.67
SJ04	4.82	0.18			0.05	0.11			0.02	5.17
SJ05	12.86	0.09				0.08			0.02	13.04
SJ06	5.36	4.07	0.29		0.56	1.22	0.67		1.33	13.49
SJ07	7.23	2.10	0.51	0.33		0.89	0.13	0.02	0.22	11.43
SJ11	6.96	1.83		0.67		0.67	0.44		0.05	10.62
SJ12	9.82	3.05		0.56	0.11	1.56	0.11	0.05	0.67	15.92
SJ13	14.82	3.35		0.11	0.22	1.78	0.89	0.02	0.33	21.52
SJ15	4.64	3.00		0.22		2.00	0.56		0.22	10.64
SJ16	5.89	6.64	0.22	0.44	0.22	4.64	0.67		0.44	19.18

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ17	6.34	3.14	0.07	0.47		1.78	0.36	0.02	0.44	12.61
SJ18	12.86	6.40	0.57	0.17	1.56	3.44	0.16		0.50	25.66
SJ19	10.00	1.34			0.67	0.50	0.09	0.02	0.08	12.69
SJ20	13.39	1.36	0.13		0.17	0.83	0.17	0.02	0.05	16.12
SJ21	9.33	2.07	0.13	0.50	0.02	1.28	0.06	0.02	0.08	13.47
SJ22	10.00	0.51		0.22		0.22	0.05		0.02	11.02
SJ23	14.82	5.22			0.22	3.11	1.22	0.05	0.61	25.25
SJ24	11.07	1.35			0.11	1.00	0.11	0.02	0.11	13.77
SJ25	5.18	0.08				0.05	0.02		0.02	5.34
SJ26	5.89	1.22		0.17		0.89	0.11		0.05	8.33
SJ27	13.13	2.95			0.22	2.22	0.39		0.11	19.02
SJ28	9.78	4.04	0.09		0.58	2.61	0.56	0.02	0.18	17.86
SJ29	6.61	3.98	0.16	0.44	0.09	2.33	0.39	0.02	0.56	14.57
SJ30	2.68	1.09	0.13	0.22	0.06	0.56	0.11		0.02	4.85
SJ31	7.86	2.07	0.13	0.33		1.33	0.22		0.05	12.00
SJ33	6.25	2.10		0.33		1.67	0.04		0.06	10.45
SJ34	6.70	1.46				1.39	0.02		0.06	9.62
SJ35	5.09	1.18				0.89	0.11	0.02	0.17	7.45
SJ36	9.20	0.32				0.14	0.04		0.14	9.84
SJ37	19.64	0.29				0.17	0.11		0.02	20.23
SJ38	12.14	3.16			0.02	1.39	1.53	0.02	0.21	18.46
SJ39	15.71	0.72	0.13			0.22	0.33	0.02	0.02	17.15
SJ40	12.95	1.33		0.22		0.89	0.11	0.02	0.09	15.60
SJ41	15.63	0.06				0.03	0.03			
SJ42	4.29	0.44		0.36		0.04	0.02		0.02	
SJ43	25.09	0.94		0.39		0.44	0.05		0.06	
SJ44	6.25	0.09				0.08			0.02	
SJ45	3.93	0.57				0.56	0.02			
SJ46	2.68	0.12				0.09	0.02		0.02	
SJ48	3.21	0.13				0.11			0.02	
SJ49	2.32	0.06				0.06				
SJ50	0.56	0.03				0.02			0.02	
SJ51	13.84	1.37	0.09			1.00	0.22		0.05	
SJ52	8.21	1.32	0.32			0.78	0.11		0.11	
SJ54	8.93	0.03				0.02	0.02			
SJ55	1.43	1.38			0.11	1.06	0.09	0.02	0.11	
SJ56	24.29	0.50				0.33			0.17	
SJ57	7.14	0.16				0.11			0.05	
SJ58	15.98	0.25				0.22	0.02		0.02	

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ59	17.95	1.80				1.33	0.28	0.02	0.17	
SJ61	21.16	0.05				0.05				
SJ62	10.89	0.16				0.13	0.02		0.02	
SJ64	29.91	1.55	0.13			0.83	0.56	0.02	0.02	
SJ65	40.27	0.91	0.09			0.72	0.06	0.02	0.02	
SJ66	8.75	0.25				0.22	0.02		0.02	
SJ69	0.36	0.26				0.26				
SJ70	13.39	1.14				1.00	0.06		0.09	
SJ71	5.36	0.27				0.11	0.11		0.05	
SJ72	36.88	0.33				0.11	0.22			
SJ73	11.07	1.14			0.33	0.78	0.02		0.02	
SJ74	31.52	1.28			0.44	0.46	0.02	0.02	0.35	
SJ75	10.89	0.89				0.67	0.11		0.11	
SJ76	10.54	2.41	0.22	0.22	0.56	1.11	0.08		0.22	
SL01	0.02	4.28		0.50	0.09	0.56	3.13		0.02	
SL02	16.16	0.78				0.56	0.11		0.11	
SL03	21.79	0.74				0.56	0.09	0.02	0.09	
SL04	15.27	2.59		0.17		1.83	0.14	0.22	0.22	
SL05	3.84	1.60			0.02	0.67	0.78		0.14	
SL06	26.07	1.57		0.72		0.50	0.22	0.02	0.11	
SL07	21.96	1.36		0.11		0.78	0.44	0.02	0.02	
SL08	8.84	0.74				0.67	0.02		0.06	
SL09	18.21	2.33			0.44	0.78	0.67		0.44	
SL10	17.90	0.74				0.42	0.24	0.04	0.04	
SL11	21.79	1.64		0.33	0.11	0.33	0.72	0.02	0.13	
SL12	18.48	0.69				0.56	0.05		0.09	
SL13	15.54	0.99				0.56	0.33		0.10	
SL14	12.95	2.13				0.89	1.00	0.02	0.22	
SL15	14.46	1.56			0.11	1.22	0.17	0.02	0.04	
SL16	13.21	0.51				0.33	0.09	0.02	0.08	
SL17	19.64	1.13			0.11	0.67	0.33		0.02	
SL18	8.21	0.77				0.56	0.17		0.05	
SL19	19.82	1.21				0.83	0.20	0.02	0.17	
SL20	23.84	1.32				0.33	0.89		0.10	
SL21	7.23	0.74				0.28	0.39		0.07	
SL22	6.79	0.51			0.02	0.33	0.11	0.02	0.04	
SL23	17.68	5.92			0.06	0.33	0.44		5.09	
SL24	44.11	2.49				1.33	0.67	0.05	0.44	
SL25	65.18	4.31		0.67	0.02	2.00	1.17		0.46	

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SM01	15.80	0.75				0.64	0.09		0.03	
SM02	11.34	0.25	0.07			0.11		0.02	0.06	
SM03	37.41	0.41			0.02	0.28	0.11			
SM04	7.59	0.14				0.11		0.02	0.02	
SM05	10.80	0.05				0.02	0.02		0.02	
SM07	14.06	5.22		1.06	0.09	2.50	1.11	0.02	0.44	
SM08	8.13	0.61			0.06	0.28	0.22	0.02	0.04	
SM09	12.77	1.40			0.11	0.67	0.28	0.02	0.33	
SM11	13.75	1.51		0.22	0.02	0.67	0.50	0.02	0.09	
SM12	3.13	0.47	0.13			0.06	0.08	0.09	0.11	
SP01	25.27	17.21	0.36	3.96	0.02	6.86	5.16	0.02	0.83	
SU01	6.96	0.18				0.17			0.02	
SU02	13.75	3.51	0.66	0.44	0.11	1.28	0.22	0.02	0.78	
SU03	15.71	1.10				1.00	0.09		0.02	
SU04	14.69	1.06	0.13			0.39	0.10		0.44	
SU05	14.46	0.25				0.22	0.02		0.02	
SU06	5.63	0.09				0.04	0.04		0.02	
SU07	10.98	1.75			0.39	0.83	0.39		0.14	
SU08	25.80	0.97			0.04	0.72	0.04	0.06	0.11	
SU09	7.77	0.59				0.44	0.02	0.02	0.11	
SU10	9.73	0.71				0.50	0.09	0.02	0.11	
SU11	6.61	0.73				0.67	0.05		0.02	
SU12	5.98	0.13				0.11			0.02	
SU13	15.00	0.59	0.09			0.44	0.04		0.02	
SU14	13.75	0.29				0.22	0.02	0.02	0.04	
SU15	8.66	0.80			0.17	0.50	0.09		0.05	
SU16	9.02	0.31				0.28	0.02		0.02	
WC01	31.07	2.48			0.02	1.00	1.33	0.02	0.11	
WC02	10.71	2.83		1.11		1.22	0.11		0.39	
WC03	22.50	0.67				0.33	0.22		0.11	
WC04	18.93	0.40				0.33	0.05		0.02	
WC05	3.39	0.05				0.02	0.02		0.02	
PL01	6.07	0.51				0.39	0.04		0.09	
SJ32	8.57	2.30	0.38	0.11	0.06	1.50	0.14		0.11	
SM06	5.09	0.09				0.04	0.04		0.02	
SM10	1.43	1.11			0.02	0.89	0.17		0.04	
SJ14	11.25	1.19	0.13	0.22	0.11	0.56	0.06		0.11	

Event 3 (January 2012) Weights (lbs)

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
BK01	22.19	29.56				0.36	23.93	0.01	5.26	51.75
BK02	26.37	1.14	0.03	0.04	0.01	0.54	0.44	0.01	0.08	27.51
BK03	40.75	0.41	0.03			0.14	0.04	0.04	0.16	41.16
BK04	53.25	1.74		0.06	0.06	0.89	0.28	0.01	0.44	54.99
BR01	36.54	0.79	0.05			0.24	0.25	0.11	0.14	37.33
BR02	18.28	0.25			0.02	0.12	0.10		0.01	18.53
BR04	19.17	0.65		0.02	0.02	0.24	0.06	0.01	0.31	19.81
DN01	5.09	0.02				0.00	0.00		0.02	5.11
DN02	3.29	0.03				0.01	0.00		0.02	3.32
DN03	14.28	0.03	0.02			0.01	0.00		0.00	14.31
DN04	8.02	0.05		0.02		0.01	0.00	0.01	0.01	8.07
FR01	14.95	0.07				0.02	0.01		0.04	15.02
FR02	103.04	1.00				0.79	0.13		0.08	104.04
FR03	32.65	0.75		0.03	0.05	0.31	0.19	0.14	0.03	33.40
FR04	42.36	1.52			0.03	1.08	0.14	0.01	0.28	43.88
LV01	85.89	0.42				0.18	0.10		0.14	86.31
LV02	32.57	0.45				0.14	0.02	0.25	0.04	33.02
OK01	30.04	1.64	0.09	0.06		0.60	0.76		0.13	31.68
OK02	120.62	14.40	0.08	0.18	0.09	4.09	7.84	0.36	1.76	135.02
OK03	10.16	0.87				0.32	0.48	0.00	0.07	11.03
OK04	31.65	0.82		0.03		0.40	0.34		0.05	32.47
OR01	1.22	0.04				0.00	0.01		0.03	1.26
OR02	2.67	0.11				0.06	0.03	0.00	0.02	2.78
PL02	43.28	0.20				0.11	0.08		0.01	43.48
RI01	29.44	2.97		0.68	0.02	1.29	0.82		0.17	32.41
RI02	20.54	3.83	0.04	0.19	0.01	1.58	0.61	0.99	0.42	24.37
RI03	28.00	7.51	0.06	0.49		2.19	2.71	0.01	2.06	35.51
SJ01	5.50	0.39		0.03	0.00	0.13	0.21	0.00	0.02	5.89
SJ03	2.46	0.24			0.01	0.05	0.12	0.05	0.01	2.70
SJ04	10.67	0.07			0.01	0.06			0.00	10.74
SJ05	11.19	0.01				0.01			0.00	11.20
SJ06	3.22	1.42	0.12		0.02	0.41	0.25		0.62	4.64
SJ07	15.24	1.18	0.18	0.12		0.43	0.18	0.01	0.27	16.42
SJ11	5.28	0.22		0.04		0.10	0.07		0.01	5.50
SJ12	55.57	3.22		0.38	0.03	1.55	0.34	0.08	0.84	58.79
SJ13	23.49	0.90		0.01	0.05	0.36	0.36	0.01	0.11	24.39
SJ15	7.00	1.75		0.05		1.00	0.50		0.20	8.75
SJ16	6.53	2.44	0.09	0.09	0.03	1.28	0.34		0.61	8.97

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ17	9.30	1.71	0.03	0.31		0.79	0.29	0.11	0.18	11.01
SJ18	62.38	6.45	1.29	0.04	0.31	3.49	0.28		1.04	68.83
SJ19	36.45	0.69			0.07	0.48	0.01	0.01	0.12	37.14
SJ20	31.92	1.09	0.04		0.04	0.33	0.55	0.00	0.13	33.01
SJ21	31.30	1.39	0.04	0.28	0.00	0.88	0.08	0.00	0.12	32.69
SJ22	34.61	0.27		0.13		0.12	0.01		0.01	34.88
SJ23	42.90	5.49			0.08	2.11	1.45	0.13	1.72	48.39
SJ24	29.82	0.52			0.01	0.37	0.06	0.00	0.08	30.34
SJ25	34.11	0.18				0.13	0.03		0.02	34.29
SJ26	15.32	0.71		0.05		0.28	0.31		0.07	16.03
SJ27	62.41	3.85			0.18	1.88	1.41		0.38	66.26
SJ28	27.48	2.06	0.04		0.08	1.17	0.48	0.07	0.22	29.54
SJ29	25.52	4.69	0.10	0.13	0.02	1.86	0.52	0.01	2.05	30.21
SJ30	6.93	0.33	0.06	0.04	0.01	0.10	0.11		0.01	7.26
SJ31	22.23	1.88	0.10	0.20		1.02	0.44		0.12	24.11
SJ33	10.34	0.53		0.05		0.39	0.04		0.05	10.87
SJ34	33.49	1.23				0.84	0.05		0.34	34.72
SJ35	27.15	1.38				0.87	0.10	0.00	0.41	28.53
SJ36	26.50	0.38				0.08	0.02		0.28	26.88
SJ37	13.97	0.22				0.05	0.15		0.02	14.19
SJ38	4.14	0.26			0.00	0.08	0.15	0.01	0.03	4.40
SJ39	11.15	0.14	0.05			0.05	0.03	0.00	0.01	11.29
SJ40	30.51	0.84		0.07		0.43	0.13	0.00	0.21	31.35
SJ41	19.61	0.04				0.01	0.03			19.65
SJ42	13.47	0.16		0.06		0.08	0.01		0.02	13.63
SJ43	40.97	0.47		0.16		0.21	0.01		0.09	41.44
SJ44	14.87	0.08				0.07			0.01	14.95
SJ45	5.66	0.21				0.16	0.05			5.87
SJ46	1.10	0.01				0.00	0.00		0.01	1.11
SJ48	16.62	0.04				0.03			0.01	16.66
SJ49	2.41	0.01				0.01				2.42
SJ50	4.09	0.03				0.00			0.03	4.12
SJ51	19.07	0.68	0.04			0.34	0.25		0.05	19.75
SJ52	13.78	1.05	0.18			0.23	0.20		0.44	14.83
SJ54	21.15	0.01				0.01	0.00			21.16
SJ55	6.22	0.95			0.02	0.39	0.13	0.03	0.38	7.17
SJ56	52.22	0.60				0.27			0.33	52.82
SJ57	21.57	0.13				0.02			0.11	21.70
SJ58	47.13	0.21				0.11	0.02		0.08	47.34

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ59	18.66	0.79				0.35	0.13	0.08	0.23	19.45
SJ61	52.42	0.04				0.04				52.46
SJ62	45.51	1.31				1.24	0.02		0.05	46.82
SJ64	8.76	0.24	0.04			0.10	0.06	0.00	0.04	9.00
SJ65	70.63	0.66	0.05			0.37	0.04	0.00	0.20	71.29
SJ66	21.32	0.92				0.06	0.02		0.84	22.24
SJ69	0.66	0.03				0.03				0.69
SJ70	19.43	0.27				0.14	0.02		0.11	19.70
SJ71	17.87	0.18				0.08	0.02		0.08	18.05
SJ72	12.82	0.02				0.01	0.01			12.84
SJ73	22.28	0.31			0.03	0.23	0.05		0.00	22.59
SJ74	56.09	1.78			0.07	0.21	0.03	0.00	1.47	57.87
SJ75	23.74	1.25				0.15	0.06		1.04	24.99
SJ76	51.32	1.78	0.38	0.18	0.18	0.88	0.04		0.12	53.10
SL01	15.10	0.51		0.04	0.01	0.06	0.37		0.03	15.61
SL02	43.81	0.81				0.34	0.22		0.25	44.62
SL03	55.21	0.61				0.33	0.15	0.01	0.12	55.82
SL04	66.92	2.92		0.04		1.43	0.17	0.54	0.74	69.84
SL05	2.82	0.24			0.00	0.09	0.11		0.04	3.06
SL06	24.24	0.29		0.02		0.11	0.04	0.01	0.11	24.53
SL07	13.45	0.36		0.07		0.09	0.13	0.01	0.06	13.81
SL08	15.03	0.21				0.11	0.01		0.09	15.24
SL09	17.90	0.47			0.04	0.16	0.17		0.10	18.37
SL10	15.82	0.53				0.12	0.04	0.25	0.12	16.35
SL11	31.02	0.69		0.00	0.01	0.05	0.12	0.09	0.42	31.71
SL12	22.03	0.10				0.05	0.02		0.03	22.13
SL13	31.16	0.38				0.17	0.08		0.13	31.54
SL14	24.68	0.63				0.14	0.22	0.04	0.23	25.31
SL15	27.89	0.65			0.03	0.30	0.18	0.07	0.07	28.54
SL16	17.82	0.32				0.08	0.02	0.01	0.21	18.14
SL17	13.42	0.19			0.01	0.08	0.09		0.01	13.61
SL18	28.35	0.23				0.08	0.11		0.04	28.58
SL19	69.89	0.64				0.26	0.14	0.01	0.23	70.53
SL20	39.75	0.19				0.07	0.09		0.03	39.94
SL21	19.64	0.21				0.06	0.09		0.06	19.85
SL22	20.63	0.20			0.00	0.13	0.04	0.01	0.02	20.83
SL23	40.33	1.58			0.01	0.09	0.10		1.38	41.92
SL24	100.10	2.85				0.93	0.64	0.34	0.94	102.95
SL25	156.60	2.60		0.26	0.00	1.06	0.51		0.77	159.20

BASMAA Site ID	Total Debris	Total Trash	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SM01	49.34	0.58				0.34	0.14		0.11	49.92
SM02	99.19	0.51	0.04			0.13		0.05	0.29	99.70
SM03	129.69	0.46			0.00	0.16	0.30			130.15
SM04	60.92	0.26				0.21		0.01	0.04	61.18
SM05	61.28	0.05				0.02	0.01		0.02	61.33
SM07	31.54	3.91		0.15	0.01	1.14	1.28	0.11	1.24	35.45
SM08	16.07	0.47			0.00	0.15	0.24	0.00	0.08	16.54
SM09	47.43	2.12			0.06	0.60	0.70	0.01	0.75	49.55
SM11	40.07	0.56		0.02	0.00	0.18	0.17	0.06	0.13	40.63
SM12	20.14	1.55	0.04			0.04	0.07	1.14	0.26	21.69
SP01	24.16	3.81	0.09	0.65	0.01	1.21	1.53	0.06	0.28	27.97
SU01	28.52	0.12				0.11			0.01	28.64
SU02	64.12	3.15	0.27	0.23	0.02	0.69	0.38	0.03	1.53	67.27
SU03	14.80	0.18				0.11	0.06		0.01	14.98
SU04	19.90	1.22	0.14			0.20	0.22		0.66	21.12
SU05	35.70	0.17				0.09	0.04		0.04	35.87
SU06	20.69	0.13				0.03	0.07		0.03	20.82
SU07	18.70	0.69			0.03	0.26	0.29		0.11	19.39
SU08	122.47	3.31			0.03	0.58	0.13	1.04	1.53	125.78
SU09	58.49	2.21				0.79	0.07	0.43	0.92	60.70
SU10	39.81	0.86				0.30	0.14	0.01	0.41	40.67
SU11	17.52	0.33				0.24	0.04		0.05	17.85
SU12	31.64	0.10				0.07			0.03	31.74
SU13	76.75	0.49	0.05			0.35	0.04		0.05	77.24
SU14	42.03	0.18				0.13	0.00	0.00	0.05	42.21
SU15	49.37	1.07			0.03	0.72	0.13		0.19	50.44
SU16	11.25	0.07				0.04	0.03		0.00	11.32
WC01	18.74	0.37			0.01	0.10	0.18	0.04	0.04	19.11
WC02	40.22	1.33		0.18		0.22	0.09		0.84	41.55
WC03	10.89	0.10				0.06	0.02		0.02	10.99
WC04	81.20	0.20				0.15	0.02		0.03	81.40
WC05	1.18	0.00				0.00	0.00		0.00	1.18
PL01	22.10	0.67				0.53	0.05		0.09	22.77
SJ32	27.62	2.19	0.14	0.05	0.07	0.85	0.37		0.71	29.81
SM06	21.44	0.17				0.04	0.12		0.01	21.61
SM10	3.09	0.76			0.00	0.45	0.21		0.10	3.85
SJ14	14.70	0.37	0.00	0.05	0.01	0.10	0.04		0.17	15.07

Event 4 (April 2012) Volumes (gallons)

BASMAA Site ID	Total Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
BE01	2.95	0.76				0.72			0.04	3.71
BK01	1.88	0.13				0.06	0.03	0.02	0.03	2.00
BK02	2.14	1.39	0.09			0.67	0.50	0.02	0.11	3.53
BK03	1.88	0.66				0.28	0.04	0.02	0.33	2.54
BK04	5.98	0.40	0.09			0.17	0.01	0.01	0.11	6.38
BR01	3.48	0.23				0.11	0.05	0.02	0.06	3.72
BR02	8.13	1.71			0.03	1.44	0.11	0.01	0.11	9.84
BR04	6.07	1.09				0.72	0.28		0.09	7.16
DN01	1.43	0.08				0.04	0.02		0.03	1.51
DN02	1.16	0.09				0.06	0.01		0.01	1.25
DN03	10.18	0.63	0.09			0.44	0.02		0.08	10.81
DN04	5.18	0.04				0.01	0.01		0.01	5.22
FR01	1.52	0.31		0.11		0.01	0.17		0.01	1.82
FR02	9.20	0.69			0.02	0.50	0.01	0.02	0.14	9.88
FR03	2.14	0.76		0.22		0.44	0.03		0.06	2.90
FR04	14.91	0.85				0.67	0.11	0.02	0.06	15.76
LV01	8.57	0.24				0.23			0.01	8.81
LV02	0.80	0.26				0.22	0.03		0.01	1.06
OK01		1.44				1.39	0.06			1.44
OK02	12.90	1.53		0.22		1.00	0.17	0.01	0.13	14.43
OK03	1.43	0.62		0.50		0.06		0.01	0.06	2.05
OK04	4.20	0.38				0.09	0.22		0.08	4.58
OR01	4.46	0.35		0.11		0.03	0.17	0.02	0.03	4.81
OR02	1.07	0.18				0.11	0.01		0.06	1.25
PL02	1.52	0.14			0.06	0.06	0.02		0.02	1.66
RI01	3.93	3.45	0.31	0.72	0.39	1.17	0.56	0.03	0.28	7.38
RI02	9.55	3.00	0.09			1.67	1.00	0.02	0.22	12.55
RI03	9.60	6.75	0.16	0.44	0.17	2.97	0.72	0.04	2.25	16.35
SJ01	5.89	1.94			0.67	1.11	0.05		0.11	7.83
SJ03	7.77	0.11				0.06			0.06	7.88
SJ04	6.34	0.04				0.04				6.38
SJ05	7.14	0.21					0.01		0.20	7.35
SJ06	4.55	3.00			0.67	1.61	0.06		0.67	7.55
SJ07	5.98	2.81	0.25		0.67	1.44	0.17		0.28	8.79
SJ08	6.96	1.74			0.44	1.22	0.01	0.02	0.05	8.71
SJ09	5.45	0.69				0.67	0.01		0.01	6.14
SJ10	0.27	0.23				0.11			0.11	0.50
SJ11	11.88	2.11	0.09		0.44	1.11	0.22	0.01	0.22	13.98
SJ12	4.87	1.39			0.06	1.11	0.11		0.11	6.26

BASMAA Site ID	Total Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ13	10.94	3.15			0.67	1.64	0.28	0.02	0.56	14.09
SJ15	1.47	2.62			0.11	2.31	0.09		0.11	4.09
SJ16	2.14	4.24	0.13	0.67	0.06	2.44	0.50		0.44	6.39
SJ17	2.77	3.62	0.16	0.67	0.67	1.61	0.11	0.02	0.39	6.39
SJ18	7.86	1.98	0.26			1.39	0.09	0.02	0.22	9.83
SJ19	4.11	1.30			0.11	0.78	0.23	0.04	0.14	5.41
SJ20	9.02	3.63	0.13		0.22	2.05	0.72		0.50	12.65
SJ21	4.91	1.43	0.13			0.89	0.28	0.02	0.11	6.34
SJ22	9.42	13.30	0.13	0.94	0.50	7.14	0.58	0.33	3.67	22.72
SJ23	6.34	1.14			0.03	0.89	0.11		0.11	7.48
SJ24	9.64	2.40	0.68		0.04	0.89	0.11	0.01	0.67	12.04
SJ25	4.38	0.08				0.06			0.02	4.45
SJ26	2.68	0.27				0.11	0.01		0.14	2.94
SJ27	2.95	0.86			0.28	0.44	0.06		0.09	3.81
SJ28	11.07	1.08			0.17	0.78	0.08		0.06	12.15
SJ29	5.71	4.41			0.56	2.86	0.56		0.44	10.13
SJ30	8.13	3.71	0.13	0.06	0.64	2.28	0.08		0.53	11.84
SJ31	0.54	0.05				0.01	0.01	0.02	0.01	0.59
SJ33	4.11	0.53				0.44	0.01	0.02	0.06	4.64
SJ34	2.50	2.08	0.13		0.22	1.39	0.28		0.06	4.58
SJ35	1.70	1.24			0.05	1.00	0.03		0.17	2.94
SJ36	5.98	0.60			0.11	0.17	0.03	0.02	0.28	6.58
SJ37	4.29	2.29			0.44	1.11	0.33	0.02	0.39	6.58
SJ38	2.50	1.12	0.09			0.89	0.09	0.02	0.04	3.62
SJ39	4.38	0.78	0.29			0.22	0.17		0.10	5.16
SJ40	0.36	0.08				0.05	0.01		0.02	0.44
SJ41	1.52	0.03				0.02			0.02	1.55
SJ42	1.79	0.13				0.09	0.01	0.02	0.02	1.91
SJ43	5.45	0.56				0.33	0.11		0.11	6.01
SJ44	0.71	0.29	0.28				0.01			1.01
SJ45	2.86	0.09				0.05	0.02		0.03	2.95
SJ46	4.11	0.42	0.23			0.17	0.02		0.01	4.53
SJ47	1.07	0.14				0.11			0.03	1.21
SJ48	2.23	0.03				0.02			0.02	2.26
SJ49	7.77	0.11				0.11				7.88
SJ50	4.11	0.03				0.02			0.02	4.14
SJ51	12.68	1.02			0.11	0.61	0.11	0.02	0.17	13.70
SJ52	20.00	1.30			0.09	1.11	0.03		0.07	21.30
SJ53	5.80	1.10	0.09			0.67	0.11		0.23	6.90
SJ54	5.00	0.04				0.01	0.01		0.02	5.04

BASMAA Site ID	Total Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SJ55	0.89	0.75				0.05	0.09		0.61	1.64
SJ56	6.25	0.29				0.22	0.01		0.06	6.54
SJ57	3.39	0.16	0.13			0.02	0.02			3.56
SJ58	9.11	1.71				1.33	0.33	0.02	0.03	10.81
SJ59	4.64	0.53				0.50			0.03	5.17
SJ61	5.00	0.14				0.11	0.02		0.01	5.14
SJ62	4.55	0.05				0.04			0.02	4.61
SJ64	3.13	1.35			0.02	0.89	0.22		0.22	4.47
SJ65	3.04	0.05				0.02	0.02		0.02	3.08
SJ66	10.71	0.08				0.04	0.03		0.02	10.79
SJ69	0.89	0.47				0.44			0.03	1.36
SJ70	6.16	0.36				0.33	0.01		0.02	6.52
SJ71	1.61	0.11	0.09			0.02				1.72
SJ72	15.71	0.21			0.03	0.11	0.01		0.06	15.92
SJ73	7.23	0.39				0.11			0.28	7.62
SJ74	8.30	0.47				0.33	0.03		0.11	8.77
SJ75	17.41	0.72	0.16			0.44	0.01		0.11	18.14
SJ76	0.45	0.72				0.06	0.11		0.56	1.17
SL01	0.80	0.21				0.03	0.11	0.02	0.06	1.02
SL02	1.07	1.20		0.44	0.02	0.67	0.01	0.02	0.05	2.28
SL03	6.25	0.39	0.12		0.02	0.11	0.11	0.02	0.01	6.64
SL04	8.88	1.03	0.32			0.44	0.09	0.02	0.17	9.92
SL05	6.92	1.40		0.06	0.56	0.39	0.22		0.17	8.32
SL06	2.05	1.81		0.17		1.28	0.28		0.09	3.86
SL07	0.36	0.06				0.01	0.02	0.02	0.01	0.41
SL08	5.80	0.12				0.03	0.01	0.02	0.06	5.92
SL09	0.98	0.55	0.13			0.03	0.11		0.28	1.53
SL10	1.61	0.18				0.03	0.06	0.02	0.08	1.79
SL11	5.09	0.78				0.33	0.28		0.17	5.87
SL12	4.73	1.03	0.08	0.56		0.09	0.14		0.17	5.76
SL13	5.22	0.84			0.02	0.31	0.22	0.02	0.28	6.06
SL14	2.44	0.61		0.26		0.09	0.20	0.02	0.05	3.05
SL15	6.61	1.57				0.39	1.06	0.02	0.11	8.18
SL16	1.56	1.74		0.33	0.06	0.42	0.28	0.02	0.64	3.30
SL17	4.64	0.17				0.10	0.01	0.02	0.04	4.81
SL18	5.09	0.30				0.06	0.22		0.03	5.39
SL19	9.11	0.51				0.44	0.03	0.01	0.03	9.61
SL20	2.32	1.12		0.33	0.11	0.44	0.11		0.11	3.44
SL21	8.21	0.11				0.06	0.03		0.03	8.32
SL22	2.32	0.35				0.11	0.22		0.01	2.67

BASMAA Site ID	Total Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc	
SL23	6.16	0.28				0.11	0.11		0.06	6.44
SL24	6.43	1.20		0.22	0.02	0.67	0.06	0.02	0.22	7.63
SL25	18.97	0.98				0.67	0.14	0.02	0.16	19.95
SM01	18.30	1.00				0.72	0.22		0.06	19.30
SM02	9.73	0.77	0.14	0.28	0.09	0.22	0.02	0.01	0.01	10.50
SM03	1.52	0.20				0.14	0.02		0.04	1.71
SM04	5.36	0.08				0.03	0.01	0.02	0.03	5.44
SM05	11.70	0.06				0.02	0.02	0.02	0.01	11.76
SM07	10.36	3.99		0.72	0.11	1.89	0.81	0.02	0.44	14.35
SM08	2.05	1.52				1.28	0.14	0.02	0.09	3.57
SM09	8.39	0.36				0.11	0.23		0.03	8.76
SM11	6.96	0.13				0.08		0.02	0.04	7.09
SM12	1.07	0.06				0.04	0.01		0.01	1.13
SP01	2.90	8.37	0.16	3.53	0.53	3.04	0.56	0.02	0.56	11.28
SU01	7.50	0.16				0.05	0.04	0.02	0.06	7.66
SU02	3.84	0.98	0.13			0.72	0.01		0.11	4.82
SU03	9.82	0.85				0.67	0.11	0.02	0.06	10.67
SU04	13.84	1.02				0.44	0.22	0.02	0.33	14.85
SU05	6.25	1.56		0.61		0.78	0.11		0.06	7.81
SU06	6.96	0.23				0.22			0.01	7.20
SU07	16.34	0.74			0.02	0.50	0.11		0.11	17.08
SU08	25.00	0.46			0.03	0.28	0.11	0.01	0.03	25.46
SU09	19.91	1.14			0.56	0.44	0.02	0.02	0.11	21.05
SU10	19.20	0.60				0.33	0.03	0.02	0.22	19.79
SU11	16.34	1.33			0.01	1.06	0.04		0.22	17.67
SU12	9.55	0.12				0.03	0.06	0.02	0.01	9.67
SU13	20.45	0.33				0.28	0.02		0.04	20.78
SU14	31.16	0.65			0.11	0.44	0.01	0.02	0.06	31.81
SU15	20.27	0.72				0.44	0.04	0.02	0.22	20.99
SU16	8.84	0.53				0.44	0.08		0.01	9.37
WC01	9.46	0.56				0.44	0.06		0.06	10.02
WC02	2.05	0.07				0.02	0.04		0.02	2.12
WC03	2.14	0.10				0.05	0.03		0.03	2.24
WC04	37.86	0.28				0.22	0.03	0.01	0.03	38.14
WC05	7.05	0.03				0.02			0.02	7.08

Event 4 (April 2012) Weights (lbs)

BASMAA Site ID	Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
BE01	28.87	0.63				0.38			0.25	29.50
BK01	19.88	0.63				0.13	0.30	0.02	0.18	20.51
BK02	8.89	0.98	0.04			0.19	0.22	0.01	0.52	9.87
BK03	24.15	1.15				0.40	0.15	0.01	0.59	25.30
BK04	76.37	2.55	0.48			0.65	0.13	0.04	1.25	78.92
BR01	27.75	0.61				0.27	0.10	0.01	0.23	28.37
BR02	28.18	0.82			0.01	0.39	0.19	0.01	0.22	29.00
BR04	23.81	0.67				0.18	0.35		0.14	24.48
DN01	6.33	0.14				0.06	0.00		0.08	6.47
DN02	7.24	0.10				0.06	0.01		0.03	7.34
DN03	47.96	0.51	0.07			0.27	0.01		0.16	48.47
DN04	24.19	0.08				0.03	0.03		0.02	24.27
FR01	12.20	0.10		0.02		0.02	0.04		0.02	12.30
FR02	64.14	1.66			0.00	1.02	0.03	0.05	0.56	65.80
FR03	8.30	0.63		0.16		0.20	0.06		0.21	8.92
FR04	118.92	1.72				0.81	0.60	0.02	0.29	120.64
LV01	46.78	0.14				0.11			0.03	46.92
LV02	1.06	0.11				0.09	0.01		0.01	1.17
OK01		1.34				1.24	0.10			1.34
OK02	91.50	2.57		0.20		1.09	0.60	0.34	0.35	94.07
OK03	18.55	2.07		0.82		0.36		0.11	0.78	20.62
OK04	33.57	0.46				0.06	0.31		0.09	34.03
OR01	24.24	0.57		0.16		0.00	0.37	0.00	0.03	24.81
OR02	5.77	0.29				0.13	0.05		0.11	6.06
PL02	9.48	0.23			0.01	0.18	0.03		0.01	9.71
RI01	23.59	4.71	0.10	0.31	0.09	0.86	2.63	0.02	0.70	28.31
RI02	28.40	5.76	0.03			1.05	4.21	0.00	0.47	34.16
RI03	80.49	19.17	0.08	0.12	0.04	4.87	2.80	0.05	11.22	99.66
SJ01	21.10	0.66			0.08	0.32	0.17		0.09	21.76
SJ03	34.54	0.19				0.07			0.12	34.73
SJ04	31.30	0.02				0.02				31.32
SJ05	35.68	0.20					0.01		0.19	35.88
SJ06	27.40	2.65			0.06	1.32	0.09		1.18	30.05
SJ07	41.89	2.91	0.12		0.13	1.31	0.64		0.71	44.80
SJ08	38.49	1.59			0.16	1.37	0.01	0.00	0.04	40.08
SJ09	8.31	0.12				0.10	0.01		0.02	8.43
SJ10	0.25	0.01				0.01			0.00	0.25
SJ11	102.12	4.65	0.17		0.07	2.61	0.73	0.02	1.05	106.77
SJ12	26.68	2.31			0.01	1.63	0.33		0.35	28.99

BASMAA Site ID	Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
SJ13	55.14	4.02			0.05	1.53	0.75	0.01	1.69	59.16
SJ15	5.15	2.11			0.01	1.52	0.21		0.38	7.25
SJ16	12.23	2.50	0.06	0.16	0.01	1.08	0.23		0.98	14.73
SJ17	13.25	1.87	0.04	0.05	0.08	0.93	0.17	0.00	0.60	15.12
SJ18	54.42	4.20	0.11			3.29	0.23	0.02	0.55	58.62
SJ19	35.40	1.98			0.02	0.90	0.40	0.24	0.42	37.38
SJ20	51.45	6.18	0.06		0.08	2.37	1.84		1.83	57.63
SJ21	34.11	2.29	0.04			1.39	0.49	0.02	0.35	36.40
SJ22	64.51	20.45	0.08	0.83	0.19	4.85	1.85	1.13	11.55	84.96
SJ23	39.81	1.61			0.00	0.77	0.12		0.72	41.42
SJ24	55.17	3.71	0.29		0.00	0.83	0.27	0.13	2.19	58.88
SJ25	6.71	0.02				0.02			0.00	6.73
SJ26	10.84	0.46				0.17	0.00		0.29	11.30
SJ27	17.10	0.78			0.03	0.38	0.13		0.25	17.89
SJ28	51.47	1.16			0.07	0.81	0.13		0.15	52.63
SJ29	22.59	4.04			0.05	1.24	1.70		1.05	26.63
SJ30	51.33	3.02	0.08	0.07	0.13	1.37	0.21		1.16	54.34
SJ31	2.47	0.02				0.01	0.00	0.00	0.00	2.49
SJ33	20.95	0.73				0.57	0.00	0.00	0.16	21.68
SJ34	10.94	1.38	0.03		0.02	0.49	0.70		0.14	12.31
SJ35	12.37	0.89			0.00	0.40	0.11		0.37	13.25
SJ36	28.62	0.74			0.03	0.13	0.04	0.02	0.52	29.37
SJ37	25.42	3.42			0.09	1.36	0.58	0.01	1.38	28.84
SJ38	9.98	0.80	0.04			0.65	0.06	0.00	0.05	10.78
SJ39	15.22	0.34	0.11			0.10	0.08		0.05	15.56
SJ40	3.13	0.06				0.06	0.01		0.00	3.19
SJ41	8.37	0.00				0.00			0.00	8.37
SJ42	5.98	0.02				0.02	0.00	0.00	0.00	6.00
SJ43	38.21	0.51				0.32	0.04		0.15	38.72
SJ44	4.66	1.34	1.34				0.00			6.00
SJ45	15.23	0.04				0.01	0.00		0.02	15.27
SJ46	18.17	0.17	0.06			0.07	0.00		0.04	18.33
SJ47	4.56	0.06				0.02			0.04	4.62
SJ48	11.42	0.01				0.00			0.00	11.42
SJ49	44.13	0.05				0.05				44.18
SJ50	35.04	0.01				0.00			0.01	35.05
SJ51	15.14	0.63			0.04	0.16	0.09	0.00	0.34	15.77
SJ52	56.71	0.78			0.04	0.67	0.00		0.06	57.49
SJ53	33.73	2.16	0.05			1.07	0.48		0.56	35.89
SJ54	27.27	0.01				0.01	0.01		0.00	27.28

BASMAA Site ID	Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
SJ55	3.55	2.61				0.03	0.24		2.34	6.16
SJ56	47.28	0.56				0.37	0.00		0.19	47.84
SJ57	15.98	0.14	0.13			0.00	0.00			16.11
SJ58	37.24	1.60				0.70	0.79	0.00	0.11	38.84
SJ59	22.47	0.25				0.20			0.05	22.72
SJ61	29.91	0.13				0.12	0.00		0.01	30.04
SJ62	21.92	0.02				0.02			0.00	21.94
SJ64	9.74	0.90			0.00	0.48	0.21		0.21	10.65
SJ65	14.92	0.00				0.00	0.00		0.00	14.92
SJ66	40.48	0.04				0.01	0.04		0.00	40.52
SJ69	2.35	0.11				0.10			0.01	2.46
SJ70	31.03	0.17				0.15	0.02		0.00	31.20
SJ71	16.08	0.05	0.05			0.00				16.13
SJ72	88.44	0.32			0.01	0.13	0.02		0.16	88.76
SJ73	33.87	0.83				0.19			0.64	34.70
SJ74	26.76	0.50				0.12	0.00		0.38	27.26
SJ75	84.89	1.11	0.24			0.45	0.05		0.37	86.00
SJ76	0.85	0.70				0.02	0.29		0.39	1.54
SL01	4.02	0.33				0.00	0.08	0.00	0.25	4.35
SL02	10.66	1.08		0.22	0.00	0.52	0.03	0.01	0.30	11.74
SL03	52.06	0.82	0.06		0.01	0.32	0.36	0.02	0.05	52.88
SL04	57.58	2.27	0.26			1.01	0.17	0.03	0.80	59.85
SL05	23.01	1.19		0.05	0.07	0.37	0.15		0.56	24.20
SL06	7.03	0.68		0.02		0.27	0.09		0.30	7.71
SL07	1.10	0.08				0.00	0.00	0.04	0.04	1.18
SL08	43.60	0.33				0.07	0.06	0.01	0.19	43.93
SL09	5.62	1.96	0.04			0.04	0.02		1.86	7.58
SL10	5.32	0.32				0.01	0.02	0.01	0.28	5.64
SL11	22.49	0.59				0.25	0.05		0.29	23.08
SL12	12.02	0.88	0.05	0.02		0.04	0.04		0.73	12.90
SL13	28.09	2.34			0.00	0.25	0.10	0.03	1.97	30.43
SL14	24.90	0.84		0.06		0.17	0.43	0.03	0.15	25.74
SL15	45.85	1.38				0.45	0.75	0.01	0.17	47.23
SL16	4.20	0.88		0.03	0.01	0.04	0.25	0.01	0.55	5.07
SL17	17.80	0.11				0.02	0.02	0.00	0.07	17.91
SL18	27.84	0.76				0.05	0.64		0.07	28.60
SL19	65.96	0.69				0.40	0.13	0.04	0.12	66.65
SL20	8.72	0.34		0.05	0.01	0.16	0.02		0.10	9.06
SL21	34.50	0.19				0.05	0.03		0.11	34.69
SL22	19.14	0.21				0.06	0.12		0.03	19.35

BASMAA Site ID	Debris	Trash Total	Trash Types							Grand Total
			Recyclable Beverage Containers (CRV-labeled)	Plastic Grocery Bags	Styrofoam Food and Beverage Ware	Other Plastic	Paper	Metal	Misc.	
SL23	71.96	1.42				0.59	0.58		0.25	73.38
SL24	62.43	3.64		0.54	0.00	1.93	0.28	0.02	0.87	66.07
SL25	182.83	1.43				0.78	0.32	0.01	0.32	184.25
SM01	42.11	0.82				0.16	0.15		0.51	42.93
SM02	105.55	1.21	0.19	0.39	0.02	0.30	0.03	0.22	0.06	106.76
SM03	10.37	0.46				0.20	0.01		0.25	10.83
SM04	72.93	0.15				0.06	0.04	0.00	0.05	73.08
SM05	104.90	0.11				0.02	0.02	0.00	0.07	105.01
SM07	98.73	14.55		1.90	0.06	3.54	6.21	0.06	2.79	113.28
SM08	13.86	2.57				0.65	0.33	0.02	1.57	16.43
SM09	48.35	0.93				0.36	0.48		0.09	49.28
SM11	43.92	0.27				0.05		0.04	0.18	44.19
SM12	7.69	0.08				0.01	0.01		0.06	7.77
SP01	16.94	11.15	0.10	2.33	0.08	2.90	2.37	0.01	3.37	28.09
SU01	32.18	0.16				0.06	0.08	0.01	0.01	32.34
SU02	16.17	0.99	0.04			0.42	0.05		0.48	17.16
SU03	28.35	0.49				0.19	0.11	0.03	0.17	28.84
SU04	41.28	1.41				0.32	0.27	0.01	0.81	42.69
SU05	24.49	1.09		0.13		0.58	0.20		0.18	25.58
SU06	40.54	0.20				0.12			0.08	40.74
SU07	71.22	1.34			0.00	0.63	0.22		0.49	72.56
SU08	149.87	1.05			0.01	0.62	0.19	0.09	0.14	150.92
SU09	152.80	0.96			0.20	0.32	0.02	0.00	0.42	153.76
SU10	131.05	1.95				0.62	0.08	0.00	1.25	133.00
SU11	81.19	1.54			0.00	0.84	0.04		0.66	82.73
SU12	61.17	0.19				0.04	0.10	0.00	0.05	61.36
SU13	114.94	0.49				0.42	0.01		0.06	115.43
SU14	153.90	0.90			0.03	0.49	0.08	0.00	0.30	154.80
SU15	143.45	1.09				0.39	0.07	0.01	0.62	144.54
SU16	22.94	0.14				0.10	0.02		0.02	23.08
WC01	40.95	0.64				0.28	0.15		0.21	41.59
WC02	17.23	0.21				0.00	0.21		0.00	17.44
WC03	12.37	0.11				0.01	0.02		0.09	12.48
WC04	273.81	0.66				0.25	0.09	0.14	0.18	274.47
WC05	38.23	0.00				0.00			0.00	38.23

APPENDIX D

MULTIPLE REGRESSION RESULTS

Appendix D-1. Multiple linear regression matrix for logged trash generation rates (gal/acre) for retail land use compared to the most influential factors evaluated.

#	Statistics				Influential Factors																
	C_p	r^2	Adjusted r^2	Error Mean Square	Median Home Value (5 Acre Buffer)	% in Poverty (5 Acre Buffer)	Median Household Income (1 Sq Mile)	Log Median Household Income (1 Sq Mile)	Median Household Income (2 Sq Mile)	Log Median Household Income (2 Sq Mile)	Median Household Income (3 Sq Mile)	Pop Density in Surrounding Area (5 Acre Buffer)	% income > $150K/year (5 Acre Buffer)	# Fast food (5 acres)	# Fast food (15 acres)	# Cafes (2 acres)	# Cafes (5 acres)	# Cafes (15 acres)	# Transit stops (5 acres)	# Transit stops (5 acres)	Log Median Home Value (5 Acre Buffer
1	6.75	0.35	0.34	0.07				*													
2	-3.02	0.47	0.45	0.06				*						*							
3	-4.83	0.51	0.49	0.05				*						*							*
4	-5.55	0.54	0.51	0.05	*		*	*						*							
5	-5.79	0.56	0.52	0.05	*		*	*						*			*				
6	-5.26	0.58	0.53	0.05	*		*	*						*			*			*	
7	-4.81	0.59	0.54	0.05	*		*	*						*			*		*	*	
8	-4.34	0.61	0.55	0.05	*		*	*			*			*			*		*	*	
9	-3.61	0.62	0.56	0.05	*		*	*	*	*				*			*		*	*	
10	-2.93	0.64	0.56	0.05		*	*	*	*	*				*			*		*	*	*
11	-1.43	0.64	0.56	0.05		*	*	*	*	*				*		*		*	*	*	*
12	-0.01	0.65	0.56	0.05		*	*	*	*	*				*	*	*		*	*	*	*
13	1.52	0.65	0.56	0.05		*	*	*	*	*				*	*	*	*	*	*	*	*
14	2.68	0.66	0.56	0.05		*	*	*	*	*		*	*	*	*	*		*	*	*	*
15	4.27	0.67	0.55	0.05		*	*	*	*	*		*	*	*	*	*	*	*	*	*	*

Appendix D-2. Multiple linear regression matrix for logged trash generation rates (gal/acre) for residential land use compared to the most influential factors evaluated.

	Statistics				Influential Factors													
Combination #	C_p	r^2	Adjusted r^2	Error Mean Square	Median Home Value (5 Acre Buffer)	Log Median Household Income (5 acre)	Pop Density in Surrounding Area (15 Acre Buffer)	# Males aged 10-29 in Census Blocks (5 Acre Buffer)	Pop Density (5 Acre Buffer)	% of Other Types of Households (Trailer Parks etc. in 5 Acre Buffer)	Median # of Rooms (5 Acre Buffer)	% No High School Diploma (5 Acre Buffer)	% High School Diploma (5 Acre Buffer)	% 10-29 Age Males (5 Acre Buffer)	% 10-29 Age Females (5 Acre Buffer)	% Households that are Families (5 Acre Buffer)	% Ages 0-17 in Poverty (5 Acre Buffer)	# Lanes in Adjacent Road
1	5.69	0.75	0.73	7.52								*					*	
2	-3.62	0.83	0.81	5.39		*						*				*	*	
3	-4.35	0.85	0.82	5.00		*						*		*		*	*	
4	-5.40	0.86	0.84	4.53		*		*	*			*				*	*	
5	-4.74	0.87	0.84	4.38		*		*	*	*		*				*	*	
6	-3.58	0.88	0.84	4.33		*		*	*	*		*				*	*	
7	-2.58	0.88	0.85	4.24		*		*	*	*	*	*				*	*	
8	-1.79	0.89	0.85	4.10		*		*	*	*	*	*				*	*	
9	-0.62	0.90	0.85	4.04		*	*	*	*	*	*	*				*	*	*
10	0.93	0.90	0.85	4.07		*	*	*	*	*	*	*			*	*	*	*
11	2.58	0.90	0.85	4.12	*	*		*	*	*	*	*			*	*	*	*
12	4.18	0.90	0.85	4.17	*	*	*	*	*	*	*	*	*		*	*	*	*

1H

Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Storm Drain Trash Monitoring and Characterization Project

Technical Report

September 2016

This report was developed by the agencies participating in the

Santa Clara Valley
Urban Runoff
Pollution Prevention Program

City of Campbell	City of Milpitas	City of Santa Clara
City of Cupertino	City of Monte Sereno	City of Saratoga
City of Los Altos	City of Mountain View	City of Sunnyvale
Town of Los Altos Hills	City of Palo Alto	County of Santa Clara
Town of Los Gatos	City of San Jose	Santa Clara Valley Water District

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LIST OF ABBREVIATIONS

ARS	Automated Retractable Screen
BASMAA	Bay Area Stormwater Management Agencies Association
CRV	California Redemption Value
EPS	Expanded Polystyrene
gal	Gallon
MDL	Method detection limit
mL	milliliter
mm	millimeter
MRP	San Francisco Bay Area Municipal Regional Stormwater NPDES Permit
MS4s	Municipal Separate Storm Sewer Systems
NPDES	National Pollutant Discharge Elimination System
SAP	Sampling and Analysis Plan
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
QA/QC	Quality Assurance/Quality Control
yr	Year

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1.0 INTRODUCTION

High levels of trash (i.e., litter, floatables, gross pollutants, or solid waste) in local watersheds can present an aesthetic nuisance to communities, and pose a serious threat to surface water quality if transported to local creeks, the San Francisco Bay, or the Pacific Ocean. Data suggest that plastic trash in particular persists for hundreds of years in the environment and can pose a threat to wildlife through ingestion, entrapment, as well as harboring chemicals potentially harmful to the aquatic environment (Bjorndal et al. 1994; Islam and Tanaka 2004; Moore 2008; von Saal et al. 2008). Types of trash commonly observed in watersheds and water bodies include food and beverage containers (e.g., plastic bags and bottles), food packaging, cigarette butts, food waste, construction and landscaping materials, furniture, electronics, tires, and hazardous materials (e.g., paint and batteries).

In response to concerns about urban trash impacts on receiving water bodies in the San Francisco Bay Area, the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB or Water Board) included trash reduction requirements in the Municipal Regional Stormwater NPDES Permit for Phase I communities in the Bay Area (Order No. R2-2009-0074), referred to as MRP 1.0, and in the recently reissued Permit (Order No. R2-2015-0049), also known as MRP 2.0. These provisions require applicable Bay Area municipalities (i.e., Permittees) to reduce trash from their Municipal Separate Storm Sewer Systems (MS4s) by 70 percent by July 1, 2017, 80 percent by July 1, 2019, and 100 percent or "no adverse impacts" to water bodies by July 1, 2022 (SFBRWQCB 2015). To establish a baseline, each Permittee was also required to develop an estimate of the amount of trash discharged from its stormwater conveyance system circa 2011, and develop and implement an assessment strategy used to account for trash load reduction actions and to demonstrate progress and attainment of trash load reduction targets.

Permittees participated in a regional trash characterization and generation rate study through Bay Area Stormwater Management Agencies Association (BASMAA), with the goal of developing first-order estimates of trash generation in Bay Area urban areas. As part the BASMAA Study, a total of 154 trash full-capture devices located in Bay Area storm drain inlets were monitored for trash. Trash and debris was intercepted and collected during four different time periods, and subsequently sorted and characterized. Monitoring sites represented seven different land use classes and a range of household income levels. Of the 154 inlets, 87 were located in Santa Clara County.

The BASMAA Study resulted in trash generation rates for each inlet monitored in the Bay Area. Best estimates for trash generation in the Bay Area ranged from 0.5 to 150 gallons/acre per year, depending on the land use and the median household income level in the area surrounding monitored sites. These rates along with additional field observations were used to develop maps illustrating trash generation for each Permittee. Additionally, data generated from the BASMAA Study included the number and volume of single-use plastic bags and expanded polystyrene foam (EPS) food service ware found in stormwater conveyances. This information was collected prior to the implementation of many trash control measures, including most product-related ordinances in Santa Clara County. The results of the project are presented in the *San Francisco Bay Area Stormwater Trash Generation Rates* Final Technical Report (BASMAA 2014).

The assessment strategy used by Co-permittees in Santa Clara County to demonstrate progress and attainment of trash reduction targets is described in Co-Permittee *Long-Term Trash Load Reduction Plans* (Long-Term Plans) and the *Pilot Assessment Strategy* (Strategy) developed by the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP 2014). SCVURPPP includes fourteen population-based Co-Permittees within Santa Clara County (13 cities and the unincorporated area) and the Santa Clara Valley Water District that collaborate to protect water quality in Santa Clara County creeks, wetlands and

the San Francisco Bay. With regard to trash reduction, each population-based Co-permittee was required by provision C.10 of the Municipal Regional Stormwater NPDES Permit (MRP) to submit a Long-Term Plan by February 1, 2014. The Long-Term Plans outline how each Co-permittee will achieve MRP trash reduction goals. Trash control measures and implementation schedules are described in each Long-Term Plan. In their Long-Term Plans, some Co-permittees included the adoption of ordinances that prohibit the distribution of litter-prone products (e.g., single-use plastic bags and expanded polystyrene food service ware) in their jurisdictions. Section 4.0 of the Long-Term Plan describes each Co-permittee's approach to assessment and includes a reference to the Strategy, which was submitted on behalf of the Co-permittees and describes a number of indicators that Co-permittees plan to use to assess progress towards trash reduction goals. These indicators are either outcome-based or output-based. Outcome-based indicators measure the results or environmental outcomes of litter reduction efforts and are used to assess the effectiveness of trash control measures.

This report describes the results of *SCVURPPP Storm Drain Trash Monitoring and Characterization Project* (Project). The main goal of this Project was to measure trends in one outcome-based indicator described in the Strategy, the amount of litter-prone products (i.e., single-use plastic bags and expanded polystyrene food service ware) and other litter in storm drains and hydrodynamic separators.

1.1 Trash Control Measures

1.1.2 Product-based Ordinances

In an effort to reduce the environmental impacts of single-use plastic bags, eleven Co-Permittees have adopted ordinances prohibiting their distribution at the point-of-sale within their jurisdictions. In addition to adopting single-use bag ordinances, eleven Co-Permittees have also prohibited the distribution of expanded polystyrene (EPS) food service ware by restaurants, food vendors, and/or retailers. A list of Co-Permittees with single-use plastic bag and EPS food service ware ordinances (with their effective date) are provided in Table 1.1. Ordinances were developed due to potential impacts of single-use plastic bags and EPS food service ware to aquatic life and wildlife; persistence of these material within the environment; and for overall sustainability and zero waste reasons. The Cities of Monte Sereno, and Saratoga, and the Town of Los Altos Hills have not instituted single-use plastic bag ordinances and the Cities of Milpitas, Monte Sereno, and Saratoga have not adopted EPS food service ware ordinances. The Town of Los Altos Hills and City of Monte Sereno, however, do not have retail land uses within their jurisdictions and therefore there is no need to adopt the ordinances. Due to limited information on the levels of single-use plastic bags and EPS food service ware currently observed in the environment within Santa Clara County, there was an interest in characterizing the magnitude and extent of these materials to determine if they continue to be present in the environment and if so, at what levels.

Table 1.1. Effective dates of single-use plastic bag and EPS food service ware ordinances in Santa Clara County.

Co-Permittee	Date of Single-use Plastic Bag Ordinance	Date of Expanded Polystyrene (EPS) Food Service Ware Ordinance
Campbell	1/27/2014	6/1/2015
Cupertino	10/1/2013	7/1/2014
Los Altos	7/4/2013	7/4/2014
Los Altos Hills	NA	6/15/2012
Los Gatos	2/3/2014	6/1/2015
Milpitas	1/1/2016	NA
Monte Sereno	NA	NA
Mountain View	4/22/2013	7/1/2014
Palo Alto	9/18/2009[a]	4/22/2010[a]
San Jose	1/1/2012	1/1/2014[b]
Santa Clara	12/1/2014	9/1/2014
Santa Clara County	1/1/2012	2/1/2013
Saratoga	NA	NA
Sunnyvale	6/20/2012	4/22/2014[c]

[a] Palo Alto's single-use plastic bag ordinance requiring compliance from grocery stores became effective on September 18, 2009. This ordinance was expanded to include retail stores on July 1, 2013 and restaurants on November 1, 2013. Palo Alto's EPS food service ware ordinance requiring compliance from food vendors became effective on April 22, 2010. The ordinance was expanded to prohibit the retail sale or distribution of plastic foam ice chests, foam egg cartons, foam food service ware and foam packaging materials on March 1, 2016.
[b] San José's EPS food service ware ordinance requiring compliance from multi-state restaurant chains became effective on January 1, 2014. The second phase of the ordinance went into effect at all other restaurants, including mobile and street vendors, on January 1, 2015.
[c] Sunnyvale's EPS food service ware ordinance requiring compliance from food providers became effective on April 22, 2014. The second phase of the ordinance went into effect at all other vendors who sell or provide EPS containers and EPS food service ware, on April 22, 2015.

1.1.3 Other Trash Control Measures

Enhanced or new trash control measures presented within the Long-Term Plan are based on the Co-permittees' current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with MS4 discharges. The Long-Term Plans build upon trash control measures implemented by Co-permittees prior to the adoption of the MRP and during the implementation of Short-Term Trash Load Reduction Plans submitted to the Water Board on February 1, 2012. With the implementation of the Long-Term Plan, trash reductions should be observable on streets, public right-of-ways, and in stormwater conveyances. Trash control measures that may be implemented by Co-permittees include, but not limited to the following:

- Enhanced Street Sweeping
- Public Education and Outreach Programs
- Anti-Littering and Illegal Dumping Enforcement Activities
- Improved Trash Bin/Container Management
- Enhanced On-land Trash Cleanups

- Curb Inlet Screens
- Enhanced Storm Drain Inlet Maintenance
- Full-Capture Treatment Devices
- Creek/Channel/Shoreline Cleanups

1.2 Management Questions

With increased levels of control measures implementation, Co-permittees are assessing progress toward trash reduction goals and evaluating the effectiveness of specific control measures that are designed to reduce the generation of trash. In particular, SCVURPPP is interested in determining whether the effects of municipal product-based ordinances that prohibit litter-prone items are detectable in stormwater conveyances or in other locations in the environment. Additionally, SCVURPPP was interested in evaluating whether reductions in the overall level of trash in stormwater conveyances in Santa Clara County are observable from the time of the previous monitoring and characterization project that occurred from December 2010 to April 2012 (BASMAA 2014).

The following management questions were developed to evaluate environmental outcomes associated with product-based ordinances and trash levels in Santa Clara County:

1. To what degree are single-use plastic bags present in stormwater drainage systems?
2. Have single use plastic bag ordinances substantially reduced the level of bags observed in the environment?
3. To what degree is EPS food service ware present in stormwater drainage systems?
4. Have municipal ordinances substantially reduced the level of EPS food service ware found in the environment?
5. Are trash control measures implemented by Co-Permittees effectively reducing trash in municipal stormwater conveyances in Santa Clara County?

2.0 MONITORING DESIGN AND METHODS

Site selection and monitoring procedures used during the Project are fully described in the Project's Sampling and Analysis Plan (SAP; SCVURPPP 2015) included in Appendix A. The SAP describes the assessment methods outlined in Long-Term Plans and the Strategy that Co-Permittees are using to evaluate progress towards overall trash reduction goals and assist SCVURPPP in assessing the effects of specific trash control measures designed to reduce the generation and impacts of litter-prone products and materials.

The monitoring design employed during this Project consisted of re-sampling the majority of the storm drain inlets in Santa Clara County monitored during the previous BASMAA Study (BASMAA 2014), in addition to other previously unmonitored inlets in Co-permittee jurisdictional areas. Data on single-use plastic bags and EPS food service ware, which were collected during the BASMAA Study and prior to the implementation of many product-related ordinances in Santa Clara County, were compared to data collected via this Project. This Project was designed in December 2014/January 2015 and conducted between March 2015 and February 2016.

2.1 Monitoring Sites

2.1.1 Site Selection Criteria

In an effort to select previously unmonitored sites and assess the level of specific trash items potentially present in different land uses, data generated via the BASMAA Study were compiled and evaluated. Based on the analysis of single-use plastic bag data specific to different land uses, the current and planned locations of many enhanced control measures, and experience in conducting trash characterization studies; monitoring sites included in this Project met the following selection criteria, which were applied in the following order:

1. Sites (inlets) that are equipped with properly functioning small trash full-capture[1] devices or systems meeting the full-capture standard;
2. Sites that are not equipped with curb inlet screens that block trash from entering the storm drain inlet;
3. Sites with properly functioning devices that were previously sampled during the BASMAA Study;
4. Previously unmonitored sites that drain predominately retail land use areas associated with moderate, high or very high trash generation rates[2]; and,
5. A minimum of two monitoring sites equipped with small trash full-capture devices or one large full-capture device were selected within each Co-permittee's jurisdiction.

2.1.2 Selected Monitoring Sites – Small Full-Capture Devices

A total of 125 monitoring sites (Figure 2.1) were selected from a pool of nearly 423 available sites equipped with small full-capture devices. Prior to commencing the SCVURPPP Project, each monitoring site was reviewed to determine if it met the site selection criteria described above. A total of 56 of the 87 sites previously monitored during the BASMAA Study were selected for re-sampling. Previously monitored sites not selected for this Project were either located in areas with low trash generation rates or in very close proximity to other sites selected for the Project. Since the main goal of the Project was to measure the quantity of single-use plastic bags and EPS food service ware in the environment, sites with low trash generation rates were seen as less beneficial due to the unlikelihood of both products being observed in these inlets.

Table 2.1 summarizes the small device sites available in Santa Clara County and the 125 monitoring sites selected for the Project. The monitoring sites were distributed approximately proportional to Co-Permittee populations. The previously monitored sites represent a larger variety of land uses, with most of the newer sites being in retail land uses. The land uses associated with the selected monitoring sites are provided in Table 2.2. Details on each of the selected monitoring sites is available in Appendix B.

All 125 small full-capture devices located in inlets monitored during the Project were Connector Pipe Screens (CPS) manufactured by Stormtek or United Stormwater, Inc. An example small full-capture device used as a monitoring site is provided as Figure 2.2.

[1] A full capture system or device has the ability to trap all particles retained by a 5 mm mesh screen and has a design treatment capacity of at least the peak flow rate resulting from a one-year, one-hour, storm in the sub-drainage area.

[2] The City of Monte Sereno and Town of Los Altos Hills do not have devices in retail land use areas. The City of Santa Clara did not have any small full-capture devices yet installed when the SAP was being developed.

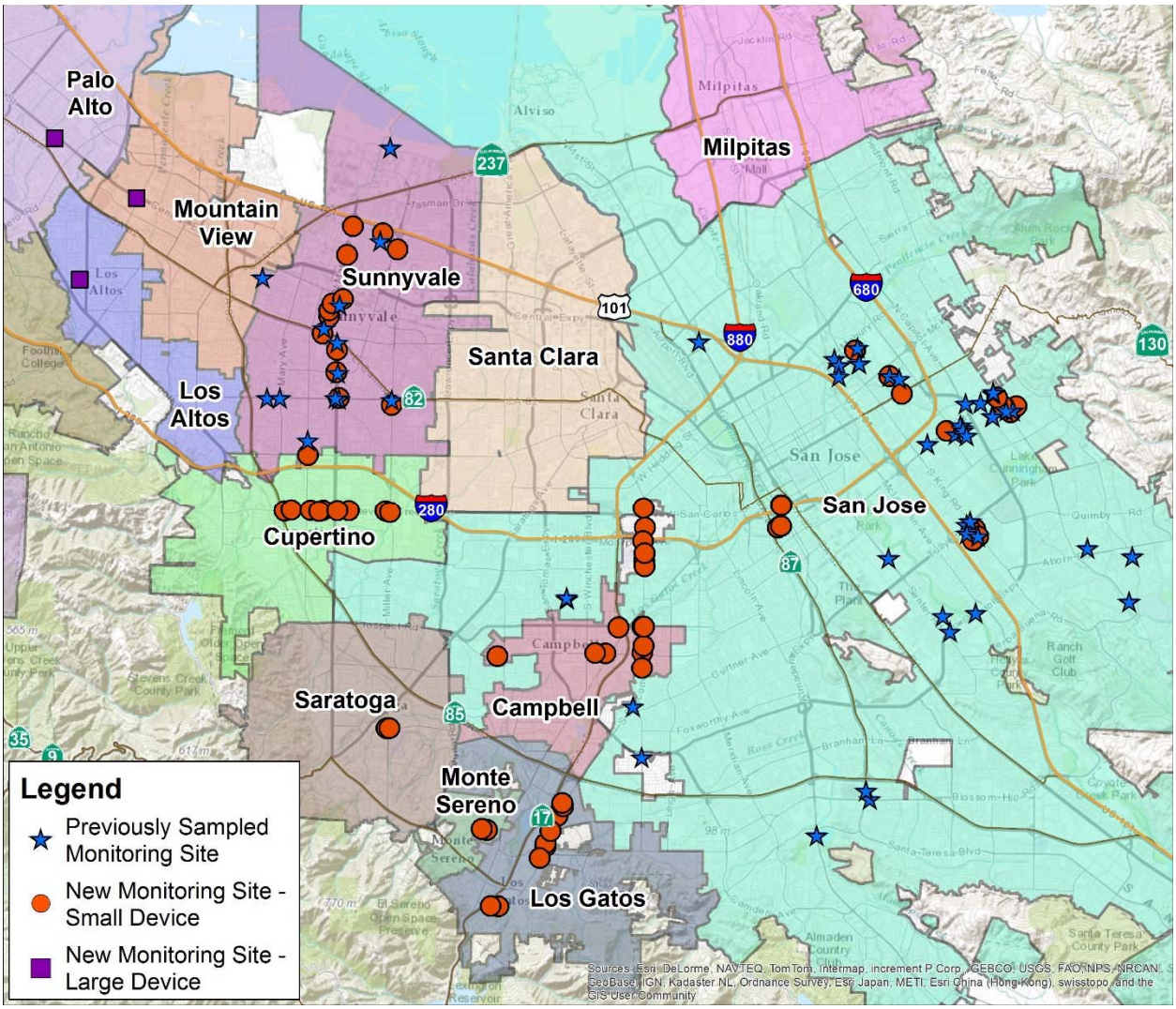

Figure 2.1. Monitoring sites included in the SCVURPPP Storm Drain Trash Monitoring and Characterization Project.

Table 2.1. Summary of available and selected monitoring sites with small full-capture devices by Co-permittee.

Co-permittee	# Available Sites[1]	# Sites Monitored in BASMAA Study	# BASMAA Study Sites Monitored via SCVURPPP Project	# Previously Unmonitored Sites Selected for SCVURPPP Project	Total # Sites Selected for SCVURPPP Project
Campbell	28	0	0	9	**9**
Cupertino	107	0	0	10	**10**
Los Gatos	30	0	0	9	**9**
Monte Sereno	4	0	0	2	**2**
San Jose	145	71	42	19	**61**
Santa Clara County	26	0	0	6	**6**
Saratoga	4	0	0	2	**2**
Sunnyvale	77	16	14	12	**26**
Total	**423**	**87**	**56**	**69**	**125**

[1] Includes those inlets equipped with small full-capture devices that are owned and operated by Co-permittees at the time of the development of the SAP (January 2015). Many Co-Permittees have additional devices within their jurisdictional boundaries that are owned and operated by private entities.

Table 2.2. Land uses associated with selected monitoring sites with small full-capture devices .

Land Use	# of Sites
Colleges and Universities	2
Commercial	12
Industrial	7
Residential	33
Retail	65
Roadway[3]	2
School	3
Urban Park	1
Total	**125**

[3] These sites are along roadways that are significantly separated from adjacent land uses.

Figure 2.2. Example small full-capture device used as a monitoring site.

2.1.3 Selected Monitoring Sites – Large Full-Capture Devices

Small full-capture devices typically drain smaller areas that are depictive of a homogeneous land use (e.g., retail) and are relatively easy to clean/maintain. Therefore, inlets equipped with these devices were identified as the ideal monitoring locations. At the time of this Project, however, five Co-Permittees (i.e., Los Altos, Milpitas, Mountain View, Palo Alto and Santa Clara) had only large full-capture devices within their jurisdictions. Large devices are equally effective at capturing trash in debris, however they typically treat larger less homogenous land areas. Due to their ease of sampling, hydrodynamic separators (i.e., HDS) large devices installed in Los Altos (1), Mountain View (1) and Palo Alto (2) were used as monitoring sites for these Co-permittees, as alternatives to small inlet-based devices. The locations of HDS units used as monitoring sites (n=4) are presented in Table 2.1 and illustrated in Figure 2.1.

Table 2.3. Location of HDS units used as monitoring site.

Co-permittee	Location
Los Altos	On View St, 180’ N of the intersection with Edith Ave.
Mountain View	Intersection of Leland Ave. and Fair Oaks St.
Palo Alto	Intersection of Park Blvd. and Ventura Ave **AND** On Park Blvd., 60’ SE of the intersection with Maclane St.

2.2 Sampling and Characterization Methodology

2.2.1 Sampling Procedure

Small Full-Capture Devices

Prior to the start of the Project in March 2015, a total of 122 of the 125 monitoring sites equipped with small full-capture devices were cleaned to provide a start date for the trash accumulation period. Of the three sites not cleaned, one site in San Jose and one site in Cupertino had Automatic Retractable Screens (ARS) installed, and one site in San Jose was blocked by a construction fence. As a result, these three sites were removed from the Project.

All trash and debris was removed during the March 2015 cleanouts and the screens on the devices were cleaned to provide for proper device operation during the first accumulation period. Trash and debris from this cleanout was not saved for characterization. In July and August 2015, a total of 119 of the 122 remaining monitoring sites were again cleaned. Of the three sites not cleaned, two sites in Sunnyvale and one site in San Jose were blocked by cars, and therefore removed from the Project. The cleanout date for each of the 119 sites was recorded to calculate the number of days during the first accumulation period. In January and February 2016, a total of 117 of the 119 remaining were again cleaned. The date was recorded to calculate the number of days during the second accumulation period. The two sites not cleaned were both located in San Jose and blocked by cars. It was decided to not remove these sites from the Project, but to use only the first accumulation period to determine trash generation rates for these sites.

All trash and debris (e.g., sediment, vegetation, rocks, bugs, etc.) removed from inlets during the second and third cleanouts were placed in large, plastic garbage bags and transported to the Palo Alto Regional Water Quality Control Plant for characterization. All cleaning events were performed by Revel Environmental Manufacturing, Inc. (REM), a contractor that has extensive experience with small full-capture device maintenance that was hired specifically for the Project. The contractor followed procedures in accordance with the *Standard Operating Procedure for Storm Drain Insert Trash Removal* (see Project SAP in Appendix A).

Site information was recorded by the contractor on field forms, including exact cleanout dates and any issues associated with the devices or monitoring site (e.g., damaged screens, presence of ARSs, observations of flows bypassing devices, cars blocking site, other issues) that were observed. The total accumulation period for all monitoring sites for the second cleanout was between 122 and 175 days, and between 159 and 220 days for the third cleanout. This report includes data analysis for a total of 119 monitoring sites equipped with small full-capture devices. Of the six sites that were removed from the SCVURPPP Project because of the above mentioned reasons, three had been previously monitored and three were new to the Project. In the end, data from 53 previously monitored sites and 66 previously unmonitored were analyzed and used to address the management questions for the Project.

Large Full Capture Devices

Monitoring sites with large full-capture devices (i.e., HDS units) were cleaned once by Co-Permittees during the 2015 dry season. The removal of trash and debris from HDS units followed procedures described within the SCVURPPP document entitled *Hydrodynamic Separator Operation and Maintenance: Standard Operating Procedures* (see Project SAP in Appendix A). Cleanouts consisted of removing the top floatable fraction within the HDS chamber and solids from the HDS sump. Cleanouts occurred during dry weather conditions on a designated date determined by Program staff and Co-Permittees.

HDS units were cleaned during May 2015 (Palo Alto), September 2015 (Los Altos) and October 2015 (Mountain View). Prior to each cleanout, Co-Permittees provided the exact date when the HDS unit was last cleaned. Trash and debris removed from HDS units represents accumulation during the FY 14-15 wet weather season. All collected trash and debris from cleanouts was saved and transported to a designated location (i.e., drying pads operated by each Co-permittee) for trash and debris characterization. The total accumulation period for monitored HDS units was 145 days (Palo Alto), 218 days (Los Altos) and 286 days (Mountain View).

2.2.2 Characterization Procedure

Trash Classification System

Once the material cleaned from monitoring sites was received at the centralized characterization location (Palo Alto Regional Water Quality Control Plant or Co-permittee drying pads), trash was separated from other debris using procedures described in the *Standard Operating Procedure for Trash and Debris Evaluation* (see Project SAP in Appendix A). Program staff conducted all trash characterization activities using the trash classification system presented in Table 2.4.

Table 2.4 . Trash characterization classification system used during the project.

Main Categories	Subcategories	Description and Examples
Plastic	Recyclable beverage containers	Recyclable beverage containers labeled with a California Redemption Value (CRV). Includes all plastic and glass redeemable water, soda and juice bottles.
	Single-use plastic bags	Includes all single use plastic bags that have handles and are typically distributed at point-of-sale. Single use plastic bags used to distribute or hold produce, newspapers, sandwiches and parking tickets were not included in this category.
	Expanded polystyrene (EPS) food service ware	Expanded polystyrene (EPS) food and beverage service ware includes all disposable containers, bowls, plates, trays, cartons, cups, and other items made of expanded polystyrene designated for one-time use for prepared foods. Food and beverage ware includes service ware distributed for takeout foods and leftovers from partially consumed meals prepared by food providers.
	Rigid plastic disposable food and beverage ware	Rigid plastic disposable food and beverage ware includes non-EPS plastic, fiber-based, and compostable plastic containers, bowls, plates, trays, cartons, cups, and other items designated for one-time use for prepared foods. These products are typically distributed by food vendors in jurisdictions with EPS prohibitions.
	Other plastic materials/items	Includes all other trash items made of any type of plastic, including but not limited to food and candy packaging, straws, lids, and bottle tops. Includes hard plastic and plastic film.
Cigarette Butts	Cigarette Butts	Cellulose cigarette butts
All Other Trash	All Other Trash	Any other item or fragment of an item that does not fit into one of the categories listed above. Includes but is not limited to, paper, metal, and items made of rubber, fabric or other hybrid materials.
Debris	NA	All material not characterized as trash. Includes sand, sediment and vegetation.

Trash Measurement

Trash and debris removed from each storm drain inlet during the July/August 2015 and January/February 2016 cleanout events, and HDS units in May 2015 (Palo Alto), September 2015 (Los Altos) and October 2015 (Mountain View) was sorted based on the Project's trash classification system and placed into containers between 50 milliliters (mL) and 5 gallons in size (depending on the volume of the material). All items identified as recyclable beverage containers, single-use plastic bags, EPS food service ware, and rigid plastic disposable food and beverage ware was also counted and recorded. Measurement procedures generally included the following steps:

- Volume: The appropriate size of container was used to measure and record the total un-compacted volume of each of the trash categories and debris for each site. If a bucket of trash or debris was partially full, a ruler was used to measure the average depth, which is then converted to a volume in gallons in the Project database. The lowest reporting limit for total volume determination for trash or debris was 5 mL for samples less than 50 mL but greater than zero. Sites that did not contain one or more trash categories or debris were recorded as zero.
- Item Count: The number of recyclable beverage containers (plastic and glass counted separately), single-use plastic bags, polystyrene foam food ware items, and rigid plastic disposable food and beverage ware were counted and recorded.
- Disposal: After all measurements and records were completed, all trash and debris was placed in plastic trash bags and properly disposed.

All data recorded on field data sheets were transferred into the Project database. To ensure that all data were transferred correctly, quality assurance and control checks were performed during and following data entry.

3.0 MONITORING RESULTS AND DISCUSSION

3.1 Statement of Data Quality

A comprehensive quality assurance and control (QA/QC) program was implemented, covering all aspects of trash monitoring and characterization. All data and associated information on trash captured via monitored full capture treatment devices at sampling sites were compiled into a Project database. Data underwent quality assurance checks prior to being used to calculate total volumes or numbers of specific items (i.e., single-use plastic bags or EPS food service ware).

With regard to assessing the precision of the trash characterization methods that were used as part of the Project, trash and debris samples from 34 sites/events (14%) were re-measured. In comparison to the volume of samples originally measured, all samples that were re-measured except for one were within 20% of original results, with one having a volume of 40% more trash the second time measured.[4] The average relative percent difference between the first measurement and the second was 7.2%, and the net difference between the total measured trash quantities was only 1.1%. The level of precision was considered adequate for the characterization of this material and therefore, no samples characterized during the Project were discarded. All results of QA/QC assessments used to evaluate precision are included in Appendix C.

[4] This 40% increase in volume is most likely due to a large item being more compacted the first time it was sorted from the material and then becoming less compacted during the second sort. Discrepancies may also occur for large items that do not fit well into buckets (e.g. hub caps, clothes hangers, etc.), and are difficult to measure their volume or if different size buckets (i.e., 2-gallon vs. 5-gallon bucket) are used.

3.2 Overview of Results

3.2.1 Summary of Characterization Results

A total of 119 small full-capture devices throughout Santa Clara County and four HDS units in Palo Alto, Los Altos and Mountain View were sampled as part of the Project. The period of trash accumulation occurred from March 2015 to February 2016 and ranged from 124 to 350 days for the sites monitored. Approximately 4,178 gallons of material (i.e., trash and debris) was collected and characterized from both small and large full-capture devices. A total of 3,822 gallons (91.5%) was debris (i.e., sediment and vegetation), with the remainder (8.5%) identified as trash (Table 3.1 and Figure 3.1). Trash volumes for each monitoring site are provided in Appendix D.

A total of 57 single-use plastic bags were observed, with 43 collected from 119 small full-capture devices and 14 from 4 large full-capture devices. This compares to 539 single-use bags observed at the 154 small devices during the BASMAA Study. No single-use plastic bags observed during the SCVURPPP Project could be clearly identified as originating from food vendors. Specifically, all single-use plastic bags identified were either clearly associated with (i.e., branded) non-food vendors or very small bags (e.g., ~6”x9”) that are typically distributed by convenience stores or non-food vendor types of retail businesses. A total of 8.8 gallons of expanded polystyrene (EPS) foam food service ware and 7.2 gallons of cigarette butts were observed during the Project.

CRV-labeled plastic and glass containers accounted for 6.1% of trash characterized. Approximately 64.1% of the trash characterized was other plastic and 23.5% was all other trash (e.g. paper, rubber, metal, mixed materials). Only 0.8 gallons of disposable rigid or paper food or beverage ware products were observed at the 119 monitoring sites, indicating that EPS food service ware replacement products are not consistently observed in the storm drain conveyance system in Santa Clara County. A possible explanation may be that either these products are littered at a lower frequency than other items, or that they are too large to easily fit in the curb opening or grate of a storm drain inlet.

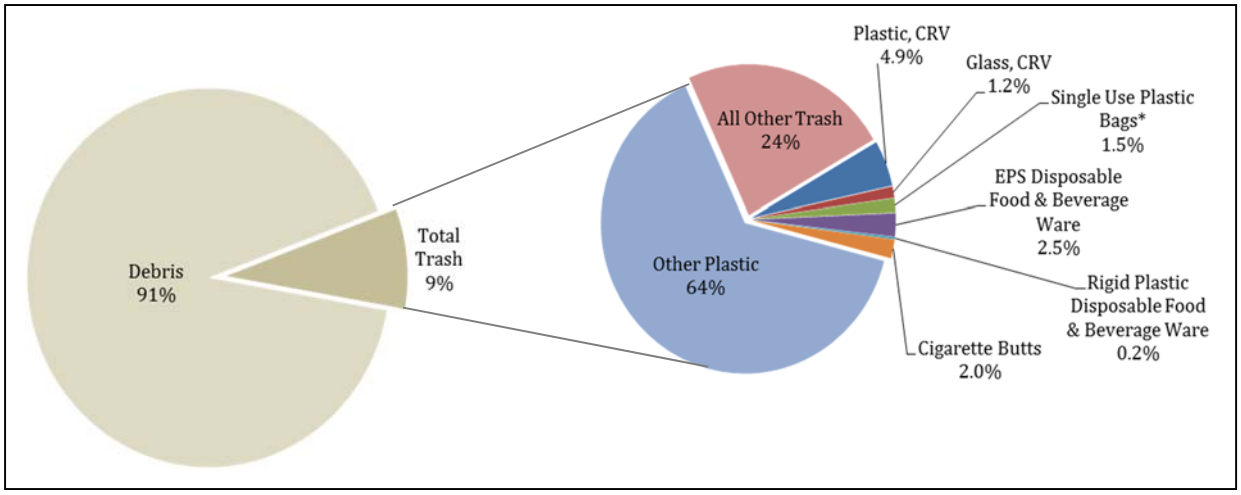

Figure 3.1. Percent of trash and debris (by volume) that was characterized during the SCVURPPP Project (*Assumes an average volume of 12 ounces per bag).

Table 3.1. Total amount and percentage of material removed and characterized from SCVURPPP monitoring sites.

Material Type	# Counted	Volume (gallons)	% of All Material Type	% of Trash
Debris (e.g., Sediment, sand and vegetation)	--	**3,822.3**	**91.5%**	--
Trash	--	**355.3**	**8.5%**	--
1. Plastic - Recyclable Beverage Containers (CRV-labeled)	142	17.5	0.4%	4.9%
2. Glass - Recyclable Beverage Containers (CRV labeled)	44	4.3	0.1%	1.2%
3. Single Use Plastic Bags	57	5.3*	0.1%*	1.5%*
4. EPS Disposable Food & Beverage Ware	394	8.8	0.2%	2.5%
5. Rigid Plastic Disposable Food and Beverage Ware	--	0.8	0.0%	0.2%
6. Cigarette Butts	--	7.2	0.2%	2.0%
7. Other Plastic	--	227.9	5.5%	64.1%
8. All Other Trash	--	83.5	2.0%	23.5%
9. **Total**	--	4,178	--	--

*Assumes 12 oz/bag

3.2.2 Trash Rates by Co-permittee for Small Full-Capture Devices

The results of the BASMAA Study are presented as annual trash rates (gallons/year). The accumulation period during the SCVURPPP Project, however, was roughly ten to eleven months for small full-capture devices and five to nine months for large full-capture devices (i.e., HDS units). For comparison purposes, normalizing the volumes of trash removed and characterized from the 119 monitoring sites equipped with small full-capture devices and 4 monitoring sites with HDS units into annual rates was therefore necessary. For each Project monitoring site, normalization was done by multiplying the daily trash rates observed during the Project (i.e., volume of trash observed divided by the number of accumulation days) by 365 days.

The results of the trash rates by Co-permittee are presented in Table 3.2. Co-permittees with the highest trash rates were the City of San Jose and unincorporated Santa Clara County. The Cities of Cupertino, Monte Sereno, and Saratoga had the lowest trash rates. The Cities of Campbell, Los Gatos, and Sunnyvale had relatively moderate levels of trash.

Table 3.2. Average trash rates (gallons/year) by Co-permittee for small full-capture devices.

Co-permittee	Number of Sites	Average Trash Rate (gal/yr)	Average Bag Rate (bags/yr)	Average EPS Rate (gal/yr)
Campbell	9	2.43	0.88	0.03
Cupertino	9	0.85	0	0.07
Los Gatos	9	2.15	0	0
Monte Sereno	2	0.46	0	0
San Jose	58	4.13	0.6	0.13
Santa Clara County	6	4.11	0.37	0.2
Saratoga	2	0.34	0	0
Sunnyvale	24	1.61	0.14	0.01
Total/Average	**119**	**2.97**	**0.41**	**0.09**

3.2.3 Trash Rates by Land Use

As in the BAASMA Study, Project monitoring sites were also classified by land use to determine if trash rates varied among land use types. In the BASMAA Study and SCVURPPP Project, the six common land use categories included commercial, industrial, schools (kindergarten through 12th grade), residential, retail and urban parks. Additionally, the SCVURPPP Project also included the land use categories of colleges and universities and roadways. Calculated annual average trash rates for each land use class monitored during the BASMAA Study and SCVURPPP Project are presented in Table 3.3. The HDS units contain a variety of land uses within their catchment and are therefore not included.

Trash rates were generally lower in the SCVURPPP Project, with the average trash rate being less than half of what was observed in the BASMAA Study. However, caution should be taken when comparing trash rates since only 53 of the sites are in common between the data sets. Commercial trash rates are higher in the SCVURPPP Project due to many of the inlets in low trash generating areas not being included. Trash rates in retail and school land uses were less than those observed in the BASMAA Study.

Table 3.3. Average trash rates (gallons/year) by land use for BASMAA Study and SCVURPPP Project monitoring sites.

Land Use	BASMAA Study (2011-12)		SCVURPPP Project (2015-16)	
	# of Sites	Average Trash Rate (gallons/year)[a]	# of Sites	Average Trash Rate (gallons/year)[a]
Colleges and Universities	0	--	2	0.86
Commercial	18	1.33	11	2.32
Industrial	13	7.41	7	3.92
Residential	49	4.66	32	3.42
Retail	61	8.66	62	2.76
Roadway	0	--	2	7.52
School	10	5.08	2	0.85
Urban Park	3	1.27	1	1.32
All Land Uses	**154**	**6.13**	**119**	**2.97**

[a] Trash rates presented in the table were not normalized for the effects of existing trash control measures (e.g., street sweeping) or area draining to each monitoring site as was done to develop trash generation rates presented in BASMAA (2014).

3.3 Evaluation of Management Questions

The SCVURPPP Project was designed to answer the five management questions listed in Section 1.2. These questions were evaluated using the data collected during the SCVURPPP Project and BASMAA Study. A discussion of the preliminary results of the evaluations is presented for each management questions in the following sections.

3.3.1 Presence of Single-Use Plastic Bags and Effectiveness Ordinances

The first two management questions relate to the presence of single-use plastic bags in the environment and effectiveness of single-use plastic bag ordinances adopted in Santa Clara County. The goal of single-use plastic bag ordinances is to substantially reduce the level of bags observed in the environment and associated adverse environmental impacts. Of the 119 monitoring sites equipped with small-full capture devices that were sampled as part of the SCVURPPP Project, 53 sites (i.e., 40 sites in San Jose and 13 sites in Sunnyvale) were also part of the BASMAA Study and were used to evaluate the rate at which bags were observed prior to, and after ordinances went into effect.

Single-use plastic bags removed from each monitoring site were counted during both the BASMAA Study and SCVURPPP Project. The numbers of bags observed at the 53 sites common to both the Study and Project are presented in Table 3.4.

Table 3.4. Number of single-use plastic bags observed pre-ordinance (BASMAA Study) and post-ordinance (SCVURPPP Project) at 53 monitoring sites in Cities of San Jose and Sunnyvale.

Permittee	Site ID	Land Use	BASMAA Study (2011-12)		SCVURPPP Project (2014-2015)	
			Accumulation Period (Days)	# Single-Use Plastic Bags	Accumulation Period (Days)	# Single-Use Plastic Bags
San Jose (n=40)	SJC-044	Commercial	324	2	336	0
	SJC-007	Industrial	303	0	334	0
	SJC-045	Industrial	411	1	337	0
	SJC-046	Industrial	319	5	337	0
	SJC-048	Industrial	321	0	337	0
	SJC-107	Industrial	409	1	350	3
	SJC-002	Residential	270	1	348	0
	SJC-006	Residential	274	2	330	1
	SJC-010	Residential	299	1	331	0
	SJC-055	Residential	411	7	331	0
	SJC-056	Residential	411	5	331	3
	SJC-060	Residential	401	2	343	4
	SJC-073	Residential	167	0	345	0
	SJC-076	Residential	419	6	346	4
	SJC-077	Residential	419	5	345	0
	SJC-079	Residential	167	1	345	0
	SJC-085	Residential	401	3	126	0
	SJC-086	Residential	401	6	172	0
	SJC-093	Residential	420	2	345	0
	SJC-102	Residential	419	8	346	0
	SJC-104	Residential	419	2	346	1
	SJC-110	Residential	269	0	350	0
	SJC-112	Residential	305	1	345	0
	SJC-113	Residential	419	6	126	1
	SJC-003	Retail	263	0	334	0
	SJC-004	Retail	235	0	334	0
	SJC-016	Retail	260	0	336	0
	SJC-018	Retail	287	1	335	0
	SJC-027	Retail	235	0	336	0
	SJC-032	Retail	435	3	335	0
	SJC-033	Retail	435	6	335	3
	SJC-036	Retail	432	1	336	2
	SJC-038	Retail	432	9	349	1
	SJC-080	Retail	419	1	350	0
	SJC-081	Retail	419	2	350	1
	SJC-082	Retail	419	3	350	1
	SJC-142	Retail	295	2	350	1
	SJC-008	Roadway	298	5	335	0
	SJC-021	Roadway	235	0	335	0
	SJC-019	Urban Park	287	1	335	0
Sunnyvale (n=13)	SNV-097	Commercial	238	0	327	0
	SNV-098	Commercial	239	0	327	0
	SNV-137	Commercial	236	0	325	0
	SNV-166	Commercial	546	0	329	0
	SNV-122	Residential	238	0	328	0
	SNV-165	Residential	585	5	329	0
	SNV-092	Retail	237	0	327	0
	SNV-112	Retail	238	0	327	0
	SNV-117	Retail	238	0	328	0
	SNV-129	Retail	238	0	329	0
	SNV-150	Retail	236	2	325	0
	SNV-114	School	238	0	327	0
	SNV-163	School	565	3	329	0
Totals			-	111	-	26

Using similar methods to those described for calculating annual trash rates by volume, the number of bags observed and the associated accumulation period for each of the 53 sites were used to calculate the average annual number of single-use plastic bags in the stormwater conveyance system during the BASMAA Study (pre-ordinance) and the SCVURPPP Project (post-ordinance). The average number of single-use plastic bags (i.e., bags/year) collected at all sites in San Jose (n=40) and Sunnyvale (n=13) during the Study and Project are shown in Table 3.5. Average rates for retail sites and non-retail sites monitored in San Jose and Sunnyvale are also presented separately.

Table 3.5. Average annual number[a] of single-use plastic bags pre-ordinance (BASMAA Study) and post-ordinance (SCVURPPP Project) at 53 monitoring sites in the Cities of San Jose and Sunnyvale.

Co-permittee	Land Use	# Sites	BASMAA Study (Pre-Ordinance) (bags/yr)	SCVURPPP Project (Post-Ordinance) (bags/yr)	Percent Reduction
San Jose	Retail Sites	13	1.92	0.74	61%
	Non-Retail Sites	27	2.66	0.74	72%
	All Sites	40	2.42	0.74	69%
Sunnyvale	Retail Sites	5	0.62	0	100%
	Non-Retail Sites	8	0.63	0	100%
	All Sites	13	0.63	0	100%
San Jose and Sunnyvale	All Sites	53	1.98	0.56	72%

[a] Because there were different accumulation periods during the BASMAA Study and SCVURPPP Project, the numbers of bags observed in storm drains during the Study and Project were normalized to an average annual rate for comparison purposes.

Average rates were significantly lower during the SCVURPPP Project compared to the BASMAA Study. The average rate of single-use plastic bags decreased by 69% at the 40 monitoring sites in San Jose, compared to pre-ordinance data from the 2011 BASMAA Study. Average rates for single-use plastic bags at San Jose retail land use sites decreased by 61% and by 72% at non-retail sites. Only 13 of the 40 San Jose sites contained a plastic bag, a large drop compared to the BASMAA Study where 29 of the 40 sites contained a plastic bag. There were no bags found at any of the 13 Sunnyvale monitoring sites during the SCVURPPP Project. Therefore, the number of single-use plastic bags decreased by 100% when compared to pre-ordinance data from the 2011 BASMAA Study. Although the data set is limited, these results appear to indicate that the level of single-use plastic bags observed in stormwater conveyances has substantially decreased at the San Jose and Sunnyvale sites, regardless of land use. Overall, there was a 72% reduction in the number of bags between the Study and Project.

A statistical comparison[5] of single-use plastic bags annual rates for the BASMAA Study and SCVURPPP Project was performed to further evaluate the statistical significance of the reduction. The results indicate that there is greater than a 95% chance that a statistically significant difference ($p < 0.001$, $\alpha = 0.05$) exists between the data collected at the 53 sites pre- and post-ordinance adoption.

[5] The two data sets were first assessed for normality using the Shapiro-Wilk test and found not to follow a normal distribution. A Mann-Whitney Rank Sum Test was therefore used rather than a paired t-test.

3.3.2 Presence of EPS Food Service Ware in the Environment and Effectiveness of Ordinances

The third and fourth management questions relate to the presence of EPS food service ware in the environment and effectiveness of EPS food service ware ordinances adopted in Santa Clara County. The goal of EPS food service ware ordinances is to substantially reduce the level of EPS food service ware observed in the environment and associated adverse environmental impacts. To assess potential trends in the presence of EPS food service ware in the environment over time, the volumes of EPS food service ware removed from the 53 monitoring sites (i.e., 40 sites in San Jose and 13 sites in Sunnyvale) in both the BASMAA Study (pre-ordinance) and SCVURPPP Project (post-ordinance) were compared. Using similar methods to those described for calculating annual rates (by volume) for all trash, annual rates of EPS food service ware were calculated for the 53 sites. Volume was used to compare the EPS service ware data rather than item count because EPS commonly breaks into smaller pieces, making item counts difficult to interpret.

The average EPS food service ware rates (i.e., gallons/year) collected at all sites in San Jose and Sunnyvale during the BASMAA Study and SCVURPPP Project are shown in Table 3.6. Average rates for retail sites and non-retail sites monitored in San Jose and Sunnyvale are also presented separately. Out of the 53 monitoring sites common to both the BASMAA Study and SCVURPPP Project (Table 3.7), EPS food service ware was observed at 48 sites (39 in San Jose and 9 in Sunnyvale) during the BASMAA Study (pre-ordinance). During the SCVURPPP Project, EPS food service ware was observed at 35 sites (32 in San Jose and 3 in Sunnyvale).

Table 3.6. Average annual volume (gallons/yr) of EPS food service ware based on data collected during the BASMAA Study and SCVURPPP Project at 53 monitoring sites in in the Cities of San Jose and Sunnyvale.

Co-permittee	Land Use	# Sites	BASMAA Study (Pre-Ordinance)	SCVURPPP Project (Post-Ordinance)	Percent Reduction
San Jose	Retail Sites	13	0.42	0.18	57%
	Non-Retail Sites	27	0.61	0.13	79%
	All Sites	40	0.55	0.15	73%
Sunnyvale	Retail Sites	5	0.35	0	100%
	Non-Retail Sites	8	0.08	0.02	75%
	All Sites	13	0.19	0.01	95%
San Jose and Sunnyvale	**All Sites**	53	0.46	0.12	74%

Table 3.7. Volume (gallons) of EPS food service ware observed pre-ordinance (BASMAA Study) and post-ordinance (SCVURPPP Study) at 53 monitoring sites in the Cities of San Jose and Sunnyvale.

Co-Permittee	Site ID	Land Use	BASMAA Study (2011-12)		SCVURPPP Project (2015-2016)	
			Accumulation Period (Days)	EPS Food Ware (gal)	Accumulation Period (Days)	EPS Food Ware (gal)
San Jose (n=40)	SJC-044	Commercial	324	0.29	336	0.02
	SJC-007	Industrial	303	0.38	334	0.00
	SJC-045	Industrial	411	0.67	337	0.30
	SJC-046	Industrial	319	1.11	337	0.67
	SJC-048	Industrial	321	0.17	337	0.03
	SJC-107	Industrial	409	1.56	350	0.00
	SJC-002	Residential	270	0.00	348	0.15
	SJC-006	Residential	274	0.11	330	0.13
	SJC-010	Residential	299	0.56	331	0.06
	SJC-055	Residential	411	1.11	331	0.30
	SJC-056	Residential	411	0.19	331	0.20
	SJC-060	Residential	401	1.56	343	0.07
	SJC-073	Residential	167	0.44	345	0.00
	SJC-076	Residential	419	0.73	346	0.48
	SJC-077	Residential	419	0.89	345	0.04
	SJC-079	Residential	167	1.56	345	0.08
	SJC-085	Residential	401	0.39	126	0.00
	SJC-086	Residential	401	0.02	172	0.01
	SJC-093	Residential	420	0.37	345	0.24
	SJC-102	Residential	419	0.60	346	0.15
	SJC-104	Residential	419	0.38	346	0.02
	SJC-110	Residential	269	0.02	350	0.05
	SJC-112	Residential	305	0.03	345	0.08
	SJC-113	Residential	419	1.28	126	0.07
	SJC-003	Retail	263	0.11	334	0.10
	SJC-004	Retail	235	0.09	334	0.00
	SJC-016	Retail	260	0.11	336	0.00
	SJC-018	Retail	287	0.11	335	0.00
	SJC-027	Retail	235	0.11	336	0.15
	SJC-032	Retail	435	0.83	335	0.08
	SJC-033	Retail	435	0.56	335	0.34
	SJC-036	Retail	432	0.94	336	0.37
	SJC-038	Retail	432	0.75	349	0.19
	SJC-080	Retail	419	0.78	350	0.61
	SJC-081	Retail	419	0.72	350	0.11
	SJC-082	Retail	419	0.11	350	0.15
	SJC-142	Retail	295	0.56	350	0.15
	SJC-008	Roadway	298	0.22	335	0.09
	SJC-021	Roadway	235	0.11	335	0.02
	SJC-019	Urban Park	287	0.02	335	0.00
Sunnyvale (n=13)	SNV-097	Commercial	238	0.11	327	0.00
	SNV-098	Commercial	239	0.00	327	0.05
	SNV-137	Commercial	236	0.00	325	0.00
	SNV-166	Commercial	546	0.02	329	0.00
	SNV-122	Residential	238	0.07	328	0.08
	SNV-165	Residential	585	0.44	329	0.00
	SNV-092	Retail	237	0.17	327	0.00
	SNV-112	Retail	238	0.00	327	0.00
	SNV-117	Retail	238	0.56	328	0.00
	SNV-129	Retail	238	0.42	329	0.01
	SNV-150	Retail	236	0.00	325	0.00
	SNV-114	School	238	0.01	327	0.00
	SNV-163	School	565	0.11	329	0.00
Totals			-	22.44	-	5.61

After normalizing the volumes of EPS food service ware observed during the BASMAA Study and the SCVURPPP Project into annual averages, a comparison between the two data sets was made. The percent reduction in both San Jose and Sunnyvale was over 70%, with an overall reduction of 74%. Furthermore, statistical analysis indicates that there is a 95% chance ($p < 0.001$, $\alpha = 0.05$)[6] that the annual volume of EPS food service ware has significantly decreased since the adoption of ordinances. These results suggest that although EPS food service ware ordinances have not eliminated EPS food service ware from the environment, they are having a significant effect on the volume of this material observed.

Eleven of the fourteen Co-Permittees in Santa Clara County have adopted ordinances prohibiting the distribution of EPS food service ware by restaurants, food vendors and/or retailers. For those Co-Permittees with ordinances, the year of the adoption (see Table 1.1) and scope of the ordinance vary. All but one Co-permittee (i.e., City of Palo Alto) adopted their EPS food service ware ordinance after the BASMAA Study was completed. However, Palo Alto did not have any monitored sites in the BASMAA Study. Of the 119 monitoring sites equipped with small-full capture devices that were sampled as part of the SCVURPPP Project, 66 sites were not part of the BASMAA Study and therefore did not have any pre-ordinance data sets. Information presented in Table 3.1 presents the average EPS rate (gallons/year) observed at the 119 sites post-ordinance. Similar to the results of the BASMAA Study and SCVURPPP Project for the common monitoring sites in San Jose and Sunnyvale, it is also likely that the average EPS rate observed during the SCVURPPP Project for the 66 sites not included in the BASMAA Project has significantly decreased post-ordinance.

Therefore, unlike the comparison of pre- and post-ordinance datasets for single-use plastic bags, comparisons presented in this section are not linked to EPS ordinance adoption timeframes. Information presented is only focused on evaluating the extent and magnitude of EPS food ware observed in the environment over time. Of all the trash characterized, EPS was only 2.5% of the total volume, indicating that it is entering the MS4 at a much lower rate than other trash types.

3.4 Effectiveness of All Trash Control Measures

The trash management question--*Are trash control measures implemented by Co-Permittees effectively reducing the overall level of trash in municipal stormwater conveyances in Santa Clara County*?-- was addressed by comparing trash rates measured during the SCVURPPP Project to those measured during the BASMAA Study for the same 53 sites. As a first step, trash volumes observed during the Study and Project were normalized to annual rates (gallons/year), which were then used to develop box plots which illustrate the range and distribution of annual trash rates for both the BASMAA Study and SCVURPPP Project (Figure 3.2). Box plots are typically used to visualize and compare data sets to better understand the level of data variability within and between categories (e.g., land use). Box plots have three parts: 1) the "box", which represents the 25th percentile (lower edge), 50th percentile (horizontal line), and 75th percentile (upper edge) of the dataset; 2) the "whiskers", which represent the 10th percentile and 90th percentile of the dataset; and 3) the "dots", which represent the statistical outliers in the dataset. Visual observations of the box plots suggest that trash rates observed in different land uses during the SCVURPPP Project are consistently lower than those observed by the BASMAA Study.

[6] The Shapiro-Wilk test determined that the two groups did not follow a normal distribution, resulting in the use of the Mann-Whitney Rank Sum Test to evaluate statistical differences between the two datasets.

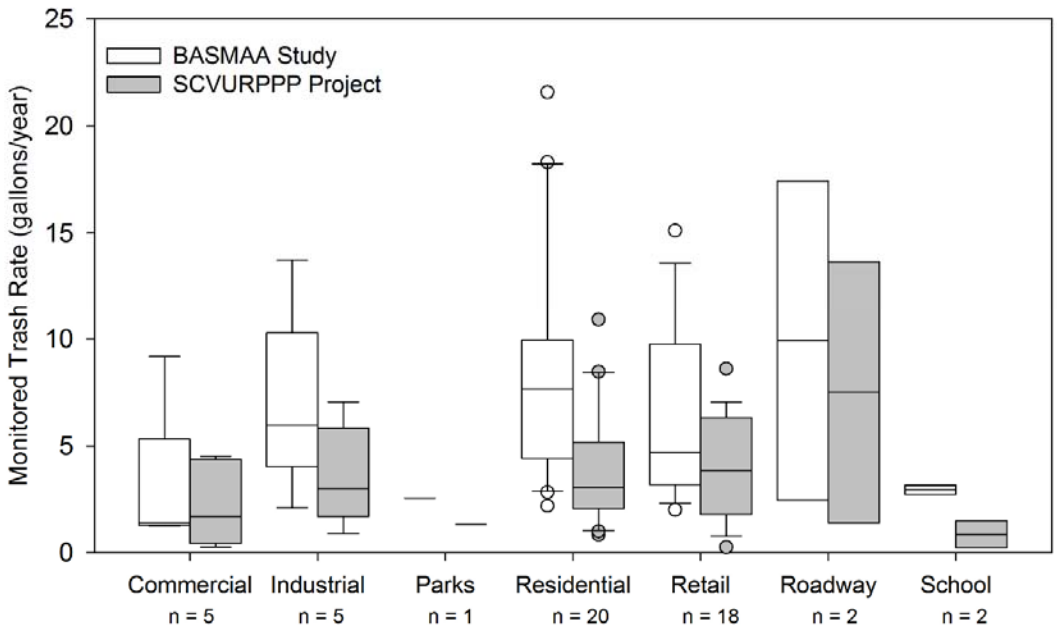

Figure 3.2. Comparison of trash rates by land use observed during the BASMAA Study and SCVURPPP Project (n= 53).

The average trash rates (i.e., gallons/year) collected at all sites in San Jose and Sunnyvale during the BASMAA Study and SCVURPPP Project are shown in Table 3.8. Average rates for retail sites and non-retail sites monitored in San Jose and Sunnyvale are also presented separately.

Table 3.8. Average annual volume (gallons/yr) of trash based on data collected during the BASMAA Study and SCVURPPP Project at 53 monitoring sites in in the Cities of San Jose and Sunnyvale.

Co-permittee	Land Use	# Sites	BASMAA Study (Pre-Ordinance) (gal/yr)	SCVURPPP Project (Post-Ordinance) (gal/yr)	Percent Reduction
San Jose	Retail Sites	13	8.1	4.83	40%
	Non-Retail Sites	27	8.35	4.12	51%
	All Sites	40	8.27	4.35	47%
Sunnyvale	Retail Sites	5	2.73	1.86	32%
	Non-Retail Sites	8	2.68	1.56	42%
	All Sites	13	2.7	1.67	38%
Total	All Sites	53	6.9	3.69	47%

Compared to the BASMAA Study, average trash rates were significantly lower during the SCVURPPP Project. The average trash rate decreased by 47% at the 40 monitoring sites in San Jose and by 38% at the 13 monitoring sites in Sunnyvale. Average trash rates at Sunnyvale retail land use sites decreased by 32% and by 42% at non-retail sites. Although the data set is limited, these results appear to indicate that the level of trash observed in stormwater conveyances has substantially decreased in San Jose and Sunnyvale, regardless of land use. Overall, there was a 47% reduction in trash observed at sites monitored both during the BASMAA Study and Project.

Statistical comparisons[7] were made to further evaluate whether there are significant differences between the BASMAA and SCVURPPP data sets, possibly indicating a reduction in trash between 2011/12 and 2015/2016. Like the single-use plastic bag and EPS food service ware reductions, statistically speaking there is a greater than 95% probability ($p < 0.001$, $\alpha = 0.05$) that the observed reduction is significant.

3.5 Trash Rates from Hydrodynamic Separators

The Project also included the characterization of trash and debris from four hydrodynamic separators (HDS) located in the Cities of Palo Alto (two), Los Altos (one) and Mountain View (one). The two units in Palo Alto are in very close proximity of each other and were grouped together for the purposes of this Project. For the Palo Alto and Mountain View HDS units, the majority of material removed from the HDS unit was characterized and the volume of each trash item was extrapolated to the portion of trash and debris not characterized. To ensure that a representative sample of trash and debris was characterized, a random grab sample was collected from the entire amount of trash and debris removed from the HDS unit. The volume of each fraction (i.e., characterized vs. non-characterized) was measured to ensure an accurate extrapolation. All material removed from the Los Altos HDS unit was characterized.

The catchment areas for each of the HDS units range from a low of 106 acres in Los Altos to a high of 168 acres for the combined Palo Alto HDS units. As a comparison, the average small full capture device in the Project had a catchment area of 1.76 acres, with a summed total of 207 acres for all 119 small full-capture devices. This Project and the BASMAA Study did not find a correlation with catchment area and quantity of trash. Therefore, trash rates were not normalized by catchment area. However, to be comparable to HDS units, the rates must be normalized to catchment area. This was only done by using the averages and not the catchment area specific to each small full-capture device.

Table 3.9 shows that the normalized rates for total trash, single-use plastic bags, and EPS food service ware were much lower in the HDS units than the small full-capture devices. However, none of the cleanout periods for the HDS units included the “first flush” event in fall 2015, which occurred on November 2, 2015. As a result, the actual trash rate may be higher. In addition to missing the first flush, HDS units only capture trash and debris during storm flows. Therefore, the last day of accumulation was the last storm event before the cleanouts. The last rain of any significance in spring 2015 occurred on May 14, 2015, so there would not be any trash accumulation expected in the HDS units after this day. When the accumulation period is ended on May 14, 2015, the Los Altos trash rate would increase by a multiplier of 2.7 and the Mountain View rates by a multiplier of 2.3. The Palo Alto rates would not change.

[7] A Shapiro-Wilk test of normality determined that none of the data sets were normally distributed and therefore a Mann-Whitney Rank Sum Test (non-parametric) test was used.

Table 3.9. Annual rate of total trash, single-use plastic bags, and EPS normalized to drainage area.

Trash Full Capture System	Area (acres)	Trash Rate Total (gal/yr/ac)	Plastic Bags Rate (bags/yr/ac)	EPS Rate (gal/yr/ac)
CPS (All 119)	207	1.69	0.23	0.049
Los Altos (HDS)	106	0.08	0.06	0.000
Mountain View (HDS)	126	0.33	0.03	0.004
Palo Alto (2 HDS)	168	0.23	0.10	0.003

4.0 CONCLUSIONS AND UNCERTAINTIES

Data collected as part of the *Santa Clara Countywide Storm Drain Trash Monitoring and Characterization Project* and the previously conducted BASMAA Study assisted in beginning to answer questions related to reductions in single-use plastic bags, EPS food service ware, and overall levels of trash observed in stormwater conveyance systems in Santa Clara County. The 119 sites monitored during the SCVURPPP Project (including 53 previously monitored BASMAA sites) served as sites representative of high and moderate trash generation in Santa Clara County. Based on the limited data available as part of the SCVURPPP Project and the BASMAA Study, the following preliminary conclusions can be made with reference to the five management questions developed to guide this Project:

- Trash Characteristics – Roughly 9% (by volume) of the material removed and characterized from storm drain inlets meets the definition of trash. This is compared to 17% observed during the BASMAA study. The types of trash observed are dominated by plastic film, food and candy packaging, straws, lids, and bottle tops (i.e., Other Plastic Category); and paper napkins, newspapers, cardboard, sports balls, and other non-plastic trash (i.e., All Other Trash Category). CRV-labeled plastic and glass recyclable bottles, cigarette butts, single-use plastic bags, and EPS food ware comprise a smaller portion of the trash characterized (~12% combined). Rigid plastic and paper disposable food and beverage ware are not consistently observed in material removed from storm drains.

- Single-Use Plastic Bags – The number of single-use plastic bags observed in Santa Clara County storm drains appears to have decreased significantly since the adoption of single-use bag ordinances. In the 53 sites common to both the BASMAA Study (pre-ordinance) and this Project (post-ordinance), the number of bags observed decreased by 72%. This decrease was seen in both San Jose and Sunnyvale sites, and in both retail and non-retail land uses. This decrease coincides with the adoption and implementation of ordinances prohibiting the distribution of single-use plastic bags at many stores/businesses in Santa Clara County. This result suggests that although ordinances have not eliminated single-use plastic bags in the environment, they are having a significant effect on the number of bags observed in stormwater conveyance systems in the Santa Clara Valley.

- EPS Food Service Ware – Similar to single-use plastic bags, there was a 74% decrease in the volume of EPS food service ware observed in the 53 sites in common between this Project and the BASMAA Study. Like single-use plastic bags, this large decrease coincides with ordinances that have been adopted throughout most of the Santa Clara Valley. This result also suggests that although ordinances have not eliminated EPS food service ware in the environment, they are

having a significant effect on the volume of this type of trash in storm stormwater conveyance systems in the Santa Clara Valley.

- Effectiveness of All Trash Control Measures – Consistent with methods outlined in the MRP, Co-permittees perform on-land visual assessments to quantify long term reductions in trash observed on-land and available to the stormwater conveyance system. Results from over 500 visual assessments conducted in 2015 suggest that countywide at least 25% of the trash entering the storm drainage system in 2009 has been reduced as a result of ordinances and control measures other than full capture devices (SCVURPPP 2016). This compares to the data collected via this Project, where the overall amount of trash observed at 53 sites common to the BASMAA Study and SCVURPPP Project has decreased by approximately 47%.

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APPENDIX A

SCVURPPP PROJECT
SAMPLING AND ANALYSIS PLAN (SAP)

APPENDIX B

QUALITY ASSURANCE

RELATIVE PERCENT REDUCTION CALCULATIONS

Appendix B Relative Percent Differences (<MDL = ½ MDL) between trash volumes measured in samples and duplicates collected at applicable sampling sites.

Sample ID	Sample Date	Sample Trash Volume (gal)	Duplicate Trash Volume (gal)	Percent Difference
SJC-007	2/2/2016	2.48	2.16	-14.0%
SJC-036	7/13/2015	3.55	3.10	-13.6%
SJC-082	2/18/2016	1.94	1.69	-13.5%
SJC-104	2/18/2016	1.78	1.58	-12.3%
CUO-079	1/31/2016	1.72	1.55	-10.2%
CMP-024	1/28/2016	2.27	2.05	-9.9%
SJC-006	2/2/2016	1.41	1.29	-9.1%
SCC-134	1/29/2016	2.03	1.85	-9.0%
SCC-153	1/29/2016	0.61	0.56	-8.2%
SJC-056	2/4/2016	3.62	3.35	-7.9%
SNV-150	1/25/2016	0.31	0.29	-6.7%
Los Altos HDS	9/29/2015	3.82	3.58	-6.4%
SJC-068	2/4/2016	5.52	5.21	-5.8%
SNV-112	7/10/2015	2.33	2.22	-4.8%
SJC-003	7/13/2015	2.60	2.52	-2.8%
CMP-012	1/28/2016	0.96	0.94	-2.3%
SNV-135	1/25/2016	1.02	1.00	-1.3%
SJC-077	2/17/2016	3.72	3.68	-1.3%
SCC-151	1/29/2016	1.62	1.60	-1.0%
SJC-016	7/13/2015	1.40	1.39	-0.8%
SJC-035	7/13/2015	4.09	4.06	-0.8%
SJC-142	7/13/2015	2.35	2.35	-0.2%
SNV-141	1/25/2016	0.59	0.59	0.4%
SJC-033	7/13/2015	5.39	5.44	0.9%
SJC-068	7/13/2015	3.04	3.11	2.2%
SJC-084	8/28/2015	2.15	2.21	2.5%
SJC-100	2/17/2016	3.00	3.10	3.3%
SJC-108	2/17/2016	1.84	1.94	5.2%
CMP-027	7/6/2015	1.17	1.25	6.6%
SNV-129	7/10/2015	2.51	2.69	7.0%
SNV-160	1/25/2016	0.60	0.65	8.3%
SCC-134	7/6/2015	1.90	2.10	9.9%
SJC-021	7/13/2015	0.59	0.70	16.8%
SJC-100	7/13/2015	2.71	4.07	40.3%
Total		**76.63**	**75.86**	**-1.1% (Avg.)**

APPENDIX C

MONITORING SITE DESCRIPTIONS AND TRASH VOLUMES

Expanded Polystyrene Food Service Take-Out Container Study

April 26, 2011

CASCADIA
CONSULTING GROUP

SEATTLE | SAN JOSE
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Executive Summary

The City of Milpitas hired Cascadia Consulting Group to prepare a study on the options for reducing expanded polystyrene food service take-out containers in the waste stream. Expanded polystyrene, also referred to as EPS, or by the trade name Styrofoam™, is commonly used for food take-out containers and beverage cups due to its excellent ability to maintain heat and cold and its low cost per unit. Based on concerns regarding the impacts of polystyrene in the environment, a number of municipalities in California and other states have banned expanded polystyrene food service take-out containers or implemented programs to reduce the use of specific polystyrene products.

Because a polystyrene food service container ban would affect many businesses, the City of Milpitas commissioned this study to research similar programs elsewhere, identify the major economic and procedural considerations, and assess potential support or opposition among Milpitas businesses and residents.

The conclusions presented in this document are based on background research, interviews, and information identified during the research phase of this project. These conclusions are intended to inform implementation of a single-use bag ban if the City of Milpitas decides to adopt one.

Methods

On behalf of the City of Milpitas, Cascadia Consulting Group undertook nine specific research tasks. At the City's direction, Cascadia reviewed the efforts of approximately 15 California cities to regulate the replacement of polystyrene containers with recyclable or compostable alternatives. We targeted our research on a sub-set of these cities: Fremont, Hayward, Millbrae, Monterey, Oakland, Palo Alto, Santa Cruz, and San Francisco. Additionally, we included information from programs in Seattle and Issaquah, Washington. Cascadia also interviewed food service businesses in Milpitas, surveyed 293 Milpitas residents by phone, and interviewed organizations that have lobbied for or against polystyrene bans.

Findings

The key findings of this research are presented by individual research task.

1. Polystyrene Bans in Other Jurisdictions

- **Cities often implement bans in phases, beginning with businesses and organizations that primarily operate as "food providers."**
- **Some cities provided businesses with only informational materials, while others had a larger budget to offer site visits of other assistance to businesses. Some cities said that site visits were key to making businesses feel supported in their switch to alternative products.**
- **Although limited outcome information is available, reports have found high compliance rates in cities with bans as well as increasing availability of alternative products.**

- **Cities interviewed that replaced a voluntary program with a ban noted that a significantly larger number of businesses switched to alternatives to polystyrene after compliance became mandatory.**
- **Many ordinances reviewed included justifications for the ban, including the specific impacts of polystyrene such as litter in waterways, beaches, and public works infrastructure.**

2. Potential Economic Impacts

- **Alternative containers cost more than polystyrene.**
- **Jurisdictions can help businesses reduce cost impacts by identifying local suppliers and establishing a purchasing co-op for small businesses.**
- **Containers contaminated by food must usually be washed prior to recycling, increasing processing costs.** Rigid recyclable alternatives, such as crystalline polystyrene, are easier to wash than foam, such as expanded polystyrene.
- **Compostable alternatives, such as paper or bioplastics, that are contaminated with food can be composted along with food scraps, requiring no pre-washing.**

3. Alternative Materials for Food Service Containers

- **Alternative products are available for most applications where food service polystyrene is currently used.**
- **Some products types are more available in alternative materials than others;** phasing implementation by product type can help businesses comply given limited availability of some products.
- **If Milpitas implements a ban, the City should offer food scrap and container composting to businesses and residents.** In the absence of food scrap and compostable container composting collection programs, these materials will be disposed as garbage.

4. Types of Polystyrene Products to Regulate

- **Jursidictions should initially limit the ban to food containers while excluding utensils**. Other cities with food service container regulations in place have successfully regulated all expanded polystyrene containers with reasonable alternatives in place and have put temporary exemptions on single use plastic utensils.
- **If Milpitas implements a ban, the City should cover food providers while allowing time-limited exemptions for undue hardship.** Other cities have successfully regulated expanded polystyrene take-out containers from food service businesses and have allowed exemptions to businesses that can prove that compliance would cause their business undue harm.

- **Outreach on a polystyrene ban should focus on educating and assisting small businesses.** Based on Cascadia's interview of businesses that may be affected by a polystyrene ban in Milpitas, small businesses would most benefit from outreach.

5. Enforcement Policies and Procedures

- **Enforcement approaches can be scaled to the level of effort appropriate.**
- **A long (up to one year) phase-in period with outreach increases the success of compliance and reduces the amount of enforcement required.**
- **Site visits to confirm that businesses are complying will help with enforcement of the ban.**
- **Citizen complaints are an effective way to supplement the enforcement process and create awareness among the community.**
- **Education and outreach is a key component of achieving compliance.**

6. Alternatives to a Polystyrene Ban

- **Recycling of food-contaminated expanded polystyrene is not currently available in Milpitas.** Food contamination and the material's low density pose challenges to cost-effective collection, transport, and processing of expanded polystyrene food containers.
- **In cities researched, voluntary reduction programs achieved lower compliance rates than mandatory bans while still requiring an extensive investment in education and outreach.**
- **Reducing the costs of alternatives to be comparable to expanded polystyrene would address a primary barrier to voluntary polystyrene reductions; however the City must consider its ability to provide sufficient financial incentives to achieve cost parity.**

7. Interviews with Key Stakeholders

Interviews with 25 restaurants and other food providers and with stakeholders from the American Chemistry Council, Save the Bay, and the California Restaurant Association found the following:

- **Over half (15 out of 25) businesses interviewed supported a City ban on expanded polystyrene**.
- **Business owners said that educating Milpitas residents about the ban would be important so that they continue to support local establishments.**
- **Stakeholders interviewed who expressed concerns about a ban mentioned the cost and performance of alternatives, net environmental effects, and the need for composting infrastructure if compostable alternatives are mandated.**
- **Stakeholders opposed to a ban suggested promoting a general recycling message and recycling expanded polystyrene. Ban proponents said that local haulers have not included food service containers in their proposed recycling program for expanded polystyrene.**

- **Representatives from two stakeholder groups recommended implementing strong outreach and education efforts if the City decided to ban expanded polystyrene.**

8. Results of a Survey of Residents

A survey of 293 Milpitas residents found the following:

- **About 70% of residents surveyed said they would approve of a ban on polystyrene food service take-out containers.**
- **Half (50%) of Milpitas residents surveyed stated they would continue to support a business that had to increase their prices to cover costs of complying with a polystyrene take-out container ban**, while nearly a quarter (23%) said they would not support such a business.
- **A majority of respondents reported that they would take some action if they saw non-compliant businesses**, such as mentioning the ban to the non-compliant business (34%), stopping shopping at the businesses (15%), or reporting the business to the City (7%).
- **About a third (33%) of respondents reported that non-compliance would not affect their shopping habits.**

9. Stakeholder Outreach and Public Awareness

- **Should Milpitas choose to pursue a ban, the City should involve stakeholder early in the process, maintain transparency, use clear and consistent messages, provide information electronically, conduct outreach in a variety of languages, and emphasize education over enforcement.**
- **Although more expensive, an active outreach approach is usually also more effective than providing only written information.** Similarly, providing informational materials to all affected parties is more effective than targeting only businesses or only consumers.

Organization of this Report

The City contracted with Cascadia Consulting Group to conduct research in nine specific task areas. The main body of this report is organized into nine sections corresponding to these tasks, as follows:

1. Review polystyrene bans in other jurisdictions.
2. Assess potential economic impacts.
3. Review alternative food service containers.
4. Recommend types of polystyrene products to regulate.
5. Research enforcement policies and procedures.
6. Evaluate alternatives to a polystyrene ban.
7. Conduct interviews with stakeholders.
8. Survey Milpitas residents.
9. Develop an outreach and awareness campaign plan.

Each section outlines the task objectives, our methods for conducting the research, major findings, and overall conclusions. Research data supporting findings and conclusions is provided in appendices.

1. Review Polystyrene Bans in Other Jurisdictions

This section describes Cascadia's research on expanded polystyrene food service take-out container bans adopted and implemented by other jurisdictions in California and elsewhere. It identifies the food service providers impacted, the outreach approaches used, measureable outcomes, and other guidance.

Methods

Cascadia's research focused on cities in the Bay Area and Washington State that have successfully pursued polystyrene food service take-out bans. California cities included Berkeley, Fremont, Hayward, Millbrae, Monterey, Oakland, Palo Alto, Santa Cruz, and San Francisco; Washington cities included Issaquah and Seattle. Cascadia reviewed ordinances and outreach materials as well as conducted interviews with city staff members to better understand effective practices.

Appendix 1.1. California Cities that have Pursued a Polystyrene Ban presents a complete list of jurisdictions in California that have implemented a polystyrene ban.

Findings

Cities reviewed often **implement their polystyrene bans in phases**, starting with businesses that are primarily engaged in providing food. Many of these cities initially targeted "food providers," meaning any business, organization, group, or individual that offers food or beverages for sale to the public. After bringing food providers on board with the program, many cities targeted other business types that serve food or purchase polystyrene food take out containers, even though these businesses do not primarily focus on food service. The food providers that are most commonly covered by polystyrene bans in cities reviewed are supermarkets, delicatessens, restaurants, retail food vendors, caterers, sales outlets, shops, cafeterias, catering trucks, outdoor vendors, food trucks, city facilities, and special large events. A few cities have required that suppliers of take-out containers certify that the shipment does not include polystyrene containers. This requirement gives food service businesses written proof of their compliance.

Cities researched for this study typically provide **outreach to affected businesses and their customers**. For affected businesses, cities explained the ban and options for transitioning to alternative materials. Some cities also targeted customers—the general public—to explain the ban. In some cases, cities researched promoted businesses that comply and encourage consumers to support those businesses.

Many **outreach programs provided written information** to businesses and their customers without personal interaction. Some cities provided businesses with the information resources needed to comply with the ban and educate customers, but these cities did not reach out to businesses to provide training or similar in-person guidance on ban compliance. Informational resources can be provided at a lower cost than more active outreach involving phone calls and site visits.

Some **communities with larger budgets have pursued more active outreach**. City staff or hired contractors worked with targeted businesses to help them transition from polystyrene take-out containers to alternatives, including selecting the most appropriate and most cost-efficient alternatives. Some cities that provided these outreach services noted that visits to businesses to inform them about the ban were key to making businesses feel supported in their switch to alternative products.

Most polystyrene bans have come into effect only in the past few years, so limited information is available on measurable outcomes of the bans. Available information includes:

- Affected businesses have high compliance rates of 94% in San Francisco (SFEnvironment) and about 95% in Palo Alto (Reigel).
- Alternative products are becoming more available and prices are gradually lowering in San Francisco (City of Monterey).
- The composition of litter has shifted from polystyrene and to alternative container types (HDR).

Cities, such as San Francisco and Santa Cruz, that attempted voluntary polystyrene use reduction programs before bans noted that businesses were much more likely to switch to alternative materials types when the city made the program mandatory. The threat of fines for noncompliance gave teeth to the cities' bans, even if only a handful of fines (if any) were issued. According to the ordinances reviewed and interviews with staff members, cities reported adopting polystyrene bans for a variety of reasons including:

- When lightweight polystyrene is blown or washed into creeks, it eventually makes its way into the ocean. Polystyrene is slow to degrade, and when it does, it resembles food to marine organisms that eat but cannot digest it (City of San Francisco).
- Polystyrene is commonly found in storm drains and catch basins, and it is an abundant type of marine debris(City of Palo Alto Public Works).
- Polystyrene take-out containers litter on beaches can be a visual deterrent for visitors; this is especially important for cities that rely on tourism to stimulate their economy (City of Monterey).

Appendix 1.2. Environmental and Social Reasons for Banning Polystyrene presents more detailed findings on the reasons cities have adopted bans on polystyrene in their communities, the outreach methods cities have pursued, measurable outcomes, and details on Berkeley's outreach to food service container suppliers.

Conclusions

- **Cities often implement bans in phases, beginning with businesses and organizations that primarily operate as "food providers."**
- **Some cities provided businesses with only informational materials, while others had a larger budget to offer site visits of other assistance to businesses. Some cities said that site visits were key to making businesses feel supported in their switch to alternative products.**
- **Although limited outcome information is available, reports have found high compliance rates in cities with bans as well as increasing availability of alternative products.**

- **Cities interviewed that replaced a voluntary program with a ban noted that a significantly larger number of businesses switched to alternatives to polystyrene after compliance became mandatory.**
- **Many ordinances reviewed included justifications for the ban, including the specific impacts of polystyrene such as litter in waterways, beaches, and public works infrastructure.**

2. Assess Potential Economic Impacts

Businesses faced with polystyrene bans frequently express **c**oncerns regarding the cost of complying with the ban. This section describes research on the potential economic impacts of an expanded polystyrene food service take-out container ban in Milpitas.

Methods

Based on concerns most frequently mentioned in a survey of businesses in Milpitas, we reviewed available data regarding the economic impacts to businesses and other stakeholders in cities with a ban in place.

Findings

The success of a ban is affected by two economic factors: the cost and availability of alternative products and the cost and needed infrastructure for processing alternative materials compared to expanded polystyrene.

Cost of Alternative Materials

Products made from alternative materials cost more than polystyrene containers. However, the unit pricing is steadily dropping as more businesses use alternative materials. The costs of alternative materials vary depending on where a business purchases materials and on what items a business chooses to purchase. Table 1, presents a study conducted in Seattle regarding the cost of polystyrene materials compared with alternatives. *Section 3. Identify and Evaluate Impacts of Preferred Alternative Materials for Food Service Take-Out Containers* offers more information on cost differences between polystyrene and alternative containers.

Appendix 2.1. Price Comparisons presents another study comparing the costs of polystyrene and alternative products, performed by Restaurant Depot, a food service container supplier in Seattle, Washington.

To assist businesses, **some cities provide a list of local suppliers that offer approved alternatives** to polystyrene serve ware to aid the transition to these alternatives. The list should include local vendors, which could reduce the cost of shipping, thus lowering economic barriers to a polystyrene ban. Bulk purchasing can also be cost-effective and is a strategy widely used by chain restaurants, supermarkets, and retail establishments.

Many of the chain businesses that Cascadia interviewed (including McDonalds, Noah's Bagels, Red Lobster, and Burger King) already offer alternative take-out container types to customers. As a result, these large businesses may not notice a significant financial burden at the outset of a ban. However, the

smaller, independent businesses we interviewed reported the purchasing of alternative take-out container types to be cost-prohibitive.

Because small businesses may have limited access to bulk suppliers, **some cities have established a purchasing co-op** to help small businesses purchase alternative products in bulk during and after this transition. GreenTown Los Altos, a grassroots environmental group in the City of Los Altos, has established a co-op through which businesses that purchase alternatives from a certain supplier receive a 25-percent discount on their purchase (GreenTown Los Altos).

Table 1. Cost of Food Service Products (cost per single item)

	Cups	Plates	Clamshell
Compostable			
	Corn-Based Cold Cup	9" Biodegradable Plate	8'' Compostable Hinged Clamshell (PLA)
	$0.13	$0.15	$0.72
Recyclable			
	Plastic Cold Drink Cups	8 1/2" Paper Plate	Easy-Lock
	$0.11	$0.06	$0.25
Expanded Polystyrene			
	Insulated Foam Cups	9" Foam Plate	Foam Container
	$0.04	$0.05	$0.11

Source: Stephanie Terrell, Cascadia Consulting Group.

Cost of Processing Polystyrene Compared to Alternative Materials

In considering a ban on expanded polystyrene food containers, Milpitas should evaluate the cost of recycling expanded polystyrene food containers compared to the cost of recycling and composting alternative products. Costs vary but are affected by the factors discussed below.

Although clean polystyrene is readily recyclable, **food contamination can be a costly barrier to recycling**. A few food-contaminated containers could make an entire load of expanded polystyrene non-recyclable. Contaminated containers can be washed, but this would increase the cost of recycling. **Alternative recyclable materials that are rigid, such as crystalline polystyrene, are easier to wash** than expanded polystyrene foam. Allied Waste's Newby Island recycling facility currently accepts crystalline polystyrene and aluminum food service containers that are contaminated with food, but not food-contaminated expanded polystyrene.

In contrast, **compostable containers that are contaminated with food can be composted with food scraps**. Because Milpitas does not currently have a food scrap collection program, compostable materials must now be disposed as trash. However, the composting facility that serves Milpitas (Allied Waste's Newby Island facility) is able to process food scraps and food-contaminated compostable containers. If the Milpitas imposes a polystyrene ban, **the City should offer composting for commercial food scraps and containers to both businesses and residents**.

Conclusions

- **Alternative containers cost more than polystyrene.**
- **Jurisdictions can help businesses reduce cost impacts by identifying local suppliers and establishing a purchasing co-op for small businesses.**
- **Containers contaminated by food must usually be washed prior to recycling, increasing processing costs.** Rigid recyclable alternatives, such as crystalline polystyrene, are easier to wash than foam, such as expanded polystyrene.
- **Compostable alternatives, such as paper or bioplastics, that are contaminated with food can be composted along with food scraps, requiring no pre-washing.**

3. Review Alternative Food Service Containers

This section describes the main characteristics of alternative products, to assist Milpitas and businesses identify appropriate alternatives to polystyrene containers, as well as some considerations when switching to alternative containers.

Methods

Cascadia identified alternatives to expanded polystyrene food service take-out containers by contacting cities that have enacted bans on polystyrene containers. We researched information provided by product manufacturers to determine whether the products have the appropriate characteristics for use in food service.

Findings

Four primary product material types were identified:

- **Bagasse** is made from processed sugar cane.
- **PLA bioplastics** are primarily derived from corn but can also be made from other materials (for example, Taterware is made from potato starch).
- **Paperboard** containers are made from paper fiber.
- **Crystalline polystyrene** and **expanded polystyrene** (foam) are petroleum-based products.

Table 2 describes the heat tolerance, sterility, compostability or recyclability, and safe use in a microwave or freezer of each material. These characteristics help businesses select which products work best for specific applications. A list of the most commonly used terms and their definitions is provided in *Appendix 3.1. Definitions of Material Types and Characteristics*.

Table 2. Characteristics of Alternative Materials

Material Type	Heat Tolerance	Sterile	Compostable or Recyclable	Microwave and Freezer Safe
Bagasse	Up to 200 degrees Fahrenheit; moisture forms at the bottom of the container for hot items. (World Centric)	Sterile according to US FDA guidelines (World Centric)	Compostable (World Centric)	Both freezer and microwave safe (World Centric)

Material Type	Heat Tolerance	Sterile	Compostable or Recyclable	Microwave and Freezer Safe
Bioplastics (PLA)	Dependent on resin but can generally hold food up to 200 degrees Fahrenheit (World Centric)	Yes, approved for use in containers in contact with food by the FDA (Chemistry Research and Environmental Review, 2001)	Compostable (World Centric)	Freezer safe; not microwave safe (World Centric)
Paper-based (paperboard, etc.)	Up to 200 degrees Fahrenheit. (Moisture may form at bottom of the container for hot items.) (World Centric)	Sterile according to US FDA guidelines. (World Centric)	Compostable. (World Centric)	Both freezer and microwave safe (World Centric)
Crystalline Polystyrene	For cold service only	Approved as sterile by the FDA.	Recyclable if food contamination is minimal	Freezer safe; not microwave safe.
Expanded Polystyrene	Up to 216 degrees Fahrenheit. (Styron , 2010)	Approved as sterile by the FDA. (Paper Mart)	Recyclable, but not accepted if contaminated by food. (Dow Chemical Company , 2006)	Freezer safe; not microwave safe.

Considerations for Changing Container Types

Product Availability

Some product types are more readily available in alternative materials than others. Food providers may more easily make the switch gradually rather than all at once. One option would be to establish temporary exemptions for products that are less available, with the exemptions ending at a fixed time (such as after one year) or when some defined availability threshold is achieved.

After implementing a ban, most cities delay enforcement until after a phase-in, outreach period to give businesses to learn about the ban and its requirements, purchase appropriate alternative take-out container types for their businesses, and use up their current stock of soon-to-be banned containers. After the phase-in period, cities often continue to offer outreach and support but also may begin to

issue fines to noncompliant businesses. The cities interviewed by Cascadia noted that businesses are more receptive to the ban when they feel the city is working to ensure that the transition is as easy as possible.

Appendix 3.2.1 Suppliers of Compostable Alternative Container Types and *Appendix 3.2.2 Suppliers of Recyclable Alternative Container Types* present lists of alternative product suppliers. The list provides information about vendors that offer recyclable or compostable alternatives to polystyrene, by product type (such as bowls and plates).

Product Recyclability and Compostability

Even when products are recyclable or compostable, Milpitas and businesses should consider whether they are accepted by available collection programs. Businesses residents in Milpitas currently receive garbage, recycling, and composting collection from Allied Waste Services. Allied Waste's Newby Island Facility does not accept food-contaminated expanded polystyrene, although it does accept food-contaminated crystalline polystyrene and aluminum. While Allied Waste's Newby Island composting facility processes food scraps and food-contaminated compostable containers from elsewhere, Milpitas residents and businesses cannot include these materials in their compost collection containers. If the City implements an expanded polystyrene ban, it should offer food scrap and food-soiled container composting for both businesses and residents.

Process to Switch Product Types

Some businesses expressed a concern that they would not have time to train staff people to comply with a polystyrene ban. After an initial surge of reminders, signage, fliers, and other outreach materials in stores, staff should be accustomed to the additional requirements of the ban. Although these requirements represent mostly a shift in work rather than additional work, staff will need to:

- Label front-of-house containers correctly for composting, recycling, and garbage.
- Sort compostable containers from garbage (depending on the requirements of the ban).
- Dispose materials from front- and back-of-house containers in the correct outside containers for collection.
- Updating signage, brochures, and other reminders around the store as the city distributes new outreach material.

Conclusions

- **Alternative products are available for most applications where food service polystyrene is currently used.**
- **Some products types are more available in alternative materials than others;** phasing implementation by product type can help businesses comply given limited availability of some products.
- **If Milpitas implements a ban, the City should offer food scrap and container composting to businesses and residents.** In the absence of food scrap and compostable container composting collection programs, these materials will be disposed as garbage.

4. Recommend Types of Polystyrene Products to Regulate

A successful expanded polystyrene food service take-out container ban would prohibit only those products for which reasonable alternatives exist, and it should cover the appropriate types of businesses. This section reviews products that could be banned and which types of businesses could be regulated.

Methods

The findings that follow are informed by the businesses and material types observed during the Milpitas business surveys, as well as by research on other cities that have regulated expanded polystyrene food service take-out containers. Each section addresses the initial implementation phase (based on ease of regulation) and implementation after the ban has been in place for a year (more difficult to manage items and businesses).

Findings

Products to Regulate

The ban should initially **target expanded polystyrene products for which readily available and acceptable alternatives exist**. In most of the bans we researched, these items generally included all food containers and excluded food service ware "accessories" such as utensils. Food containers typically include expanded polystyrene hinged and lidded containers (also known as clamshells), hot and cold cups, bowls, plates, and trays.

Biodegradable alternatives for accessories such as utensils either do not compost effectively in most local systems or do not currently exist. As a result, if Milpitas implements ban, the city should provide **a temporary exemption to allow use of utensils until a suitable alternative is identified**.

If the City pursues a ban, early in the stakeholder process it should **gather suggestions about other food service ware items** that do not have compostable or recyclable alternatives and add these to the list of products receiving temporary exemptions. Annually, the City should re-evaluate whether alternatives to these exempt materials have entered the market. If they have, the City should amend its ban to include these items.

Businesses to Regulate

The City should regulate food service polystyrene take-out containers from **all food providers**. "Food provider" means any persons providing food within the City for public consumption, on or off its premises, and includes (but is not limited to) the following business types: supermarkets, delicatessens,

restaurants, retail food vendors, caterers, shops, cafeterias, catering trucks, outdoor vendors, City facility users, and special large events.

In Cascadia's interviews of food service businesses in Milpitas, we found that most chain restaurants were already using alternatives to polystyrene take-out containers. Milpitas should still reach out to chain food service providers to ensure that they are in compliance with the ban. However, we recommend that the City **spend the majority of its resources aiding small food service business**, providing education and assisting them with achieving compliance. The small businesses in Milpitas that were interviewed expressed concerns about the cost and complexity of implementing a ban. To address these concerns, the City should target small food service businesses with support. We suggest that the City offer exemptions to businesses that can demonstrate that compliance with the ban would cause undue hardship for financial or other reasons. These exemptions should last a limited time, such as one year; after a year, the businesses should either comply with the ban or provide evidence that compliance would still cause their business undue hardship.

Conclusions

- **Jurisdictions should initially limit the ban to food containers while excluding utensils**. Other cities with food service container regulations in place have successfully regulated all expanded polystyrene containers with reasonable alternatives in place and have put temporary exemptions on single use plastic utensils.
- **Should Milpitas choose to pursue a ban, the ban should cover food providers while allowing time-limited exemptions for undue hardship.** Other cities have successfully regulated expanded polystyrene take-out containers from food service businesses and have allowed exemptions to businesses that can prove that compliance would cause their business undue harm.
- **Outreach on a polystyrene ban should focus on educating and assisting small businesses.** Based on Cascadia's interview of businesses that may be affected by a polystyrene ban in Milpitas, small businesses would most benefit from outreach.

5. Research Enforcement Policies and Procedures

Appropriate enforcement policies and procedures are critical to achieving compliance with a polystyrene ban. This section describes research on enforcement options, penalties, and costs for polystyrene food service take-out container ban programs in cities in California and elsewhere.

Methods

Cascadia's research focused on California cities that have adopted polystyrene bans, including the cities of Berkeley, Fremont, Hayward, Millbrae, Monterey, Oakland, Palo Alto, Santa Cruz, and San Francisco; our research also examined programs in Seattle and Issaquah, Washington. We reviewed polystyrene ban ordinances and conducted interviews with city staff to better understand successes and failures. *Appendix 5.1. Existing Enforcement Procedure Information* provides details from these cities' ordinances.

Findings

Jurisdictions reviewed typically enforce polystyrene bans either through site visits by city staff members to verify compliance or through non-compliance complaints by citizens received through a customer service hotline or a form on the city's website. Encouraging citizens to notify the city can help raise awareness in the community and save staff resources; however, most of the cities researched verify customer complaints with site visits by city staff. Cities we researched reported that either enforcement mechanism can be effective. Using city staff members that are already visiting businesses for another reason can be efficient and avoid duplicate trips.

Ordinances in the cities researched include a variety of penalties to support enforcement including a written warning, a fine (up to $1,000), imprisonment, or a combination of a fine and imprisonment.[1] Typically each day a violation is committed (i.e., banned materials are used in the business) is considered a separate offense. As an alternative to paying fines, some jurisdictions allow the violator to submit receipts demonstrating that after the citation date they purchased an equivalent dollar amount of acceptable alternative products.

Costs for enforcement vary depending on the type of assistance and outreach efforts. Cities typically scale their enforcement programs to the resources they have available. Several cities noted the value of having staff members who are already visiting a business for other program also distribute materials regarding the ban and assess and encourage compliance.

Non-compliance may be an issue among businesses that do not understand the purpose of the polystyrene ban or those that view the ban as unfair. Communication and outreach with businesses can lead to greater understanding and support, thus improving compliance. In interviews, staff members from the Cities of Santa Cruz and Palo Alto both attributed high compliance rates to outreach and constant communication with both businesses and the public.

[1] Cascadia does not know of any jurisdiction that has imprisoned violators.

Although the cities we researched have the infrastructure (such as an ordinance, enforcements protocols, and fines) to enforce the ban, most businesses in those cities comply without enforcement actions. Between the outreach efforts, such as site visits and stakeholder meetings, and a lengthy phase-in period, the businesses in these cities were complied without enforcement action taken. During our interview, the staff member at the City of Palo Alto stated that a long phase-in period allowed businesses to anticipate the ban and, thus, achieve acceptance and compliance. Most of the cities we researched focused on outreach and assistance efforts to help achieve compliance instead of on issuing monetary fines.

Although the cities researched saw a high compliance rate at the beginning of the ban implementation, the compliance rate may decline without enforcement. As an example, the City of Seattle had a very high compliance rate initially; however, site visits performed by Cascadia on behalf of the city showed that many businesses had reverted to polystyrene use due to the cost and lack of enforcement.

Conclusions

- **Enforcement approaches can be scaled to the level of effort appropriate to Milpitas.**
- **A long (up to one year) phase-in period with outreach will increase the success of compliance and reduce the amount of enforcement required.**
- **Site visits to confirm that businesses are complying will help with enforcement of the ban.**
- **Citizen complaints are an effective way to supplement the enforcement process and create awareness among the community.**
- **Education and outreach is a key component of achieving compliance.**

6. Evaluate Alternatives to a Polystyrene Ban

Opponents of bans on expanded polystyrene food containers have suggested alternatives including offering a program to recycle expanded polystyrene food containers and encouraging voluntary use of non-polystyrene food containers. This section presents a summary of Cascadia's assessment of the benefits and drawbacks of each potentially viable option. *Appendix 6.1. Further Evaluation of Alternatives* presents an in-depth evaluation of each alternative.

Methods

Cascadia reviewed alternatives to polystyrene bans that other cities have pursued or that opponents to an expanded polystyrene food service take-out container ban have proposed as viable.

Findings

Alternative 1: Recycling Expanded Polystyrene Food Containers

Recycling expanded polystyrene food containers decreases the quantity of the material in the waste stream (garbage). To be effective, recycling programs must collect a sufficient quantity of the target material and process it into a commodity with a quality and price acceptable to companies that are willing make a new product out of the material. Expanded polystyrene's low density poses challenges in collection and transport. Food contamination of expanded polystyrene food containers increases recycling costs because the material must be cleaned prior to processing. Manufacturers can use recovered expanded polystyrene to make other products but not food containers. At present, food-contaminated expanded polystyrene recycling is not available in Milpitas.

Table 3. Benefits and Drawbacks of Recycling Polystyrene

Recycling of Polystyrene	
Benefits	**Drawbacks**
Recovered polystyrene can be used to manufacture items such as trays, picture frames, office supplies, packing filler, combs, rulers, pens, playground equipment, and foam insulation board.	Polystyrene take-out food containers cannot be recycled back into food containers, so new polystyrene containers must be manufactured from virgin resources.
Recovering polystyrene from the waste stream conserves landfill space and resources.	Expanded polystyrene food containers are difficult to recycle because food contamination requires extensive cleaning. Additionally, expanded polystyrene's low density raises transportation costs and requires collectors to amass a large volume of the material for it to be economical to handle. Uncontrolled expanded polystyrene also has a high potential to become windblown litter.

Alternative 2: Voluntary Polystyrene Reduction by Businesses with an Extensive Outreach and Education Program

In place of a mandatory ban, businesses may voluntarily discontinue the use of polystyrene products through a public education program. A voluntary program would need to educate businesses and customers about the issue, motivate businesses to take action, and motivate customers to support businesses that voluntarily reduce polystyrene use. A public outreach and education program should be designed to achieve the complementary goals of reduced polystyrene use by businesses and reduced demand for polystyrene (or increased demand for alternative) by customers. Public outreach and education programs could use one or more of the following outreach tactics:

- Community-based social marketing
- Website development to promote polystyrene alternatives
- Workshops
- Site visits
- Recognition program for participating businesses
- Media coverage or press releases
- Community newsletters
- Campaigns to promote alternatives to polystyrene and/or recycling opportunities

Table 4. Benefits and Drawbacks of a Voluntary Polystyrene Reduction Program

Voluntary Polystyrene Reduction Program	
Benefits	**Drawbacks**
Businesses can choose which products to use, including expanded polystyrene, rather than being forced to comply with a ban.	As long as polystyrene products are less expensive and serve the intended purpose, businesses may choose not to use alternative products.
No enforcement program needed because no compliance requirements.	Additional outreach and education, beyond what would be required with a ban, are needed to effect a change in behavior.
Reduces the opposition of stakeholders who oppose bans and who may sue the City for enacting a mandatory ban.	In cities researched, voluntary polystyrene reduction programs generally achieved lower compliance rates compared to mandatory bans.
No delay in implementation due to lawsuits or other challenges, besides the outreach process to convince people to voluntarily reduce their use.	

Alternative 3: Focus on Reducing the Cost of Polystyrene Alternatives

In Issaquah, Washington, the Chamber of Commerce CEO Matt Bott reported that the major concern among businesses is cost. Among cities that Cascadia interviewed, all those that pursued a ban cited cost factor as a primary concern in the business community. Food service businesses often prefer expanded polystyrene because it is cheaper than the alternative products. According to Mr. Bott, nearly every business he spoke to about polystyrene packaging said that they would immediately switch to alternative products without a ban if the prices were comparable. However, prices for alternative products are often higher; for example, some Seattle restaurant owners interviewed reported that using compostable products raised their container costs by 35 to 40 percent.

To make recyclable and compostable products more cost comparable to polystyrene products, the City could:

- Create a co-op from which businesses can buy recyclable and compostable products in bulk.
- Develop outreach materials or a website to promote alternative products to businesses, increasing the market and possibly driving prices down.
- Provide financial incentives for businesses to use alternative products.
- Provide incentives for alternative product suppliers who conduct business in the City.

Table 5. Benefits and Drawbacks of Reducing Costs of Polystyrene Alternatives

Reducing Costs of Polystyrene Alternatives	
Benefits	**Drawbacks**
Addresses a primary barrier to reducing polystyrene use by making alternatives more affordable for businesses.	Requires education and outreach program as well as staff time to develop co-ops or manage incentive programs.
Brings additional business to suppliers of alternative products.	City incurs direct costs of providing financial incentives to food businesses or product suppliers
	City must be cautious in promoting or providing funds for any one product over another. Could face opposition from stakeholders for promoting alternative products over polystyrene.

Conclusions

- **Recycling of food-contaminated expanded polystyrene is not currently available in Milpitas.** Food contamination and the material's low density pose challenges to cost-effective collection, transport, and processing of expanded polystyrene food containers.
- **In cities researched, voluntary reduction programs achieved lower compliance rates than mandatory bans while still requiring an extensive investment in education and outreach.**
- **Reducing the costs of alternatives to be comparable to expanded polystyrene would address a primary barrier to voluntary polystyrene reductions; however the City must consider its ability to provide sufficient financial incentives to achieve cost parity.**

7. Conduct Interviews with Key Stakeholders

As food service polystyrene bans are adopted and implemented, jurisdictions have heard from both vocal critics of and cheerleaders of the bans. This section summarizes the findings from interviews with key stakeholder groups, including both proponents and opponents of a food service polystyrene ban, to better understand their opinions and to identify potential alternative solutions.

Methods

Cascadia worked with the City of Milpitas staff to create a survey to understand food service businesses' concerns over a potential take-out food service expanded polystyrene ban and to identify overall perceptions surrounding the idea of a ban, actions that businesses would be willing to take to reduce expanded polystyrene use, and positive ways that businesses are willing to help the City reach their resource management goals.

On December 9th, 10th, and 15th, 2010, three Cascadia employees visited and spoke with selected food service businesses regarding the take-out containers they currently use and their opinions about the ban as business owners. These businesses included mostly sit-down and fast-food restaurants, but we also spoke with a handful of retail food establishments that primarily sell hot and cold beverages. In total, we completed interviews with 25 food service businesses, representing roughly 3% of the business accounts served by Allied Waste. For each interview, we sought to speak with a manager or owner. We only deviated from the survey form to answer clarifying questions from the interviewees.

Cascadia compiled a list of potential businesses to target from the electronic White Pages (sorting by category). We selected a handful of chain restaurants and fast food establishments (only visiting one location for each chain), as well as a number of restaurants unique to Milpitas. The targeted businesses were primarily located on major roads in Milpitas, including but not limited to: E. Calaveras Boulevard, Jacklin Road, Abel Street, N. Milpitas Boulevard, and S. Park Victoria Dr. If, while on these major roads, a Cascadia outreach person identified a food service business that would likely be affected by a ban but that was not on our list, our outreach personnel also pursued an interview with this business.

Prior to interviewing any food service businesses, Cascadia contacted Carol Kassab, CEO of the Milpitas Chamber of Commerce, to discuss the project goals and solicit any guidance from the Chamber. Ms. Kassab responded that the Chamber cannot distribute information about its members to the public, but that we would be welcome to access information from the Chamber's public website.

To obtain information from other stakeholder groups, Cascadia also interviewed representatives of the following organizations:

- **American Chemistry Council**: Ryan Kenny and Sherry Jackson
- **Save the Bay**: Emily Utter
- **California Restaurant Association**: Johnise Down

Findings

Appendix 7.1. EPS Ban Stakeholders Survey Instrument and Results presents complete survey and interview results. *Appendix 7.2. Text of Interviews with Key Stakeholders* present the text of Cascadia's interviews with key stakeholders. *Appendix 7.3. Respondent Comments* presents additional comments representatives shared with surveyors after the official survey was complete. *Appendix 7.4. Businesses Interviewed* presents a list of the businesses Cascadia interviewed, business addresses, and business contact names (where applicable).

Businesses

Business Types and Environmental Consciousness

Of the 25 businesses surveyed, 18 were restaurants, 5 were retail food vendors (coffee roasters, yogurt shops), and 2 were delis. Among these businesses, 17 were chain restaurants.

The majority (17) of respondents classified their business as "extremely" or "somewhat" involved with and supportive of environmental issues, and 12 businesses had an environmental corporate policy in place. The majority of business (18) agreed that expanded polystyrene food take out containers littered the environment.

Knowledge of and Support of the Ban

Relatively few respondents (4 businesses) were aware that Milpitas was considering a ban. Over half of respondents (15 businesses) said that the City should ban food service businesses from providing polystyrene containers to customers; 7 of these ban supporters reported currently using polystyrene take-out containers for at least some foods.

The vast majority of respondents (23 businesses) said they would comply with a ban by purchasing alternatives to polystyrene, even if they were more expensive. Many businesses commented that they would have no choice but to buy alternatives if a ban were in place. The amount that businesses reported being willing to increase purchasing costs by varied greatly between "$100 or less" and "more than $400."

Current Practices and Container Usage

About half (13) of restaurants surveyed said they did not currently use expanded polystyrene take-out containers. Chain restaurants reported that making the switch was not financially difficult, as food service containers composed a small part of their overall operating costs. A few non-chain restaurants that did not use expended polystyrene reported doing so for personal beliefs. These small businesses said they were glad to have made the switch and found that customers were pleased to be offered alternatives to polystyrene; however, they mentioned that the cost of making the shift was difficult to bear.

Of the businesses that use polystyrene take-out containers, the majority estimated that they use more than 2,000 pieces per month of clamshells, soup cups with lids, hot drink cups, cold drink cups, plates, and other products. Among businesses that use alternatives to polystyrene, frequency of use varied widely across material types. Generally paper and recyclable plastic were the most popular materials,

but businesses also reported using biodegradable fiber, biodegradable plastics, and aluminum. Perhaps because of the increased cost of purchasing these materials, businesses did not distribute as many of these alternative containers per month compared to expanded polystyrene.

Outreach

When asked which outreach would be most helpful to them, businesses most commonly said “guides to acceptable alternatives” and “posters and fliers to educate customers about the ban,” followed by “staff training” and “the threat of fines for businesses that didn’t comply.”

Comments from Businesses Outside of the Survey Text

Fourteen businesses shared additional comments with Cascadia surveyors after the surveys were complete. These comments ranged from concerns about alternative containers’ abilities to hold certain foods to excitement that Milpitas is considering the idea of a program to reduce polystyrene use. General themes arose that may guide Milpitas forward in its work with the business community surrounding this issue. First, businesses are concerned that customers will not know about the ban, and will therefore not be part of the polystyrene use reduction efforts or support the measures that businesses take to implement it. Second, businesses did not feel that implementing the change would be a struggle in terms of training staff; instead, they were primarily concerned about the increased purchasing costs that a ban may cause.

American Chemistry Council

Ryan Kenny, representing the American Chemistry Council (ACC), stated that 30 cities in California have banned expanded polystyrene food service take-out containers, and none have shown any significant change in polystyrene use. He said a ban will remove one product and promote the use of another type of disposable product. Mr. Kenny referred to a 2008 San Francisco Streets Re-Audit which he said shows that before and after the ban there was a reduction in polystyrene food service litter, but an increase in other types of food service litter.

Mr. Kenny also said that polystyrene is the least expensive material for restaurants with the highest level of performance. Mr. Kenny stated that many restaurants complained of performance issues in alternative products. For example, he said that Jamba Juice had reported that an alternative cup that they tested leaked.

Mr. Kenny said that mandates for using compostable alternatives without an infrastructure for disposal is ineffective, and these materials still go directly to landfill. Mr. Kenny stated that expanded polystyrene is 100% recyclable and that some cities are accepting polystyrene in their recycling program.

Sherry Jackson stated that some studies have shown no change in litter composition following an expanded polystyrene container ban, although this is not what Mr. Kenny reported for San Francisco. She said that polystyrene bans force consumers to use materials with higher carbon costs, including paper. She stated that a ban would not contribute to zero waste because it would not achieve a reduction in materials.

Mr. Kenny and Ms. Jackson both said that one way to help businesses comply would be for the City to spend more on a general recycling message.

- **American Chemistry Council representatives stated opposition to a ban on polystyrene.** The American Chemistry Council representatives mentioned concerns about the price, performance, and carbon cost of alternatives; the effectiveness of a ban on reducing litter; and the need for composting infrastructure if a compostable alternatives are mandated. In place of a ban, the representatives suggested promoting general recycling and mentioned the recyclability of expanded polystyrene.

Save the Bay

Emily Utter said that Save the Bay has not yet seen any legal challenges to a polystyrene ban based on the California Environmental Quality Act (CEQA), noting that the American Chemistry Council and other similar organizations have instead challenged plastic bag bans by citing a ban's CEQA inadequacies. Ms. Utter said that Save the Bay believes that legislation, partnered with public education needs, is key to reducing polystyrene use among businesses and residents.

Ms. Utter said that a polystyrene recycling program proposed by local haulers does not currently and may never include expanded polystyrene *food service* containers.

Ms. Utter described the value of a strong public education push from the City, which would engage business associations ahead of time, provide businesses with a list of vendors and pricing for alternative products, and include in-person visits to answer questions and information in various languages for ethnically-operated businesses. She said that flyers and posters are not as effective as direct communication with businesses.

According to Ms. Utter, Save the Bay has found that businesses' concerns regarding the price of alternative materials are a significant hurdle. She stated that Milpitas would need to work with businesses to show them the advantages of the alternatives and importance of the ban.

- **A Save the Bay representative stated support for an expanded polystyrene ban paired with in-person outreach** as the most effective method to reduce expanded polystyrene use, in her view. She said that local haulers have not included food service containers in their proposed expanded polystyrene recycling program. The representative recommended that outreach especially address the cost difference between expanded polystyrene and alternative materials.

California Restaurant Association

Johnise Down of the California Restaurant Association said that the cost difference between expanded polystyrene and alternative materials can be significant, especially for smaller restaurants with high overhead and low profit margins.

Ms. Down mentioned that some studies have shown the lack of a proven impact or benefit in cities with polystyrene bans and that most restaurants that can afford to make the change have already done so.

She said that the California Restaurant Association questions the performance of alternative materials and would support alternatives that are inexpensive and work for the business.

According to Ms. Downs, the California Restaurant Association recommends that the City ensures that an adequate supply of alternatives is locally available, ensures the City has infrastructure for composting, and offers some type of co-op to purchase in bulk at a lower cost. Ms. Down also stated that outreach challenges include the difficulty of reaching decision-makers at restaurants, that small restaurant staff may not be as web-savvy, and communication difficulties with restaurant staff that speak languages other than English.

Ms. Downs requested that Milpitas keep both the California Restaurant Association and individual restaurants involved and informed in the process of deciding how to reduce expanded polystyrene use.

- **A California Restaurant Association representative expressed concerns about a ban and suggested that Milpitas proceed cautiously if it pursues this course**. She expressed concerns about the lack of demonstrated benefits in other cities with bans, the performance of alternative materials, and the cost impacts (particularly on small restaurants). If the City were to enact a ban, the representative suggested that the City offer a way for small businesses to purchase alternatives locally and in bulk to lower costs, composting for compostable alternatives, and outreach that overcomes the challenges of reaching small restaurants.

Conclusion

- **Over half (15 out of 25) businesses interviewed supported a City ban on expanded polystyrene**.
- **Business owners said that educating Milpitas residents about the ban would be important so that they continue to support local establishments.**
- **Stakeholders interviewed who expressed concerns about a ban mentioned the cost and performance of alternatives, net environmental effects, and the need for composting infrastructure if compostable alternatives are mandated.**
- **Stakeholders opposed to a ban suggested promoting a general recycling message and recycling expanded polystyrene. Ban proponents said that local haulers have not included food service containers in their proposed recycling program for expanded polystyrene.**
- **Representatives from two stakeholder groups recommended implementing strong outreach and education efforts if the City decided to ban expanded polystyrene.**

8. Survey Milpitas Residents

Residential support is often cited as key to ensuring the success of an expanded polystyrene ban. This section summarizes the results of a survey of Milpitas residents to assess their opinions regarding an expanded polystyrene ban.

Methods

Cascadia worked with the City of Milpitas staff to create a survey to assess residents' concerns over a potential polystyrene ban, overall feelings on the idea of a ban, and positive ways that residents would be willing to help the City reach its resource management goals. This survey included questions about a, expanded polystyrene ban and about a plastic bag ban. Cascadia asked residents additional questions regarding Household Dump Days and demographics, providing information to the City for a separate project. The final survey instrument and complete results are attached in *Appendix 8.1. Residential Survey Instrument and Results*. Additional details on the methodology are presented in *Appendix 8.2. Residential Survey Methods: Continued*. In total, 293 residents were surveyed, representing approximately 4 percent of the population. This number of surveys produces a margin of error of plus or minus 5 percent at the 90 percent confidence level.

Findings

When asked about the effect of single-use bags and polystyrene food service take-out containers, about 75 percent of respondents agreed with the statement that these products can harm wildlife, and 73 percent of respondents agreed with a statement that these products litter the environment.

Approximately 69 percent of residents surveyed did not know that the City was considering a ban on expanded polystyrene food service take-out containers. When asked about their support or opposition for bans on polystyrene food service take-out containers and single use bags, 48 percent of respondents approved of a ban of **both products**, 22 percent approved of a **polystyrene** ban only, 6 percent approved of a **single-use bag** ban only, and 24 percent **disapproved** of any ban.

Surveyors asked residents if they had visited a fast-food restaurant that did not use expanded polystyrene packaging and noticed any loss of quality in their food as a result of the packaging. About 86 percent of respondents said that they had eaten food from to-go containers not made of expanded polystyrene without noticing a difference in food quality.

Respondents varied on whether they would continue to support a business that had to increase prices to cover costs of complying with an expanded polystyrene take-out container ban. Half (50%) of respondents said they would support the businesses, 27 percent said they may consider supporting the business, and 23 percent said they would not support the business.

Residents were asked what their hypothetical response would be to a business that had not yet complied with a ban after it came into effect. While a third (33%) of respondents said they would shop there as usual because non-compliance would not affect their shopping habits, a majority of respondents said they would take some action in response to non-compliance. A third of respondents

(34) said they would mention it to the business and ask them to comply with the ban, and about 15 percent of residents surveyed reported that they would not say anything to a non-compliant business but would avoid shopping at the store. About 7 percent of respondents said they would report the business to the City for investigation, and 5 percent said they would tell the business that they would stop shopping at the business if it did not comply.

At the end of the survey, residents were asked if they would like to provide additional input. Responses from the 93 residents that did so are provided in *Appendix 8.3. Additional Responses from Residents*. (Because the residential survey covers both the polystyrene ban and a single-use bag ban, some responses refer to a single use bag ban.)

Conclusions

- **About 70% of residents surveyed said they would approve of a ban on polystyrene food service take-out containers.**
- **Half (50%) of Milpitas residents surveyed stated they would continue to support a business that had to increase their prices to cover costs of complying with a polystyrene take-out container ban**, while nearly a quarter (23%) said they would not support such a business.
- **A majority of respondents reported that they would take some action if they saw non-compliant businesses**, such as mentioning the ban to the non-compliant business (34%), stopping shopping at the businesses (15%), or reporting the business to the City (7%).
- **About a third (33%) of respondents reported that non-compliance would not affect their shopping habits.**

9. Develop an Outreach and Awareness Campaign Plan

An outreach and awareness campaign would help the City of Milpitas move forward with any program selected to manage polystyrene. This section summarizes findings from a review of polystyrene outreach programs in other jurisdictions and suggestions for outreach targeting both residents and businesses.

Methods

Cascadia reviewed outreach materials and programs that other cities have successfully used to reduce polystyrene use among food service businesses in their communities. These cities included Palo Alto, Santa Cruz, and San Jose in California. Cascadia also provided insight based on outreach that our staff has performed in Issaquah and Seattle, Washington.

Findings

The findings begin with a summary of lessons learned from outreach programs used by other cities with a polystyrene ban followed by a description of outreach approaches the City of Milpitas could use.

Lessons Learned

Lessons learned from successful outreach programs for businesses in cities elsewhere include the following:

- **Involve the community in a series of stakeholder meetings early in the process and maintain a transparent process throughout**. Key stakeholder groups include advocacy groups, environmental organizations, chambers of commerce, neighborhood associations, and other business and industry organizations.
- **While active outreach is very effective, the most important tactic is to spread clear and consistent messages to both businesses and residents.**
- **Make outreach opportunities as attractive and useful to businesses as possible** by providing outreach materials in a variety of languages and to applicable to a variety of business types.
- **Make information about the ban and compliance requirements available on the city's website and through an e-mail list-serve** to update businesses and residents on the progress and timeline of a ban.
- **Emphasize compliance through education, awareness, and "doing the right thing" instead of focusing on enforcement.**
- **Investing in educating residents can increase pressure to comply**: residents who understand why the ban is in place are more likely to remind businesses they frequent to comply.

A variety of outreach strategies are available to implement a ban on expanded polystyrene. Outreach plans should target restaurant owners, managers, and employees at the primary businesses affected by a take-out food service polystyrene ban. The focus of all outreach and action plans should be to communicate behavior change and education.

Outreach Options for Milpitas

Milpitas could undertake two types of outreach either separately or combined: one focusing on providing written information and one adding active outreach and education.

Provide Written Information to Businesses and Residents

This outreach model involves limited staff time and instead relies on print and media to saturate the community with information about a polystyrene ban. It is a less expensive and more hands-off approach to education, compared to personalized assistance. Outreach materials should be made available online (on the City's website and in a listserv) and in print, when necessary. This approach can focus on businesses, residents, or both together:

- **Business Focus**
  - The City would distribute certified-letter mailings to affected businesses. We suggest that the City send at least two communications: one as soon as the ban is adopted (before implementation) and a second one month prior to the implementation date. If there will be a significant grace period between implementation and enforcement, then a third letter should be sent one month before enforcement begins.
    - Mailings should have a clear and simple message and should provide adequate information about the ban, how it affects the targeted businesses, required actions, and where to get more information such as translated materials.
    - If possible, these mailings should offer a list of vendors that can provide alternatives to polystyrene packaging to businesses.
- **Resident/Consumer Focus**
  - The City would distribute direct mailings to residents about the ban process and associated programs. Engaging the public will ultimately help to ease the burden of local enforcement agencies. For example, asking residents to notify the City if businesses are not in compliance will reduce the administrative cost of having enforcement officers search for non-compliant businesses.
- **Combination of Business and Resident**
  - This approach consists of direct mailings to both businesses and residents.
  - A combination outreach plan would be more costly to the City because it targets both audiences; however, an investment in this approach may be more effective as it reaches all affected parties.

Conduct Active Outreach to Businesses

The active outreach approach is usually more expensive and also more effective than providing only written information. When outreach personnel deliver materials and information in person, businesses

have the opportunity to ask questions, clarify misunderstandings, and feel supported by the City as they pursue alternative solutions. Typically, city employees in the public works or environmental services departments or outside consultants perform this direct type of outreach to food services businesses. However, a less expensive alternative would be for the City to train a group of volunteers to represent Milpitas. Key elements of active outreach are:

- **An initial "one-touch" approach to businesses in which staff or volunteers visit every food service business** in the City to deliver information about the ban prior to the date of implementation. The cities of Issaquah, Washington, and Palo Alto, California, have successfully used this approach.
- **Follow-up visits and on-site technical assistance after implementation of the ban** for food service businesses that either request a site visit or are reported to be using banned products. In these second outreach visits, the City should provide a translator if necessary to ensure that the outreach visit is effective. This outreach strategy has been employed in Seattle and Santa Cruz, yielding positive results.

On-site outreach is most effective when provided during non-peak restaurant hours. For fast food and lunch-time restaurants, the hours following the lunch rush and before closing are best (1:30–4:00 PM). It is best to approach restaurants that are open only for dinner before service starts (2:30–5:00 PM).

Conclusions

- **Should Milpitas choose to pursue a ban, the City should involve stakeholder early in the process, maintain transparency, use clear and consistent messages, provide information electronically, conduct outreach in a variety of languages, and emphasize education over enforcement.**
- **Although more expensive, an active outreach approach is usually also more effective than providing only written information.** Similarly, providing informational materials to all affected parties is more effective than targeting only businesses or only consumers.

Appendix 1.1. California Cities that have Pursued a Polystyrene Ban

Please note that not all of these bans are in place: many have been challenged or overturned.

Alameda Expanded polystyrene ban, requirement that all takeout food packaging be compostable or recyclable	(2008)
Albany Expanded polystyrene ban, requirement that all takeout food packaging be compostable or recyclable	(2008)
Aliso Viejo Government facility expanded polystyrene ban	(2005) Ordinance #2004-060
Berkeley Expanded polystyrene ban, requirement that 50% of takeout food packaging be recyclable or compostable	(adopted 1988) Title 11.58 and 11.60 of Municipal Code
Calabasas Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2008)
Capitola Expanded polystyrene ban, requirement that all disposable takeout food packaging be compostable	(2009)
Carmel Expanded polystyrene ban, requirement that 50% of takeout food packaging be recyclable, compostable or reusable	(1989)
Del Ray Oaks Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(effective July 1, 2010) More information available on page 35 of Agenda Packet
Emeryville Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2008)
Fairfax Expanded polystyrene ban for all restaurants and food retail vendors	(1993) Title 8.16 of Municipal Code
Fremont Expanded polystyrene ban for food vendors, requirement that all takeout food packaging be recyclable or compostable	(effective January 1, 2011)

Hayward Expanded polystyrene ban for restaurant vendors, requirement that takeout food packaging be recyclable or compostable	(effective July 2011)
Hercules Expanded polystyrene ban	(2008) Sec. 5-3109, Title 5, Chapter 3 of Municipal Code
Huntington Beach Government facility expanded polystyrene ban	(2005)
Laguna Beach Polystyrene ban, requirement that all plastic takeout food packaging be recyclable	(2008) Title 7. 05 of Municipal Code
Laguna Hills Government facility expanded polystyrene ban	(2008)
Laguna Woods Government facility expanded polystyrene ban	(2004)
Los Angeles City Government facility expanded polystyrene ban	(2008) Chapter IV, Article 13 of Municipal Code
Los Angeles County Government facility expanded polystyrene ban	(2008)
Malibu Expanded polystyrene ban	(2005) Title 9.24 of Municipal Code
Marin County Expanded polystyrene ban	(effective January 1, 2010)
Millbrae Polystyrene ban, requirement that all plastic takeout food packaging be recyclable or compostable	(2008)
Monterey City Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2009)
Monterey County Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(effective November 2010) Title 10, Chapter 10. 42 of Municipal Code
Newport Beach Expanded polystyrene ban	(2008) Title 6, Section 5 of Municipal Code

Oakland Expanded polystyrene ban, requirement that all takeout food packaging be compostable	(2007) Businesses that generate a large portion of litter must pay a litter fee Title 8. 07 of Municipal Code
Orange County Government facility expanded polystyrene ban, including cities of Aliso Viejo, Huntington Beach, Laguna Hills, Laguna Woods, San Clemente, San Juan Capistrano and the Santa Margarita Water District	(2005/6)
Pacific Grove Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2008) Title 11, Chapter 11. 99 of Municipal Code
Pacifica Expanded polystyrene ban	(effective January 1, 2010)
Palo Alto Expanded polystyrene ban	(effective April 22, 2010)
Pittsburg Polystyrene ban	(1993) Title 8. 06. 210 of Municipal Code
Richmond Polystyrene ban, requirement that all plastic takeout food packaging be compostable	(effective August 5, 2010)
Riverbank Expanded polystyrene ban, requirement that all takeout food packaging be compostable or recyclable	(2008)
San Bruno Polystyrene ban, requirement that all plastic takeout food packaging be recyclable or compostable	(effective April 1, 2010)
San Clemente Government facility expanded polystyrene ban in 2004	(effective July 1, 2011) Council passed a city wide ban in 2011
San Francisco Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2007)
San Jose Government facility expanded polystyrene ban for special events	(effective May 1, 2010)
San Juan Capistrano Government facility expanded polystyrene ban	(2004)

San Mateo County Government facility polystyrene ban	(2008)
Santa Cruz City Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2008)
Santa Cruz County Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2008) Title 5, Section 46 of Municipal Code
Santa Monica Polystyrene ban with requirement that all plastic takeout food packaging be recyclable	(2007)
Scotts Valley Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2009)
Seaside Polystyrene ban with requirement that all plastic takeout food packaging be recyclable or compostable	(effective August 4, 2010)
Sonoma County Government facility expanded polystyrene ban	(adopted 1989) Title 19, Section 19. 6-1 of Municipal Code
South San Francisco Polystyrene ban, requirement that all plastic takeout food packaging be recyclable or compostable	(2008)
Ventura County Government facility expanded polystyrene ban	(2004)
Watsonville Expanded polystyrene ban, requirement that all takeout food packaging be recyclable or compostable	(2009) Title 6, Chapter 6 of Municipal Code
West Hollywood Polystyrene ban for restaurants and food vendors	(adopted 1990)

Source: "Polystyrene: Local Ordinances." Californians Against Waste, 2010. http://www.cawrecycles.org/issues/plastic_campaign/polystyrene/local

Appendix 1.2. Environmental and Social Reasons for Banning Polystyrene

San Francisco's ordinance states that polystyrene directly impacts the biology of the waterways that surround their community. The City of Palo Alto makes the case on their website that polystyrene constitutes 15% of the litter collected in local storm drains, and according to a 2004 CIWMB study it is the second most abundant type of marine debris. The City of Monterey acknowledges that their economy is largely dependent on tourists who visit their beaches, and that polystyrene take-out containers comprise a large percentage of litter on their beaches.

Detailed Outreach Strategies by City

Written Information

Examples of written information-based outreach efforts are as follows:

- The City of Monterey created a video to post on their website that explains the reasons behind the ban, food vendor roles in ban enforcement, and alternatives to polystyrene use. This video targets businesses and residents alike, guiding businesses towards correct practices and explaining to residents the logic behind the ban and how their compliance impacts Monterey's community. This video can take the place of individual presentations at businesses. (City of Monterey Recycling Programs)
- The City of Santa Cruz, like most other cities with a ban, has developed a brochure regarding the program, a frequently-asked-questions flyer, and biodegradable alternative product vendor list, all available online (Public Works, Santa Cruz County).
- The City of Palo Alto offers a factsheet on its website explaining acceptable and available alternatives to polystyrene in preparation for implementation of the ban. To aid businesses in customizing alternative service ware for their businesses, the City created three separate lists of alternatives, targeting events/business cafeterias, eat-in restaurants, and take-out restaurants. The City also created a factsheet that explains the ordinance requirements to affected businesses, and provides ideas for practices businesses can implement to reduce the cost of compliance (City of Palo Alto Public Works).

Active Outreach

Examples are as follows:

- Santa Cruz County began the educational outreach for their polystyrene ban ordinance with an introductory letter to all food service business owners in unincorporated Santa Cruz County. This letter introduced businesses to the program and to the outreach materials available to them; it included a poster to educate their staff, a FAQ sheet, and a list of sources for alternative products. Santa Cruz County offered free consulting services to help businesses transition to alternatives to using polystyrene for food service take-out containers (County of Santa Cruz Department of Public Works). The County also held a workshop for restaurants that covered the

ordinance and hosted supplier representatives to talk about alternative products (Public Works, Santa Cruz County).

- The City of Monterey Recycling Programs Office offers technical assistance to businesses that directly request it (City of Monterey Recycling Programs).
- The City of Seattle has hired consultants to provide outreach to businesses on behalf of the City through their Resource Venture program. These outreach personnel visit businesses affected by the ban to help them transition to alternative take-out containers and to ensure that the take-out food container system they transition to reduces landfilled waste. These visits came in phases, the first educational and the second tending more towards documentation of current practices to distribute to the City for potential enforcement. Outreach personnel distributed waste, recycling, and compost educational posters, binlabels and containers for businesses to use to collect alternative take-out service ware. These personnel also guided business owners in the purchase of alternative containers accepted by Cedar Grove, Seattle's local composting facility. In addition to direct targeted outreach, the city's comprehensive outreach program includes quarterly stakeholder meetings and events with foodservice businesses, waste service providers, and food packaging manufacturers, and a print, television, radio, and social media campaign. (Hibbs)

Supplemental Information to Measureable Outcome of the Bans

In 1989, the City of Santa Cruz put a voluntary polystyrene foam takeout food service ban in place for food establishments. Despite extensive education and outreach to both business and the public, food service businesses and consumers continued to use polystyrene take-out containers. After 18 years, the City adopted mandatory restrictions in (August, 2008).

Many Milpitas food service businesses interviewed cited a high cost of purchasing alternative containers as a main concern surrounding a polystyrene ban. However, since the implementation of its polystyrene food serve ware ban, the City of San Francisco has experienced an influx of alternative container distributors, and the price of alternative containers has dropped significantly.

Strategy: Work Directly with Foodservice Ware Vendors to Ensure Compliance

As one of the first cities in the Bay Area to ban polystyrene, the City of Berkeley instituted a handful of trailblazing policies. Berkeley structured their polystyrene ban ordinance to include sections outlining food service business relationships with suppliers of take-out containers. Suppliers must sign an agreement to not supply food service businesses with any polystyrene products; every delivery invoice must state that the delivery does not include polystyrene (Councilmembers: Chandler). The Berkeley ordinance also requires that each restaurant and retail food vendor establish separate waste receptacles for each type of recyclable food packing generated on the premises. This ensures that the alternative materials are recycled or composted and not mixed with materials to be sent to landfill (Councilmembers: Chandler).

Appendix 2.1. Price Comparisons

Material/Size	RD Shelf	Case Pack	Price Each	With Lid	MULTIPLIER
Polystyrene Foam					**VS FOAM**
8" Single Compartment	$ 12.69	150	$ 0.085		
8" 3 Compartment	$ 12.80	150	$ 0.085		
8" 3 Compartment	$ 14.34	200	$ 0.072		
Aluminum					
9" Single compartment	$ 47.64	500	$ 0.095		
Clear PS lid	$ 25.89	500	$ 0.052	$ 0.147	173%
Foil paperboard lid	$ 23.12	500	$ 0.046	$ 0.142	166%
Molded Fiber/Bagasse					
8" Single Compartment	$ 28.39	200	$ 0.142		167%
8" 3 Compartment	$ 28.39	200	$ 0.142		167%
OPS					
8" Single Compartment	$ 33.50	200	$ 0.168		197%
8" 3 Compartment	$ 33.50	200	$ 0.168		197%
Polypropylene					
8" Single Compartment	$ 34.00	200	$ 0.170		200%
8" 3 Compartment	$ 34.00	200	$ 0.170		200%
Medium size	$ 38.05	200	$ 0.190		224%
Large Size	$ 48.34	200	$ 0.242		284%
PLA (compostable)					
8" Single Compartment	$ 65.00	200	$ 0.325		382%
8" 3 Compartment	$ 65.00	200	$ 0.325		382%
8" Single Compartment	$ 78.79	150	$ 0.525		618%
8" 3 Compartment	$ 60.03	150	$ 0.400		471%
Hot Cups					
12oz	$ 20.10	1000	$ 0.020		
16oz	$ 14.11	500	$ 0.028		
20oz	$ 17.24	500	$ 0.034		
Lids - PS White	$ 15.45	1000	$ 0.015		
Lids - PS Translucent	$ 13.01	1000	$ 0.013		
12oz	$ 29.07	1000	$ 0.029		145%
16oz	$ 40.62	1000	$ 0.041		144%
20oz	$ 59.83	1000	$ 0.060		174%
Lids - PS Translucent	$ 26.12	1000	$ 0.026		169%
Lids - PS Translucent	$ 28.75	1000	$ 0.029		186%

Material/Size	RD Shelf	Case Pack	Price Each	With Lid	MULTIPLIER
Coated Paper Hot Cups					
12oz	$ 28.08	600	$ 0.047		233%
16oz	$ 34.21	600	$ 0.057		202%
20oz	$ 34.65	500	$ 0.069		201%
Coated Paper Hot Cups					
12oz	$ 28.84	600	$ 0.048		239%
16oz	$ 36.85	600	$ 0.061		218%
20oz	$ 39.47	500	$ 0.079		229%
Lids - PS White	$ 33.08	1200	$ 0.028		178%
Cold Cups					
12oz	$ 20.10	1000	$ 0.020		
16oz	$ 14.11	500	$ 0.028		
20oz	$ 17.24	500	$ 0.034		
Lids - PS White	$ 15.45	1000	$ 0.015		
Lids - PS Translucent	$ 13.01	1000	$ 0.013		
Coated Paper Cold Cups					
12oz	$ 27.24	600	$ 0.045		226%
16oz	$ 34.94	600	$ 0.058		206%
20oz					
Lids - PS Translucent APET Cups					
12oz	$ 27.50	500	$ 0.055		274%
16oz	$ 30.99	500	$ 0.062		220%
20oz	$ 39.95	500	$ 0.080		232%
Lids Flat 12/20	$ 29.40	1000	$ 0.029		190%
Lids Flat 16/24	$ 30.51	1000	$ 0.031		197%
12oz	$ 69.18	1000	$ 0.069		344%
16oz	$ 74.10	1000	$ 0.074		263%
20oz	$ 92.08	1000	$ 0.092		267%
Lids Flat 12/20	$ 31.75	1000	$ 0.032		206%
HIPS Party Cups					
16oz	$ 52.71	1200	$ 0.044		156%

Appendix 3.1. Definitions of Material Types and Characteristics

Biodegradable: A material that can degrade outside of specific composting conditions, but that still requires the enzymatic action of microorganisms to mineralize **(Herrera Environmental Consultants).**

Compostable: A material that can achieve total mineralization (degrade) under specific composting conditions involving the coordinated action of microorganisms **(Herrera Environmental Consultants).**

PLA: A biodegradable and recyclable commercial-grade plastic resin which is produced by fermenting and distilling corn sugar **(Gilman).**

PET: Polyethylene Terephthalate. A thermoplastic material used to manufacture plastic soft drink containers and rigid containers. Can be re-used or recycled **(U.S. Environmental Protection Agency).**

GPPS: General-purpose polystyrene (GPPS) is a clear, hard, usually colorless thermoplastic resin **(The Dow Chemical Company , 2008)**.

Bagasse: Bagasse is a biodegradable and compostable disposable tableware that is made from sugarcane fiber leftover after juice extraction **(World Centric)**.

Polystyrene: A plastic polymer used to make a variety of products including plastic cutlery and food containers. It is often used in its foamed state, expanded polystyrene **(U.S. Environmental Protection Agency)**.

PP: Polypropylene. A plastic polymer that has good resistance to heat is used in flexible and rigid packaging, film, and textiles **(U.S. Environmental Protection Agency)**.

Paperboard: Paperboard is a thick paper-based material. It comes in a variety of grades that can be used for different packaging purposes. The grade most frequently used for take-out containers is coated unbleached kraft paperboard(CUK). CUK is made from at least 80 percent virgin unbleached, natural wood pulp. It can be coated with a polyethylene (PE) resin for wet strength food packaging **(Paperboard Packaging Alliance)**.

zero WASTE PALO ALTO Achieving zero waste together www.cityofpaloalto.org/zerowaste zerowaste@cityofpaloalto.org (650) 496-5910	**Compostable Food Service Ware Vendor List**

Palo Alto has a community-wide goal of sending zero waste to landfills. One way organizations can help eliminate waste going to landfills is to stock their lunch and break rooms with reusable and washable dishes, cups, and silverware. With a little planning, special events can be serviced with reusable products as well.

If the use of reusable dishes and cutlery is not possible, consider purchasing compostable service ware instead. While not as environmentally friendly, because compostable dishes, cups and cutlery are still meant to be used once and then disposed, composting them does reduce their impact. Instead of being landfilled and releasing methane, a powerful greenhouse gas, compostable service ware is turned into a soil amendment for landscaping purposes.

The information in this document is meant to assist you in selecting compostable service ware for your organization or event.

Types of products available:
Containers may be made from paper, sugarcane fiber, potato or corn starch, and other plant-based fibers.

- Hinged clamshell
- Folded to-go container
- Plates and bowls
- Cutlery
- Straws
- Bags and liners
- Cold cups/lids
- Hot cups/lids
- Trays

Consider products:
- Made from recycled content
- Labeled as compostable
- Certified by the Biodegradable Products Institute (www.bpiworld.org)
- Meeting the ASTM standards for compostability. ASTM D6400 covers plastic films and bags. ASTM D6868 covers packaging that is designed to be composted, including plastic coated paper and paper board.

Please note that starch-based compostable plastics (e.g., cutlery, clear cups) are designed to be composted in a large-scale commercial composting facility. Composting these items in a backyard system is slow and success varies depending on the conditions.

Compostables Collection Service:
Please visit www.greenwaste.com/paloalto for a detailed list of accepted compostable materials. Contact GreenWaste Customer Service, at (650) 493-4894, for collection of compostables from your business, multi-unit residential complex, or special event.

Compostable Food Servicewares Vendors

Compostable = Bamboo (BA), Compostable Plastic (CP), Molded Fiber (F) and Paper* (P)**

Vendor	Phone	Website	Boxes	Bowls	Cold cups & lids	Hinged & lidded containers	Hot cups* & lids	Paper & compostable plastic Bags	Plates	Trays and Cup Holders
Alliance	(312) 666 6424	allpfs.com	P		CP, P	F, P	P	P	F, P	P
American Paper and Plastic Inc	(626) 444 0000	appinc.com	P	P	CP	CP	P	P	P	
Arrow Tableware	(650) 871 8226	arrowtableware.com		F		F	F		F	F
Asean Corporation	(503) 295 4977	stalkmarketproducts.com		F	F, CP	F	P, F		F	
Bio Smart	(888) 310 2008	biosmartpackaging.com	F, P	F	CP, P	CP, F	CP, P	CP	F	F
Biodegradable Foodservice	(541) 593 2191	bdfs.net		F, CP	CP	CP, F	CP		F	
Biodegradable Store		biodegradablestore.com		F, P	CP	CP, F	P, CP	CP	F	
Bio-Tuf	(800) 527 2247	heritage-bag.com						CP		
BiRite	(800) 227 5373	birite.com	P	F,CP	CP	F	P	CP	F, P, CP	F
Bridge-Gate Alliance	(925) 417 0638	bridge-gate.com		F		F			F	F
California Recycles	(877) 478 3001	californiarecycles.com		F	CP	CP, F	CP, F		F	F
Cash and Carry		smartfoodservice.com		P	P		P		P	
Cereplast	(310) 676 5000	cereplast.com		CP	CP	CP			CP	
Costco	(800) 774 2678	costco.com		F, P	P		P	CP	P	
Disposable Food Service Products	(818) 674 6112	sala-dfsp.com		F	F, P	F,CP	P	CP	F	F
Earth Cycle	(604) 899 0928	earthcycle.com				F			F	F
EarthSmart LLC	(310) 834 7336	earthsmartllc.com		F		F			F	F
EcNow Tech	(541) 223 3369	ecnowtech.com	P	F	CP	F, CP	P	P, CP	F, CP	CP
Eco Greenwares	(510) 656 9440	ecogreenwares.com		F	CP	F	P	CP	F	F
Eco-Products	(303) 449 1876	ecoproducts.com		F	CP	CP, F	P	CP	F	CP
Everything Eco-Store	(415) 337 8814	everythingecostore.com		F	CP	F	P	CP	F	
Excellent Packaging and Supply	(800) 317 2737	excellentpackaging.com	P	F, CP	CP	CP, F	F	CP	F	CP, F
Genpak	(518) 798 9511	genpak.com		F, CP	CP, F	CP, F			CP, F	CP, F
Global Bio Alternatives	(650) 375-1950	http://www.gba-us.com/		CP		CP			CP	
Go Earth	(310) 371 0797	goearthcentral.com		F	F	F	F		F	
Good Flag Biotechnology Corporation	(886) 328 3911	biodegradable-product.com			CP	CP				
Goodwill Fair Trading Co.	(415) 203 7323	goodwillfairtrading.com					P			
Green Duck	(804) 240 8757	shopgreenduck.com		F, P	CP	F	P	CP	F	CP, F
Green Earth Office Supply	(800) 327 8449	greenearthofficesupply.com		F, P	CP, F	CP, F, P	F, P	CP, P	F, P	F

* Paper hot cup with exterior polyethelene foam coating is not acceptable.
** (F) = Bagasse and Potato starch products (City of PA's Compostable Plastics do take these)

References to any commercial business, organization, or product does not constitute endorsement. Note that some vendors may carry non-compliant products in addition to those approved and listed above.

Compostable Food Serviceware Vendors

Compostable = Bamboo (BA), Compostable Plastic (CP), Molded Fiber (F) and Paper* (P)**

Vendor	Phone	Website	Boxes	Bowls	Cold cups & lids	Hinged & lidded containers	Hot cups* & lids	Paper & compostable plastic Bags	Plates	Trays and Cup Holders
Green Home	(877) 282 6400	greenhome.com	P	F, BA	CP	CP, F	F	CP, P	CP, F, BA	CP, BA
Green Is Green, Inc.	(415) 215 8553	greenisgreeninc.com		CP, F, P	CP	CP, F	F	CP	F	F
Green Paper Products	(216) 990 5464	greenpaperproducts.com		F, CP P	CP	F	CP	CP	F	F
Green Starfish		gogreenstarfish.com		F, CP	CP, F	F	F		F	F
Green Tooth	(800) 775 5193	green-tooth.com	P	CP, P	CP, F	CP, F, P	F	CP	F	F, P
Green Wave	(714) 634 8822	greenwave.us.com		F		F			F, P	F
Greeno Products	(800) 313 6568	greenoproducts.com		CP, P		F	P		F	
Huhtamaki	(913) 583 3025	us.huhtamaki.com		F	CP, P	P	P		F	F
IFN Green	(510) 868 2891	ifngreen.com		F, BA	CP	BA, F			BA, F	F, BA
Innoware (UC)	(800) 237 8270	innowareinc.com				CP			P	
Kuan Chun Paper Company	(01) 886 4 771 9458	kuanchun.com/english		CP			CP			
Lets Go Green	(678) 344 6834	letsgogreen.biz	F	F,CP, P	CP, F	CP, F	P	CP, P	CP, BA, F	F
Litin Eco	(612) 607 5700	litineco.com		F	CP, F, P	CP, F	F	CP	F	F
Nat-ur	(310) 676 5000	nat-urstore.com			CP			CP	P	
Nature Friendly Prodcuts	(216) 464 5490	nfpco.com	F	F, CP	CP	CP, F	P	CP	F	F
Natur-Tec	(763) 404 8700	natur-tec.com						CP		
Nexus Group	(510) 567 1000	accessgroupnca.com	P	F	CP, F	F, P, CP	F	P, CP	CP, F	CP, P
P & R Paper Supply	(909) 794 1237	prpaper.com	P	F, P	CP, P	F	P	P	F, P	
Pactiv	(888) 828 2850	pactiv.com		F			P		F	F, P
Prime Link Solutions	(650) 375 1398	primelinksolution.com		F		F			F	F
Rainbow Grocery	(415) 863-0620	rainbowgrocery.org						CP	P	
Restaurant Depot (UC)	(714) 666 8211	restaurantdepot.com	P	P	P	P	P		P	
RestockIt	(800) 680 0859	restockit.com		F, P	P		P	P	P, F	
Simply Biodegrdable	(509) 764 0233	simplybiodegradable.com		F	CP	F		CP	F	F
Sinless Buying	(415) 279 3221	sinlessbuying.com		F	F	F	F		F	F
Smart and Final	(800) 894 0511	smartandfinal.com			P				P	
Sysco Food Services (UC)	(510) 226 3000	syscosf.com	P	F, P	CP, P	P	P	P, CP	F, P	F, P
Tahoe Green	(530) 550 9440	tahoegreeninc.com		F, P	CP, P, F	F, CP	F, P	CP	F	F, CP

* Paper hot cup with exterior polyethelene foam coating is not acceptable.
** F Bagasse and Potato starch products (City of PA's Compostable Plastics do take these)

References to any commercial business, organization, or product does not constitute endorsement. Note that some vendors may carry non-compliant products in addition to those approved and listed above.

Compostable Food Serviceware Vendors

Compostable = Bamboo (BA), Compostable Plastic (CP), Molded Fiber (F) and Paper* (P)**

Vendor	Phone	Website	Boxes	Bowls	Cold cups & lids	Hinged & lidded containers	Hot cups* & lids	Paper & compostable plastic Bags	Plates	Trays and Cup Holders
The Webstaurant Store		webstaurantstore.com	P		CP, P	CP, P		P	BA	F, BA, P
US Foodservice (UC)	(877) 583 9659	usfoodservice.com		F, P	CP, P	F, P	P	P, CP	F, P	F, P
VerTerra Ltd.	(718) 383 3333	verterra.com		F					F	F
Washington Bio-Plastics	(415) 869 1028	washingtonbio-plastics.com		CP	CP	CP, F	CP, P	CP	F, CP	
WorldCentric Store	(650) 283-3797	worldcentric.org		F, CP, P	CP	CP, F	CP, F	CP	F, P	F

* Paper hot cup with exterior polyethelene foam coating is not acceptable.
** F = Bagasse and Potato starch products (City of PA's Compostable Plastics do take these)

References to any commercial business, organization, or product does not constitute endorsement. Note that some vendors may carry non-compliant products in addition to those approved and listed above.

Recyclable Food Serviceware Vendors

Updated 4/29/2010

Recyclable= Aluminum (A) and Recyclable Plastic (RP)

	Vendor	Phone	Website	Boxes (No Vendors for this products)	Bowls	Cold cups & lids	Hinged & lidded containers	Hot cups & lids	Paper & compostable plastic Bags	Plates	Trays and Cup Holders
1	Alliance	(312) 666 6424	allpfs.com		RP	RP	A	RP		RP	RP
2	American Paper and Plastic Inc	(626) 444 0000	appinc.com		RP	RP		RP	P	RP	
3	Anchor Packaging	(314) 822 7800	reusecontainers.com		RP		RP				RP
4	Biodegradable Store		biodegradablestore.com								RP
5	California Recycles	(877) 478 3001	californiarecycles.com				RP				
6	Cash and Carry		smartfoodservice.com					RP			
7	Costco	(800) 774 2678	costco.com			RP					
8	Disposable Food Service Products	(818) 674 6112	sala-dfsp.com				RP				
9	Eco-Products	(303) 449 1876	ecoproducts.com					RP			
10	Excellent Packaging and Supply	(800) 317 2737	excellentpackaging.com					RP			
11	Good Flag Biotechnology Corporation	(886) 328 3911	biodegradable-product.com			RP	RP				
12	Goodwill Fair Trading Co.	(415) 203 7323	goodwillfairtrading.com		RP		RP	RP			
13	Green Duck	(804) 240 8757	shopgreenduck.com					RP			
14	Green Paper Products	(216) 990 5464	greenpaperproducts.com					RP			
15	Green Starfish		gogreenstarfish.com					RP			
16	Greeno Products	(800) 313 6568	greenoproducts.com					RP			
17	Huhtamaki	(913) 583 3025	us.huhtamaki.com				RP	RP			
18	Innoware	(800) 237 8270	innowareinc.com				RP			P	
19	Lets Go Green	(678) 344 6834	letsgogreen.biz					RP			
20	Nexus Group	(510) 567 1000	accessgroupnca.com		RP	RP	A, RP	RP			RP
21	P & R Paper Supply	(909) 794 1237	prpaper.com		RP			RP		RP	A
22	Pactiv	(888) 828 2850	pactiv.com		RP	RP	RP				A, RP
23	RestockIt	(800) 680 0859	restockit.com			RP				RP	
24	Sabert	(800) 722 3781	sabert.com		RP		RP				RP
25	Restaurant Depot	(714) 666 8211	restaurantdepot.com					RP			
28	Sysco Food Services	(510) 226 3000	syscosf.com		RP	RP	RP	RP		RP	RP
29	The Webstaurant Store		webstaurantstore.com				RP	RP			A, RP
30	US Foodservice	(877) 583 9659	usfoodservice.com		RP		RP			RP	

References to any commercial business, organization, or product does not constitute endorsement. Note that some vendors may carry non-compliant products in addition to those approved and listed above.

Appendix 5.1. Existing Enforcement Procedure Information

The following section details the information we collected about cities in the Bay Area and elsewhere that currently have polystyrene bans in place: Berkeley, Fremont, Hayward, Millbrae, Monterey, Oakland, Palo Alto, Santa Cruz (City), and San Francisco.

In 1988, the **City of Berkeley** adopted an ordinance banning the use of EPS take-out food containers in food service establishments and requiring 50% of take-out food packaging to be recyclable or compostable. A Registered Environmental Health Specialist responds to complaints from the public, takes enforcement action, and interprets and clarifies polystyrene foam food packaging guidelines.

Penalties can include a fine of up to one thousand dollars, or by imprisonment not to exceed six months, or by both a fine and imprisonment. Each day a violation is committed will be considered a separate offense.

In May 2010, the **City of Fremont** adopted a polystyrene ban which prohibits all food vendors selling food prepared and served in Fremont, to use compostable or recyclable food serve ware. Union Sanitary District is responsible for conducting annual restaurant inspections and will monitor, and report when a business is out of compliance and the Environmental Services staff will follow up. There is also an online "report a Styrofoam user" form on the City's website which allows for citizen complaints. Penalties vary from a verbal or written warning with further fines at the discretion of the enforcement officer and violations may result in fines of up to $500 per day.

In October 2010, the **City of Hayward** adopted a polystyrene ban which prohibits all food vendors selling food prepared and served in Hayward, to use compostable or recyclable food serve ware. Enforcement is complaint-driven and the City Manager (or his/her designee) will have primary responsibility for enforcement.

In July 2008, the **City of Millbrae** adopted a polystyrene ban which requires all restaurants or sellers of take-out food to use only take-out containers that are reusable, biodegradable, compostable or recyclable. The ordinance includes cups, lids, straws, clamshells, plates, bowls, and utensils. Enforcement is complaint-driven and the City Manager (or his/her designee) will have primary responsibility for enforcement.

In February 2009, the **City of Monterey** enacted a polystyrene ban prohibiting the use of polystyrene foam food service containers within city limits. The Director is responsible for enforcement. Penalties range from the first violation with a written warning, with subsequent violations a possible fine. In lieu of a fine, the City may allow the violator to submit receipts demonstrating the purchase of at least $100 worth of biodegradable, compostable, or recyclable products as an alternative disposable food service ware for the items which led to the violation

In June 2006, the **City of Oakland** passed the Green Food Service Ware Ordinance which prohibits the use of polystyrene foam disposable food service ware and requires, when cost neutral, the use of biodegradable or compostable disposable food service ware by food vendors and city facilities. Enforcement is performed by the City of Oakland and is complaint-driven, meaning citizens may notify

the City of violations. Penalties range from a written warning to $100 for the first violation, up to $200 for the second violation, not more than $500 for the third and future violations.

In May 2009 the **City of Palo Alto** adopted an ordinance to restrict food vendors from providing prepared food in disposable food service containers made from expanded polystyrene or non-recyclable plastic. Enforcement is managed by environmental inspectors and the City will monitor compliance in part by responding to customer complaints. The penalty for non-compliance is a $500 fine, however the City uses that as a last resort and works closely with stores to educate them about recyclable and compostable alternatives.

In July 2007, the **City of San Francisco** passed a Food Service Waste Reduction Ordinance that prohibits the use of polystyrene foam disposable food service ware and requires the use of biodegradable, compostable or recyclable food service ware. Enforcement is by the City Administrator, however is also complaint driven. The community may notify the City by calling the City Customer Service Department or filling out an online form. Penalties range from a written warning to $100 for the second violation, $200 for the third violation and $500 for the 4th or additional violations.

In 2008 the **City of Santa Cruz** passed an Environmentally Acceptable Food Packaging Ordinance which prohibits food service providers within the City from using polystyrene foam disposable food service ware. The Director of Public Works (or the Director's designee) is responsible for enforcing the ban and has authority to issue citations for violations. The City of Santa Cruz may inspect any vendor's or food provider's premises to verify compliance. Penalties for violations range from up to $100 for the first violation, up to $200 for the second violation and up to $500 for the third violation. The Director of Public Works may allow the violator, in lieu of payment of the fine, to submit receipts demonstrating the purchase of at least one hundred dollars worth of biodegradable, compostable, or recyclable products purchased after the citation date.

Appendix 6.1. Further Evaluation of Alternatives

Evaluation of Alternative 1

Food service polystyrene containers are recovered for recycling in very few locations across the country because the material is typically contaminated with food. Also, polystyrene foam is so light that it cannot cost-effectively be shipped very far.

The City's franchised hauler, Allied Waste, is currently in the process of purchasing and installing a 'densifier,' which compresses and then extrudes polystyrene into a more dense and compact block, making the product more manageable for transport for remanufacturing or recycling. This process can only be effective if the polystyrene is clean enough to be recycled, like clean block polystyrene packaging materials. The City's curbside recycling program does not accept food service polystyrene containers or packing peanuts, because they cannot effectively be marketed for use in manufacturing any new product.

Additionally, despite their purchase of a densifier, Allied Waste does not have a program in place to accept food ware in their polystyrene recycling program. There currently is no date for when EPS food ware will be accepted for recycling and if it is accepted, the pilot program will not include curbside pick-up, thus residents will need to clean and stockpile their EPS food ware, then drop off at the recycling facility.

In addition, as long as polystyrene takeout food serve ware is still in use, it will still likely be disposed of it as garbage or as litter. In the later case, it will likely continue to find its way into storm drains, out to the bay, and ultimately into the ocean. Compostable alternatives, if littered, will eventually degrade completely, and are easier for animals to digest if they ingest small pieces of the materials; recyclable alternatives do not break into small pieces as polystyrene does.

Additionally, polystyrene has the potential to have a negative effect on human health; recycling polystyrene would not alleviate these health effects. According to a 2009 report by the Center for Disease Control (CDC), styrene (a chemical used to manufacture polystyrene) "can be ingested when styrene migrates from packaging into foods" (Center for Disease Control). The most notable affects to human health that the CDC reports following chronic exposure to styrene are neurological. However, the CDC also cited respiratory and eye irritation as possible health effects. (Center for Disease Control)

A rigorous education program will help to decrease polystyrene use, but will not eliminate disposal of the material as garbage or litter or possible health effects from the material. The City should evaluate whether or not the recycling benefits outweigh the benefits of a ban as the continued production of polystyrene will not alleviate concerns regarding the virgin materials used to continue creating the material, health affects, or litter problems.

Finally, as surrounding jurisdictions ban polystyrene, the supply of alternative products will likely increase, and the price will be more comparable. As a result, food service businesses and consumers may be driven to use alternative, more environmentally friendly products which could make the need for collection and recycling of food service polystyrene obsolete.

Evaluation of Alternative 2A

The City of Santa Cruz had a voluntary polystyrene reduction program in place for 18 years prior to its 2008 mandatory ban. In 1991, a survey of Santa Cruz businesses (52% response rate) reported that 66% of businesses did not use polystyrene foam products. Therefore, it was recommended that the voluntary compliance program continue with increased public education. However, in later years despite extensive public outreach and the decreased use of polystyrene by some businesses, Santa Cruz found that the reductions were not significant compared with their goals, and that polystyrene was a growing part of the waste and litter streams. A voluntary polystyrene reduction program for the City of Milpitas would likely require a joint public education program (city and affected businesses) that would be costly and time consuming without a guarantee of success as businesses would not be required to comply. Unless incentives such as lower product costs and better performance exist for alternative products, then businesses that do not have a strong desire to protect the environment would not be compelled to voluntarily give up polystyrene products.

Evaluation of Alternative 2B

Public outreach and education programs are typically performed in conjunction with a ban or recycling program, in the time leading up to an enforcement program. These programs are not typically successful when there is no enforcement that requires the target action (e.g., discontinued use or recycling of polystyrene) as this would be a voluntary decision by those individuals or businesses that had not only been reached by the outreach campaign but had also been positively impacted by the campaign to discontinue their use of polystyrene. A successful public outreach campaign would be costly and require staff time to develop outreach materials and visit businesses, as well as the cost of materials such as mailers and flyers. The City of Milpitas would have to determine a funding source for the public outreach campaign: the City of Issaquah, WA funded their public outreach program using solid waste franchise fees.

Evaluation of Alternative 3

Santa Monica developed a list of suppliers of alternative products which helped food vendors seek out economically alternative solutions to replacing polystyrene and encouraged manufacturers and distributors to expand the number of alternative products they carry. This effort increased the number of alternative product distributors in the area from 16 to 76. If the City of Milpitas were to develop a comprehensive list of alternative container suppliers, they would not be promoting any one company. The goal would be to ensure the prices of alternative containers can compete with polystyrene and hope that businesses make the choice on their own to use an environmentally friendly product.

Appendix 7.1. EPS Ban Stakeholders Survey Instrument and Results

SurveyMonkey

1. Are you a manager or assistant manager of this business?

	Response Percent	Response Count
Yes	**100.0%**	**25**
No	0.0%	0
	answered question	**25**
	skipped question	**0**

2. Please input the following information for future follow-up:

	Response Percent	Response Count
Manager Name	0.0%	0
Phone Number	0.0%	0
Best Time to Visit Him/Her	0.0%	0
	answered question	**0**
	skipped question	**25**

3. Business Type:

	Response Percent	Response Count
Food Cart	0.0%	0
Restaurant	**72.0%**	**18**
Caterer	0.0%	0
Supermarket	0.0%	0
Deli	8.0%	2
Cafeteria	0.0%	0
Retail Food Vendor	20.0%	5
Catering Truck	0.0%	0
Shop	0.0%	0
Outdoor Vendor	0.0%	0
Special Large Event Organizer	0.0%	0
	answered question	**25**
	skipped question	**0**

4. Does your business have an environmental corporate policy?

	Response Percent	Response Count
Yes	**54.5%**	**12**
No	45.5%	10
	answered question	**22**
	skipped question	**3**

5. What is your business' stance on environmental initiatives?

	Response Percent	Response Count
No opinion, no interest	20.8%	5
Somewhat involved and supportive	25.0%	6
Extremely environmentally concious	**45.8%**	**11**
Don't know	8.3%	2
	answered question	**24**
	skipped question	**1**

6. Do you think that polystyrene foam (Styrofoam cups, clam -shells, plates, and other items) litters the environment?

	Response Percent	Response Count
Yes	**54.5%**	**12**
No	18.2%	4
Somewhat	27.3%	6
	answered question	**22**
	skipped question	**3**

7. Did you know that the City of Milpitas is considering a ban on polystyrene food service take -out containers?

	Response Percent	Response Count
Yes	16.0%	4
No	**76.0%**	**19**
Somewhat	8.0%	2
	answered question	**25**
	skipped question	**0**

8. Do you think the City of Milpitas should ban food service businesses from providing polystyrene containers to customers?

	Response Percent	Response Count
Yes	**60.0%**	**15**
No	24.0%	6
Somewhat	16.0%	4
	answered question	**25**
	skipped question	**0**

9. Would you be willing to purchase (paper or biodegradable) alternatives to polystyrene, even if they were more expensive than polystyrene, if Milpitas banned polystyrene at all food service businesses in the city?

	Response Percent	Response Count
Yes	**92.0%**	**23**
No	8.0%	2
	answered question	**25**
	skipped question	**0**

10. How much of an increase in your puchasing costs per month would you be able to tolerate? (pick the highest amount you would tolerate)

	Response Percent	Response Count
$100	**33.3%**	**5**
$150	6.7%	1
$200	20.0%	3
$250	6.7%	1
$300	13.3%	2
$350	6.7%	1
$400	0.0%	0
More	13.3%	2
	answered question	**15**
	skipped question	**10**

11. Does your business currently use polystyrene take -out containers?

	Response Percent	Response Count
Yes	40.0%	10
No	**52.0%**	**13**
For some foods	8.0%	2
	answered question	**25**
	skipped question	**0**

12. How many of each of the following polystyrene containers do you use each month for food or beverage containers?

	None	0-250	250-500	500-750	750-1000	1000-2000	2000 and up	Response Count
Clamshell	**45.5% (5)**	27.3% (3)	0.0% (0)	0.0% (0)	9.1% (1)	9.1% (1)	9.1% (1)	11
Soup cups with lids	**36.4% (4)**	**36.4% (4)**	9.1% (1)	0.0% (0)	0.0% (0)	9.1% (1)	9.1% (1)	11
Hot Drink Cups	**54.5% (6)**	18.2% (2)	9.1% (1)	9.1% (1)	9.1% (1)	0.0% (0)	0.0% (0)	11
Cold Drink Cups	**54.5% (6)**	18.2% (2)	0.0% (0)	0.0% (0)	18.2% (2)	0.0% (0)	9.1% (1)	11
Plates	**90.9% (10)**	0.0% (0)	9.1% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	11
Other	**90.0% (9)**	10.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	10
							answered question	**11**
							skipped question	**14**

13. Where do you buy these products?

	Response Count
	11
answered question	**11**
skipped question	**14**

14. Does your current foodservice ware provider offer alternatives to polystyrene?

	Response Percent	Response Count
Yes	**66.7%**	**8**
No	0.0%	0
Don't know	33.3%	4
	answered question	**12**
	skipped question	**13**

15. What types of and how many alternative take -out containers do you currently use per month? (Note: PET plastic #1 is not an alternative.)

	None	1-250	250-500	500-750	750-1000	1000-2000	2000 and up	Response Count
Paper	**44.0% (11)**	12.0% (3)	0.0% (0)	12.0% (3)	4.0% (1)	8.0% (2)	20.0% (5)	25
Biodegradable fiber	**84.0% (21)**	8.0% (2)	4.0% (1)	4.0% (1)	0.0% (0)	0.0% (0)	0.0% (0)	25
Fold-Paks (traditionally Chinese take-out containers)	**84.0% (21)**	4.0% (1)	4.0% (1)	4.0% (1)	0.0% (0)	4.0% (1)	0.0% (0)	25
Biodegradable plastic	**88.0% (22)**	0.0% (0)	4.0% (1)	8.0% (2)	0.0% (0)	0.0% (0)	0.0% (0)	25
Plastic	**44.0% (11)**	8.0% (2)	16.0% (4)	12.0% (3)	0.0% (0)	8.0% (2)	12.0% (3)	25
Aluminum	**80.0% (20)**	8.0% (2)	8.0% (2)	0.0% (0)	0.0% (0)	4.0% (1)	0.0% (0)	25
							answered question	**25**
							skipped question	**0**

16. Which of the following would most help you to comply with a ban like this one?

	Response Percent	Response Count
Staff training	39.1%	9
Free posters and fliers about the program to educate customers	56.5%	13
Guides to acceptable alternatives	**60.9%**	**14**
The threat of fines for businesses that do not comply	30.4%	7
	answered question	**23**
	skipped question	**2**

17. Is there anything else you would like to share with me regarding this issue?

	Response Count
	14
answered question	**14**
skipped question	**11**

Appendix 7.2. Text of Interviews with Key Stakeholders

Single-Use Bag and Polystyrene Foam Questions

Ryan Kenny(American Chemistry Council) and Sherry Jackson-Progressive Bag Affiliates (subset of ACC)

1. **What are your concerns over a single-use bag ban?**

Sherry (bags):

Unintended consequence of ordinances is that they don't take all issues into effect. If you ban plastic bags only, the customer is forced to use paper bags. In San Francisco, a plastic bag ban increased overall bag litter, and did nothing to alleviate litter associated with plastic bags. Studies show paper bags have a worse environmental impact than plastic in terms of the energy to manufacture, GHG emissions, and water use,-increase impacts that force consumer out of one product to another.

The best was to capture plastic bags is through recycling: cleaner, more value. If we ban bags, we remove reasons for manufacturers and retailers to collect recyclable product at the source. Plastic bags are an important component of recycling programs; other types of film are collected at these plastic bag recycling sites as well; banning plastic bags discourages infrastructure. Grocery drop-offs tend to be cleaner than curb-side recycling.

Ryan (polystyrene):

30 cities in California have banned polystyrene, and none of which have shown any significant change. The mentality is: "Other cities have done it- we should too." No facts. The ban just encourages cities to replace one product with another product. The 2008 San Francisco Litter Streets Re-Audit showed a reduction in polystyrene food service containers, but an increase in other types of food service litter. Only .5% of the litter was food service polystyrene; most polystyrene was packaging for computers, tvs, etc. The plastic industry has been hit hard with these bans, and there has been no conclusive evidence that it alleviates litter composition.

Also, foam is the least expensive material for restaurants with high levels of performance. Many restaurants complain of performance issues of alternatives; for example, Jamba Juice reported leaking cups with alternatives. A mandate for businesses to use compostable alternatives without a compostable infrastructure for disposal is ineffective. Products go directly to landfill. Polystyrene is 100% recyclable- clean in both cases. Some cities are accepting polystyrene as recyclable. Recyclable infrastructure- cleaner the better.

2. **Do you believe a single-use bag ban would benefit the environment??**

Sherry: Studies have shown no change in litter composition. Bans force consumers to use materials with higher carbon costs, such as paper. (GHGs, energy, water, etc) A ban is not the right answer. A

ban on foam would not contribute to zero-waste. Zero waste implies a reduction in materials, while a ban would encourage a different material type but not material reduction.

3. **What actions would you recommend to reduce single-use bag use?**

   Sherry: Reduce, reuse, recycle approach. Efficient bagging practices also work, instructing checkers not to double-bag, use extra bags, etc., as a way to reduce wasteful bagging.

4. **Do you believe businesses would be willing to charge customers for single-use bags, if it would help the City meet state mandates?**

   Sherry: Some businesses are already doing that without mandates. Not something we ascribe to, but some businesses have adopted.
   Ryan: The business opinion differs between larger stores vs. mom and pops. stop the bag police.com; over 500 business associations that came out against it publicly. Businesses are concerned that the ban wouldn't do much good, and were concerned about business and economy. Regulating proposals, ban on plastic, fee on paper- many large stores benefit because they get a price break on buying in bulk. Businesses don't prefer to charge customers for bags, they don't think it is good business practice to do that. The Milpitas Chamber is opposed to fee on plastic bags.

5. **Do you believe customers would be willing to pay for bags? How much do you feel that they would be willing to pay?**

   Sherry: DC- has implemented a tax on paper and plastic bags, and residents have expressed a lot of displeasure, as they don't feel they should be charged. There was lots of anger from residents in the beginning. We heard from retail allies that compliance is an issue, as businesses don't want disgruntled consumers and thus don't charge customers for the bags. People did eventually forgo the bags and carried purchases in their hands because did not want to pay.

   Have not done any consumer reaction studies.

   A California State bill died decidedly for a tax on plastic and paper, as the State was concerned about impacts on businesses and consumers.

6. **Do you believe customers would be willing to bring in their own bags?**

   Consumers do bring their own bags, but it's not practical for all people. People won't always have a reusable bag in tow. Seniors like plastic bags. We are not opposed to this idea of people bringing their own bags.

   The ACC would support an incentive for bringing back bags for recycle. Incentivizing reuse, recycling is a good approach.

7. **Do you think businesses would be willing to absorb the costs of a bag fee so they don't need to charge customers?**

   NA- opposed to bag ban.

8. **What do you believe would make it easier for <u>businesses to comply</u> with a single-use bag ban? (training, free posters/fliers, guides with list of alternatives, fines for businesses that don't comply, etc.)**

   Ryan: If the City is going to spend money on enforcement and public education, spend money instead on more general recycling education.
   Sherry: General education about waste reduction overall, and recycling plastic bags is the best approach. Recycling plastic bags is also addressing waste and helping to aid the environment.

9. **In your opinion, what are the <u>biggest hurdles to a single-use bag ban</u>?**

   NA-opposed to bag ban.

10. **Do you have any recommendations or suggestions?**

    Sherry: There are different approaches to solve this problem. Look at ban options, consequences, etc., and other options that might be as effective. Recycling with aggressive public education efforts is one. Look more broadly at a comprehensive approach with a goal to reduce litter. I've worked with communities around the country, and it's best if a community looks at multitude of options. How to reduce litter? Increase recycling of plastic bags and film, reduce waste, and prevent litter and waste in the beginning, from the source in the stores, but more broadly than a tax or ban. Those have unintended consequences.

    Ryan: Our preference from this report is that both sides are presented in a quantitative manner, with no opinions and unproven allegations in final report to council. I am happy to answer further questions or provide clarifications if needed. I will send reports that might be helpful.

Save the Bay

QUESTIONS FOR STAKEHOLDERS- Save the Bay <u>Polystyrene Questions</u>

1. **What <u>concerns</u> do you have about a potential food service takeout polystyrene ban?**

   We have not yet seen any legal challenges to a polystyrene ban per the California Environmental Quality Act. The industry seems more interested in challenging the plastic bag bans: jury is still out on Prop 26. I think ordinances should cover paper and plastic bags. It's good for cities to charge for paper bags at the local level, but cities should be prepared to answer lawsuits and claims about Prop 26. There have not been any Prop 26 lawsuits, but cities should feel confident that any charge on paper bags is legally sound before they pursue it.

2. **Do you believe a food service polystyrene ban would benefit the environment?**

   Yes we do. Absolutely.

   Measurable outcomes: In San Francisco, piece for piece, polystyrene was replaced with paper trash. This was not a great study. SF Environment has good stats about litter related to bags, etc. Jack

Macy good person to talk to for any studies results. Recology, a local waste hauler, notes that one of the problems associated with recycling plastic bags is that they clog the machinery and increase efficiency. Bayrock is a Bay Area recycling outreach coalition that conducts surveys throughout the Bay area, noting the number of people using reusable bags to gauge effectiveness of the Bag Your Bag Campaign. The Bayrock results are not scientific, but give a good idea of current use rates.

Tax on bags in DC resulted in 50% fewer bags in the Anacostia River.

Public education needs to be coupled with legislation. Education on its own has been proven to promote only a slight increase in the use of reusable bans. Education thus needs to be coupled with legislation. Recycling can only do so much: California recycles fewer than 5% of plastic bags a year. Foam containers are a similar issues (though it's a little different as people rarely bring their own containers for take-out); public education alone does not reduce polystyrene use. We are absolutely supportive of moving restaurants to sustainable alternatives.

3. **What do you believe <u>businesses would need</u> in order <u>to easily comply</u> with a ban? (training, free posters/fliers, guides with list of alternatives, fines for businesses that don't comply, etc.)**

   A strong public education push from the City is important, as is engaging business associations ahead of time, providing businesses with a list of vendors and pricing for polystyrene, in-person visits to answer questions, and providing information in various languages for ethnically operated businesses. Flyers and posters are not as effective; direct communication with the businesses is more effective. San Jose sent out a certified mail piece so they know who signed for it, and if a business didn't sign for it, outreach personnel can perform more targeted outreach. In San Francisco, a team of volunteers goes out into the city to perform outreach, which is a low-cost way to disseminate information. Outreach doesn't need to be fancy, it can be a website with all information and regulations that businesses need to have access to, and a help hotline for businesses to ask questions and obtain information.

4. In your opinion, what are the <u>biggest hurdles to a ban of polystyrene containers</u>?

   Financial, given the legal landscape that includes costly EIRs, hiring consultants, getting started because of legal concerns. It all requires a significant investment to fight one of the wealthiest corporations in the country. Cities and advocacy groups are telling the environmental side of the story, but businesses are worried about the impacts of a ban. It's the fear of the unknown. Businesses in DC are happy that they can now charge for something they weren't charging for before. Many businesses are initially worried that they won't be able to afford the alternatives, but upon researching they realize that the alternatives are ok. Cities should work with businesses to help them see the advantages of a ban. Residents and businesses are already paying for cleanup and municipal recycling of polystyrene, so a ban is a long-term investment in reducing taxes and environmental problems.

5. **Do you have any recommendations or suggestions?**

Don't back down. Don't succumb to industry pressure. Cities are doing the right thing: over 40 cities have already banned polystyrene, and many more interested in banning bags.

Recycling program proposed by waste haulers would not and may not ever include foodservice ware. This means that even if a program were to be initiated, residents would be required to clean and stockpile used containers before driving them to a facility because curbside pickup would not be offered. This has been confirmed by the haulers.

In regards to the phone survey used in San Jose:

Don't draw too many conclusions on what residents self-report to inform taxes. There are high reports of people bringing their own bags, because people are hesitant about relaying the truth. People do not negatively report about themselves. In San Jose, when asked the question: "If you had to pay 10 cents for a bag, would you bring your own," 70% said "Yes." When asked the question: "If you had to pay 25 cents for a bag, would you bring your own," 90% said "Yes." People don't know how they are actually going to act, so the City shouldn't draw examples from that. Instead, cities should look to real examples in the US, Washington D.C., for example. Even a small charge for bags results in a drastic and immediate behavior change. Set a charge consistent with what other Bay Area Cities are adopting: 10 cents.

I would like residents to understand that the material is not recyclable curb-side and would not be initially included in a pilot program. Residents would be required to wash and stockpile polystyrene before recycling, which requires lots of work, and they would need to self-haul the materials. It is important for residents to know about that so they can make an informed decision. We need to respond to reality, that polystyrene recycling does not currently exist.

California Restaurant Association

QUESTIONS FOR STAKEHOLDERS- CA Restaurant Association Polystyrene Questions

1. **What concerns do you have about a potential food service polystyrene ban?**

   For most operators, the number one issue is the cost difference between polystyrene and alternatives. This cost difference is usually significant, especially for mom and pop restaurateurs; for these small businesses, a ban affects the bottom line. Especially in this economy, it's tough for restaurants to comply, as they have high overhead and low profit margins. A 3 cent difference per cup, etc. can demolish the entire profit margin of a small restaurateur.

2. **Do you believe a food service polystyrene ban would benefit the environment?**

   There have been studies that have shown no impact or benefits of a ban; there have not necessarily been proven benefits in cities where these bans exist.

3. **What actions do you think restaurants in your association would be willing to take to reduce their use of polystyrene containers?**

Most restaurants that can afford to make the change have already done so; many have sought alternatives where possible. The issue becomes one of performance: alternatives don't always perform as well. Restaurateurs are committed citizens trying to find solutions. Many have reduced usage if possible; our community has made huge strides to move in that direction.

4. **Do you believe businesses would purchase alternatives to polystyrene containers, even at a higher cost, to help the City meet State mandates? a. If so, how much of an increase do you think businesses could reasonably absorb?**

   This issue is typically not a matter of restaurants wanting to use alternatives; they will assist the City to meet a State mandate or to stay in business.

   We have not really done surveys; it's difficult to get a read on restaurants, as one month not indicative of the next few months, and opinions change from city to city. Restaurants are unlike any other business. We cannot legislate restaurants the way we do other business, as they work in such a volatile industry

5. **Do you know if alternatives to Polystyrene are easily available to most restaurants in your association?**

   This varies from city to city, though in larger metropolitan areas, product availability is not an issue. Although I'm still getting calls that restaurants are still having problems with getting alternatives.

6. **What type of alternative take-out containers would you support for restaurants in your association? Why?**

   Cheapest.

7. **What types of implementation and outreach do you believe businesses would need in order to easily comply with a ban? (trainings, free posters/fliers, a vendor listing of alternatives, fines for businesses that don't comply, etc.)**

   First, make sure that there is adequate supply in the area: does the city have an infrastructure for composting? Cities pass bans and usually require compostable alternatives, but do not have the infrastructure to process this material.

   Second, creating a co-op to bring down the costs of alternatives would help businesses.

   Outreach in some cities has been attempted more than in others: when dealing with restaurants, it's not necessarily easy to get info to the right people. Small restaurants may not be web-savvy. Outreach is challenging with restaurants, not to mention language barriers.

8. **Do you have any recommendations or suggestions for the City of Milpitas to consider as they weigh the pros and cons of such a ban?**

   Ask that they keep Restaurant Association involved in the process, and keep restaurants informed along the way. We would like to come to the table to have some robust conversations about this before moving forward.

Appendix 7.3. Respondent Comments

14 respondents shared additional comments with the interviewees:

Fines for other businesses that do not comply would be helpful to ensure that we are all on a level playing field. We decided to stop providing polystyrene to our customers when we realized that polystyrene can have negative health effects on humans; we didn't even know Milpitas was considering a ban when we started a few years ago.

The Loving Hut is already likely in compliance with any ban that would take place (polystyrene and plastic bag). The Loving Hut (Vegan Restuarant) would make a good case study. They are already using plant-based compostable containers and bags and they provide regular outreach to their customers in the form of reusable bags, fliers, cds, discussions, etc.

We are switching from polystyrene to paper cups for smoothies right now.

He is going to contact corporate to see if they can replace polystyrene coffee cups. He lived in Mexico where they tax people on plastic bags - worked well and he wants the same thing here.

Alternatives cannot effectively hold curries, etc.

The City could also motivate businesses to participate by publicizing businesses that participate. The biodegradable plastics that I use retain liquid really well. If something like this passes, it should be partly up to the distributor to lend a helping hand, reduce prices to make it easier for businesses to comply.

If we use paper products and biodegradable or regular plastic for soup, customer can get burned and businesses can get sued. Paper and plastic cups cannot hold heat the way polystyrene can.

If this were approved by corporate, their store would need to comply. Their biggest concern is the cost, they must purchase the most inexpensive products right now due to the economy.

Coffee store - they believe knowledge and outreach is the key. They already are using alternative products, so they don't really need to worry, they already comply.

Very much in favor of a ban, but they won't be affected by it because they already use alternative materials.

They have been using alternative products for some time now.

Consider the size of the business and the revenue stream when deciding what businesses to target for a ban; give smaller businesses a break. For larger corporations and chain restaurants, take-out packaging is such a tiny part of the budget, buying alternatives would hardly phase the businesses.

If people say there aren’t alternatives for curries and soups, that’s BS. We have been using a re-usable and recyclable plastic take-out container for curries, and it works extremely well for us and for customers. It has actually increased our business from some customers. Paper containers are even fine for food to keep from dripping for a short ride in the car. There has been a large price increase, though, about $500 per month (they were a large business that provided more than 2000 take-out containers

per month). At their other, smaller, location, they haven't been able to fund the change to alternative containers.

There is a large cost increase to purchase alternatives (as I have). It would be awesome if we could find a way for businesses to band together and purchase alternatives from one place in bulk, to lower the price. It would also be ideal if that place were local, to save on shipping costs. Also, a local paper should have a section to highlight local businesses that are really going above and beyond to comply, and are passionate about it.

Appendix 7.4. Businesses Interviewed

All of the contacts interviewed were business owners, managers, or assistant managers. Most of the contacts interviewed did not provide their name to maintain confidentiality.

Business Name	Business Address	Contact Name
Bento Xpress	23 N. Milpitas Blvd.	
Varsha's Indian Vegetarian Food	263 W. Calaveras Blvd.	
Noah's Bagels	124 N. Milpitas Blvd.	
Sushimaru	599 E. Calaveras Blvd.	Kenichiro Miyamoto
Erik's Deli Café	148 N. Milpitas Blvd.	
Foster's Freeze	78 Serra Way	
McDonald's	99 N. Milpitas Blvd.	
Giorgio's	643 E. Calaveras Blvd	Ron
El Torito's	477 E. Calaveras Blvd.	
Peet's	543 E. Calaveras Blvd.	Chloe
Quizno's	55 N. Milpitas Blvd.	
Mountain Mike's Pizza	85 N. Milpitas Blvd.	
Red Lobster	503 E. Calaveras Blvd.	
Anh Hong Restaurant	233 W. Calaveras Blvd.	Le
Papa Murphy’s	119 N. Milpitas Blvd.	
Jamba Juice	547 E. Calaveras Blvd.	
Subway	61 Serra Way	
So Yong Dong Tofu House	231 W. Calaveras	
Burger King	175 W. Calaveras Blvd.	
Milan Indian Cuisine	420 S. Main Street	Sanjay Milan
Nutrition House, Chinese Cuisine	496 Barber Lane	
Swagat	68 S. Abel Street	
Loving Hut	516 Barber Lane	
Blush Frozen Yogurt	489 E. Calaveras Blvd.	Cynthia Abad

Appendix 8.1. Residential Survey Instrument and Results

1. Do you live in a:

	Response Percent	Response Count
Single Family Dwelling	**87.0%**	**254**
Condominium	5.5%	16
Apartment	5.5%	16
Mobile Home	0.0%	0
Other (please specify)	2.1%	6
	answered question	**292**
	skipped question	**1**

2. Do you think that single use bags and polystyrene (a.k.a. Styrofoam) foam food take -out containers litter our creeks, the bay, and the oceans?

	Response Percent	Response Count
Yes	**73.2%**	**202**
No	6.5%	18
Don't Know	20.3%	56
	answered question	**276**
	skipped question	**17**

3. Are you concerned that single-use bags and polystyrene take-out food containers can harm wildlife and the environment?

	Response Percent	Response Count
Yes	**75.1%**	**208**
No	6.9%	19
Maybe	18.1%	50
	answered question	**277**
	skipped question	**16**

4. Did you know that the City of Milpitas is considering bans on:

	Yes	No	Somewhat	Response Count
polystyrene food service take-out containers	19.6% (57)	**69.4% (202)**	11.0% (32)	291
single-use bags	21.4% (62)	**65.2% (189)**	13.4% (39)	290
			answered question	**291**
			skipped question	**2**

5. Do you think the City should ban businesses from providing polystyrene food service take -out containers and single use bags to customers?

	Response Percent	Response Count
Yes (both)	**48.4%**	**139**
No (both)	24.4%	70
Ban polystyrene but not single use bags	21.6%	62
Ban single use bags but not polystyrene	5.6%	16
	answered question	**287**
	skipped question	**6**

6. Have you bought food at a fast -food restaurant (like McDonalds, Carl's Jr., and Burger King) that did not use foam packaging, and did you notice any loss of quality in their food as a result?

	Response Percent	Response Count
Yes	6.2%	18
No	**85.5%**	**248**
Maybe	8.3%	24
	answered question	**290**
	skipped question	**3**

7. Would you continue to support a business that had to increase their prices to cover the costs of complying with a polystyrene take-out container ban?

	Response Percent	Response Count
Yes	**50.3%**	**146**
No	22.8%	66
Maybe	26.9%	78
	answered question	**290**
	skipped question	**3**

8. Approximately how many of each of the following bag types do you use or receive when shopping at grocery stores, retail stores, and food service establishments each month?

	None	0-5	6-10	11-15	16 or more	Response Count
Single-Use Paper	20.3% (59)	**36.6% (106)**	16.9% (49)	9.7% (28)	16.6% (48)	290
Single-Use Plastic	11.4% (33)	12.1% (35)	14.1% (41)	13.4% (39)	**49.0% (142)**	290
Reusable Bags	33.1% (95)	**33.4% (96)**	15.7% (45)	5.6% (16)	12.2% (35)	287
					Other (please specify)	3
					answered question	**291**
					skipped question	**2**

9. Would you be likely to use reusable bags if single use bags were banned?

	Response Percent	Response Count
Yes	**81.0%**	**235**
No	4.1%	12
Maybe	14.8%	43
	answered question	**290**
	skipped question	**3**

10. Which of the following would make complying with a single -use bag ban easier? Please rank the following from one to three.

	First	Second	Third	Rating Average	Response Count
Getting a discount on your purchase every time you use a reusable bag.	**77.9% (211)**	14.4% (39)	7.7% (21)	1.30	271
Receiving tips on remembering to bring your reusable bag when you shop.	11.2% (30)	**48.1% (129)**	40.7% (109)	2.29	268
Having the option to purchase a reusable bag for future use at every business affected by the ban.	15.2% (41)	34.9% (94)	**49.8% (134)**	2.35	269
			Other (please specify)		17
			answered question		**274**
			skipped question		**19**

11. Hypothetically, what would your response be to a business that hasn't yet complied with a ban (after the ban came into effect)?

	Response Percent	Response Count
Report them to the city for investigation.	6.6%	19
Mention that, as their customer, you would appreciate it if they complied with the ban.	33.8%	98
Tell them that you will no longer frequent their establishment if they will not comply.	5.2%	15
Not say anything, but avoid shopping there again.	15.2%	44
Shop there as usual; non-compliance will not affect your shopping habits.	**39.3%**	**114**
	answered question	**290**
	skipped question	**3**

12. Do you or anyone in your household use Household Dump Days?

	Response Percent	Response Count
Yes	**55.0%**	**160**
No	45.0%	131
	answered question	**291**
	skipped question	**2**

13. How many times in the last 12 months have you used Household Dump Day?	
	Response Count
	161
answered question	**161**
skipped question	**132**

14. What is the minimum number of Household Dump Days per year necessary to meet your household's needs?	
	Response Count
	155
answered question	**155**
skipped question	**138**

15. Is the respondent:		
	Response Percent	**Response Count**
Male	47.9%	138
Female	**52.1%**	**150**
Other (please specify)		0
answered question		**288**
skipped question		**5**

16. Which of the following age ranges best describes you?

	Response Percent	Response Count
18-24	2.8%	8
25-34	10.1%	29
35-44	16.0%	46
45-54	18.4%	53
55-64	20.5%	59
65 or older	**27.8%**	**80**
Refused to answer	4.5%	13
	answered question	**288**
	skipped question	**5**

17. What is the highest level of education you have received?

	Response Percent	Response Count
Completed Elementary	1.0%	3
Some High School	1.4%	4
Graduated High School	18.5%	53
Some College	19.2%	55
Graduated College (Undergraduate)	**35.0%**	**100**
Some Graduate School	3.5%	10
Graduate School (Completed)	16.1%	46
Refused to answer	5.2%	15
	answered question	**286**
	skipped question	**7**

18. What ethnicity are you?

	Response Percent	Response Count
White	**39.2%**	**111**
African American	2.5%	7
Hispanic/Latino	9.5%	27
Asian	27.2%	77
Filipino	4.9%	14
Native American	0.4%	1
Refused to answer	8.8%	25
Other (please specify)	7.4%	21
	answered question	**283**
	skipped question	**10**

19. Which of the following income categories best represents your TOTAL household income?

	Response Percent	Response Count
Less than $30,000	9.5%	27
Less than $45,000	12.3%	35
Less than $60,000	12.6%	36
Less than $100,000	14.4%	41
$100,000 or more	20.0%	57
Refuse to answer	**31.2%**	**89**
	answered question	**285**
	skipped question	**8**

20. Additional Questions/Comments?	
	Response Count
	93
answered question	93
skipped question	200

Appendix 8.2. Residential Survey Methods: Continued

Cascadia staff members administered the survey on behalf of the City of Milpitas between December 7th 2010 and January 10th 2011. Cascadia initially called residents at all times of day between 10am and 7pm, but focused calls on the late afternoon through early evening (2 pm until 7pm), times that yielded the largest response rate from residents.

Cascadia gathered Milpitas resident phone numbers from Allied Waste records. Staff made 2799 calls to achieve 293 completed surveys, of which 984 (35%) calls resulted in an answering machine picking up, 522 (19%) numbers were no longer in service, 468 (17%) were residents who did not want to talk us, 371 (13%) had no answer, 103 (1%) were residents that did not speak English, and 78 (1%) were not Milpitas residents.

The project manager trained the six Cascadia staff people to administer the survey in the same way every time they spoke to a resident. Surveyors only deviated from the script to answer clarifying questions from residents, and to the extent possible, Cascadia anticipated frequently asked questions and gave surveyors responses appropriate to represent the City and Cascadia.

Appendix 8.3. Additional Responses from Residents

A certain percentage of a shoppers re-use them as garbage bag liners; although single use bags do get in the waters and affect wildlife, and that's a concern, consumers find it beneficial to have the single use bags as liners for garbage containers.

Uses re-usable bags as bin liners for indoor garbage.

We need to put some type of ban into place in Milpitas, especially in grocery stores. I lived in Europe for 11 years, and we had to carry our plastic bags everywhere, they had a tax on plastic and paper bags.

Some bans don't have any effect: you should provide the City with information about how much of an impact a ban like this one would actually have on the environment.

Cannot see life without plastic bags. Owns a Household Cleaning business that uses plastic bags and would have to raise fees to customers. Uses them regularly for personal life-shopping, cat litter, garbage liners.

Survey questions are set up to get the answers they want. Don't want a ban, use plastic bags regularly. Will be forced to buy bags on their own. Still need bags even with a ban. Won't save their household any money because they used to get the bags for free from stores.

Brown paper bags should not be banned, only white paper bags, plastic bags and styrofoam should be banned. Lived places where you never used plastic bags before moving to CA in 1990. We can get to not using plastic bags again. Brown paper bags biodegrade, are made from recycled content, and are a natural color (don't contain chemicals) unlike white paper bags that have a manufacturing prcoess that contaminates the air and water. Plastic bags and styrofoam are very bad. Costco is a good example-they don't have bags, so you either bring your own, uses boxes provided, or go without a bag.

If the City wants to ban bags and styrofoam, it makes it hard for businesses at times when we need to help the green. It would be better to increase the littering ban, but I don't think this ban helps at all. The green people will come out and protest it because of a turtle which can be relocated. Energy will get more and more expensive, it's getting dirtier and dirtier. The United States in clean, and China is making us dirtier. Don't give free education to illegal immigrants. Worse education because of it. People line their garbage cans with them, it keeps a cleaner environment. Cask for clunkers put more cars into the landfill. Go ahead and ban the bags, we'll look liek Russia, I don't think banning the bags will be a huge issue. Reusable bags, bacteria will collect, they have lead in the bags, we have to be careful what we use from China. No place will take them to recycle them when they're done. We need to stop, take a deep breath, and re-think how we're doing this. We need to stop and plan and think; we need to consider what we're doing before we're doing it. We're going to charge more, people won't be able to afford their groceries. Going to hurt people that can't afford what's going on.

Most people are thinking about cost, not convenience. People like myself may be more likely to shop outside of Milpitas to avoid paying a fee if one is enacted.

Had concerns about too many leaves in street, clogging storm drain. Surveyor instructed them to call the City Public Works Dept. as this is a stormwater issue.

Loves Milpitas and all they do for the environment, would like to see improvements to the recycling program.

Resident mentioned concern about smell from the landfill out by 237. Surveyor discussed that the smell may actually be coming from the waste water treatment plant in the area as there are strict regulations in place for the landfill.

Limit or minimize the use of bags: there is only one way. We use the plastic bags from the supermarket for bagging the garbage. I don't see the elimination of plastic bags as possible, she doesn't like the idea of dumping it all in the garbage can. I'm not convinced that any other materials can be used. Still not fair

For Household Dump Days would prefer a program such as San Jose's where you can leave items at the curb. Have a brand new car that they do not want to take into the dump where there is broken glass and other hazards.

Would like a yearly dump day on the street/curbside at their home, like Santa Clara offers.

We recycle a lot.

Reusable bags aren't water-resistant enough and create a mess.

Would hate to see them stop using paper bags because so many ways to reuse them.

I hope that this will take effect; it would be great for the city.

You just so happened to reach the Chairman of RSRAC. My policy has always been to RECYCLE as opposed to RESTRICT. RESTRICTING is ineffective unless a suitable REPLACEMENT has been thoroughly tested and implemented. Furthermore, plastic bags were forced on us by the environmentalist wackos who didn't want trees harvested to product paper bags. We need to adjust people's habits and encourage the use of reusable bags. I have and use these and love them. And, in case you were not aware, polystyrene is recyclable. Check out Dart Container Corp in Lodi, CA.

Doesn't want to be charged for bags.

They should bring the bans into effect as soon as possible.

When will this happen. Especially in this town where the majority are Asian (I am Asian) and as an ethnicity we are not very environmentally friendly.

I use single use paper bags for garbage bags, if they are banned I would have to use plastic bags as garbage bags. I feel plastic bags are worse than paper bags.

concerned about the hassle of the reusable bags and the cost of buying them.

Balance the budget before taking this issue on.

We never throw these on the streets after use! We normally use the Plastic bags to collect the garbage and throw it in the Garbage Containers for the Garbage Company to pick up! From there on we do not know! I think the easiest way is to create controls at that level.

Only thing I see bad about it is putting small businesses out; added cost will not help those smaller businesses to stay afloat.

A lot of businesses are struggling, and this type of ban will not help them. I'd be willing to see large chains put something like this in place, but smaller stores cannot handle the extra burden of cost.

Survey questions aren't really well written: force people to give the answers that we want rather than involve them in discussion.

I would prefer if paper bags were not banned, because I use them at home and they're biodegradable.

This does not at all affect my decision to live or play in Milpitas

Nope

This survery is to long

Don't ban plastic bags.

Will comply with whatever is best for the environment.

Most times you can use a reusable bags, but when there is wet food material, it makes it difficult. Is concerned about inconvenience.

hopes they are banned.

Thinks its a good idea.

encourage the community to use reusable bags and encourage retail stores to incentivize customers to bring in their own bags before enacting a policy. Reusing plastic bags for dog poop and will have to buy purchase these bags. Appreciates when the city supplies dog poop bags at parks.

I would go to San Jose rather than pay more at businesses for a ban like this one. I re-use all of my plastic bags. I would not stand for any kind of tax on my plastic bags. There are too many taxes already.

Feels that government intervention should me minimized; corporate responsibility should be emphasized.

I think this particular approach (a ban) is a waste of my taxpayers money.

Dead set against banning plastic grocery bags; don't think it's a good idea to ban plastic grocery bags in stores.

I really don't like plastic bags; I use pyrex to avoid plastic poison. I hate plastic, when I get anything from the grocery I put in glass. I don't care that it's heavy as long as it's healthy. Melaleuca (all natural products I am using), made in Iowa, is what I use.

send residents information about harmful effects of single use bags and polystyrene.

concerned about them floating out in the Bay. implement asap.

Environmental nonsense, I hope this doesn't pass.

We need the plastic bags for groceries.

Works for a recycling company and would like to see it go into effect.

hopes the bans will go into effect soon

Concerned that she won't be able to reuse plastic bags for food scraps and other wet waste.

Doesn't want government to interfere in consumer purchases.

Think there should be a ban or strict rules concerning stryofoam. I think Styrofoam is really messy. Paper bags are difficult to carry in to the household, especially for those people who live in apartments.

She saves all plastic bags for reuse as garbage bags. If she doesn't use all of them she puts them in the recycle bin.

Glad Milpitas is looking into this. Concerned that trash bins are larger than recycling bins. She thinks it needs to be reversed.

I think it would be a great idea.

We should think about having the option to let consumers bring their own tupperware to businesses as well. But, if businesses have to charge more, I can appreciate that they have to run a business and must do that to stay afloat. Eventually, this will all be a non-issue because we'll have to carry re-usable bags in our cars. I wouldn't get in the face of a business if they weren't in compliance. The burden falls on me to bring my own bag and do the right thing.

Interested to know what the viable alternatives are.

If these materials are harming the environment then the bans should be put into place.

Thinks that its a statewide problem that needs to be handled on a statewide level.

I think is the most stupid thing that the Milpitas Council has ever done. Researching whether we should use alternatives and spending $60,000 on a survey is absurd. Every council member who voted for this should resign.

I think the decision to use or not use plastic bags should be left up to the consumer.

Here are some issues this person had with a single use bag ban: 1) they agree with a plastic bag ban but not a paper bag ban 2) They wonder how folks will carry meat products that are fresh from the butcher - this is the only time plastic bags are necessary. 3) It would be good if plastic bags were eliminated because they are less sturdy than reusable bags and they are backed by the oil industry.

If they no longer allow styrofoam, then what happens to the styrofoam that is already in the stores? Will they use up stock?

Depend less on the government and more on personal responsibility.

We need to use the systems we already have to implement a recycling program for polystyrene rather than banning it. Otherwise, this will be another beauracratic mess.

Seen lots of styrofoam in waterways and you want to prevent that.

Bags should not be a high priority. Make the streets safer and repairs should taken care of first.

It would be great if the City would let us bring our own, reusable containers to restaurants to take food home.

Concerned about the environment and wants to protect it.

I think it's good for the environment, so I would be in favor of it.

I think Milpitas should ban styrofoam just like Oakland.

These bans would be a great thing for the City to do.

feels we need to clean up our environment

The survey is to long

Please do not call my house again

Resident simply asked how the survey was being conducted and when a ban might occur.

Plastic bags are not the problem, it's the people that don't reuse/recycle them properly. If you get rid of plastic bags you will have major health issues if bags are not available for raw meat, which often leaks from their packaging. There are bigger issues to worry about, such as feeding and educating children. Please do not do away with Household Dump Day.

Doesn't want to be bothered with reusable bags.

hopes ban will be in effect asap.

appreciates solicitation of public opinion

Uses plastic bags for her garbage bags, so doesn't want plastic bags banned.

There are other more pressing needs to focus their attention on besides this matter.

I think it's time we did it, becuase we have to do better. The grocery store always asks, "paper or plastic" and it's time for a change. If people can bring paper bags back in for a profit. We have to get trained, and I think this is a good way to start the training.

Wanted to make sure we wouldn't give her phone number to someone else.

Probably a good thing, but it would just take me getting used to it. I really like the plastic bags for convenience and for lining my garbage can.

I think it's a great idea and I hope it goes through.

I think it would be good to keep paper bags around. I use them for garbage bags, and would continue to even if they were taxed.

Difficult to get a truck to use Household Dump days.

Was not familiar with household dump days

I totally agree with banning styrofoam because it's very affordable to replace styrofoam with other containers. Afraid the bags would really affect low income people unless it's done in an affordable way. That's my only concern about that ban.

I know it's a tough thing about banning the bags, and I think the answer would be to have a CRV on that stuff, and that would clean things up. If we had something like that with the bags, it wouldn't be a problem, and things would go up tenfold. I believe that we can't recycle styrofoam, but I would like to see it built into the recycling program. I would like to see it built into the recycling program. If more people threw their Styofoam in there we wouldn't have as much of a problem.

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1K

American® Chemistry Council | Plastics Food Service Packaging Group

City Clerk's Office
APR 25 2017
RECEIVED

April 25, 2017

The Honorable Bob Nuñez
Councilmember, City of Milpitas
455 E. Calaveras Blvd.
Milpitas, CA 95035

RE: OPPOSE – Proposal to Ban Polystyrene Take-Out Food Containers

Dear Mayor and Councilmembers:

The Plastic Foodservice Packaging Group (PFPG) of the American Chemistry Council (ACC) – a national trade association whose membership includes manufacturers of take-out food service packaging – appreciates the city's interest in reducing food packaging litter and disposal. While PFPG supports the reduction of litter as well as materials sent to landfill, we believe a more effective policy would be to educate your constituents and business owners and create a policy that addresses all materials (e.g. paper, plastic, polystyrene, compostable) similarly via a fair and balanced recycling and/or composting standard. We note below several reasons why targeting single products for commercial prohibition is not good public policy and will not benefit the environmental goals of the City.

Your Draft ordinance suggests that a polystyrene ban "will result in a reduction of EPS litter." In fact, a ban on one material will not address the behavior of littering nor will it reduce litter in the community. This policy would simply be a shift from one type of litter to another, and will likely repeat the experience in the City of San Francisco when it passed a similar polystyrene ban. A city-sponsored litter audit revealed San Francisco's ban had not reduced litter and instead found that a reduction in polystyrene litter was **offset by an increase of a greater percentage of coated paperboard on an item by item basis**.

A ban will also not significantly reduce the amount of polystyrene in the landfill. Polystyrene foodservice is a small percentage of the waste stream. Banning foodservice polystyrene will not address non-foodservice polystyrene which can be diverted from the landfill and recycled. Many cities across California are accepting and recycling foodservice and non-foodservice polystyrene in their residential recycling programs, this is a solution that Milpitas should consider.

Since Milpitas is interested in being an environmentally responsible city and reducing greenhouse gas emissions, we caution that several independent studies have demonstrated that banning polystyrene foam could have negative environmental impacts because alternatives such

as coated bleached paperboard and "compostables" generate significantly more greenhouse gas emissions, use more energy and generate more solid waste[1,2,3].

For example, according to an independent analysis[4] by the City of Seattle, Washington, a polystyrene food service ban would result in the following negative impacts:

- Non-renewable energy would increase 214%
- Greenhouse gas (GHG) emissions would increase 234%
- Ozone would increase 134%
- Acidification would increase by 179%
- Eutrophication would increase by 104%
- Waste generated would increase by 240%

An EPS ban would also negatively impact many small businesses as products made from alternative materials are more expensive than polystyrene and in some cases do not function as well as polystyrene for all food handling purposes. The financial impact would be more severe on small restaurants and vendors, and other jurisdictions have identified costs ranging upwards of $15,000 per year for some small businesses. These restaurants already survive on razor thin margins and a ban on EPS, which is cost effective and functions better than any alternative, would be yet another increased cost that they'll have to bear.

For the reasons outlined above, we respectfully oppose the proposed ban and encourage the City Council and staff to work with industry, restaurants, recyclers and other stakeholders to educate business and residents about the recyclability of polystyrene and other products and encourage increased diversion of these already recyclable materials.

PFPG and its members would welcome the opportunity to work with the city, local restaurants, local recyclers, composters and the area restaurants to implement anti-litter, recycling and composting efforts that avoids unintended environmental consequences, while reducing litter and disposal of all packaging types.

Thank you for the opportunity to share this information.

Sincerely,

Mike Levy, Senior Director
Plastics Foodservice Packaging Group
American Chemistry Council

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1 Final Peer-Reviewed Report: Life Cycle Inventory of Polystyrene Foam, Bleached Paperboard and Corrugated Paper Foodservice Products, Franklin Associates, Ltd., prepared for Polystyrene Packaging Council, March 2006, http://www.plasticsfoodservicepackaging.org

2 Paper or Styrofoam, A Review of the Environmental Effects of Disposable Cups, University of California at San Diego (UCSD), Dec 2006

3 Life Cycle Inventory of Foam and Coated Paperboard Plates, Peer-Reviewed Final Report, prepared for Pactiv Corporation, Franklin Associates, Ltd., May 2008

4 Alternative to Disposable Shopping Bags and Food Service Items Volume I, prepared for Seattle Public Utilities, January 2008, Herrera Environmental Consultants

FY 2016-2017 Mid-Year Follow Up Budget Appropriation Requests Fund Impact

2A

Capital Improvement Projects					
Item	**Description**	**Department**	**Sale of McCandless Property**	**Equipment Replacement Fund**	**General Government/ Community Improvements CIP**
	Revenue/Prior Fund Balance		7,776,832	9,695,000	21,667,000
1	MedEvac	Police			(406,465)
2	MILO Range Theatre 180 System	Police		(83,204)	(16,075)
3	CIP 4273 Street Landscape Irrigation	Public Works	(200,000)		
		Net Impact to Fund		**(83,204)**	**(422,540)**
		Excess Revenue/New Fund Balance	7,576,832	9,611,796	21,244,460
	Commitments			(9,611,796)	
	5-year CIP				(21,244,460)
	Ending Fund Balance		7,576,832	-	-

2B

City of Milpitas, California
BUDGET CHANGE FORM

Type of Change	From		To	
	Account	Amount	Account	Amount
Check one:				
☒ Budget Appropriation	330-2931	406,465	331-951-3432-8-4800	406,465
	331-951-3432-15-3899	406,465	330-3999	406,465
☐ Budget Transfer				
	330-2931	16,075	331-951-3433-8-4800	99,279
	331-951-3433-15-3899	16,075	330-3999	16,075
	331-951-3433-15-3847	83,204	500-3952	83,204
	500-2970	83,204		
	100-2940	200,000	311-951-4273-8-4800	200,000
	311-951-4273-15-3831	200,000	100-3939	200,000

Approve Mid-Year Budget Appropriations Follow Up for the FY 16-17 Capital Improvement Program Budget (Staff Contact: Jane Corpus, 408-586-3125)

Background: The City's budget policy requires that any additional appropriations to a department, capital improvement project's budget or re-appropriation of monies from one fund to another must be approved by the City Council. These requests are summarized in the ARS and quantified in the attached schedule.

☒ **Check if City Council Approval required.** **Meeting Date**: April 18, 2017

Requested by:	**Jane Corpus, Interim Finance Director**	**Date:**
Reviewed by:	**Finance Director:** Jane Corpus	**Date:** 7/10/17
Approved by:	**City Manager:**	**Date:**

Date approved by City Council, if required: **Confirmed by:**

FI/24786/V **Form 30-222 (Rev. 1/92)**

Santa Clara County

Wage Theft Report

Shannon Gleeson, PhD • Ruth Silver Taube • Charlotte Noss

UNIVERSITY OF CALIFORNIA SANTA CRUZ

SANTA CLARA LAW

Santa Clara County Wage Theft Coalition

The Santa Clara County Wage Theft Coalition, formed in 2013, is composed of community-based and nonprofit organizations, including:

• **Asian Americans for Community Involvement:** AACI's mission is to improve the health, mental health, and well being of individuals and their families. We do this by (1) providing an array of high quality health and human services; (2) sharing expertise about the Asian community's needs and best service delivery practices; and (3) providing Asian leadership in advocating on key health and human services issues.

• **California Immigrant Policy Center:** CIPC is an organization that advances inclusive policies that build a prosperous future for all Californians using policy analysis, advocacy and capacity building to unlock the power of immigrants in California.

• **International Children Assistance Network:** ICAN is a nonprofit organization with programs that focus on child development and the importance of the first 5 years. Our mission is to help children reach their potential and become compassionate leaders of tomorrow. Our programs aim to create strong family and community networks to support children as well as provide them with skills, confidence and opportunities to succeed in life.

• **Katharine & George Alexander Community Law Center:** The Law Center provides pro bono legal representation to low income individuals in the area of workers' rights, educates law students, increases community awareness about workers' rights, and effects social change by working with legislators and law reform committees to effectuate changes in the law to improve the rights of low-income individuals.

• **Movimiento de Acción, Inspirando Servicio:** MAIZ is an organization dedicated to creating a movement for social change that achieves the healthy well being of Mexicans and other marginalized communities in the United States and in Mexico and to develop leaders and use cultural advocacy in order to increase political participation in the San Jose Mexican community specifically among Women, Youth, and LGBTQQI.

• **Mountain View Day Laborer Center:** The Day Laborer Center connects workers and employers in a safe and supportive environment. We empower workers to improve their socio-economic condition through fair employment, education, and job skills training. We participate in advocacy efforts that support the day laborer community.

• **Pilipino Association of Workers and Im/migrants:** PAWIS is a grassroots organization supporting the rights and welfare of Filipino (and all) workers and immigrants in Santa Clara County. PAWIS not only provides services to distressed migrant workers, but also organizes them to take action against root causes of their abuse and exploitation.

• **Restaurant Opportunities Center of the Bay:** ROC the Bay is a local worker center dedicated to improve wages and working conditions for low-wage restaurant workers. We build power and voice for workers through workplace justice campaigns, promoting the high road to profitability, and original research and local policy work. We are part of ROC United, a national organization with over 13,000 restaurant workers, 100 high-road employers, and thousands of engaged consumers united for raising restaurant industry standards.

• **Services, Immigrant Rights, & Education Network:** SIREN is an organization dedicated to empowering low-income immigrants and refugees in Santa Clara County through community education and organizing, leadership development, policy advocacy and naturalization services. We believe that all people regardless of legal status or nationality are entitled to essential services, human dignity, basic rights and protections, and access to full participation in society.

• **Vietnamese American Workers' Rights Project:** This is a project of the Legal Aid Society–Employment Law Center that is dedicated to educating, assisting, and representing Vietnamese American workers with work related legal problems. The Legal Aid Society - Employment Law Center is a nonprofit, legal services organization assisting California's low-income working families and addressing issues that affect their ability to achieve self-sufficiency.

• **Working Partnerships USA:** Working Partnerships is a community-labor organization dedicated to addressing the root causes of inequality for workers and communities of color in today's economy. We use research and policy campaigns, civic engagement and leadership development, and community-labor organizing strategies to build the capacity of workers and their communities to lead and govern.

• **Workplace Justice Initiative:** Workplace Justice Initiative works to advance the rights of low-wage and immigrant workers who are denied justice in their workplace, expanding upon successful models utilizing the law to organize workers.

• **WorkSafe:** Worksafe is a California-based organization dedicated to eliminating workplace hazards. We advocate for protective worker health and safety laws and effective remedies for injured workers. We watchdog government agencies to ensure they enforce these laws. We engage in campaigns in coalition with unions, workers, community, environmental and legal organizations, and scientists to eliminate hazards and toxic chemicals from the workplace.

The Coalition is also supported by governmental and private entities, including:

• The Santa Clara County Office of Women's Policy has provided valuable support and assistance to the Coalition. The OWP is a leading voice in Silicon Valley on the needs of women and girls, serving as a catalyst for awareness and action on current and emerging issues that impact women's health, safety and security. Through analysis, research and strategic collaboration, OWP works to ensure that programs and services, and also systems and policy support women's leadership, full equality and advancement in the home, at work and in the community.

• Justice at Work Law Group is a private law firm, primarily representing workers in wage theft cases in Federal and California Courts and administrative bodies. They seek to work proactively with small businesses to prevent wage and hour disputes from occurring and helps to resolve these disputes with employees and their representatives when mistakes have been made.

The Coalition came together to address wage theft in Santa Clara County. One of the Coalition's main goals is to create an environment where workers earn their fair wages and responsible businesses do not face unfair competition.

The Coalition works to strengthen member organizations that support workers, to lift up worker stories, and to increase the visibility of these organizations in our community. The Coalition is building a sustainable workers' rights movement by protecting those workers who speak out and raising awareness around risks that workers take when they come forward.

The Coalition members represent diverse ethnic communities, which are all impacted by wage theft. Coalition members focus on myriad issues and highlight the intersectionality between wage theft and other violations of workers and human rights such as health and safety violations, human trafficking, mental health, and child development.

More information about the Santa Clara County Wage Theft Coalition: www.wagetheftcoalition.com

Join us on Facebook: https://www.facebook.com/pages/Santa-Clara-County-Wage-Theft-Coalition/614391335304552

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Acknowledgments

The Coalition appreciates the work of Shannon Gleeson, Ruth Silver Taube, and Charlotte Noss in authoring this report. All the members of the Santa Clara County Wage Theft Coalition provided context and information that is included in this report, especially Michael Tayag of PAWIS, Van Nguyen of ROC, Maria Noel Fernandez of Working Partnerships, and Nicole Marquez of WorkSafe. Our deep gratitude goes to Esther Peralez-Dieckmann of the Santa Clara County Office of Women's Policy for her support and assistance to the Coalition. Extra special thanks goes to Tia Koonse and the University of California Los Angeles Downtown Labor Center for sharing their legal research and compilation of local ordinances.

Executive Summary

Wage theft is the crime of stealing earned wages from workers. It occurs when a worker is paid less than minimum wage, is not paid overtime, is paid only in tips, or works off the clock. Wage theft is a national epidemic – affecting workers in industries that span the economy. According to a national study, the average low-wage worker loses 15% of her wages to wage theft each year.

Despite the economic success of Silicon Valley, wage theft is rampant in Santa Clara County. The San Jose office of the California Labor Commissioner handles approximately 300 enforcement claims from workers in the County each month. From 2012-2013, the almost 2,000 workers who filed claims with this office were awarded $8.4 million in owed wages. This is an average of almost $5,000 per worker – which amounts to approximately a quarter of the income they earn in a year.

Wage theft hurts workers, their families, their communities, and responsible businesses. It reduces the take-home pay for low-wage workers who already struggle to make ends meet, leading to food insecurity and unstable housing situations. Wage theft is a menace to public health as underpaid workers must forgo medical treatment or must work while sick to compensate. It robs local governments of taxes and can lead workers to turn to County assistance for support.

Current enforcement efforts are proving insufficient to confront this epidemic. Workers face challenges when they come forward to complain about unlawful working conditions. Nationally, almost half of workers surveyed experienced some form of illegal retaliation when they complained about unlawful working conditions. Although federal and state law provides protections for all workers regardless of their immigration status, undocumented workers remain especially vulnerable.

Additionally, workers are often unable to collect their owed wages. Of the $8.4 million awarded to workers by the Labor Commission offices in San Jose and Salinas, workers could collect only $2.8 million (33% of the total awarded). Even when workers obtain legal counsel, they still struggle to collect.

Due to this enforcement gap, local governments are increasingly playing an important role in protecting worker rights. For example, San Francisco, Chicago, Houston, and Miami-Dade have enacted local ordinances to combat wage theft. These ordinances make offenders ineligible to receive occupational permits and licenses. They create lists of companies with a documented record of wage theft, making them ineligible for government contracts.

Santa Clara County has a unique and important role to play in addressing wage theft. County leaders have the power to enact laws that combat wage theft, including ordinances that provide for the suspension of permits and the enactment of wage liens. The Santa Clara County Department of Environmental Health has existing Health Code authority to suspend the permits of wage theft violators until they come into compliance. The District Attorney has the power to prosecute egregious wage theft cases. The County Recorder can also record a wage lien for victims of wage theft, as it does with Mechanic's Liens.

Workers often turn to community organizations for assistance when they experience wage theft. Services at these organizations are crucial to support low-wage workers in filing complaints about working conditions. Advocates at these organizations also provide essential support for overburdened state and federal agencies. The County should provide support for the outreach, education, and assistance that these community based organizations and legal service organizations provide.

Finally, the Santa Clara County Wage Theft Coalition calls for the County to convene a working group of all County departments with constituent organizations and other enforcement agencies to address the issue of wage theft in the County. The working group should meet quarterly to coordinate efforts to address wage theft, educate workers and businesses, and strategize how to obtain compliance from the County's worst offenders. Together we can effectively address the crime of wage theft that affects us all.

Wage Theft is a Crime

Wage theft is the unlawful and illegal practice of stealing wages from workers. Federal, state and local laws set requirements regarding minimum working conditions. An employer who fails to comply with all of these legal mandates is engaging in wage theft.

Most often, an employer steals wages from workers by paying workers less than minimum wage, failing to pay overtime, or forcing workers to work off-the-clock. In California, the minimum wage is $8.00 per hour; in San Jose, it is $10.15 per hour.[1] Most employees are entitled to earn overtime premium wages, or time-and-a-half their regular hourly rate, after they work eight hours in a day or 40 hours in a week.[2] Time that workers spend preparing for work or cleaning up after their shift ends should be paid.[3]

Nelson has worked as a caregiver for 8 years, most of that time at a group care home as a live-in caregiver. He worked with individuals who have mental and severe physical disabilities, most with limited mobility that made the everyday activities of daily life difficult. This work is very stressful and time-consuming, especially if the patients have a hard time expressing what they need and when they are sick. The caregivers are around them all the time; they attend to everything the clients need: feeding them, showering them, cleaning and changing their diapers, assisting them in taking their medications, and more. Even in the middle of the night, when they wake up continually, caregivers also have to wake up and attend to them. Nelson says: "I love what I do. I like taking care of people. But as a caregiver, the owners are oppressing many of us. We are overworked and underpaid. I worked almost 24 hours around the clock, yet I was only paid for 8 hours a day. Although I was paid minimum wage for those eight hours, I was never given overtime." When Nelson filed a case with the Labor Commission, they determined that he was owed over $62,000 in back wages. He is still awaiting a final ruling and the collection of any funds.

Sometimes, employers issue paychecks late, or without funds.[4]

Maria expresses frustration with her employers frequent use of bounced checks, "She doesn't say, 'Don't cash it yet.' Of course, if she doesn't say, 'Don't cash it,' you get excited. When you get there, 'Oh, there are no funds.' And then we say to her, [makes noises]. It's like that. Instead of saying sorry, she even gets mad at you. Would I say to my family in the Philippines, 'Don't eat for now because I haven't gotten paid yet'? I can't say that to my family, right? I'm the one that they're counting on. Well, you're working, right? You're working so that you have something to send home. And then you even have a bounced check? 'I didn't give you a bounced check!' It's 35 dollars if you have a bounced check, so she should have told us that it would bounce so that we would not try to cash it."

Some employers steal tips from workers or force workers to share their tips with non-tipped workers.[5] Employers also deny workers access to legally required meal and rest breaks.[6]

Other common mechanisms impacting wage theft are paying "off-the-books" in cash, the misclassification of employees as independent contractors, and misuse of the practice of subcontracting.[7]

These unlawful practices are also illegal. It is a crime to defraud any person's labor or to obtain his or her labor fraudulently.[8] If an employer willfully fails to pay wages that are due immediately, they are subject to penalties and may be guilty of a misdemeanor.[9] It is also a misdemeanor to require an employee to sign a wage release without making payment of the wages.[10] There is potential criminal liability for violations of the workers' compensation code.[11]

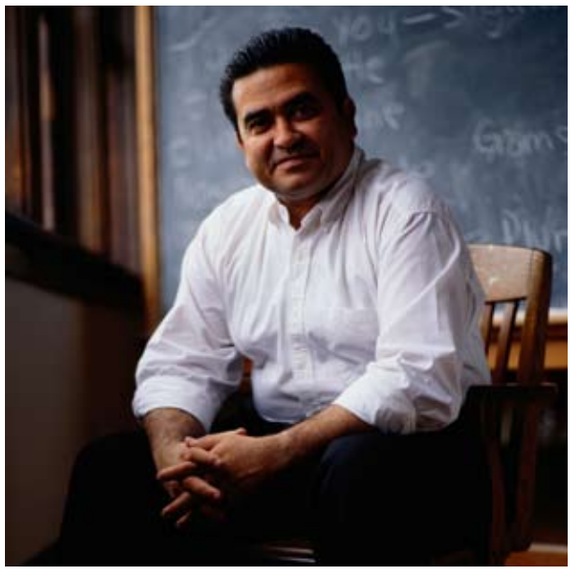
The District Attorney's Office is empowered to prosecute cases of wage theft and to bring civil enforcement actions.[12] California employers have been prosecuted for refusing to pay an employee for vacation pay earned and due,[13] for failing to maintain a semimonthly payroll for his employee,[14] for issuing paychecks with insufficient funds,[15] for willfully failing to make required payments to an employee pension fund,[16] and for failing to secure workers' compensation insurance for an employee.[17] Employers have been charged with felonies for unlawfully taking a portion of an employee's wages[18] and sentenced to prison for violating the limit on the use of employee bond money.[19]

Recently in San Francisco, an employer pled guilty to 487(a) of the Penal Code, felony grand theft. He was sentenced on April 21, 2009 to five years of felony, grand theft, 112 days in the county jail, and over $19,000 in restitution to employees, and he was ordered to obtain worker's compensation and unemployment insurance for his employees as a condition of probation. In another case, an employer was sentenced to one year in the county jail related to theft of labor and failure to secure worker's compensation insurance among other violations. He was convicted of a felony grand theft charge related to the thefts of labor. He was ordered to pay over $80,000 in restitution. In a third, ongoing case, an employer has been charged with 57 felony counts related to wage theft, filing false instruments, workers' compensation fraud and offering other fraudulent documents.

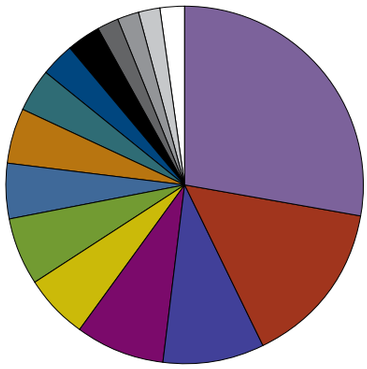
Wage Theft is a Devastating Epidemic

According to a groundbreaking national study, the average low-wage worker loses approximately $2,634 – or 15 percent of their earnings – each year because of wage theft.[20] This study, based on a survey of 4,387 workers in Chicago, Los Angeles, New York, found that two-thirds of workers experienced at least one pay related violation in the previous workweek. The majority of these wages were stolen by failing to pay minimum wage (58 percent) and overtime (22 percent), failing to provide breaks (10 percent) and requiring unpaid, off-the-clock work (8 percent).

"Wage theft is not incidental, aberrant or rare, or committed by a few rogue employers at the periphery of the labor market. It takes place in industries that span the economy – including retail, restaurants and grocery stores; caregiver industries such as home health care and domestic work; blue collar industries such as manufacturing, construction and wholesalers; building services such as janitorial and security; and personal services such as dry cleaning and laundry, car washes, and beauty and nail salons." - National Employment Law Project. Winning Wage Justice: An Advocate's Guide to State and City Policies to Fight Wage Theft. January 2011.



Employment Clinic Clients by Industry (2007-2011)
Sample Size: 461 cases



- *Food Services – 15%*
- *Admin./Clerical – 9%*
- *Construction Worker – 8%*
- *Janitor – 6%*
- *Sales/Service – 6%*
- *Driver – 5%*
- *Professional Technician – 5%*
- *Maintenance – 4%*
- *Health Services – 3%*
- *Teaching – 3%*
- *Housekeeper – 2%*
- *Machine Operator – 2%*
- *Security Guard – 2%*
- *Elder Disabled Care – 2%*
- *Other (Bookkeeping, Data Entry, Hairstyling, Roofer, Mechanic, Painter, Personal Attendant, Pharmacy Technician, Printing Shop Worker, Railroad Worker, Warehouse Employee) – 28%*

Wage theft victims range from undocumented workers who fear deportation if they report violations to skilled construction workers who are forced to kick back parts of their paycheck on government projects. Kim Bobo. Wage Theft in America: Why Millions of Working Americans are not Getting Paid-and What We Can Do about It. September 2011.

Data indicate that wage theft is rampant in the South Bay. According to state and federal agencies, employers in Santa Clara County steal millions of dollars in wages from their employees each year.[21] The federal enforcement agency, the Department of Labor–Wage and Hour Division, also handles wage theft claims from workers in Santa Clara County. According to data on compliance actions, employers agreed to pay $1,026,367 in back wages for minimum wage violations, $6,599,994 in back wages for overtime violations, and $40,612 in civil monetary penalties.[22]

The state agency responsible for enforcement of state labor law, the Division of Labor Standards Enforcement ("Labor Commissioner"), operates sixteen regional offices around the state. In one year, the Labor Commissioner offices in San Jose and Salinas awarded $8,413,242 to workers through hearing awards for wage theft violations.[23] According to other data, in one year there were 1,967 workers who filed claims at the San Jose office.[24] They were awarded an average of $4,786 on their claims for unpaid wages. This indicates that low-wage workers in Santa Clara County have up to one-quarter of their annual income stolen by their employers.

Data indicate that the wage theft epidemic is worse in Santa Clara County than in other regions of the state. The San Jose office of the Labor Commissioner receives an average of 294 claims each month, the highest number of all of the sixteen regions. Additionally, this Labor Commissioner office awards an average $1,000 more per worker than the statewide average. Therefore, not only are there more workers filing claims in Santa Clara County than the rest of the state, but more wages on average are stolen from each worker in the county.

In response to serious concerns from religious leaders, advocates, and workers regarding persistent mistreatment and harassment of vulnerable workers, the Santa Clara County Commission on the Status of Women and the Human Relations Commission convened a public forum in May 2012 for vulnerable workers to voice their concerns, to hear from local and national experts who monitor labor conditions, and to provide the Commission and policy makers with a broader understanding of the working conditions of vulnerable workers in the County. The two Commissions convened over 100 individuals from diverse backgrounds. A Filipino worker provided compelling testimony that he was forced to work long hours for little pay and that many employers exploit workers because "they are undocumented." Ruth Silver Taube of the Katharine & George Alexander Community Law Center's Workers' Rights Clinic, who testified as an expert, stated: "Almost 40% of the workers we saw at the Workers' Rights Clinic from 2007 to 2011 were victims of wage theft. As a result, many of these clients are dependent on County assistance. Businesses should not be making a profit through wage theft. It is unfair competition."

Data shows that wage theft is prevalent in the restaurant and construction industries. The Restaurant Opportunities Centers United published a multi-site study of the restaurant industry in 2011, which reveals the hidden costs of low-wage jobs and low road workplace practices. Many workers from the eight sites (New York, Chicago, Metro Detroit, Los Angeles, Maine, Miami, New Orleans, and Washington DC) reported overtime and minimum wage violations, lack of health and safety training, and failure to implement other health and safety measures in restaurant workplaces.[25] The study also found that restaurant employers who violate labor laws are more likely to violate health and safety standards in the workplace—such as failing to provide health and safety training or forcing workers to engage in practices that endanger the health and safety of customers.[26] In Los Angeles, many workers surveyed (44.1%) experienced overtime violations and slightly more than a quarter (26.7%) reported working "off the clock" without being paid.[27]

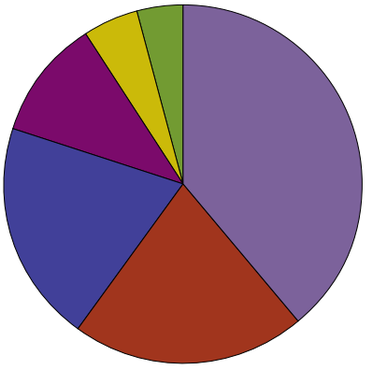
Day laborers who work in the construction industry are often not paid at all for their work.[28] Because employment is unstable and insecure, monthly earnings are volatile, with the median hovering around $700 per month. Half of all day laborers report that they have experienced wage theft every two months. Workplace injuries are also common – one in five workers suffer a work-related injury on the job.

Workers come to the Mountain View Day Laborer Center looking for help in recovering legitimately owed wages, from abusive employers who have not paid them for their labor. Director Maria Marroquin says: "The workers arrive at the Center tired, frustrated and almost without hope of being paid. They have only their faith in God, which helps them continue believing that they will eventually recover what they need to support their families. They wait, and wait, for the law, which is always slow. And once they win their cases, they wait more – because they cannot recover what they are owed."

Marco is a day laborer, who sometimes gets work from the parking lot in front of Home Depot. He was picked up by Jose in a blue pick-up truck and taken to a worksite. He worked painting a house in Palo Alto and was paid $100 for his work that day. Jose told him that, if he came back the next day, he'd pay him another $100 a day. So Marco showed up and painted houses for two weeks. Every day, Jose said "I'll pay you at the end of the week." Then, at the end of the week, Jose said "I'll pay you at the end of this job." Then, at the end of the job, Jose disappeared. He owed Marco almost $2,000. Now he no longer answers his phone when Marco calls.

No wonder, then, that the network of legal advocates in Santa Clara County is over-strained. The Katharine and George Alexander Community Law Center at Santa Clara University is the only pro bono legal resource for low-wage workers available in San Jose. The Workers' Rights Clinic, operated once a week at the Law Center, sees approximately 15 workers each week.[29] In a survey of clients conducted from April 2010 to June 2012, almost half of the workers who participated reported wage and hour violations.[30]

KGACLC Employment Clinic Clients by Issue (2007-2011)



- *Wage/Hour – 39%*
- *Discrimination – 21%*
- *Termination – 20%*
- *Unemployment Insurance – 11%*
- *Harrassment – 5%*
- *Workers Compensation – 4%*

The 237 workers surveyed reported:

Paid less than they were initially promised (33%)
Paid less than the minimum wage (20%)
Denied a rest break or having it shorted (51%)
Denied a meal break or having it shortened (45%)
Problems getting paid or paid late (49%)
Forced to work overtime against their will (33%)

Multivariate survey analysis reveals that restaurant and construction workers were significantly more likely to report ever having experienced a wage and hour violation.[31] The Law Center advises or refers approximately 300 clients each year. The Law Center's Skills program and the Workers' Rights program also directly represents workers in their wage claims at the Labor Commissioner's office or in court. The Law Center has recently obtained several significant awards, ranging from $50,000 to $150,000, on behalf of their clients.

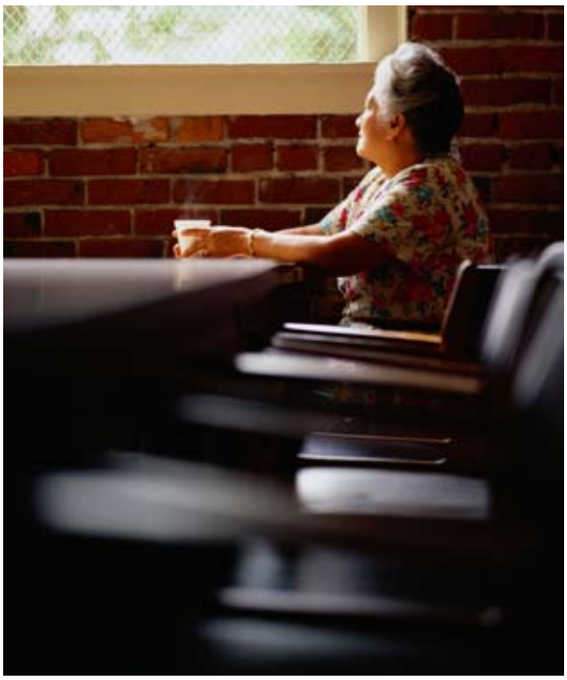
The Golden Gate University, Women's Employment Rights Clinic in San Francisco also represents about ten Santa Clara County workers each year, mostly caregivers in group home facilities and housecleaners.[32] Wage violations are especially rampant in group-home facilities for the elderly and people with disabilities. Caregivers in these facilities typically work 24 hour shifts and are paid a flat daily or monthly rate that ultimately falls far below the minimum wage, does not include overtime, and can often include difficult living and sleeping conditions. Caregivers at these facilities are often awarded as much as $130,000, which is multiple times the amount that they are actually paid for their work.

Community groups such as the Pilipino Association of Workers and Im/migrants ("PAWIS") assists workers who have experienced wage theft, advocating with them and helping them access services.[33] They find that employers utilize a variety of schemes to steal wages from caregivers, including paying below minimum wage; nonpayment of hours worked; excessive deductions for food, housing, and medical insurance, sometimes without the provision thereof; and payment with bounced checks. Despite the widespread incidence of these findings, only a handful of respondents file claims against their employers for fear of retaliation. Of those workers who have filed claims, the average amount of owed wages was $82,750.

Finally, private firm lawyers who represent low-wage workers in San Jose reaffirm the urgent need for resources to address wage and hour violations in Santa Clara County.[34] For example, in 2013, the Justice at Work Law Group firm received 96 calls from individuals requesting help with employment issues, 64 of whom reported wage and hour issues. Of the 50 cases that the firm retained, 44 were for wage and hour issues.

Low wage workers are mostly women and vulnerable to wage theft!

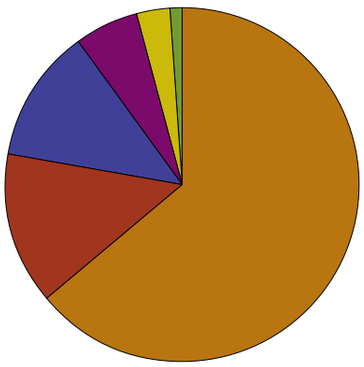
"Farmworker women put food on our tables. They plant, pick, and pack fruits and vegetables, among other crops and plants. It is estimated that more than 600,000 women are responsible for feeding us… They are often victims of wage theft."
– Monica Ramirez, Writer and Advocate



Widespread Impact of Wage Theft

Wage theft disproportionately impacts Black and Latino workers in Santa Clara County. According to the latest census, the population of Santa Clara County is 26.9% Hispanics or Latinos and 2.6% African American. However, 64% of the Workers' Rights Clinic's clients seen by the clinic at the Katharine and George Alexander Community Law Center were Hispanic or Latino, and 6% were black.[35]

KGACLC Employment Clinic Clients by Ethnic Group (2007-2011) Number of Clients: 1,365



- *Hispanic – 64%*
- *Asian/Pacific Islander – 14%*
- *White – 12%*
- *Black – 6%*
- *Other – 3%*
- *Native American – 1%*

Several factors influence a worker's vulnerability to wage theft. Undocumented and immigrant workers are especially vulnerable.[36] Almost half of the workforce in Santa Clara County is immigrant labor, but they are concentrated predominantly in the agricultural, manufacturing, personal service, and high tech industries – industries where wage theft is especially rampant.[37]

Alex, a carwash worker in Los Angeles sought help from WorkSafe, a statewide organization in California that focuses on the right of every worker to a safe and healthy place of employment. He explains, "Three years ago I suffered a workplace injury, when a car hit me while I was washing a car. The injury caused severe pain in my neck. I was so afraid to report the injury or go to the doctor because the owner of the company told me that he would fire me. In fact my supervisor told me that it was my fault and said that I would need to pay for the damage caused to the car. He made me take a week off of work, which was unpaid. I never went to the doctor because I was afraid of losing my job. I was afraid of losing my job because he had fired other workers who complained about tips or other labor problems. The supervisor also told us that he would call immigration if anyone complained. The supervisor knew that a lot of people were without status."

A week later, Alex returned to work. "When I received my paycheck I noticed that it was short $500. I asked my supervisor why it was short and his response was that he was taking the money out of my paycheck to pay for the damage caused to the car. I could not believe it. Here I was with an injured neck and could not get medical help because I was too intimidated by the supervisor. When he took the money out of my check it had a huge impact on my family because we needed that money to pay for food and help support my family. I continued to work for the employer for another couple months and left shortly after that. While there I saw some very abusive treatment. I saw people get their wages stolen. For example the supervisor would throw parties for the workers and make carne asada. He would take money from workers' paychecks to pay for these parties

even if the workers did not show up. The owner was very abusive and mistreated all the carwash workers. We workers never complained because we did not know to whom we could complain. No one at the company ever did anything to help us and we did not know about our rights. We also were afraid of complaining because the supervisor told us that he would fire us or call immigration. The fear of retaliation was very much part of the culture and no one complained to any agencies."

Several studies have documented the heightened risk that foreign-born, undocumented, Latino, and limited-English proficient workers face regarding the epidemic of wage theft.[38]

Wage theft hurts workers, their families and communities, responsible businesses, the County itself, and the taxpayer. Workers themselves are harmed by wage theft. They can experience increased stress, which results in fatigue and sleep disturbances.[39] Sleep deprivation leads to decreased concentration and lower cognitive performance, which can cause mistakes on the job.[40] Workers experiencing wage theft continue to work hard each day but are not appropriately compensated for their time. Stressful work-related experiences, especially repeated stress over time, can damage immune defenses and vital organs, which can result in more rapid onset and progression of cardiovascular disease and may accelerate aging.[41]

Loss of income due to wage theft can result in increased homelessness, overcrowding, hunger, decreased mobility, and/or difficulty accessing health care and paying medical bills.[42] Income is one of the strongest and most consistent predictors of health and disease. The poorest communities in the U.S. have the worst health status, and high-income earners can expect to live at least 6.5 years longer than low-wage workers.[43] When cash flow is low, food is often one of the items that is cut from the budgets.[44] Nationally, one third of food-insecure families have to skip meals, cut portions, or pass on food at some point in the year because they lack money.[45] Wage theft can also lead to an inability to pay rent – which can lead to living in unhealthy temporary housing conditions without safe drinking water, hot water for washing, effective waste disposal, adequate food storage, and insect and rodent infections.[46] Wage theft can also cause individuals to live in overcrowded conditions, which increases the risk of poor sanitation, exposure to environmental noise, and residential fire.[47]

Wage theft causes significant harm to Santa Clara County. Worker victims of wage theft cannot make ends meet individually for their families, high-road employers face unfair competition from employers who engage in wage theft, and government loses revenue. It is a public health menace. It negatively impacts workers' ability to meet their basic needs, to pay the rent, to buy food for their families, and to pay for health care. It can lead to homelessness and cause increased stress and anxiety.

Workplace violations can have a negative impact on the lives of the families and children of these workers. Most of the clients seen at the Workers' Rights Clinic at the Katharine and George Alexander Community Law Center have children in the local public schools.[48] California as a state ranks 45th in the nation for economic well being of children.[49] Over a third (35%) of California's children have parents who lack secure employment. Over half (54%) of California's children live in households where the cost of housing is over a third of the family's budget. Children in food insecure households experience two to four times as many individual health problems (unwanted weight loss, fatigue, headaches, irritability, inability to concentrate, and frequent colds) compared to other children.[50] Parents reporting stress due to spillover of work to family life are more likely to suffer from mood, anxiety, and substance dependence – with all the attendant consequences to their families.[51]

In many cases, government subsidies like food stamps or general assistance are required to supplement household budgets in order to bridge gaps in the family's income. One study of restaurant workers found an increased reliance on social assistance programs, resulting in an "indirect subsidy" to employers engaging in wage theft and fewer public resources available to those in need.[52] Another study found that increasing the state minimum wage would reduce the cost to California's public assistance programs by between $2.7 and $5.6 billion.[53]

Workers use various strategies to protect their children in an effort to "avoid problems for everyone," as one worker explained.[54] However, at a statewide immigration conference, workers talked frankly about the hard impact that wage loss placed on their families and their ability to provide for these children.

Parents often also described their own difficulty coping with the effects of depression stemming from ordeals with their employers and the impact this had on their ability to be there for their families. These experiences placed strains also on marriages and other familial relationships as families lost their homes, had to relocate, and had to scramble to find work after being terminated for demanding justice. In addition, workers rely on their families for support during the claims-making process – for rides to agency hearings and even calling on their children to help translate when necessary. Families also helped provide workers with food, housing, and loans in times of need while awaiting restitution that sometimes never came.[55]

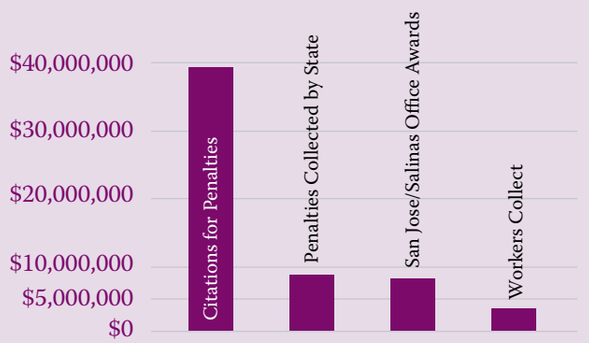
Local, state and federal government experience a significant economic cost of wage theft.[56] They experience revenue losses from unpaid payroll taxes, penalties, and judgments. Unpaid wages also affect consumer behavior, impacting local businesses and limiting sales tax revenues. Unscrupulous employers also pose unfair competition for responsible employers. An employer who pays "off-the-books" (also called "under the table") in cash means that an employer does not pay the estimated 30% of additional expenses on wages for things such as payroll and related taxes.[57] This not only deprives workers of credit for work and prevents them from filing their own taxes, but it also robs federal, state, and local governments of much-needed revenue.

Employers often misclassify an employee as an independent contractor (thus filing an IRS 1099 Form rather than a W-2 Form), which allows employers to sidestep their responsibility for wage and hour protections. Like the common practice of cash payment, "1099-ing" a worker helps employers evade paying payroll and related taxes, undercutting fair business competition.[58] Misclassification especially impacts workers in industries such as construction, day labor, home health care, janitorial work, and even port trucking.[59] Finally, subcontracting, while it can be a legitimate business practice, is often used to break the chain of responsibility between the workers and the prime contractor or businesses. Then, if workers are not paid appropriately, the prime business seeks to escape responsibility for those working conditions. This illegitimate subcontracting is rampant in cleaning services, painting companies, warehouses, and temporary labor service providers.[60]

Challenges to Effective Enforcement

Perhaps one of the most shocking aspects of wage theft is how insufficient current enforcement efforts are. In 2012-2013, the Labor Commission offices in San Jose and Salinas awarded $8,413,242 to workers through hearing awards for wage theft violations. Of this amount, workers could collect only $2,817,589.[61] Another arm of the Labor Commissioner, which conducts workplace wide investigations, awarded $39,772,344 in penalties for labor violations in 2012-2013, but collected only 20 percent of these penalties. An even smaller amount (10 percent) of penalties was collected for minimum wage and overtime violations. Ultimately, these losses diverted over $31 million away from state coffers.[62]

Unpaid Wage Theft Awards and Penalities



Even when workers have obtained legal counsel, they are still often unable to recover their owed wages. For example, between April 2012 and December 2013, clients of the Katharine and George Alexander Community Law Center were awarded $391,964 in back wages but were only able to collect forty percent of that money. The remaining $237,268 is still owed to those workers.

The California Department of Labor Standards Enforcement processes the vast majority of wage theft claims in the state. A May 2013 report issued by the agency reports that, under Labor Commissioner Julie Su, "our field investigations assessed 462% more in minimum wages and 642% more in overtime wages than in 2010. Time to hearings were also reduced, and the agency hit the highest amount of hearing awards in the last 5 years, highest total wages assessed and civil penalties in nearly a decade, and highest minimum wages and overtime wages assessed on record.[63]

Workers may try to resolve workplace violations with their employer before seeking legal counsel.[64] Workers with less than a high school degree were significantly less likely to communicate their complaint directly to their employer.[65] Based on a survey of workers' rights clinics in the San Francisco Bay Area, the vast majority of workers had confronted their employer before seeking legal assistance, with disappointing results:[66]

The workers surveyed who confronted their employer reported:

Complaint ignored (38%)
Threatened (8.1%)
Issue resolved, then resumed (14%)

Many workers were leery that such a confrontation would lead to positive results. Indeed, among those workers surveyed who chose to avoid a confrontation with their employer reported:

Were afraid it would affect their job (17%)
Didn't think it would do any good (19%)

Those workers who are brave enough to come forward have mixed results. It should, therefore, be of little surprise that many more workers do not speak up about workplace violations. Instead, they either continue to work under deplorable conditions or leave their employment in search of greener pastures. There are many reasons why workers may not come forward to seek help. Lack of worker education and language barriers can pose significant challenges.[67] Finally, many workers wait until they have left that employment before they complain about the working conditions.[68]

Many wage theft victims report being retaliated against – being fired or having their hours cut – when they complain about their employer's failure to pay wages.[69] The voices of the workers interviewed illuminate the challenges claimants face in trying to seek justice for their unpaid work. Often, employers seek to discourage workers from complaining. Workers are forced to choose between losing their jobs and accepting whatever the employer is offering to pay them.

One worker, Reynaldo, explained his experience with wage theft and the fear of employer retaliation. "On our weekends and holidays, count the 10-5 schedule [on top of our normal weekday schedule]. No one is on duty at night. That's 10 at night until 5 in the morning. On the weekend, it's working straight because no one comes in, right? That's 17 hours. But she pays us only for 8 hours. And then she makes us sign that. She says that if we don't sign what she wants us to sign, then she opens to the door and tells us to leave."

Frank filed a successful wage claim with the Labor Commission. When the employer failed to pay the judgment, Frank sought assistance from the Law Center. It referred him to the Wage Justice in Los Angeles, which agreed to help him collect. The employer showed up at Frank's house for 3 days in a row. On the second day the employer brought a fake Social Security card and green card that did not belong to Frank and threatened to send these cards to immigration and have Frank deported. On the third day, the employer made threats to call immigration if Frank did not drop his efforts to collect and threatened to make Frank and his family pay. Frank is afraid to go outside for fear the employer will harm him because the employer previously threatened to harm another worker who made a wage claim and told him that he would plant drugs in his car. The other worker dropped his claim.

In fact, almost half (43%) of the 4,387 workers surveyed nationwide have experienced some form of illegal retaliation like firing or suspension.[70]

Oscar worked for several years for a construction company where he should have been paid prevailing wage but was not. The moment he spoke up, he was fired immediately. It's now been a year since he won his case and the employer was fined $333,000. Unfortunately, he has yet to see a cent of that money. He says: "I'm proof that we must strengthen protections for workers and ensure not one more person endures what me and my family have faced."

Employer retaliation comes in multiple forms, and impacts not only workers but also their friends and relatives.[71]

Working as a dishwasher, Jorge received on average of $5/hour, paid in cash, with no regular rest or meal breaks. Fearing retaliation, Jorge left his job before filing his claim, and he referred his cousin to the position. After consulting at the Katharine and George Alexander Community Law Center clinic, Jorge filed a claim against his employer. A week after Jorge filed his claim, his cousin was fired. Although the California Labor Commissioner ultimately issued a judgment in his favor, he has not received any of the money owed to him. The offending employer remains in business, and advocates continue to receive reports of similar wage and hour abuses.

Employer retaliation looms large in workers' decisions as to whether to speak up and can also haunt workers long after they have even won their cases. Several workers have mentioned a secret "blacklist" of group care home workers who are not hired when they fight for wages that are unjustly stolen from them.[72]

Gabriela, who at one point was being paid $250 a month, successfully won a highly publicized case against a group care home owner. She not only became known by local caregivers whom she inspired to fight for their own rights, but also by local employers who condemned her as a threat to their businesses. It has been three years since she won her case, but until now she is having a hard time finding a new job and hears about a "blacklist" of which her name is at the top.

Effective Labor Standards Enforcement as a Path to Immigrant Integration and Justice for All

Members of PAWIS and the National Alliance for Filipino Concerns highlighted the ways in which the current U.S. immigration system treats workers like disposable labor import/export products, tears families apart, and increases these vulnerabilities through increased flexibilization and contractualization of labor policies, as well as through immigration enforcement mechanisms that run counter to the goals of workplace protections. Testimony also highlighted the challenges facing immigrant workers at non-union hotels and ethnic grocers. In theory, federal[73] and state[74] statutes are clear about the wage and hour protections available to all workers regardless of their immigration status. Yet undocumented workers nonetheless face particular challenges and may be wary of coming forward.

Santa Clara County prides itself on being a region that promotes immigrant integration through initiatives such as the Office of Human Relations Immigrant Relations and Integration Services. The 2004 Summit on Immigrant Needs and Contributions highlighted the particular challenges all immigrant workers face at the workplace and convened a working group on Economic Empowerment: Wages and Working Conditions, which concluded five specific findings and related recommendations that ring true a decade later.[75] These included a call for broad policies aimed at improving the income levels of all county residents, which would help a wide array of immigrant workers, who are disproportionately poor. The working group also recommended additional effective legal representation to assist immigrant workers, the creation of materials that are linguistically and culturally appropriate, an ongoing outreach campaign in high-immigrant community locations, and a central hub for organizing legal expertise and collaborative work. Additional specific recommendations pointed to the rampant violations in subcontracted industries, those targeting misclassified independent contractors, and the need to place a firewall between workers' rights enforcement and pernicious immigration enforcement.[76]

What Local Enforcement Mechanisms Can Do

The Santa Clara County Wage Theft Coalition is not alone in seeking a local mechanism for protecting the wage and hour rights for workers. Local ordinances in San Francisco (2006), Seattle (2011), Chicago (2013), and Houston all permit revocation of business permits, licenses, and certificates.[77] Each of these cities has created a new claims or administrative review process with specific penalties. One important component to assist with enforcement is cooperation of other local agencies in revoking or suspending permits for noncompliant employers. For example, the San Francisco municipal code permits the city to "create and impose liens against any property owned or operated by a person who fails to pay a penalty assessed by administrative citation."[78] Similarly, the San Francisco Department of Public Health Environmental Health Division uses its existing authority to gain compliance from employers who refuse to pay wage judgments by initiating permit revocation hearings when there is an outstanding judgment for unpaid wages.[79] The Houston Wage Theft Ordinance provides that if an employer is included in a wage theft database and currently holds or wishes to apply for or renew a license or permit issued by the city (such as restaurants or food services), the director or licensing official or board shall revoke or refuse to issue or renew any permit for a period of 5 years.[80]

Local ordinances can also address the insidious, yet far too common, occurrence of employer retaliation. For example, San Francisco added additional penalties, Seattle specifically prohibited immigration-based threats, and Massachusetts includes a presumption of retaliation if adverse action occurs within a certain period of time after a complaint is filed.[81]

Local ordinances also help raise the enforcement minimums set by federal and state legislation.[82] Both San Francisco and Chicago have imposed fines that are higher than those imposed by their respective state legislation. Seattle has also imposed stricter criminal penalties, and San Francisco also has stricter penalties for repeat offenders.[83] According to the Department of Labor Wage and Hour Division, of the 182,718 nationwide compliance actions published since FY 2007, 7,820 include repeat violators.[84]

Local ordinances can encourage more timely compliance, as is the case in San Francisco and Miami-Dade.[85]

Some local ordinances address the costly fiscal burden that wage theft poses for local governments by holding offending employers liable, as was done in San Francisco and Miami-Dade.[86]

In many jurisdictions, police can also play an important role in addressing "theft of service claims."[87]

Local efforts to address wage theft have spread across the country and are ongoing. Most recently, on November 20, 2013, the city of Houston unanimously passed an ordinance that will provide local enforcement mechanisms through the Office of Inspector General to penalize employers who have a criminal conviction of wage theft. The Texas Wage Theft Act, signed by Republican Governor Perry in 2011, did a number of things to help address the issue. For example, the Act empowers local law enforcement to investigate wage theft and closed a loophole that let employers who partially paid their workers off the hook. However, challenges remain related to coordination of law and enforcement to prosecute cases and training detectives and officers who often have serious resource constraints.[88] The Houston ordinance now makes offenders ineligible to receive occupational permits and licenses, and a public database on the city's website will list those companies with a documented record of wage theft, making them ineligible for city contracts and subcontracts.[89] In this Down With Wage Theft Campaign, advocates from all sides of the economic and partisan spectrum united to address the matter. For example, the President of the Houston Chapter of Associated General Contractors supported the proposal by explaining, "It's very hard to be competitive, this is a tough market.... there's a lot of people trying to get work, people from the home building industry which really hit hard times coming into our industry so people are taking work a lot cheaper, and those companies that do have hourly workforces, that do pay some sort of benefits, they obviously can't compete. It's very difficult to compete ..."[90]

The success in San Francisco is instructive for Santa Clara County. Advocates and agency staff highlight the creation of the Office of Labor Standards Enforcement, funded and staffed by almost sixteen investigators which is integral to ensuring maximum enforcement of minimum wage and other labor standards in the city.

• Since its creation in February 2004, the city agency found that back wages, interest and penalties were owed in two-thirds of their cases.

• The city agency has recovered over $6.5 million for 2,761 employees who were denied minimum wage and overtime pay by employers in the city.

• The city has recovered over $1.7 million in penalties through agency enforcement actions.

• In 99% of cases where the city concluded that back wages were owed, a settlement was reached that paid all of the owed minimum wages to the workers.

• Ten percent of city complaints were referred to other agencies, mostly the state enforcement agency. From 2010-2013, the state agency office in San Francisco determined that workers were owed back wages in 86% of their cases, and awarded $12,303,534 in unpaid wages, penalties, and interest to those workers.[91]

Local mechanisms to address wage theft could go a long way in assisting these categories of vulnerable workers in seeking justice. Currently, the City of San Jose requires employers within the city limits to pay their workers $10.15 an hour. San Jose is now the fifth city in the nation to do so, in addition to other major cities such as San Francisco, Santa Fe, Albuquerque, Washington, D.C., and now also SeaTac, Washington.[92] Voters passed the San Jose minimum wage ordinance on November 6, 2012, raising the minimum wage above the state. However, the ordinance did not establish an effective enforcement mechanism.[93] As the largest city and the county seat of Santa Clara County, this is a crucial enforcement gap.

What Local Officials Can Do

Counties have the power to enact laws to affect wage theft – including the suspension of permits and the enactment of wage liens. The California Constitution gives counties and cities broad authority to enact laws.[94] The California Courts have upheld these powers.[95] Most licensing or permitting ordinances are still lawful although they directly impact the enforcement of state laws enacted to preserve the health, safety, and welfare of state and local cities.[96] For example, a Sacramento ordinance that suspended or revoked the retail license of businesses selling cigarettes to minors was found to be lawful. Local ordinances can discourage activity prohibited by the state as long as they do not expand or reduce the degree to which the activity is criminally prosecuted.[97]

The legislative history of the state wage and hour laws establishes that Counties and Cities may enact ordinances to combat wage theft. A county ordinance is only invalid if it duplicates, contradicts, or enters an area fully occupied by state law to the exclusion of local regulation. This limitation does not apply to wage and hour laws, as the legislature specifically established that the state laws do not "occupy the field" at the time of their passage. Therefore, the State Legislature contemplated, and authorized, local regulation of working conditions.[98] In fact, what state law does is to establish a floor beneath which local jurisdictions may not fall in imposing penalties[100] for wage and hour violations.[99] This leaves local jurisdictions free to enact stricter penalties. This is a clear expression of the intent of the Legislature to permit local governments to impose stricter penalties for wage and hour violations.[101] Therefore, Santa Clara County may lawfully enact an Ordinance to combat wage theft.

Findings

(1) Workers do not know their employment rights and are afraid, with good reason, of the consequences of speaking up (i.e. retaliation).

(2) Employers engage in wage theft because they operate in industries where there is a culture of non-compliance, they lack knowledge of their responsibilities, they have engaged in a cost/benefit analysis that weighs in favor of violation, and/or they lack the skills or resources to comply with employment law.

(3) The agencies that enforce wage and hour laws face severe limitations on their ability to effectively ensure compliance with employment laws. Collecting judgments for unpaid wages can be extremely difficult for low-wage workers.

Recommendations for Local Action

I. General Recommendations

• Implement a system for flagging those businesses to which the County issues permits that are "wage theft violators" – that is, employers who have been found to be violation of state and/or federal labor and employment laws within the last three years.

• Screen all businesses receiving a County benefit or recognition to ensure that wage theft violators are not eligible.

• Prohibit County departments and commissions from entering into contracts or engaging in any business arrangement with any individual or entity that engages in wage theft.

• Permit workers with wage theft judgments to record a wage lien with the County Recorder similar to the existing Mechanic's Lien.

• Pass an ordinance authorizing all departments that issue permits to suspend those permits issued to wage theft violators.

• Use opportunities to create public awareness and enhance public recognition of responsible employers.

• Identify points of contact in each department with workers, especially low-wage workers, and provide know-your-rights information to workers.

• Convene a working group of County departments that meet quarterly to coordinate efforts to address the problem of wage theft, develop education campaigns, and strategize about how to obtain compliance from the County's worst violators.

II. Specific Agency Recommendations

A. County Department of Environmental Health

1. Fact Sheets Describing Health Impacts of Wage Theft: The Santa Clara County Department of Environmental Health has existing Health Code authority and should publish a fact sheet that describes the health impacts of wage theft.

2. Applications for Permits to Include Labor Law Checklist for Business Owners: The Santa Clara County Environmental Health Department should develop a Labor Law Checklist for business owners, to include in its permit packet, that will help educate employers and employees on wage law requirements.

3. Restaurant Recognition programs: The Santa Clara County Environmental Health Department should hold a Restaurant Appreciation Month, which also integrates labor compliance into its selection criteria.

4. Permit Suspensions: The Santa Clara County Department of Environmental Health has existing Health Code authority to suspend permits and should suspend health permits where there is a judgment against an employer for a violation of wage and hour laws until the employer comes into compliance.

B. District Attorney

The District Attorney Should Prosecute Egregious Wage Theft Cases: The District Attorney's Office is empowered to prosecute cases of wage theft under the relevant criminal statutes and to bring civil enforcement under Business and Professions Code 17200 et seq. In either criminal or civil enforcement action, obtaining restitution for the victims is a central component of any resolution. The Santa Clara County District Attorney should prosecute criminal and/or civil enforcement actions in egregious cases including those involving repeat violators or multiple victims and cases in which the wage theft violations are accompanied by violations of other statutes (e.g. threats to workers, workers compensation violations, unlicensed contractors.)

The District Attorney should certify U visas for victims of wage theft.

C. County Recorder

The County Recorder should record a wage lien (like a Mechanic's Lien) for victims of wage theft. Currently, a mechanic's lien may be recorded on real property at the County Recorder's Office. Every person supplying labor, equipment, or materials to a construction project may record a mechanic's lien to protect himself or herself from general contractors or property owners who may be inclined not to pay for the work performed or supplies provided.

Before recording a lien, a contractor must serve the owner with a preliminary 20-day notice. The notice provides the owner with information about the contractor, including the nature of the services or materials provided to the project, an estimate of the total price of the goods or services to be provided, and who hired the contractor. If the lien is recorded after 20 days, the contractor will lose its right to claim recovery of the value of the labor or goods that were provided more than 20 days before the notice was given.

A contractor or laborer who is not paid when the work is completed must then record the mechanic's lien at the County recorder's office in the county where the property is located. The lien must be recorded after the contractor or laborer has finished work on the project and no more than 90 days after the entire project is completed. To be valid, the mechanic's lien must (a) include the nature and value of the goods or services provided and (b) be signed and verified by the laborer or contractor. The claimant must file suit to foreclose on the lien no more than 90 days after recording. Failure to sue renders the lien "null and void and of no further force and effect." At trial, the court will decide the amount and validity of each lien. Mechanic's liens take priority over all liens, including mortgages and construction loans, that are recorded after work or improvement commenced.

The mechanic's lien should be expanded to include all victims of wage theft, not just workers on construction projects.

D. County Counsel

The County Counsel's Impact Litigation and Social Justice Section should conduct litigation in egregious wage theft cases. The Impact Litigation and Social Justice Section conducts affirmative litigation on behalf of the County, drafts local ordinances, and develops novel policies and programs to advance the County's goal of securing social and economic justice for all its residents. County Counsel should conduct wage theft litigation since wage theft is a social and economic justice issue. It impacts the County because it forces victims to seek County assistance, it constitutes unfair competition for businesses in the County, and it deprives the County of revenue.

III. Support for Community Based Organizations/Day Laborer Centers and Legal Service Organizations that Fight Wage Theft

Due to fear or ignorance of government enforcement agencies, workers often first report instances of wage theft to advocates at community organizations or day laborer centers.

For example, PAWIS is an organization of Filipino workers that provides assistance to members who are victims of wage theft. Filipino workers commonly call PAWIS first when they are victims of wage theft. PAWIS then contacts legal services organizations.

Similarly, other community organizations like ICAN, AACI, SIREN, MAIZ, the Mountain View Day Laborer Center, and other organizations like Working Partnerships, Restaurant Opportunities Center, the NAACP, and WorkSafe are often the first to know about wage theft. Legal service organizations such as the Katharine & George Alexander Community Law Center and the Workplace Justice Initiative provide advice and representation to these community organizations and assist workers who file wage claims. The County should provide support for the outreach, education, and assistance that these community based organizations and legal organizations provide.

Endnotes

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[2] Cal. Lab. Code § 510.
[3] Industrial Welfare Commission, Wage Orders 1-16l Cal. Code Regs., tit. 8 §§ 11010-11160.
[4] Cal. Lab. Code §§ 203.1, 204; Cal. Civil Code § 1719.
[5] Cal. Lab. Code § 351; Wage Order 5-2001.
[6] Cal. Lab. Code § 226.7; Wage Orders 1-16.
[7] Cal. Lab. Code § 226.8.
[8] Cal. Penal Code §§484, 532(a).
[9] Cal. Lab. Code §§ 203, 216(a), 226.6.
[10] Cal. Lab. Code § 206.5.
[11] Cal. Lab. Code §§ 132(a) (illegal retaliation), 3550 (posting requirements), 3700.5, and 3710.2.
[12] Cal. Bus.& Prof. Code § 17200 et *seq.*; Cal. Lab. Code §§ 215 (regarding the timing, method, and place of wage payments), 216 (refusing to pay wages when demanded), 225 (withholdings from wages), 226.6 (itemized pay stubs), 354 (unlawful deductions), 408 (bond posting requirements), 553 (misdemeanor for violation of any provision regarding overtime, meal periods, alternative workweeks, makeup work time, and rest days), 1175 (payroll records and permits), and 1199 (minimum wage); Cal. Lab. Code § 227 (misdemeanor or felony for failure to make required benefit payments).
[13] *People v. Bishopp*, (1976) 56 Cal. App. 3d Supp. 8.
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[22] *Id*.
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[33] Michael Tayag, *The Caregiver Research (CARE) Project: A study of wage theft within the Santa Clara County caregiving industry*, Pilipino Association of Workers and Immigrants (2014) (reporting on an ethnographic and community-based participatory research study involving interviews of 24 Filipino caregivers for the elderly and disabled); *see also* Michael Tayag, *By the People, For the People: The role of community-based participatory research in building leadership and capacity of workers*, Undergraduate Honors Thesis, Stanford University (2013).
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[35] Presentation by Ruth Silver Taube at the Vulnerable Workers Public Forum (5/10/12).
[36] *Id*. It is important to note that clinic staff do not inquire about the legal status of clients. Gleeson (2013) constructs a conservative measure to estimate the undocumented population in this survey. Respondents were asked to identify, at different points in the survey: (1) where they were born, (2) whether they are a citizen of the United States, and (3) whether they are legal permanent residents. Thirty-seven percent of individuals did not answer affirmatively to each question, and were classified as undocumented. Similarly, 36 percent of respondents said "no" to a final question asking whether they were authorized to work in the United States.
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[65] *Id*.

[66] Survey of 453 workers at the Katharine and George Alexander Law Center in San Jose (N=237), the East Bay Community Law Center in Berkeley (N=58), the Centro Legal de la Raza in Oakland (N=61), and the Hastings Law School clinic in San Francisco (N=97).
[67] Among the full sample of workers in four San Francisco Bay Area workers' rights clinics, 41% overall answered that they had "tried going directly to a government agency first," compared to 50% of those at the KGACLC. Multivariate analyses of this full sample reveal that undocumented claimants were statistically less likely to have gone directly to a government agency (36, versus 44%, p=.1) before seeking help at a workers' rights clinic. Workers who had been paid in cash (11%) were also less likely to have gone to a government agency (log odds = -.74, p =.05).
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[71] Shannon Gleeson, *Between Support and Shame: The Impacts of Workplace Violations for Immigrant Families*, UC-Wide Immigration Conference, We Asked For Workers And Families Came: Children, Youth, And Families In Migration, International Institute Program on International Migration, University of California-Los Angeles (2/22/13).
[72] Michael Tayag, *By the People, For the People: The role of community-based participatory research in building leadership and capacity of workers*, Undergraduate Honors Thesis, Stanford University (2013).
[73] Department of Labor, *Fact Sheet #48: Application of U.S. Labor Laws to Immigrant Workers: Effect of Hoffman Plastics Decision on Laws Enforced by the Wage and Hour Division* (Nov. 2007), available at http://www.dol.gov/whd/regs/compliance/whdfs48.pdf.
[74] Cal. Lab. Code §1171.5
[75] Immigrant Relations and Integration Services, *Bridging Borders In Silicon Valley, Summit On Immigrant Needs And Contributions*, Santa Clara County (2004), *available at* http://www.immigrantinfo.org/borders/index.html.
[76] *Id*.
[77] San Francisco, Cal., Mun. Code § 12R.7(b) (2006) ("Where prompt compliance is not forthcoming, the Agency may . . . request that City agencies or departments revoke or suspend any registration certificates, permits or licenses held or requested by the Employer or person until such time as the violation is remedied."); Seattle Mun. Code § 5.55.230(A) (2011) ("The Director [of Finance and Administrative Services] . . . has the power and authority to refuse to issue, revoke or refuse to renew any business license or amusement device license under the provisions of this chapter . . . [if] the applicant or licensee has been convicted of [wage] theft . . . within the last ten years [or] . . . subject within the last ten years to a . . . final [wage] judgment not satisfied within 30 days [or] . . . subject within the last ten years to a final and binding citation and notice of assessment from the Washington State Department of Labor and Industries . . . not satisfied within 30 days . . . The period of non-issuance, revocation or non-renewal shall be at least one year."); Chicago, Ill., Mun. Code § 4-4-320(a) & (b) (2013) ("The commissioner [of business affairs and consumer protection], for good and sufficient cause, may deny [suspend, or revoke] an application for any license . . . if, during the five-year period prior to the date of this application, the applicant admitted guilt or liability or has been 'found guilty' or liable in any judicial or administrative proceeding of committing or attempting to commit a willful violation, or two or more violations which do not include a willful violation, of the Illinois Wage Payment and Collection Act, 820 ILCS 115/1, or any other federal or state law regulating the payment of wages; or a violation of . . . any other federal or state law regulating the collection of debt.").
[78] S.F. Mun. Code § 12R.17(d) (2006).

[79] San Francisco Office of Labor Standards Enforcement, *Minimum Wage Ordinance, Annual Report FY 2012-2013* (Dec. 6, 2013), *available at* http://sfgsa.org/modules/showdocument.aspx?documentid=11225.
[80] Houston, Tex., Art. XII, Ch. 15, City of Houston Code of Ord. §§ 15-5 (2)(c), 15-6(2) (2013).
[81] S.F. Mun. Code § 12R.16(b) (2006); Cal. Lab. Code § 98.6(a) (prohibits retaliation against an employee for exercising her rights under wage and hour laws; contains no statutory penalty or liquidated damages but includes reinstatement and compensatory damages (lost wages); tort remedies under California Civil Code § 3294 include punitive damages, pain and suffering, back pay, and reasonable attorney's fees and costs); Seattle, Wash., Mun. Code § 12A.08.060(B)(6) (2011) ("[A]mong the circumstances that may be considered in determining whether the person intends to avoid payment for services are that he or she . . . in retaliation for asserting any claim to wages, communicates to the person providing the services, directly or indirectly, explicitly or implicitly, the willingness to inform a government employee that the person is not lawfully in the United States, or threatens, intimidates, or takes any other adverse action against the person . . . ."); Mass. Wage and Hour Anti-Retaliation Laws, Mass. Gen. Laws c. 149 § 148A; Mass. Gen. Law c. 151 §§ 19 (1), (5).
[82] S.F. Mun. Code §§ 12R.7 & 12R.16; Chicago Mun. Code § 4-4-350 (2012).
[83] Seattle Mun. Code §§ 12A.02.070(A)& 12A.08.060(A) (2011).
[84] U.S. Dept. of Labor, Data Catalog, *available at* http://ogesdw.dol.gov/views/data_summary.php.
[85] S.F. Mun. Code § 12R.17(a) & (b) (2006) ("If the person or persons responsible for the violation fail to correct violation within the time period specified on the citation . . . the Director of the Office of Labor Standards Enforcement may issue subsequent administrative citations for the uncorrected violation(s) without issuing a new notice . . . [and] assess a ten (10) percent late fee . . . ."); Miami-Dade-Dade County, Fl., Code § 22-2(2)(b)-(c) (2010) ("If the County finds that any respondent employer has failed to comply with the Hearing Examiner's order within forty-five (45) days after written notice from the County, the County shall . . . order the employer, in addition to wage restitution ordered, to pay the prevailing complainant employee an amount equal to the applicable interest rate which accrues on the full amount of treble damages from the date upon which the finding of wage violation was made until the date upon which the amount is paid in full; and . . . to pay to the Board of County Commissioners an amount equal to the applicable interest rate which accrues on the assessment of costs from the date upon which the Hearing Examiner's order is issued.").
[86] S.F. Mun. Code §§ 12R.16(b), 12R.7(c) (2006); Miami-Dade-Dade County, Fl., Code § 22-5(1)(b) (2010).
[87] Rita J. Verga, *An Advocates Toolkit: Using Criminal 'Theft of Service' Laws to Enforce Workers' Right to Be Paid*, New York City Law Review 8: 283 (2005).
[88] Workers Defense Project, *Wage Theft Fact Sheet* (2014), *available at* http://www.workersdefense.org/programs-2/workplace-justice/wage-theft/wage-theft-fact-sheet/.
[89] Down with Wage Theft Campaign, *Houston City Council Passes Anti-Wage Theft Ordinance* (Nov. 20, 2013), *available at* http://downwithwagetheft.org/2013/11/20/houston-city-council-passes-anti-wage-theft-ordinance/.
[90] Houston Interfaith Worker Justice Center, *Houston, We Have a Wage Theft Problem: The Impact of Wage Thefton Our City and the Local Solutions Necessary to Stop It* (May 2012), *available at* http://stopwagetheft.files.wordpress.com/2012/05/2012-houston-wage-theft-report.pdf.
[91] San Francisco Wage Theft Task Force Final Report (2013), *available at* http://sfgsa.org/modules/showdocument.aspx?documentid=11224.
[92] Paul K Sonn, *Citywide Minimum Wage Laws: A New Policy Tool for Local Governments*, ECONOMIC POLICY BRIEF, New York: Brennan Center for Justice (2006), *available at* http://brennan.3cdn.net/61d71f6dc9f7116f1d_phm6bx3n9.pdf.
[93] http://www.sanjoseca.gov/minimumwage
[94] California Constitution, Article X1, §7 ("A county or city may make and enforce within its limits all: local, police, sanitary, and other ordinances and regulations not in conflict with general laws.")
[95] *Candid Enterprises, Inc. V. Grossmont Union High School District*, 29 Cal.3d 878, 885 (1985).
[96] *Cohen v. Board of Supervisors of the City and County of San Francisco et al.*, 40 Cal. 3d 277 (1985).
[97] Prime Gas v. City of Sacramento, 184 Cal. App. 4th 697 (2010).

[98] Cal. Lab. Code §§ 1171-1206 (2012); see also Cal. Lab. Code § 1206, Leg. Counsel Dig., Chaptered Bill Text, AB 469 §11, Chapter 655, Filed with Sec'y of State Oct. 9, 2011 (see Appendix A, 13).
[99] Cal. Lab. Code § 1206.
[100] Cal. Lab. Code § 1205(b).
[101] Records of each committee hearing and vote pertaining to § 1206 demonstrate that the intent of the Legislature is to allow local jurisdictions to enact stricter penalties. The bill contained language that "…nothing preempts or limits a local law that prohibits the same or similar conduct, imposes more severe penalties for failure to comply with wage-related payment requirements, or has more accelerated timelines for the payment of wages or penalties … [and] the Labor Code provisions governing wages paid, hours worked and working conditions of employees are not to be deemed to restrict the exercise of local police powers in a more stringent manner." Leg. Counsel Dig., Bill Analysis, AB 469, Assembly Committee on Judiciary, Apr. 26, 2011, p. 8 (see Appendix, p. 4. The bill was amended in its final version because the Judiciary Committee felt that Labor Code §1205(b) already permitted local jurisdictions to enact stricter penalties and that AB 469's language was redundant. Leg. Counsel Dig., Amended Bill Text, AB 469, §9, Apr. 14, 2011 (see Appendix, p. 5).

County of Santa Clara
Office of Women's Policy

PROJECT NAME Vali Cooper & Associates

PROJECT NO.: 4265, 4179

SEVENTH AMENDMENT TO THE AGREEMENT FOR CONSULTATION AND OTHER SERVICES

This Seventh Amendment is entered into this 18th day of April, 2017, by and between the City of Milpitas, a municipal corporation of the State of California (hereafter referred to as "City") and Vali Cooper & Associates, Inc., a California corporation (hereafter referred to as "Consultant"). City and Consultant are joint referred to herein as the "Parties").

RECITALS

WHEREAS, the Parties entered into an Agreement on November 20, 2013, entitled "Consultant Services Agreement between the City of Milpitas and Vali Cooper & Associates, Inc." ("Agreement") for engineering services on the BART Silicon Valley Berryessa Extension (SVBX) project (Project No. 4265) in the amount of Nineteen Thousand Seven Hundred Sixty Dollars ($19,760); and

WHEREAS, the Parties entered into Amendment No. 1 to the Agreement on January 21, 2014, to increase the compensation in the amount of Seventy Five Thousand Dollars ($75,000) to allow Consultant to continue providing support services for the BART Silicon Valley Berryessa Extension (SVBX) project; and

WHEREAS, the Parties entered into Amendment No. 2 to the Agreement on June 3, 2014, to extend the term to June 30, 2015, and increase the compensation in the amount of One Hundred Fifty Eight Thousand Two Hundred Forty Dollars ($158,240) to allow Consultant to continue providing support services for the BART Silicon Valley Berryessa Extension (SVBX) project; and

WHEREAS, the Parties entered into Amendment No. 3 to the Agreement on December 16, 2014, to extend the term to September 30, 2015, and increase the compensation in the amount of Three Hundred Thousand Dollars ($300,000) to allow Consultant to continue providing support services for the BART Silicon Valley Berryessa Extension (SVBX) project; and

WHEREAS, the Parties entered into Amendment No. 4 to the Agreement on September 15, 2015, to extend the term of the Agreement to October 31, 2016, and increase the compensation in the additional amount of Three Hundred Ten Thousand Dollars ($310,000) to allow Consultant to continue providing support services for the BART Silicon Valley Berryessa Extension (SVBX) project and also the Montague Widening project (Project No. 4179); and

WHEREAS, the Parties entered into Amendment No. 5 to the Agreement on September 20, 2016, to extend the term of the Agreement to February 28, 2017, and increase the compensation in the additional amount of Two Hundred Thirty Thousand Dollars ($230,000) to allow Consultant to continue providing support services for the BART Silicon Valley Berryessa Extension (SVBX) project and Montague Widening project; and

WHEREAS, the Parties entered into Amendment No. 6 to the Agreement on February 1, 2017, to extend the term of the Agreement to August 30, 2017, to allow

Consultant to continue providing support services for the BART Silicon Valley Berryessa Extension (SVBX) project and Montague Widening project; and

WHEREAS, the Parties desire to extend the term through January 31, 2018, and to increase the compensation by the additional amount of Three Hundred Three Thousand Dollars ($303,000) to allow Consultant to continue providing support services for the BART Silicon Valley Berryessa Extension (SVBX) project and Montague Widening project.

NOW THEREFORE, in consideration of the mutual covenants and conditions herein contained, the Parties agree to amend the Agreement as follows:

1. Section 1.1, entitled "Term of Services" of the Agreement is amended in its entirety to read as follows:

   Terms of Services. The term of this Agreement shall begin on the date first noted above and shall end on January 31, 2018, and Consultant shall complete all the work described in Exhibit A prior to that date, unless the term of the Agreement is otherwise terminated or extended, as provided for in Section 8. The time provided to Consultant to complete the services required by this Agreement shall not affect the City's right to terminate the Agreement, as provided for in Section 8.

2. Section 2, entitled "Compensation" of the Agreement is amended in its entirety to read as follows:

   Section 2. Compensation. City hereby agrees to pay Consultant an amount not to exceed One Million Ninety Three Thousand Dollars ($1,396,000) for all services to be performed and reimbursable costs incurred under this Agreement. City shall pay Consultant for services rendered pursuant to this Agreement at the time and in the manner set forth herein. The payments specified below shall be the only payments from City to Consultant for services rendered pursuant to this Agreement. Consultant shall submit all invoices to City in the manner specified herein. Except as specifically authorized by City, Consultant shall not bill City for duplicate services performed by more than one person. Consultant and City acknowledge and agree that compensation paid by City to Consultant under this Agreement is based upon Consultant's estimated costs of providing the services required hereunder, including salaries and benefits of employees and subcontractors of Consultant. Hourly rates for personnel performing services shall be as shown in Exhibit B. Consequently, the Parties further agree that compensation hereunder is intended to include the costs of contributions to any pensions and/or annuities to which Consultant and its employees, agents, and subcontractors may be eligible. City therefore has no responsibility for such contributions beyond compensation required under this Agreement.

3. Exhibit A-4. The last sentence of Exhibit A-4 shall be revised to read: "All work shall be completed by January 31, 2018."

4. Exhibit B-5 is repealed and replaced in its entirety with Exhibit B-7, attached hereto and incorporated herein.

5. The Consultant agrees to maintain and pay for all insurance policies as stated in Section 4, entitled "Insurance Requirements" of the Agreement dated November 20, 2013, between Consultant and City. The Consultant shall provide City with renewal certificates of the current policies upon the expiration of the current policy.

6. Except as amended by this Seventh Amendment, all provisions of the Agreement shall remain unchanged and in full force and effect. From and after the date of this Seventh Amendment, whenever the term "Agreement" appears in the Agreement, it shall mean the Agreement as amended by this Seventh Amendment.

7. This Seventh Amendment is executed as of the date on the first page.

APPROVED BY:

CITY OF MILPITAS

_____

Thomas C. Williams, City Manager

VALI COOPER & ASSOCIATES, INC.
CONSULTANT

_____

John Collins, Chief Operating Officer

APPROVED AS TO CONTENT:

_____

Greg Chung, Interim City Engineer

APPROVED AS TO FORM:

_____

Christopher J. Diaz, City Attorney

EXHIBIT B-7

COMPENSATION SCHEDULE

Personnel	2017 Hourly Rates
Russ Moore	$195
Felix Ajayi	$155

Other Vali Cooper & Associates, Inc. personnel may be assigned, upon mutual agreement of City and Vali Cooper & Associates, Inc., and according to the billing schedules for 2017.

CITY OF MILPITAS
INVESTMENT PORTFOLIO STATUS

PERCENT OF TOTAL DOLLARS INVESTED AT QUARTER ENDED

TYPE OF SECURITY	Mar-17	Dec-16	Sep-16	Jun-16
LAIF & Money Market	36	40	43	44
Corporate Medium Term Notes	7	8	9	8
Treasury Notes / Bills	13	12	11	13
Federal Agency	43	38	35	33
Negotiable CD's	1	2	2	2
	100	100	100	100

	Mar-17	Dec-16	Sep-16	Jun-16
Market Value	233,001,818	208,314,815	187,624,570	203,213,945
Cost	233,428,207	208,723,590	187,302,499	202,571,158
Days				
Weighted Average Maturity	416	351	316	322
Rates				
Average Yield	1.00%	0.91%	0.85%	0.83%
Benchmarks:				
LAIF	0.82%	0.72%	0.63%	0.58%
2 Year Treasury - (12 Month Average)	0.94%	0.85%	0.82%	0.80%

Exhibit 1

City of Milpitas

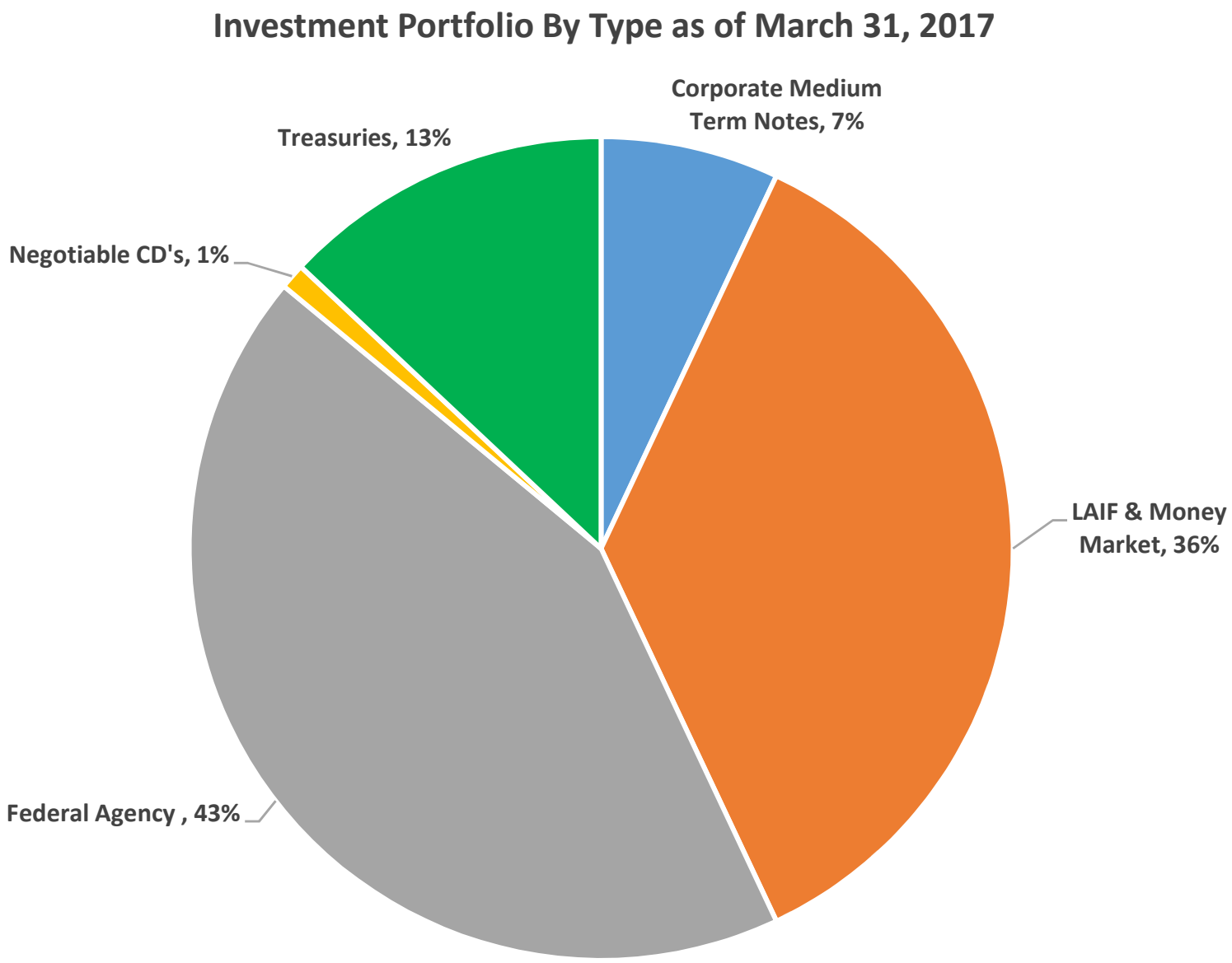
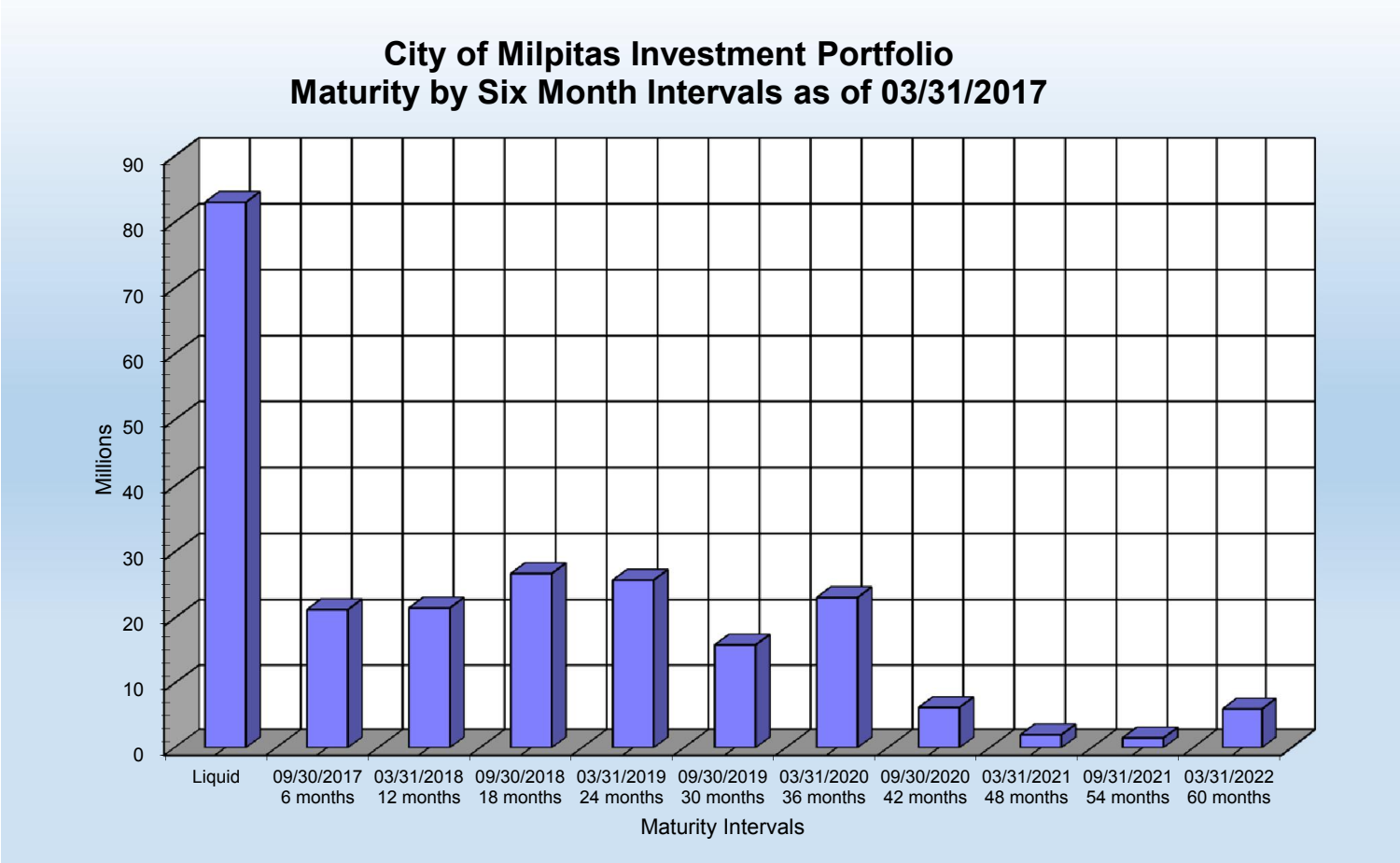


Exhibit 2


City of Milpitas Investment Portfolio
Maturity by Six Month Intervals as of 03/31/2017
Millions
90
80
70
60
50
40
30
20
10
0
Liquid
09/30/2017 6 months
03/31/2018 12 months
09/30/2018 18 months
03/31/2019 24 months
09/30/2019 30 months
03/31/2020 36 months
09/30/2020 42 months
03/31/2021 48 months
09/31/2021 54 months
03/31/2022 60 months
Maturity Intervals

City of Milpitas Investment Portfolio Yields Compared to Benchmarks for the Quarters Ended 06/30/14– 03/31/17

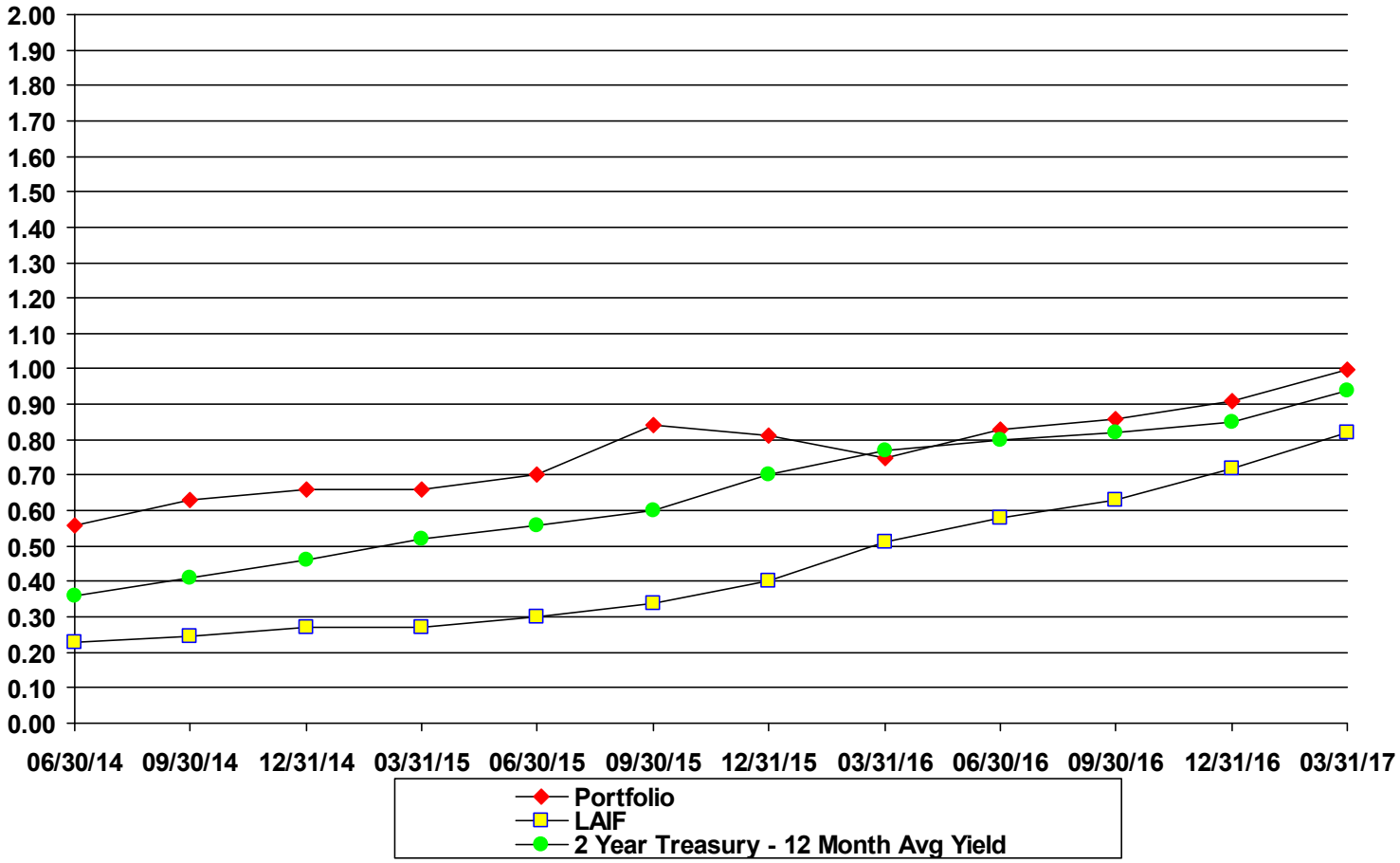


Exhibit 4

City of Milpitas
Portfolio Management
Portfolio Summary
March 31, 2017

Investments	Par Value	Market Value	Book Value	% of Portfolio	Term	Days to Maturity	YTM 360 Equiv.	YTM 365 Equiv.
LAIF	74,900,000.00	74,838,278.73	74,900,000.00	32.09	1	1	0.810	0.821
Money Market Funds	8,225,144.19	8,225,144.19	8,225,144.19	3.52	1	1	0.523	0.530
Corporate Notes	16,500,000.00	16,500,260.00	16,579,222.84	7.10	1,161	534	1.102	1.117
Federal Agency	99,500,000.00	99,269,088.34	99,503,364.77	42.63	1,198	681	1.219	1.236
Treasury Coupon Securities	31,000,000.00	30,922,830.78	30,970,474.98	13.27	1,167	614	1.156	1.172
GNMA	-0.05	-0.05	-0.05	0.00	7,228	14	7.965	8.076
Negotiable CDs -2	3,250,000.00	3,246,215.91	3,250,000.00	1.39	1,125	423	1.338	1.357
Investments	**233,375,144.14**	**233,001,817.90**	**233,428,206.73**	**100.00%**	**764**	**416**	**1.048**	**1.063**
Cash								
Passbook/Checking (not included in yield calculations)	2,175,476.47	2,175,476.47	2,175,476.47		1	1	0.055	0.056
Total Cash and Investments	**235,550,620.61**	**235,177,294.37**	**235,603,683.20**		**764**	**416**	**1.048**	**1.063**

Total Earnings	March 31 Month Ending	Fiscal Year To Date
Current Year	198,892.83	1,424,430.82
Average Daily Balance	**233,197,241.46**	**207,969,178.86**
Effective Rate of Return	**1.00%**	**0.91%**

To the best of my knowledge, this report accurately reflects all City and RDA pooled investments and is in conformity with all State laws and the City's investment policy. A copy of the policy is available at the office of the City Clerk. This investment program herein shown provides sufficient cash flow liquidity to meet next six months' estimated expenditures.

Jane Corpus 4/24/17

Jane Corpus, Interim Director of Finance

Reporting period 03/01/2017-03/31/2017

Run Date: 04/24/2017 - 10:25

Portfolio MILP
AC
PM (PRF_PM1) 7.3.0
Report Ver. 7.3.5

City of Milpitas
Portfolio Management
Portfolio Details - Investments
March 31, 2017

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM 365	Days to Maturity	Maturity Date
LAIF												
SYS82000010	82000010	Local Agency Invest. Fd - City			38,400,000.00	38,368,356.52	38,400,000.00	0.821		0.821	1	
SYS97090401	97090401	Local Agency Invest. Fd - MPFA			36,500,000.00	36,469,922.21	36,500,000.00	0.821		0.821	1	
		Subtotal and Average	**76,629,032.26**		**74,900,000.00**	**74,838,278.73**	**74,900,000.00**			**0.821**	**1**	
Money Market Funds												
SYS	150601930	Dreyfus Treasury & Agency Fund			8,225,144.19	8,225,144.19	8,225,144.19	0.530	AAA	0.530	1	
		Subtotal and Average	**10,661,969.02**		**8,225,144.19**	**8,225,144.19**	**8,225,144.19**			**0.530**	**1**	
Corporate Notes												
166764AA8	13060501	Chevron Corporation		06/05/2013	1,000,000.00	998,330.00	999,498.44	1.104	AA	1.180	248	12/05/2017
30231GAU6	16092201	Exxon Capital Corp		09/22/2016	1,000,000.00	1,000,920.00	1,003,376.30	1.439	AA+	1.067	334	03/01/2018
166764AV2	15041701	Chevron Corporation		04/17/2015	1,000,000.00	999,420.00	1,002,753.54	1.365	AA	1.060	335	03/02/2018
30231GAL6	15031201	Exxon Capital Corp		03/12/2015	1,000,000.00	999,200.00	1,000,280.73	1.305	AAA	1.274	339	03/06/2018
931142DF7	15031202	Walmart Stores		03/12/2015	1,000,000.00	998,250.00	999,042.47	1.125	AA	1.220	375	04/11/2018
594918AS3	15060502	Microsoft Corp		06/05/2015	1,000,000.00	996,590.00	999,466.83	1.000	AAA	1.050	395	05/01/2018
037833AJ9	13051301	Apple Inc		05/13/2013	2,000,000.00	1,993,960.00	1,998,940.07	1.000	AA+	1.050	397	05/03/2018
084664BW0	15060501	Berkshire Hathaway Financial		06/05/2015	1,000,000.00	999,660.00	1,000,988.28	1.300	AA	1.210	409	05/15/2018
478160BG8	16020301	Johnson & Johnson		02/03/2016	1,000,000.00	1,005,080.00	1,008,805.87	1.650	AAA	1.115	613	12/05/2018
594918AV6	15052601	Microsoft Corp		05/26/2015	1,000,000.00	1,004,190.00	1,007,784.02	1.625	AAA	1.151	614	12/06/2018
478160BR4	16042901	Johnson & Johnson		04/29/2016	1,500,000.00	1,493,280.00	1,503,524.27	1.125	AAA	1.000	699	03/01/2019
084664CG4	16091201	Berkshire Hathaway Financial		09/12/2016	1,000,000.00	1,001,730.00	1,012,240.09	1.700	AA	1.064	713	03/15/2019
037833AQ3	16092202	Apple Inc		09/22/2016	1,000,000.00	1,010,860.00	1,018,651.06	2.100	AA+	1.194	765	05/06/2019
084664CK5	16091202	Berkshire Hathaway Financial		09/12/2016	1,000,000.00	990,430.00	1,002,692.57	1.300	AA	1.184	866	08/15/2019
742718EG0	16091203	Proctor & Gamble Co		09/12/2016	1,000,000.00	1,008,360.00	1,021,178.30	1.900	AA-	1.064	944	11/01/2019
		Subtotal and Average	**16,580,818.12**		**16,500,000.00**	**16,500,260.00**	**16,579,222.84**			**1.117**	**534**	
Federal Agency												
3133ECMM3	13042501	Federal Farm Credit Bank		04/25/2013	2,000,000.00	1,999,720.00	2,000,000.00	0.600	AA+	0.600	24	04/25/2017
3133ECPA6	13051502	Federal Farm Credit Bank		05/15/2013	2,000,000.00	1,999,640.00	2,000,000.00	0.600	AA+	0.600	44	05/15/2017
3134G43S5	13051501	Fed Home Loan Mortgage Corp		05/15/2013	2,000,000.00	1,999,780.00	2,000,000.00	0.650	AA+	0.650	44	05/15/2017
3133EDPC0	14062701	Federal Farm Credit Bank		06/27/2014	2,000,000.00	2,000,660.00	2,000,000.00	1.000	AA+	1.000	87	06/27/2017
3133EDEB4	14012801	Federal Farm Credit Bank		01/28/2014	2,000,000.00	2,001,100.00	2,000,000.00	1.100	AA+	1.100	88	06/28/2017
3133EDXH0	14101401	Federal Farm Credit Bank		10/14/2014	2,000,000.00	2,000,360.00	2,000,000.00	1.000	AA+	1.000	104	07/14/2017
3133EDKP6	14050101	Federal Farm Credit Bank		05/01/2014	2,000,000.00	2,002,140.00	2,000,000.00	1.070	AA+	1.070	153	09/01/2017
3134G3J68	13053001	Fed Home Loan Mortgage Corp		05/30/2013	2,000,000.00	2,000,340.00	1,999,544.74	0.900	AA+	0.950	170	09/18/2017
3133ED3Z3	13100401	Federal Farm Credit Bank		10/04/2013	2,000,000.00	2,002,860.00	2,000,000.00	1.230	AA+	1.230	186	10/04/2017

City of Milpitas
Portfolio Management
Portfolio Details - Investments
March 31, 2017

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM 365	Days to Maturity	Maturity Date
Federal Agency												
3130A3QQ0	14122901	Federal Home Loan Bank		12/29/2014	1,000,000.00	1,000,260.00	1,000,000.00	1.150	AA+	1.150	272	12/29/2017
3135G0UE1	13021401	Federal Nat'l. Mortgage Assoc		02/14/2013	3,000,000.00	2,997,030.00	3,000,000.00	1.000	AA+	1.000	319	02/14/2018
3133EEQM5	15022001	Federal Farm Credit Bank		02/20/2015	2,000,000.00	1,999,920.00	2,000,000.00	1.110	AA	1.110	325	02/20/2018
3136G1DG1	13022701	Federal Nat'l. Mortgage Assoc		02/27/2013	2,000,000.00	1,998,780.00	2,000,000.00	1.050	AA+	1.050	332	02/27/2018
3134G9HC4	16052501	Fed Home Loan Mortgage Corp		05/25/2016	2,000,000.00	1,995,540.00	2,000,000.00	1.000	AA+	1.000	419	05/25/2018
3130A4Y71	15041501	Federal Home Loan Bank		04/15/2015	2,000,000.00	1,996,540.00	2,000,000.00	1.000	AA+	1.000	440	06/15/2018
3130A5BK4	15052201	Federal Home Loan Bank		05/22/2015	2,000,000.00	1,995,660.00	1,999,093.57	1.000	AA+	1.037	454	06/29/2018
3130A57J2	15050601	Federal Home Loan Bank		05/06/2015	2,000,000.00	1,995,480.00	2,000,000.00	1.000	AA+	1.000	461	07/06/2018
3133ECW75	13080101	Federal Farm Credit Bank		08/01/2013	2,000,000.00	2,011,920.00	2,000,000.00	1.610	AA+	1.610	487	08/01/2018
3133EE6G0	15081701	Federal Farm Credit Bank		08/17/2015	1,000,000.00	999,910.00	999,823.06	1.150	AA+	1.163	492	08/06/2018
3130A4DP4	15022701	Federal Home Loan Bank		02/27/2015	2,000,000.00	2,003,040.00	2,000,000.00	1.300	AA+	1.300	513	08/27/2018
3130A6AB3	15082801	Federal Home Loan Bank		08/28/2015	2,000,000.00	1,999,520.00	2,000,000.00	1.200	AA+	1.200	514	08/28/2018
3130A5K73	15061201	Federal Home Loan Bank		06/12/2015	2,000,000.00	2,000,760.00	1,999,421.62	1.200	AA+	1.220	543	09/26/2018
3133EFNF0	15110601	Federal Farm Credit Bank		11/06/2015	2,000,000.00	1,995,380.00	2,000,000.00	1.080	AA+	1.080	584	11/06/2018
3130AA5P9	16112101	Federal Home Loan Bank		11/21/2016	2,000,000.00	1,994,520.00	2,000,000.00	1.020	AA+	1.020	599	11/21/2018
3133EG2S3	17011301	Federal Farm Credit Bank		01/13/2017	2,000,000.00	1,999,371.11	2,004,503.11	1.280	AA+	1.170	642	01/03/2019
3130AAE46	17010601	Federal Home Loan Bank		01/06/2017	2,000,000.00	1,998,080.00	2,000,706.85	1.250	AA+	1.230	655	01/16/2019
3133EFVQ7	16031101	Federal Farm Credit Bank		03/11/2016	1,000,000.00	999,170.00	1,001,944.79	1.250	AA+	1.140	661	01/22/2019
3130AAS41	17020801	Federal Home Loan Bank		02/08/2017	2,000,000.00	1,997,860.00	2,000,000.00	1.270	AA+	1.270	678	02/08/2019
3133782M2	16020101	Federal Home Loan Bank		02/01/2016	1,000,000.00	1,002,640.00	1,007,512.87	1.500	AA+	1.104	706	03/08/2019
3134G8QB8	16032901	Fed Home Loan Mortgage Corp		03/29/2016	1,500,000.00	1,494,360.00	1,500,000.00	1.270	AA+	1.270	727	03/29/2019
3134G8QB8	16032902	Fed Home Loan Mortgage Corp		03/29/2016	1,500,000.00	1,494,360.00	1,500,000.00	1.270	AA+	1.270	727	03/29/2019
3137EADZ9	16121203	Fed Home Loan Mortgage Corp		12/12/2016	2,000,000.00	1,993,882.50	1,998,547.27	1.125	AA+	1.250	744	04/15/2019
3130A9ZY0	16113001	Federal Home Loan Bank		11/30/2016	2,000,000.00	1,984,720.00	2,000,000.00	1.000	AA+	1.000	789	05/30/2019
3130AADN5	16122801	Federal Home Loan Bank		12/28/2016	2,000,000.00	1,995,840.00	2,001,936.80	1.375	AA+	1.331	818	06/28/2019
3133EFW52	16121202	Federal Farm Credit Bank		12/12/2016	2,000,000.00	1,987,980.00	1,992,948.86	1.150	AA+	1.310	821	07/01/2019
3136G3R56	16092001	Federal Nat'l. Mortgage Assoc		09/20/2016	1,000,000.00	986,700.00	1,000,000.00	1.050	AA+	1.050	846	07/26/2019
3134G3A91	17010602	Fed Home Loan Mortgage Corp		01/06/2017	1,000,000.00	998,220.00	998,816.81	1.400	AA+	1.450	873	08/22/2019
3130AAL89	17010901	Federal Home Loan Bank		01/09/2017	2,000,000.00	1,989,640.00	2,000,000.00	1.422		1.422	874	08/23/2019
3136G35A9	16090901	Federal Nat'l. Mortgage Assoc		09/09/2016	2,000,000.00	1,971,320.00	2,000,000.00	1.150	AA+	1.150	879	08/28/2019
3137EADM8	16111503	Fed Home Loan Mortgage Corp		11/15/2016	2,000,000.00	1,991,826.11	2,009,606.77	1.250	AA+	1.115	914	10/02/2019
3135G0R39	16110902	Federal Nat'l. Mortgage Assoc		11/09/2016	2,000,000.00	1,976,417.78	1,997,241.78	1.000	AA+	1.070	936	10/24/2019
3133EGW92	17011302A	Federal Farm Credit Bank		01/13/2017	1,550,000.00	1,549,767.50	1,554,421.02	1.500	AA+	1.430	992	12/19/2019
3133EGW92	17011302B	Federal Farm Credit Bank		01/13/2017	450,000.00	449,932.50	451,283.52	1.500	AA+	1.430	992	12/19/2019
3133EG3J2	17011001	Federal Farm Credit Bank		01/10/2017	2,000,000.00	1,999,140.00	2,000,037.00	1.550	AA+	1.549	1,014	01/10/2020
3130A9ZV6	16112801	Federal Home Loan Bank		11/28/2016	2,000,000.00	1,972,320.00	2,000,000.00	1.200	AA+	1.200	1,063	02/28/2020

City of Milpitas
Portfolio Management
Portfolio Details - Investments
March 31, 2017

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM 365	Days to Maturity	Maturity Date
Federal Agency												
3133EHBA0	17030201	Federal Farm Credit Bank		03/02/2017	2,000,000.00	1,994,820.00	2,000,000.00	1.520	AA+	1.520	1,066	03/02/2020
3136G35W1	16092701	Federal Nat'l. Mortgage Assoc		09/27/2016	2,000,000.00	1,965,020.00	2,000,000.00	1.250	AA+	1.250	1,091	03/27/2020
3137EADR7	17031002	Fed Home Loan Mortgage Corp		03/10/2017	2,000,000.00	1,994,014.17	1,991,599.53	1.375	AA+	1.680	1,126	05/01/2020
3135G0D75	16121201	Federal Nat'l. Mortgage Assoc		12/12/2016	2,000,000.00	1,991,240.00	1,996,069.06	1.500	AA+	1.563	1,178	06/22/2020
3130AAX52	17031001	Federal Home Loan Bank		03/10/2017	2,000,000.00	2,003,471.67	1,998,305.74	1.750	AA+	1.780	1,242	08/25/2020
3133EHEC3	17033001	Federal Farm Credit Bank		03/30/2017	2,000,000.00	1,998,220.00	2,000,000.00	1.800	AA+	1.800	1,459	03/30/2021
3134GBAX0	17032801	Fed Home Loan Mortgage Corp		03/28/2017	1,500,000.00	1,501,755.00	1,500,000.00	2.070	AA+	2.070	1,641	09/28/2021
3133EHAK9	17022301	Federal Farm Credit Bank		02/23/2017	1,000,000.00	1,000,880.00	1,000,000.00	2.000	AA+	2.000	1,789	02/23/2022
3134GA4Q4	17022801	Fed Home Loan Mortgage Corp		02/28/2017	3,000,000.00	2,995,260.00	3,000,000.00	2.050	AA+	2.050	1,794	02/28/2022
		Subtotal and Average	**95,103,004.98**		**99,500,000.00**	**99,269,088.34**	**99,503,364.77**			**1.236**	**681**	
Treasury Coupon Securities												
912828WH9	14051501	United States Treasury Note		05/15/2014	2,000,000.00	2,000,480.00	1,999,917.30	0.875	AA+	0.910	44	05/15/2017
912828TB6	14061302	United States Treasury Note		06/13/2014	1,000,000.00	999,770.00	999,557.78	0.750	AA+	0.932	90	06/30/2017
912828WT3	14071501	United States Treasury Note		07/15/2014	2,000,000.00	2,000,160.00	1,999,221.60	0.875	AA+	1.013	105	07/15/2017
912828G20	14111701	United States Treasury Note		11/17/2014	2,000,000.00	1,999,060.00	1,998,466.11	0.875	AA+	1.000	228	11/15/2017
912828G79	14121501	United States Treasury Note		12/15/2014	2,000,000.00	2,000,000.00	1,998,749.43	1.000	AA+	1.090	258	12/15/2017
912828J68	15031601	United States Treasury Note		03/16/2015	2,000,000.00	1,998,520.00	1,998,690.63	1.000	AA+	1.070	348	03/15/2018
912828VE7	13062101	United States Treasury Note		06/21/2013	2,000,000.00	1,997,180.00	1,993,598.51	1.000	AA+	1.285	425	05/31/2018
912828XF2	15061501	United States Treasury Note		06/15/2015	2,000,000.00	1,999,760.00	2,000,000.00	1.125	AA+	1.125	440	06/15/2018
912828M64	15111601	United States Treasury Note		11/16/2015	3,000,000.00	3,002,460.00	3,001,429.86	1.250	AA+	1.220	593	11/15/2018
912828V56	17013101	United States Treasury Note		01/31/2017	2,000,000.00	1,996,020.00	1,997,131.85	1.125	AA+	1.204	670	01/31/2019
912828P53	16031102	United States Treasury Note		03/11/2016	1,000,000.00	990,980.00	994,003.85	0.750	AA+	1.076	685	02/15/2019
912828T59	16110901	United States Treasury Note		11/09/2016	2,000,000.00	1,981,373.63	2,000,832.16	1.000	AA+	1.011	927	10/15/2019
912828U32	16111501	United States Treasury Note		11/15/2016	2,000,000.00	1,977,960.00	1,999,742.08	1.000	AA+	1.005	958	11/15/2019
912828V31	17011701	United States Treasury Note		01/17/2017	2,000,000.00	1,995,471.93	1,996,611.24	1.375	AA+	1.440	1,019	01/15/2020
912828H52	16111502	United States Treasury Note		11/15/2016	2,000,000.00	1,987,120.00	2,004,967.47	1.250	AA+	1.160	1,035	01/31/2020
912828W55	17030801	United States Treasury Note		03/08/2017	2,000,000.00	1,996,515.22	1,987,555.11	1.875	AA+	2.017	1,794	02/28/2022
		Subtotal and Average	**30,972,388.70**		**31,000,000.00**	**30,922,830.78**	**30,970,474.98**			**1.172**	**614**	
GNMA												
36217FKE8	87042001A	GNMA		07/01/1997	-0.05	-0.05	-0.05	8.000	AA+	8.076	14	04/15/2017
		Subtotal and Average	**28.39**		**-0.05**	**-0.05**	**-0.05**			**8.076**	**14**	

City of Milpitas
Portfolio Management
Portfolio Details - Investments
March 31, 2017

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM 365	Days to Maturity	Maturity Date
Negotiable CDs -2												
05573J4P6	15092301	BMO Harris Bank NA		09/23/2015	250,000.00	249,794.25	250,000.00	1.100	A+	1.101	174	09/22/2017
49306SVE3	15093002	Key Bank NA		09/30/2015	250,000.00	249,808.45	250,000.00	1.150	A-	1.152	184	10/02/2017
36163CWS5	14101001	GE Capital Bank		10/10/2014	250,000.00	250,199.10	250,000.00	1.450	AA+	1.451	192	10/10/2017
140420QD5	14101601	Capital One Bank USA		10/16/2014	250,000.00	250,204.95	250,000.00	1.450	BBB+	1.451	198	10/16/2017
38148JBF7	14102901	Goldman Sachs Bank USA		10/29/2014	250,000.00	250,218.73	250,000.00	1.450	A	1.249	212	10/30/2017
05580AAY0	14111401	BMW Bank of North America		11/14/2014	250,000.00	250,155.13	250,000.00	1.400	NR	1.401	227	11/14/2017
29266NF28	14120501	EnerBank USA		12/05/2014	250,000.00	249,827.90	250,000.00	1.200	NR	1.201	248	12/05/2017
564759QQ4	15051301	Manufacturers & Traders Trust		05/13/2015	250,000.00	247,934.13	250,000.00	1.050	A	0.904	408	05/14/2018
02587CDK3	15070801	American Express Bk FSB		07/08/2015	250,000.00	249,655.23	250,000.00	1.650	A-	1.422	464	07/09/2018
06740KJH1	15091601	Barclays Bank Delaware		09/16/2015	250,000.00	249,534.88	250,000.00	1.600	NR	1.379	534	09/17/2018
14042RAG6	15093001	Capital One NA		09/30/2015	250,000.00	249,767.58	250,000.00	1.650	BBB+	1.422	548	10/01/2018
02587DC71	15100701	American Express Centurion Bnk		10/07/2015	250,000.00	251,773.23	250,000.00	2.000	A-	2.001	919	10/07/2019
94986TUG0	15063002	Wells Fargo Bank		06/30/2015	250,000.00	247,342.35	250,000.00	1.500	AA-	1.502	1,186	06/30/2020
		Subtotal and Average	**3,250,000.00**		**3,250,000.00**	**3,246,215.91**	**3,250,000.00**			**1.357**	**423**	
		Total and Average	**233,197,241.46**		**233,375,144.14**	**233,001,817.90**	**233,428,206.73**			**1.063**	**416**	

City of Milpitas
Portfolio Management
Portfolio Details - Cash
March 31, 2017

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	S&P	YTM 365	Days to Maturity
Money Market Funds											
SYS1000	1000	Cash in Bank			482,551.00	482,551.00	482,551.00	0.250		0.250	1
SYS1000	131127930	Cash in Bank			72,949.16	72,949.16	72,949.16	0.020		0.020	1
SYS1030	1030A	Cash with Fiscal Agent			1,474,876.40	1,474,876.40	1,474,876.40			0.000	1
SYS1030	1030B	Cash with Fiscal Agent			0.38	0.38	0.38			0.000	1
HBOC	150701103	Heritage Bank of Commerce		07/01/2016	145,099.53	145,099.53	145,099.53			0.000	1
		Average Balance	**0.00**								**1**
	Total Cash and Investments		**233,197,241.46**		**235,550,620.61**	**235,177,294.37**	**235,603,683.20**			**1.063**	**416**

City of Milpitas
Portfolio Management
Activity By Type
March 1, 2017 through March 31, 2017

CUSIP	Investment #	Issuer	Stated Rate	Transaction Date	Purchases or Deposits	Redemptions or Withdrawals	Balance
LAIF (Monthly Summary)							
SYS82000010	82000010	Local Agency Invest. Fd - City	0.821		0.00	5,800,000.00	
		Subtotal			**0.00**	**5,800,000.00**	**74,900,000.00**
Money Market Funds (Monthly Summary)							
SYS1000	1000	Cash in Bank	0.250		482,551.00	589,849.00	
SYS1000	131127930	Cash in Bank	0.020		1.55	915.47	
SYS	150601930	Dreyfus Treasury & Agency Fund	0.530		3,636.64	0.00	
SYS1030	1030A	Cash with Fiscal Agent			1,474,876.40	1,474,841.47	
SYS1030	1030B	Cash with Fiscal Agent			0.38	15,231.98	
HBOC	150701103	Heritage Bank of Commerce			145,099.53	295,431.40	
		Subtotal			**2,106,165.50**	**2,376,269.32**	**8,225,144.19**
Corporate Notes							
		Subtotal					**16,579,222.84**
Federal Agency							
3133ECT79	13062701	Federal Farm Credit Bank	1.000	03/01/2017	0.00	2,000,000.00	
3133EHBA0	17030201	Federal Farm Credit Bank	1.520	03/02/2017	2,000,000.00	0.00	
3133EHEC3	17033001	Federal Farm Credit Bank	1.800	03/30/2017	2,000,000.00	0.00	
3130AAX52	17031001	Federal Home Loan Bank	1.750	03/10/2017	1,997,980.00	0.00	
3137EADR7	17031002	Fed Home Loan Mortgage Corp	1.375	03/10/2017	1,981,400.00	0.00	
3134GBAX0	17032801	Fed Home Loan Mortgage Corp	2.070	03/28/2017	1,500,000.00	0.00	
		Subtotal			**9,479,380.00**	**2,000,000.00**	**99,503,364.77**
Treasury Coupon Securities							
912828C32	14032001	United States Treasury Note	0.750	03/15/2017	0.00	1,000,000.00	
912828W55	17030801	United States Treasury Note	1.875	03/08/2017	1,986,562.50	0.00	
		Subtotal			**1,986,562.50**	**1,000,000.00**	**30,970,474.98**
GNMA							
362174T46	87042001C	GNMA	8.000	03/15/2017	0.00	63.16	
362174T46	87042001C			03/15/2017	0.00	-0.19 **	
		Subtotal			**0.00**	**62.97**	**-0.05**
Negotiable CDs -2							

** - Indicates incomplete recording of maturity redemption.

City of Milpitas
Portfolio Management
Activity By Type
March 1, 2017 through March 31, 2017

CUSIP	Investment #	Issuer	Stated Rate	Transaction Date	Purchases or Deposits	Redemptions or Withdrawals	Balance
Negotiable CDs -2							
		Subtotal					3,250,000.00
		Total			13,572,108.00	11,176,332.29	233,428,206.73

City of Milpitas

Investment Broker Dealer List

Dreyfus Institutional Services

Mischler Financial Group, Inc.

Morgan Stanley

State of California Local Agency Investment Fund

US Bank, N.A.

Vining Sparks IBG, L.P.

	FY 15/16			FY 16/17		
	Actual	Year to Date	Percentage of Actual	Budget	Year to Date	Percentage of Budget
Revenues						
General Fund						
Property Taxes	$ 21,940,118	$ 12,142,877	55.35%	$ 21,706,000	13,187,285	60.75%
RFTTF Distributions	5,127,991	2,111,193	41.17%	5,010,000	3,509,758	70.06%
Sales and Use Taxes	24,718,975	14,026,508	56.74%	22,019,000	17,963,664	81.58%
Franchise Fees	3,841,010	1,337,062	34.81%	3,631,000	1,393,205	38.37%
Business License Tax	334,117	295,984	88.59%	355,000	300,687	84.70%
Hotel/Motel (TOT) Tax	9,401,800	5,893,142	62.68%	8,731,000	5,895,744	67.53%
Building Permits	5,871,202	4,490,344	76.48%	5,134,000	4,520,277	88.05%
Fire Permits and Inspection Fees	1,676,701	1,369,731	81.69%	1,749,600	1,899,507	108.57%
Fines and Forfeitures	460,265	286,952	62.34%	431,000	283,437	65.76%
Investment Income	691,266	269,617	39.00%	302,000	469,547	155.48%
Intergovernmental	1,266,076	841,580	66.47%	1,106,523	571,749	51.67%
Charges for Current Services	6,872,100	4,769,821	69.41%	6,727,700	4,477,470	66.55%
Other Revenue Sources	972,647	695,577	71.51%	9,889,097	7,898,151	79.87%
Total General Fund Revenue	**83,174,270**	**48,530,388**	**58.35%**	**86,791,920**	**62,370,480**	**71.86%**
Water M & O Fund						
Charges for Services	18,559,493	10,346,610	55.75%	27,357,000	14,610,896	53.41%
Sewer M & O Fund						
Sewer Service Charges	15,770,897	7,736,869	49.06%	18,578,000	8,500,382	45.76%

General Fund Expenditures by Department - March 31, 2017

Percent of Year						75%
Department/Division	Budget	YTD Expenditures	Percent Utilized	Proposed Budget Adjustment	Revised Budget	Adjusted Percent Utilized
City Council	448,216	196,123	43.76%		448,216	**43.76%**
City Manager	1,811,849	917,022	50.61%		1,811,849	**50.61%**
City Clerk	635,418	463,811	72.99%		635,418	**72.99%**
Policy Planning	**2,895,483**	**1,576,956**	**54.46%**		**2,895,483**	**54.46%**
Building & Safety	**3,852,637**	**2,328,960**	60.45%		**3,852,637**	**60.45%**
City Attorney (a)	**831,076**	**695,370**	83.67%	**119,000**	**950,076**	**73.19%**
Finance	**2,615,275**	**1,747,969**	66.84%		**2,615,275**	**66.84%**
Public Works	**6,361,543**	**4,225,173**	66.42%		**6,361,543**	**66.42%**
Engineering	**3,094,901**	**2,127,666**	68.75%		**3,094,901**	**68.75%**
Planning	**2,672,667**	**1,630,556**	61.01%		**2,672,667**	**61.01%**
Police	**28,131,289**	**19,920,158**	70.81%		**28,131,289**	**70.81%**
Fire (b)	**18,027,176**	**13,532,935**	75.07%	**408,000**	**18,435,176**	**73.41%**
Information Svcs	**2,452,668**	**1,795,009**	73.19%		**2,452,668**	**73.19%**
Human Resources	**1,296,160**	**799,165**	61.66%		**1,296,160**	**61.66%**
Recreation	**4,293,085**	**2,713,524**	63.21%		**4,293,085**	**63.21%**
Non-Departmental	**9,415,568**	**6,616,785**	70.27%		**9,415,568**	**70.27%**
Total	**85,939,528**	**59,710,226**	69.48%	**527,000**	**86,466,528**	**69.06%**

(a) - Legal services for City Attorney from BBK $ 119K budget adjustment for 3rd Party reimbursables
(b) - Budget adjustment for Mutual Aid overtime will be reimbursed by the state for $408k

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City of Milpitas, California
BUDGET CHANGE FORM

Type of Change	From		To	
	Account	Amount	Account	Amount
Check one:	100-3750	3,000	100-840-4921	3,000
☒ Budget Appropriation				
☐ Budget Transfer				

Accept Donation of $3,000 to the Milpitas Fire Department for Office of Emergency Services and Appropriate Those Funds to the Office of Emergency Services for Purchase of a Shaker Trailer - an Emergency Preparedness Educational Tool (Staff Contact: Toni Charlop, 408-586-2801)

Background: The Milpitas Office of Emergency Services (OES) is running the kids area of the Milpitas Chamber of Commerce 2017 International BBQ Festival. In the children's area, Milpitas OES wishes to provide a "Shaker Trailer" to teach the community about earthquake safety and preparedness. This year's children's area will have a focus on Emergency Preparedness Education in a fun, interactive setting that both children and their parents can learn from. Milpitas OES sought donations to assist with the cost of this unique educational tool.

Fiscal Impact: None.

Recommendation: to accept an anonymous donation of $3,000 to the Milpitas Fire Department to be deposited into the City's General Fund and appropriate the funds to the Fire Dept. Office of Emergency Services budget for the purchase of a shaker trailer from Big Shaker Enterprises, LLC.

☒ **Check if City Council Approval required.** **Meeting Date**: May 2, 2017

Requested by:	**Toni Charlop**	**Date: 4/25/17**
Reviewed by:	**Finance Director:** Jane Chapin	**Date:** 4/25/17
Approved by:	**City Manager:**	**Date:**

Date approved by City Council, if required: **Confirmed by:**

FI/24786/V **Form 30-222 (Rev. 1/92)**

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MILPITAS APPROVING THE SOLE SOURCE PURCHASE OF A RAPIDVIEW IBAK CLOSED CIRCUIT TELEVISON (CCTV) ALL-IN-ONE SEWER INSPECTION VEHICLE WITH ASSOCIATED EQUIPMENT FROM JACK DOHENY COMPANIES FOR THE NOT-TO-EXCEED AMOUNT OF $337,528.00

WHEREAS, there are currently over 173 miles of sanitary sewer pipelines owned and operated by the City of Milpitas ("City"); and

WHEREAS, the State Water Resources Control Board Order No. 2006-0003-DWQ requires sanitary sewer operators to develop a rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency; and

WHEREAS, the plan should include regular visual and TV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation; and

WHEREAS, consistent with this Order, the City of Milpitas Sanitary Sewer Management Plan section 4.3 states that the City shall establish a CCTV program for assessing sanitary sewer pipelines; and

WHEREAS, after evaluating multiple CCTV all-in-one sewer inspection vehicles on the market, including Envirosight, CUES, Pipe Vision, and RapidView IBAK, Public Works staff determined that the RapidView IBAK CCTV all-in-one sewer inspection vehicle best met the requirements of the City's CCTV program; and

WHEREAS, pursuant to Milpitas Municipal Code Section I-2-3.09, the Purchasing Agent has designated Jack Doheny Companies as the sole source for this purchase in that it is the sole distributor in California for RapidView IBAK, which is the only manufacturer to offer such unique features as the Orion® and Orpheus 2.0® zoom pan and tilt cameras, the only cameras upgradable to PANORAMO 360 degree digital pipe line scanning capability, T66 small camera and T76 large camera steerable tractors with anti-tilt compensation, BS7 vehicle mounted control panel for all systems, 2-axis high strength cable connections rated to 2,000 pounds, and a ten-year spare parts guarantee. No other vendor, entity or manufacturer offers these proprietary features. RapidView IBAK also invented the sewer camera in 1957; and

WHEREAS, the initial purchase price includes the RapidView IBAK CCTV all-in-one sewer inspection vehicle mounted on a Ford E450 chassis and with one Orion® and one Orpheus 2.0® zoom pan and tilt camera, one T66 small camera and one T76 large camera steerable tractors with anti-tilt compensation, BS7 vehicle mounted control panel for all systems, KW505 synchronized power reel with boom light, computer hardware, and Pipeline Assessment Certification Program inspection software, for a total not-to-exceed amount of $337,528.00.

NOW, THEREFORE, the City Council of the City of Milpitas hereby finds, determines, and resolves as follows:

1. The City Council has considered the full record before it, which may include but is not limited to such things as the staff report, testimony by staff and the public, and other materials and evidence submitted or provided to it. Furthermore, the recitals set forth above are found to be true and correct and are incorporated herein by reference.

2. The City Council hereby approves the Purchase of a RapidView IBAK CCTV all-in-one sewer inspection vehicle mounted on a Ford E450 chassis and with one Orion® and one Orpheus 2.0® zoom pan and tilt camera, one T66 small camera and one T76 large camera steerable tractors with anti-tilt compensation, BS7 vehicle mounted control panel for all systems, KW505 synchronized power reel with boom light, computer hardware, and Pipeline Assessment Certification Program inspection software for a total not-to-exceed amount of $337,528.00, as a sole source purchase, based on the Purchasing Agent's designation of Jack Doheny Companies as the sole source for this purchase.

PASSED AND ADOPTED this ____ day of _____, 2017, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

APPROVED AS TO FORM:

_____
Christopher J. Diaz, City Attorney

APPROVED:

_____
Rich Tran, Mayor

ATTEST:

_____
Mary Lavelle, City Clerk

*11B

Jack Doheny COMPANIES

777 DOHENY COURT
PO BOX 609
NORTHVILLE MI 48167

t 248.349.0904
f 248.349.2774

April 3, 2017

James Levers
City of Milpitas
1265 N. Milpitas BLVD.
Milpitas, CA. 95035
408-586-2648

Dear Mr. Levers,

We are pleased to provide you with a budget proposal for the following equipment:

CAMERA

ORION Zoom Pan and Tilt Camera With 3X Digital Zoom, With Case $ 19,147.00
(Requires Additional Software for Laser Measuring Capability)

For 4" pipe and larger
LED lighting
Auto-uprighting, LED Lighting and 33Hz Transmitter for locate
Wide angle of view = 90º
Laser diameter, deformation, defect and object measurement (third-party software required - not included)
3X Digital Zoom (allows dynamic viewing up into laterals and further down the pipeline)

ORPHEUS 2.0 Pan and Tilt Camera With Zoom With Case $ 28,720.00

For 6" pipe and larger
LED lighting
Auto-uprighting, LED Lighting and 33Hz Transmitter for locate
Integrated detector transmitter and transport case
10x Optical zoom, 4x digital zoom
Dual diode laser measurement

Pressure Test Set for JUNO / ORION / ORPHEUS, Hand pump with air dehumidifier and pressure gauge

T66 Small Camera Steerable Tractor	$	12,395.00
For operation in lined 6" and up pipelines		
Zero radius steering		
Automatic Tilt Compensation (ATC)		
Lowering Claw, toolset and spare parts		
Includes 5", 6", 8" and 10" wheelsets		
Camera Connection Type 2 for T66 (Standard Straight Connector)	$	1,248.00
Treaded Wheel set for 5" pipe for T66 (HARD Wheel)	$	628.00
Treaded Wheel set for 6" pipe for T66 (HARD Wheel)	$	859.00
Granulated Wheel set for 5" pipe for T66	$	728.00
Granulated Wheel set for 6" pipe for T66	$	894.00
High-Traction Carbide Wheels for 4", 5" & 6" Pipe	$	2,859.00
T76 Steerable Large Camera Tractor	$	21,862.00
For operation in 5" pipe or larger		
Lowering Claw, toolset and spare parts		
Steerable Camera carriage with Zero Turn Radius and Auto Tilt Compensation (ATC)		
Test adapter, lowering claw ASG5		
Maintenance tools and Bolt Set		
Wheel set 86 For 5," 6", 8", 10" Pipe		
Applicators for Wheel Change		
(2) sets of rubber tires for each wheel size		
Camera Base Module for T76 Tractor (Required for operation of T76 as mainline tractor) Includes integrated transmitter for location	$	4,171.00
Remote Elevator for T76 (Raises the camera to allow centering in pipeline) - lifts camera above water line in pipes with flow	$	7,168.00
Small Pneumatic Tires (set of 4) for T76 /86 / PANORAMO / LISY (Grey)	$	1,320.00
Large Pneumatic Tires (set of 4) for T76 /86 / PANORAMO / LISY (Black)	$	1,355.00
T76/86 Treaded Wheelset for 8" and up (Brown/Hard), Includes hubs and replaceable tires (set of four)	$	1,387.00
High-Traction Carbide Wheels for 8" Pipe	$	1,325.00
Tool Set for T76		

Tractor Lowering Hook With Quick Disconnect

SYSTEM CONTROL UNIT

BS7 - Vehicle Mounted Control Panel for ALL SYSTEMS	$	31,400.00

Includes rack-mount PSU
Ergonomic control and diagnostic panel
Keyboard and joysticks
Controls all systems including PANORAMO
Required for KW505 reel operation
Does not inlcude rack VZ000912

CABLE AND REEL

KW505 Synchronized Power Reel with Boom Light (FO for Fiber Optic) (Requires Cable #802908930 Cable Adaptor required for Non-Fiber cable) (Panoramo)	$	32,660.00
KUV 2.7 Cable Deflection Pulley for Fiber Optic & Standard Cable	$	694.00
Rack: KW Reel cabinet with 2 Aluminum sliding drawers (mandatory for	$	2,500.00
FO Camera Cable Type 00/12 - 1640 feet	$	14,048.00
KUV 5.1 Upper Deflection Guide Pulley attaches to Type KW305 / KW505 Reel (to keep cable tension for off-site use)	$	1,056.00

COMPUTER HARDWARE

Standard 19" Rack Mount Computer with (2) 19" LCD Flat Panel Monitor, Keyboard / Mouse Combo, 240 gB solid state hard disk for operating system, 2tB internal Hard Disk for data storage, Multi-Format Read / Write DVD Burner, 4gB RAM, PCI Express Slot Video Card, Windows Operating System, Windows 7-32Bit Operating System	$	4,344.00
Panoramo PC Baumer Card for install (Required for Panaramo)	$	3,143.00
PACP Inspection Software	$	25,000.00

CHASSIS

Current Model Ford E450 Gasoline 14,200 GVWR with 16' Hi-Cube body	$	40,500.00

BODY OUTFITTING

Inspection van body outfitting - Gasoline Chassis	$	32,500.00
5500 watt gasoline generator mounted above deck and tied to chassis fuel system		
13,000 BTU roof mounted air conditioner		
Insulated, 7/16" plywood and White Kemlite covered walls		
Black Diamond Plate design PVC floor covering		
Partition wall with Diamond Plate and Windowed Door		
Formica Cabinetry		
Formica Countertop & lockable office file cabinet		
7-Drawer Tool box		
Roof mounted stobe light kit		
Studio LCD Flat panel monitor with speakers		
Rear Facing LCD Monitor in Equipment Room		
Equipment washdown system: 15 gallon		
Dual roof mounted 22 watt strobes installed		
Rear LED arrow board mounted	$	1,147.00
Rear vision camera with dash mounted monitor	$	894.00
RadioDetection RD7000 Locating Receiver with Soft-sided Carrying Case	$	2,258.00
Fiberglass Abrasion Resistant Safety Ring for Manhole	$	250.00
Delivery, Prep and Onsite Training	$	9,690.00
PRICE:	**$**	**309,200.00**
Santa Clara County Tax @ 9%	**$**	**27,828.00**
Registration Fees:	**$**	**500.00**
		$337,528.00

Note: This quotation expires in 30 days.

Thank you for your consideration of this budget price proposal.

Sincerely yours,

Kevin Kelly
Regional Sales Rep.
916-955-9819
kevinkelly@dohenycompanies.com

*11C

RapidView IBAK North America

April 17, 2017

To whom it may concern:

Jack Doheny Supplies, Inc. is RapidView IBAK North America's only distributor for the contractor and municipal markets in California.

RapidView IBAK North America, and its dealers are the only source for advanced fiber optic mainline pipe inspection systems including the fiber the optic control system (BS7) and PANORAMO 360° scanning technology for pipelines and manholes. It is also the only provider of advanced optical inspection cameras and transporters such as the T66, T76, ORION®, and ORPHEUS 2.0®. We understand that choosing pipeline inspection equipment is a large decision, and our goal is to provide our customers with the best value in the industry.

1. We are the only manufacturer to offer ATC (anti-tilt compensation) which is an intelligent system that steers the tractor back to the center of the pipe, dramatically reducing damage from flip-overs.
2. We are the only manufacture of 2-axis, high strength connectors rated for 2,000lbs of force to reduce strain on the cable to help avoid damage.
3. We offer the industry's only 10-year spare parts guarantee.
4. IBAK is the world's oldest, and largest pipeline inspection manufacturer, and has been creating quality inspection tools since we invented pipeline inspection cameras in 1957.
5. All IBAK equipment is tested multiple times throughout the manufacturing and installation process, resulting in 100% quality checks.
6. All components are hand-assembled and tested by trained technicians.
7. Over 93% of all parts, including electronic components are made in-house, allowing us to keep equipment in service for decades.
8. All manufacturing is conducted to ISO 9001 standards.
9. All imaging equipment is designed specifically for use in pipelines, avoiding the use of consumer products whenever possible.
10. RapidView IBAK North America and its dealers maintain over $4,000,000 in parts and accessories inventory in the U.S. and Canada, ready for immediate shipment.
11. Over the last decade our revenue generated by spare parts and repairs has never exceeded 11% of our total income. We are proud of this statistic, because it demonstrates the value, quality and long-term ROI that you can expect from our equipment.
12. Our data shows that average repair, maintenance and replacement costs for a RapidView IBAK system in North America has averaged less than $2000 per year, over the last decade.

13. We pride ourselves on training our customers. We offer free, hands-on, repair and maintenance training throughout the year at our Rochester, Indiana facility.
14. Our integrated command and control systems are easily upgraded and depending on your choice of system, can run any of the equipment we offer. Simply connect the equipment and the controller finds it and loads the appropriate control software.
15. Our systems are ergonomically designed, offering many features that aid in production and provide increased safety.

Thank you for the opportunity to provide you with this information. We hope that we can serve you in the future.

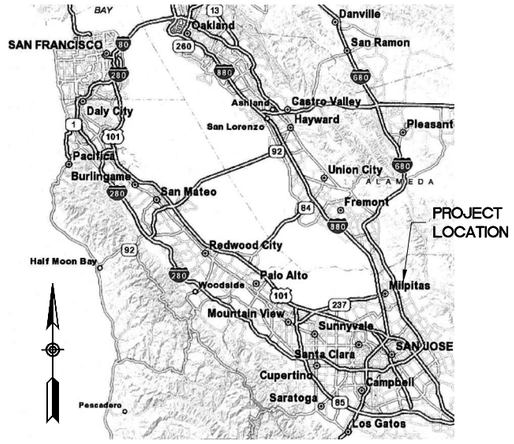
If you have any questions regarding this, please contact us.

Sincerely,

Matt Sutton
VP Sales and Marketing
RapidView IBAK North America
574-224-5427

*12

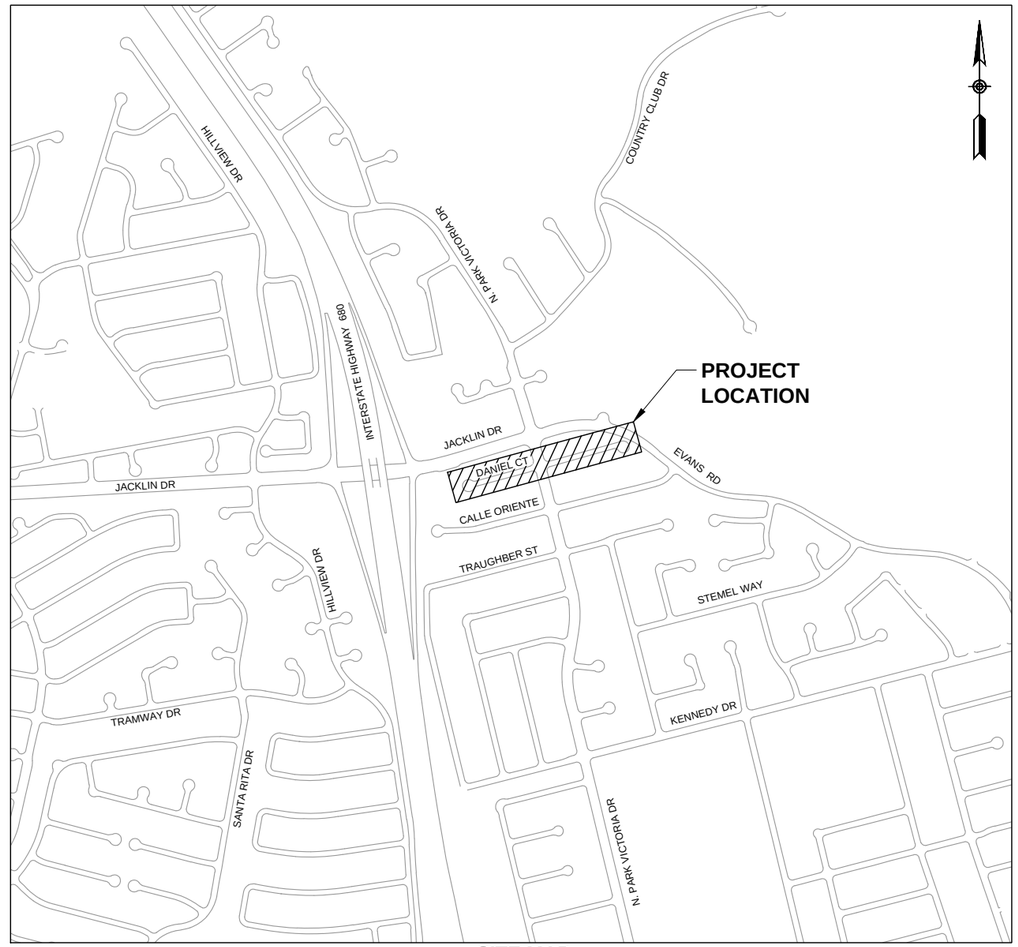
CITY OF MILPITAS
DANIEL COURT WATER MAIN AND SERVICE REPLACEMENT
PROJECT NO. 7110 & 7131



VICINITY MAP
N.T.S

SHEET INDEX

PAGE	SHEET	TITLE	STATION
1	G-1	TITLE SHEET	
2	G-2	GENERAL NOTES	
3	G-3	ABBREVIATIONS, LEGEND, SURVEY CONTROL AND POTHOLE LOCATIONS	
4	G-4	BUILDING & SAFETY DEPARTMENT BLUEPRINT FOR A CLEAN BAY	
5	C-1	PLAN AND PROFILE (1)	STA 10+00 TO STA 13+50
6	C-2	PLAN AND PROFILE (2)	STA 13+50 TO STA 16+50
7	C-3	PLAN AND PROFILE (3)	STA 16+50 TO STA 20+82
8	C-4	PAVEMENT PLAN	
9	D-1	CITY STANDARD DETAILS (1)	
10	D-2	CITY STANDARD DETAILS (2)	
11	D-3	CITY STANDARD DETAILS (3)	
12	D-4	CITY STANDARD DETAILS (4)	
13	D-5	WATER SERVICE LATERAL DETAILS	
14	D-6	WATER SERVICE LATERAL PHOTOS	
15	D-7	ADDITIONAL DETAILS	



SITE MAP
N.T.S

PRELIMINARY PLAN ONLY
NOT FOR CONSTRUCTION

90% SUBMITTAL
04/20/2017

Plotted: Apr 19 , 2017 , 3:58pm by R0061802 Last Saved: Apr 19 , 2017 , 3:57pm by R0061802
File: C:\pwworking\hmm\water_wastewater\wo061802\w0250678\G-01.dwg SYS: VISRETAIN=1, PSLTSCALE=1, LTSCALE=1
Xref: | CSC-CNTR | XREF-Utility_basemap | G-TTBL

MOTT MACDONALD
181 Metro Drive
Suite 510
San Jose CA 95110
United States of America
T +1 (408) 572 8800
F +1 (408) 572 8799
www.mottmac.com/americas

Designer Stamp:

REGISTERED PROFESSIONAL ENGINEER
TRACIE K. SANAKTHERA
C 37141
CIVIL
STATE OF CALIFORNIA

Record Drawings

Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Utility/Facility Dept. Head: _____ Date: _____
Project Engineer: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____ Res. No. _____

Drawn By: PR Date: 04/19/17
Checked By: TG Date: 04/19/17
Designed By: PR Date: 04/19/17

Revisions

Num.	Description	Engr. Aprv.	Date

CITY OF MILPITAS
CALIFORNIA
JANUARY 25, 1954

CITY OF MILPITAS
ENGINEERING DIVISION

DANIEL COURT WATER MAIN AND SERVICE REPLACEMENT
PROJECT NO. 7110 & 7131

TITLE SHEET

RECOMMENDED FOR BIDDING BY: _____ DATE: _____
STEVE P. ERICKSON, CIP MANAGER

APPROVED FOR BIDDING BY: _____ DATE: _____
Greg Chung, PE. Interim City Engineer

MM PROJECT NO. 328300
Dwg No. G-1
SCALE: Hz: NONE Vt: NONE
SHEET 1 OF 15