

July 26, 2016
Santa Clara Valley Urban Runoff
Pollution Prevention Program
San Jose, CA



Trash Assessment Workshop
On-Land Visual Assessment Protocol

Santa Clara Valley Urban Runoff Pollution Prevention Program
Andrea Trese Associate Engineer atrese@coajine.com
Chris Sommers Managing Scientist csommers@coajine.com
EOA

Workshop Agenda

- Workshop Objectives and Background
 - Impetus for conducting visual assessments
 - Defining geographical areas of interest
- Performing Assessments
 - Field observation techniques
 - Assessment areas and timing
 - Field Forms and Assessment Scores
- Practice – Example Assessments
 - Complete example trash assessments in small groups (3 sites)
- Discussion/Q&A/Workshop Evaluation

Trash Sources and Pathways to Urban Creeks



Litter

from Pedestrians

from Cars and Trucks

from Garbage and Recycling Bins

Stormwater Conveyance Systems

is transported by

Wind

Dumping

affecting beneficial uses

to Bay Area waterways

Trash Sources and Pathways to Urban Creeks

Litter

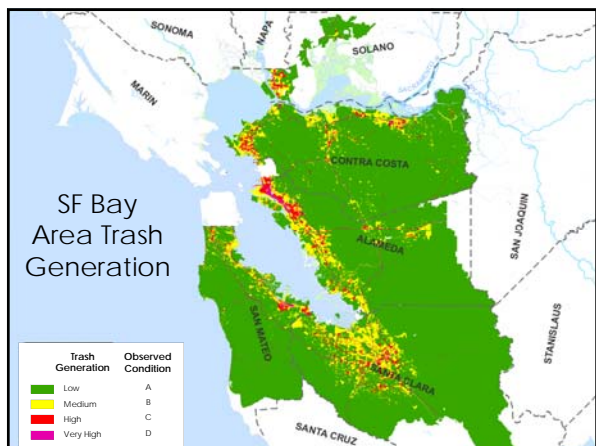
Stormwater Conveyance Systems

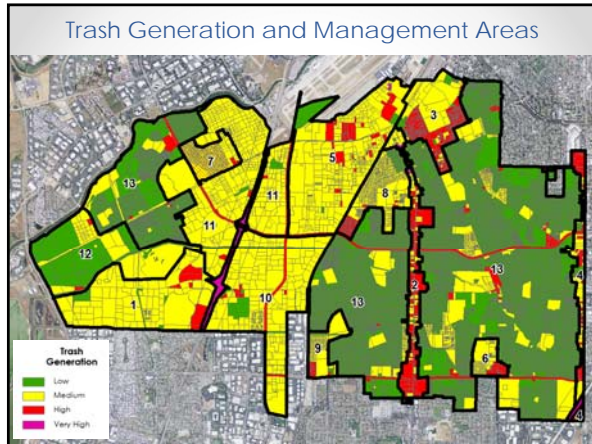
affecting beneficial uses

In 2009, requirements to reduce trash included in municipal stormwater permit for first time

SF Bay Area Stormwater Requirements

- Attain a **70% reduction** in trash from stormwater systems within **7.5 years (2017)**
- Attain an **80% reduction** in trash from stormwater systems within **9.5 years (2019)**
- **No adverse impact** by trash from stormwater systems within **12.5 years (2022)**





Control Measures



Full Capture Devices

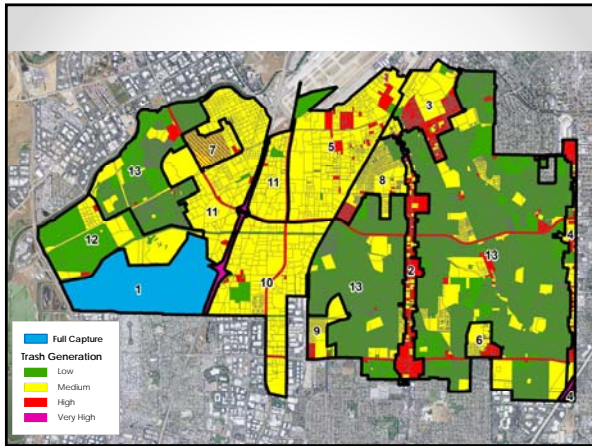
Other Control Measures

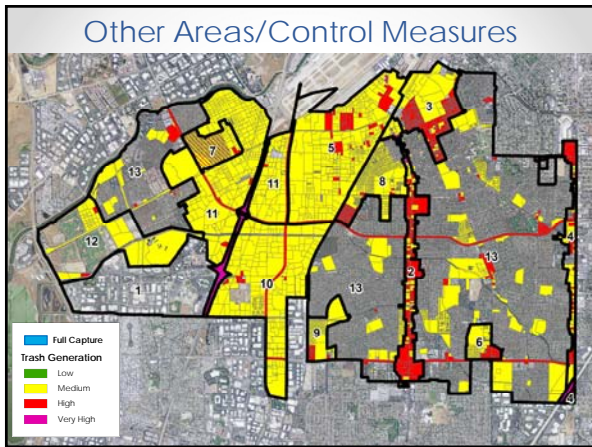
- o Product-based ordinances
- o Institutional Controls (e.g., street sweeping)
- o Pub Ed & Outreach
- o Improved Waste Management
- o On-land cleanups
- o Creek and shoreline cleanups
- o More challenging to demonstrate effectiveness/progress



Primary Assessment Indicators

Trash Full Capture Areas	Other Areas & Control Measures	Creeks and Shorelines
		





Assessment Approach
Other Areas/Control Measures

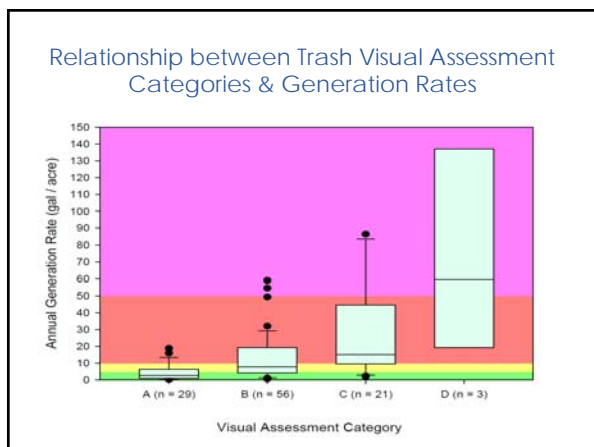
- Trash quantification is challenging and expensive
 - 10,000's of storm drain inlets
 - 1,000's of outfalls (pipes)
 - Large land areas – 10,000's of acres
 - Temporal and spatial variability

Need for a cost-effective and moderately precise method to assess progress in VH/H/M trash generating areas

On-land Trash Visual Assessment Method

- Rapid visual (qualitative) assessment of the magnitude of trash on streets and public right-of-ways
- Assessment Area
 - - 1000 linear curb feet
 - Street center line to front of adjacent property
- Two person crew, 15-20 minutes per site (20-30/day)
- Similar to Keep America Beautiful (KAB) Index
- Scores = A (Low) to D (Very High)







Assessment Protocol

- Introduction
- Personnel, Equipment
- Assessment area
- Assessment timing
- Trash Condition Categories



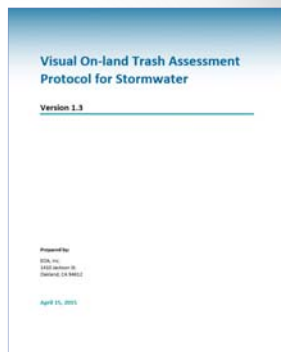
Assessment Protocol

- Introduction
- **Personnel, Equipment**
- Assessment area
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Assessment Protocol

- Introduction
- Personnel, Equipment
- **Assessment area**
- Assessment timing
- Trash Condition Categories



Assessment Area

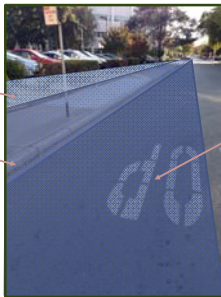
- The length of the assessment is defined by the yellow line on the assessment field form
- Each assessment is approximately 1000 ft. long



Assessment Area includes visible area draining to street / storm drain

Vegetation and/or parking lots draining to the street

Sidewalk and Gutter



Street – to center line, including median.

Assessment Area does **NOT** include:

- The opposite side of the street
- A ditch not draining to the street
- An area blocked by a fence or wall restricting trash movement
- Trash embedded in vegetation that would not mobilize during rain, wind or mowing
- Areas draining to inlets not located in the public right-of-way (i.e. street)
 ★ Being addressed through separate MRP requirements

Assessment Protocol

- Introduction
- Personnel, Equipment
- Assessment area
- **Assessment timing**
- Trash Condition Categories



Assessment Timing

Assessments should be conducted halfway between sweeping events to depict average conditions



Assessment Timing

- **Example 1:** If a site is swept twice monthly, on the 1st and 3rd Thursday, when should you assess?
 - Ideally, the 2nd or 4th Thursday (flexible within a few days)
- **Example 2:** If a site is swept weekly on Friday, when should you assess?
 - Monday or Tuesday

Assessment Timing

- Do not perform an assessment after a significant rainfall event.
- A significant rainfall event is defined as: **more than 0.5 inches within a 24 hour period**
- Assessments should not be conducted **within 48 hours** of a significant rainfall event.
- Check recent rainfall by visiting:
 - http://cdps.water.ca.gov/precip_maps/24hrprecip.html or
 - <http://www.weather.gov/mtr/vesproch.php?93-808&qt=4&A>
- Check forecasted rainfall by visiting:
 - <http://www.weather.gov/forecastmaps>. Type in the zipcode and navigate to the hourly weather graph at the bottom right of the page.

Assessment Protocol

- Introduction
- Personnel, Equipment
- Assessment area
- Assessment timing
- **Trash Condition Categories**



Definition of Trash

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 waters of the state.

Definition of Trash

- For the On-Land Visual Assessment Protocol, trash does **NOT** include:
 - Organic material such as vegetation, yard clippings, food wastes (apple cores, banana peels, etc.) or pet wastes
 - Sediments, sand, oil, and grease
 - Things that are too large to fit in a storm drain, such as mattresses, tires, or contained bags of trash



On-land Visual Assessment Categories



A – Not Littered



A – Not Littered

- Effectively no trash is observed in the assessment area.
- Approximately less than one piece per two car lengths on average.
- There may be some small pieces in the area, but they are not obvious at first glance.
- One individual could easily clean up all trash observed in a very short timeframe.

B – Slightly Littered



B – Slightly Littered

- Predominantly free of trash except for a few littered areas.
- On average, approximately one piece per two car lengths.
- The trash could be collected by one or two individuals in a short period of time.

C – Littered



C – Littered

- Predominantly littered except for a few clean areas.
- Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
- At least two or three pieces per car length on average
- It would take a more organized effort to remove all trash from the area.

D – Very Littered



D – Very Littered

- Trash is continuously seen throughout the assessment area.
- Large piles are present and there is a strong impression of lack of concern for litter in the area.
- There is often significant litter along gutters.
- It would take a large number of people during an organized effort to remove all trash from the area.

Field Form

- Use the field form to locate your site.
- Walk the length of the site and, with your partner, select a category to describe your observations.

Visual Trash Assessment Form Assessment ID: CCT0001

Staff: _____ Date: _____ Duplicate:



Trash Observed:

1. Trashed Site	4. Overflowing Trash Receptacles	8. Parking Lot
2. Convenience Store/Gas Station	5. Disposal from Curbside Pickup	9. Illegal Dumping
3. Restaurant/Cafe	6. Construction Site	10. Other
	7. Special Event (e.g. farmers market, fair)	

Observed Trash Category: _____ Substantial Variation in Category? yes / no

of Plastic Bags Observed: _____ Substantial Litter Trash Picture ID # _____

Posted Street Sweeping Schedule: _____

Percent Food & Beverage: none 0-25% 25-50% 50-75% 75-100% NA

Comments: _____

Field Form

- Use the field form to locate your site.
- Walk the length of the site and, with your partner, select a category to describe your observations.

Visual Trash Assessment Form Assessment ID: CCT0001

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3. Restaurant/Cafe	6. Construction Site	10. Other
	7. Special Event (e.g. farmers market, fair)	

Observed Trash Category: **B** Substantial Variation in Category? yes / no

of Plastic Bags Observed: _____ Substantial Litter Trash Picture ID # _____

Posted Street Sweeping Schedule: _____

Percent Food & Beverage: none 0-25% 25-50% 50-75% 75-100% NA

Comments: _____

Splitting an Assessment

- Mark the segments and indicate the category assigned on the map using a marker.

Visual Trash Assessment Form

Assessment ID: CCT0981

Sub: _____ Date: _____

Map Details:

1. Street Name	4. Construction Type/Structure	6. Parking Lot
2. Cornerstone (Street/Corner Station)	5. Disposal Type (Garbage Pickup)	7. Illegal Dumping
3. Resurfaced/Asphalt	8. Construction Site	8. Other
9. Special Event (e.g. Farmers market, fest)		

Observed Trash Category: _____ Substantial Variation in Category? **Yes**

of Plastic Bags Observed: _____ Substantial Trash Load? **Yes**

Plastic Waste Recycling Schedule: _____

Forward Food & Beverage: **None** 0-25% 26-50% 51-75% 75-100% **N/A**

Comments: _____

Splitting an Assessment

- Circle "yes" for *Substantial Variation in Category* on the form.

Visual Trash Assessment Form

Assessment ID: CCT0981

Sub: _____ Date: _____

Map Details:

1. Street Name	4. Construction Type/Structure	6. Parking Lot
2. Cornerstone (Street/Corner Station)	5. Disposal Type (Garbage Pickup)	7. Illegal Dumping
3. Resurfaced/Asphalt	8. Construction Site	8. Other
9. Special Event (e.g. Farmers market, fest)		

Observed Trash Category: _____ Substantial Variation in Category? **Yes**

of Plastic Bags Observed: _____ Substantial Trash Load? **Yes**

Plastic Waste Recycling Schedule: _____

Forward Food & Beverage: **None** 0-25% 26-50% 51-75% 75-100% **N/A**

Comments: _____

Splitting an Assessment

- Still record one overall category for the assessment.

Visual Trash Assessment Form

Assessment ID: CCT0981

Sub: _____ Date: _____

Map Details:

1. Street Name	4. Construction Type/Structure	6. Parking Lot
2. Cornerstone (Street/Corner Station)	5. Disposal Type (Garbage Pickup)	7. Illegal Dumping
3. Resurfaced/Asphalt	8. Construction Site	8. Other
9. Special Event (e.g. Farmers market, fest)		

Observed Trash Category: _____ Substantial Variation in Category? **Yes**

of Plastic Bags Observed: _____ Substantial Trash Load? **Yes**

Plastic Waste Recycling Schedule: _____

Forward Food & Beverage: **None** 0-25% 26-50% 51-75% 75-100% **N/A**

Comments: _____

Sites Lacking Pedestrian Access

- Sites should include sidewalks or safe walking area: **skip the assessment if it is unsafe to walk**
- If construction blocks pedestrian passage for half of the assessment or more, write this on the form and skip the assessment
- If passage is blocked for less than half of the site, shorten the assessment to the accessible area (mark on field form)

Eliminating Bias

- **Do I need to distinguish between types of trash material, sources, or land use types?**
 - No. Consider the trash volume and quantity only. Do not bias your scores based on material, source, size of road, condition of road or sidewalk, or the surrounding environment.
 - If you wish, you may add details about types or sources in the comments section.

Eliminating Bias

- **What if I see a significant trash source/issue just outside the assessment area?**
 - Don't let any trash outside the assessment area influence your scores, but add useful information to the comments section and take photos for your municipal staff to reference.

Outdoor Practice

Site Rotation Matrix

	1 st	2 nd	3 rd
Group A	Site 1	Site 2	Site 3
Group B	Site 2	Site 3	Site 1
Group C	Site 3	Site 1	Site 2



Assessment Site Selection

Random: data from randomly selected sites to be extrapolated to the Trash Management Area (TMA) as a whole. Creation of a "sample frame" and "sample draw" necessary.

Targeted: chosen intentionally and data extrapolation may be challenging, possibly only used to describe land directly adjacent to the street length assessed.

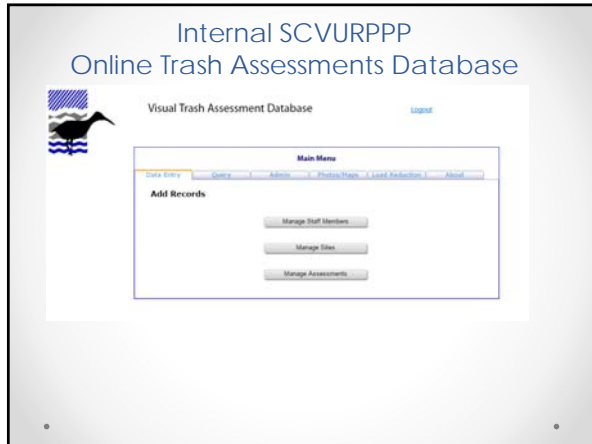
Data Quality Assurance and Management

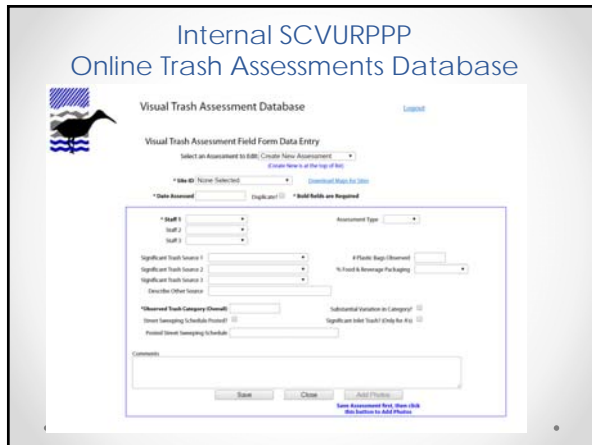
Quality Assurance

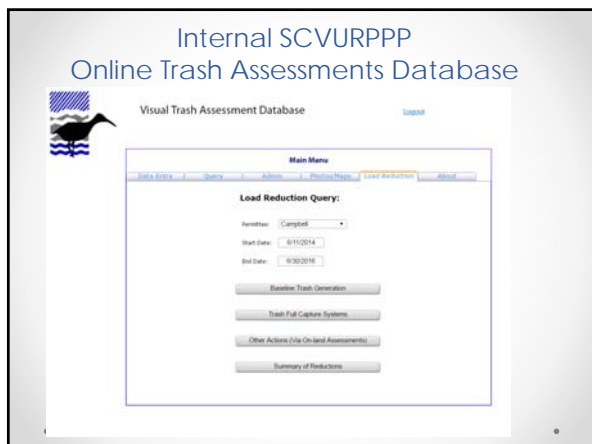
- Training of field crews is necessary for consistency
- Two-person crews reduces bias, allows inter-calibration
- Formal inter-calibration between crews also helpful

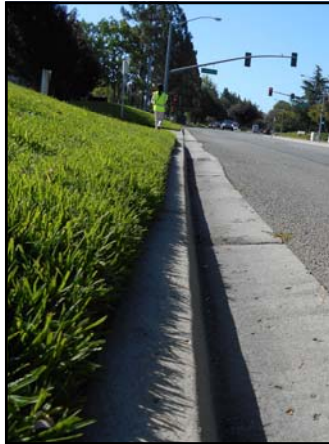
Data Management

- Check over your field forms at the end of the day to make sure that everything is filled out correctly
- Type your data into the online database as soon as possible after data collection
- Upload photos and completed field forms









Workshop Summary

- Focused on M/H/VH areas addressed by actions other than full capture systems
- Qualitative, but more cost-effective than measuring volumes
- 15-20 minutes per site with two crew members
- Assessments conducted halfway between on-going control measure implementation
- Quality assurance, including training, key to accuracy of results

Thank You

Andrea Trese
EOA, Inc.
atrese@eoainc.com
510-832-2852 x120

