IMPLEMENTATION PLAN TO MEET STATE WATERBOARD’S TRASH PROVISION TRACK 2

Prepared by:
LAKE COUNTY CLEAN WATER PROGRAM
July 1, 2019

Lake County
City of Lakeport
City of Clearlake
LAKE COUNTY CLEAN WATER PROGRAM IMPLEMENTATION PLAN TO MEET STATE WATER BOARD’S TRASH PROVISION
TRACK 2

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 assure 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.”

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David Cowan, Director of Lake County Water Resources Department

___________________________
Kevin Ingram, Director of Community Development, City of Lakeport

___________________________
Alan Flora, City Manager, City of Clearlake
ABBREVIATIONS

**BMPs** = Best Management Practices  
**CDD** = Community Development Department  
**DPS** = Department of Public Services  
**FCS** = Full capture system (structure at end of drain to catch trash, easy to collect trash, easy to install, easy to maintain, expensive, but easy to measure, remove, and track effectiveness)  
**FCSE** = Full capture system equivalency (combination of full capture and non-structural methods to reduce trash to the same capacity as a FCS, hard to measure, easy to implement, hard to track effectiveness)  
**MS4** = Municipal Small Phase II Stormwater Program  
**OVTA** = On-Land Visual Trash Assessment methodology produced by EOA, Inc.  
**PLU** = Priority land use (specific areas the state wants us to measure for trash levels)  
**TAMLE** = Recommended trash assessment minimum level of effort (lowest amount of effort to assess trash generation for PLU), this is an established method provided by water boards, any deviation needs to be explained and justified (section 4a.)  
**TGR** = Trash Generating Rates (how much trash a specific area, land use, monitoring site generates. For purposes of PLUs, TGR indicate the average amount of trash a specific land use generate, for example a high density residential (HDR) might have a trash generation rate of 2000 lb / yr. or 53% at A and 25% at B generation levels etc.  
**TMA** = Trash Management Areas  
**WRD** = Water Resources Department of Lake County, CA
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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this implementation plan is to fulfill the requirements of State Water Resources Control Board (Water Board) Water Code Section 13383 Order to submit Method to Comply with Statewide Trash Provisions for traditional small municipal separate storm sewer system (MS4) permittees (Appendix 1). In Lake County, the MS4 is administered and implemented by four co-permittees collectively referred to as the Clean Water Program. The Clean Water Program is a joint effort between the County of Lake, the Lake County Watershed Protection District, the City of Lakeport, and the City of Clearlake. For the purposes of this report, the County of Lake and the Lake County Watershed Protection District are considered one entity, for compliance and implementation requirements of the Trash Provisions.

On April 7th, 2015, the Water Board adopted statewide Trash Provisions to address the pervasive impact trash has on the beneficial uses of our surface waters. Throughout the state, trash is typically generated on land and transported to surface water, predominantly through MS4 discharges, or infrastructure that is under MS4 regulations, under a statewide Phase II MS4 Permit pursuant to section 402(p) of the Federal Clean Water Act.

The Trash Provisions establish a statewide water quality objective for trash and a prohibition of trash discharge, or deposition where it may be discharged to surface waters of the State. Additionally, the Trash Provisions require implementation of the prohibition through requirements incorporated into the Phase II MS4 Permit and/or through monitoring and reporting orders, by June 2, 2017. The State Water Board did not amend the existing Phase II MS4 Permit within the time frame specified by the Trash Provisions. Therefore, the initial steps in planning for the implementation of the Trash Provisions are required through the 13383 order in accordance with Water Code section 13383, as specified in the Trash Provisions, 1624 and as further authorized by Clean Water Act section 308(a) and 40 Code of Federal Regulations part 122.41 (h). This implementation plan, submitted in response to the Order, is subject to approval by the State Water Board and the Central Valley Regional Water Quality Control Board (CVRWQCB).

The Trash Provision requires Phase II MS4 permittees with regulatory authority over Priority Land Uses (PLUs) to select a method of compliance with the trash prohibition. The first step to meeting compliance is for all Phase II MS4 permittees to determine and report their selection of either the Track 1 or Track 2 compliance method.

On August 30, 2017, the former Water Resources Director at the time, Phil Moy, submitted a letter indicating the selection of Track II to meet the trash compliance
methods (Appendix 2), for Lake County Clean Water Program Co-permittees. The required preliminary jurisdictional maps were submitted through SMARTS on March 1, 2018 as provided in an extension request.

Track II compliance requires the permittees to select priority land uses or use those defined by the state where implementation of a combination of controls will achieve Full Capture System Equivalency (FCSE) when measuring pre-implementation and post implementation trash generation rates. Combination of controls includes either structural or source controls and/or combinations of both to reduce trash generation or remove trash from entering waterways. Jurisdictional maps will include the PLUs as identified by the state to generate the most trash as well as any additional land uses selected by the permittees that are known to also generate trash.

Along with the submission of these jurisdictional maps, the order requires that all Phase II MS4 permittees that elect Track II compliance must conduct and submit trash assessments to identify existing levels of trash generation. The minimum requirements within Track II compliance include completing baseline trash assessment surveys within the PLU areas and any additional land use areas selected by the permittees. Within Lake County, only the required PLUs were included in trash assessments.

Information resulting from the trash assessments is necessary to develop appropriate requirements and provisions in the future Phase II MS4 Permit reissuance, including:
   1) Establishing a baseline for compliance tracking and determinations,
   2) Establishing interim milestones to demonstrate progress towards 100 percent compliance with the Trash Provisions within 10 years of the effective date of the implementing permit,
   3) Evaluating the permittees' planned implementation of Full Capture System Equivalency, and in
   4) Approval of the implementation plan by the Water Board.

Additionally, the areas selected for surveying from the assessments can be used to monitor and evaluate the effectiveness of trash-reducing methods as outlined in this trash implementation plan during current and future Phase II MS4 Permit periods. Once baseline trash generation levels are determined, subsequent surveys will be considered effectiveness assessments and be used to evaluate and monitor the progress of achieving the milestones as outlined in this plan and as required by future Phase II MS4 permits.

The original deadline for submitting this implementation plan was December 1, 2018. However, due to staff turnover and expired legal documentation governing the Clean Water Program, the three co-permittees requested a six-month extension for completing the remainder of the trash provisions, to be completed by July 31, 2019 (Appendix 3a & Appendix 3b). The water board graciously approved the requested extension for subject materials to be completed and submitted by July 1, 2019 (Appendix 4). The subject material, as specified in the SMARTS reporting system and as part of the original 13383 order includes the following:
1) An updated jurisdictional map(s) identifying the following:
   a) All Priority Land Use areas and selected locations and land uses, 
      discharging to the storm drain network;
   b) The corresponding storm drain network;
   c) Proposed locations of all certified Full Capture Systems and where any 
      combination of controls will be implemented that will achieve Full Capture 
      System Equivalency;
   d) Trash levels, using the methodology described in the attached 
      recommended Visual Trash Assessment Approach or other equivalent 
      trash assessment methodology, for all Priority Land Uses within the MS4s 
      jurisdiction if proposing to implement any combination of controls;

And,

2) An Implementation Plan that includes the following:
   a) The rationale for how the selected combination of controls will achieve Full 
      Capture System Equivalency;
   b) The rationale for how Full Capture System Equivalency will be 
      demonstrated;
   c) If using a methodology other than the attached recommended Visual 
      Trash Assessment Approach to determine trash levels, a description of 
      the methodology used and rationale of how the alternative methodology is 
      equivalent to the recommended Visual Trash Assessment Approach;
   d) If proposing to select locations or land uses other than Priority Land Uses, 
      a rationale demonstrating that the alternative land uses generate trash at 
      rates that are equivalent to or greater than the Priority Land Uses.

For this Trash Provision Implementation Plan, the following applies:
   a) No additional or alternative priority land uses were identified in Lake 
      County, Lakeport, or Clearlake MS4 jurisdictions;
   b) The baseline trash assessments were based on the provided Visual Trash 
      Assessment Approach methodology,
   c) Each co-permittee, depending on their PLUs, staffing level, and internal 
      governing structure, might have slightly modified methods, map 
      presentations and formats, rationale for achieving FCSE, and timelines to 
      achieve milestones.

1.2 Compliance Approach
Track II was chosen as the preferred compliance method due to the rural and 
distributed nature of the MS4 boundaries of the Lake County Co-Permittees. For 
example, Lake County jurisdiction is spread over approximately 11 different distinct 
areas within the county (Figure 1), and both the cities of Lakeport and Clearlake have 
different municipal operations structures, funding resources, and public works 
departments. Track 2 Trash compliance methods requires the MS4 permittee to install, 
operate, and maintain any combination of Full Capture System (FCS), multi-benefit
Figure 1 The current MS4 boundaries as identified in the 2013 Phase II General Permit Program Management requirements. Trash Assessments were conducted in each of the 11 distinct Lake County areas and the cities of Lakeport and Clearlake that make up the entire MS4 jurisdiction.

projects, other treatment controls, and/or institutional controls within its jurisdiction. The MS4 permittees will demonstrate that such combinations achieve full FCSE.
However, the MS4 co-permittees may determine which specific controls to implement to achieve compliance with the FCSE. The co-permittees understand and acknowledge that the State Water Board expects that the MS4 permittee will elect to install FCS within their PLUs where such installation is not cost-prohibitive. The permittees also understand and acknowledge that The Water Board also expects Permittees to make regular progress towards full compliance, demonstrating reasonable annual efforts (approximately 10% annually) under the Track II compliance Method.

1.3 Storm Water Drainage Maps
All three co-permittees used the storm water drainage data layer and map to identify priority assessment areas. This map layer was created in 2015 by the Lake County Water Resources and other staff members of the Clean Water Program. The map layer, and associated attributes, include relevant PLU's for trash implementation, as well as drainage basins, culverts, connector outfalls, and outfalls. In total, Clean Water Program staff have mapped 2896 outfalls, 2071 connector outfalls, and 3695 culverts. The storm water drainage map layer (Figure 2.) was used to identify priority baseline assessment survey areas, where they intersected with PLU's, transit stops and non-Caltrans roadways.

1.4 Co-Permittee responsibilities
Each permittee is responsible for the trash implementation activities within their own jurisdiction and for determining their compliance towards program goals as outlined in each permittees designated section within this plan. Lake County described their current trash generation rates within section 2.0, City of Lakeport within section 3.0, and City of Clearlake within section 4.0. This plan, and its subsequent assessment areas, are identified where each jurisdiction contains a separate coverage area and the trash generation reduction strategy is applied.

1.5 Special Considerations
Some areas within the County and City of Clearlake lack paved roads, gutters, sidewalks, and curbs, and improved stormwater infrastructure. While there are some plans to address this, the majority of these areas will likely remain in their current state 10 years from this plan submission due to the current and anticipated economic status of Lake County. Lake County is considered a Disadvantaged Community (DAC) as the median income of Lake County ($40,818) is notably less than the state median (63,783). This trend combined with the loss in property revenue and disaster spending (loss of over $5,240,593) over the last five years due to multiple wildfires (Figure 3), has left Lake County and the two municipalities, in a significant delay in achieving basic infrastructure improvements such as paving roads, upgrading storm drain systems, installing trash removal or capture systems. In addition to the devastation caused by multiple years of intense wildfire, the County directly surrounding Clear Lake, is extremely susceptible to flood damage, and has suffered from Emergency Declaration – level flood events during both the winter of 2016-2017 and 2018-2019, leading to infrastructure costs and losses estimated at near $4 million. Therefore, while the County and other co-permittees will attempt to maintain the timelines and milestones as listed in this implementation plan, the ability to meet the financial burden of complying.
with the Trash Provision is a constant and consistent challenge. Successful compliance and completion with the plan, along the 10-year required timeline will, to a great extent, depend on future natural disaster occurrences that may have significant impact on the availability to support the required municipal operations and maintenance needed to accomplish the goals outlined in this plan.

Considering the past emergency events and financial hardship experienced by the County, in addition to staff turnover that occurred at the County and Clearlake administrations during the 2016-2018, trash surveys that were recommended to be conducted in tandem, occurred only once, during the spring of 2019 by all three co-permittees. Some preliminary surveys were conducted by Lake County and City of Lakeport in conjunction with the preliminary map development, but upon further review of the current Clean Water Program staff, these surveys and maps did not adhere to the recommended protocols and survey methods as provided on the Statewide Trash Provisions Training Website and were completed correctly only during spring 2019. Results of these surveys are provided in this implementation plan. More information about the state of the County and the financial shortfalls can be found on the Lake County Administrative Website. Clean Water Program staff, associated departments, and relevant program contacts are provided in table 1.

1.6 Partners and Relevant Contacts

<table>
<thead>
<tr>
<th>Agency</th>
<th>Name</th>
<th>Title</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>Marina Deligiannis</td>
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<tr>
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<td>Lyle Swartz</td>
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</tr>
<tr>
<td></td>
<td>Scott DeLeon</td>
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</tr>
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<td></td>
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</tr>
<tr>
<td>City of Clearlake</td>
<td>Alan Flora</td>
<td>City Manager</td>
<td>(707) 994-8201</td>
</tr>
<tr>
<td></td>
<td>Marisa Hewitt</td>
<td>Assistant City Engineer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adeline Brown</td>
<td>Engineer Tech</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mike Baker</td>
<td>Superintendent</td>
<td></td>
</tr>
</tbody>
</table>
Figure 2 Lake County Drainage map used to identify priority assessment areas for baseline trash generation surveys.
Figure 3 Major Fires of Lake County that have occurred between 2015-2018 that have contributed to the financial shortfalls of both county and cities.
2.0 COUNTY OF LAKE

2.1 Priority Land Use Methods

Due to the unique “patch-work” nature of Lake County MS4 jurisdiction (Figure 1), within each distinct growth boundary area, baseline assessment location selection included identifying priority land uses (PLUs), based on the Statewide Trash Amendments definitions:

1) **High Density Residential**: At Least 10 developed dwelling units/acre. No High Density Residential areas exist in Lake County Jurisdictions and therefore was not included as part of the PLUs used in identifying assessment areas.

2) **Industrial**: Primary activities on the developed parcels involve product manufacture, storage, or distribution (e.g., manufacturing businesses, warehouses, equipment storage lots, junkyards, wholesale businesses, distribution centers, or building material sales yards).

3) **Commercial**: Primary activities on the developed parcels involve the sale or transfer of goods or services to consumers (e.g., business or professional buildings, shops, restaurants, theaters, vehicle repair shops, etc.).

4) **Mixed urban**: High-density residential, industrial, and/or commercial land uses predominate collectively (i.e., are intermixed). No High Density Residential areas exist in Lake County Jurisdictions and therefore was not included as part of the PLUs used in identifying assessment areas.

5) **Public Transportation**: Facilities or sites where public transit agencies’ vehicles load or unload passengers or goods (e.g., bus stations and stops).

2.2 Methods for Determining Baseline Assessment Areas

In Lake County jurisdictions, specific parcels, blocks, or streets were selected for assessments areas based on the following parameters:

a) High density residential land use
b) Industrial land use
c) Commercial land use
d) Mixed urban land use
e) Lake County Transit stops
f) Outfalls
g) Connector outfalls
h) Drainage inlets
i) Culverts

Using ArcGIS, complete the following steps to determine the Baseline Assessment Areas.

1) **Add a Base map**
2) **Add layers**: *layers are located in County GIS Drive*
   a) County Roads

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3) Right click each layer go to → “Data” → “Export Data” and export each layer so you have the ability to edit layers.
   a) Save the exported data in a designated folder.
   b) NOTE: You will be using the exported data layers from now on. This gives you the required permission to edit the data.

4) Create a 200 ft Buffer around the exported “drainage inlet” layer. (As shown in Figure 4).
   a) Go to the top bar of ARCGIS Desktop and click “Geoprocessing” → “Buffer”.
      1. For the Input Feature click the “drainage inlet layer” that you have saved.
      2. For the Output Feature Class this is where you will name this buffer (i.e. Transit Buffer) and save it in your data folder you have created.
      3. For distance plug in “200” and “feet” measurement.
      4. Click “Okay” and the Buffer should appear as a new layer.

5) Create a 200 ft Buffer around the exported “Transit Stop” layer.
   a) Repeat step 4 again but instead plug in the “Transit Stop” layer

6) Create an “Intersect” of the two “Buffers” you just created: This will help identify the focus areas.
   a) Go to the top bar of ARCGIS Desktop and click “Geoprocessing” → “Intersect”.
      1. For the Input Feature click the “Drainage Inlet Buffer” that you created in step 4 and the “Transit Stop Buffer” that you created in step 5.
      2. For the Output Feature Class this is where you will name this Intersect (i.e. 200 Ft Drainage Inlet and Transit Intersect) and save it in your data folder you have created.
      3. Click “Okay” and the Intersect should appear as a new layer.
Each boundary area was given a prefix to help identify the assessment areas within each distinct growth boundary (Table 2). City of Lakeport (LP) and the City of Clearlake (CL) are included in this list of prefixes but their respective maps and results are provided in each of their respective sections. Lake County therefore, had ten (10) distinct growth boundary areas where assessment surveys were conducted. The eleventh, Soda Bay (SB) did not have any PLU’s or transit stops identified, and therefore did not contain a surveyed assessment area.

Table 2 Prefix codes for distinct growth boundaries within Lake County jurisdictions.

<table>
<thead>
<tr>
<th>Area / City Name</th>
<th>Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Clearlake</td>
<td>CL</td>
</tr>
<tr>
<td>Clearlake Oaks</td>
<td>CO</td>
</tr>
<tr>
<td>Clearlake Riviera</td>
<td>CR</td>
</tr>
<tr>
<td>Hidden Valley / Coyote Valley</td>
<td>HV</td>
</tr>
<tr>
<td>Kelseyville</td>
<td>KV</td>
</tr>
<tr>
<td>City of Lakeport</td>
<td>LP</td>
</tr>
<tr>
<td>Lower Lake</td>
<td>LL</td>
</tr>
<tr>
<td>Lucerne</td>
<td>LU</td>
</tr>
<tr>
<td>Middletown</td>
<td>MT</td>
</tr>
<tr>
<td>Nice</td>
<td>NI</td>
</tr>
<tr>
<td>North Lakeport</td>
<td>NL</td>
</tr>
<tr>
<td>Soda Bay</td>
<td>SB</td>
</tr>
<tr>
<td>Upper Lake</td>
<td>UL</td>
</tr>
</tbody>
</table>
2.3 Determining Trash Generation Rates

Methods used to conduct trash assessment baseline surveys followed the procedures and protocols provided in the On-Land Visual Trash Assessment Protocol for Storm Water prepared by EOA Inc. for the Water Boards Trash Implementation Program. Lake County assessment areas followed either Protocol A - Street and Sidewalk Surveys (v2.0) or Protocol B – Driving Surveys, where appropriate (Appendix 5a&5b). Trash generation categories also followed those provided in the EOA Inc. protocols (Table 3) with scores ranging from A – D depending on the trash present in the assessment area at the time of the surveys (Figure 5). Surveys were conducted at least 48 hours after storm / rain events and street sweeping or clean-up events. Data was collected using field datasheets modified from The City of Goleta’s Track 2 Implementation Plan (Appendix 6).
Table 3 Trash Generation Categories and On-Land Visual Trash Assessment Score (OVTA) and description for the condition to assign each score.

<table>
<thead>
<tr>
<th>Trash Generation Category</th>
<th>OVTA Score</th>
<th>Predicted Best/Midpoint Trash Generation Rates (gallons/acre yr⁻¹)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>A</td>
<td>2.5</td>
<td>Effectively no trash can be observed on a city block or the equivalent. There may be some small pieces in the area, but they are not obvious at first glance and one individual could quickly pick them up. A low trash generation level is the goal of stormwater trash control programs and is considered equivalent to the performance of a full trash capture system.</td>
</tr>
<tr>
<td>Moderate</td>
<td>B</td>
<td>7.5</td>
<td>Predominantly free of trash except for a few pieces that are easily observed along a city block, or the equivalent. The trash could be collected by one or two individuals in a short period of time.</td>
</tr>
<tr>
<td>High</td>
<td>C</td>
<td>30</td>
<td>Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets. It would take a more organized effort to remove the litter.</td>
</tr>
<tr>
<td>Very High</td>
<td>D</td>
<td>100</td>
<td>Trash is continuously seen throughout the area, with large piles and a strong impression of lack of concern for litter in the area. There is often significant litter even along gutters that are swept.</td>
</tr>
</tbody>
</table>

Figure 5 Examples of Assessment scores for Protocol A - Street and Sidewalk surveys (BASMAA2016).
2.4 Maps & Results

The following maps (Figures 6-15) show the trash generation rates for each of the eleven (11) Lake County distinct growth boundary areas, based on the assessment surveys (Table 4). Scores, generation rates, and calculated trash loadings for each assessment area are provided in Table 5. Overall within the county jurisdictions the average trash generation rate was moderate with ten (10) areas being rated as moderate trash generation rate, eleven (11) sites were rated as low, six (6) sites rated as high, and zero (0) sites being rated as very high trash generation areas. There were no assessment areas selected for the Soda Bay assessment area, so there is not a trash generation rate for that jurisdiction.

![Figure 6 Clearlake Oaks 2019 baseline trash generation rates & locations.](image-url)
Figure 7 Clearlake Riviera 2019 baseline trash generation rates & locations.

Figure 8 Hidden Valley / Coyote Valley 2019 baseline trash generation rates & locations.
Figure 9 Kelseyville 2019 baseline trash generation rates & locations.

Figure 10 Lower Lake 2019 baseline trash generation rates & locations.
Figure 11 Lucerne 2019 baseline trash generation rates & locations.

Figure 12 Middletown 2019 baseline trash generation rates & locations.
Figure 13 Nice 2019 baseline trash generation rates & locations.

Figure 14 North Lakeport 2019 baseline trash generation rates & locations.
Figure 15 Upper Lake baseline trash generation rates & locations.

Table 4 Baseline Trash Generation Rates Calculated from Assessment Areas Surveyed during Spring 2019, sorted by scored trash category and then alphabetically by Area ID.

<table>
<thead>
<tr>
<th>Survey Date</th>
<th>Survey Time</th>
<th>Survey Type</th>
<th>Area ID</th>
<th>Street Start</th>
<th>Street End</th>
<th>Trash Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/16/2019</td>
<td>10:30 AM</td>
<td>A</td>
<td>CO1</td>
<td>Foothill Blvd</td>
<td>Acorn St</td>
<td>A</td>
</tr>
<tr>
<td>6/16/2019</td>
<td>11:00 AM</td>
<td>A</td>
<td>CO2</td>
<td>Orchard Shores</td>
<td>Grape Ct</td>
<td>A</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>2:20 PM</td>
<td>A</td>
<td>KV3</td>
<td>Hwy 29 / Live Oak</td>
<td>Live Oak / Mullbery Ln</td>
<td>A</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>3:00 PM</td>
<td>A</td>
<td>KV4</td>
<td>Gaddy Ct</td>
<td>3rd st &amp; Gaddy Lane</td>
<td>A</td>
</tr>
<tr>
<td>5/30/2019</td>
<td>10:15 AM</td>
<td>B</td>
<td>LL2</td>
<td>Anderson Ranch Parkway</td>
<td>Anderson Ranch Parkway</td>
<td>A</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>11:30 AM</td>
<td>B</td>
<td>LU1</td>
<td>8th Country Club Dr / 12th Ave</td>
<td>12th ave</td>
<td>A</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>11:40 AM</td>
<td>A</td>
<td>LU3</td>
<td>Rancho Vista Dr / Hwy 20</td>
<td>Bell Ray Ave / Virginia Dr</td>
<td>A</td>
</tr>
<tr>
<td>5/30/2019</td>
<td>12:07 PM</td>
<td>A</td>
<td>MT1</td>
<td>Bush St / Hwy 75</td>
<td>Bush St / Callayomi St</td>
<td>A</td>
</tr>
<tr>
<td>5/30/2019</td>
<td>12:30 PM</td>
<td>B</td>
<td>MT2</td>
<td>Valley Oak Dr / Central Park Rd</td>
<td>Valley Oak Dr / Central Park Rd</td>
<td>A</td>
</tr>
<tr>
<td>6/26/2019</td>
<td>10:22 AM</td>
<td>A</td>
<td>UL1</td>
<td>2nd St / Clover Valley Rd</td>
<td>Old Lucerne Rd</td>
<td>A</td>
</tr>
<tr>
<td>6/26/2019</td>
<td>10:03 AM</td>
<td>A</td>
<td>UL2</td>
<td>1st St / Main St</td>
<td>1st St / Washington St</td>
<td>A</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>2:00 PM</td>
<td>A</td>
<td>CR1</td>
<td>Tenaya Wy / Soda Bay Rd</td>
<td>Fairway Dr / Soday Bay Rd</td>
<td>B</td>
</tr>
<tr>
<td>5/30/2019</td>
<td>11:00 AM</td>
<td>A</td>
<td>HV1</td>
<td>Coyote Valley Rd / Hartmann Rd</td>
<td>Hidden Valley Rd / Hartmann Rd</td>
<td>B</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>2:40 PM</td>
<td>A</td>
<td>KV2</td>
<td>Main St / Live Oak</td>
<td>7th / Church St and Main St</td>
<td>B</td>
</tr>
<tr>
<td>5/30/2019</td>
<td>9:56 AM</td>
<td>A</td>
<td>LL3</td>
<td>Jessie St/Lake St</td>
<td>HWY 53/Main St</td>
<td>B</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>11:50 AM</td>
<td>A</td>
<td>LU4</td>
<td>Frontage Rd / Laurel Del Dr</td>
<td>Frontage Rd / Rosemont</td>
<td>B</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>12:20 PM</td>
<td>A</td>
<td>NI1</td>
<td>Crump Ave / Boggs</td>
<td>Sayre / Boggs Ave</td>
<td>B</td>
</tr>
<tr>
<td>6/17/2019</td>
<td>12:10 PM</td>
<td>A</td>
<td>NI2</td>
<td>Hwy 20 / Manzanita Dr</td>
<td>Hwy 20 / Hudson</td>
<td>B</td>
</tr>
</tbody>
</table>
Table 5 Lake County estimated annual trash loading rates for street (linear feet) trash generation & loading rates.

<table>
<thead>
<tr>
<th>Assessment Area ID</th>
<th>Approximate Linear Ft.</th>
<th>Assessment Score (A-D)</th>
<th>Generation Rate (Table 3)</th>
<th>Subtotal Trash Loading Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>2617.76</td>
<td>A</td>
<td>2.5</td>
<td>6544.4</td>
</tr>
<tr>
<td>CO2</td>
<td>1470.46</td>
<td>A</td>
<td>2.5</td>
<td>3676.15</td>
</tr>
<tr>
<td>KV3</td>
<td>1434.99</td>
<td>A</td>
<td>2.5</td>
<td>3587.475</td>
</tr>
<tr>
<td>KV4</td>
<td>1045.35</td>
<td>A</td>
<td>2.5</td>
<td>2613.375</td>
</tr>
<tr>
<td>LL2</td>
<td>1601.91</td>
<td>A</td>
<td>2.5</td>
<td>4004.775</td>
</tr>
<tr>
<td>LU1</td>
<td>1054.14</td>
<td>A</td>
<td>2.5</td>
<td>2635.35</td>
</tr>
<tr>
<td>LU3</td>
<td>2869.14</td>
<td>A</td>
<td>2.5</td>
<td>7172.85</td>
</tr>
<tr>
<td>LU4</td>
<td>3773.99</td>
<td>A</td>
<td>2.5</td>
<td>9434.975</td>
</tr>
<tr>
<td>MT1</td>
<td>910.88</td>
<td>A</td>
<td>2.5</td>
<td>2277.2</td>
</tr>
<tr>
<td>MT2</td>
<td>2421.7</td>
<td>A</td>
<td>2.5</td>
<td>6054.25</td>
</tr>
<tr>
<td>UL1</td>
<td>1693.49</td>
<td>A</td>
<td>2.5</td>
<td>4233.725</td>
</tr>
<tr>
<td>UL2</td>
<td>916.18</td>
<td>A</td>
<td>2.5</td>
<td>2290.45</td>
</tr>
<tr>
<td>CR1</td>
<td>1017.37</td>
<td>B</td>
<td>7.7</td>
<td>7833.749</td>
</tr>
<tr>
<td>HV1</td>
<td>2653.84</td>
<td>B</td>
<td>7.7</td>
<td>20434.568</td>
</tr>
<tr>
<td>KV2</td>
<td>1310.52</td>
<td>B</td>
<td>7.7</td>
<td>10091.004</td>
</tr>
<tr>
<td>LL3</td>
<td>1220.74</td>
<td>B</td>
<td>7.7</td>
<td>9399.698</td>
</tr>
<tr>
<td>NI1</td>
<td>796.3</td>
<td>B</td>
<td>7.7</td>
<td>6131.51</td>
</tr>
<tr>
<td>NI2</td>
<td>1688.93</td>
<td>B</td>
<td>7.7</td>
<td>13004.761</td>
</tr>
<tr>
<td>NL1</td>
<td>1244.6</td>
<td>B</td>
<td>7.7</td>
<td>9583.42</td>
</tr>
<tr>
<td>NL2</td>
<td>3796.11</td>
<td>B</td>
<td>7.7</td>
<td>29230.047</td>
</tr>
<tr>
<td>NL5</td>
<td>2429.71</td>
<td>B</td>
<td>7.7</td>
<td>18708.767</td>
</tr>
<tr>
<td>KV1</td>
<td>1526.34</td>
<td>C</td>
<td>30</td>
<td>45790.2</td>
</tr>
<tr>
<td>KV5</td>
<td>1202.43</td>
<td>C</td>
<td>30</td>
<td>36072.9</td>
</tr>
<tr>
<td>LL1</td>
<td>661.17</td>
<td>C</td>
<td>30</td>
<td>19835.1</td>
</tr>
<tr>
<td>LU2</td>
<td>1127.38</td>
<td>C</td>
<td>30</td>
<td>33821.4</td>
</tr>
<tr>
<td>NL3</td>
<td>998.93</td>
<td>C</td>
<td>30</td>
<td>29967.9</td>
</tr>
<tr>
<td>NL4</td>
<td>1418.55</td>
<td>C</td>
<td>30</td>
<td>42556.5</td>
</tr>
</tbody>
</table>

Street Total Trash Loading Rate For Lake County (gal/acre \( \text{yr} \)) 386,986.50
Additional Lake County survey data and photos are provided in Appendix 6.

2.5 Trash Reductions Strategies – Current Baseline Management Measures

Street Sweeping
Lake County Public Works Staff regularly sweep streets on a generally-fixed schedule that is flexible upon need (Table 6.) Most street sweeping occurs between 4am and 12pm Monday through Fridays.

<table>
<thead>
<tr>
<th>Day</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>Kelseyville: Main St &amp; back streets, 1/2 Rivieras</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Rest of Kelseyville, Lower Lake, Clearlake Oaks</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Middletown</td>
</tr>
<tr>
<td>Thursday</td>
<td>1/2 Rivieras, Extra sweeping as requested</td>
</tr>
<tr>
<td>Friday</td>
<td>Upper Lake, Nice, Lucerne, and Lakeport</td>
</tr>
</tbody>
</table>

Drain inlet maintenance / basin maintenance
The department of Public Works use a vacuum truck (Elgin Sweeper 2002) to remove debris out of catch basins (Drop inlets). These activities are completed on a quarterly basis. Current staffing and equipment limit the abilities of the department to check and remove all debris before and after every storm event.

Public refuse and recycling receptacles
Currently, Lake County Department of Public Services maintains trash and recycle combination receptacles in all of the County Parks and some additional public space areas. Currently, there is not a map of these locations, however these receptacles are serviced regularly along with other public county facilities such as bathrooms, picnic areas, and parks.

Lake Transit, part of the Lake Transit Authority, manages public transit stop locations. Currently there are not receptacles located at all transit stops, only a select few. Where there are trash receptacles, it is not known how or when they are serviced.

Illegal Dumping Response Program
Lake County Department of Public Works (DPW), Community Development Department (CDD), and Department of Public Services (DPS) coordinate for the removal and handling of Illegal dumping incidents within Lake County. If trash, rubbish, or bulky items are dumped in County right-of-ways, the DPW will pick up the materials and pay to have them deposited at the Lake County Landfill, which is managed by Lake County DPS. If materials are dumped along private property, CDD will be contacted and will send notice to the property or landowners to remove and dispose of the materials. If notices go unfulfilled, a lien on the property can occur or CDD will abate the materials and bill the property owners. For County parks and open spaces, DPS will remove any
illegally dumped materials or rubbish. There is currently no tracking conducted on the locations or numbers of illegal dumps that occur in the county or the amount of material that is being removed from our public areas and roadways and being moved to the landfill.

**Creek Clean-Up Events**

Lake County and local volunteers participate in annual or semi-annual creek clean-up events. Trash pick-up and invasive vegetation removal are the focus of these events. The County partners with the municipalities and CalTrans to execute these events. For example, in October 2018 the annual California Coastal Cleanup Day had five locations in Lake County; two (2) in Lake County Jurisdictions and three (3) in City of Clearlake areas. For the Lake County Locations, Rodman Slough and Keeling Park, there were eight (8) volunteers who helped remove ~100 lbs of trash from 10.3 miles of public park space and Middle creek. The City of Clearlake had 31 volunteers that picked up over 400 lbs of trash during this event. Events like these are combined with social media to advertise before and after events to communicate with the community about the event and the importance of removing trash from waterways (Figure 16). The County notifies the public with multiple media sources advertising before and after the events to help the community become more aware and involved with importance of removing trash from waterways.

**Figure 16 California CleanUp Day Event Flyer and Social Media post to advertise the event.**

**Outreach and Education**

The County conducts some storm water and solid waste education and outreach through different avenues. The County website has a “Home-Tips for Clean Water!” webpage where at-home Best Management Practices are provided in easy-to-follow
steps. In addition, the Clean Water Program has a Public Education and Outreach Program workgroup that designs educational materials and outreach campaigns that are aimed at reducing trash and other pollutants from entering the storm drain system and other surface waterways (Figure 17). Progress and activities accomplished each year are provided in the annual MS4 reporting by the Clean Water Program.

Figure 17 Digital outreach tools used to educate the county about trash sources and impacts of trash when entering waterways. (Left) Facebook post sharing the graphic from the Statewide trash Provisions webpage “How Trash Gets Into Waterways” and (right) social media banner providing education about illegal dumping and how to report illegal discharges, including trash.

2.6 Trash Reduction Strategies – Future Management Measures and Milestones

The following strategies are expected to help reduce the trash impacts to Lake County waterways by reducing trash generation rates in both the assessment areas surveyed and in other areas countywide. Where applicable and possible, these strategies will be employed in such a manner that will prioritize the portions of the jurisdictions that received C or B scores (i.e. CR1, HV1, KV2, LL3, NI1-2, NL1-2, NL5, KV1, KV5, LL1, LU2, NL3-4). Specific activities or strategies with associated timelines are indicated within each section. Some activities do not yet have anticipating timelines, but are expected to be updated in future evaluations and assessments and within the ten (10) year compliance timeline.

Street sweeping tracking and mapping

While a general schedule is followed for street sweeping, the County currently does not track specific street sweeping routes, calculated area or linear coverage of sweeping, nor accounts for the materials removed from the areas being swept. As part of this trash implementation plan, as well as to satisfy additional MS4 permit requirements, the county will aim to install a tracking system for street sweeping to evaluate the
effectiveness towards removing trash and sediments from surface streets before they enter the storm drain system, waterways, and the lake.

*Tasks Involved in this project:*

- b) Develop a street sweeping map for current routes
- c) Update map as new routes are added
- d) Designate routes with sweeping schedule
- e) Evaluate effectiveness & tracking system for quantifying the type & amount of materials removed from route areas.
- f) Make information publicly accessible

*Expected Date of Completion: January 1, 2021*

**Drain inlet maintenance / basin maintenance**

While the Lake County Department of Public Works conducts inlet, culvert, and basin cleanouts as needed during storm season, tracking information of these efforts are not tracked or evaluated. The Water Resources Department will plan to work with Department of Public works to identify methods to implement this tracking and evaluation and identify where the program and be enhanced or refined. Most likely, with the implementation of this trash plan, and other improvements to the MS4 permit program in general

*Tasks within this item:*

- a) Replace any aging equipment and update any procedures that would improve maintenance activities (*Targeted for 2022*).
- b) Work with Public Works to identify locations where drain inlet maintenance is conducted and create updated maps (*Targeted for 2020*).
- c) Identify potential ways for tracking information on material removed from drain maintenance areas (*Already initiated in Spring of 2019*).
- d) Identify methods for targeting high-trash drain maintenance areas.
- e) Work with Public Works to identify mechanisms for expanding or improving drain maintenance activities, if needed and if possible.
- f) Identify ways to increase staffing in order to meet state compliance and local needs.

*Expected Date of Completion: January 1, 2024*

**Public refuse and recycling receptacles**

Work with Lake Transit Authority and Lake County DPS to purchase and install additional trash receptacles in strategic locations based on the results of the assessment surveys. There is currently no funding for this task and no clear plan for how these receptacles will be serviced when full, but Lake County will prioritize this task in order to best reduce trash generation.

*Tasks within this item:*

- a) Work with Lake County DPS and Lake County Transit Authority to identify priority locations for public trash and recycle bin installations that coincide with higher trash generation areas as unidentified by the baseline assessment areas.
b) Identify potential mechanisms for purchasing, installing, and conducting maintenance and servicing on trash receptacles placed at selected high-priority locations.

*Expected Date of Completion:* Revisit status and identify any future needs by December 31, 2025.

**Review of curbside trash and bulky item collection program**

Work with Department of Public Works and Department of Community Development Department to review and evaluate the curbside trash and bulky item collection program. Additional partners to program improvement could include the solid waste management companies within the county including Lakeport Disposal, Lake County Waste Solutions (managed by Public Services) and South Lake Refuse & Recycling.

*Tasks within this item:*

- a) Identify willing partners
- b) Review current programming and identify areas for improvement using any available records and results from assessment surveys.
- c) Develop any plans or partnerships for targeted program improvement.
- d) Identify funding or support needed to implement program improvements.

*Expected Date of Completion:* Revisit status and identify any future needs by December 31, 2025.

**Review of illegal dumping response program**

Lake County Water Resources will work with Lake County DPW, CDD, and DPS to identify ways to improve and expand the illegal dumping program if needed. Potential improvements to this program could be to implement free-dump days within the county, where people could turn in their trash and rubbish to be dropped at the dump for free. Additional efforts can include a review of the Adopt-A-Street program that is administered by the Public Works Department. Any activities would need to be combined with outreach efforts to assure that the community is aware of the opportunities so that they are utilized as much as possible and the reduction to trash generation is maximized. Funding for this proposed management measure will have to be identified, but the partnering agencies will be tasked with identifying potential sources to implement this or comparable management measures.

*Tasks within this item:*

- a) Schedule meetings with partners to identify potential measures to reduce illegal dumping
- b) Identify methods to fund and implement identified measures
- c) Evaluate measure effectiveness, if possible
- d) Identify potential days / times for Free-Dump Days, and any associated staffing or funding support for this program
- e) Evaluate the current Adopt-A-Street program and identify
- f) Improve or expand measures, if possible and as needed.

*Expected Date of Completion:* Meeting will occur before January 1, 2021 and task implementation is expected to be complete by January 1, 2027.
Creek Clean-Up Events
The county would like to steadily increase the amount and scope of creek cleanup events in Lake County. While there is currently no funding to support this effort, the Water Resources Department has initiated partnerships with Lake County Resource Conservation Districts, local area tribes, local community groups, school groups, and other volunteer-based organizations to plan, coordinate, and execute more creek clean-up events throughout the County and throughout the year. Ideally, Lake County and partners would like to meet the following goals and associated timeline (Table 7) for creek cleanup and similar events to occur in Lake County:

Table 7 Anticipated Creek CleanUp events to provide for trash reduction in Lake County

<table>
<thead>
<tr>
<th>Number of desired creek cleanup events</th>
<th>Year to accomplish goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>2019-2020</td>
</tr>
<tr>
<td>2-3</td>
<td>2020-2021</td>
</tr>
<tr>
<td>3-4</td>
<td>2021-2022</td>
</tr>
<tr>
<td>4-6</td>
<td>2022-2025</td>
</tr>
<tr>
<td>≥6</td>
<td>2025-2029</td>
</tr>
</tbody>
</table>

Outreach and Education
Work with other Lake County departments, community groups, and Clean Water Program Co-permittees to implement a Drain Marker program and outreach campaign. During summer 2019, the Clean Water Program was granted ~$10,000 from the Lake County Fish & Wildlife Advisory Group to install drain markers in all eleven growth boundary areas. Locations within each area where trash was discovered, based on the assessment areas, will be prioritized to place drain markers. Additional funds will go towards creating and airing of radio public service announcements, social media blasts, newspaper interviews and articles, as well as volunteer coordination to map, install, and maintenance all markers.

Additional outreach and education efforts will be identified as the compliance schedule continues and select assessment areas are identified as trash rates improve or decline.

Expected Date of Completion: This BMP will be ongoing throughout and beyond the duration of the 10-year compliance schedule.

2.7 Evaluations of Trash Reductions
To best evaluate if trash generation rates are declining and to identify areas of concern where implementation of any additional or enhanced efforts would be needed, follow-up assessments survey will be conducted. These surveys, mimicking the methods and scope of the baseline assessment surveys as described in section 2.1, will be completed by Water Resources staff and / or partners during odd years over a ten year period between January 1, 2019 and December 31, 2029, or following the schedule outlined in Table 8. The January 1, 2019 start date is based upon the original due date of this plan prior to the granted July 1, 2019 extension, so that trash implementation
activities align with other program activities occurring under the statewide trash provision for small MS4 stormwater permits. To the best of the ability, the trash evaluation assessment surveys will be conducted at least once a year, during late summer / early fall before increased rain events will distribute trash generation. Ideally, during this time of year the majority of trash should be present and therefore an evaluation would be helpful for identifying if trash reduction strategies are effective.

*Table 8* General Timeline for Evaluating and Tracking Effectiveness of this Implementation Plan for the years 2019-2029.

<table>
<thead>
<tr>
<th>Anticipated Date</th>
<th>Tasks</th>
</tr>
</thead>
</table>
| Spring 2019        | 1. Baseline Trash Generation Assessments  
                     2. Calculate and map trash generation baselines  
                     3. Identify “hot spots” or areas of high trash generation to target improvement efforts. |
| Spring & Fall 2021 | 1. Evaluation – Trash Generation Assessments  
                     2. Calculate trash generation rates  
                     3. Compare to rates from 2019  
                     4. Identify areas for improvement |
| Spring & Fall 2023 | 1. Evaluation – Trash Generation Assessments  
                     2. Calculate trash generation rates  
                     3. Compare to rates from 2021  
                     4. Identify areas for improvement |
| Spring & Fall 2025 | 1. Evaluation – Trash Generation Assessments  
                     2. Calculate trash generation rates  
                     3. Compare to rates from 2023  
                     4. Identify areas for improvement |
| Spring & Fall 2027 | 1. Evaluation – Trash Generation Assessments  
                     2. Calculate trash generation rates  
                     3. Compare to rates from 2025  
                     Identify areas for improvement |
| Spring & Fall 2029 | 1. Evaluation – Trash Generation Assessments  
                     2. Calculate trash generation rates  
                     3. Compare to rates from 2027  
                     4. Compare rates from start of project in 2019 and summarize activities and trends in trash generation for expiration of compliance period. |

Changes in trash generation rates between baseline and follow-up assessment surveys will be calculated and areas where trash generation rates have declined or shown no change, will be targeted for improved and enhanced efforts, while simultaneously continuing work in areas that have improved or maintained low / no trash generations rates.
3.0 CITY OF LAKEPORT

It is currently expected that The City of Lakeport as Co-Permittee with The City of Clearlake and the County of Lake will notify the Regional Board of the Trash Implementation Assessment results of using Track 2 to address the storm drain system data, and the City’s current trash control efforts (e.g., street sweeping, etc.) and through review of literature on trash generation rates.

Complying with the Trash Amendments is expected to have significant capital and operation and maintenance costs. The City of Lakeport already reduces trash through various programs and activities which include storm drain inlet inspections and maintenance, park cleanups, and many other activities.

Per the Permit requirements, the Co-Permittees are presenting the data collected and the summary of results in this combined Summary Report. Specifically, this Summary Report includes an assessment of the results, a discussion on the pathways by which trash is entering receiving water, identification of high priority receiving water where trash is identified as a significant threat to water quality, and recommendations to address the abatement of trash in high priority areas. This Summary Report is intended to satisfy the Permit requirements.

3.1 Priority Land Use Methods

The Trash Amendments require control of trash discharges from the following “Priority Land Uses (PLUs):

a) Industrial
b) Commercial
c) High-density Residential (10 or more dwelling units/acre)
d) Mixed Urban
e) Public Transportation Stations, including bus stations and stops

The Track 2 compliance approach requires the determination of full capture system equivalency, which is the amount of trash that would be reduced through the implementation of Track 1. The Track 2 approach included estimation the total trash generated from PLUs and the amount of trash reduction from existing trash controls/activities, and then calculating the additional trash reduction needed by subtracting the second number from the first number. The first step in this calculation is to determine trash generation rates for the City’s PLUs.

3.2 Methods for Determining Baseline Assessment Areas

The overall study objective was to assess the relative amounts of trash within the City of Lakeport. In accordance with the requirements of the Permit, the primary objective of this special project was to assist the Co-Permittees and NCRWQCB in setting priorities by conducting a quantitative and qualitative baseline assessment of trash in the City of Lakeport by collecting information on the following:
a) Spatial extent of trash present;
b) Seasonal variation in trash generation;
c) Relative amount of trash present;
d) Nature of the types of trash present; and
e) Likely sources of trash present.

In addition to establishing baseline trash levels using On-Land Visual Trash Assessment (OVTA) Protocol for Storm Water produced by EOA, Inc., additional evaluations of special sources of trash were conducted by the Co-Permittees as appropriate to their individual jurisdictions. These additional studies focused on specific activities or sources of trash judged by staff to contribute disproportionate levels of trash to waterways, particularly sources that may not be adequately captured in the baseline assessment.

These special sources are jurisdiction-specific, and include homeless encampments, schools, and shopping centers.

In accordance with the Permit, the following objectives have been achieved:

a) Establish Baseline Conditions of Trash;
b) Evaluate the Quantity and Type of Trash Found; and
c) Determine the Source of Trash Entering Receiving Water, where possible.

3.3 Determining Trash Generation Rates

During Fiscal Year (FY) 2018/2019, during dry weather, the City performed 2 standardized trash assessments at locations in the City of Lakeport various land uses and drainages. The spatial trash data collected during these assessments will assist the Co-Permittees and NCRWQCB with identifying problem areas, land uses, and sources that will in turn be considered when developing regional and watershed priorities.

Field teams in the City included two personnel who completed visual assessment of each defined area by driving the entire perimeter and all streets within each assessment area. While driving, one team member carefully looked for deposited trash in the roadway, median, street, curb, gutter, and vegetated areas (within three feet of the public right-of-way). Photos were taken as well, for documentation purposes. Field teams also walked the assessment area and took photos to document.

The visual assessments were intended to assess the level of trash observed along the curb and gutter around PLUs. The PLUs assessed during the visual trash assessment correspond to land uses assessed in the BASMAA study, and include the following:

a) Commercial
b) High Density Residential
c) Parks
d) Industrial
e) Public Transportation Stations
Using the City’s GIS, specific PLU land areas were selected to be assessed. A Map of these land areas were provided to the Field Team so that they could confirm the land use type while in the field. Each area was assigned an Identification number, and field teams assessed all sides of the street that were visible while driving and walking.

Figure 19a) (left) Example of trash rating “B” predominantly free of trash except for a few pieces that are easily observed in the assessment area and, 7b) Example of Trash Rating “A” where effectively, no trash is observed in the selected assessment area.

Figure 18a) Example of Trash Rating “C” – Trash is widely/evenly distributed and/or small accumulation is visible on street, sidewalks or inlets and, 8b) Example of Trash Rating “D” – Trash is continuously seen throughout the assessment area, with large piles and a strong impression of lack of concern for litter in the area. There is often significant letter along gutters.
3.4 Maps & Results

After each assigned area was assessed, the area was assigned a trash generation rating, which included a rating of A, B, C and D. If one team member rated site as an A and the other rates it a B, the combined assessed rate would be a B.

The City of Lakeport Trash Assessment Protocol, provides both quantitative and qualitative measurements of trash. Using a protocol that includes physical collection of trash items enabled Co-Permittees to present both numerical counts and a total weight of trash found for easy comparison and a more comprehensive picture of the varied effects of trash in the MS4 boundaries. The use of the Trash Assessment Tally Sheet provides quantitative data on the types of trash present (categorized by material), and allows for a more accurate evaluation of the potential effects of trash.

The Trash Assessment Worksheet contains metrics to differentiate, when possible, between litter, illegal dumping, homeless encampments, and trash accumulation. Determination of the origins of trash can be difficult, and requires consistency in the training of field staff across jurisdictions. In a further effort to identify the source of trash and to collect data that can further inform management practices, the City of Lakeport Staff conducted additional studies that focused on special uses and activities that are known to generate high levels of trash. Per data generated from field crews and volunteer creek cleanups, these persistent high-generating sources of trash include homeless encampments, and shopping centers. These additional studies will be used to confirm and quantify the experiences of field staff, and to better target and inform management practices.

The City of Lakeport identified baseline locations to be assessed within their jurisdictional boundary. For purposes of this study, baseline locations represent a snapshot in time of the conditions within the city, rather than the initial state of trash upon which future improvements will be measured against.

Locations were chosen by staff with knowledge of the jurisdiction to provide the best possible spatial variety and representation of general land uses contained in the jurisdiction. In addition to representation, consideration was also given to site accessibility and land ownership. It should be noted that, in some cases, the actual assessment location was different than the location proposed in the work plan due to safety, access, and suitability circumstances encountered in the field. The actual trash assessment locations are listed in the example tables (Figure 20). While in the field, each Co-Permittee also documented details about assessment site characteristics, as shown in Figure 21.
### Trash Implementation Assessment Sheet

<table>
<thead>
<tr>
<th>Location</th>
<th>LP</th>
<th>Site Location</th>
<th>Main Street</th>
<th>Comments</th>
<th>O1</th>
<th>O2</th>
<th>O3</th>
<th>O4</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP 1</td>
<td>200 E Main St</td>
<td>Westside Park</td>
<td>200 E Main St</td>
<td>Westside Park</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>20-20</td>
</tr>
<tr>
<td>LP 2</td>
<td>200 N Main St</td>
<td>Eastside Park</td>
<td>200 N Main St</td>
<td>Eastside Park</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>20-20</td>
</tr>
<tr>
<td>LP 3</td>
<td>1234 Oak St</td>
<td>Lakeport Mall</td>
<td>1234 Oak St</td>
<td>Lakeport Mall</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>20-20</td>
</tr>
</tbody>
</table>

**General Comments:** Photos taken of nearly every site assessed & attached to file by Site Number and location.

---

### Trash Implementation Assessment Sheet

<table>
<thead>
<tr>
<th>Location</th>
<th>LP</th>
<th>Site Location</th>
<th>Main Street</th>
<th>Comments</th>
<th>O1</th>
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<th>O3</th>
<th>O4</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP 1</td>
<td>200 E Main St</td>
<td>Westside Park</td>
<td>200 E Main St</td>
<td>Westside Park</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>20-20</td>
</tr>
<tr>
<td>LP 2</td>
<td>200 N Main St</td>
<td>Eastside Park</td>
<td>200 N Main St</td>
<td>Eastside Park</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>20-20</td>
</tr>
<tr>
<td>LP 3</td>
<td>1234 Oak St</td>
<td>Lakeport Mall</td>
<td>1234 Oak St</td>
<td>Lakeport Mall</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>20-20</td>
</tr>
</tbody>
</table>

**General Comments:** Photos taken of nearly every site assessed & attached to file by Site Number and location.

---

**Figure 20** City of Lakeport Trash Implementation Assessment Sheets with assessment areas, locations and trash generation scores.
Figure 21 Lakeport Trash Assessment Areas
### Table 9 Lakeport estimated annual trash loading rates for surface area (square feet) and street (linear feet) trash generation rates.

#### Parcel / Area Baseline Trash Generation Rates

<table>
<thead>
<tr>
<th>Assessment Area</th>
<th>Address/Parking Lots</th>
<th>Surface Area (sq. ft)</th>
<th>Assessment Score (A-D)</th>
<th>Generation Rate</th>
<th>Total Trash Generation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP-1</td>
<td>2019 S Main St</td>
<td>236,432.9</td>
<td>A</td>
<td>2.5</td>
<td>591,082.25</td>
</tr>
<tr>
<td>LP-2</td>
<td>1405 S Main St</td>
<td>12,544.9</td>
<td>A</td>
<td>2.5</td>
<td>31,362.25</td>
</tr>
<tr>
<td>LP-3</td>
<td>1285 S Main St</td>
<td>41,784.8</td>
<td>A</td>
<td>2.5</td>
<td>104,462</td>
</tr>
<tr>
<td>LP-4</td>
<td>355 Lakeport Blvd</td>
<td>339,739.2</td>
<td>A</td>
<td>2.5</td>
<td>849,348</td>
</tr>
<tr>
<td>LP-5</td>
<td>818 Lakeport Blvd</td>
<td>233,892.9</td>
<td>A</td>
<td>2.5</td>
<td>584,732.25</td>
</tr>
<tr>
<td>LP-6</td>
<td>990 Bevins St</td>
<td>66,035.2</td>
<td>A</td>
<td>2.5</td>
<td>165,088</td>
</tr>
<tr>
<td>LP-7</td>
<td>1088 Lakeport Blvd</td>
<td>15,011.7</td>
<td>A</td>
<td>2.5</td>
<td>37,529.25</td>
</tr>
<tr>
<td>LP-8</td>
<td>1705 Parallel Dr</td>
<td>11,129.8</td>
<td>A</td>
<td>2.5</td>
<td>27,824.5</td>
</tr>
<tr>
<td>LP-9</td>
<td>1484 Parallel Dr</td>
<td>25,769.2</td>
<td>A</td>
<td>2.5</td>
<td>64,423</td>
</tr>
<tr>
<td>LP-10</td>
<td>1671 Eleventh St</td>
<td>207,616.7</td>
<td>B</td>
<td>7.5</td>
<td>2,014,625.25</td>
</tr>
<tr>
<td>LP-11</td>
<td>2835 Parallel Dr</td>
<td>44,356.6</td>
<td>A</td>
<td>2.5</td>
<td>110,891.5</td>
</tr>
</tbody>
</table>

#### Parcel / Area Total Trash Generation For City of Lakeport (gal/acre\textsuperscript{yr}) 9,085,109.50

#### Street Baseline Trash Generation Rates

<table>
<thead>
<tr>
<th>Assessment Area</th>
<th>Address &amp; Connections</th>
<th>Distance (Linear Ft.)</th>
<th>Assessment Score (A-D)</th>
<th>Generation Rate</th>
<th>Total Trash Generation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP-24</td>
<td>Lakeport Blvd - Main St to Parallel Dr</td>
<td>3125.3</td>
<td>A</td>
<td>2.5</td>
<td>7,813.25</td>
</tr>
<tr>
<td>LP-25</td>
<td>Bevins St - Lakeport Blvd to Martin St</td>
<td>2520.1</td>
<td>A</td>
<td>2.5</td>
<td>6,300.25</td>
</tr>
<tr>
<td>LP-26</td>
<td>Parallel Dr - Lakeport Blvd to State Hwy 175</td>
<td>6701.6</td>
<td>A</td>
<td>2.5</td>
<td>16,754</td>
</tr>
<tr>
<td>LP-27</td>
<td>2567 Parallel Dr</td>
<td>129.3</td>
<td>A</td>
<td>2.5</td>
<td>323.25</td>
</tr>
<tr>
<td>LP-28</td>
<td>1862 Parallel Dr</td>
<td>347.2</td>
<td>A</td>
<td>2.5</td>
<td>868</td>
</tr>
<tr>
<td>LP-29</td>
<td>843-991 Parallel Dr</td>
<td>2446.4</td>
<td>A</td>
<td>2.5</td>
<td>6116</td>
</tr>
<tr>
<td>LP-30</td>
<td>Westside Park Rd at Parallel to end of Westside Park Rd</td>
<td>2615.4</td>
<td>A</td>
<td>2.5</td>
<td>6,538.5</td>
</tr>
<tr>
<td>LP-31</td>
<td>2000 Lakeshore Blvd</td>
<td>759.3</td>
<td>B</td>
<td>7.5</td>
<td>5,694.75</td>
</tr>
<tr>
<td>LP-32</td>
<td>200 Park St</td>
<td>598.1</td>
<td>A</td>
<td>2.5</td>
<td>1,495.25</td>
</tr>
<tr>
<td>LP-33</td>
<td>Eleventh St - N Main St to State Hwy 29 entrance</td>
<td>4633.5</td>
<td>A</td>
<td>2.5</td>
<td>11,583.75</td>
</tr>
</tbody>
</table>

#### Street Total Trash Generation For City of Lakeport (gal/acre\textsuperscript{yr}) 94,434.75
As required by the Permit, the trash assessment follows the steps outlined in the *Trash Assessment Protocol for the City of Lakeport* to fill out the *Trash Assessment Worksheet*.

**Trash Assessment Scoring**

During each assessment, scores and overall total were recorded in the *Trash Assessment Worksheet*. The scores for each assessment are shown using the grading system A-D from the BASMAA “Tracking California’s Trash Project Evaluation” of the on land visual assessment protocol as a method to establish a baseline level of trash and detect improvements in stormwater quality.

**Accumulation Scores**

Dry weather baseline assessment accumulation of trash scores ranged from B (Site #11 – 1464 Parallel Dr, Site #22 – 2200 Lakeshore Blvd, and Site #16 – 1071 Eleventh St) to A (Sites #1-32). The average dry weather accumulation score in the City of Lakeport was an A. (Table 9).

**Table 10 Categories and definitions of OVTA scores and associated generation rates.**

<table>
<thead>
<tr>
<th>Trash Generation Category</th>
<th>OVTA Score</th>
<th>Predicted Best/Midpoint Trash Generation Rates (gallons/acre yr)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>A</td>
<td>2.5</td>
<td>Effectively no trash can be observed on a city block or the equivalent. There may be some small pieces in the area, but they are not obvious at first glance and one individual could quickly pick them up. A low trash generation level is the goal of stormwater trash control programs and is considered equivalent to the performance of a full trash capture system.</td>
</tr>
<tr>
<td>Moderate</td>
<td>B</td>
<td>7.5</td>
<td>Predominantly free of trash except for a few pieces that are easily observed along a city block, or the equivalent. The trash could be collected by one or two individuals in a short period of time.</td>
</tr>
<tr>
<td>High</td>
<td>C</td>
<td>30</td>
<td>Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets. It would take a more organized effort to remove the litter.</td>
</tr>
<tr>
<td>Very High</td>
<td>D</td>
<td>100</td>
<td>Trash is continuously seen throughout the area, with large piles and a strong impression of lack of concern for litter in the area. There is often significant litter even along gutters that are swept.</td>
</tr>
</tbody>
</table>

**3.5 Trash Reductions Strategies – Current Baseline Management Measures**

The following are a few of the existing and/or current BMPs implemented by the City:

a) City’s Stormwater Ordinance enforcement;
b) Regular street sweeping;
c) City staff spill response;  
d) As-needed trash cleanup in parks and other potential trash collection areas conducted by City staff and volunteer groups; and  
e) Trash can installation in public places (i.e., parks, bus stops, downtown streets, etc.)

Two locations where City of Lakeport staff conducted trash assessments were primarily impacted by homeless and transient individuals. Unfortunately, BMPs for homeless / transient related trash are challenging. City staff have contacted homeless / transient individuals and have provided trash bags for cleanup of the creek areas. This effort has been somewhat successful. The City’s other BMPs to prevent trash from entering creeks involve regularly scheduled street sweeping. In addition, both City Public Works crews and volunteers clean up the creeks. Volunteers clean up creeks at least once each year.

3.6 Trash Reduction Strategies – Future Management Measures and Milestones
Overall, the City of Lakeport has a very thorough waste management program that, combined with conscientious citizens and City staff, provides for low levels of trash accumulation in the City, in general. It is the City of Lakeport’s intent to continue evaluating options for improving the areas lower than an ‘A’ condition within the City, such as education, enforcement, and additional public trash receptacle installation and maintenance.

The City of Lakeport will consider implementing some or all of the following BMPs to reduce the presence of trash in its creeks year-round:
   a) Repairing and maintaining existing, damaged trash excluders;  
   b) Increasing trash can installation and maintenance;  
   c) Encouraging shopping center operators to install trash excluders/diverters in storm drain inlets located on their properties, to install additional trash cans in their parking areas, and to conduct daily trash removal from their properties;  
   d) Encouraging the use of reusable water bottles to curtail the use of bottled water;  
   e) Outreach campaigning for anti-littering to the general public; and  
   f) Outreach campaigning for anti-littering to fast food business operators and their customers.

3.7 Evaluations of Trash Reductions
The City of Lakeport will continue to conduct bi-annual evaluations, Spring and Fall, to monitor areas for improvement, and consistency in trash reduction methods.
4.0 CITY OF CLEARLAKE

The City of Clearlake consulted closely with the City of Lakeport and County of Lake to develop their methods for conducting trash assessments. The close proximity of County jurisdiction and Clearlake city limits and the shared resource of Clear Lake, make it imperative that all co-permittees work together to share information, troubleshoot together, and coordinate trash reduction efforts.

4.1 Priority Land Use Methods

The City of Clearlake followed the State’s defined priority land uses (PLU’s) for trash assessment areas, the PLU’s are as follows:

- a) High Density Residential
- b) Industrial
- c) Commercial
- d) Mixed-use residential
- e) Public Transportation

4.2 Methods for Determining Baseline Assessment Areas

In the City of Clearlake, the method used for determining the assessment areas size and location was based on existing transit stops. When a transit stop was located within the State’s defined PLU’s and had a drainage inlet within a 400’ radius it was considered an area of interest to be further evaluated in the trash analysis survey. During the assessment map creation, there was not any transit stops/ drainage inlet intersections within the PLU’s of industrial or mixed-use residential, and as a result, those were not included in our assessment.

The reasoning behind the assessment method was to determine the worst case scenarios within the City and improve them. The areas with the highest foot traffic within commercial land uses was bound to account for the most trash in the City.

Methods for AutoCAD to generate City of Clearlake Assessment areas.

1. Import GIS layers to AutoCAD:
   a) City Parcels
   b) Commercial Zoning
   c) High Density Residential Zoning
   d) Transit Stops
   e) Drainage Inlets

2. Create a 200 foot buffer around each transit stop within the Commercial or High Density Residential Zoning
   a) Create new layer: Transit Buffer
   b) Type command “CIRCLE”, radius 200, place along each Node of the transit stop

3. Create a 200 foot buffer around each drainage inlet within the Commercial or High Density Residential Zoning
   a) Create new layer: DI Buffer
b) Type command “CIRCLE”, radius 200, place along each Node of the drainage inlet

4. Create a hatch within the areas of intersection of the transit stop and drainage inlet buffers to represent the areas that will need to be assessed
   a) Create new layer: Intersection
   b) Type command “HATCH”, pan to find an intersection point of a transit stop and drainage inlet and click within intersection

5. Create a rectangle to obtain 1-3 transit stops to be assessed
   a) Create new layer: Assessment Areas
   b) Type command “RECTANGLE”, draw size necessary, and place over intersection areas
   c) Create annotation and number assessment areas to keep track of survey locations

4.3 Determining Trash Generation Rates
The methodology the City of Clearlake took when determining the trash generation rates was utilizing the On-Land Visual Trash Assessment (OVTA) Protocol for Storm Water produced by EOA, Inc. In June 2019, Public Works staff met with Lake County’s Clean Water Program coordinator to be trained on the OVTA protocols for accurately and consistently assessing the amount of trash observed during the survey. Trash surveys were to be completed at least 48 hours after a rain event, street sweeping or clean-up event.

Trash generation levels were identified using the grading system used in the OVTA, whereas grades (A-D) are assigned based on certain trash scenarios (Table 11). While surveying each assessment area, the observers took notes on a score sheet and took adequate pictures to document their findings. An important note for trash surveyors: “Because the visual assessment protocol is intended to assess the level of trash greater than 5mm in length that is observed on-land and can reasonably be transported to the stormwater conveyance system, only trash that appears to be mobile or could be mobilized in a storm event should be considered in the assessment. Large items such as furniture, tires, and appliances that cannot fit into a storm drain inlet should not be included in this assessment. Additionally, graffiti on roads, buildings, or landscaping in disrepair should not affect the assessment grading.”
Table 11 Definitions of trash levels defined by the OVTA protocol.

<table>
<thead>
<tr>
<th>Trash Level</th>
<th>Definition</th>
</tr>
</thead>
</table>
| A Not Littered | • Effectively no trash is observed in the assessment area.  
• There may be some trash in the area, but it is not obvious at first glance.  
• One individual could easily clean up all the trash observed while walking at normal pace.  
• No additional trash reduction measures are needed in the assessment area. |
| B Slightly Littered | • Predominantly free of trash, except for a few littered areas.  
• Some trash is noticeable at first glance.  
• The trash observed could be collected by one or two individuals, but would require walking at a slower than normal pace.  
• Additional trash reduction measures are needed in the assessment area. |
| C Littered | • Predominantly littered, except for a few clean areas.  
• Trash is widely/evenly distributed and/or small accumulations are noticeable on the streets and sidewalks.  
• It would take multiple people to remove all trash from the area, frequently requiring individuals to stop walking to remove the trash.  
• Roughly 4 times as much trash as a “B” level. |
| D Very Littered | • Trash is continuously seen throughout the assessment area and there is a strong impression of lack of concern for litter.  
• Large piles of trash may be observed.  
• It would take a large number of people during an organized effort to remove all trash from the area, consistently requiring individuals to stop to remove the trash.  
• Roughly 3 times as much trash as a “C” level. |

4.4 Maps & Results
Approximately nineteen (19) assessment areas were identified in the City of Clearlake city limits that included all relevant PLUs, transit stops, and relevant drainage locations (Figure 22). Once all assessment areas were surveyed, the results input were averaged on the Trash Assessment results sheet (Figure 23). Final Trash generation rates were mapped to visually identify locations of low, moderate, high, and very high trash generation (Figure 24). The associated calculations for Parcel/Area and Street Baseline trash generation rates for the City of Clearlake from the trash survey results are also provided (Table 12).
Figure 22 City of Clearlake Assessment Areas Map (CL1-CL19)

Figure 23 City of Clearlake Trash Assessment Results Sheet
Table 12 City of Clearlake estimated annual trash loading rates for surface area (square feet) and street (linear feet) trash generation rates.

<table>
<thead>
<tr>
<th>Parcel / Area Baseline Trash Generation Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Area</td>
</tr>
<tr>
<td>CL 19</td>
</tr>
</tbody>
</table>

Parcel / Area Total Trash Generation For City of Clearlake 2,082,165

<table>
<thead>
<tr>
<th>Street Baseline Trash Generation Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Area</td>
</tr>
<tr>
<td>CL 18</td>
</tr>
<tr>
<td>CL1-2, 4-16</td>
</tr>
<tr>
<td>CL 17</td>
</tr>
<tr>
<td>CL 3</td>
</tr>
</tbody>
</table>

Street Total Trash Generation For City of Clearlake (gal/acre\textsuperscript{yr}) 491,250

Additional survey data and photos are provided in Appendix 7.
4.5 Trash Reductions Strategies – Current Baseline Management Measures
The following are a few of the existing and/or current BMPs implemented by the City:

a. City’s Stormwater Ordinance enforcement;
b. Regular street sweeping;
c. Fire Department spill response;
d. Trash cleanup in parks and other trash collection areas conducted by City staff and volunteer groups; and
e. Trash and recycling bin installation in parks

Various locations where City of Clearlake staff conducted trash assessments were primarily impacted by homeless individuals. Transient related trash is a challenging issue. City staff have provided trash bags for cleanup of various areas to volunteer groups such as Citizens Caring 4 Clearlake, a non-profit volunteer network, operating under North Coast Opportunities, that aims to rid the City of Clearlake of litter and blight. This effort has been very successful. Other BMPs to prevent trash from entering creeks and waterways include regularly scheduled street sweeping, which currently occurs on a monthly basis. In addition, both City Public Works crews and volunteers clean up the creeks as needed and volunteer-based creek clean-up events occur at least once a year.

4.6 Trash Reduction Strategies – Future Management Measures and Milestones
A first step in this process would be to identify very high, high, moderate, and low trash generating areas. Field assessments will be to confirm and refine the level of trash generation for specific areas within City jurisdiction. The City will designate Trash Management Areas (TMAs) where specific control measures exist or are planned for implementation. The methods to assess progress will be to:

a) Identify/select control measures
b) Delineate and prioritize management areas
c) Identify trash sources
d) Modify area designations & reprioritize problem areas
e) Implement control measures

The City may reprioritize trash management areas and associated control measures designed to improve trash reduction within City jurisdictions.

The City of Clearlake will also execute BMPs to reduce trash in its streets, parks, shopping centers and creeks year-round:

a) Install trash cans when and where needed.
b) Encourage commercial business owners to install trash screens/deflectors in catch basins located on their properties, remove trash daily from trash cans and install more trash cans if needed.
c) Outreach, educate and engage campaigning for anti- littering to businesses and other stakeholders in the community.
4.7 Evaluations of Trash Reductions
The City of Clearlake is committed to implementing standardized assessment methods based on lessons learned from previous assessments and will continue to improve and conduct evaluations, to monitor areas that need improvement, and consistency in trash reduction methods. Assessment activities will evaluate the use of different assessment methods to demonstrate progress towards trash reduction targets and provide recommended approaches for long-term implementation.

5.0 REPORTING

Each co-permittee is responsible for maintaining and reporting on their portion of this implementation plan including the tracking of information, data, and evaluation progress. During odd years, following the submission of this plan (e.g. 2021, 2023, 2025, 2027, and 2029), each co-permittee will electronically submit to the California Stormwater Multiple Applications and Report Tracking System (SMARTS) their biennial report as it relates to this trash implementation plan or any additionally requirements as provided by the Water Board. Reports will be submitted individually by each responsible co-permittee, or submitted together under the Clean Water Program and submitted by the County of Lake Water Resources Department representative. Each report will be submitted by the SMARTS MS4 Reporting Due Dates and will contain the following:

Current project staff and contacts
   a) Project activities that occurred during the last two year period
   b) Summary of trash reduction strategies implemented to date, if any
   c) Results of Trash Generation Assessment Surveys conducted during that calendar year, if applicable.
   d) Any changes or additional strategies to target trash reductions that are pertinent to that permittees designated section of this implementation plan.
   e) Any valuable information related to the progress of this implementation plan, including any activities or goals that do not meet specified timelines.

At any time where specified activities, progress reports, or compliance goals cannot be met by a co-permittee, communication will be made to inform the Water Board and the other parties within the Clean Water Program. Records of these communications will be included in any year-end reporting materials.

6.0 Appendices

List of Appendices

1) Rash Provision Order Letter June 2017 – From State Water Board
2) Track 2 Selection Letter – From Lake County Clean Water Program
   a. Lake County Trash Extension Request Letter Nov 2019 – From Lake County and
b. Lakeport Trash Implementation Extension Request Nov 2019 – From Lakeport

3) Trash Provision Extension Approval Letter February 2019

4) OVTA Survey Protocols
   a. Street & Sidewalk Surveys by EOA and
   b. OVTA Protocol B Driving Surveys by EOA

5) Data Sheets Modified for use by Lake County

6) Lake County: Additional Survey photos and data

7) Clearlake: Additional Survey photos and data
State Water Resources Control Board

June 1, 2017

Certified Mail: 7015 1660 0000 1530 9000

WDID: 5S17M2000251

Lake County Watershed Protection District
Attn: Scott De Leon or Environmental Coordinator
255 N Forbes Street
Lakeport, California 95453

WATER CODE SECTION 13383 ORDER TO SUBMIT METHOD TO COMPLY WITH STATEWIDE TRASH PROVISIONS; REQUIREMENTS FOR TRADITIONAL SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMITTEES

Dear Scott De Leon:

On April 7, 2015, the State Water Resources Control Board (State Water Board) adopted statewide Trash Provisions\textsuperscript{1621} to address the pervasive impacts trash has on the beneficial uses of our surface waters. Throughout the state, trash is typically generated on land and transported to surface water, predominantly through MS4 discharges. These discharges from Phase II MS4s are regulated through a statewide general permit (Phase II MS4 Permit)\textsuperscript{1622} pursuant to section 402(p) of the Federal Clean Water Act.

The Trash Provisions establish a statewide water quality objective for trash and a prohibition of trash discharge, or deposition where it may be discharged, to surface waters of the State. For Phase II MS4 permittees that have regulatory authority over Priority Land Uses,\textsuperscript{1623} the Trash Provisions require implementation of the prohibition through requirements incorporated into the Phase II MS4 Permit and/or through monitoring and reporting orders, by June 2, 2017. The State Water Board does not anticipate amending the existing Phase II MS4 Permit within the time frame specified by the Trash Provisions. Therefore, the initial steps in planning for the implementation of the Trash Provisions are required through this Order in accordance with Water Code section 13383, as specified in the Trash Provisions,\textsuperscript{1624} and as further authorized by Clean Water Act section 308(a) and 40 Code of Federal Regulations part 122.41(h). The implementation plans submitted in response to this Order are subject to approval by the State Water Board and appropriate Water Quality Control Board (Regional Water Board).

\textsuperscript{1621} Amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash (Ocean Plan) and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, And Estuaries Of California (ISWEBE Plan) to be adopted by the State Water Board. Documents may be downloaded from our website at http://www.waterboards.ca.gov/water_issues/programs/trash_control/documentation.shtml.

\textsuperscript{1622} National Pollutant Discharge Elimination System (NPDES) General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), Order No. 2013-0001-DWQ, NPDES No. CAS000004.

\textsuperscript{1623} All terms marked with an asterisk *" are defined in Enclosure, Trash Provisions Glossary.

\textsuperscript{1624} Chapter IV.A.5.a.(1)B of the ISWEBE Plan and Chapter III.L.4.a.(1)B of the Ocean Plan.
This Order is issued to implement federal law. The water quality objective established by the Trash Provisions serves as a water quality standard federally mandated under Clean Water Act section 303(c) and the federal regulations. (33 U.S.C. § 1312, 40 C.F.R. § 131.) This water quality standard was specifically approved by U.S. EPA following adoption by the State Water Board and approval by the Office of Administrative Law. This Order requests information necessary for municipal permittees to plan for implementation of actions to achieve the water quality standard for trash. Further, the water quality standard expected to be achieved pursuant to the Trash Provisions may allow each water body impaired by trash and already on the Clean Water Act section 303(d) list to be removed from the list, or each water body subsequently determined to be impaired by trash to not be placed on the list, obviating the need for the development of a total maximum daily load (TMDL) for trash for each of those water bodies. (33 U.S.C. § 1313(d); 40 C.F.R. § 130.7.) In those cases, the specific actions that will be proposed by the municipal permittees in response to this Order substitute for some or all of the actions that would otherwise be required consistent with waste load allocations in a trash TMDL. (40 C.F.R. § 122.44, subd. (d)(1)(vii)(B).) This Order nevertheless allows municipal permittees to select specific proposed actions to meet the federal requirements.

Non-municipal MS4 permittees, referred to as non-traditional MS4 permittees, are not subject to this Order. Non-traditional MS4 permittees generally do not have significant areas of Priority Land Uses under their authority. Therefore, this Order is not being issued to non-traditional MS4 permittees. Non-traditional MS4 permittees that generate substantial amounts of trash may be issued a separate Water Code section 13383 Order with requirements for Priority Land Uses and/or any additional specific land uses within their jurisdiction.

The Trash Provision requires Phase II MS4 permittees with regulatory authority over Priority Land Uses to select a method of compliance with the trash prohibition. Through this Order, the State Water Board requires Phase II traditional MS4 permittees to determine and report their selection of either the following Track 1 or Track 2 compliance methods:

1. **Track 1:** Install, operate, and maintain Full Capture Systems* for the storm drain network that capture runoff from the Priority Land Uses in their jurisdiction.

   Phase II MS4 permittees that select the Track 1 compliance method may discover that there are locations within their storm drain network where full capture systems cannot be implemented, or are better implemented within another land use area. The Trash Provisions allow a Phase II MS4 permittee with regulatory authority over Priority Land Uses to request, from the appropriate Regional Water Board Executive Officer, to substitute one or more Priority Land Uses with equivalent alternate land uses within the MS4 permittee’s jurisdiction.

2. **Track 2:** Install, operate, and maintain any combination of Full Capture Systems, Multi-Benefit Projects, other Treatment Controls, and/or Institutional Controls within either the jurisdiction of the MS4 permittee or the jurisdiction of the MS4 permittee and contiguous MS4 permittees. The MS4 permittee may determine the locations or land uses within its jurisdiction to implement any combination of controls. Permittees choosing Track 2 must

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1625 Chapter IV.A.3.d of ISWEBE Plan or Chapter III.L.2.d of the Ocean Plan.
1626 Chapter IV.A.3.a. of the ISWEBE Plan and Chapter III.L.2.a. of the Ocean Plan.
1627 See definition of Priority Land Uses in enclosed Trash Provisions Glossary.
demonstrate that the approach\textsuperscript{1628} will achieve Full Capture System Equivalency.'

To ensure the compliance method selection is completed accurately, the State Water Board, through this Order, requires the traditional Phase II MS4 permittees to complete and submit the following:

1. **Jurisdictional Maps.** Traditional Phase II MS4 permittees must develop jurisdictional maps identifying Priority Land Use areas, the corresponding storm drain network and associated drainage areas, and proposed locations for certified Full Capture System installations.

   Permittees selecting the Track 1 compliance method and are proposing alternative land uses shall identify the alternative land uses on the jurisdictional map and the corresponding priority land uses being substituted.

   Permittees selecting the Track 2 compliance method may determine the locations or land uses within their jurisdictions to implement any combination of controls that achieve Full Capture System Equivalency. Therefore, the permittee shall also identify on the jurisdictional maps the selected locations or land uses where a combination of controls, which are identified in Track 2 above, will be implemented to achieve Full Capture System Equivalency.

   The State Water Board recognizes that field surveys may be necessary to ensure the accuracy of jurisdictional map development. Therefore, this Order requires Phase II MS4 permittees to provide preliminary jurisdictional maps within three months from the date of this Order, and final jurisdictional maps within eighteen months from the date of this Order.

   These jurisdictional maps will assist review of the compliance method selection by the State Water Board and Regional Water Boards and also support development of appropriate permit requirements in a future Phase II MS4 permit reissuance.

2. **Trash Assessments.** Traditional Phase II MS4 permittees that elect the Track 2 compliance method must conduct and submit trash assessments to identify existing levels of trash generation.

   Through this Order, the State Water Board directs Traditional Phase II MS4 permittees selecting Track 2, at a minimum, to conduct a trash assessment of the Priority Land Use areas, even if they subsequently select other locations or land uses within their jurisdiction to implement any combination of controls that meet Full Capture System Equivalency. If proposing to select locations or land uses other than Priority Land Uses, the permittee must also assess trash levels at those locations or land uses and provide a justification demonstrating that the selected locations or land uses generate trash at rates that are equivalent to or greater than the Priority Land Uses. State or Regional Water Board approval may be based on the proposed trash assessments and corresponding justification.\textsuperscript{1629}

\textsuperscript{1628} The MS4 permittee may determine which controls to implement to achieve compliance with the Full Capture System Equivalency. It is, however, the State Water Board's expectation that the MS4 permittee will elect to install Full Capture Systems where such installation is not cost-prohibitive. (Chapter IV.A.3.a.(2) of the ISWEBE Plan and Chapter III.L.2.a.(2) of the Ocean Plan).

\textsuperscript{1629} In accordance with Permitting Authority's discrentional authority under Chapter IV.A.3.d. of the ISWEBE Plan or Chapter III.L.2.d. of the Ocean Plan.
The Trash Provisions provide two example trash assessment approaches for permittees to demonstrate Full Capture System Equivalency when a permittee selects the Track 2 compliance method. Phase II MS4 permittees may use alternative methods to demonstrate Full Capture System Equivalency. One alternative method currently implemented in the San Francisco Bay region is the Visual Trash Assessment Approach, an accepted assessment approach based on on-land visual trash assessments.\textsuperscript{1630} A description of the Visual Trash Assessment Approach\textsuperscript{1631} is enclosed in this Order and may be used by Phase II MS4 permittees to meet the requirement for a baseline assessment.

Information resulting from the trash assessments is necessary to develop appropriate requirements and provisions in the future Phase II MS4 Permit reissuance, including:
(1) Establishing a baseline for compliance tracking and determinations,
(2) Establishing interim milestones to demonstrate progress towards 100 percent compliance with the Trash Provisions within 10 years of the effective date of the implementing permit,\textsuperscript{1632}
(3) Evaluating the permittees’ planned implementation of Full Capture System Equivalency, and in
(4) Approving the implementation plan.

Permittees that select the Track 1 compliance method through implementation of certified Full Capture Systems in all storm drains that capture runoff from all Priority Land Use areas are not required to conduct trash assessments. Through the Track 1 compliance method, the State Water Board provides a streamlined compliance pathway with annual progress reporting of Full Capture System installation.

3. Implementation Plan. The implementation plan required by this Order in clause 3 below is subject to approval by the State Water Board Executive Director and/or the corresponding Regional Water Board Executive Officer.\textsuperscript{1633} A request for an equivalent alternative land use identified on the jurisdictional map, section 1 above, must be submitted within the implementation plan and approved by the Regional Water Board Executive Officer prior to installation and implementation of certified Full Capture Systems or Full Capture System Equivalency trash controls.

\textsuperscript{1630} The State Water Board-funded an evaluation (through Proposition 84 grant funds) of the on-land visual trash assessment method as part of the Tracking California’s Trash project conducted by the Bay Area Stormwater Management Agencies Association (BASMAA). The evaluation concluded that if visual assessments were conducted consistent with the protocol, the method could reliably establish baseline trash levels and detect progress in reducing trash in MS4 discharges over time.

\textsuperscript{1631} See Enclosure, Recommended Trash Assessment Minimum Level of Effort.

\textsuperscript{1632} Chapter IV.A.5.a.(2) and (3) of ISWEBE Plan or Chapter III.L.4.a.(2) and (3) of the Ocean Plan.

\textsuperscript{1633} Chapter IV.A.5.a.(1)B of the ISWEBE Plan or Chapter III.L.4.a.(1)B of the Ocean Plan.
Pursuant to Water Code section 13383, IT IS HEREBY ORDERED THAT, as a Permittee of the statewide Phase II MS4 permit, you shall:

1. By September 1, 2017, submit electronically via SMARTS;\(^\text{1634}\)
   a. A letter to State Water Board identifying the permittee's selected compliance option, (Track 1 or Track 2) as defined in this Order; and
   b. A preliminary jurisdictional map(s) identifying the following:
      i. Priority Land Use areas discharging to the storm drain network; and
      ii. The corresponding storm drain network that receives discharges from Priority Land Use areas.

2. Permittees Selecting Track 1: By December 1, 2018, submit electronically via SMARTS, an updated jurisdictional map(s) identifying the following:
   i. All Priority Land Use areas discharging to the storm drain network;
   ii. The corresponding storm drain network;
   iii. Proposed locations of all certified Full Capture Systems\(^\text{1635}\) and,
   iv. Proposed equivalent alternative land uses, documentation demonstrating that the substitution of equivalent alternative land uses has been approved by the appropriate Regional Water Board Executive Officer, and corresponding storm drainage network, if applicable.

3. Permittees Selecting Track 2: By December 1, 2018, submit electronically via SMARTS, the following:
   i. An updated jurisdictional map(s) identifying the following:
      a) All Priority Land Use areas and selected locations and land uses, other than the Priority Land Uses area, discharging to the storm drain network;
      b) The corresponding storm drain network; and
      c) Proposed locations of all certified Full Capture Systems and where any combination of controls will be implemented that will achieve Full Capture System Equivalency;
      d) Trash levels, using the methodology described in the attached recommended Visual Trash Assessment Approach or other equivalent trash assessment methodology, for all Priority Land Uses, and for other selected locations or land uses within the MS4s jurisdiction if proposing to implement any combination of controls in locations other than Priority Land Uses; and

\(^{1634}\) SMARTS stands for Storm Water Multiple Application and Report Tracking System and is an online database for dischargers to electronically file their permit documents. It can be accessed at: https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml

\(^{1635}\) A list of Certified Full Capture Systems is located at:
ii. An Implementation Plan that includes the following:

   a) The rationale for how the selected combination of controls will achieve Full Capture System Equivalency;
   b) The rationale for how Full Capture System Equivalency will be demonstrated;
   c) If using a methodology other than the attached recommended Visual Trash Assessment Approach to determine trash levels, a description of the methodology used and rationale of how the alternative methodology is equivalent to the recommended Visual Trash Assessment Approach; and
   d) If proposing to select locations or land uses other than Priority Land Uses, a rationale demonstrating that the alternative land uses generate trash at rates that are equivalent to or greater than the Priority Land Uses.

The Legally Responsible Person identified in SMARTS must sign and certify all submittals required by this Order, with the following certification:

"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 assure 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."

Failure to comply with this Order, or falsifying any information provided therein, may result in enforcement action including civil liabilities for late or inadequate reports consistent with Water Code section 13385.

Questions regarding this Order or any requests for assistance should be directed to Mr. Leo Cosentini of the Division of Water Quality at (916) 341-5524 or leo.cosentini@waterboards.ca.gov.

Sincerely,

[Signature]

Thomas Howard
Executive Director

Enclosures (3):
- Trash Policy Implementation Procedure Flowchart
- Trash Provisions Glossary
- Recommended Trash Assessment Minimum Level of Effort

cc: [see next page]
cc: [via email]

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matthias.st.john@waterboards.ca.gov

Bruce Wolfe  
San Francisco Bay Regional Water Quality Control Board  
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Kurt Berchtold  
Santa Ana Regional Water Quality Control Board  
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David Gibson  
San Diego Regional Water Quality Control Board  
david.gibson@waterboards.ca.gov
30 August 2017

To: Gayleen Perreira, Program Manager

Subject: Trash Implementation Program

Dear Ms. Perreira,

Pursuant to Assistant Deputy Director Phil Crader’s email of 29 August, I am submitting the Track selection and map justification for Lake County, Clearlake and Lakeport, California. The two cities and Lake County have selected to pursue Track II for compliance with the trash compliance methods.

We are unable to submit the preliminary jurisdictional maps at this time due to heavy commitment of County and municipal resources to recent widespread fires and flooding. We will comply with the March 1, 2018 extended deadline for the preliminary information and with the December 1, 2018 deadline for final submission of compliance documentation.

Thank you for your consideration in this matter. Sincerely,

Philip B. Moy, PhD
Director
November 30, 2018

Jaime Favila, Program Manager
Municipal Storm Water Unit
State Water Resources Control Board
1001 - I Street, 15th Floor
Sacramento, CA 95814

RE: Lake County Trash Implementation Program Compliance

Dear Mr. Favila,

Pursuant to your November 28, 2018 email, I want to inform you of the status of the Trash Implementation Program in Lake County. At this time, we are unable to submit our implementation plan (IP) with updated jurisdictional maps and respectfully request an extension until July 31, 2019.

In a letter dated August 30, 2017, my predecessor Dr. Moy requested an extension for deliverables required by Water Code 13383. He noted that wildfire and flood response prevented the County and our co-permittees, the cities of Clearlake and Lakeport, from meeting the deadline for preliminary jurisdictional maps. He requested an extension for the preliminary maps until March 1, 2018 and also confirmed the December 2018 deadline for the remainder of the requirements; the IP with included maps and selection rationales Preliminary maps for the County were submitted to SMARTs on March 2, 2018. However he did not upload maps representing the two cities.

Dr. Moy also indicated in his letter that the three co-permittees would comply with the December 1, 2018 deadline. Since Dr. Moy’s departure in April, new county staff (including myself), were hired and have begun working on the previously neglected MS4 permit. A Clean Water Program Agreement between co-permittees has been drafted and we are moving toward MS4 compliance. A Joint Submission Letter Request has also been drafted and will be submitted once it has been signed by all parties.

As to the Trash IP, during the transition I assumed incorrectly that the trash IP had been completed. I was unaware of the December 1 deadline until you reached out to each of us this week.
I am writing today only on behalf of Lake County and I assure you that the county trash IP will be completed by July 31, 2019. Because we do not have the joint agreement in place today, the other co-permittees will submit separate correspondence about their plans for trash IP compliance.

Thank you for your consideration in this matter.

Sincerely,

[Signature]

David Cowan
Director, Water Resources
County of Lake
December 3, 2018

Jaime Favila, Program Manager
Municipal Storm Water Unit
State Water Resources Control Board
1001 – I Street, 15th Floor
Sacramento CA  95814

Sent via Email: Jaime.Favila@waterboards.ca.gov
Re: City of Lakeport Trash Implementation Program Compliance

Dear Mr. Favila,

After your communication with our City Manager, Margaret Silveira, in regard to the City of Lakeport Trash Implementation Program compliance, we followed up with the County of Lake as to the status of the submittals due on December 2, 2018. As you are aware, we are completing the formal renewal of the agreement to be Co-Permittees with the City of Clearlake and the County of Lake. The updated agreement is expected to be adopted in the very near future. However, as the updated agreement has not yet been adopted, and the SWRCB currently considers the City of Lakeport to be an independent permittee, we are requesting a time extension until, July 31, 2019, to move forward as Co-Permittees with the County of Lake and City of Clearlake, and to be in compliance with the revisions of the Trash Implementation Program applicable to our community.

If you have any questions or concerns regarding this issue, please contact Kevin Ingram Community Development Department Director, at (707) 263-5615 x 201 or via email at kingram@cityoflakeport.com.

Sincerely,

Bonne C. Sharp
Permit Technician
City of Lakeport

CC:  Margaret Silveira, City Manager
     Kevin Ingram, Community Development Director
     David Cowan, County of Lake Water Resources Dept.
     NPDES Trash Program File
FEB 05 2019

David Cowan
Director Water Resources
County of Lake
255 N. Forbes Street
Lakeport, CA 95453
WDID 5S 17M2000251

Greg Folsom
City Manager
City of Clearlake
14050 Olympic Drive
Clearlake, CA 95422
WDID 5S 17M2000256

Margaret Silveira
City Manager
City of Lakeport
225 Park Street
Lakeport, CA 95453
WDID 5S 17M2000045

APPROVAL OF REQUESTS FOR TIME EXTENSION FOR METHODS TO COMPLY WITH THE STATEWIDE TRASH PROVISIONS, WATER CODE SECTION 13383 ORDER

Dear Mr. Cowan, Mr. Folsom, and Ms. Silveira:

The Lake County and the cities of Lakeport and Clearlake requests for an extension to the December 1, 2018 compliance date specified in the June 1, 2017 Water Code 13383 Order (Order) issued to your agencies is approved.

The State Water Board staff received the County’s request via email on November 30, 2018 and the cities’ requests via email on December 3, 2018. Your request for an additional seven months to submit your reports for the selected method of compliance with the Order is due to:

- The diversion of resources and staff to manage wildfires;
- Unusually high turnover of management and technical staff creating a loss of institutional knowledge; and

State Water Resources Control Board staff recognize the strain on local resources caused by the July 2018 Mendocino Complex Fire that was declared a state of emergency by then-Governor Brown. This approved time extension establishes a new due date of July 1, 2019 for submittal of the subject methods. Please note that Lake County and the two cities must each upload its respective submittal to the SMARTS database.¹

¹ State Water Resources Control Board Stormwater Multiple Application Reporting Tool database, located at https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.xhtml
If you have any questions, please contact Jaime Favila at (916) 341-5482 or Jaime.Favila@waterboards.ca.gov.

Sincerely,

[Signature]
Karen Mogus, Deputy Director
Division of Water Quality

cc (via email only):
Alan Pyeatt, City of Clearlake, apyeatt@clearlake.ca.us
Doug Herren, City of Clearlake, dherren@clearlake.ca.us
Angela DePalma, County of Lake, Angela.Depalma-Dow@lakecountyca.gov
Bonnie Sharp, City of Lakeport, bsharp@cityoflakeport.com
Andrew Britton, City of Lakeport, abritton@cityoflakeport.com
Kevin Ingram, City of Lakeport, kingram@cityoflakeport.com
Elizabeth Lee, Central Valley Regional Water Board, Elizabeth.Lee@waterboards.ca.gov
Bryan Smith, Central Valley Regional Water Board, Bryan.Smith@waterboards.ca.gov
On-land Visual Trash Assessment Protocol for Stormwater

Protocol A - Street & Sidewalk Survey
Establishing baseline levels of trash generation and assessing changes in trash levels

Version 2.0
Preface

The On-Land Visual Trash Assessment (OVTA) Protocol was originally developed by EOA, Inc. in 2015 to provide public agencies subject to the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (MRP) requirements with a mechanism to establish baseline trash levels on streets and sidewalks, and demonstrate trash load reductions from their stormwater conveyance systems due to trash prevention and reduction controls. The original protocol focused on conducting surveys of trash on streets and sidewalks, and was revised in 2017. The 2017 version of the protocol is now referred to as Protocol A – Street and Sidewalk Survey.

In response to the need to apply similar assessment concepts to areas that do not have sidewalks or safe pedestrian access, or are not associated with streets/sidewalk, EOA developed two additional OVTA protocols in 2017. Protocol B – Driving Survey should be used in situations where pedestrian access is not safe or available (e.g., highways). Protocol C – Area-based Survey should be used in situations where the area of interest is not associated with the adjacent roadway or sidewalk, such as parking lots. Protocols A, B and C may be updated/revised periodically by EOA, Inc.

Disclaimer

OVTA Protocols A, B and C are the property of EOA, Inc. (1410 Jackson Street, CA 94612 www.eoainc.com) and may not be used, published or redistributed without the prior written consent of EOA, Inc. The protocols were developed in good faith and while every care has been taken in preparing the documents, EOA, Inc. makes no representations and gives no warranties of whatever nature in respect of these documents, including but not limited to the accuracy or completeness of any information, facts and/or opinions contained herein. These protocols are used at the complete will and discretion of the user, who should implement the appropriate health and safety procedures based on site-specific conditions determined by the user. EOA, Inc., its directors, employees and agents cannot be held liable for the use of and reliance of the opinions, estimates, forecasts and findings in these protocols.
INTRODUCTION

The On-land Visual Trash Assessment Protocol for Stormwater is designed to provide qualitative estimates of the amount of trash that accumulates on specific street segments, sidewalks and adjacent land areas that may be transported to a municipal stormwater conveyance system. Trash accumulation is a term used to describe the level of trash deposited onto land areas and available for transport to the conveyance system prior to removal via street sweeping or other significant management actions that intercept trash before entering the stormwater conveyance system. Trash generation is a term used to describe the remaining level (i.e., volume) of trash transported by the stormwater conveyance system to receiving waters (e.g., creeks, rivers, lakes, estuaries, bays and oceans).

The On-land Visual Trash Assessment Protocol for Stormwater serves the following two purposes:

1) **Establishing Baseline Levels of Trash Generation** - to establish baseline levels of trash generation for specific land areas using four trash generation categories1, and;

2) **Assessing Changes in Levels of Trash Generation** - to provide a qualitative tool to assist in evaluating changes in the level of on-land trash that is transported by the stormwater conveyance system to receiving waters.

This protocol (A) focuses primarily on evaluating trash levels that accumulates on streets and sidewalks by walking these public right-of-ways. For streets that do not have sidewalks or are unsafe to walk, please refer to Protocol B – Driving Survey. For conducting area-based on-land visual assessments on the interiors of properties, such as parking lots of large commercial properties, please refer to Protocol C – Area-based Surveys. All three protocols are available at [http://eoainc.com/ovta_fc/](http://eoainc.com/ovta_fc/).

When using this methodology, the definition of trash or litter is generally consistent with the definition included in the California Code Section 68055.1(g)1, but excludes sediments, sand, vegetation, oil and grease, exotic species, food waste (e.g., apple cores, banana peels), landscaping material that has been improperly disposed on the public right-of-way, and pet wastes. Additionally, mattresses, shopping carts, furniture, appliances, contained bags of trash, and all other illegally dumped large items not capable of fitting in a storm drain inlet opening; and trash that is less than 5mm in length are also excluded from the definition of trash.

PERSONNEL

This methodology requires **at least two trained personnel**, both for objectivity and safety. An additional person in the office should be designated as a point-of-contact with cell phone numbers of both field personnel and their planned schedule (i.e., location and time).

---

1 Defined as 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, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling, or manufacturing.
EQUIPMENT

The following equipment is needed to properly apply the protocol:

- Clipboard
- Pencils and colored markers/sharpie
- Digital camera (preferably with GPS capabilities)
- One copy of field form for each assessment area (including map)

Wearing bright clothing or safety vests is also recommended.

ASSESSMENT AREA

When establishing baseline trash generation for the purposes of complying with the California State Water Resource Control Board’s Trash Amendments, assessments should be conducted in areas associated with Priority Land Use (PLU) areas or equivalent alternative land areas. The width of the assessment area should extend from the center line of the road (or middle of the median) to the edge of the adjacent property, and include all portions of the public right-of-way (ROW) that convey stormwater to the stormwater conveyance system. The assessment area should include, but not be limited to the median, street, gutter, curb, sidewalk, backside of sidewalk, and vegetated areas (e.g., grass, bushes, and tree wells). The assessment area should also include any trash in visible areas that could theoretically reach the stormwater conveyance system, regardless if it is in the public right-of-way or private land area. If there are obstructions such as a building or fence that would prevent trash from moving to the stormwater drainage system, the area should not be included in the assessment area.

TIMING OF ASSESSMENT

Establishing Baseline Trash Generation

When using this protocol to assess baseline trash levels, the timing of the assessment should be selected carefully in accordance with the following directions. To ensure that the level of baseline trash generation is not underestimated, assessments should be conducted prior to reoccurring trash control measure implementation events (e.g. street-sweeping). At a minimum,
the assessment should be performed sometime after the half-way point between sweeping events (or other reoccurring control measure implementation events). This will ensure that the trash conditions observed are most likely at or above typical levels for that location.

**Assessing Changes in Trash Levels**

When using this protocol to assess changes in trash levels over time, the timing of the assessment should be selected carefully in accordance with the following directions. To ensure that the level of observed is not under or overestimated, assessments should be conducted roughly half-way between reoccurring trash control measure implementation events (e.g. street-sweeping).

**Considerations of Rainfall (Transport) Events**

To reduce the influence of recent rainfall-runoff events on the levels of trash accumulated at visible during assessments, assessments should not be conducted after a significant rainfall-runoff event. For the purposes of this protocol, a significant rainfall event is defined as at least 0.5 inches of rain in a 24-hour period occurring within a 48-hour period before the assessment. Rainfall volumes can be tracked at the following websites or other local rainfall data management systems:

http://cdec.water.ca.gov/cgi-progs/precip/DLYPCP

If more than one half-inch of rainfall has fallen within a 24-hour period prior to the assessment, then the assessment should be rescheduled.

**TRASH LEVEL CATEGORIES**

Trash levels established by using this protocol are based visual observations of the magnitude and extent of trash observed in a defined assessment area. There are four trash level categories (A, B, C and D). The definitions for each are provided in Table 1. Example images and links to videos illustrating trash levels are provided in Appendix A.
Table 1. Definitions of trash levels defined by the On-land Visual Trash Assessment protocol.

<table>
<thead>
<tr>
<th>Trash Level</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Not Littered</td>
<td>• Effectively no trash is observed in the assessment area.</td>
</tr>
<tr>
<td></td>
<td>• There may be some trash in the area, but it is not obvious at first glance.</td>
</tr>
<tr>
<td></td>
<td>• One individual could easily clean up all the trash observed while walking at normal pace.</td>
</tr>
<tr>
<td></td>
<td>• No additional trash reduction measures are needed in the assessment area.</td>
</tr>
<tr>
<td>B Slightly Littered</td>
<td>• Predominantly free of trash, except for a few littered areas.</td>
</tr>
<tr>
<td></td>
<td>• Some trash is noticeable at first glance.</td>
</tr>
<tr>
<td></td>
<td>• The trash observed could be collected by one or two individuals, but would require walking at a slower than normal pace.</td>
</tr>
<tr>
<td></td>
<td>• Additional trash reduction measures are needed in the assessment area.</td>
</tr>
<tr>
<td>C Littered</td>
<td>• Predominantly littered, except for a few clean areas.</td>
</tr>
<tr>
<td></td>
<td>• Trash is widely/evenly distributed and/or small accumulations are noticeable on the streets and sidewalks.</td>
</tr>
<tr>
<td></td>
<td>• It would take multiple people to remove all trash from the area, frequently requiring individuals to stop walking to remove the trash.</td>
</tr>
<tr>
<td></td>
<td>• Roughly 4 times as much trash as a “B” level.</td>
</tr>
<tr>
<td>D Very Littered</td>
<td>• Trash is continuously seen throughout the assessment area and there is a strong impression of lack of concern for litter.</td>
</tr>
<tr>
<td></td>
<td>• Large piles of trash may be observed.</td>
</tr>
<tr>
<td></td>
<td>• It would take a large number of people during an organized effort to remove all trash from the area, consistently requiring individuals to stop to remove the trash.</td>
</tr>
<tr>
<td></td>
<td>• Roughly 3 times as much trash as a “C” level.</td>
</tr>
</tbody>
</table>

**Important Note:** Because the visual assessment protocol is intended to assess the level of trash greater than 5mm in length that is observed on-land and can reasonably be transported to the stormwater conveyance system, only trash that appears to be mobile or could be mobilized in a storm event should be considered in the assessment. **Large items** such as furniture, tires, and appliances that cannot fit into a storm drain inlet should **not be included** in this assessment. Additionally, graffiti on roads, buildings, or landscaping in disrepair should not affect the assessment grading.
Establishing Baseline Trash Generation

The following on-land visual assessment protocol should be used to establish baseline trash levels for a specific land area. The time to complete the protocol will depend on assessment area size (expect approximately 5 to 10 minutes per block, including discussions among team members and completion of the field form).

The protocol consists of the following steps that should be conducted in sequential order:

1. **Identify assessment areas.** Assessment areas should be delineated on the map(s) of areas (e.g., PLUs). Areas should be identified on the map(s) using a unique ID or other label, which should also be used on the data collection form and/or tracking spreadsheet.

2. **Confirm timing** falls directly before control measure implementation and does not follow a significant rainfall event.

3. **Assemble equipment** needed to conduct the assessment including the data collection form and map(s) delineating the assessment area (see Appendix B).

4. **Review trash condition category definitions** presented in Table 1 (also included on the data collection form) and photo examples in Appendix A.

5. After arriving at the assessment area, **safely walk at a normal pace on the sidewalk** from one end of the area to the other. Team members should discuss their observations as they walk.

6. **Carefully look for trash deposited in the assessment area.** The width of the assessment area extends from the center line of the road (or middle of the median) to back of the sidewalk, and includes all portions of the public right-of-way that could reach the stormwater drainage system, including but not limited to the median, street, gutter, curb, sidewalk, back of sidewalk, and vegetated areas (e.g., grass, bushes, and tree wells). Also, include any trash observed on lands adjacent to sidewalk/street that could theoretically reach the stormwater conveyance system, if there are no obstructions such as a building or fence that would prevent trash from being transported to the system.

7. **If desired, note sources of trash on the data collection form.** If the source of the observed trash is evident and may require the attention of municipal staff, mark the source in section III of the data collection form and the location on the map as needed.

8. **Take one to three photographs per assessment area** to document observed trash conditions. A photograph should be taken for each trash category present in the assessment area, and the photographs should depict an equal area of road and sidewalk. If possible, assign a tag to each photograph that specifies the date and site ID for the assessment. Photographs of trash sources or other items of interest are optional. Identify photos in section II of the data collection form and record the particular camera used (if different cameras are regularly used for assessments).

9. If, based on the observations made during the assessment, there is a **significant difference in the trash generation category within the assessment area,** define a new assessment area on the map and complete a new data collection form.

10. Team members may individually choose a trash generation category initially, but must **collectively agree on the appropriate trash generation category** to assign to the area. Mark the category observed in section II on the data collection form and/or on the field map. While recording information on the data collection form, take time to write legibly. Errors can arise due to numbers in dates and photograph IDs being misread when the data are entered into the OVTA web application. Additionally, record the full names of each
field crew member that participated in the assessment so that they may be consulted if discrepancies with the assessment data are found.

11. **At the end of each assessment, review the data collection form** for accuracy, legibility, and completeness. Upon completing the final assessment of the day, review all forms to ensure that there is no missing information.
Assessing Changes in Trash Levels (Over Time)

The following on-land visual assessment protocol should be used to assess changes in trash levels for a specific land area. The time to complete the protocol will depend on assessment area size (expect approximately 5 to 10 minutes per block, including discussions among team members and completion of the field form).

The protocol consists of the following steps that should be conducted in sequential order:

1. **Identify timing** of the assessment so that it falls roughly halfway between reoccurring control measure implementation and does not follow a significant rainfall event.

2. **Assemble equipment** needed to conduct the assessment including the data collection form and map(s) delineating the assessment area (see Appendix C).

3. **Review trash condition category definitions** presented in Table 1 (also included on the data collection form) and photo examples in Appendix A.

4. After arriving at the assessment area, **safely walk at a normal pace on the sidewalk** from one end of the assessment site to the other. Team members should discuss their observations as they walk.

5. **Carefully look for trash deposited in the assessment area.** The width of the assessment area extends from the center line of the road (or middle of the median) to back of the sidewalk, and includes all portions of the public right-of-way that could reach the stormwater drainage system, including but not limited to the median, street, gutter, curb, sidewalk, back of sidewalk, and vegetated areas (e.g., grass, bushes, and tree wells). Also, include any trash observed on lands adjacent to sidewalk/street that could theoretically reach the stormwater conveyance system, if there are no obstructions such as a building or fence that would prevent trash from being transported to the system.

6. **If desired, note sources of trash on the data collection form.** If the source of the observed trash is evident and may require the attention of municipal staff, mark the source in section III of the data collection form. Mark its location on the map as needed.

7. **Take one to three photographs per assessment site** to document observed trash conditions. A photograph should be taken for each trash category present in the assessment area, and the photographs should depict an equal area of road and sidewalk. If possible, assign a tag to each photograph that specifies the date and site ID for the assessment. Photographs of trash sources or other items of interest are optional. Identify photos on the field form and record the particular camera used (if different cameras are regularly used for assessments).

8. **If, based on the observations made during the assessment, there is a significant difference in the trash generation category within the assessment area,** on the field form map, identify the portion of the site that falls within each trash level category.

9. Team members may individually choose a trash generation category initially, but must **collectively agree on the appropriate trash generation category** to assign to the site or portion of the site if there is significant variation at the site. Mark the category observed on the data collection form. While recording information on the data collection form, take time to write legibly. Errors can arise due to numbers in dates and photograph IDs being misread when the data are entered into the OVTA web application. Additionally, record the full names of each field crew member that participated in the assessment so that they may be consulted if discrepancies with the assessment data are found.

10. **At the end of each assessment, review the data collection form** for accuracy, legibility, and completeness. Upon completing the final assessment of the day, review all forms to ensure that there is no missing information.
APPENDIX A

PHOTOGRAPH EXAMPLES OF TRASH CONDITION CATEGORIES
CATEGORY A - LOW TRASH LEVEL (NOT LITTERED)

Effectively no trash is observed in the assessment area. There may be some trash in the area, but it is not obvious at first glance. One individual could easily clean up all the trash observed while walking at normal pace. No additional trash reduction measures are needed in the assessment area. To see videos of sites with Category “A” trash levels, click here.
CATEGORY B – MODERATE TRASH LEVEL (SLIGHTLY LITTERED)

Predominantly free of trash, except for a few littered areas. Some trash is noticeable at first glance. The trash observed could be collected by one or two individuals, but would require walking at a slower than normal pace. Additional trash reduction measures are needed in the assessment area. To see videos of sites with Category “B” trash levels, click here.
CATEGORY C: HIGH TRASH LEVEL (LITTERED)

Predominantly littered, except for a few clean areas. Trash is widely/evenly distributed and/or small accumulations are noticeable on the streets and sidewalks. It would take multiple people to remove all trash from the area, frequently requiring individuals to stop walking to remove the trash. Roughly 4 times as much trash as a “B” level. To see videos of sites with Category “C” trash levels, click here.
CATEGORIES D: VERY HIGH TRASH LEVEL (VERY LITTERED)

Trash is continuously seen throughout the assessment area and there is a strong impression of lack of concern for litter. Large piles of trash may be observed. It would take a large number of people during an organized effort to remove all trash from the area, consistently requiring individuals to stop to remove the trash. Roughly 3 times as much trash as a “C” level. To see videos of sites with Category “D” trash levels, click here.
APPENDIX B

EXAMPLE FIELD FORM FOR ESTABLISHING BASELINE TRASH LEVELS
**OVTA Data Collection Form – Street and Sidewalk Surveys**

**Agency:** ____________________________ **Date:** ____________________________

**Team Members:** ____________________________ **Contact E-mail:** ____________________________

**Note:** Fill out a separate Data Collection Form for each assessment area

---

### I. Assessment Area

**MAP ID**

**Assessment Area:** Delineate the assessment area on your jurisdictional map, create a map ID, and mark the ID on the map and place in the box provided to the left. Below, describe the location and boundaries of the assessment area. Include the street segment name, length of the street based on cross streets, and land area description (if applicable).

---

### II. Condition Category Assignment

**Trash Condition Category**

Conduct the assessment in accordance with the Visual On-land Assessment Protocol for Stormwater (Refer to Definitions below). Check one of the below categories based on the assessment.

- [ ] Low (A)
- [ ] Moderate (B)
- [ ] High (C)
- [ ] Very High (D)

**Photograph Documentation**

Indicate if photographs were taken and are maintained by your agency.

Photographs: [ ] Number of photographs taken: ____________________________

**Measureable Rainfall in past 48 hours:**

- [ ] Yes
- [ ] No

<table>
<thead>
<tr>
<th>Trash Condition Category</th>
<th>Definition</th>
</tr>
</thead>
</table>
| 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      | - Predominantly free of trash except for a few littered areas.  
- On average, one piece per two car lengths  
- The trash could be collected by one or two individuals in a short period of time. |
| 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         | - Trash is continuously seen throughout the assessment area,  
- Large piles and 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. |
### III. Preliminary Source Identification (Optional)

Stormwater trash sources identified within the assessment area during assessments (CHECK ALL SOURCES THAT APPLY).

<table>
<thead>
<tr>
<th>Vehicles</th>
<th>Inadequate Waste Container Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Moving Vehicles</td>
<td>☐ Overflowing or uncovered receptacles/dumpsters</td>
</tr>
<tr>
<td>☐ Parked Cars</td>
<td>☐ Dispersal of household trash and recyclables before, during and after collection</td>
</tr>
<tr>
<td>☐ Uncovered Loads</td>
<td>☐ Other __________________________________________________________________</td>
</tr>
<tr>
<td>☐ Other __________________</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pedestrian Litter</th>
<th>Illegal Dumping</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Restaurants</td>
<td>☐ Illegal dumping on-land</td>
</tr>
<tr>
<td>☐ Convenience Stores</td>
<td>☐ Homeless encampments</td>
</tr>
<tr>
<td>☐ Liquor Stores</td>
<td>☐ Other __________________________________________________________________</td>
</tr>
<tr>
<td>☐ Bus Stops</td>
<td></td>
</tr>
<tr>
<td>☐ Special Events</td>
<td></td>
</tr>
<tr>
<td>☐ Other ___________________</td>
<td></td>
</tr>
</tbody>
</table>

### IV. Comments and Additional Information about the Assessment Area and Sources

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
APPENDIX C

Example Field Form for Assessing Changes in Trash Levels
Visual Trash Assessment Form

Assessment ID: ___________________

Staff: ___________________________ Date: ________________ Duplicate: ☐

FOR OFFICE USE ONLY: For Events with Substantial Variation in Category

\[ \text{Lake County Clean Water Program Trash Plan: Appendix 5a} \]

Field Site Location Image

<table>
<thead>
<tr>
<th>Trash Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Transit Stop</td>
</tr>
<tr>
<td>2 Convience Store/Gas Station</td>
</tr>
<tr>
<td>3 Restaurants/Cafes</td>
</tr>
<tr>
<td>4 Overflowing Trash Receptacle</td>
</tr>
<tr>
<td>5 Dispersal from Garbage Pickup</td>
</tr>
<tr>
<td>6 Construction Site</td>
</tr>
<tr>
<td>7 Special Event (e.g. farmers market, fair)</td>
</tr>
<tr>
<td>8 Parking Lot</td>
</tr>
<tr>
<td>9 Illegal Dumping</td>
</tr>
<tr>
<td>10 Other:</td>
</tr>
</tbody>
</table>

Observed Trash Category: ___________ Substantial Variation in Category? yes / no (If yes, see below)

\# of Plastic Bags Observed: ___________ Substantial Inlet Trash: Picture ID #: ___________

Posted Street Sweeping Schedule: ___________

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

Comments: ____________________________

FOR OFFICE USE ONLY: For Events with Substantial Variation in Category

<table>
<thead>
<tr>
<th>Low Results (ft)</th>
<th>Mod Results (ft)</th>
<th>High Results (ft)</th>
<th>Very High Results (ft)</th>
<th>Total Site Length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
On-Land Visual Trash Assessment Protocol for Stormwater

Protocol B - Driving Survey
Establishing baseline levels of trash generation and assessing changes in trash levels

Version 2.0

March 2018
Preface

The On-Land Visual Trash Assessment (OVTA) Protocol was originally developed by EOA, Inc. in 2015 to provide public agencies subject to the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (MRP) requirements with a mechanism to establish baseline trash levels on streets and sidewalks, and demonstrate trash load reductions from their stormwater conveyance systems due to trash prevention and reduction controls. The original protocol focused on conducting surveys of trash on streets and sidewalks, and was revised in 2017. The 2017 version of the protocol is now referred to as Protocol A – Street and Sidewalk Survey.

In response to the need to apply similar assessment concepts to areas that do not have sidewalks or safe pedestrian access, or are not associated with streets/sidewalk, EOA developed two additional OVTA protocols in 2017. Protocol B – Driving Survey should be used in situations where pedestrian access is not safe or available (e.g., highways). Protocol C – Area-based Survey should be used in situations where the area of interest is not associated with the adjacent roadway or sidewalk, such as parking lots. Protocols A, B and C may be updated/revised periodically by EOA, Inc.

Disclaimer

OVTA Protocols A, B and C are the property of EOA, Inc. (1410 Jackson Street, CA 94612 www.eoainc.com) and may not be used, published or redistributed without the prior written consent of EOA, Inc. The protocols were developed in good faith and while every care has been taken in preparing the documents, EOA, Inc. makes no representations and gives no warranties of whatever nature in respect of these documents, including but not limited to the accuracy or completeness of any information, facts and/or opinions contained herein. These protocols are used at the complete will and discretion of the user, who should implement the appropriate health and safety procedures based on site-specific conditions determined by the user. EOA, Inc., its directors, employees and agents cannot be held liable for the use of and reliance of the opinions, estimates, forecasts and findings in these protocols.
INTRODUCTION

The On-land Visual Trash Assessment Protocol for Stormwater is designed to provide qualitative estimates of the amount of trash that accumulates on specific street segments, sidewalks and adjacent land areas that may be transported to a municipal stormwater conveyance system. Trash accumulation is a term used to describe the level of trash deposited onto land areas and available for transport to the conveyance system prior to removal via street sweeping or other significant management actions that intercept trash before entering the stormwater conveyance system. Trash generation is a term used to describe the remaining level (i.e., volume) of trash transported by the stormwater conveyance system to receiving waters (e.g., creeks, rivers, lakes, estuaries, bays and oceans).

The On-land Visual Trash Assessment Protocol for Stormwater serves the following two purposes:

1) Establishing Baseline Levels of Trash Generation - to establish baseline levels of trash generation for specific land areas using four trash generation categories\(^1\), and;

2) Assessing Changes in Levels of Trash Generation - to provide a qualitative tool to assist in evaluating changes in the level of on-land trash that is transported by the stormwater conveyance system to receiving waters.

This protocol (B) focuses primarily on evaluating trash levels on streets that do not have sidewalks or are unsafe to walk. If streets of interest have sidewalks and can be walked safely, then please refer to Protocol A – Street and Sidewalk Surveys. For conducting area-based on-land visual assessments on the interiors of properties, such as parking lots of large commercial properties, please refer to Protocol C – Area-based Surveys. All three protocols are available at http://eoainc.com/ovta_fc/.

When using this methodology, the definition of trash or litter is generally consistent with the definition included in the California Code Section 68055.1(g)\(^1\), but excludes sediments, sand, vegetation, oil and grease, exotic species, food waste (e.g., apple cores, banana peels), landscaping material that has been improperly disposed on the public right-of-way, and pet wastes. Additionally, mattresses, shopping carts, furniture, appliances, contained bags of trash, and all other illegally dumped large items not capable of fitting in a storm drain inlet opening; and trash that is less than 5mm in length are also excluded from the definition of trash.

PERSONNEL

This methodology requires at least two people, one driver and at least one passenger performing the assessments and managing the camera. An additional person in the office should be designated as a point-of-contact with cell phone numbers of both field personnel and their planned schedule (i.e., location and time).

\(^{1}\) Defined as 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, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling, or manufacturing.
EQUIPMENT

The following equipment is needed to properly apply the protocol:

- Digital camera (preferably with GPS capabilities)
- A car window mount to hold the camera steady
- Pencils and marker
- Field form and/or maps of the assessment area

ASSESSMENT AREA

When establishing baseline trash generation for the purposes of complying with the California State Water Resource Control Board’s Trash Amendments, assessments should be conducted in areas associated with Priority Land Use (PLU) areas or equivalent alternative land areas. The width of the assessment area should extend from the center line of the road (or middle of the median) to the edge of the adjacent property, and include all portions of the public right-of-way (ROW) that convey stormwater to the stormwater conveyance system. The assessment area should include, but not be limited to the median, street, gutter, curb, sidewalk, backside of sidewalk, and vegetated areas (e.g., grass, bushes, and tree wells). The assessment area should also include any trash in visible areas that could theoretically reach the stormwater conveyance system, regardless if it is in the public right-of-way or private land area. If there are obstructions such as a building or fence that would prevent trash from moving to the stormwater drainage system, the area should not be included in the assessment area.

TIMING OF ASSESSMENT

Establishing Baseline Trash Generation

When using this protocol to assess baseline trash levels, the timing of the assessment should be selected carefully in accordance with the following directions. To ensure that the level of baseline trash generation is not underestimated, assessments should be conducted prior to reoccurring trash control measure implementation events (e.g. street-sweeping). At a minimum,
the assessment should be performed sometime after the half-way point between sweeping events (or other reoccurring control measure implementation events). This will ensure that the trash conditions observed are most likely at or above typical levels for that location.

**Assessing Changes in Trash Levels**

When using this protocol to assess changes in trash levels over time, the timing of the assessment should be selected carefully in accordance with the following directions. To ensure that the level of observed is not under or overestimated, assessments should be conducted roughly half-way between reoccurring trash control measure implementation events (e.g. street-sweeping).

**Considerations of Rainfall (Transport) Events**

To reduce the influence of recent rainfall-runoff events on the levels of trash accumulated at visible during assessments, assessments should not be conducted after a significant rainfall-runoff event. For the purposes of this protocol, a significant rainfall event is defined as at least 0.5 inches of rain in a 24-hour period occurring within a 48-hour period before the assessment. Rainfall volumes can be tracked at the following websites or other local rainfall data management systems:

- [http://cdec.water.ca.gov/cgi-progs/precip/DLYPCP](http://cdec.water.ca.gov/cgi-progs/precip/DLYPCP)

If more than one half-inch of rainfall has fallen within a 24-hour period prior to the assessment, then the assessment should be rescheduled.

**TRASH LEVEL CATEGORIES**

Trash levels established by using this protocol are based visual observations of the magnitude and extent of trash observed in a defined assessment area. There are four trash level categories (A, B, C and D). The definitions for each are provided in Table 1. Example images and links to videos illustrating trash levels are provided in Appendix A.
### Table 1. Definitions of trash levels defined by the On-land Visual Trash Assessment protocol.

<table>
<thead>
<tr>
<th>Trash Level</th>
<th>Definition</th>
</tr>
</thead>
</table>
| **A** Not Littered | • Effectively no trash is observed in the assessment area.  
                  • There may be some trash in the area, but it is not obvious at first glance.  
                  • One individual could easily clean up all the trash observed while walking at normal pace.  
                  • No additional trash reduction measures are needed in the assessment area. |
| **B** Slightly Littered | • Predominantly free of trash, except for a few littered areas.  
                           • Some trash is noticeable at first glance.  
                           • The trash observed could be collected by one or two individuals, but would require walking at a slower than normal pace.  
                           • Additional trash reduction measures are needed in the assessment area. |
| **C** Littered | • Predominantly littered, except for a few clean areas.  
                           • Trash is widely/evenly distributed and/or small accumulations are noticeable on the streets and sidewalks.  
                           • It would take multiple people to remove all trash from the area, frequently requiring individuals to stop walking to remove the trash.  
                           • Roughly 4 times as much trash as a “B” level. |
| **D** Very Littered | • Trash is continuously seen throughout the assessment area and there is a strong impression of lack of concern for litter.  
                           • Large piles of trash may be observed.  
                           • It would take a large number of people during an organized effort to remove all trash from the area, consistently requiring individuals to stop to remove the trash.  
                           • Roughly 3 times as much trash as a “C” level. |

**Important Note:** Because the visual assessment protocol is intended to assess the level of trash greater than 5mm in length that is observed on-land and can reasonably be transported to the stormwater conveyance system, only trash that appears to be mobile or could be mobilized in a storm event should be considered in the assessment. *Large items* such as furniture, tires, and appliances that cannot fit into a storm drain inlet should not be included in this assessment. Additionally, graffiti on roads, buildings, or landscaping in disrepair should not affect the assessment grading.
ASSESSMENT PROTOCOL

Establishing Baseline Trash Generation

The following on-land visual assessment protocol should be used to establish baseline trash levels for a specific land area. The time to complete the protocol will depend on length of the assessment area and traffic on roadways.

The protocol consists of the following steps that should be conducted in sequential order:

1. **Identify Assessment Areas.** Assessment areas should be delineated on a map. Areas should be identified on the map using a unique ID or other label, which should also be used on the data collection form and/or tracking spreadsheet. Targeted roads should be split into segments varying from approximately 200 to 600 meters in length. It is best if segments are divided at intersections or other features that are easily recognizable while driving. These segments could be established in the office before the assessment, or in the field during the first assessment. This allows the assessor to split the road by trash generation level observed in addition to other features such as intersections.

2. **Confirm timing** falls directly before reoccurring control measure implementation and does not follow a significant rainfall event.

3. **Assemble equipment** needed to conduct the assessment including the data collection form and map(s) delineating the assessment area (see Appendix B).

4. **Review trash condition category definitions** presented in Table 1 (also included on the data collection form) and photo examples in Appendix A.

5. **Conduct Photography-Based Assessments.** Conduct assessments using a high definition digital camera and a window mount to hold the device steady. Camera specifications should include a wide field of view, fast shutter speed, and an internal GPS to geo-reference the photos taken. The camera should be mounted to the passenger-side window to maintain a steady shot and keep a consistent angle between photographs. The camera should be aimed perpendicular to the car or slightly forward to capture a wider area, if necessary. Photographs should be taken approximately every 100 meters (e.g., 16 photographs per mile) on each side of the road. The vehicle should be driven at no more than 65 mph, although less than 35 mph is preferred to reduce the blurriness of the photos.

6. **Evaluate Trash Deposited in the Assessment Area.** In parallel to the photography-based methods, the passenger in the car should also conduct an OVTA of each roadway segment and record the results. The width of the assessment area extends from the center line of the road (or middle of the median) to back of the sidewalk, and includes all portions of the public right-of-way that drain to the stormwater conveyance system, including but not limited to the median, street, gutter, curb, sidewalk, back of sidewalk, and vegetated areas (e.g., grass, bushes, and tree wells). Also, include any trash observed on lands adjacent to sidewalk/street that could theoretically reach the stormwater conveyance system if there are no obstructions such as a building or fence that would prevent trash from being transported to the system.

7. **Record the Trash Level on the Map.** The passenger should have a series of forms/maps that clearly designate the road segments, but do not illustrate baseline trash generation levels or OVTA scores from previous assessments. Using a permanent marker, the assessor should write an OVTA score directly on the form/map after assessing each segment. While recording information on the form/map, the assessor should take time to write legibly. Errors can arise due to handwriting being misread when the data are processed digitally. Additionally, the assessor should record the full names of each field crew member present...
for the assessment along with the date of the assessment so that the field crew members may be consulted if discrepancies in the assessment data are found.

8. **At the end of each assessment, review the form/map** for accuracy, legibility, and completeness.

9. **Compile the Data and Determine Final Baseline Trash Level.** In the office after conducting the assessments, the OVTA score for each photograph should be determined and recorded. The combination of OVTA scores based on photographs and those observed during the driving assessments are then compared and the highest (worst) OVTA score observed is assigned to the segment.

10. **Conduct Quality Assurance.** 10% of the photographs should be evaluated for quality assurance. The photographs should be reviewed by a staff member other than the original assessor who has prior experience conducting OVTAs. Trash levels should be compared between the initial assessment and the reassessment of the photographs and adjustments should be made as needed.

### Assessing Changes in Trash Levels (Over Time)

The following on-land visual assessment protocol should be used to assess changes in trash levels for a specific land area. The protocol consists of the following steps that should be conducted in sequential order:

1. **Identify Assessment Areas.** Assessment areas should be delineated on a map. Areas should be identified on the map using a unique ID or other label, which should also be used on the data collection form and/or tracking spreadsheet. Targeted roads should be split into segments varying from approximately 200 to 600 meters in length. It is best if segments are divided at intersections or other features that are easily recognizable while driving. These segments could be established in the office before the assessment, or in the field during the first assessment. This allows the assessor to split the road by trash generation level observed in addition to other features such as intersections.

2. **Identify timing** of the assessment so that it falls roughly half-way between reoccurring control measure implementation and does not follow a significant rainfall event.

3. **Assemble equipment** needed to conduct the assessment including the data collection form and map(s) delineating the assessment area (see Appendix B).

4. **Review trash condition category definitions** presented in Table 1 (also included on the data collection form) and photo examples in Appendix A.

5. **Conduct Photography-Based Assessments.** Conduct assessments using a high definition digital camera and a window mount to hold the device steady. Camera specifications should include a wide field of view, fast shutter speed, and an internal GPS to geo-reference the photos taken. The camera should be mounted to the passenger-side window to maintain a steady shot and keep a consistent angle between photographs. The camera should be aimed perpendicular to the car or slightly forward to capture a wider area, if necessary. Photographs should be taken approximately every 100 meters (e.g., 16 photographs per mile) on each side of the road. The vehicle should be driven at no more than 65 mph, although less than 35 mph is preferred to reduce the blurriness of the photos.

6. **Evaluate Trash Deposited in the Assessment Area.** In parallel to the photography-based methods, the passenger in the car should also conduct an OVTA of each roadway segment and record the results. The width of the assessment area extends from the center line of the road (or middle of the median) to back of the sidewalk, and includes all portions of the public right-of-way that drain to the stormwater conveyance system, including but not limited to the median, street, gutter, curb, sidewalk, back of sidewalk, and vegetated areas.
areas (e.g., grass, bushes, and tree wells). Also, include any trash observed on lands adjacent to sidewalk/street that could theoretically reach the stormwater conveyance system if there are no obstructions such as a building or fence that would prevent trash from being transported to the system.

7. **Record the Trash Level on the Map.** The passenger should have a series of forms/maps that clearly designate the road segments, but do not illustrate baseline trash generation levels or OVTA scores from previous assessments. Using a permanent marker, the assessor should write an OVTA score directly on the form/map after assessing each segment. While recording information on the form/map, the assessor should take time to write legibly. Errors can arise due to handwriting being misread when the data are processed digitally. Additionally, the assessor should record the full names of each field crew member present for the assessment along with the date of the assessment so that the field crew members may be consulted if discrepancies in the assessment data are found.

8. **At the end of each assessment, review the form/map** for accuracy, legibility, and completeness.

9. **Compile the Data and Determine Final Baseline Trash Level.** In the office after conducting the assessments, the OVTA score for each photograph should be determined and recorded. The combination of OVTA scores based on photographs and those observed in during the driving assessments are then compared and the highest (worst) OVTA score observed is assigned to the segment.

10. **Conduct Quality Assurance.** 10% of the photographs should be evaluated for quality assurance. The photographs should be reviewed by a staff member other than the original assessor who has prior experience conducting OVTA.s. Trash levels should be compared between the initial assessment and the reassessment of the photographs and adjustments should be made as needed.
APPENDIX A

PHOTOGRAPH EXAMPLES OF TRASH CONDITION CATEGORIES
CATEGORY A - LOW TRASH LEVEL (NOT LITTERED)

Effectively no trash is observed in the assessment area. There may be some trash in the area, but it is not obvious at first glance. One individual could easily clean up all the trash observed while walking at normal pace. No additional trash reduction measures are needed in the assessment area. To see videos of sites with Category “A” trash levels, click [here].
CATEGORY B – MODERATE TRASH LEVEL (SLIGHTLY LITTERED)
Predominantly free of trash, except for a few littered areas. Some trash is noticeable at first glance. The trash observed could be collected by one or two individuals, but would require walking at a slower than normal pace. Additional trash reduction measures are needed in the assessment area. To see videos of sites with Category “B” trash levels, click here.
CATEGORY C: HIGH TRASH LEVEL (LITTERED)

Predominantly littered, except for a few clean areas. Trash is widely/evenly distributed and/or small accumulations are noticeable on the streets and sidewalks. It would take multiple people to remove all trash from the area, frequently requiring individuals to stop walking to remove the trash. Roughly 4 times as much trash as a “B” level. To see videos of sites with Category “C” trash levels, click here.
CATEGORY D: VERY HIGH TRASH LEVEL (VERY LITTERED)

Trash is continuously seen throughout the assessment area and there is a strong impression of lack of concern for litter. Large piles of trash may be observed. It would take a large number of people during an organized effort to remove all trash from the area, consistently requiring individuals to stop to remove the trash. Roughly 3 times as much trash as a “C” level. To see videos of sites with Category “D” trash levels, click here.
Appendix B

Example Map with Assessment Scores Observed
### I. Assessment Area

**Area ID**

**Assessment Area:** Delineate the assessment area on your jurisdictional map, create a map/area ID, and mark the ID on the map and place in the box provided to the left. Below, describe the location and boundaries of the assessment area. Include the street segment name, length of the street based on cross streets, and land area description (if applicable). Can provide address or APN as needed.

### II. Condition Category Assignment

**Trash Condition Category**

Conduct the assessment in accordance with the Visual On-land Assessment Protocol for Stormwater (Refer to Definitions below). Check one of the below categories based on the assessment.

- **Low (A)**
- **Moderate (B)**
- **High (C)**
- **Very High (D)**

**Photograph Documentation**

Indicate if photographs were taken and are maintained by your agency.

- **Photographs:**
  - Number of photographs taken: __________

**Measurable Rainfall in past 48 hours?**

- **Yes**
- **No**

**Trash receptacle inventory**

Are there any trash recepticals, cans, recycle bins, or other in the assessment area?

- **Yes**
- **No**

If yes, What type? ___________________ How many? _______

### Trash Condition Category Definitions

<table>
<thead>
<tr>
<th>Trash Condition Category</th>
<th>Definition</th>
</tr>
</thead>
</table>
| 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      | Predominantly free of trash except for a few littered areas.  
                           | On average, one piece per two car lengths  
                           | The trash could be collected by one or two individuals in a short period of time. |
| 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         | Trash is continuously seen throughout the assessment area.  
                           | Large piles and 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. |
### III. Preliminary Source Identification (Optional)

Stormwater trash sources identified within the assessment area during assessments (CHECK ALL SOURCES THAT APPLY).

#### Vehicles
- Moving Vehicles
- Parked Cars
- Uncovered Loads
- Other __________________________

#### Inadequate Waste Container Management
- Overflowing or uncovered receptacles/dumpsters
- Dispersal of household trash and recyclables before, during and after collection
- Other __________________________

#### Pedestrian Litter
- Restaurants
- Convenience Stores
- Liquor Stores
- Bus Stops
- Special Events
- Other __________________________

#### Illegal Dumping
- Illegal dumping on-land
- Homeless encampments
- Other __________________________

### IV. Comments and Additional Information about the Assessment Area and Sources

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Figure 1
Figure 6

Figure 7
Figure 12

Figure 13
Figure 26

Figure 27
Figure 32

Figure 33