Ventura Countywide Stormwater Quality Management Program

2014-2015 Permit Year

Ventura Countywide Stormwater Quality Management Program Annual Report

Attachment E 1

2014 Annual Report - Revolon Slough and Beardsley Wash Trash TMDL

Camarillo
County of Ventura
Fillmore
Moorpark
Ojai
Oxnard
Port Hueneme
Santa Paula
Simi Valley
Thousand Oaks
Ventura
Ventura County Watershed Protection District

December 14, 2015

City of Oxnard

2014 Annual Report

Revolon Slough and Beardsley Wash Trash TMDL,
Regional Board Resolution No. R4-2007-007

Contents

1 Introduction

1.1 Environmental Setting

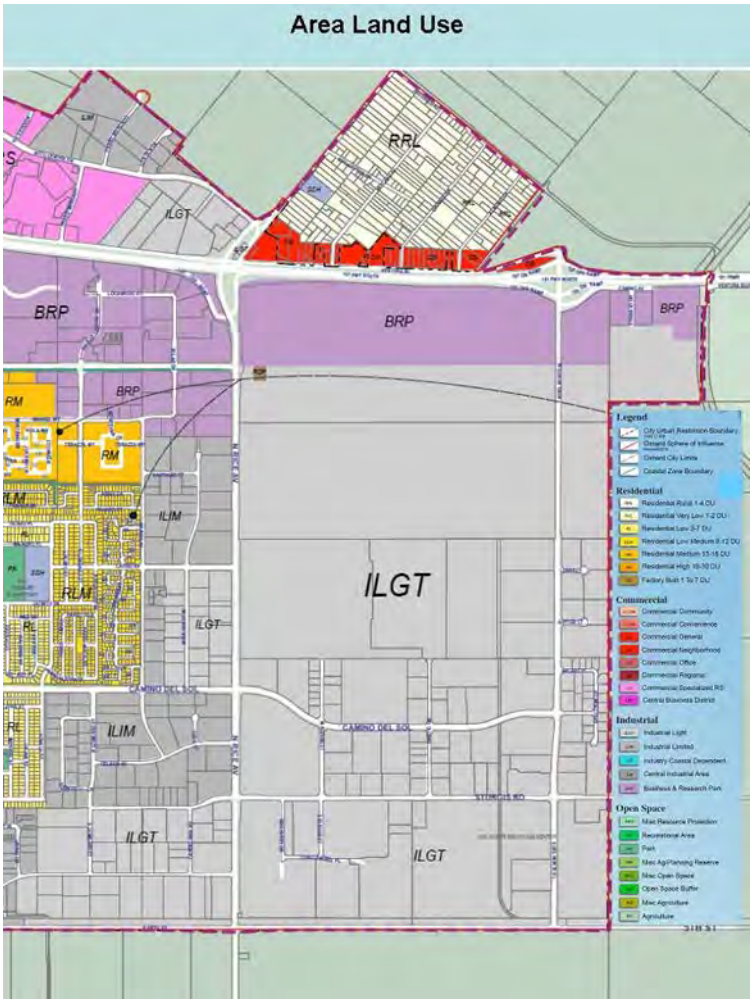
The City of Oxnard is the largest city in Ventura County, with a population of approximately 200,000. The City occupies the western edge of the Oxnard Plain, a flat, fertile land noted for its agricultural produce. Many large open-channel conveyances transport stormwater and urban runoff to major waterbodies, including three that discharge to the Beardsley Wash / Revolon Slough branch of the Calleguas Creek Watershed. These three channels, the Nyeland Drain, Sturgis Drain, and 5th Street Drain, are listed as impaired for trash, and are subject to the Calleguas Creek Trash Total Maximum Daily Load (TMDL).

Calleguas Creek and its tributaries, including Revolon Slough and Beardsley Wash, are located in southeast Ventura County. Calleguas Creek drains an area of approximately 343 square miles from the Santa Susana Mountains to the Pacific Ocean. Water within the Calleguas Creek watershed travels 30 miles from the surrounding mountains through the Mugu Lagoon and empties into the Pacific Ocean. Revolon Slough starts as Beardsley Wash in the Camarillo Hills, and continues into Pleasant Valley, and then into the Oxnard Plain. The Slough is concrete-lined just upstream of Central Avenue and remains lined with rip-rapped sides. The lower mile to mile and a half of the Slough to above Las Poses Road appears to be tidally influenced. The primary water sources for Beardsley Wash and Revolon Slough are agricultural and storm water.

The land uses in the area of the three channels are predominately light industry within Oxnard city limits, and agricultural outside of the city limits as shown in Figures 1-1 and 1-2.

FIGURE 1-1

FIGURE 1-2



The purpose of this document is to provide an analysis of the impacts of trash from these land uses in the monitored channels flowing to Beardsley Wash / Revolon Slough, and to recommend management measures to address the impacts.

1.2 Baseline Trash and Percent Reduction

1.2.1 2014 Annual Reporting

The following baseline trash quantities, by channel, were submitted to the Regional Board in the 2010 Annual Report:

Monitored Channel	***Baseline Number of Pieces***
• Nyeland Drain	120
• Sturgis Drain	105
• 5th Street Drain	174

A discussion of the results of 2014 monitoring compared to these baseline numbers is contained in Section 4 of this document.

1.2.2 2015 Annual Reporting

For the past four years the City of Oxnard has conducted trash monitoring independently from other permitees to the Ventura Countywide Municipal Stormwater Program's NPDES permit. The Oxnard City Corps' Storm Drain Keeper Program was utilized to provide the information necessary to assess the effectiveness of BMPs for trash reduction and focused on three channels, the Nyeland Drain, Sturgis Drain, and 5th Street Drain, which are listed as impaired for trash, and are subject to the TMDL. While the Storm Drain Keeper Program provided substantial information about the volume, types and sources of trash in the channels, the reported information was inconsistent, thereby, demonstrating the need for an alternate monitoring method. To this end, the City has elected to join the Calleguas Creek Watershed Stakeholders Group and follow the recently proposed and accepted Trash Monitoring and Reporting Program (TMRP) which is based on "visual assessments" and a scoring system to estimate the presence of litter in specific areas. By joining the stakeholders group the future information generated for the Oxnard drains will be consistent with the other watershed stakeholders and will provide a greater level of certainty with regard to overall BMP assessment and percent reduction of trash within the watershed.

1.3 Municipal Stormwater Program

The City of Oxnard is a co-permittee to the Ventura Countywide Municipal Stormwater Program's National Pollutant Discharge Elimination System (NPDES) permit. This permit requires the development and implementation of a stormwater management program that reduces pollutants carried in urban runoff to the maximum extent practicable (MEP). While MEP is not defined by the regulatory agencies, it generally means the application of best management practices (BMPs) that achieve a balance between effective reductions of a pollutant of concern and economic achievability. One of the potential pollutants of concern to any stormwater program is trash. BMPs to address trash consist of traditional source control (education, street sweeping, and catch basin cleaning) and treatment control (e.g., trash grates and CDS devices). Many of the requirements of the municipal stormwater permit have led to a decrease in trash from baseline levels.

1.4 Ventura County NPDES Compliance Activities

1.4.1 Drainage Facilities Maintenance

As Co-permitees to an NPDES stormwater permit, the City of Oxnard conducts routine cleaning of drainage facilities. Inspections are conducted at least once per year prior to the wet-weather season, beginning October 1. The inspections include visual observations of catch basins and open channels for accumulated trash and debris. Accumulated material is routinely removed from facilities to prevent trash and debris discharges and to maintain hydraulic capacity. Catch basin cleaning is conducted on an as-needed basis to keep trash and debris levels below 40% of catch basin capacity.

1.4.2 Roadway Maintenance

The Annual Report summarizes Co-permittee street sweeping activities. Streets in residential areas are reportedly swept at least six times per year. These practices do not specifically address the maintenance and cleaning activities in the vicinity of the Drains. However, cleaning activities are conducted in areas immediately adjacent to and tributary to the Drains.

1.4.3 Public Education & Outreach Programs

The VCWPD and the City of Oxnard participate in countywide efforts that are a combination of educational outreach and activities aimed to increase knowledge of stormwater pollution impacts and methods to reduce pollutant problems. The programs aim to change behaviors through activities and programs such as community outreach, storm drain inlet stenciling, and prohibition postings at access points to drainage channels.

Examples of community outreach efforts by Co-Permitees include:

- Coastal Cleanup Day - This program has enjoyed widespread public, multi-city and multi-agency involvement. This program provides volunteers an opportunity to clean local beaches and inland waterways. The most recent event occurred on September 20, 2014.
- Presentations at schools, community groups, and public events
- Newspaper articles and advertisements
- Television and radio announcements
- Brochures
- Stormwater websites

1.5 Oxnard City Corps Stormdrain Keeper Program

The Oxnard City Corps (City Corps) has been operating in VCWPD drainage channels since April 2002, as part of the Oxnard City Corps Stormdrain Keeper Program. City Corps' storm drain cleaning program was jointly funded by the City of Oxnard and the VCWPD for the first year, and subsequently funded by City of Oxnard since. Besides the cleaning effort in the drainage channels, City Corps also has a street sweeping contract with the City of Oxnard, operating sweepers in downtown Oxnard twice per day.

City Corps' inspection and cleaning activities are coordinated through the VCWPD. A seven-member crew currently inspects and routinely cleans the Wooley, J Street, Oxnard Industrial, and Oxnard West Drains.

City Corps staff members are highly motivated, and have been involved in discussing options and solutions for reducing trash and debris within the drains. City Corps has discussed treatment control devices with the City of Oxnard to control trash and debris.

1.6 Calleguas Creek Watershed Trash TMDL

Beardsley Wash and Revolon Slough were listed as impaired waterbodies based on the narrative water quality objective in the Basin Plan for floating material:

"*Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses";*

and for solid, suspended, or settleable materials:

"Waters shall not contain suspended or settleable material in concentrations that cause nuisance or adversely affect beneficial uses."

By Regional Board Resolution No. R4-2007-007, the Basin Plan was modified to incorporate a Total Maximum Daily Load for Trash in Revolon Slough and Beardsley Wash. The numeric target for the Revolon Slough and Beardsley Wash TMDL is 0 (zero) trash within Revolon Slough, Beardsley Wash and their tributaries. Regional Board staff did not find information to justify any value other than zero that would fully support the designated beneficial uses. Further, court rulings have found that a numeric target of zero trash is legally valid. The numeric target was used to calculate the Load Allocations for nonpoint sources and Waste Load Allocations for point sources. The Effective Date of the Trash TMDL is March 6, 2008.

1.6.1 TMDL Implementation Schedule

1.6.1.1 Trash Monitoring Plan

The Basin Plan Amendment for the incorporation of the Trash TMDL included requirements for the preparation and implementation of a trash monitoring program for point source discharges, which are incorporated into the Ventura County Municipal Stormwater permit. The City of Oxnard submitted its Trash Management and Monitoring Program to lay out the City's program for removing and evaluating trash downstream of proposed full-capture devices in the three channels flowing to Revolon Slough and Beardsley Wash (see Chapter 3.0).

On April 29, 2010, the City provided the first progress report on the implementation of the Trash Management and Monitoring Program. This annual report is submitted in compliance the Stormwater permit, and compares current 2014, waste loads to the 2010 Wasteload Allocation baseline levels of trash in the three channels being monitored.

1.6.1.2 Trash Management Plan

The City of Oxnard proposed to install three Fresh Creek devices, similar to the device installed in the Oxnard West Drain, in the channels flowing to the Calleguas Creek Watershed. The proposed devices are intended to capture the city's potential contribution of trash at the city limits.

City staff have since met with Regional Board staff to discuss the Trash Management Plan, in light of the data available to date under the Monitoring Program. The data indicate that the majority of the waste removed from the channels are deposited by wind transport instead of the expected transport through

the City's storm drain system. Additionally, the intensive permit requirements for catch basin and open channel maintenance, combined with the TMDL Monitoring Program, have resulted in most of the trash removed before given the opportunity to be transported to receiving waters via MS4. We therefore proposed to Regional Board staff that the best full-capture strategy may be catch basin inserts for the sub-drainage basins. We initially thought that funding would come from the City's Measure O, which passed in 2009, and is a ½ cent sales tax increase; however, the Citizen Oversight Committee did not elect to fund this project. City staff are currently reviewing different options to fund this project.

1.6.1.2 Minimum Frequency of Assessment and Collection (MFAC)

The City of Oxnard is also listed under the TMDL for non-point source contributions of trash to Revolon Slough and Beardsley Wash. As there are no non-point sources owned by the City, the City has no facilities for which a conditional waiver applies; however, we believe the requirements for the MFAC are met by our current monitoring program.

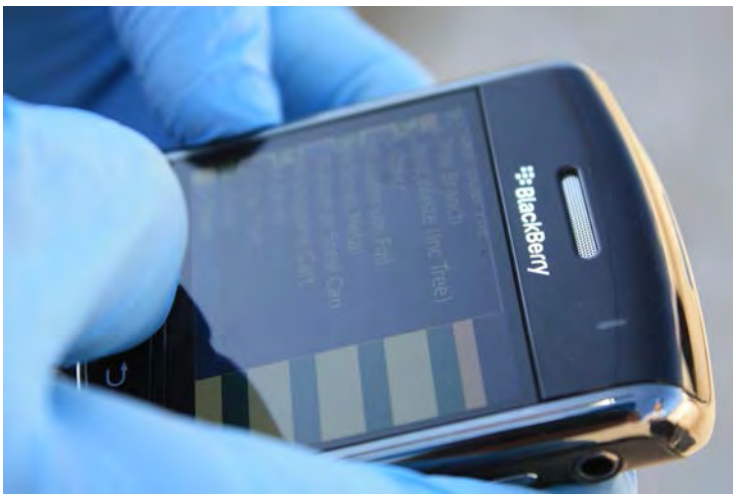
2 City of Oxnard Trash Management and Monitoring Program

2.1 Trash Management

By letter dated September 3, 2008, the City of Oxnard transmitted its proposed Trash Management and Monitoring Program. The trash management measures proposed included the installation of Fresh Creek Trash Netting full-capture system on three drains. The full-capture systems have been sized and designed, and were awaiting funding through the City's Measure O sales tax increase. As potential Measure O projects need approval by a Citizen Oversight Committee (http://www.cityofoxnard.org/uploads/measure_o_oversight_committee_agenda.pdf), City staff have proceeded with inclusion of purchase of one of the full capture devices under the Capital Improvement Project list. This Annual Report proposes a change to catch basin insert devices within the drainage areas that flow to Beardsley Wash/Revolon Slough. City staff are currently reviewing different options to fund this project. Enhanced existing BMPs (e.g., more frequent street sweeping and channel and catch basin maintenance), as well as the actual removal of litter during monitoring, continue to be proposed as interim BMPs until the full capture devices are installed.

2.2 Trash Monitoring

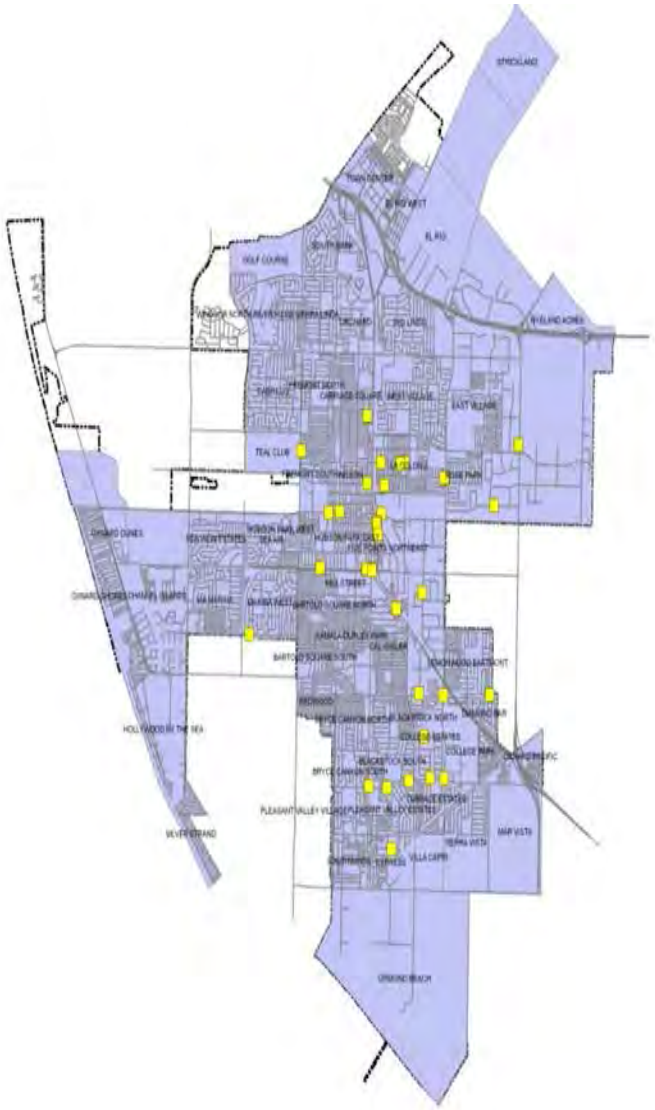
In the past monitoring of the three drains flowing to Revolon Slough / Beardsley Wash was conducted by City Corps' through the Stormdrain Keeper Program. The Calleguas Creek Watershed (CCWS) monitoring was conducted by City Corps crews equipped with Blackberry Phones. The GPS-enable Blackberry phones and field checklist application were purchased by a grant supporting the use of new technology for municipal enterprise programs. The use of this technology is described in Section 3, Monitoring Methods.



In 2014, monitoring was conducted upstream of the open channels. As in the past, the intent was for crews to take GPS points for the catch basins, and use a drop-down menu which would allow them to quickly categorize percent trash, leaves, and sediment in the catch basin prior to maintenance.

As shown on Figure 2-1 produced from the catch basin survey (below), there are no high priority catch basins (in yellow) within the Oxnard drainage areas tributary to Revolon Slough / Beardsley Wash.

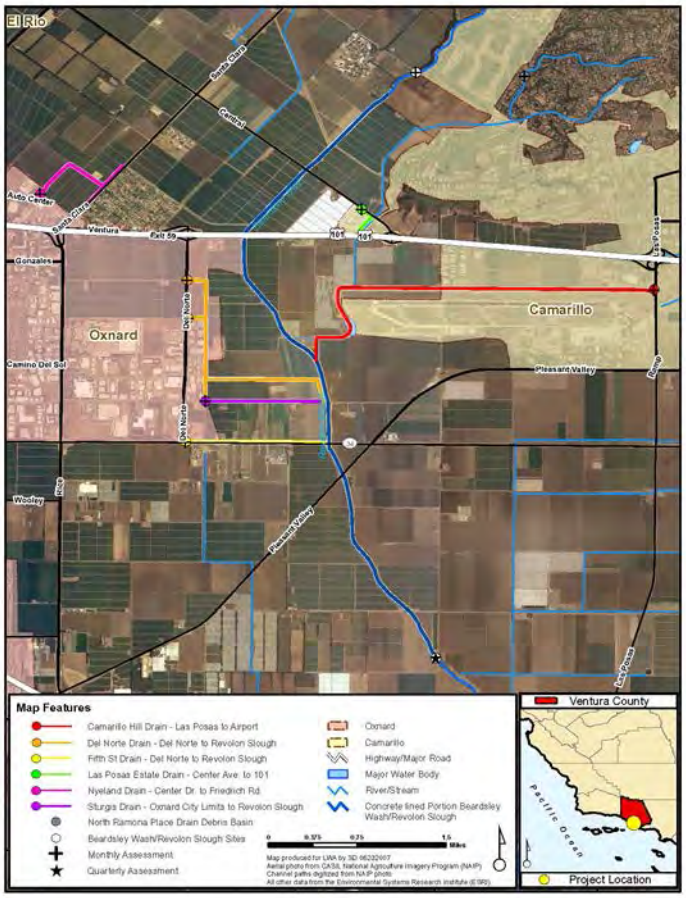
FIGURE 2-1



3 Monitoring Methods

Figure 3-1 is a map of the monitoring locations originally proposed by the stakeholders when considering TMDL implementation in the Beardsley Wash / Revolon Slough drains. The City of Oxnard proposed management measures and monitoring of the Nyeland Drain (pink), the Sturgis Drain (labeled Del Norte in the graphic and colored orange), and the 5th Street Drain (yellow).

FIGURE 3-1



3.1 Nyeland Drain

The Nyeland Drain receives commercial / industrial flows before entering agricultural drainage areas. The Nyeland drainage area is shown in Figure 3-2.

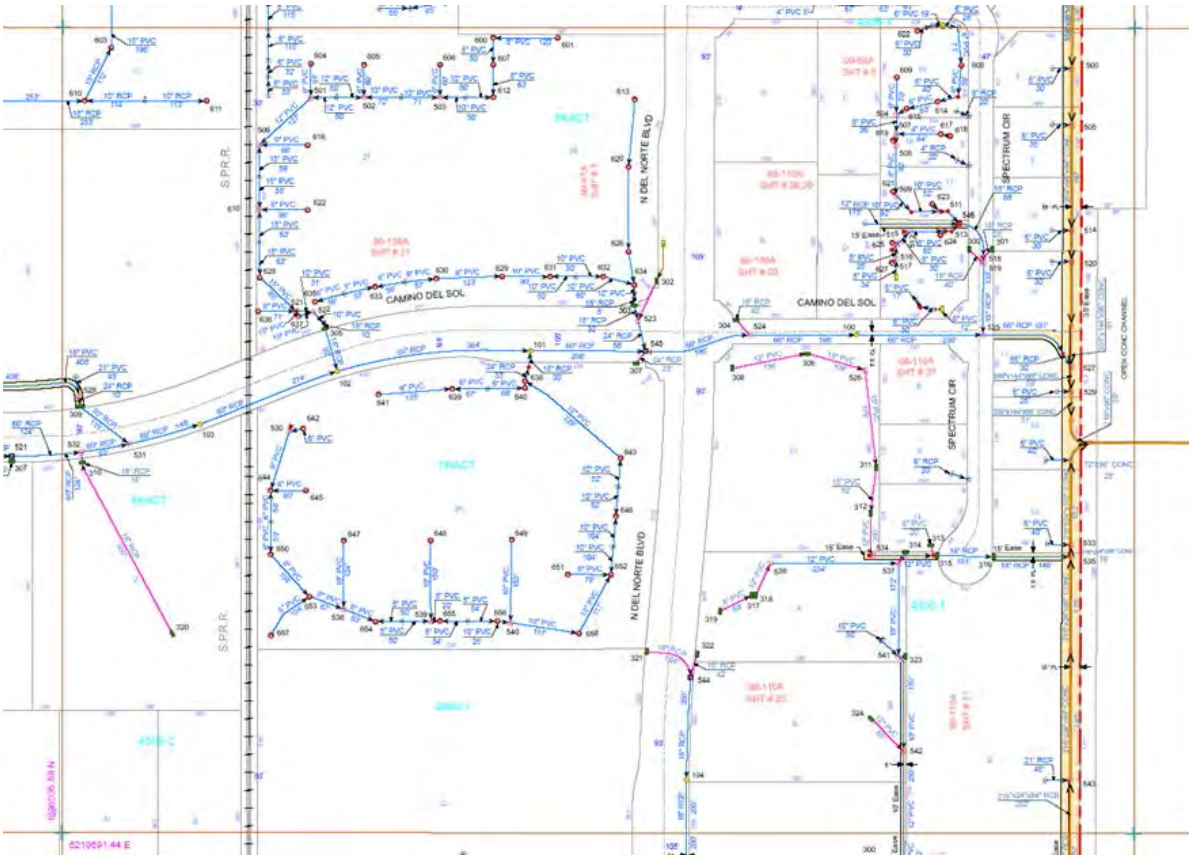
FIGURE 3-2

The proposed Fresh Creek device would have captured the joined north-bound flows as they daylight. Catch basin inserts are now proposed, as noted in Figure 3-2. However, none of these catch basins are currently Priority A.

3.2 Sturgis Drain

Sturgis Drain receives mixed flows from commercial / industrial and agricultural areas. The drainage area is shown in Figure 3-3.

FIGURE 3-3



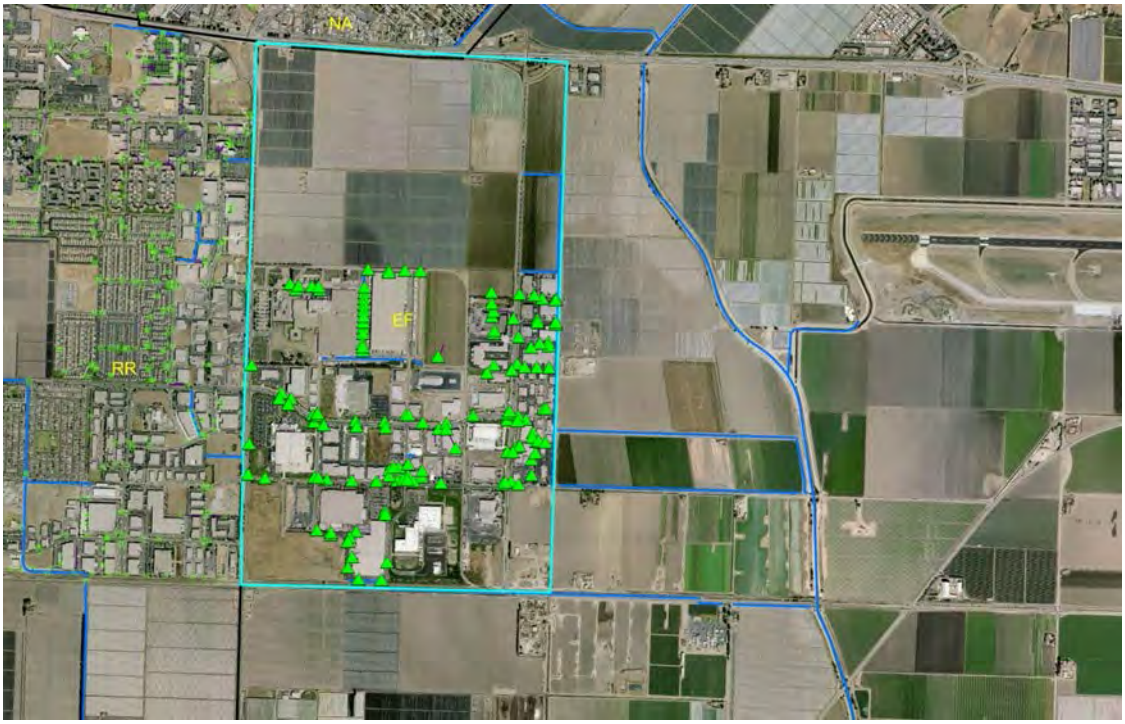
The proposed Fresh Creek device would have captured the joined north/south flows of the channel as they transition to the east, and to Revolon Slough. The sub-drainage area is now proposed for catch basin inserts. Similar to the Nyland Drain, however, none of these catch basins are currently Priority A.

3.3 Fifth Street Drain

The 5th Street Drain, in the Project area, takes flows primarily from commercial and industrial areas of the City, including the Del Norte Recycling facility. These facilities installed various post-construction treatment devices when they were constructed, so many of the pollutants of concern have been eliminated. The open channel in the project area potentially receives runoff from 5th Street (State Highway 34), a Caltrans highway. Downstream of the Oxnard city limit, other land uses include agriculture, oil and gas production, and state highway.

In the Trash Management and Monitoring Plan submitted by the City, a full-capture device is near the city limit; downstream of Oxnard MS4 input was proposed. Following discussions with Regional Board staff, an alternative full-capture strategy was suggested. City staff proposed that all of the catch basins that flow to the 5th Street and Sturgis drains (green triangles on Figure 3-4 below) are to receive catch basin inserts.

FIGURE 3-4



None of these catch basins are currently Priority A.

3.4 Trash & Debris Characterization

City Corps crews are provided with GPS-enabled Blackberry phones with a drop-down menu application by Freeance. This application mirrors the forms previously used in channel trash studies, without the need to manually enter the data into a database program. Additionally, the City Corps crews have the opportunity to photograph unusual trash types, which become part of the database. Real-time data is linked to desktop computers by the application and the Blackberry server.

The data collected for the first two quarters of 2014 was collected without the aid of the GPS-enabled devices. The GPS-enabled Blackberry phones were phased out and replaced with Android devices which prevented their use during the first part of 2014, consequently, data was manually collected and entered into the City's GIS database. Subsequent data collection for the third quarter of 2014 and in January of 2015 was conducted using the GPS-enabled Android devices.

4 Data Analysis

Monitoring for the Trash TMDL has been on-going since December 2009. All channels have been monitored this year. In 2014, data was collected for three quarters. Data from the fourth quarter was not collected due to availability of the City Corps crews. However, data collection was conducted in January of 2015 and that data is included in this document since future annual reports will not be prepared by the City of Oxnard. As noted previously, all future reporting will be done in collaboration with the Calleguas Creek Watershed Stakeholder's Group.

Due to issues associated with the GPS-enable devices, the number of trash pieces reported manually for the first two quarters of 2014 is questionable. Generally, there have been high amounts of trash reported in each drain for various quarters each year since 2009, however, the numbers reported manually for the first two quarters of 2014 were much higher than previous years and in all cases three times or more above the baseline that was established in 2009. To this end, the analysis for 2014 will include the first two quarters of data only for comparison of the percentage of trash types found. To compare trash collected to the base line numbers, only data collected using GPS-enable devices from the third quarter of 2014 and January of 2015 was used. Use of this data is consistent with data collected in previous years and used for the base line development and comparison.

4.1 Observations

From 2009-2014 the largest numbers of trash were found in the 5th Street Drain. This is probably due to the large amount of vehicular traffic. The 5th Street Drain had the closest percentages between plastic/Styrofoam and paper classes of trash, which may also indicate trash thrown or blown from vehicles. Below is a comparison between long-term (2009-2013) trash percent by channel (Figure 4-1) and 2014 trash percent for the three channels (Figure 4-2).

FIGURE 4-1

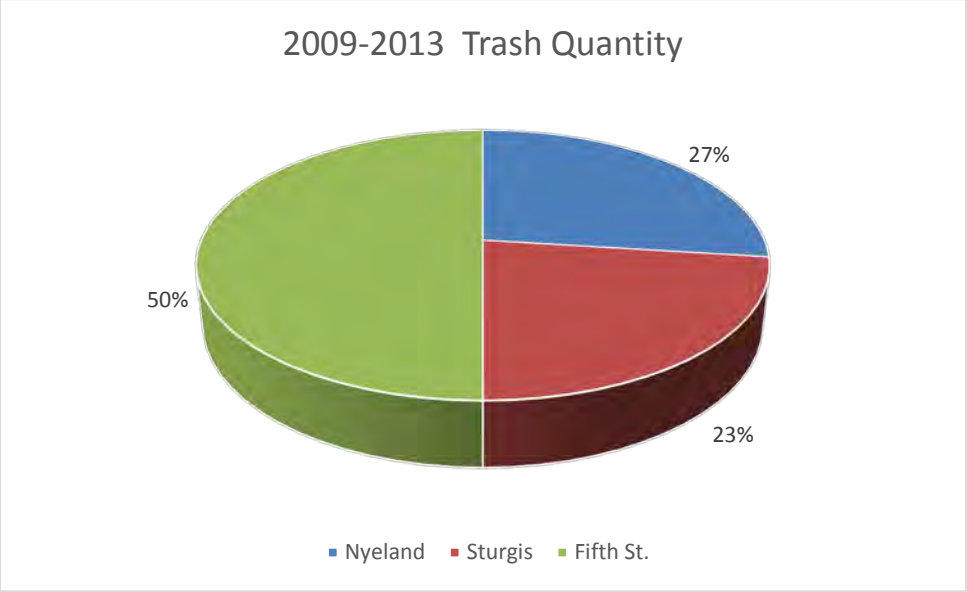
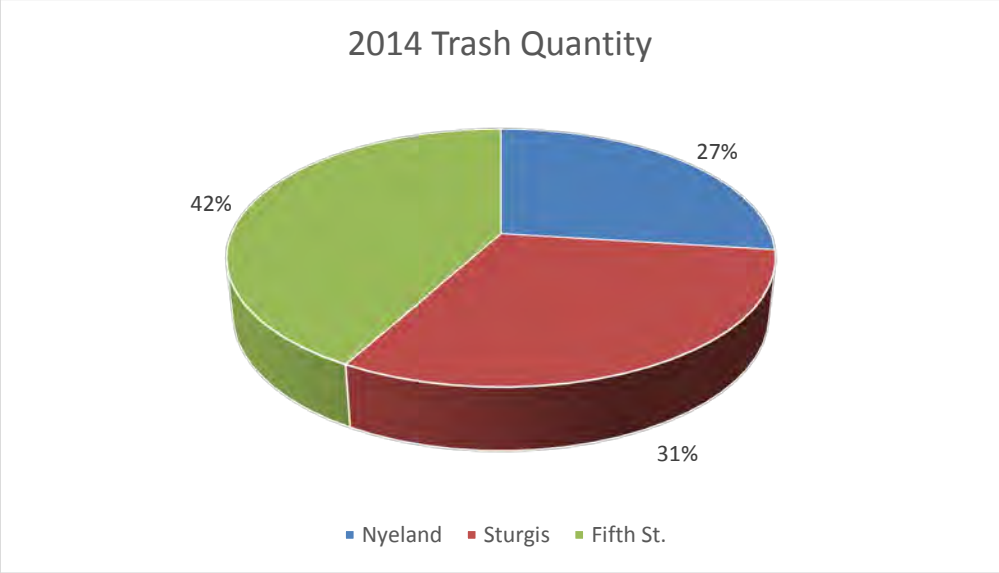
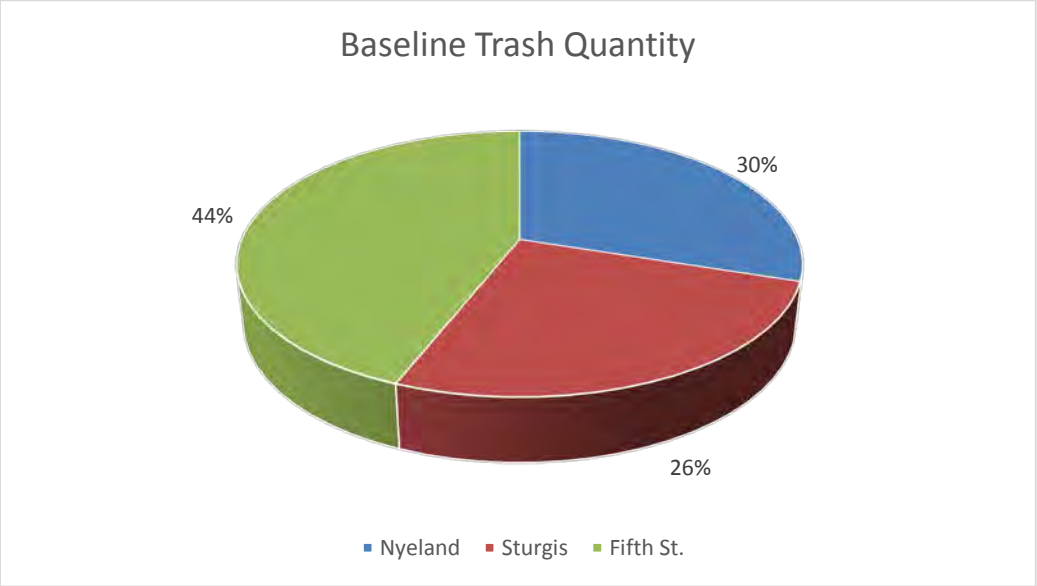


FIGURE 4-2



The figures indicate that the percent of total trash collected from each channel has been fairly consistent over the course of reporting with the 5th Street drain having the highest percent of trash. Further, a similar comparison can be made with the baseline projections as noted in Figure 4-3.

FIGURE 4-3



For the three channels the major types of trash were characterized by major trash type. The percent of trash types found in each drain in 2014 are shown in Figures 4-4 through 4-6.

In the 5th, Nyeland, and Sturgis Drains, all other classes of trash were masked by the overwhelming amount of plastic/Styrofoam trash found. The 5th Street and Nyeland Drains have little or no fencing to protect the channel from wind-blown trash. In contrast, the Sturgis Drain, as it traverses the agricultural land on its way to the Revolon Slough, is closely bordered by fencing on both sides. The fact that the majority of trash is plastic and Styrofoam, which are light weight, is indicative of wind-blown accumulation. Further study, however, would be needed to determine a correlation between high wind events and the quantities of trash found in the channels.

FIGURE 4-4

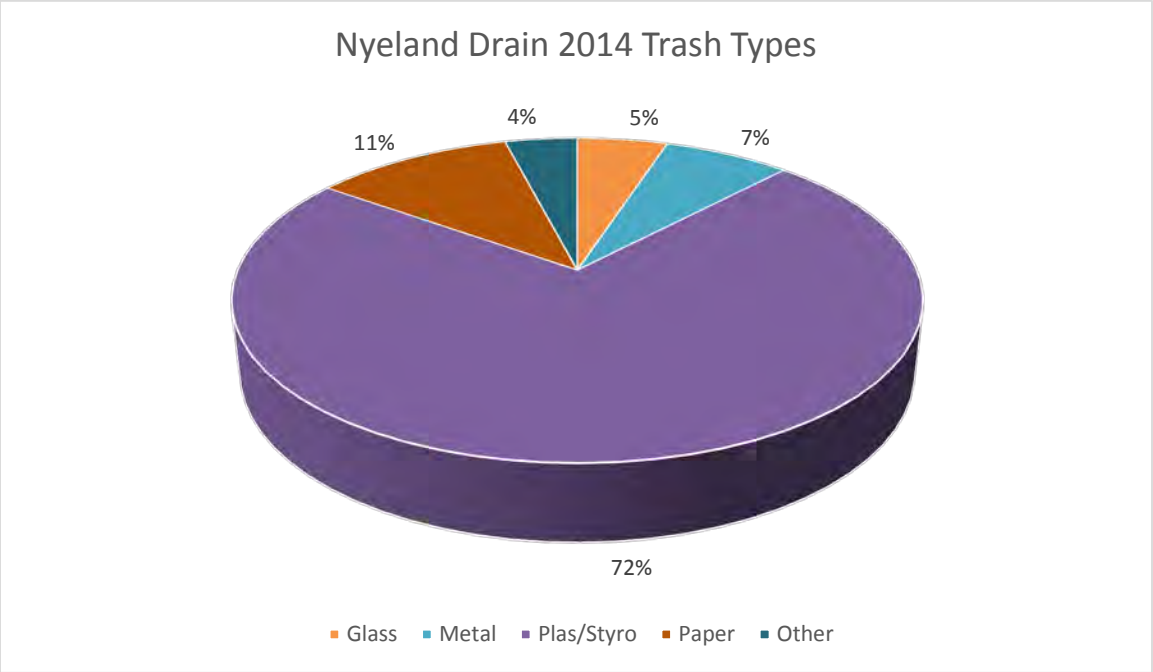


FIGURE 4-5

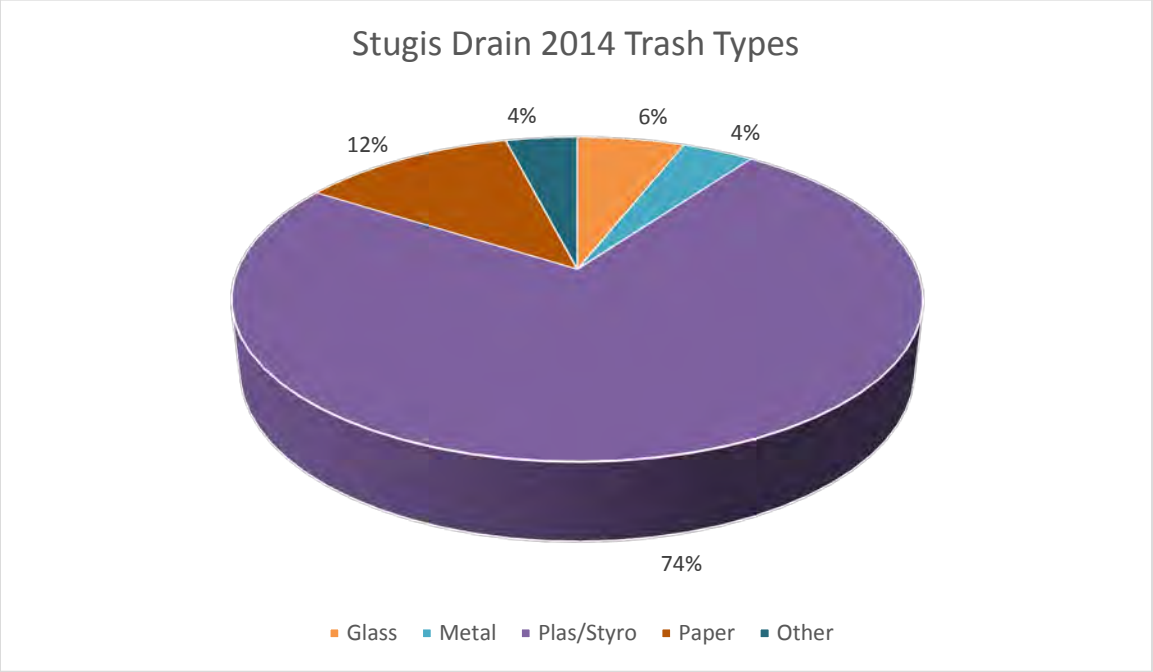
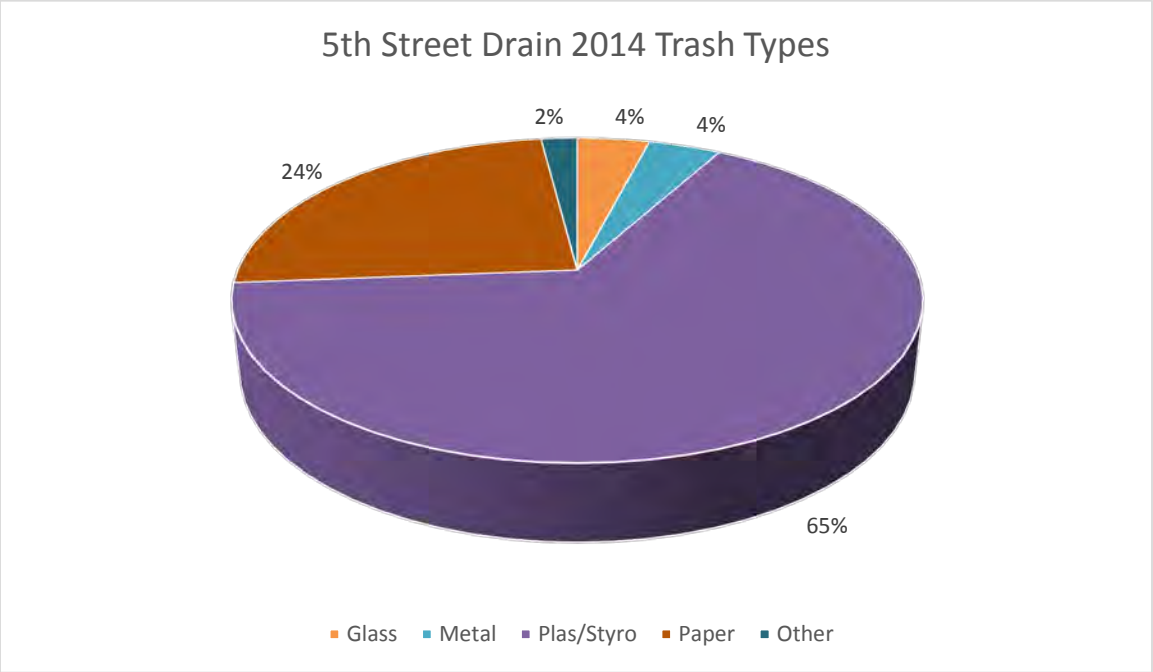


FIGURE 4-6



4.2 Comparison to Baseline

All three channel segments have had monitoring and removal events since December 2009. The expectation for the City was that the number of pieces removed would stabilize to a true baseline, measuring enhanced BMP performance. And, the City had hoped to use that baseline to compare pre- and post- full capture device results. However, this has not been the case for the 5th Street, Sturgis, and Nyeland Drains, as seen in the following historic numbers of trash found in Figures 4-7 through 4-9.

FIGURE 4-7

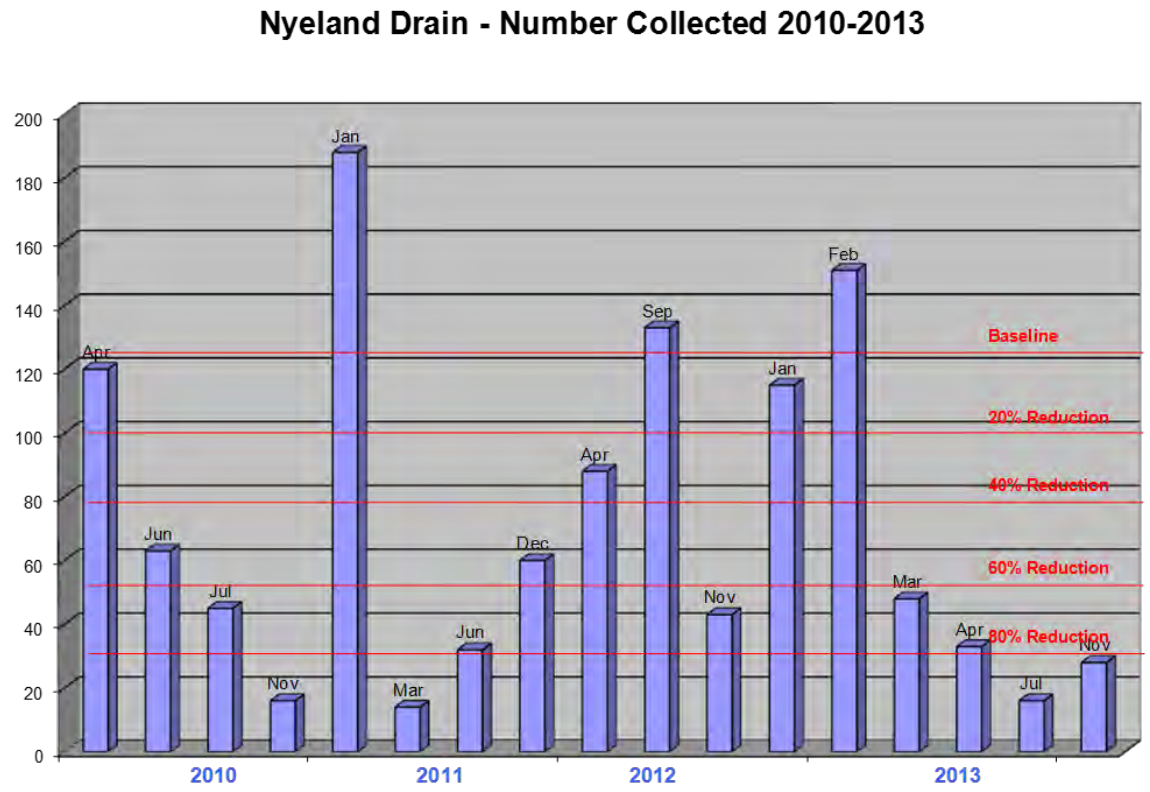


FIGURE 4-8

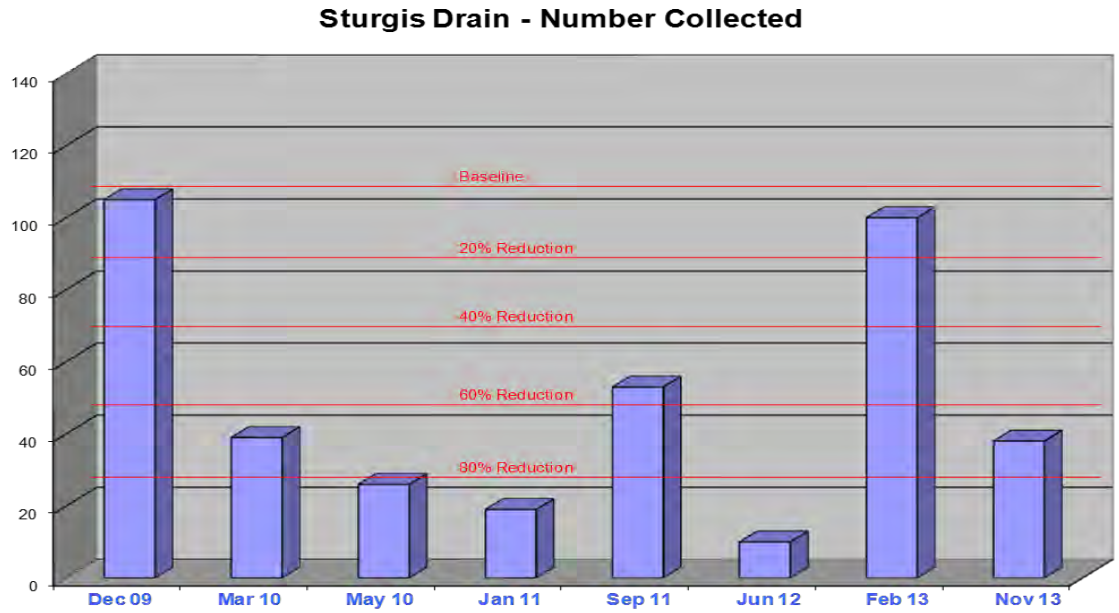
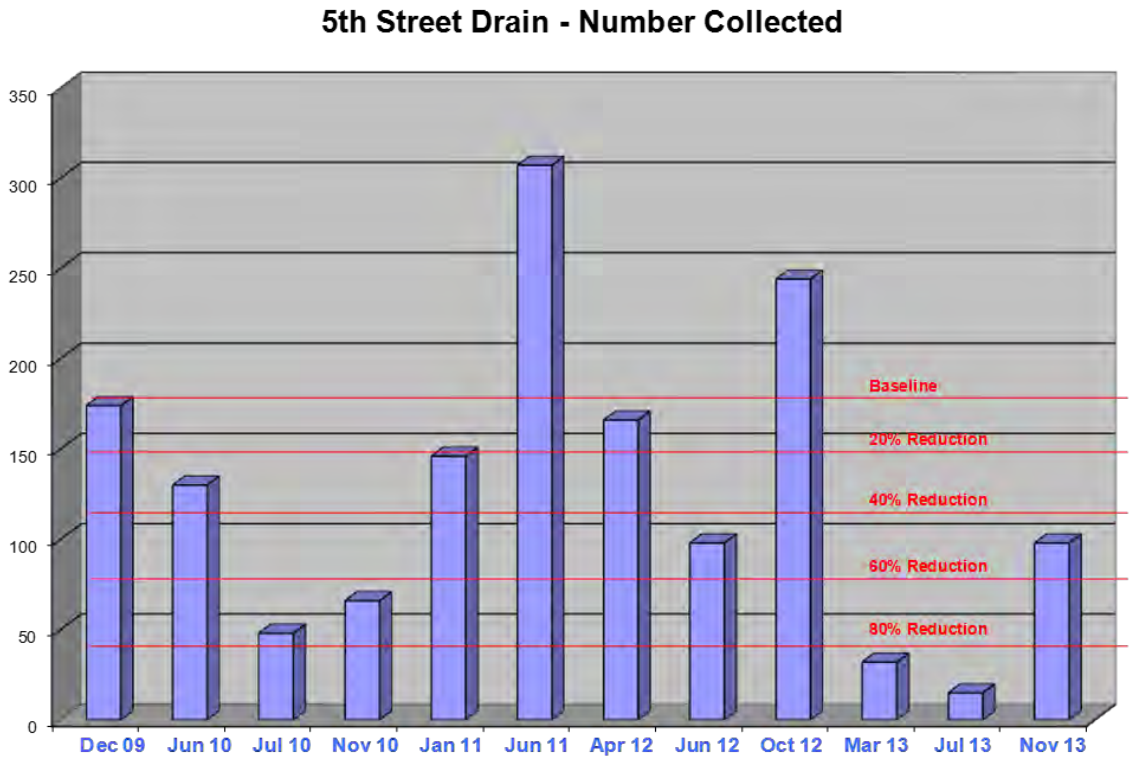
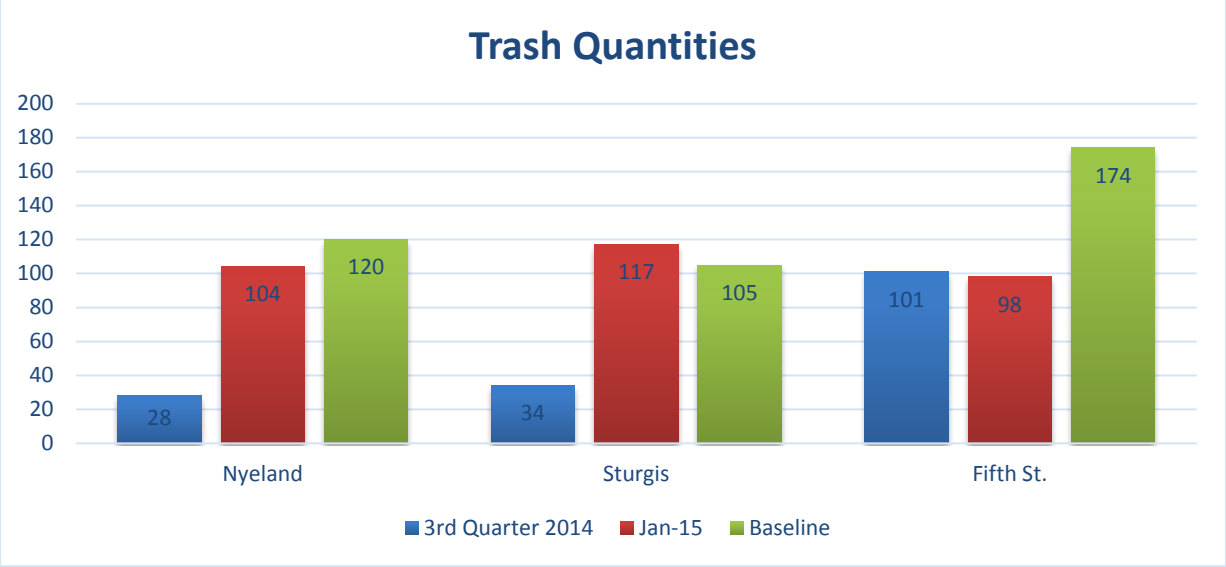


FIGURE 4-9



The number trash pieces collected for the third quarter of 2014 and in January of 2015 are shown graphically in Figure 4-10. The base line for each channel is also noted on the graph. Although the numbers were generally below the baseline a trend cannot be established at this time because of the limited data.

FIGURE 4-10



5 Conclusions and Recommendations

The City of Oxnard will continue to implement its Stormdrain Keeper Program. City Corps' Stormdrain Keeper Program, funded by City of Oxnard, provides the cleaning effort in the drainage channels and over the past five years has provided data and observations to aid in the monitoring and reporting for the Trash TMDL. Recently, the Calleguas Creek Watershed Stakeholder Group proposed a revision to the Minimum Frequency of Collection and Assessment (MFAC) and Best Management Practices (BMP) approach that is detailed in their Trash Monitoring and Reporting Plan (TMRP). This revised approach utilizes a visual assessment method with a three point scoring system based on the level of trash present at various sites. The City of Oxnard will join the stakeholder group for further reporting. Therefore, future monitoring will be more consistent with watershed stakeholders and is expected to improve the MFAC and BMP as well as more effectively utilized resources in the watershed.

As mentioned earlier in the report, the Measure O Citizen Oversight Committee did not allocate any money for storm water projects so the City has not yet been able to install full-capture devices for the catch basins in the drainage basins leading to Revolon Slough / Beardsley Wash. The City is in the process of reviewing options for funding the installation of full-capture devices and hope to prepare a request for proposal to complete this project once a funding source is secured.

Additional trash management efforts include the City's support for a bag-ban. In the past, the City of Oxnard has contributed funds to Beach Erosion Authority for Clean Oceans and Nourishment (BEACON) to prepare an Environmental Impact Report to establish a regional bag-ban ordinance. This would address much of the wind-blown trash issues in the TMDL channels by addressing market plastic bags. Presently, the State has taken on the bag ban issue which will be addressed by a State-wide referendum in 2016.