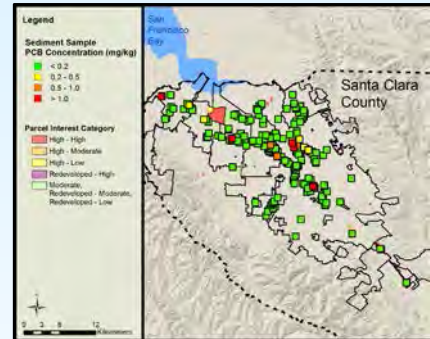


Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Watershed Monitoring and Assessment Program



APPENDIX C

Water Year 2015 POC Monitoring Report *PCBs and Mercury Source Area Identification*

Submitted in Compliance with NPDES Permit No. CAS612008 Provision C.8.e.i - Pollutants of Concern Loads Monitoring

March 28, 2016

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LIST OF ABBREVIATIONS

BASMAA	Bay Area Stormwater Management Agencies Association
BMPs	Best Management Practices
CW4CB	Clean Watersheds for a Clean Bay
CWA	Clean Water Act
DTSC	California Department of Toxic Substances
FD	Field Duplicate
FY	Fiscal Year
LCS	Laboratory Control Samples
MQO	Measurement Quality Objective
MRP	Municipal Regional Permit
MS	Matrix Spike
MS4	Municipal Separate Storm Sewer System
MSD	Matrix Spike Duplicate
NPDES	National Pollution Discharge Elimination System
PCBs	Polychlorinated Biphenyls
POC	Pollutant of Concern
RPD	Relative Percent Difference
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
SAP	Sampling and Analysis Plan
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SCVWD	Santa Clara Valley Water District
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
VTA	Santa Clara Valley Transportation Authority
WY	Water Year
WMA	Watershed Management Area

EXECUTIVE SUMMARY

In Water Year 2015, the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) conducted a targeted reconnaissance sediment sampling program on behalf of its Permittees. Sediment monitoring was conducted in compliance with Provision C.8.e.i (Pollutants of Concern Loads Monitoring) of the Municipal Regional Stormwater Permit (MRP 1.0) for the San Francisco Bay Area (Bay Area). Over two hundred sediment samples were collected and analyzed for polychlorinated biphenyls (PCBs) and total mercury to further identify land areas that may be contributing elevated levels of these pollutants to the municipal separate storm sewer system (MS4). Identification of these elevated land areas will assist Permittees in delineating management areas where future pollutant control measures should be considered and the associated benefits calculated to demonstrate progress towards PCB and mercury load reduction requirements included within the recently reissued Municipal Regional Permit (MRP 2.0).

Based on previous sediment and stormwater sampling conducted throughout the Bay Area, the highest concentrations of PCBs observed to-date are associated with urban areas industrialized between 1950 and 1980 (i.e., old industrial), the time period when PCBs were at their highest use. Sediment sampling locations were therefore distributed among the nine municipalities that collectively encompass over 99% of the old industrial land use in the Santa Clara Valley. Sediments were collected from street gutters and from the MS4 (e.g., storm drain inlets and manholes) at high priority locations that are considered to be representative of high interest old industrial properties (e.g., those with poorly maintained heavy or electrical equipment, recycling operations, poor pavement condition, and evidence of sediment track out). The 202 samples collected represent roughly 17% of the 7,365 acres of high interest properties identified.

Total PCBs concentrations ranged from non-detect to 4.83 mg/kg, with an average of 0.13 mg/kg and a median of 0.02 mg/kg for the 202 samples collected. A total of 10 samples exceeded the 0.5 mg/kg threshold that was selected by as an approximate benchmark for identifying areas that should be considered for future investigation. Total mercury concentrations ranged from 0.03 mg/kg to 18.90 mg/kg, with an average of 0.41 mg/kg and a median of 0.10 mg/kg. A total of 12 of the 202 samples had concentrations over 1.0 mg/kg, the provisional threshold for considering further action.

Based on the results of this project, there is sufficient evidence to categorize seven stormwater catchment areas as “PCB Watershed Management Areas” that should be further investigated in an attempt to identify source properties and potentially refer to the San Francisco Bay Regional Water Quality Control Board for further action. The remaining high interest areas will be further evaluated through monitoring conducted in Water Years 2016 and 2017, consistent with provision C.8.f of MRP 2.0 and other information obtained regarding the likelihood that elevated levels of PCBs and/or mercury are originating from these areas. These results of sediment monitoring to-date, however, suggest that continuing to identify additional source areas and properties in the Santa Clara Valley may be challenging due to the dispersal of PCBs onto the urban landscape over the previous decades. This dispersion may eventually pose a water quality management challenge, as pollutants dispersed throughout the older urban areas are more difficult to control and the mandated reductions may need to rely more heavily on stormwater treatment systems constructed as a result of redevelopment and green infrastructure plan implementation by Santa Clara Valley municipalities.

1.0 INTRODUCTION

Pollutants of Concern (POC) loads monitoring is required by Provision C.8.e.i of the Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (Order R2-2009-0074, NPDES Permit No. CAS612008), referred to as MRP 1.0. In Water Year 2015, the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP or Program) and its Regional Monitoring Coalition (RMC) partners implemented a revised alternative approach to POC loads monitoring consistent with Task 2 of the SCVURPPP Fiscal Year (FY) 13-14 Alternative POC Monitoring Work Plan (Work Plan), which describes the Program's approach to complying with Provision C.8.e (POC Monitoring) of MRP 1.0 (SCVURPPP 2014b). The Work Plan responds to requests made from San Francisco Bay Regional Water Quality Control Board (Regional Water Board) staff to further identify PCB and mercury source areas and prepare for implementation of the reissued NPDES Municipal Regional Permit (i.e., MRP 2.0) by identifying areas of interest for PCBs and mercury sources and eventual load reduction "opportunities."

This report describes the results from the targeted sediment sampling conducted in Santa Clara County by SCVURPPP on behalf of its Permittees in Water Year 2015 (WY2015)¹ in compliance with provision C.8.e.i of MRP 1.0. Sediment/soil sample collection is one element of a multi-step process described in the Work Plan that is being used to identify areas where control measures could be implemented to comply with PCB and mercury load reduction requirements included in the recently reissued NPDES Permit, also known as MRP 2.0. Load reductions goals included in MRP are milestones towards addressing waste load allocations included in the PCBs and mercury Total Maximum Daily Loads for the San Francisco Bay.

Sampling design and methodologies are presented in detail in the Sampling and Analysis Plan (SAP) for PCBs and Mercury Opportunity Area Analysis and Implementation Planning (SCVURPPP 2014a). A reconnaissance approach was implemented to maximize the area characterized by the sampling program within existing budget and schedule constraints. Approximately 200 sediment samples were collected and analyzed in WY 2015 through this sampling program. Methods used to select sample stations and collect and analyze the samples are summarized in Section 2.0 of this report. Section 3.0 describes the sampling results. Conclusions and recommendations for next steps are included in Section 4.0. Cited references are listed in Section 5.0.

1.1. PCB and Mercury Load Reductions

Fish tissue monitoring in San Francisco Bay has revealed bioaccumulation of PCBs, mercury, and other pollutants. The levels found are thought to pose a health risk to people consuming fish caught in the Bay. As a result of these findings, an interim advisory has been issued on the consumption of fish from the Bay. The advisory led to the Bay being designated as an impaired water body on the Clean Water Act (CWA) "Section 303(d) list" due to elevated levels of PCBs, mercury, and other pollutants. In response, the Regional Water Board has developed Total Maximum Daily Load (TMDL) water quality restoration programs targeting PCBs and mercury in the Bay. The general goals of the TMDLs are to identify sources of PCBs and mercury to the Bay, implement actions to control the sources, and restore water quality.

The PCBs and mercury TMDLs indicate that a 90% reduction in PCBs and 50% reduction in mercury found in discharges from urban stormwater runoff to the Bay are needed to achieve water quality standards and restore beneficial uses. Provisions C.11 and C.12 of MRP 1.0 required Permittees to implement pilot-scale control measures during the permit term to reduce PCBs and mercury discharges

¹ Water Year 2015 is the period of October 1, 2014 through September 30, 2015.

from Municipal Separate Storm Sewer Systems (MS4s). These pilot studies were intended to enhance our collective knowledge about the costs and benefits of different Best Management Practices (BMPs) to control PCBs and mercury. The reissued NPDES permit (i.e., MRP 2.0) became effective in January 2016 and requires municipal agencies to move from pilot-scale work to focused implementation and defined load reduction goals (e.g., 3 kg/year region wide for PCBs). The strategies and BMPs that will be applied to meet the load reduction goals, at a minimum, will include:

- Source property identification and referral for investigation and abatement;
- Green infrastructure/treatment controls; and
- Management of PCBs in building materials during demolition.

1.2. Definitions of Areas of Interest and Opportunity for Reductions

In preparation for reissuance of the MRP, Program and Permittee staff participated in dialogue with Regional Water Board staff through the MRP 2.0 Steering Committee and its workgroups. One outcome was a preliminary framework for focused implementation requirements addressing PCBs and mercury during the MRP 2.0 timeframe. The framework assumes that all areas in the urban landscape that drain to the Bay fall within one of three PCBs/mercury interest area categories that will eventually be categorized as load reduction opportunity area types.

PCBs/mercury interest area types have the following characteristics:

- **High Interest Areas** – Areas mainly within old industrial land uses that have a relatively high likelihood of having elevated (e.g., ≥ 0.5 mg/kg PCBs, > 1.0 mg/kg Hg) concentrations of PCBs/mercury in street dirt, sediment removed from the MS4, or in stormwater runoff.
- **Moderate Interest Areas** – Land uses in the moderate interest area category include light industrial area with no risk factors associated with PCBs or mercury as well as other old urban land uses, and have not been redeveloped with stormwater treatment. Moderate interest areas have a relatively moderate likelihood of having elevated concentrations of PCBs/mercury in street dirt, sediment removed from the MS4, or in stormwater runoff.
- **Low/No Interest Areas** – Land uses in the low/no interest area category include newly urbanized areas, redeveloped areas that have stormwater treatment, open spaces, and parks where it is unlikely that PCBs/mercury were ever used, transported, or recycled. Low/No interest areas have a relatively low likelihood of having elevated concentrations of PCBs/mercury in street dirt, sediment removed from the MS4, or in stormwater runoff.

A sample is considered elevated if it has a PCBs concentration over 0.5 mg/kg, moderately elevated if it has a concentration from 0.2 to 0.5 mg/kg, and has a low or urban background concentration if below 0.2 mg/kg. For mercury, the sample is considered elevated if it has a concentration over 1.0 mg/kg, and not elevated if the concentration is below 1.0 mg/kg.

High interest areas where concentrations of PCBs in sediment are >1.0 mg/kg are further classified as “PCB Watershed Management Areas.” These areas will often require a source investigation to understand the extent of the elevated sources of PCBs. A “source property/parcel” is a property (sometimes composed of multiple parcels) that has been identified through source investigations as an elevated source of PCBs to a stormwater conveyance system or receiving water body.

As high interest areas or source properties are identified, “opportunity analyses” will be conducted to evaluate the resources needed and likelihood that load reductions could eventually be achieved from

actions taken by SCVURPPP or Permittees. Opportunity analyses for source properties is a likely future step that will be based on factors such as property ownership, cost of oversight, regulatory authority, logistical considerations, and likelihood of rapid benefit from implementation of control measures. Opportunity area types have the following characteristics:

- **High Opportunity Areas** – are source areas that also provide a relatively high opportunity for cost-effective controls such as referrals to the Regional Water Board or other agencies for subsequent remediation.
- **Moderate Opportunity Areas** - are either moderate source areas or source areas that provide a relatively moderate opportunity for cost-effective controls. These include areas where additional PCBs/mercury load reductions could be achieved as the urban landscape is redeveloped and/or retrofitted with Green Infrastructure, providing the opportunity for integration of PCBs/mercury load reductions with other drivers and funding sources such as transportation projects.
- **Low Opportunity Areas** - These areas have low or urban background PCBs/mercury concentrations or provide low or no opportunity for cost-effective controls.

The goal of the monitoring described in this report is to better delineate *High and Moderate* source areas (e.g., watershed management areas) where opportunity analyses could be conducted to assess the feasibility of implementing control measures in the future. The sampling approach utilized builds on past efforts that include over 150 sediment samples within Santa Clara County (KLI and EOA 2002; City of San Jose and EOA 2003; Yee and McKee 2010, SCVURPPP 2015) as well as wet weather water quality characterization in at least 5 watersheds within the County (McKee et al. 2012, McKee et al. 2013).

2.0 METHODS

This section provides a brief overview of the sampling design and field methods. A detailed discussion is included in the SAP for this project (SCVURPPP 2014a).

2.1. Development of High Interest Areas

PCBs and mercury *High* interest areas are being identified and classified using a map-based GIS platform through an informal iterative framework developed by the Bay Area Stormwater Management Agencies Association (BASMAA) Monitoring and Pollutants of Concern (MPC) Committee. This iterative process includes the steps listed in Table 1 to identify PCBs or mercury source areas.

Table 1. Iterative framework to identify high interest PCB or mercury source areas.

Step	Description ¹	Status
Step 1	Identify parcels that were industrial in or prior to 1980 (i.e., old industrial parcels), or have other land uses associated with PCBs or mercury. See Appendix A of the SAP (SCVURPPP 2014a) for a full description of these areas. These parcels are referred to as potential <i>High</i> interest areas.	<i>Completed</i> in collaboration with Permittees using County Assessor's Parcel GIS data layer.
Step 2	Classify potential <i>High</i> interest areas into <i>High</i> , <i>Moderate</i> or <i>Redeveloped (Low)</i> interest areas based on the evaluation of existing information on current land uses and practices (e.g., extent and quality of pavement, level of current housekeeping, presence of heavy equipment, redevelopment status, stormwater treatment).	<i>Completed</i> in collaboration with Permittees using local institutional knowledge combined with windshield/Google Street View/aerial photo surveys.
Step 3	Conduct sediment and/or water sampling in the public right-of-way (i.e., streets or stormwater conveyance system) near or downstream of <i>High</i> interest areas and analyze samples for PCBs and mercury.	<i>Ongoing</i> . The sediment sampling results documented in this report add to a growing database in development since 2000.
Step 4	Initiate Source Area Investigations and reclassify <i>High</i> interest areas based on sampling results and existing information on current and historical land uses and PCB/mercury sources.	<i>Ongoing</i> . As knowledge about land uses and the presence of PCBs and mercury grows, the maps and data spreadsheets are updated.

¹ See the Opportunity Area Analysis SAP (SCVURPPP 2014a) for a complete description of the process.

The results of Steps 1 and 2 are summarized in Table 2 which lists the number of parcels and/or acreage for each interest area category. Step 1 identified 5,483 parcels within the County that either have an old industrial land use or other indicator of an increased risk of PCB or mercury pollution (i.e., potential *High* interest areas). *Moderate* and *No/Low* interest areas listed in Table 2 include primarily old urban, open

space, and new urban land uses. In Step 2 old industrial land uses were screened for redevelopment activities since 1980 (i.e., roughly when PCBs were banned). Old industrial land uses that have not been redeveloped were classified as *High* interest areas if they have one or more of the following characteristics:

- Unpaved areas;
- Pavement in poor condition or sediment is seen or suspected to move off site;
- A lack of “good housekeeping” in outdoors areas;
- A history of PCB-related activities (e.g., identified in the United States Environmental Protection Agency (USEPA) PCB Transformer Registration Database, Envirostor, or Geotracker);
- A current or past last use associated with possible PCB use (e.g., metals manufacturing, transportation/shipping, recycling, electrical, port, railroad);
- Heavy or electrical equipment observed on-site;
- Hazardous waste storage;
- Recent stormwater violations; or
- Monitoring results from adjacent areas that have elevated PCB concentrations (≥ 0.5 mg/kg).

A total of 2,639 or 48% of the original 5,483 parcels identified as *potential High* interest areas met one or more of the criteria above and were therefore confirmed as *High* interest areas for PCBs or mercury (Table 2). High interest areas represent roughly 7,300 acres of land, or roughly 2.6% of the 279,000 acres of land in the Santa Clara Valley.

Table 2. Classification of SCVURPPP Permittee areas of interest for PCB and mercury sources.

Permittee	Old Industrial Parcels Reclassified via Step 2				Moderate and No/Low Interest Areas (Acres)				Total Area (Acres)
	High Interest Areas		Moderate/Low Interest Areas		Old Urban	Open Space	New Urban	Other ¹	
	# Parcels	Area (acres)	# Parcels	Area (acres)					
Campbell	173	130	156	117	3,431	121	100	--	3,899
Cupertino	44	156	35	222	4,704	1,299	718	--	7,100
Los Altos ²	3	2	0	0	4,062	72	37	--	4,173
Los Altos Hills ²	--	--	--	--	4,206	1,045	441	--	5,692
Los Gatos ²	27	38	4	9	2,513	1,813	587	--	4,960
Milpitas	101	410	48	143	3,023	2,158	2,933	--	8,668
Monte Sereno ²	--	--	--	--	463	33	--	--	496
Mountain View ³	89	159	309	616	5,219	699	541	--	7,234
Palo Alto	75	250	166	455	6,268	4,902	184	78	12,137
San Jose	1,216	2,495	1317	1,894	53,487	22,491	15,254	1,044	96,665
Santa Clara	579	1,157	420	811	7,424	642	1,508	60	11,603
Unincorporated Santa Clara County ³	38	204	2	3	7,162	84,391	2,903	--	94,662
Saratoga ²	28	42	--	--	6,041	1,107	702	--	7,892
Sunnyvale ³	256	713	384	1,326	8,832	506	934	--	12,312
TOTAL	2,629	5,756	2,841	5,596	116,835	121,279	26,842	1,182	277,493

¹ Land area associated with civilian airports (e.g., San Jose International Airport)

² No samples were collected within these jurisdictions.

³ Parcels and acreage for these Permittees do not include 10 parcels and 1,859 acres associated with Moffett Field or NASA Ames, both federal government facilities that are not under the jurisdiction of Permittees.

2.1.1. Priority Ranking

A priority ranking system was developed by Program staff using parcel information collected in collaboration with Permittees to rank the 2,639 *High* interest area parcels and the redeveloped parcels. The system scores a number of parcel characteristics related to the potential for contributions of PCBs or mercury from a parcel to the MS4. A total score was developed for each parcel by summing the scores of each characteristic.

Of the 2,639 *High* interest area parcels, 335 were identified as the highest priority (i.e., *High - High*), 1,012 as moderate priority (i.e., *High - Moderate*), and 1,084 as low priority (i.e., *High - Low*). *Redeveloped - High* parcels are those that have been partially or fully redeveloped since 1980 but still meet the criteria associated with *High* interest areas. Table 3 lists the number of parcels and percent of overall old industrial land use associated with each classification and priority ranking. Figure 1 illustrates these categories in a flow chart format.

Table 3. Number of old industrial parcels and associated areas originally classified as *high* interest areas but reclassified based on existing information on PCB and mercury sources and uses.

Category	# of Parcels ¹	Area (Acres) ¹	% of Potential High Interest (Old Industrial) Areas Identified (5,483 Parcels)
High Interest Areas			
High - High	335	2,544	6%
High - Moderate	1,012	2,195	19%
High - Low	1,084	1,848	20%
Redeveloped - High	208	779	4%
Sub-Total	2,639	7,365	48%
Reclassified Areas			
Moderate Interest Areas	1,710	2,823	31%
Low Interest Area (Redeveloped)	1,134	3,025	21%
Sub-Total	2,844	5,848	52%
Total	5,483	13,232	100%

¹Parcels and acreage in this table deviate from those presented in Table 2 because the parcels and acres associated with Moffett Field and NASA Ames, both federal government facilities that are not under the jurisdiction of Permittees, are included.

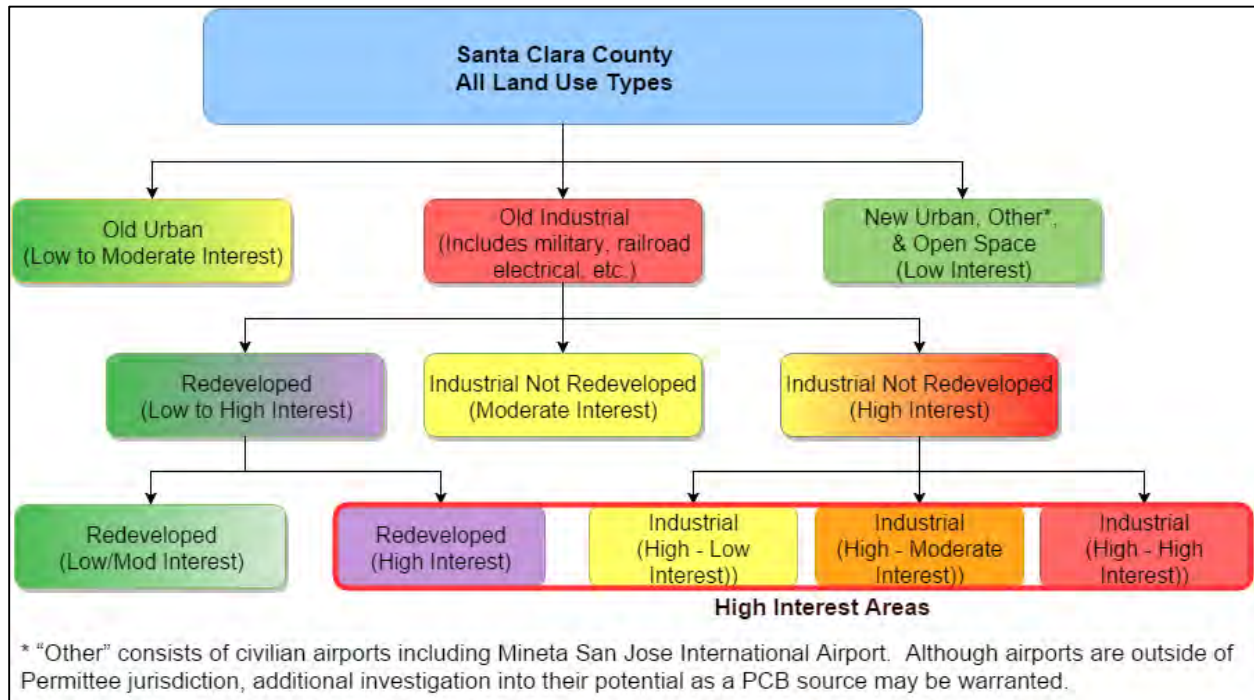


Figure 1. Conceptualized structure of land use rankings and prioritization according to their potential to contribute PCBs to the MS4. High interest land uses are targeted for sampling. Any land use type may become a known PCB source area/property as additional information is gathered. Colors are reflected in maps in Appendices B and C.

2.2. Sampling Stations

The primary goal of the sampling program was to characterize sediment chemistry (i.e., concentrations of PCBs and mercury) in areas screened as *High* interest areas of PCBs to MS4s. Therefore, a targeted reconnaissance approach was implemented to maximize the area characterized by the sampling program within existing budget and schedule constraints. A total of 202 samples were collected during this WY2015 investigation.

A total of 2,639 parcels (7,365 acres) in Santa Clara County were screened as *High* interest areas for PCBs according to the criteria listed in Section 2.1. Because the number of *High* interest parcels (2,639) far exceeded the number samples that could be collected within the available budget, not all parcels were targeted for sediment/soil sampling in WY2015. Therefore, tentative locations for sampling stations were identified based on the priority ranking (e.g., *High - High*) process described in Section 2.1.1 above. Furthermore, the number of samples targeted for each of the Permittees was based on their relative contribution to the total number of *High* interest area parcels and acreage. Based on relatively low old industrial land use acreage, a number of Permittees were not sampled in WY2015, including the Cities/Towns of Los Altos, Los Altos Hills, Los Gatos, Monte Sereno and Saratoga.

Prior to initiating the field effort, Program staff identified tentative sampling locations using the *High* interest area maps and available GIS data such as storm drain networks, elevation files, and high quality aerial photographs (e.g., Google Earth and Google Street View). For most samples, multiple alternative sampling locations or composite locations were also identified. Field reconnaissance maps and data about each potential sampling location (sample location type, safety information, prioritization, and comments) were developed to allow field crews to identify the optimal locations for sampling given the area that the sample was intended to represent. Field crews then used discretion to alter locations based on actual site conditions (e.g., accessibility, incorrectly mapped storm drain inlets, presence of sufficient sediment for sample collection). If a planned location could not be sampled due to a lack of sediment, safety concerns, or the inability to locate sediment, alternative *High* interest areas were sampled.

When possible, sample stations were selected that characterized multiple *High* interest area parcels by capturing sediment at a point in the MS4 that drained multiple *High* interest parcels (e.g., from a line beneath a manhole). In areas where sediment from within manholes or storm drain inlets could not be obtained, samples were collected along street surfaces, sidewalks, or driveways that would have arrived at that location from stormwater or vehicle tracking. To increase the area characterized by inlet or surface samples, multiple nearby samples were often composited.

The Leo Avenue watershed was explicitly excluded from this sampling project due to the high number of samples that have been collected and analyzed in this watershed during the Clean Watersheds for a Clean Bay (CW4CB) Source Property Identification and Referral Pilot Study and the fact that a PCB source property has been referred to the Water Board for cleanup (SCVURPPP 2015).

2.3. Sample Collection Methods

Sediment/soil sample collection methods, equipment decontamination procedures, sample handling and shipping procedures, disposal of residual materials, sample documentation, quality control, and field health and safety procedures followed the Sample and Analysis Plan and Quality Assurance Project Plan developed for Task 3 of the CW4CB – Implementing the San Francisco Bay’s PCBs and Mercury TMDLs with a Focus on Urban Runoff program (AMS 2012 and AMS 2013). These procedures are summarized in the sections below.

Kinetic Laboratories Incorporated (KLI) conducted the sample collection for this project with guidance from Program staff. General sampling locations were identified via the process described in the project's SAP (SCVURPPP 2014a) and summarized above. Consistent with CW4CB procedures, exact soil/sediment sampling locations were determined in the field based on sediment availability, site accessibility, signs of sediment accumulation/wash off, visible signs of potential contamination (e.g., stained soils), and topographical features. Sediment sample locations, coordinates, site conditions, collection methods, descriptions, notes about possible sources for the sediment, and a sketch were recorded on field datasheets as sampling was completed.

Sediment samples were collected using methods that minimize contamination, losses, and changes to the chemical form of the analytes of interest. Samples were collected in the field using pre-cleaned equipment (e.g., natural fiber whisk brooms, stainless steel scoops and spoons, extension poles) into pre-cleaned sample containers (provided by the analytical laboratory). Sampling technique varied at the discretion of the field crew depending on the location and sample type. Samples with field duplicates were collected into a pre-cleaned stainless steel and Tefzel-coated compositing bucket, where they were thoroughly homogenized in the field, and then aliquoted into separate jars for chemical analysis.

Field crews collected the surface soil/sediment samples using the general procedures described in the RMC SOP FS-6 *Collection of Bedded Sediment Samples for Chemical Analysis & Toxicity* (BASMAA 2014). Additional details are described in the CW4CB Quality Assurance Project Plan (QAPP) (AMS 2013). Additional detail regarding the field methods can be found in the SAP (SCVURPPP 2014a).

2.3.1. Laboratory Analytical Methods

Each soil/sediment sample was analyzed for PCB congeners and mercury by ALS Environmental in Kelso, WA. Ancillary methods include sieving to 2 mm and measuring bulk density. PCB and mercury analyses are conducted on the 2 mm fraction. Bulk density measurements were applied to calculate concentrations as mg/kg. Measurement Quality Objectives (MQOs) for laboratory analyses were based on the CW4CB QAPP (AMS 2013) but modified for differing laboratory analytical methods. ALS is involved with the CW4CB program and was asked to conform to those MQOs for this study.

Although USEPA analytical method 1668A for PCBs (as congeners) has been used for previous sediment sampling, loads monitoring and analyses of Bay water and sediments, USEPA method 8082M for PCBs (as congeners) was selected as the method of choice for this study. Method 8082M was identified as the optimal method for this effort based on a thorough review of analytical detection limits. It allows for the collection of screening-level PCB data at a much greater number of sampling sites due to lower analytical laboratory costs. Consistent with the recommendations in *PCBs in San Francisco Bay: Assessment of the Current State of Knowledge and Priority Information Gaps* (Davis et al. 2014), a subset of 40 PCB congeners were analyzed. These are referred to as the Regional Monitoring Program (RMP) 40. A more thorough discussion of the reasons for selecting method 8082M can be found in the SAP (SCVURPPP 2014a).

2.3.2. Quality Assurance and Quality Control

Field personnel adhered to Section 11 of the CW4CB QAPP (AMS 2013) to ensure the collection of representative, uncontaminated samples.

- **Field Blanks.** No field blanks were analyzed as part of this project as they are considered to be of limited value to the quality control process.

- **Field Duplicates.** Consistent with the CW4CB SAP (AMS 2012), field duplicate samples were collected at a rate of ten percent of sample locations or once per day, whichever was less frequent. Field crews had the discretion to select where field duplicates were collected based upon schedule and site conditions. A separate sample number was assigned to each duplicate, and a total of twenty duplicate samples were submitted blind to the laboratory. The purpose of the field duplicates was to better understand the degree of heterogeneity associated with the sediment/soil samples collected for this project and therefore variability within analytical results. Field duplicate samples assist with the interpretation of analytical results by providing an indication of this variability.
- **Method Comparison.** A total of ten percent or twenty samples were submitted for analysis of PCB congeners (i.e., RMP 40) using USEPA analytical method 1668A. Both methods (8082M and 1668A) quantify PCB congeners, however, method 1668A has a higher resolution and lower detection limits. The results of the two methods were compared to verify the accuracy and comparability of the 8082M results.

3.0 SAMPLING RESULTS

From December 2014 through April 2015, 202 sediment samples were collected from *High* interest areas throughout Santa Clara County within the nine jurisdictions that contain over 99% of the County's old industrial land uses (Table 2). The samples consisted of sediments that were collected from the storm drainage system (e.g., in storm drain lines beneath manholes, storm drain inlets, pump stations) or from locations where sediment could potentially reach the storm drainage system (e.g., sediment in street gutters, driveways and other surface sediments). Eighty-five (85) of the samples were composites of more than one location.

3.1. PCB Results

Sample results by location are illustrated in Figure 2 and listed in **Appendix A**. More detailed maps are included in **Appendix B**, which includes sample results and locations by Permittee. **Appendix C** shows detailed maps of all catchment areas for samples with total PCBs concentrations over 0.5 mg/kg.

Four of the nine sampled jurisdictions had at least one sample with a total PCBs concentration greater than 0.5 mg/kg and four others did not have samples above *urban background* levels (< 0.2 mg/kg) (Table 4). Figures 2 and 3 illustrate total PCBs concentrations for each Permittee by concentration category. The sum of the RMP 40 PCB congeners (i.e., total PCBs) concentrations ranged from non-detect (only one sample) to a maximum of 4.84 mg/kg. Ten samples had total PCBs concentrations in the high range (> 0.5 mg/kg), with six of those samples having concentrations greater than 1.0 mg/kg. Seven samples had *moderately* elevated concentrations from 0.2 to 0.5 mg/kg, and the remaining 185 samples had *low* or *urban background* concentrations (< 0.2 mg/kg). **Appendix A** contains detailed documentation for each sample including location coordinates, sample location type (i.e., inlet, street dirt, and manhole), total PCBs and mercury concentrations, and duplicate sample results.

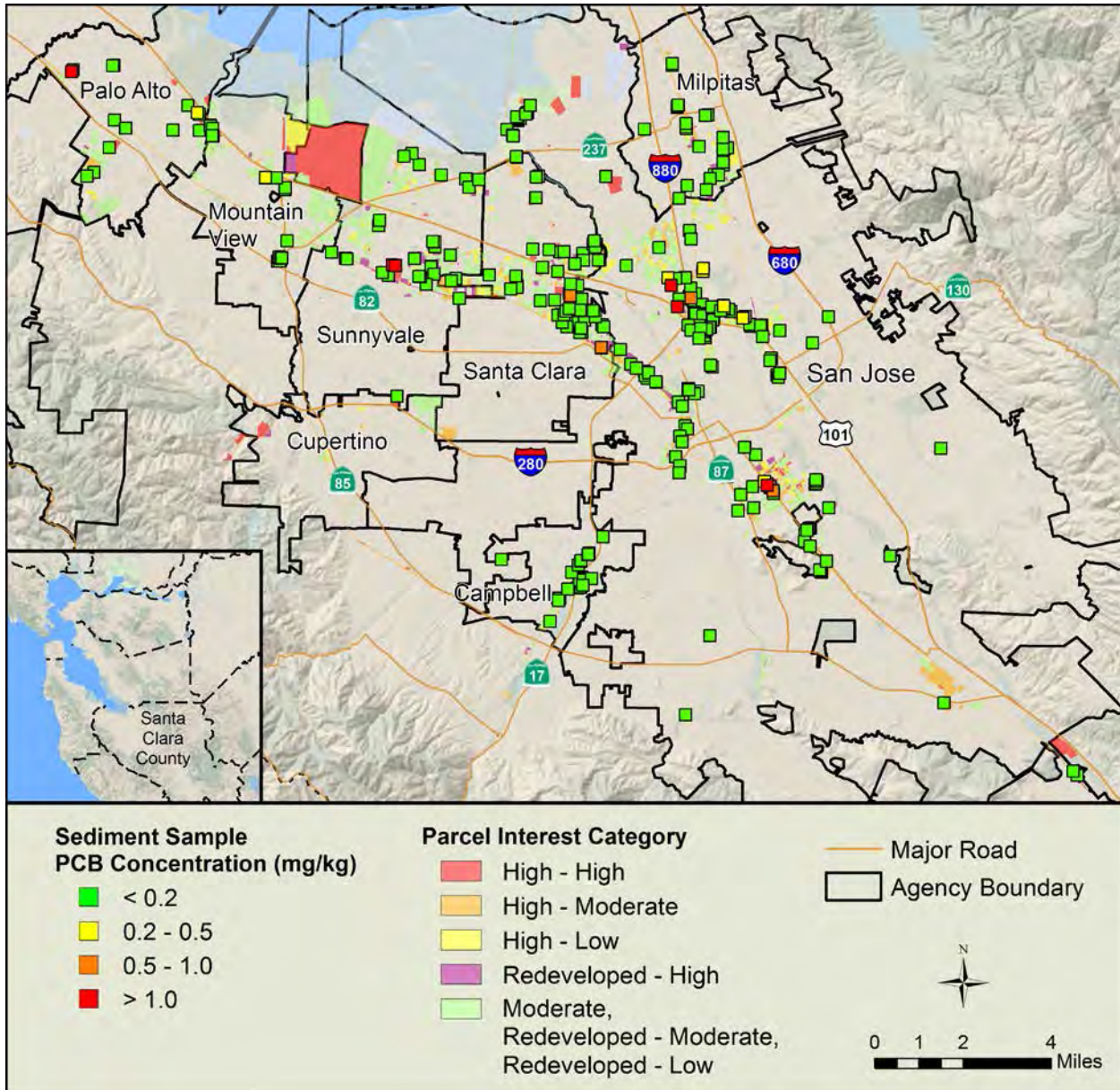


Figure 2. PCB concentrations in sediments collected from the municipal separate storm sewer system in Santa Clara County in WY2015. See Appendix B for larger scale maps by Permittee.

Table 4. PCB concentrations by Permittee in sediments collected from the municipal separate sewer storm system in WY2015.

Permittee	Total PCBs (mg/kg)					Number of Samples				
	Max	Mean	Percentile			> 1.0 (mg/kg)	0.5 - 1.0 (mg/kg)	0.2 - 0.5 (mg/kg)	< 0.2 (mg/kg)	Total
			50th	75th	90th					
Campbell	0.11	0.02	0.02						15	15
Cupertino	0.01	0.01	0.01						1	1
Milpitas	0.02	0.01	0.01						11	11
Mountain View	0.34	0.08	0.01					1	5	6
Palo Alto	1.45	0.21	0.04			1		1	10	12
San Jose	1.97	0.11	0.02	0.07	0.20	3	2	5	85	95
Santa Clara	0.83	0.07	0.01	0.04	0.07		2		36	38
Unincorporated Santa Clara County	0.02	0.02	0.02						2	2
Sunnyvale	4.84	0.42	0.03	0.06	0.13	2			20	22
TOTAL	4.84	0.13	0.02	0.05	0.16	6	4	7	185	202
All Bay Area Samples	193	0.77	0.04	0.19	0.92	101	65	98	811	1,075

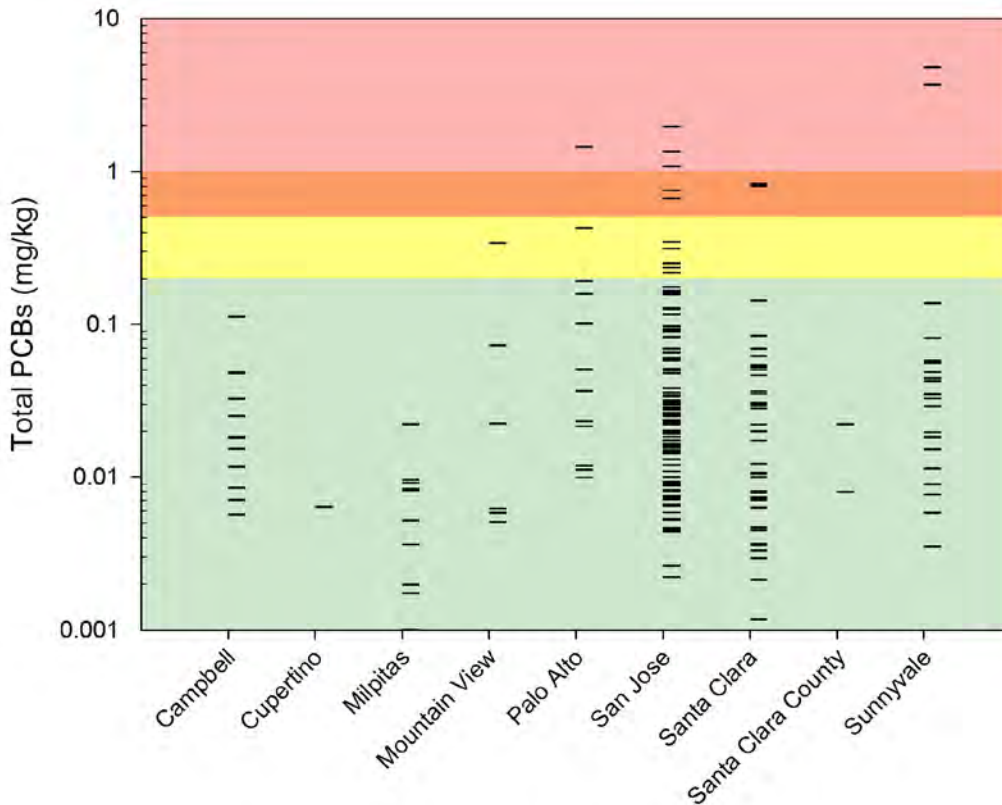


Figure 3. PCB concentrations by Permittee in sediments collected from the municipal separate storm sewer system in WY2015. Note: four values less than 0.001 mg/kg and are not displayed in this figure.

3.2. Catchment Areas Represented

In an effort to convey the total area characterized by the sampling program, the approximate contributing area for each individual sample station was delineated using GIS. These catchment areas range from 0.5 to 426 acres with a median size of 4.8 acres. For the majority of samples, the catchment area was delineated using GIS storm drain data in conjunction with field notes. If the sample was collected from a driveway, the catchment area of that station was assumed to be all or a portion of the parcel from which the sediment could have been tracked.

Of the 13,213 acres of old industrial (potential high interest) parcels in Santa Clara County that drain to the Bay, approximately 1,813 acres (14%) were characterized through sediment sampling as part of this project. However, the majority of the old industrial area that was not sampled is of *Moderate* or *Low* interest, inaccessible, non-jurisdictional (such as Moffett Field), or does not drain to an MS4 (e.g., drains directly to a creek or the Bay). As expected, samples with elevated levels of PCBs had a much higher proportion of catchment area from the areas of highest interest (Table 5). This is partially due to three of the elevated samples targeting the known PCB hot spots near Northrop Grumman in Sunnyvale and Sims Metal Management in San Jose, but was also true in areas with no history of PCB sampling. However, caution should be taken in making any assumptions relating parcel interest category to PCB concentrations. An equivalent sediment monitoring study in San Mateo County did not find a correlation between the parcel interest category and PCB concentrations (SMCWPPP 2015b). In that study, five out of 101 samples had concentrations greater than 0.5 mg/kg, with only seven percent of the old industrial area within the five catchment areas containing *High – High* or *High – Moderate* interest parcels. Possible explanations for this result may be:

- There are many uncertainties and areas of subjectivity in the parcel screening process, including the limited amount and quality of historical land use data available, as well as challenges related to aerial photograph and field reconnaissance results interpretation.
- One characteristic that may result in the export of PCBs from a parcel is the potential contribution associated with sealants, caulks and other materials that may contain PCBs found in certain types of buildings primarily constructed in the 1950s through the 1970s. PCBs can leach off of these materials and pollute the surrounding soil over time or pieces of the material can directly enter stormwater. This characteristic was not used during the parcel screening process.
- Parcels that potentially contribute a large quantity of sediment to the storm drainage system were targeted because of their potential to contribute a relatively large mass of PCBs and mercury via sediments. However, the classification and priority ranking processes may have placed too much weight on unpaved parcels. For example, many parcels are of a higher interest category simply because of the presence of unpaved areas or vehicle tracking, regardless of other factors that would contribute to a higher PCB concentration on the parcel. In addition, samples were skewed toward parcels with unpaved areas because the field crew was often unable to find adequate sediment from parcels that are entirely paved.
- For some catchments, the majority of a sample catchment area may exhibit background levels of PCB concentration, with a relatively small area within the catchment having elevated concentrations. Therefore, PCB concentrations may be diluted at the sample station, especially for sample locations draining larger catchments. Thus it may be necessary to characterize smaller catchments with each sample, which would increase the ratio of the number of samples collected to the area characterized, resulting in a higher cost per unit area characterized.

Table 5. Acres of land by level of interest represented by WY2015 PCB monitoring.

Parcel Interest Category	Approximate Area Draining to Sample Location (acres)					Not Sampled (acres)	Total Area (acres)
	> 1.0 (mg/kg)	0.5 - 1.0 (mg/kg)	0.2 - 0.5 (mg/kg)	< 0.2 (mg/kg)	Total Area		
High - High	14.8	6.3	23.5	273.8	318.4	2,225.3	2,543.7
High - Moderate		7.4	4.3	408.5	420.2	1,774.4	2,194.6
High - Low	2.9	5.1	4.8	311.3	324.0	1,523.5	1,847.5
Moderate	3.3		10.2	270.5	284.1	2,539.0	2,823.0
Redeveloped - High	0.4	4.0	1.7	174.9	180.9	597.8	778.7
Redeveloped - Mod	0.7		0.8	80.1	81.6	654.5	736.1
Redeveloped - Low		4.1	8.5	190.7	203.3	2,085.8	2,289.0
Total	22.0	26.8	53.9	1,709.7	1,812.5	11,400.2	13,212.7

3.3. Comparison to Previous Bay Area Monitoring

Over the past 15 years more than 1,000 sediment samples from the Bay Area have been analyzed for total PCBs (Gunther et al. 2001; Kleinfelder 2005, 2006; KLI and EOA 2002, 2007; City of San Jose and EOA 2003; SMSTOPPP 2002, 2003, 2004; Salop et al., 2002a, b; Yee and McKee 2010; SCVURPPP 2015; SMCWPPP 2015a, 2015b). When compared to previous PCB sampling conducted in the Bay Area, the results of this study show significantly lower percentages of samples with elevated PCB concentrations. Six samples from this study (3%) had concentrations over 1.0 mg/kg compared with 10.2% for the full Bay Area dataset; four samples (2%) had concentrations between 0.5 and 1.0 mg/kg compared with 6.4% for the full Bay Area dataset; and seven samples (3.5%) from this study had concentrations between 0.2 and 0.5 mg/kg compared to roughly 9% for the full Bay Area dataset.

The results of the samples from this project relative to the full Bay Area dataset are illustrated in Figure 4 and listed at the bottom of Table 4. The median total PCBs concentration for Santa Clara County is 0.02 mg/kg, while for the Bay Area dataset this value is 0.04 mg/kg. A third of the samples from this study (66) have a total PCBs concentration less than 0.01 mg/kg. The higher rate of elevated samples in prior sampling may partly be attributed to past sampling efforts targeting areas of known PCBs pollution such as the Leo Avenue catchment in San Jose, the Pulgas Creek pump station catchment in San Carlos, the Ettie Street pump station catchment in Oakland, and the Lauritzen and Parr Channel catchments in Richmond. A disproportionate number of samples with PCB concentrations over 1.0 mg/kg are located in Oakland, with 43% of the total.

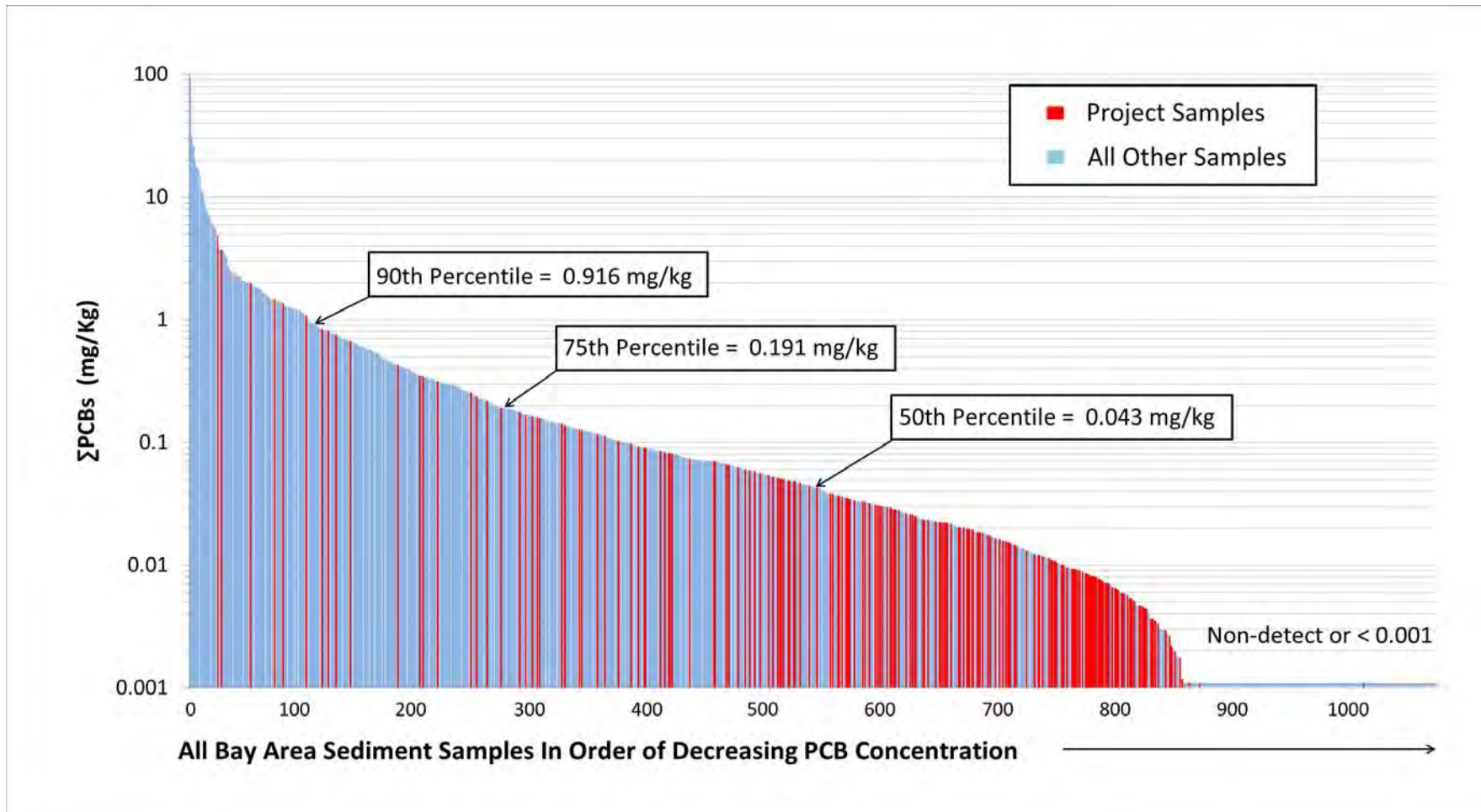


Figure 4. Sum of PCBs in 202 sediment samples collected during WY2015 compared to the full Bay Area PCB dataset. Note: the full height of the highest concentration (193 mg/kg) is not shown.

3.4. Mercury Results

Sample results by location are illustrated in Figure 5 and listed in **Appendix A**. Total mercury concentrations were analyzed for each of the 202 samples. BASMAA member agencies have not developed a threshold for further investigation of mercury sources, comparable to the PCBs thresholds discussed previously. For the purposes of this project, samples with mercury concentrations exceeding 1.0 mg/kg considered elevated and discussed in more detail in this section.

A total of 12 of the 202 samples had concentrations over 1.0 mg/kg, and 16 additional samples had concentrations ranging from 0.3 to 1.0 mg/kg (Table 6). A total of 10 of the 12 samples over 1.0 mg/kg were observed in the City of San Jose (Figure 6). As illustrated in Table 6, San Jose had higher mean and 90th percentile concentrations when compared with other Permittees, suggesting that a disproportionate number of elevated samples were located in the City; possibly as a result of having more recycling facilities (e.g., metal recycling facilities or auto repair and recycling facilities) than other Permittees.

3.5. Comparison to Previous Bay Area Monitoring

Mercury concentrations observed during this project were generally comparable to previous studies throughout the Bay Area (Figure 7). However, a much higher proportion of samples from this study had concentrations below 0.1 mg/kg (48%) relative to the other 715 samples in the dataset (23%). It should be noted that many of the other Bay Area studies focused on locations with known elevated POC concentrations such as Leo Avenue in San Jose and the Ettie Street pump station catchment in Oakland, whereas the goal of this study was to locate new POC sources.

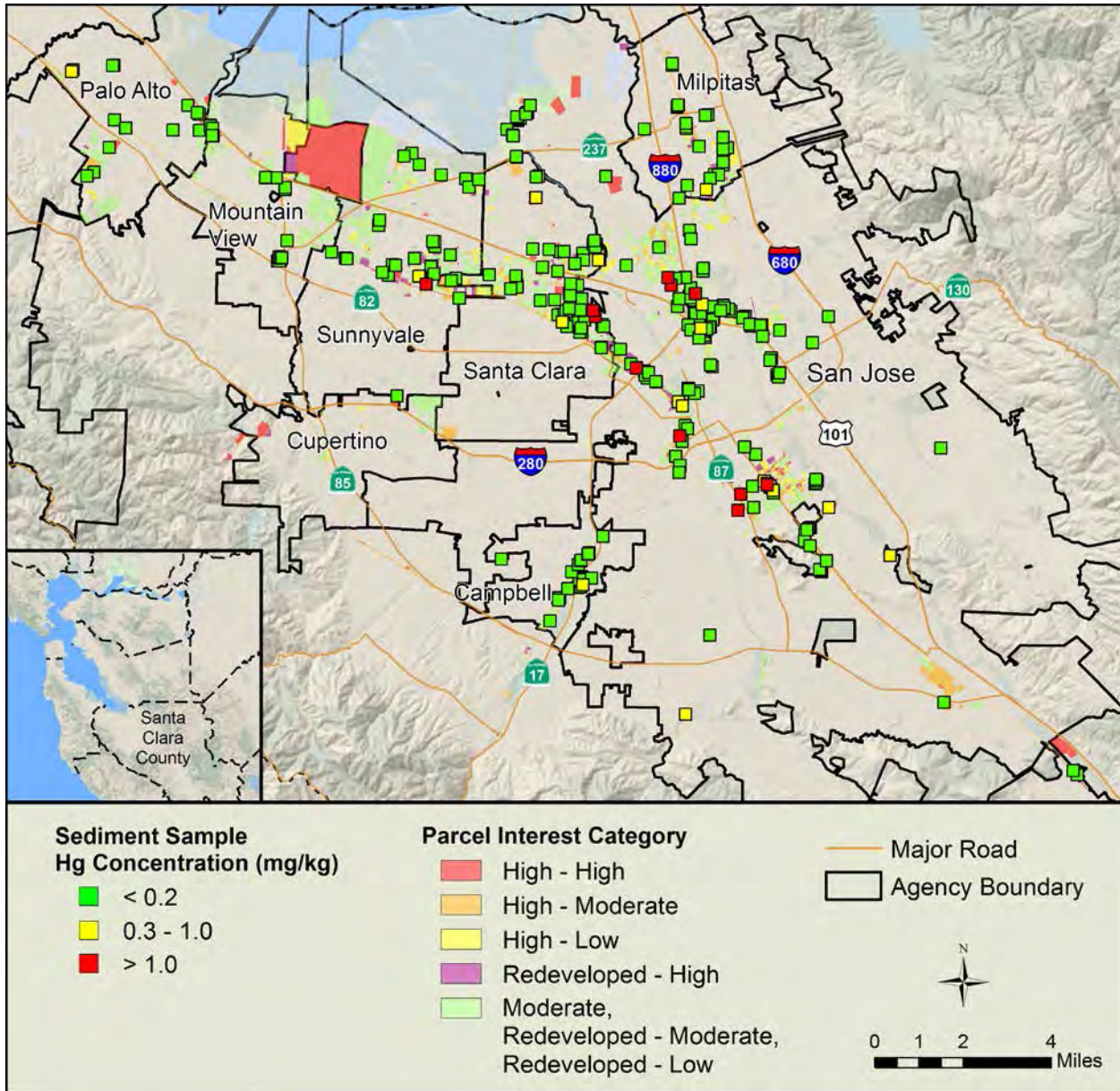


Figure 5. Mercury concentrations in sediments collected from the municipal separate storm sewer system in Santa Clara County in WY2015.

Table 6. Mercury concentrations by Permittee in sediments collected from the municipal separate sewer system in WY2015.

Permittee	Mercury (mg/kg)					Number of Samples			
	Max	Mean	Percentile			> 1.0 (mg/kg)	0.3 - 1.0 (mg/kg)	< 0.3 (mg/kg)	Total
			50th	75th	90th				
Campbell	0.55	0.17	0.10				1	14	15
Cupertino	0.04	0.04	0.04					1	1
Milpitas	0.33	0.10	0.08				1	10	11
Mountain View	0.19	0.10	0.08					6	6
Palo Alto	0.82	0.15	0.07				1	11	12
San Jose	18.90	0.68	0.15	0.25	0.94	10	9	76	95
Santa Clara	3.21	0.23	0.09	0.21	0.32	1	3	34	38
Unincorporated Santa Clara County	0.25	0.16	0.16					2	2
Sunnyvale	1.57	0.19	0.07	0.15	0.2	1	1	20	22
Total	18.90	0.41	0.10	0.22	0.45	12	16	174	202
Total (not including San Jose)	3.21	0.18	0.08	0.17	0.29	2	7	98	107
All Bay Area Samples	18.90	0.43	0.16	0.31	0.79	70	174	674	918

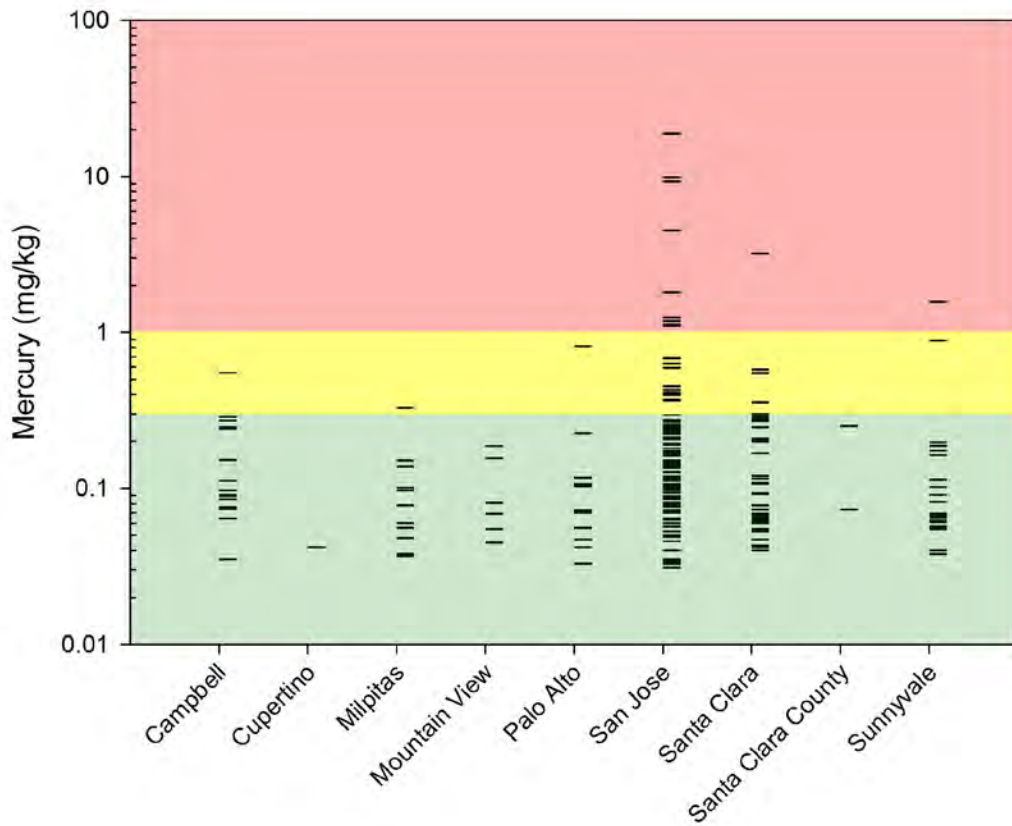


Figure 6. Mercury concentrations by Permittee in sediments collected from the municipal separate sewer system in WY2015.

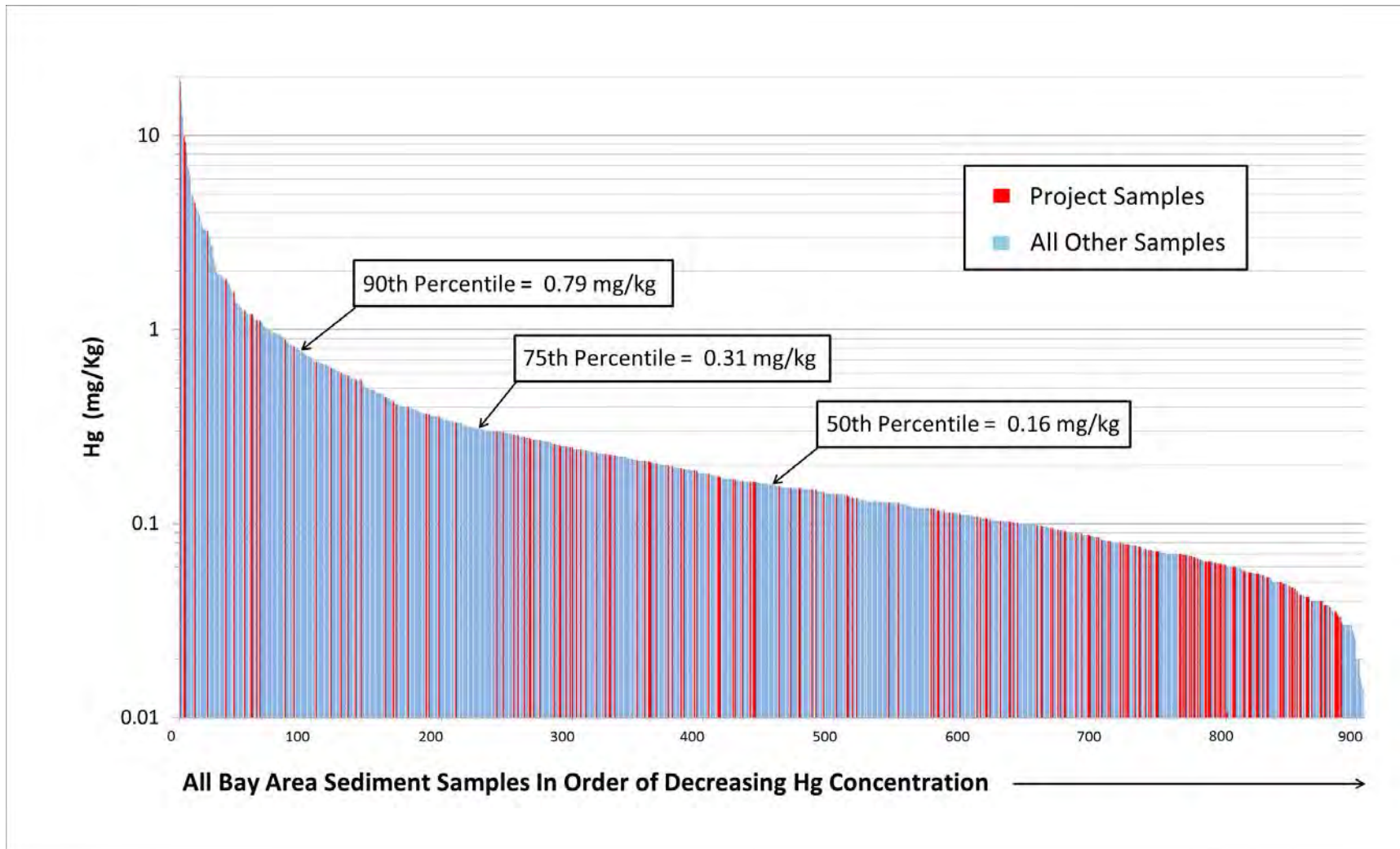


Figure 7. Mercury concentrations in the 202 samples collected during WY2015 compared to the full Bay Area dataset.

3.6. Catchment Areas Represented

As with PCB concentrations, the catchment for each sampling location was drawn in GIS and intersected with the High Opportunity dataset to understand the degree of correlation between mercury concentrations and the parcel interest category (Table 7). For samples with concentrations greater than 1.0 mg/kg, there was no correlation with parcel interest category, with the category expected to have the lowest concentrations of POCs (*Redeveloped – Low*), representing the greatest proportion of these catchments. For the sixteen samples with a concentration ranging from 0.3 to 1.0 mg/kg, 41% of the catchment area was from parcels of *High – High* interest. However, most of this High – High area is from three separate samples that characterize large electrical substations, which are often placed in this highest interest category. The parcel ranking system outlined in the methods section of this report put more emphasis on parcels at risk for PCBs than mercury, although certain industries such as metal recycling are a high risk for both pollutants. If the risk for mercury pollution was weighted higher in the ranking system, businesses such as auto repair and crematoriums would potentially be placed in a higher parcel interest category.

Table 7. Acres of land by level of interest represented by WY2015 PCB monitoring.

Parcel Interest Category	Approximate Area Draining to Sample Location (acres)				Not Sampled (acres)	Total Area (acres)
	> 1.0 mg/kg	0.3 - 1.0 mg/kg	< 0.3 mg/kg	Total		
High - High	5.4	44.7	268.3	318.4	2,225.3	2,543.7
High - Moderate	10.2	11.1	398.9	420.2	1,774.4	2,194.6
High - Low	10.1	14.8	299.1	324.0	1,523.5	1,847.5
Moderate	12.5	9.8	261.8	284.1	2,539.0	2,823.0
Redeveloped - High	0.2	14.4	166.3	180.9	597.8	778.7
Redeveloped - Moderate	3.4	3.3	74.9	81.6	654.5	736.1
Redeveloped - Low	17.4	10.3	175.6	203.3	2,085.8	2,289.0
Total	59.2	108.4	1,644.9	1,812.5	11,400.2	13,212.7

3.7. Quality Assurance Results

This project used the CW4CB QAPP (AMS 2013) as a basis for Quality Assurance and Quality Control (QA/QC) procedures. SCVURPPP contracted with ALS Environmental in Kelso, WA for both mercury and PCB testing. This project used USEPA method 8082M for PCB congeners analysis rather than method 1668A (used by CW4CB) so that more samples could be collected with the given budget, while also having detection limits that are within the goals of this project (SCVURPPP 2014a). However, the difference in lab methods did not impact the measurement quality objects (MQOs), which remained the same as in the CW4CB QAPP (Table 8). Overall, the results of the QA/QC review suggest that the sediment chemistry data generated during this study was of sufficient quality for the screening level purposes of the project. While some data were flagged in the project database, none of the data were rejected. The sections below provide more detail about the data validation process.

Table 8. Measurement quality objectives of the Clean Watersheds for a Clean Bay (CW4CB) Quality Assurance Project Plan.

QA/QC Component	PCBs	Mercury
Laboratory Blank	< Reporting Limit	< Reporting Limit
Reference Material (Laboratory Control Sample)	50-150% recovery (70-130% recovery if certified)	75-125% recovery
Matrix Spike	50-150% recovery	75-125% recovery
Matrix Spike Duplicate	50-150% recovery Relative Percent Difference < 25%	75-125% recovery Relative Percent Difference < 25%

3.7.1. Reporting Limits

The project SAP (SCVURPPP 2014a) identified 0.5 mg/kg as an elevated/high total PCBs concentration threshold for sites to be considered for additional investigation. Because a different analytical method was used in this project for PCBs congeners (i.e., 8082M) compared to the CW4CB project (i.e., 1668A), a reporting limit requirement had to be developed. To maintain a conservative approach, QA/QC goals for this project focused on concentrations greater than 1/5 of the high concentration threshold (i.e., 0.1 mg/kg), and applied a reporting limit requirement of 10 µg/kg, or 1/10 of this new lower threshold, for each of the forty PCB congeners analyzed.

Approximately 7% of congener samples (568 of 8149) did not meet the reporting limit requirement of 10 µg/kg. However, the majority of these exceedances are explained by dilutions², necessary to conduct the analysis, resulting in elevated reporting limits. Only a small minority (42; 0.5%) of the samples that did not meet the reporting limit requirements were not diluted, and therefore, did not have a justification for the elevated reporting limits. One-quarter (ten) of the 40 congeners were affected.

The target method reporting limit for mercury of 0.30 mg/kg was met for all but three samples. Two of these samples were diluted (dilution factor of 20) and only marginally elevated at 0.38 and 0.45 mg/kg. The third sample that did not meet the target reporting limit was also diluted, but had a reporting limit of 1.4 mg/kg. This sample had a very high dilution factor (50), and as a result had a reporting limit more than four times greater than the target.

3.7.2. Lab Blanks

All laboratory blanks were less than the reporting limit and method detection limit for both PCBs and mercury.

3.7.3. Laboratory Control Samples (LCS)

The CW4CB MQO for Synthetic Organic Compounds in sediment (i.e., PCB congeners) specifies a 70-130% recovery for reference material if certified or 50-150% recovery otherwise. The laboratory had a much smaller acceptable range for laboratory control samples (LCS) recovery, and as a result, some of the QA samples that were qualified by the laboratory were within the QAPP MQO range. Samples associated with these QA samples were not qualified. Samples were only qualified if their batch was

² Samples are typically diluted to lower the concentration to a range measureable by the equipment and sometimes to address confounding issues with the sample matrix. Dilutions will always reduce the concentration of the sample.

associated with QA samples whose percent recovery exceeded the QAPP MQOs. Approximately one-third (32%) of all LCS samples exceeded the MQOs specified by the CW4CB QAPP.

3.7.4. Matrix Spikes and Matrix Spike Duplicates

Only half (51%) of matrix spike (MS) and matrix spike duplicates (MSD) met the percent recovery MQOs specified in the CW4CB QAPP. However, the relative percent difference (RPD) between matrix spikes and their duplicates met MQOs for the majority of samples. Only 18% of these RPDs exceeded the 25% MQO.

3.7.5. Field Duplicates

Twenty field duplicates were collected during this project. Field duplicate sampling methods involved placing the sediment samples in a pre-cleaned stainless steel and Tefzel-coated compositing bucket, where they were thoroughly homogenized in the field, and then aliquoted into separate jars and submitted to the lab as a blind duplicate. A comparison of the PCB and mercury samples and their respective duplicates is shown in Table 9.

The relative percent difference (RPD) for four of the twenty samples and their corresponding duplicates exceeded MQOs for total PCBs. However, the concentrations of total PCBs at two of these sites were lower than reporting limit requirement of 0.01 mg/kg, and the concentrations of total PCBs at the other two sites were lower than the threshold of 0.2 mg/kg to be considered moderately elevated. As a result, these high RPDs are attributed to low concentrations.

Seven of the twenty duplicate samples did not meet the MQO for RPD for mercury. Similar to total PCBs RPDs, the field duplicates that exceeded the RPD MQOs for mercury generally contained low concentrations and were below the reporting limit. All of the samples were in the same concentration category as their duplicates except for SC-SJY-09-B, which is considered moderately elevated (0.37 mg/kg), while the duplicate has an urban background concentration (0.27 mg/kg). The absolute differences between the samples and their duplicates were generally higher than expected, possibly from heterogeneity of concentrations within the sample rather than laboratory techniques.

Table 9. Relative percent differences (RPDs) of PCBs and mercury between samples and field duplicates.

Site ID	Site Duplicate Sample ID	Total PCBs				Mercury			
		Result (mg/kg)		RPD ¹	Meets MQO?	Result (mg/kg)		RPD ¹	Meets MQO?
		Sample	Duplicate			Sample	Duplicate		
SC-WVC-10-A	SC-WVC-10-B	0.113	0.121	7%	Yes	0.55	0.47	15%	Yes
SC-MIL-07-A	SC-MIL-07-B	0.008	0.009	11%	Yes	0.10	0.06	49%	No
SC-MOV-04-A	SC-MOV-04-B	0.073	0.095	26%	No	0.08	0.07	19%	Yes
SC-PAO-05-B	SC-PAO-05-C	0.428	0.432	1%	Yes	0.23	0.28	21%	Yes
SC-SJY-01-F	SC-SJY-01-H	0.013	0.013	2%	Yes	0.18	0.20	10%	Yes
SC-SJY-04-A	SC-SJY-04-C	0.002	0.001	96%	No	0.21	0.18	15%	Yes
SC-SJY-08-D	SC-SJY-08-H	0.666	0.601	10%	Yes	0.06	0.05	31%	No
SC-SJY-09-A	SC-SJY-09-B	0.011	0.011	4%	Yes	0.37	0.27	31%	No
SC-SJY-15-B	SC-SJY-15-C	0.014	0.013	8%	Yes	0.05	0.07	37%	No
SC-SJY-31-B	SC-SJY-31-C	0.070	0.059	16%	Yes	0.26	0.14	61%	No
SC-SJY-40-A	SC-SJY-40-B	0.026	0.031	18%	Yes	4.52	3.78	18%	Yes
SC-SJY-47-B	SC-SJY-47-E	0.754	0.703	7%	Yes	0.64	0.87	31%	No
SC-SJY-62-A	SC-SJY-62-B	0.003	0.003	2%	Yes	0.03	0.04	18%	Yes
SC-SJY-71-A	SC-SJY-71-B	0.065	0.074	12%	Yes	0.19	0.22	16%	Yes
SC-SCL-02-C	SC-SCL-02-F	0.035	0.033	8%	Yes	0.25	0.11	81%	No
SC-SCL-03-A	SC-SCL-03-E	0.054	0.047	13%	Yes	0.17	0.15	11%	Yes
SC-SCL-10-A	SC-SCL-10-B	0.003	0.003	28%	No	0.07	0.07	6%	Yes
SC-SNV-10-A	SC-SNV-10-D	4.835	5.675	16%	Yes	0.10	0.11	3%	Yes
SC-SNV-22-A	SC-SNV-22-B	0.138	0.129	6%	Yes	0.89	0.79	12%	Yes
SC-SNV-30-A	SC-SNV-30-B	0.042	0.027	44%	No	0.06	0.07	16%	Yes

¹ RPD = $\text{ABS}([X1 - X2] / [(X1 + X2) / 2])$ where X1 is the first sample result and X2 is the duplicate sample result. Sites that exceeded the measurement quality objective of 25 % are **bolded**

3.7.6. 1668A Method Comparison

A total of 20 samples from Santa Clara County were also analyzed using USEPA method 1668A, which has higher resolution and lower detection limits for PCB congeners than method 8082M. The samples submitted for 1668A analysis were selected based on having either high total PCBs concentrations or minor QA issues with method 8082M. As a result of the extremely low detection limits achievable by method 1668A, several laboratory blanks had PCB congener concentrations greater than the method detection limit³. Most were below the reporting limit, but 16 individual congeners and coelutions⁴ were also above the laboratory reporting limit. However, all laboratory blanks were less than the project reporting limit of 10 µg/kg.

In addition to resolution and detection limits differences for the two methods, there are small differences in the individual congeners analyzed. Method 8082M identifies the RMP 40 congeners

³ The presence of PCBs in laboratory blanks associated with method 1668A is common and highlights the theory that PCBs are ubiquitous in the environment (City of Spokane 2015).

⁴ Coelution is the process whereby two or more chemical compounds (e.g., PCB congeners) elute from the chromatographic column at the same time, making separation and identification difficult.

individually; whereas, method 1668A identifies 22 individual congeners and 17 coelutions. Consequently, results from the two methods are not identical but are considered comparable. The sums of the PCB congeners (e.g., Sum of PCBs) were compared and the relative percent difference was calculated for each sample (Table 10).

Table 10. Comparison of Sum of PCB concentrations analyzed by both USEPA 8082M and 1668A methods.

Site ID	Method 8082M (mg/kg)	Method 1668A (mg/kg)	Relative Percent Difference
SC-MOV-04-B	0.095	0.133	33%
SC-PAO-05-B	0.428	0.474	10%
SC-PAO-18-B	1.449	1.920	28%
SC-SCL-01-A	0.835	1.620	64%
SC-SCL-02-B	0.062	0.106	52%
SC-SCL-02-C	0.035	0.039	9%
SC-SCL-02-E	0.804	0.802	0%
SC-SCL-03-B	0.143	0.179	22%
SC-SCL-06-A	0.050	0.053	5%
SC-SCL-20-A	0.006	0.009	34%
SC-SJY-01-D	0.175	0.159	10%
SC-SJY-07-A	0.346	0.322	7%
SC-SJY-08-D	0.666	0.590	12%
SC-SJY-08-F	0.157	0.153	2%
SC-SJY-12-C	0.218	0.109	67%
SC-SJY-46-A	0.005	0.008	53%
SC-SJY-47-C	0.251	1.1600	129%
SC-SJY-47-D	1.973	2.500	24%
SC-SJY-48-A	0.128	0.011	170%
SC-WVC-03-C	0.0085	0.0092	8%

Of the 20 samples collected in Santa Clara County that were analyzed using both methods, the relative percent difference (RPD) for nine of the 20 samples exceeded the MQO (greater than 25% difference), with seven of those samples having higher concentrations using method 1688A. Sample SC-SJY-47-C had a much higher concentration using method 1668A, although the manhole that this sample was collected from drains Sims Metal Management in San Jose which another sample (SC-SJY-47-B) as well as historical samples collected near there already confirm high concentrations around the property. Method 8082M may occasionally under-measure PCB concentrations, but is appropriate for screening purposes given limited budgets.

4.0 CONCLUSIONS AND NEXT STEPS

Identifying land areas that contribute elevated concentrations of PCBs and mercury to the municipal stormwater system is a challenging and multi-year process. The 202 sediment samples collected and analyzed during this project in combination with historical sediment and stormwater runoff samples are part of an ongoing effort to identify areas in Santa Clara County for further study and the potential opportunity to implement pollutant controls. The sampling design specifically targeted locations within the old industrial landscape that are influenced by parcels classified and prioritized as having a relatively higher potential to be sources of PCBs and/or mercury. However, only 5% of the samples collected had total PCBs concentrations exceeding the 0.5 mg/kg threshold. Most samples (91.5%) had urban background PCB concentrations (< 0.2 mg/kg), while 3.5% of samples were considered moderately elevated (0.2 – 0.5 mg/kg). For mercury, 8% of all samples were considered moderately elevated (0.3 – 1.0 mg/kg), and 6% were characterized as elevated (> 1.0mg/kg).

These results suggest that continuing to identify additional source areas and properties in Santa Clara County may be challenging. Due to the dispersal of PCBs onto the urban landscape over decades, much of the PCB load to the San Francisco Bay may be coming from less elevated and more diffuse sources. This poses a water quality management challenge, as disperse sources are more difficult to control. Data collected to-date suggests that the diffuse nature of PCB contamination within the urban landscape may require a rethinking of the approach and timeline needed to meet TMDL load reduction goals.

4.1. Identifying Watershed Management Areas

Using the results of this report and additional information, SCVURPPP has begun the process to address the MRP 2.0 C.12.a.ii (1) requirement that Permittees shall *“Identify the watersheds or portions of watersheds (management areas) in which PCBs control measures are currently being implemented and those in which new control measures will be implemented during the term of this permit.”* These Watershed Management Areas (WMAs) will be identified and classified based on a combination of historical and current land uses, facility condition, and the results of sediment and stormwater samples that have been collected to-date. A report summarizing the identification of WMAs in the Santa Clara Valley and descriptions of existing and current control measures for PCBs implemented with these areas will be submitted to the Water Board by September 30, 2016.

4.2. Further Source Property Identification

Although the primary objective of this project was not to identify specific source properties, larger areas or catchments were identified where further investigation of PCB sources is warranted. Source identifications were previously successful in identifying a PCB source property in the Leo Avenue Watershed (San Jose) and therefore additional source investigations are planned to begin in FY 2015-16 based on the sampling results within this report. Investigations may include working with Permittees to better understand specific MS4 (including private storm drains) transport processes from private properties, review of property records source catchment areas, additional sample collection in the public right-of-way and on private property, and inspections of properties identified at high interest parcels.

4.3. Continued Regional Coordination and POC Monitoring

SCVURPPP plans to continue working with other Bay Area countywide stormwater programs (through the BASMAA MPC Committee) to evaluate the results of the ongoing efforts in the Bay Area to identify PCBs and mercury source areas and plan next steps. Follow-up sediment and water monitoring will be

conducted in coordination with compliance with Provision C.8.f (Pollutants of Concern Monitoring) of reissued MRP (i.e., MRP 2.0). Monitoring under Provision C.8.f is intended to address a number of management questions related to priority pollutants such as mercury and PCBs, including assessing inputs to the Bay from urban runoff, assessing trends in pollutant loading, and helping to identify pollutant source areas. SCVURPPP began the process of sampling wet weather runoff in WY2015 through the San Francisco Estuary Regional Monitoring Program for Trace Substances (RMP). In WY2016 the RMP is conducting additional stormwater monitoring to supplement SCVURPPP's POC monitoring designed to better characterize PCB concentrations and potentially locate previously unknown source areas.

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Appendix A

WY2015 Sampling Locations and Results

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
Campbell	SC-WVC-01-A	01-A	SC-WVC-01-A-1	Inlet	37.26421	-121.95629	1/15/2015	9:30	0.25	0.015	
	SC-WVC-03-A	03-A	SC-WVC-03-A-2	Inlet	37.27890	-121.94358	1/15/2015	14:30	0.09	0.009	
			SC-WVC-03-A-3	Street Dirt	37.27846	-121.94401					
	SC-WVC-03-B	03-B	SC-WVC-03-B-2	Inlet	37.27564	-121.94400	1/15/2015	13:40	0.09	0.006	
			SC-WVC-03-B-3	Street Dirt	37.27533	-121.94531					
			SC-WVC-03-B-4	Inlet	37.27555	-121.94395					
	SC-WVC-03-C	03-C	SC-WVC-03-C-1	Street Dirt	37.27749	-121.94467	1/15/2015	15:00	0.07	0.009	0.009
			SC-WVC-03-C-3	Inlet	37.27814	-121.94418					
			SC-WVC-03-C-5	Manhole	37.27790	-121.94450					
	SC-WVC-04-A	04-A	SC-WVC-04-A-1	Inlet	37.27844	-121.93964	1/15/2015	12:40	0.10	0.012	
	SC-WVC-05-A	05-A	SC-WVC-05-A-1	Inlet	37.27179	-121.95339	1/15/2015	10:35	0.29	0.049	
			SC-WVC-05-A-3	Inlet	37.27185	-121.95322					
			SC-WVC-05-A-4	Inlet	37.27186	-121.95258					
	SC-WVC-06-A	06-A	SC-WVC-06-A-3	Manhole	37.27486	-121.94927	1/15/2015	11:30	0.24	0.048	
	SC-WVC-07-A	07-A	SC-WVC-07-A-3	Manhole	37.27112	-121.95309	1/15/2015	10:05	0.09	0.018	
	SC-WVC-10-A	10-A	SC-WVC-10-A-2	Inlet	37.27628	-121.94309	1/15/2015	13:00	0.55	0.113	
	SC-WVC-10-B (Dup of 10-A)								0.47	0.121	
SC-WVC-11-A	11-A	SC-WVC-11-A-1	Street Dirt	37.28038	-121.94782	1/16/2015	8:45	0.11	0.025		
SC-WVC-12-A	12-A	SC-WVC-12-A-1	Street Dirt	37.28287	-121.94514	1/16/2015	9:10	0.08	0.007		
SC-WVC-13-A	13-A	SC-WVC-13-A-1	Inlet	37.28412	-121.94412	1/16/2015	9:40	0.15	0.007		
		SC-WVC-13-A-2	Inlet	37.28413	-121.94401						
		SC-WVC-13-A-3	Street Dirt	37.28421	-121.94408						
		SC-WVC-13-A-4	Street Dirt	37.28432	-121.94399						
SC-WVC-14-A	14-A	SC-WVC-14-A-1	Street Dirt	37.28675	-121.94081	1/16/2015	10:40	0.27	0.033		
		SC-WVC-14-A-3	Inlet	37.28617	-121.94128						

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
			SC-WVC-14-A-4	Street Dirt	37.28643	-121.94111					
	SC-WVC-15-A	15-A	SC-WVC-15-A-1	Street Dirt	37.29221	-121.93512	1/15/2015	15:45	0.04	0.000	
	SC-WVC-16-A	16-A	SC-WVC-16-A-2	Street Dirt	37.28432	-121.97682	1/15/2015	8:45	0.06	0.018	
Cupertino	SC-CUO-02-B	02-B	SC-CUO-02-B-2	Street Dirt	37.33744	-122.02079	1/16/2015	12:30	0.04	0.006	
Milpitas	SC-MIL-01-A	01-A	SC-MIL-01-A-4	Street Dirt	37.41502	-121.88781	1/28/2015	11:25	0.08	0.022	
			SC-MIL-01-A-5	Street Dirt	37.41593	-121.88805					
			SC-MIL-01-A-6	Street Dirt	37.41179	-121.89156					
			SC-MIL-01-A-7	Street Dirt	37.41165	-121.88984					
	SC-MIL-02-A	02-A	SC-MIL-02-A-1	Inlet	37.40689	-121.89477	4/16/2015	9:15	0.33	0.005	
	SC-MIL-03-A	03-A	SC-MIL-03-A-1	Street Dirt	37.40813	-121.90263	1/28/2015	13:40	0.06	0.004	
			SC-MIL-03-A-2	Street Dirt	37.42100	-121.89799					
	SC-MIL-04-A	04-A	SC-MIL-04-A-1	Inlet	37.42031	-121.88769	1/28/2015	10:45	0.15	0.009	
			SC-MIL-04-A-2	Manhole	37.42060	-121.88624					
			SC-MIL-04-A-3	Street Dirt	37.42022	-121.88815					
	SC-MIL-06-A	06-A	SC-MIL-06-A-3	Manhole	37.43147	-121.89459	1/28/2015	9:40	0.06	0.001	
			SC-MIL-06-A-4	Street Dirt	37.43113	-121.89567					
	SC-MIL-07-A	07-A	SC-MIL-07-A-2	Inlet	37.42676	-121.90321	1/28/2015	14:20	0.10	0.008	
			SC-MIL-07-A-3	Street Dirt	37.42735	-121.90347					
			SC-MIL-07-A-4	Ditch	37.42841	-121.90349					
	SC-MIL-07-B (Dup of 07-A)								0.06	0.009	
	SC-MIL-08-A	08-A	SC-MIL-08-A-1	Street Dirt	37.44745	-121.90948	1/28/2015	8:55	0.04	0.002	
			SC-MIL-08-A-2	Inlet	37.44812	-121.90961					
SC-MIL-10-A	10-A	SC-MIL-10-A-1	Inlet	37.41045	-121.89321	1/28/2015	12:15	0.04	0.008		
SC-MIL-13-A	13-A	SC-MIL-13-A-1	Inlet	37.43368	-121.90733	4/16/2015	8:40	0.10	0.010		
		SC-MIL-13-A-2	Street Dirt	37.43401	-121.90724						
		SC-MIL-13-A-3	Street Dirt	37.43452	-121.90682						

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 – 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
Milpitas	SC-MIL-17-A	17-A	SC-MIL-17-A-2	Inlet	37.42409	-121.88819	1/28/2015	10:10	0.05	0.001	
	SC-MIL-18-A	18-A	SC-MIL-18-A-3	Manhole	37.42643	-121.92057	1/28/2015	15:45	0.14	0.002	
Mountain View	SC-MOV-01-A	01-A	SC-MOV-01-A-1	Street Dirt	37.38145	-122.06966	1/29/2015	9:15	0.07	0.006	
			SC-MOV-01-A-2	Street Dirt	37.38114	-122.07092					
			SC-MOV-01-A-3	Street Dirt	37.38113	-122.07019					
			SC-MOV-01-A-4	Street Dirt	37.38214	-122.07002					
			SC-MOV-01-A-5	Street Dirt	37.38228	-122.07036					
	SC-MOV-01-C	01-C	SC-MOV-01-C-1	Street Dirt	37.38252	-122.07041	1/29/2015	8:50	0.05	0.005	
			SC-MOV-01-C-2	Street Dirt	37.38208	-122.06958					
			SC-MOV-01-C-3	Street Dirt	37.38222	-122.06915					
	SC-MOV-03-A	03-A	SC-MOV-03-A-1	Street Dirt	37.40459	-122.06832	1/29/2015	10:40	0.06	0.006	
			SC-MOV-03-A-2	Street Dirt	37.40532	-122.06828					
			SC-MOV-03-A-3	Street Dirt	37.40528	-122.06824					
	SC-MOV-04-A	04-A	SC-MOV-04-A-1	Manhole	37.40851	-122.07205	1/29/2015	11:10	0.08	0.073	
	SC-MOV-04-B (Dup of 04-A)								0.07	0.095	0.133
	SC-MOV-04-C	04-C	SC-MOV-04-C-1	Inlet	37.40840	-122.07651	1/29/2015	11:35	0.16	0.341	
SC-MOV-04-C-2			Inlet	37.40848	-122.07654						
SC-MOV-09-A	09-A	SC-MOV-09-A-1	Manhole	37.38783	-122.06712	1/29/2015	10:00	0.19	0.022		
Palo Alto	SC-PAO-01-A	01-A	SC-PAO-01-A-2	Street Dirt	37.42352	-122.11498	2/4/2015	13:10	0.06	0.011	
			SC-PAO-01-A-3	Street Dirt	37.40922	-122.14722					
	SC-PAO-02-A	02-A	SC-PAO-02-A-3	Inlet	37.43175	-122.10899	2/4/2015	8:50	0.10	0.159	
	SC-PAO-05-A	05-A	SC-PAO-05-A-1	Inlet	37.42883	-122.10414	2/4/2015	11:32	0.07	0.102	
			SC-PAO-05-A-5	Inlet	37.42361	-122.10416					
	SC-PAO-05-B	05-B	SC-PAO-05-B-3	Manhole	37.42939	-122.10505	2/4/2015	11:05	0.23	0.428	0.474
SC-PAO-05-C (Dup of 05-B)								0.28	0.432		

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 – 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
Palo Alto	SC-PAO-08-A	08-A	SC-PAO-08-A-2	Street Dirt	37.41743	-122.14104	1/29/2015	15:25	0.11	0.023	
	SC-PAO-09-A	09-A	SC-PAO-09-A-3	Manhole	37.40795	-122.15010	2/4/2015	14:25	0.04	0.010	
	SC-PAO-14-A	14-A	SC-PAO-14-A-1	Inlet	37.44447	-122.13989	1/29/2015	13:35	0.03	0.012	
			SC-PAO-14-A-2	Inlet	37.44446	-122.13988					
			SC-PAO-14-A-3	Street Dirt	37.44447	-122.14029					
	SC-PAO-15-A	15-A	SC-PAO-15-A-4	Street Dirt	37.42654	-122.13920	1/29/2015	14:10	0.05	0.051	
			SC-PAO-15-A-5	Street Dirt	37.42394	-122.13445					
	SC-PAO-16-A	16-A	SC-PAO-16-A-3	Manhole	37.42538	-122.09973	2/4/2015	10:18	0.07	0.022	
			SC-PAO-16-A-4	Inlet	37.42514	-122.09954					
	SC-PAO-16-B	16-B	SC-PAO-16-B-2	Inlet	37.42430	-122.09865	2/4/2015	9:30	0.07	0.037	
SC-PAO-16-B-3			Street Dirt	37.42179	-122.09838						
SC-PAO-16-B-4			Street Dirt	37.42200	-122.09878						
SC-PAO-18-A	18-A	SC-PAO-18-A-4	Manhole	37.44273	-122.15655	2/4/2015	15:25	0.12	0.192		
SC-PAO-18-B	18-B	SC-PAO-18-B-1	Manhole	37.44220	-122.15713	2/4/2015	15:55	0.82	1.449	1.920	
San Jose	SC-SJY-01-A	01-A	SC-SJY-01-A-1	Inlet	37.42923	-121.97185	1/14/2015	15:40	0.30	0.051	
			SC-SJY-01-A-2	Inlet	37.42849	-121.97287					
	SC-SJY-01-B	01-B	SC-SJY-01-B-1	Street Dirt	37.42879	-121.97330	1/15/2015	9:15	0.05	0.009	
			SC-SJY-01-B-2	Street Dirt	37.42916	-121.97316					
			SC-SJY-01-B-3	Street Dirt	37.42934	-121.97303					
			SC-SJY-01-B-4	Street Dirt	37.42976	-121.97330					
	SC-SJY-01-C	01-C	SC-SJY-01-C-1	Inlet	37.43133	-121.96889	1/14/2015	15:10	0.09	0.028	
			SC-SJY-01-C-2	Street Dirt	37.43115	-121.96912					
			SC-SJY-01-C-3	Street Dirt	37.43107	-121.96926					
			SC-SJY-01-C-4	Street Dirt	37.43077	-121.96964					
SC-SJY-01-D	01-D	SC-SJY-01-D-1	Street Dirt	37.43359	-121.96781	1/14/2015	14:50	0.05	0.175	0.159	

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
San Jose	SC-SJY-01-E	01-E	SC-SJY-01-E-1	Inlet	37.42566	-121.97733	1/15/2015	9:45	0.06	0.006	
			SC-SJY-01-E-2	Street Dirt	37.42566	-121.97733					
	SC-SJY-01-F	01-F	SC-SJY-01-F-1	Street Dirt	37.42377	-121.97494	1/15/2015	10:05	0.18	0.013	
	SC-SJY-01-H (Dup of 01-F)								0.20	0.013	
	SC-SJY-01-G	01-G	SC-SJY-01-G-1	Street Dirt	37.42342	-121.97469	1/15/2015	10:10	0.13	0.020	
	SC-SJY-03-A	03-A	SC-SJY-03-A-1	Inlet	37.41068	-121.93626	1/15/2015	13:10	0.17	0.010	
	SC-SJY-04-A	04-A	SC-SJY-04-A-1	Inlet	37.38150	-121.92716	1/14/2015	10:35	0.21	0.002	
	SC-SJY-04-C (Dup of 04-A)								0.18	0.001	
	SC-SJY-04-B	04-B	SC-SJY-04-B-3	Street Dirt	37.38759	-121.91385	1/14/2015	11:15	0.03	0.006	
	SC-SJY-07-A	07-A	SC-SJY-07-A-2	Inlet	37.37988	-121.89568	1/12/2015	14:45	0.16	0.346	0.322
			SC-SJY-07-A-4	Inlet	37.38094	-121.89552					
	SC-SJY-08-A	08-A	SC-SJY-08-A-1	Inlet	37.36998	-121.89948	1/13/2015	8:53	0.11	0.026	
			SC-SJY-08-A-2	Inlet	37.37105	-121.90049					
	SC-SJY-08-B	08-B	SC-SJY-08-B-2	Inlet	37.37170	-121.90116	1/13/2015	10:17	0.17	0.023	
			SC-SJY-08-B-3	Street Dirt	37.37124	-121.90073					
			SC-SJY-08-B-4	Street Dirt	37.37124	-121.90073					
	SC-SJY-08-C	08-C	SC-SJY-08-C-4	Street Dirt	37.37137	-121.89910	1/13/2015	9:36	0.06	0.093	
			SC-SJY-08-C-5	Street Dirt	37.37013	-121.89945					
SC-SJY-08-C-6			Street Dirt	37.37064	-121.89991						
SC-SJY-08-C-7			Street Dirt	37.37110	-121.90030						
SC-SJY-08-C-8			Street Dirt	37.36963	-121.89899						
SC-SJY-08-D	08-D	SC-SJY-08-D-1	Inlet	37.37121	-121.90038	1/13/2015	10:45	0.06	0.666	0.590	

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
San Jose	SC-SJY-08-H (Dup of 08-D)								0.05	0.602	
	SC-SJY-08-E	08-E	SC-SJY-08-E-2	Inlet	37.37249	-121.89861	1/13/2015	11:15	9.27	0.162	
			SC-SJY-08-E-3	Inlet	37.37254	-121.89857					
	SC-SJY-08-F	08-F	SC-SJY-08-F-1	Manhole	37.37442	-121.90064	1/13/2015	11:45	0.10	0.157	0.153
	SC-SJY-08-G	08-G	SC-SJY-08-G-4	Street Dirt	37.37785	-121.90296	1/13/2015	13:15	0.08	0.032	
			SC-SJY-08-G-5	Street Dirt	37.37772	-121.90276					
	SC-SJY-09-A	09-A	SC-SJY-09-A-1	Manhole	37.36899	-121.89571	1/12/2015	13:55	0.37	0.011	
	SC-SJY-09-B (Dup of 09-A)								0.27	0.011	
	SC-SJY-10-A	10-A	SC-SJY-10-A-2	Inlet	37.36825	-121.90587	1/14/2015	9:18	0.22	1.081	
	SC-SJY-10-C	10-C	SC-SJY-10-C-1	Manhole	37.37081	-121.90517	1/13/2015	14:45	0.03	0.005	
	SC-SJY-10-D	10-D	SC-SJY-10-D-3	Street Dirt	37.37519	-121.90858	1/13/2015	14:20	9.91	1.353	
	SC-SJY-10-E	10-E	SC-SJY-10-E-2	Street Dirt	37.37772	-121.90993	1/14/2015	10:04	1.19	0.314	
	SC-SJY-10-F	10-F	SC-SJY-10-F-3	Street Dirt	37.37744	-121.90681	1/13/2015	13:55	0.07	0.012	
	SC-SJY-11-A	11-A	SC-SJY-11-A-4	Manhole	37.36613	-121.89362	1/9/2015	12:40	0.11	0.048	
	SC-SJY-11-B	11-B	SC-SJY-11-B-4	Inlet	37.36533	-121.89673	1/9/2015	13:30	0.16	0.018	
			SC-SJY-11-B-5	Street Dirt	37.36585	-121.89562					
			SC-SJY-11-B-6	Street Dirt	37.36560	-121.89618					
	SC-SJY-11-C	11-C	SC-SJY-11-C-3	Street Dirt	37.36649	-121.89906	1/9/2015	14:23	0.09	0.015	
			SC-SJY-11-C-4	Street Dirt	37.36576	-121.89809					
			SC-SJY-11-C-5	Manhole	37.36642	-121.89902					
SC-SJY-11-C-6			Street Dirt	37.36610	-121.89864						
SC-SJY-11-C-7			Street Dirt	37.36594	-121.89837						
SC-SJY-11-D	11-D	SC-SJY-11-D-1	Manhole	37.36541	-121.89543	1/9/2015	13:00	0.27	0.060		
SC-SJY-12-A	12-A	SC-SJY-12-A-3	Street Dirt	37.36414	-121.89132	1/9/2015	11:15	0.19	0.025		
		SC-SJY-12-A-4	Street Dirt	37.36493	-121.89099						

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
San Jose			SC-SJY-12-A-5	Street Dirt	37.36438	-121.89152					
			SC-SJY-12-A-6	Street Dirt	37.36404	-121.89122					
	SC-SJY-12-B	12-B	SC-SJY-12-B-3	Street Dirt	37.36835	-121.89176	1/12/2015	13:32	0.10	0.030	
	SC-SJY-12-C	12-C	SC-SJY-12-C-1	Inlet	37.36890	-121.88696	1/9/2015	10:00	0.14	0.218	0.109
			SC-SJY-12-C-2	Inlet	37.36876	-121.88684					
	SC-SJY-12-D	12-D	SC-SJY-12-D-2	Inlet	37.36695	-121.88401	1/9/2015	9:15	0.21	0.090	
			SC-SJY-12-D-3	Inlet	37.36754	-121.88483					
	SC-SJY-12-E	12-E	SC-SJY-12-E-1	Inlet	37.36800	-121.88680	1/9/2015	10:15	0.14	0.065	
			SC-SJY-12-E-2	Inlet	37.36806	-121.88676					
			SC-SJY-12-E-3	Inlet	37.36712	-121.88807					
	SC-SJY-14-A	14-A	SC-SJY-14-A-2	Manhole	37.36534	-121.87804	1/8/2015	13:15	0.25	0.236	
			SC-SJY-14-A-5	Street Dirt	37.36539	-121.87794					
			SC-SJY-14-A-6	Street Dirt	37.36485	-121.87870					
			SC-SJY-14-A-7	Street Dirt	37.36473	-121.87883					
	SC-SJY-15-A	15-A	SC-SJY-15-A-5	Inlet	37.36222	-121.87556	1/8/2015	14:35	0.21	0.167	
	SC-SJY-15-B	15-B	SC-SJY-15-B-1	Manhole	37.36279	-121.87595	1/8/2015	14:05	0.05	0.014	
	SC-SJY-15-C (Dup of 15-B)								0.07	0.013	
	SC-SJY-16-A	16-A	SC-SJY-16-A-4	Manhole	37.36258	-121.87112	1/8/2015	15:00	0.10	0.016	
			SC-SJY-16-A-5	Street Dirt	37.36247	-121.87144					
			SC-SJY-16-A-6	Street Dirt	37.36235	-121.87160					
	SC-SJY-17-A	17-A	SC-SJY-17-A-3	Manhole	37.35887	-121.87061	1/8/2015	12:40	0.08	0.015	
SC-SJY-18-A	18-A	SC-SJY-18-A-2	Street Dirt	37.36084	-121.86368	1/8/2015	12:00	0.15	0.009		
SC-SJY-19-A	19-A	SC-SJY-19-A-2	Inlet	37.35155	-121.86682	1/8/2015	9:45	0.25	0.030		
		SC-SJY-19-A-3	Inlet	37.35174	-121.86703						
		SC-SJY-19-A-5	Street Dirt	37.35094	-121.86748						
SC-SJY-21-A	21-A	SC-SJY-21-A-1	Inlet	37.34630	-121.86456	1/8/2015	8:45	0.23	0.024		

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 – 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)	
San Jose			SC-SJY-21-A-2	Inlet	37.34549	-121.86395						
			SC-SJY-21-A-4	Street Dirt	37.34685	-121.86333						
		SC-SJY-25-A	25-A	SC-SJY-25-A-3	Manhole	37.35700	-121.85010	1/8/2015	10:30	0.15	0.031	
		SC-SJY-26-A	26-A	SC-SJY-26-A-1	Street Dirt	37.36569	-121.84357	1/8/2015	11:10	0.08	0.009	
		SC-SJY-27-A	27-A	SC-SJY-27-A-2	Inlet	37.36007	-121.89516	1/12/2015	9:35	0.23	0.058	
		SC-SJY-27-B	27-B	SC-SJY-27-B-1	Inlet	37.36070	-121.89431	1/12/2015	9:48	0.08	0.017	
	SC-SJY-27-B-4			Street Dirt	37.36165	-121.89221						
	SC-SJY-27-B-5			Street Dirt	37.36152	-121.89254						
	SC-SJY-27-B-6			Street Dirt	37.36098	-121.89371						
		SC-SJY-27-C	27-C	SC-SJY-27-C-1	Inlet	37.36222	-121.89696	1/12/2015	10:58	0.14	0.022	
		SC-SJY-27-D	27-D	SC-SJY-27-D-3	Inlet	37.36224	-121.90128	1/12/2015	12:35	0.09	0.097	
				SC-SJY-27-D-4	Inlet	37.36049	-121.90019					
		SC-SJY-27-E	27-E	SC-SJY-27-E-1	Inlet	37.36111	-121.89618	1/12/2015	10:37	0.68	0.038	
		SC-SJY-28-A	28-A	SC-SJY-28-A-2	Inlet	37.35788	-121.89680	1/12/2015	12:15	0.06	0.019	
		SC-SJY-28-B	28-B	SC-SJY-28-B-3	Inlet	37.34863	-121.89113	1/9/2015	15:30	0.14	0.019	
				SC-SJY-28-B-4	Street Dirt	37.34919	-121.89186					
		SC-SJY-28-C	28-C	SC-SJY-28-C-1	Street Dirt	37.35820	-121.89421	1/12/2015	8:50	0.07	0.019	
				SC-SJY-28-C-2	Street Dirt	37.35893	-121.89474					
		SC-SJY-29-A	29-A	SC-SJY-29-A-2	Street Dirt	37.34682	-121.91918	1/7/2015	14:30	0.24	0.023	
		SC-SJY-30-A	30-A	SC-SJY-30-A-1	Manhole	37.34791	-121.92242	4/16/2015	14:30	18.90	0.026	
	SC-SJY-30-A-2			Street Dirt	37.34789	-121.92248						
	SC-SJY-30-A-3			Street Dirt	37.34780	-121.92241						
	SC-SJY-31-A	31-A	SC-SJY-31-A-1	Inlet	37.34453	-121.91788	1/7/2015	13:26	0.05	0.090		
			SC-SJY-31-A-2	Inlet	37.34540	-121.91875						
	SC-SJY-31-B	31-B	SC-SJY-31-B-1	Inlet	37.34638	-121.91734	1/7/2015	14:04	0.26	0.070		
	SC-SJY-31-C (Dup of 31-B)								0.14	0.059		

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Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
San Jose	SC-SJY-32-A	32-A	SC-SJY-32-A-1	Inlet	37.34332	-121.91422	1/7/2015	14:41	0.06	0.050	
			SC-SJY-32-A-4	Inlet	37.34342	-121.91435					
	SC-SJY-33-A	33-A	SC-SJY-33-A-1	Inlet	37.33689	-121.90490	1/7/2015	9:55	0.60	0.083	
			SC-SJY-33-A-2	Inlet	37.33559	-121.90325					
	SC-SJY-34-A	34-A	SC-SJY-34-A-1	Inlet	37.32911	-121.90205	1/7/2015	9:17	0.09	0.016	
			SC-SJY-34-A-3	Manhole	37.32812	-121.90106					
	SC-SJY-36-A	36-A	SC-SJY-36-A-3	Manhole	37.32571	-121.90407	1/7/2015	8:42	1.12	0.082	
	SC-SJY-37-A	37-A	SC-SJY-37-A-1	Manhole	37.32384	-121.90316	1/6/2015	15:02	0.17	0.016	
			SC-SJY-37-A-3	Inlet	37.32381	-121.90316					
	SC-SJY-38-A	38-A	SC-SJY-38-A-1	Manhole	37.31895	-121.90578	1/6/2015	14:21	0.17	0.022	
			SC-SJY-38-A-4	Street Dirt	37.31891	-121.90571					
	SC-SJY-39-A	39-A	SC-SJY-39-A-2	Manhole	37.31593	-121.90398	1/6/2015	14:07	0.27	0.029	
	SC-SJY-39-B	39-B	SC-SJY-39-B-1	Street Dirt	37.31371	-121.90415	1/6/2015	13:28	0.12	0.036	
	SC-SJY-40-A	40-A	SC-SJY-40-A-4	Street Dirt	37.31478	-121.88844	1/6/2015	11:20	4.52	0.026	
	SC-SJY-40-B (Dup of 40-A)								3.78	0.031	
	SC-SJY-41-A	41-A	SC-SJY-41-A-1	Inlet	37.31268	-121.88446	1/6/2015	10:47	0.37	0.000	
			SC-SJY-41-A-4	Inlet	37.31293	-121.88457					
	SC-SJY-44-A	44-A	SC-SJY-44-A-4	Street Dirt	37.30144	-121.87974	1/6/2015	10:15	1.25	0.034	
SC-SJY-45-A	45-A	SC-SJY-45-A-1	Street Dirt	37.31996	-121.87276	1/6/2015	12:25	0.11	0.008		
SC-SJY-46-A	46-A	SC-SJY-46-A-2	Street Dirt	37.32238	-121.87733	1/6/2015	12:45	0.09	0.005	0.008	
SC-SJY-47-A	47-A	SC-SJY-47-A-2	Manhole	37.31061	-121.86790	12/10/2014	14:30	1.19	0.116		
SC-SJY-47-B	47-B	SC-SJY-47-B-1	Inlet	37.30918	-121.86655	12/10/2014	13:40	0.64	0.754		
		SC-SJY-47-B-2	Inlet	37.30985	-121.86718						
		SC-SJY-47-B-4	Street Dirt	37.30960	-121.86690						
		SC-SJY-47-B-5	Street Dirt	37.30818	-121.86545						

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
San Jose	SC-SJY-47-E (Dup of 47-B)								0.87	0.703	
	SC-SJY-47-C	47-C	SC-SJY-47-C-3	Manhole	37.31120	-121.86901	12/10/2014	15:05	0.41	0.251	1.160
	SC-SJY-47-D	47-D	SC-SJY-47-D-3	Manhole	37.30998	-121.86783	12/10/2014	15:40	1.81	1.973	2.500
	SC-SJY-48-A	48-A	SC-SJY-48-A-3	Manhole	37.30739	-121.86522	12/10/2014	13:05	0.04	0.128	0.011
	SC-SJY-49-A	49-A	SC-SJY-49-A-1	Inlet	37.30248	-121.87325	1/6/2015	9:21	0.09	0.028	
	SC-SJY-49-B	49-B	SC-SJY-49-B-2	Inlet	37.30944	-121.87389	1/6/2015	8:48	0.15	0.007	
	SC-SJY-50-A	50-A	SC-SJY-50-A-2	Inlet	37.30679	-121.87869	1/6/2015	9:47	1.11	0.009	
	SC-SJY-51-A	51-A	SC-SJY-51-A-2	Manhole	37.29397	-121.85206	12/10/2014	13:26	0.08	0.007	
	SC-SJY-51-B	51-B	SC-SJY-51-B-4	Manhole	37.29169	-121.85219	12/10/2014	9:30	0.15	0.126	
	SC-SJY-51-C	51-C	SC-SJY-51-C-4	Manhole	37.29015	-121.84992	12/10/2014	8:50	0.21	0.020	
	SC-SJY-52-A	52-A	SC-SJY-52-A-2	Street Dirt	37.29622	-121.84987	12/10/2014	10:25	0.12	0.017	
			SC-SJY-52-A-3	Street Dirt	37.29601	-121.85046					
			SC-SJY-52-A-4	Street Dirt	37.29556	-121.85107					
			SC-SJY-52-A-5	Street Dirt	37.29542	-121.85131					
	SC-SJY-53-A	53-A	SC-SJY-53-A-3	Street Dirt	37.28528	-121.84302	12/9/2014	15:40	0.16	0.005	
	SC-SJY-54-A	54-A	SC-SJY-54-A-3	Street Dirt	37.23426	-121.90007	12/9/2014	8:40	0.45	0.005	
	SC-SJY-55-A	55-A	SC-SJY-55-A-4	Manhole	37.23935	-121.79379	12/9/2014	11:50	0.08	0.004	
	SC-SJY-57-A	57-A	SC-SJY-57-A-1	Street Dirt	37.16699	-121.68965	12/9/2014	10:25	0.06	0.009	
			SC-SJY-57-A-2	Street Dirt	37.16658	-121.69035					
	SC-SJY-58-A	58-A	SC-SJY-58-A-3	Street Dirt	37.28735	-121.81681	12/9/2014	13:40	0.43	0.020	
SC-SJY-60-A	60-A	SC-SJY-60-A-1	Street Dirt	37.26024	-121.89057	12/9/2014	9:30	0.09	0.008		
SC-SJY-62-A	62-A	SC-SJY-62-A-1	Inlet	37.32292	-121.79652	12/9/2014	14:17	0.03	0.003		
SC-SJY-62-B (Dup of 62-A)								0.04	0.003		
SC-SJY-65-A	65-A	SC-SJY-65-A-2	Street Dirt	37.40382	-121.90587	1/14/2015	14:07	0.05	0.004		
SC-SJY-66-A	66-A	SC-SJY-66-A-2	Inlet	37.39334	-121.90134	1/14/2015	13:15	0.04	0.007		
		SC-SJY-66-A-3	Street Dirt	37.39054	-121.90073						

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
San Jose	SC-SJY-70-A	70-A	SC-SJY-70-A-3	Street Dirt	37.35387	-121.92916	1/16/2015	8:50	0.05	0.034	
	SC-SJY-71-A	71-A	SC-SJY-71-A-1	Manhole	37.34917	-121.92481	1/7/2015	13:12	0.19	0.065	
	SC-SJY-71-B (Dup of 71-A)								0.22	0.074	
	SC-SJY-73-A	73-A	SC-SJY-73-A-2	Street Dirt	37.30283	-121.84235	12/10/2014	11:05	0.40	0.009	
	SC-SJY-74-A	74-A	SC-SJY-74-A-3	Inlet	37.34040	-121.89693	1/7/2015	10:55	0.23	0.008	
			SC-SJY-74-A-4	Inlet	37.34056	-121.89699					
			SC-SJY-74-A-5	Street Dirt	37.33985	-121.89847					
			SC-SJY-74-A-6	Street Dirt	37.33977	-121.89841					
	SC-SJY-74-B	74-B	SC-SJY-74-B-4	Inlet	37.34144	-121.90098	1/7/2015	11:27	0.24	0.038	
			SC-SJY-74-B-5	Manhole	37.34100	-121.90078					
	SC-SJY-77-A	77-A	SC-SJY-77-A-3	Street Dirt	37.31061	-121.84820	12/10/2014	11:30	0.13	0.011	
			SC-SJY-77-A-4	Street Dirt	37.31079	-121.84783					
			SC-SJY-77-A-5	Street Dirt	37.31148	-121.84718					
SC-SJY-77-A-6			Street Dirt	37.31206	-121.84782						
Santa Clara	SC-SCL-01-A	01-A	SC-SCL-01-A-2	Manhole	37.35447	-121.93708	1/16/2015	9:35	0.20	0.835	1.620
	SC-SCL-01-B	01-B	SC-SCL-01-B-1	Street Dirt	37.35427	-121.93710	1/16/2015	9:45	0.06	0.030	
	SC-SCL-02-A	02-A	SC-SCL-02-A-1	Manhole	37.35931	-121.94521	1/16/2015	10:15	0.11	0.020	
			SC-SCL-02-A-2	Manhole	37.35924	-121.94595					
	SC-SCL-02-B	02-B	SC-SCL-02-B-2	Inlet	37.36327	-121.94671	1/16/2015	11:19	0.30	0.062	0.106
			SC-SCL-02-B-3	Inlet	37.36329	-121.94408					
			SC-SCL-02-B-7	Street Dirt	37.36067	-121.94550					
	SC-SCL-02-C	02-C	SC-SCL-02-C-5	Manhole	37.36654	-121.94468	2/2/2015	10:25	0.25	0.035	0.039
	SC-SCL-02-F (Dup of 02-C)								0.11	0.033	
	SC-SCL-02-D	02-D	SC-SCL-02-D-3	Manhole	37.37023	-121.94540	2/2/2015	11:20	0.07	0.028	
	SC-SCL-02-E	02-E	SC-SCL-02-E-1	Inlet	37.37133	-121.95013	2/3/2015	10:20	0.27	0.804	0.802
SC-SCL-02-G	02-G	SC-SCL-02-G-1	Street Dirt	37.36639	-121.94647	2/2/2015	10:45	0.12	0.010		

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 – 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)	
Santa Clara			SC-SCL-02-G-2	Inlet	37.36650	-121.94695						
			SC-SCL-02-G-3	Street Dirt	37.36658	-121.94593						
		SC-SCL-03-A	03-A	SC-SCL-03-A-2	Inlet	37.36110	-121.95130	1/16/2015	11:55	0.17	0.054	
		SC-SCL-03-E (Dup of 03-A)								0.15	0.047	
		SC-SCL-03-B	03-B	SC-SCL-03-B-1	Manhole	37.36251	-121.95319	1/16/2015	15:00	0.55	0.143	0.179
		SC-SCL-03-C	03-C	SC-SCL-03-C-2	Inlet	37.36505	-121.95374	1/16/2015	13:45	0.28	0.069	
	SC-SCL-03-C-4			Street Dirt	37.36490	-121.95374						
	SC-SCL-03-C-5			Street Dirt	37.36492	-121.95503						
		SC-SCL-03-D	03-D	SC-SCL-03-D-3	Street Dirt	37.36504	-121.95257	1/16/2015	14:18	0.11	0.036	
				SC-SCL-03-D-4	Street Dirt	37.36617	-121.95176					
		SC-SCL-05-A	05-A	SC-SCL-05-A-4	Street Dirt	37.37215	-121.95044	2/3/2015	9:55	0.20	0.085	
				SC-SCL-05-A-5	Street Dirt	37.37177	-121.95045					
		SC-SCL-05-B	05-B	SC-SCL-05-B-2	Inlet	37.36697	-121.95045	1/16/2015	13:00	0.04	0.007	
		SC-SCL-06-A	06-A	SC-SCL-06-A-4	Manhole	37.37473	-121.94720	2/3/2015	9:25	0.29	0.050	0.053
		SC-SCL-06-B	06-B	SC-SCL-06-B-2	Manhole	37.37509	-121.95000	2/3/2015	9:05	0.07	0.022	
		SC-SCL-07-A	07-A	SC-SCL-07-A-2	Manhole	37.37922	-121.95539	2/2/2015	15:15	0.06	0.004	
		SC-SCL-07-B	07-B	SC-SCL-07-B-2	Inlet	37.38052	-121.96180	2/2/2015	14:50	0.05	0.005	
		SC-SCL-09-A	09-A	SC-SCL-09-A-3	Manhole	37.38637	-121.96592	2/3/2015	12:45	0.06	0.008	
		SC-SCL-10-A	10-A	SC-SCL-10-A-2	Manhole	37.38562	-121.95469	2/3/2015	13:05	0.07	0.003	
		SC-SCL-10-B (Dup of 10-A)								0.07	0.003	
		SC-SCL-10-C	10-C	SC-SCL-10-C-1	Manhole	37.38580	-121.95298	2/3/2015	14:00	0.04	0.001	
		SC-SCL-11-A	11-A	SC-SCL-11-A-1	Manhole	37.38636	-121.95918	4/16/2015	11:05	0.04	0.004	
		SC-SCL-12-A	12-A	SC-SCL-12-A-1	Manhole	37.37643	-121.99738	2/3/2015	10:50	0.21	0.004	
	SC-SCL-12-A-2			Manhole	37.37558	-121.99918						
	SC-SCL-13-A	13-A	SC-SCL-13-A-3	Street Dirt	37.38525	-121.94524	1/15/2015	14:32	0.05	0.007		

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 – 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
Santa Clara			SC-SCL-13-A-4	Street Dirt	37.38294	-121.94487					
	SC-SCL-13-B	13-B	SC-SCL-13-B-2	Inlet	37.38716	-121.94027	1/15/2015	13:50	0.07	0.017	
			SC-SCL-13-B-3	Inlet	37.38844	-121.94103					
			SC-SCL-13-B-4	Inlet	37.38833	-121.93970					
			SC-SCL-13-B-5	Inlet	37.38739	-121.94006					
	SC-SCL-13-D	13-D	SC-SCL-13-D-1	Manhole	37.38946	-121.94055	2/3/2015	14:30	0.06	0.010	
	SC-SCL-14-A	14-A	SC-SCL-14-A-1	Manhole	37.40328	-121.96494	1/15/2015	12:10	0.36	0.007	
	SC-SCL-16-A	16-A	SC-SCL-16-A-1	Manhole	37.41040	-121.96400	1/15/2015	11:20	0.12	0.008	
			SC-SCL-16-A-4	Manhole	37.41014	-121.96487					
	SC-SCL-17-A	17-A	SC-SCL-17-A-1	Inlet	37.41655	-121.97308	1/15/2015	10:45	0.06	0.008	
			SC-SCL-17-A-2	Inlet	37.41672	-121.97317					
	SC-SCL-18-A	18-A	SC-SCL-18-A-3	Manhole	37.36974	-121.95657	2/2/2015	11:45	0.05	0.046	
	SC-SCL-18-B	18-B	SC-SCL-18-B-3	Manhole	37.36950	-121.96239	2/2/2015	12:20	0.04	0.001	
	SC-SCL-19-A	19-A	SC-SCL-19-A-3	Manhole	37.37420	-121.97192	2/2/2015	13:15	0.06	0.002	
			SC-SCL-19-A-4	Manhole	37.37371	-121.97205					
			SC-SCL-19-A-5	Manhole	37.37320	-121.97472					
	SC-SCL-20-A	20-A	SC-SCL-20-A-2	Manhole	37.37746	-121.97257	2/3/2015	11:55	0.08	0.006	0.009
	SC-SCL-21-A	21-A	SC-SCL-21-A-1	Manhole	37.37769	-121.98364	4/16/2015	11:30	0.07	0.011	
	SC-SCL-23-A	23-A	SC-SCL-23-A-3	Street Dirt	37.36189	-121.93687	2/2/2015	9:05	0.09	0.030	
			SC-SCL-23-A-4	Street Dirt	37.36126	-121.93610					
SC-SCL-23-B	23-B	SC-SCL-23-B-2	Inlet	37.36452	-121.93961	2/2/2015	9:45	3.21	0.052		
		SC-SCL-23-B-3	Inlet	37.36647	-121.94061						
SC-SCL-24-A	24-A	SC-SCL-24-A-1	Inlet	37.38321	-121.93818	4/16/2015	10:35	0.58	0.012		
		SC-SCL-24-A-2	Inlet	37.38312	-121.93876						
SC-SCL-25-A	25-A	SC-SCL-25-A-1	Manhole	37.38182	-121.94851	1/15/2015	15:10	0.09	0.003		
Santa Clara County	SC-SCC-03-A	03-A	SC-SCC-03-A-2	Street Dirt	37.21607	-121.73871	12/9/2014	11:05	0.07	0.008	
			SC-SCC-03-A-3	Street Dirt	37.21744	-121.74032					

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 - 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
	SC-SCC-04-A	04-A	SC-SCC-04-A-2	Street Dirt	37.28166	-121.84501	12/9/2014	15:00	0.25	0.022	
			SC-SCC-04-A-3	Street Dirt	37.28204	-121.84537					
			SC-SCC-04-A-4	Street Dirt	37.28242	-121.84568					
Sunnyvale	SC-SNV-02-A	02-A	SC-SNV-02-A-1	Inlet	37.40910	-121.99375	1/27/2015	11:55	0.07	0.011	
			SC-SNV-02-A-2	Inlet	37.40911	-121.99385					
	SC-SNV-02-B	02-B	SC-SNV-02-B-2	Manhole	37.40644	-121.99258	1/27/2015	12:50	0.16	0.035	
	SC-SNV-02-C	02-C	SC-SNV-02-C-3	Manhole	37.40901	-121.98857	1/27/2015	11:00	0.09	0.034	
	SC-SNV-05-B	05-B	SC-SNV-05-B-1	Manhole	37.38662	-122.00625	1/26/2015	15:05	0.06	0.006	
			SC-SNV-05-C	05-C	SC-SNV-05-C-2	Manhole	37.38832	-122.00623	1/26/2015	14:25	0.06
	SC-SNV-05-C-3	Manhole	37.38833		-122.00716						
	SC-SNV-07-A	07-A	SC-SNV-07-A-5	Street Dirt	37.38027	-122.00755	1/16/2015	15:30	0.17	0.081	
			SC-SNV-07-A-6	Street Dirt	37.38000	-122.00758					
	SC-SNV-07-B	07-B	SC-SNV-07-B-1	Manhole	37.37771	-122.00647	1/16/2015	14:45	0.20	0.056	
	SC-SNV-09-A	09-A	SC-SNV-09-A-3	Street Dirt	37.37427	-122.00952	1/16/2015	13:15	1.57	0.029	
	SC-SNV-10-A	10-A	SC-SNV-10-A-5	Manhole	37.38052	-122.02357	1/26/2015	10:35	0.10	4.835	
	SC-SNV-10-D (Dup of 10-A)								0.11	5.676	
	SC-SNV-10-B	10-B	SC-SNV-10-B-1	Inlet	37.37708	-122.02520	1/26/2015	9:45	0.19	0.082	
			SC-SNV-10-B-3	Street Dirt	37.37791	-122.02768					
	SC-SNV-10-C	10-C	SC-SNV-10-C-4	Street Dirt	37.38025	-122.02232	1/26/2015	11:45	0.07	3.708	
	SC-SNV-12-A	12-A	SC-SNV-12-A-2	Street Dirt	37.38271	-122.01464	1/26/2015	13:25	0.11	0.044	
	SC-SNV-13-A	13-A	SC-SNV-13-A-1	Inlet	37.38400	-121.99983	1/26/2015	9:00	0.06	0.033	
	SC-SNV-17-A	17-A	SC-SNV-17-A-2	Street Dirt	37.38425	-122.04877	1/27/2015	9:45	0.04	0.018	
	SC-SNV-17-B	17-B	SC-SNV-17-B-1	Street Dirt	37.38239	-122.04300	1/27/2015	9:02	0.08	0.049	
			SC-SNV-17-B-2	Street Dirt	37.38218	-122.04238					
	SC-SNV-20-A	20-A	SC-SNV-20-A-3	Manhole	37.41364	-122.01320	1/27/2015	14:12	0.06	0.004	
SC-SNV-20-B	20-B	SC-SNV-20-B-1	Manhole	37.41720	-122.01631	1/27/2015	14:40	0.07	0.020		
SC-SNV-22-A	22-A	SC-SNV-22-A-2	Inlet	37.37677	-122.01214	1/16/2015	14:00	0.89	0.138		

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)

Mercury (shading): < 0.3 mg/kg (none), 0.3 – 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Permittee	Sample	Map Label	Subsample	Sample Location Type	Latitude	Longitude	Date	Time	Mercury (mg/kg)	Total PCBs 8082M (mg/kg)	Total PCBs 1668A (mg/kg)
Sunnyvale			SC-SNV-22-A-3	Manhole	37.37685	-122.01267					
	SC-SNV-22-B (Dup of 22-A)								0.89	0.129	
	SC-SNV-25-A	25-A	SC-SNV-25-A-3	Street Dirt	37.39340	-122.02962	1/26/2015	15:45	0.06	0.058	
			SC-SNV-25-A-4	Street Dirt	37.39511	-122.02911					
	SC-SNV-27-A	27-A	SC-SNV-27-A-1	Manhole	37.36994	-121.99585	4/16/2015	13:30	0.07	0.009	
	SC-SNV-30-A	30-A	SC-SNV-30-A-3	Manhole	37.41624	-122.01958	1/27/2015	15:15	0.06	0.042	
	SC-SNV-30-B (Dup of 30-A)								0.07	0.027	
SC-SNV-31-A	31-A	SC-SNV-31-A-2	Manhole	37.41030	-122.00413	1/27/2015	13:40	0.04	0.015		

PCBs (shading): < 0.2 mg/kg (none), 0.2 - 0.5 mg/kg (yellow), 0.5 - 1.0 mg/kg (orange), 1.0 mg/kg (red)
 Mercury (shading): < 0.3 mg/kg (none), 0.3 – 1.0 mg/kg (yellow), ≥ 1.0 mg/kg (red)

Appendix B

Elevated PCB and Mercury Results by Permittee

This section describes elevated PCB and mercury sampling results for each of the nine Permittees where samples were collected. Each sample with total PCBs concentrations greater than 0.2 mg/kg is described in the sections below and those with concentrations exceeding 0.5 mg/kg are shown in **bold** and described in more detail. Maps of PCB samples are also provided. Samples with mercury concentrations great than 1.0 mg/kg are also described in the summaries.

City of Campbell

PCB and Mercury Results

There were 15 samples collected in Campbell in locations that drain a total of approximately 31 acres. None of the samples were elevated (> 0.2 mg/kg), with the highest total PCBs concentration in a sample being 0.11 mg/kg. PCB sampling results for sediments collected in the City of Campbell are mapped in Figure B-1. Sample SC-WVC-10-A was collected from a manhole along Griffith Place 60' northwest of McGlincy Lane and had a total PCBs concentration of 0.11 mg/kg and a moderately elevated mercury concentration of 0.55 mg/kg. This sample was black and smelled like hydrocarbons. This block of Griffin Lane drains to a nearby percolation pond.

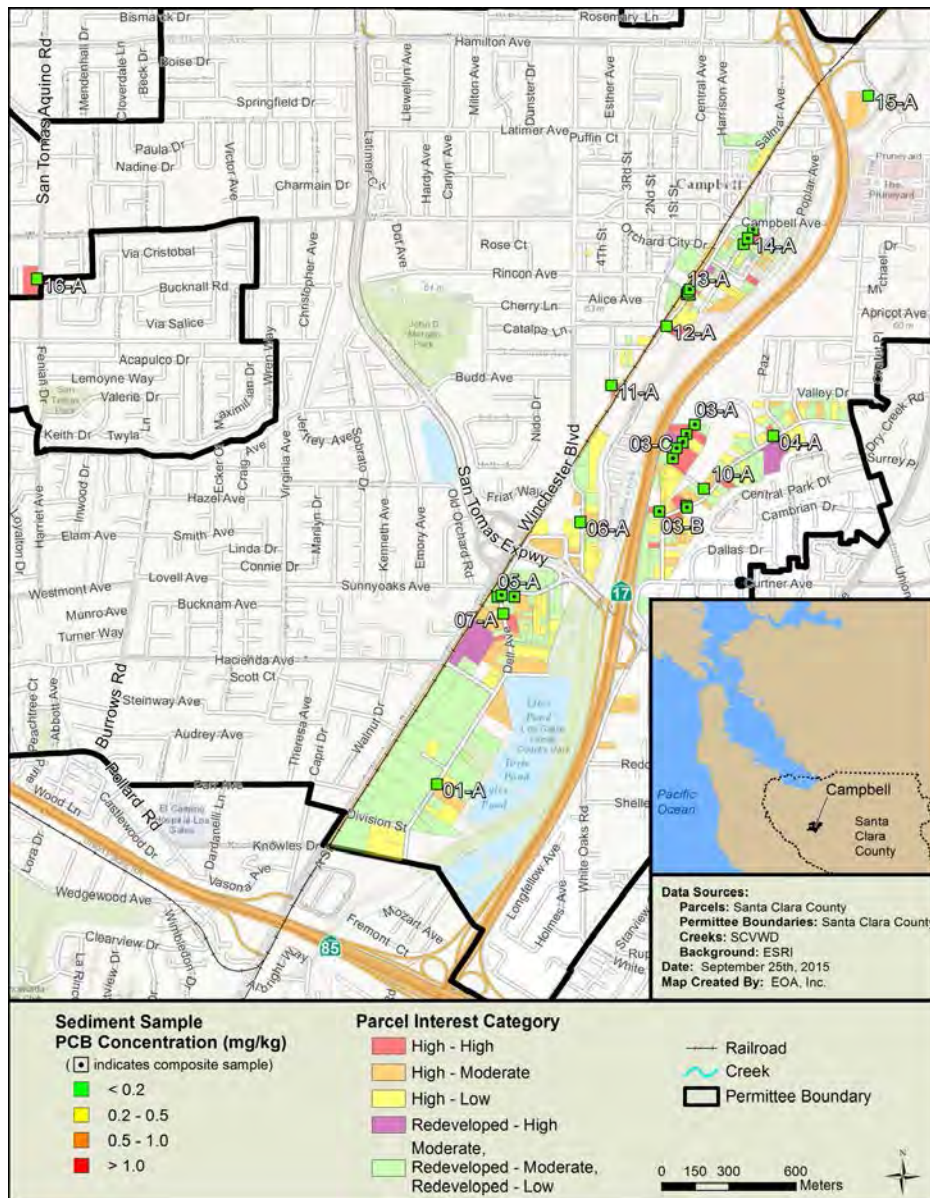


Figure B-1. Map of PCB sampling results for the City of Campbell.

City of Cupertino

PCB Results

One sample was collected in Cupertino (along the driveway of a large PG&E facility on Homestead Road) and it had a total PCBs concentration of 0.01 mg/kg. PCB sampling results for sediments collected in the City of Cupertino are mapped in Figure B-2.

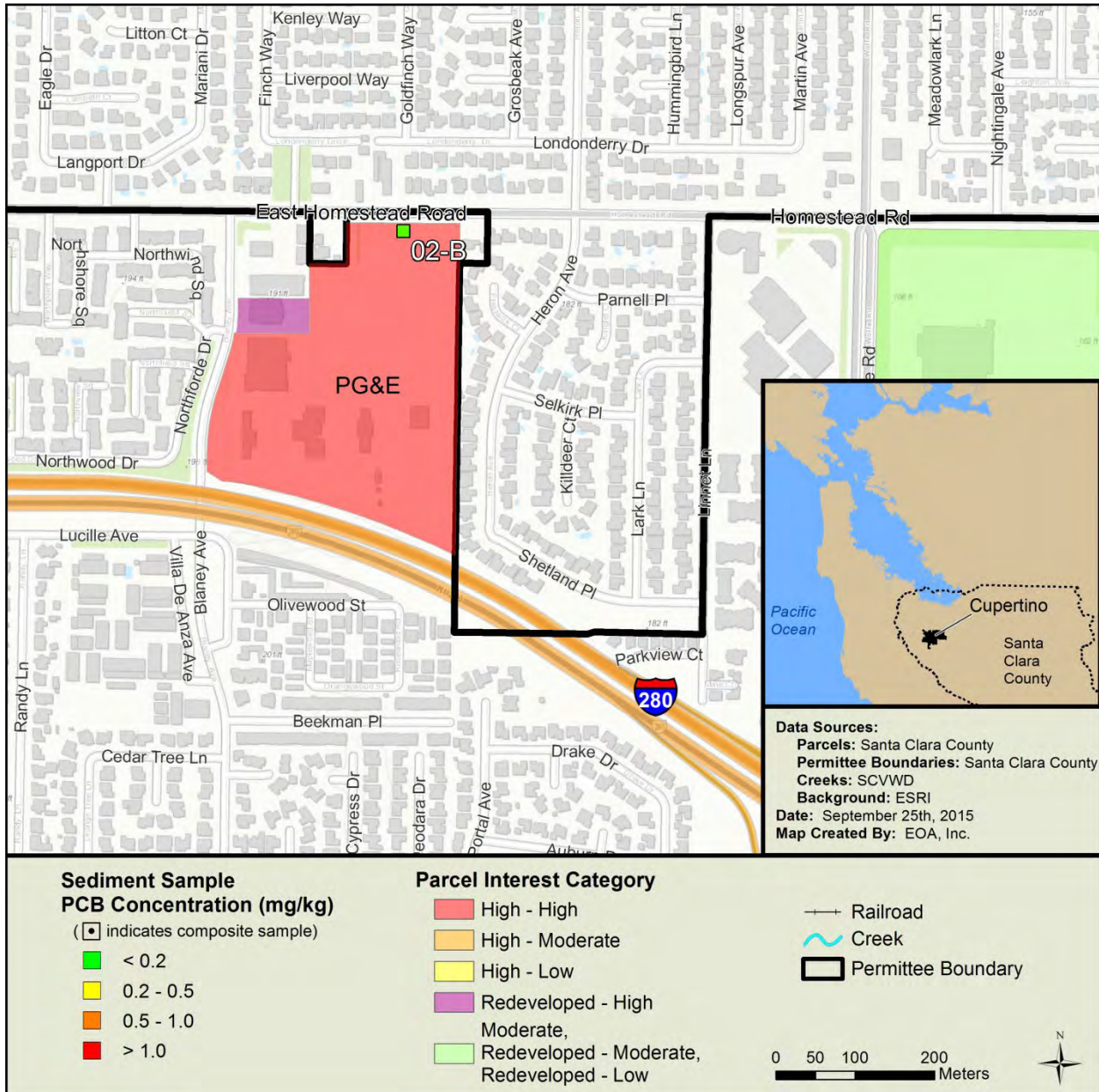


Figure B-2. Map of PCB sampling results for the City of Cupertino.

City of Milpitas

PCB Results

There were 11 samples collected in Milpitas in locations that drain a total of approximately 175 acres. Samples in Milpitas had very low total PCBs concentrations, with only one sample over 0.01 mg/kg, and the highest concentration being 0.02 mg/kg. PCB sampling results for sediments collected in the City of Milpitas are mapped in Figure B-3.

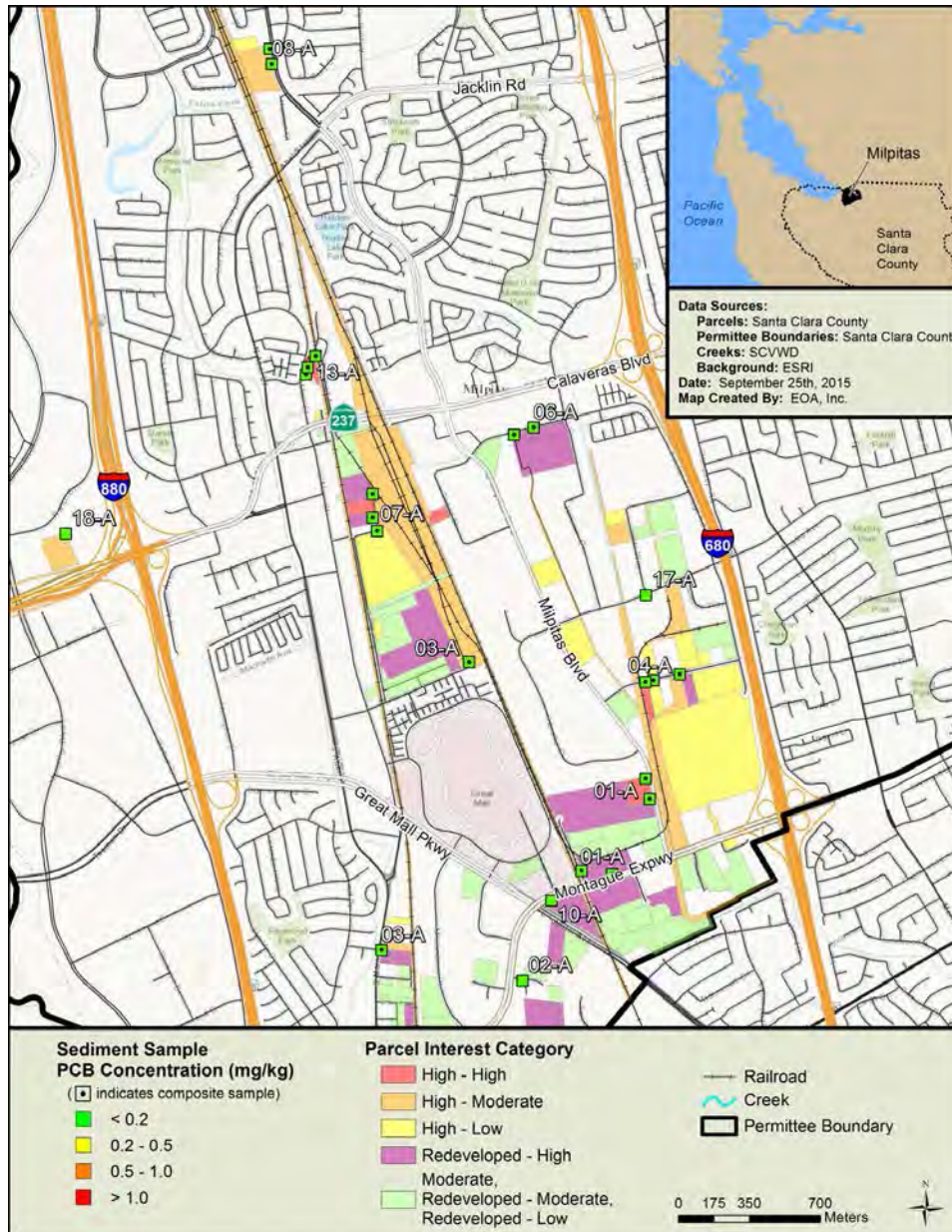


Figure B-3. Map of PCB sampling results for the City of Milpitas.

City of Mountain View

PCB Results

There were 6 samples collected in Mountain View in locations that drain a total of approximately 53 acres. **One** sample had a total PCBs concentration in the 0.2 – 0.5 mg/kg range (0.34 mg/kg). PCB sampling results for sediments collected in the City of Mountain View are mapped in Figure B-4.

- Sample SC-MOV-04-C was collected from two inlets along Terra Bella Avenue between Linda Vista Avenue and Shoreline Boulevard and has a moderately elevated total PCBs concentration of 0.34 mg/kg. Vehicles track sediment from an unpaved parcel on the north side of Terra Bella Avenue. However, at the time of sampling there was a sign on this parcel that stated that it is to be merged with 8 others parcels and there is a plan to build a four-story 111,661 square foot office building. This redevelopment plan will most likely greatly reduce the amount of sediment entering the storm drain along this block.

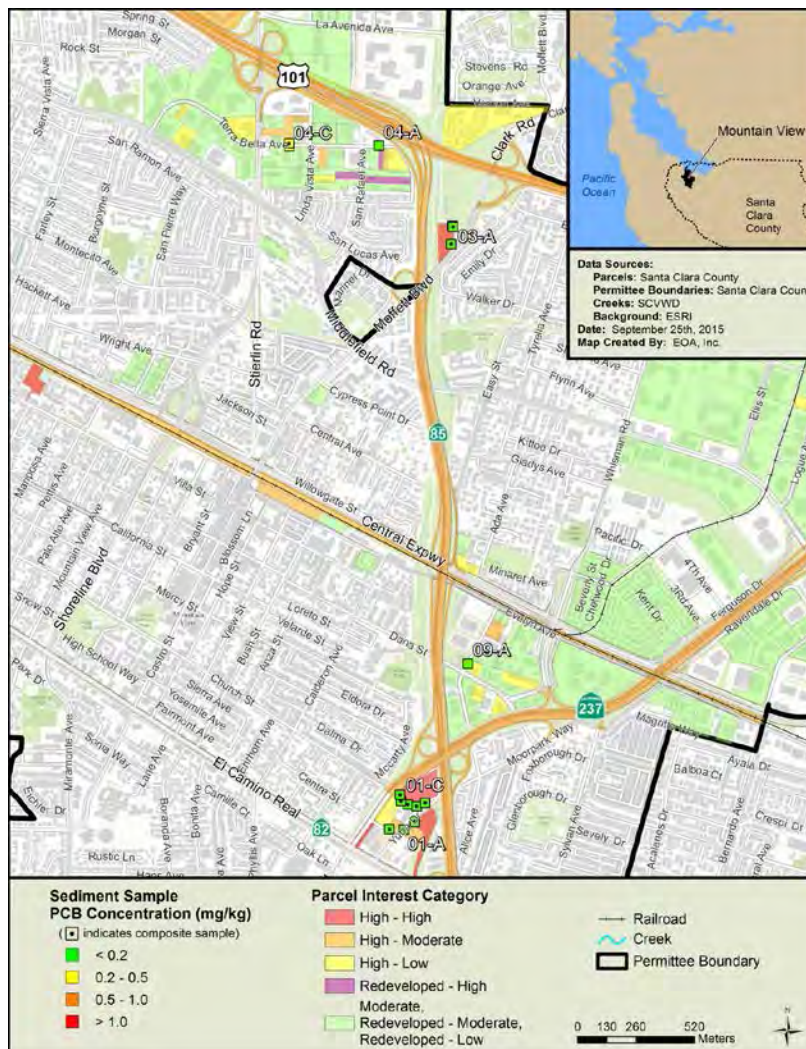


Figure B-4. Map of PCB sampling results for the City of Mountain View.

City of Palo Alto

PCB Results

There were 12 samples collected in Palo Alto in locations that drain a total of approximately 56 acres.

One of these samples had an elevated PCBs concentration (greater than 0.5 mg/kg) and **one** sample had a total PCBs concentration in the 0.2 – 0.5 mg/kg range. PCB sampling results for sediments collected in the City of Palo Alto are mapped in Figure B-5.

- Sample SC-PAO-05-B was collected from a manhole in the eastbound lane of East Meadow Drive and had a total PCBs concentration of 0.43 mg/kg. A field duplicate at this location had a total PCBs concentration of 0.47 mg/kg. There is a large vault under this manhole that the sediment was collected from, and any inflow and outflow pipes were not visible from the surface. However, from the GIS data and looking at adjacent manholes, it appears that this vault receives flow only from a very small portion of Loral Space Systems along Fabian Way. If there is further investigation into the source of PCBs in this sample, a first step would be working with the city to better understand the storm drain network in this area. This vault and three nearby manholes were checked several times during January 2016 to potentially collect a storm sample from this area. Each time the storm drain lines were completely submerged under several feet of water, preventing the possibility of taking a meaningful storm sample. This appears to be the condition at all times, most likely due to a high water table and being just up the storm drain line from a stormwater pump station. The storm drain lines are also depositional, making sediment sampling relatively easy if a source investigation was to take place.
- Sample SC-PAO-18-A was collected from a manhole at intersection of Bryant Street and Channing Avenue from a vault where an 8" line diverts some storm flow into the sanitary sewer. The sample had a total PCBs concentration of 0.10 mg/kg. This location has also been sampled during storm events by the CW4CB study calculating the effectiveness of PCB removal using sanitary diversions. Although not considered an elevated sample, this sample is located downstream of sample **SC-PAO-18-B** and therefore should be considered in any follow-up investigation.
- Sample **SC-PAO-18-B** was collected from inside a manhole one block to the southwest of sample SC-PAO-18-A on the northeast side of the intersection of Ramona Street and Channing Avenue. The sample had a total PCBs concentration of 1.45 mg/kg (1.92 with method 1668A), and also had a mercury concentration of 0.82 mg/kg (moderately elevated). The catchment contains only two old industrial parcels, and one has been redeveloped into housing. However, the redeveloped parcel previously contained an electrical substation as well as an auto repair shop. Channing Avenue also has two additional auto repair businesses along with at least four parcels used for auto storage that are currently unpaved and are possibly the source of the majority of sediment in the sample. The current zoning of these parcels is either retail or vacant, which is the reason they are not included in the High Opportunity GIS database. The largest unpaved parcel, 901 High Street, is planned for redevelopment which will remove a large source of sediment into the storm drain. A detailed map of the catchment is available in Figure C-1.

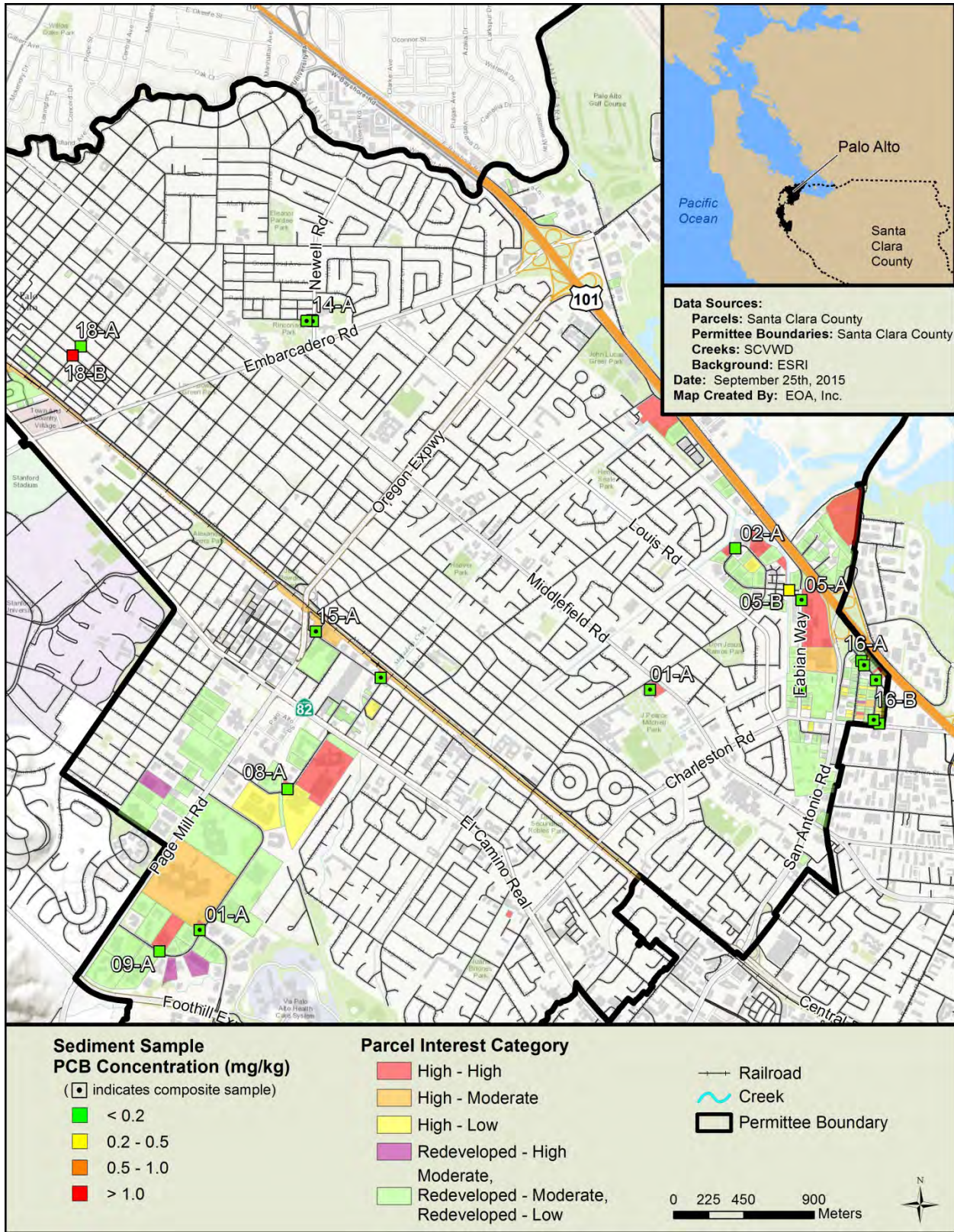


Figure B-5. Map of PCB sampling results for the City of Palo Alto.

City of San Jose

PCB Results

PCB sample results are described below by sample result. Results are also mapped in Figures B-6 through Figure B-11.

- Sample SC-SJY-07-A had a total PCBs concentration of 0.35 mg/kg (0.32 mg/kg using method 1668A) and was collected from two inlets along Oakland Road along a new housing development 600 feet south of Brokaw Road (Figure B-6). At the time of sampling, approximately half of the housing development project was completed. Full project build out is anticipated by the end of 2015⁵. The property is listed in the California Department of Toxic Substances Control (DTSC) Envirostor database and was the site of a metal recycling business from 1964 to 2000 under the name Markovits and Fox, Inc (Cornerstone 2011). Sampling from 2001 - 2006 revealed the soil contained elevated levels of PCBs, metals, and other pollutants. Remediation was performed from 2006 to 2009 to remove 5,500 cubic yards of soil contaminated with PCBs over 10 mg/kg, and consolidate all remaining soil over 1.0 mg/kg and cover with clean fill collected on-site. During grading in 2013 an underground storage tank for waste oil was discovered that contained very high levels of PCBs (1,900 mg/kg), and was subsequently remediated under oversight of the DTSC (ENGEO 2013). DTSC currently considers the site as fully remediated. However, there may be concern regarding the adjacent railroad, as this property has not been tested for PCBs, may have historically been used to transport scrap metal to the property, and is very close to the location where soil contamination was discovered.
- Sample **SC-SJY-08-D** had a total PCBs concentration of 0.67 mg/kg. The sample was collected from an inlet on the northerly corner of Kings Row and Industrial Avenue (Figure B-6). The adjacent businesses are mostly car and truck repair facilities, several of which are unpaved and contribute sediment to the inlet via vehicle tracking or overland flow. A detailed map of the catchment area for **SC-SJY-08-D** is available in Figure C-2.
- Sample **SC-SJY-10-A** had a total PCBs concentration of 1.08 mg/kg. The sample was collected from an inlet at the southeast corner of Old Bayshore Highway and Terminal Avenue (Figure B-6). The catchment area is entirely paved and contains a large Coca Cola Bottling Company facility, a fencing supply company, an irrigation supply company, and a machining shop, none of which are considered a particular risk for PCB pollution. The Coca Cola Bottling Company and possibly other properties on this block have a private drainage network and do not drain to the inlet where the sample was collected. Other industries of high interest adjacent to this catchment include a metal recycling facility, and metal manufacturing facility, and auto repair businesses. A detailed map of the catchment is available in Figure C-3.
- Sample **SC-SJY-10-D** had a total PCBs concentration of 1.35 mg/kg and was gathered by sweeping up sediment from both of the driveways to 1726 Rogers Avenue (Figure B-6). The property contains Tung Tai Group, a metal recycling facility. The sample also had a very high mercury concentration of 9.91 mg/kg. It is highly likely that the sediment originated from the

⁵ Additional information can be found at: <http://nwhm.com/neighborhood/orchard-park>

Tung Tai Group property, and therefore this property should be considered for referral to the Water Board. A detailed map of the catchment is available in Figure C-4.

- Sample SC-SJY-10-E had a total PCBs concentration of 0.31 mg/kg, and was collected from the driveway of 1788 Rogers Avenue (Figure B-6). The property contains Alco Iron & Metal, a metal recycling facility on the same block as Tung Tai Group (Figure C-4). The sample also had an elevated mercury concentration of 1.19 mg/kg. The sediment from the sample most likely originated from vehicle tracking on and off of Alco Iron & Metal. The moderately elevated total PCBs concentration along with the elevated mercury concentration is cause to consider a follow up investigation which may lead to an eventual referral to the Water Board.
- Sample SC-SJY-12-C had a total PCBs concentration of 0.22 mg/kg (0.11 mg/kg using method 1668A), and was collected from two inlets at the end of Commercial Court (Figure B-6). This block has various large industrial lots including a very large auto recycling facility.
- Sample SC-SJY-14-A had a total PCBs concentration of 0.24 mg/kg and was collected from one manhole and sediment from different locations along the curb of Yard Court (Figure B-8). The street samples were collected in front of two recycling facilities and a pallet industry. Both the pallet industry and one of the recycling facilities, Ecobox Recycling, are unpaved and vehicles track a significant amount of sediment onto the public right-of-way from both properties.
- Sample **SC-SJY-47-B** had a total PCBs concentration of 0.75 mg/kg, and a field duplicate collected at this location had a concentration of 0.70 mg/kg. The sample had a moderately elevated mercury concentration of 0.64 mg/kg. This sample was collected from two driveways and two inlets in front of Sims Metal Management (Figure B-9). Both inlets that were sampled have pipes flowing into the inlet that drain portions of the property. It is highly likely that the source sediment in this sample originates from Sims Metal Management, and therefore it is recommended that this property be referred to the Water Board. It was noted while sampling that the property appears to have stormwater treatment facilities, but the design, extent, and effectiveness of this treatment is unknown.

Sims Metal Management is on the other side of the railroad from the Leo Avenue cul-de-sac that was confirmed to contain high levels of PCBs through the CW4CB project (SCVURPPP 2015). In fact, the CW4CB sample with the highest concentration of PCBs (25.63 mg/kg) was collected between the railroad track and the fence of Sims Metal Management, and any water draining from this location would drain west towards Sims Metal Management. However, it was noted when the CW4CB sample was collected that there is an eight inch high concrete berm that prevents surface runoff from the railroad from entering Sims Metal Management. There is also an approximately ten foot high solid metal fence on the border with the railroad that would be expected to prevent the movement of most windblown polluted sediment from the railroad from entering the Sims Metal Management property. As part of CW4CB, three Union Pacific Railroad parcels adjacent to Sims Metal Management have been referred to the Water Board. A detailed map of the catchment is available in Figure C-5.

- Sample SC-SJY-47-C had a total PCBs concentration of 0.25 mg/kg (**1.16 mg/kg** using method 1668A), and was collected from a manhole along the western sidewalk at the intersection of Monterey Road and Phelan Avenue. The sample also had a moderately elevated mercury concentration of 0.41 mg/kg. The sediment collected was hardened and did not appear to have been recently deposited, and so there may not be any active sources of PCBs to this location.

The catchment area extends east along Phelan one block to the railroad tracks, and south along the west side of Monterey Road to a different set of railroad tracks (Figure C-5). It appears that most of the businesses along the west side of Monterey Road drain to this location including the storm drain line where sample **SC-SJY-47-D** was collected. Sims Metal Management does not appear to drain here. The source of PCBs may be a “halo” effect from Sims Metal Management or there may be additional PCB sources along Monterey Road.

- Sample **SC-SJY-47-D** had a total PCBs concentration of 1.97 mg/kg (2.50 mg/kg using method 1668A), and was collected from a manhole leading from a private storm drainage network that drains a number of industrial buildings (Figure C-5). The sample also had an elevated mercury concentration of 1.81 mg/kg. Like sample SC-SJY-47-C, the sediment in this sample was hardened and may not have been deposited recently. This sample is upstream from sample SC-SJY-47-C, and may be the source of PCBs that were found in that sample. The sample was collected from a manhole that contains a 24” metal pipe originating from the industrial properties to the southwest. It is unknown what the exact catchment is, and any investigation into the source of PCBs would require working with the City to determine the exact catchment. The actual catchment may be a much larger area. Both sample SC-SJY-47-C and **SC-SJY-47-D** were collected in depositional areas where sediment would not be expected to be completely flushed out during large storms. For both remediation and investigation purposes, the City should consider cleaning out this section of storm drain line. Subsequent sediment sampling in the same locations would reveal if there are active sources of PCBs or mercury to this area.

Mercury Results

- SC-SJY-08-E had a mercury concentration of 9.27 mg/kg, the third highest mercury concentration in this study. It was collected from two inlets at the intersection of Kings Row, Lane A, and Lane B. See Figure B-6 for a location map. The surrounding area consists of various industrial businesses including welding, rigging, auto repair, landscaping, and a Union Pacific Railroad property. The more easterly of the two sub-samples was black in color and smelled of hydrocarbons.
- Sample SC-SJY-10-D (also an elevated PCB sample) had a mercury concentration of 9.91/kg, the second highest mercury concentration in this study (Figure B-6 and Figure C-4). It was collected from both driveways of 1726 Rogers Avenue. This property contains a metal recycling facility, Tung Tai Group, and should be considered for referral due to elevated PCB concentrations.
- Sample SC-SJY-10-E had a mercury concentration of 1.19 mg/kg (also a moderately elevated PCB sample) and was collected from the driveway of 1784 Rogers Avenue, the site of Alco Iron & Metal (Figure B-6 and Figure C-4). This catchment should be considered for a source investigation.
- Sample SC-SJY-30-A had a mercury concentration of 18.90 mg/kg, the highest concentration of any sample collected during this project and the Bay Area dataset. It was collected from three locations at the west side of the intersection of Newhall Street and Newhall Drive, two along the gutter on either side of Newhall Street, and one from a manhole that connects with the main line, but does not itself have any active pipes flowing in (Figure B-7). There was a large amount of sediment that appears to have entered the storm drainage system from the adjacent railroad and other industrial properties, which are owned by the Santa Clara Valley Transportation Authority (VTA) and PG&E.

- Sample SC-SJY-36-A had a mercury concentration of 1.12 mg/kg and was collected from a manhole in front of 205 Dupont Street (Figure B-7). The catchment for this sample contains various industries including auto repair, auto storage, and welding.
- Sample SC-SJY-40-A had a mercury concentration of 4.52 mg/kg, and was collected from multiple driveways from what was previously 458 Willow Street (Figure B-9). This property is composed of multiple parcels currently owned by the Santa Clara Valley Water District (SCVWD), and formerly housed several auto repair businesses, which were demolished in 2012. The properties are part of the Upper Guadalupe River Flood Protection project,⁶ which is currently in design phase by the Army Corps of Engineers.
- Sample SC-SJY-44-A had a mercury concentration of 1.25 mg/kg and was collected from a several driveways near 1810 to 1858 Almaden Road where several auto repair businesses are located (Figure B-9).
- Sample SC-SJY-47-A had a mercury concentration of 1.19 mg/kg and was collected from a manhole in front of gate 6 of Sims Metal Management (Figure B-9 and Figure C-5). This manhole accesses a 30-inch line that receives inflow from Sims Metal Management and drains a very large area from the south along Monterey Highway.
- Sample SC-SJY-47-D (also an elevated PCB sample) had a mercury concentration of 1.81 mg/kg, and was collected in front of 1775 Monterey Highway, from a manhole where a private 24-inch storm drain line connects with the main storm drain flowing north along Monterey Highway (Figure B-9 and Figure C-5).
- Sample SC-SJY-50-A had a mercury concentration of 1.11 mg/kg and was collected from an inlet in front of 1639 Almaden Road (Figure B-9). The catchment for this sample includes an auto repair business, a plumbing business, a property with heavy machinery, and some railroad lines.

⁶ Additional information can be found at: <http://www.valleywater.org/Services/GuadalupeRiver.aspx>

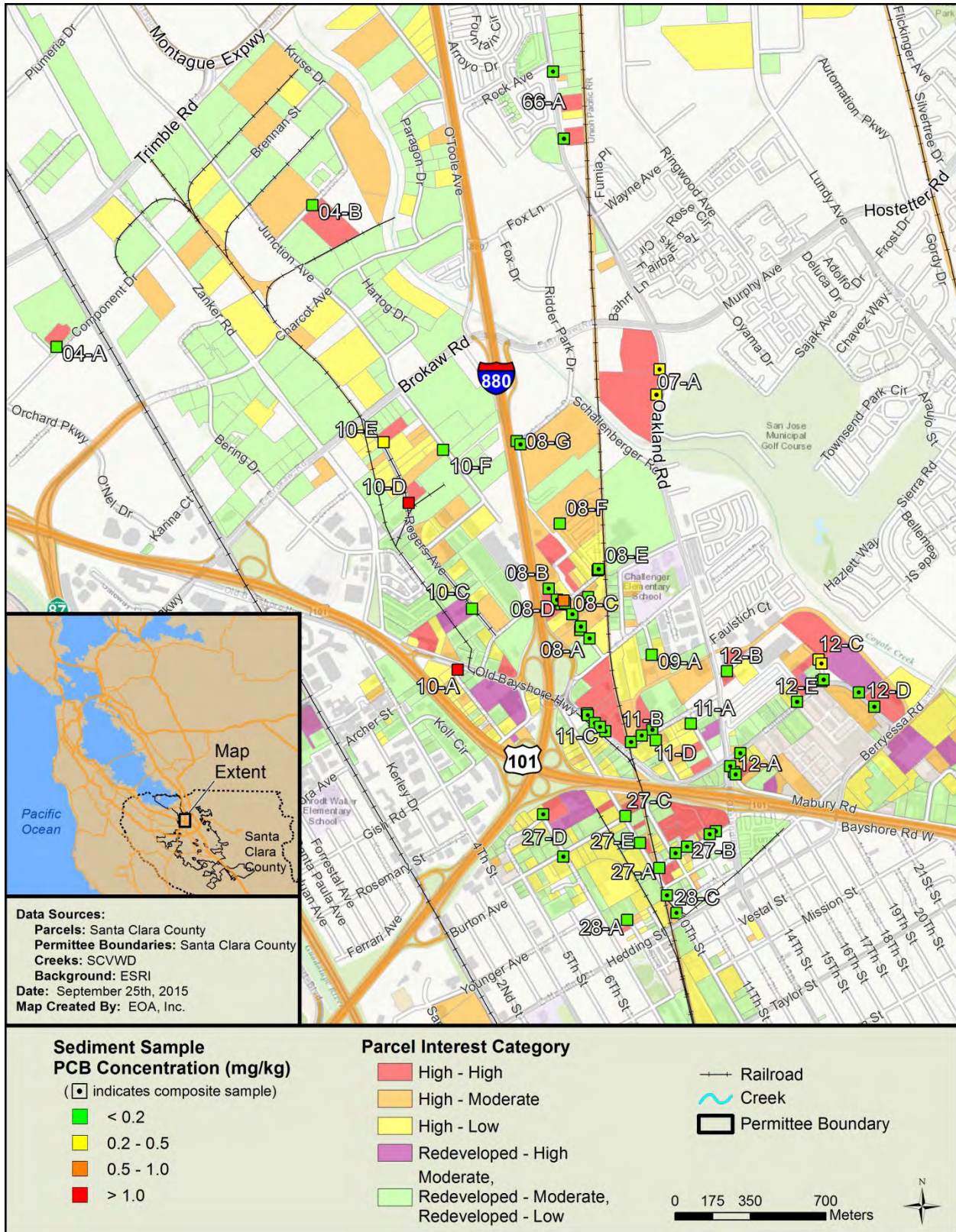


Figure B-6. Map of PCB sampling results for the City of San Jose - North.

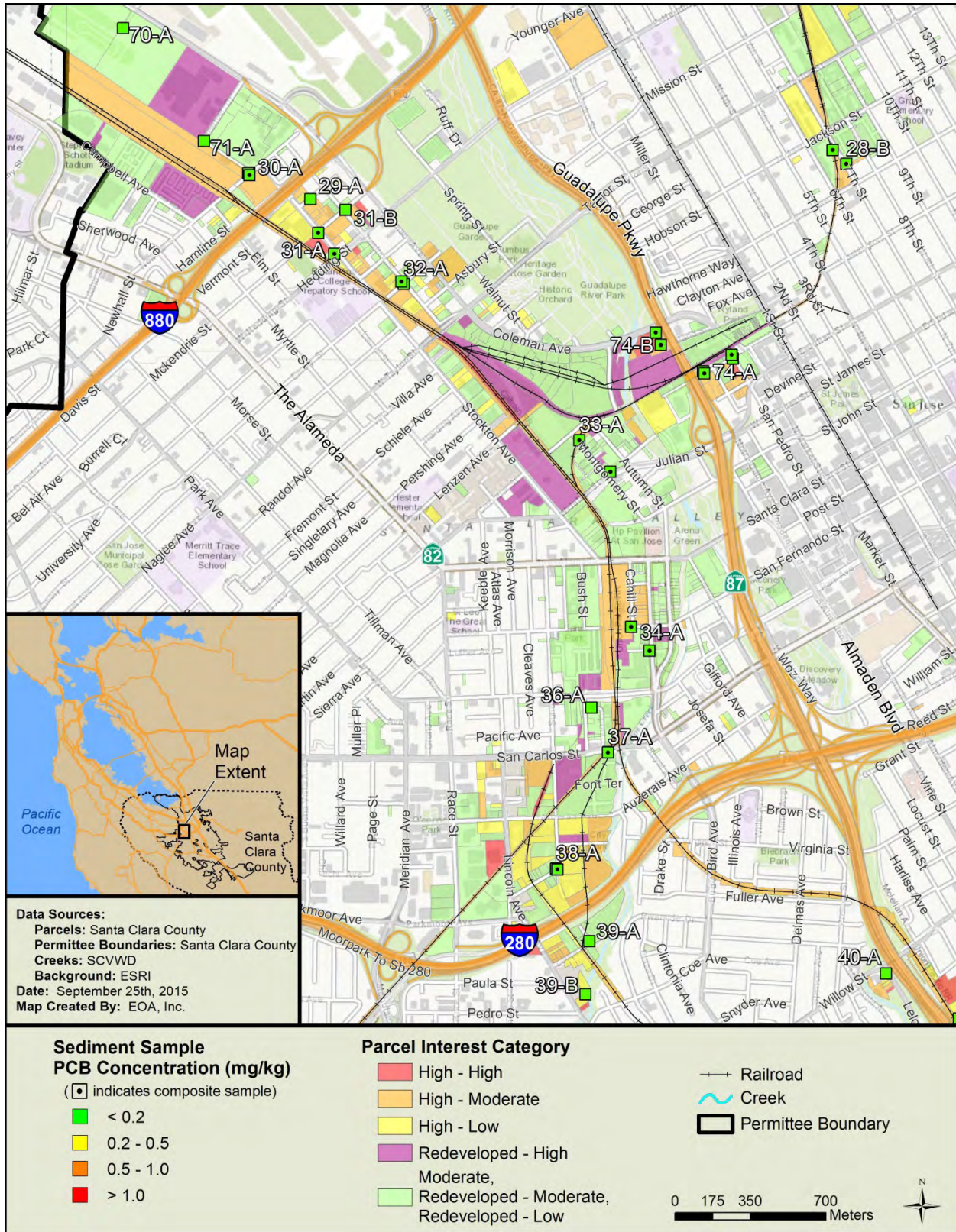


Figure B-7. Map of PCB sampling results for the City of San Jose – Center.

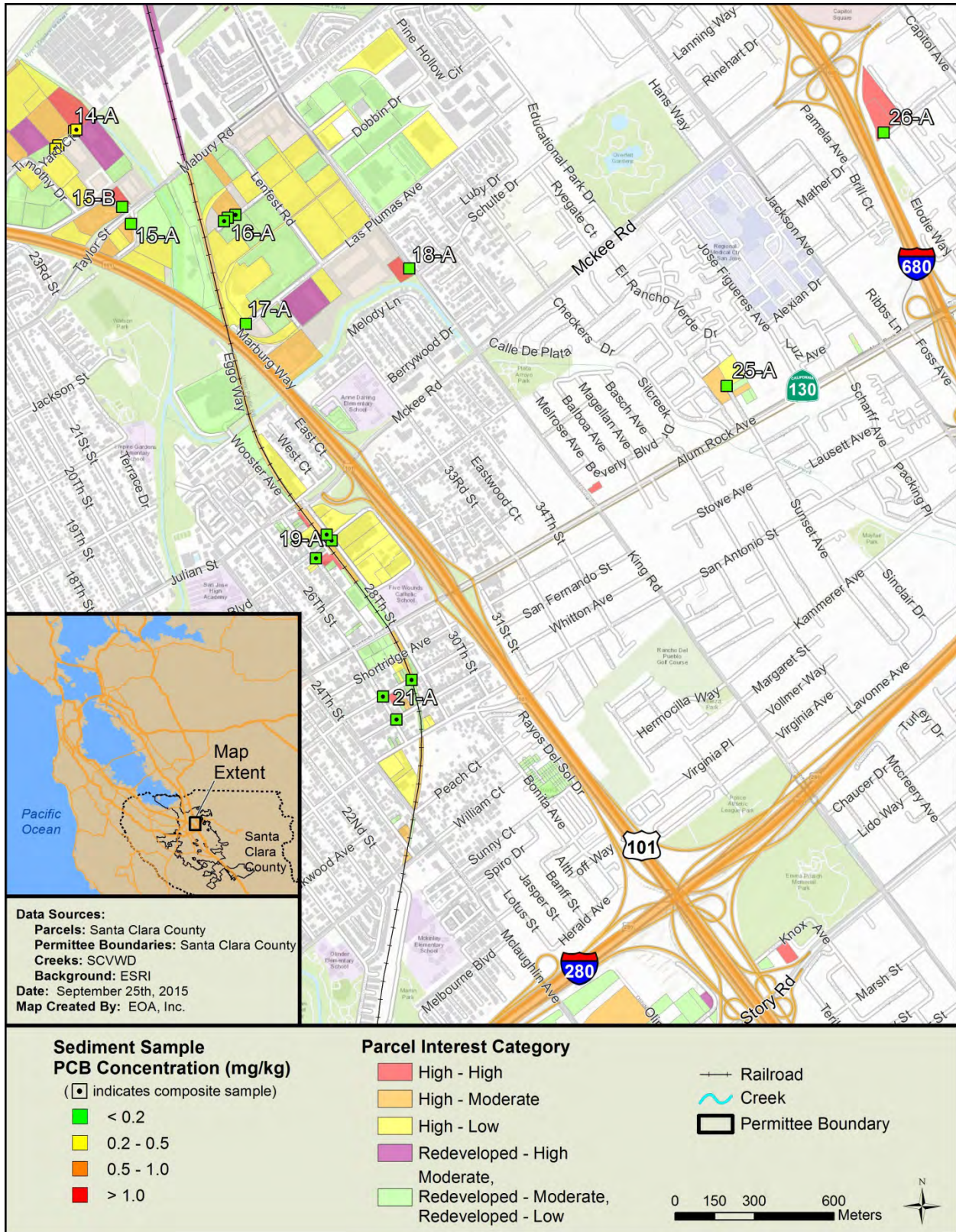


Figure B-8. Map of PCB sampling results for the City of San Jose - Northeast.

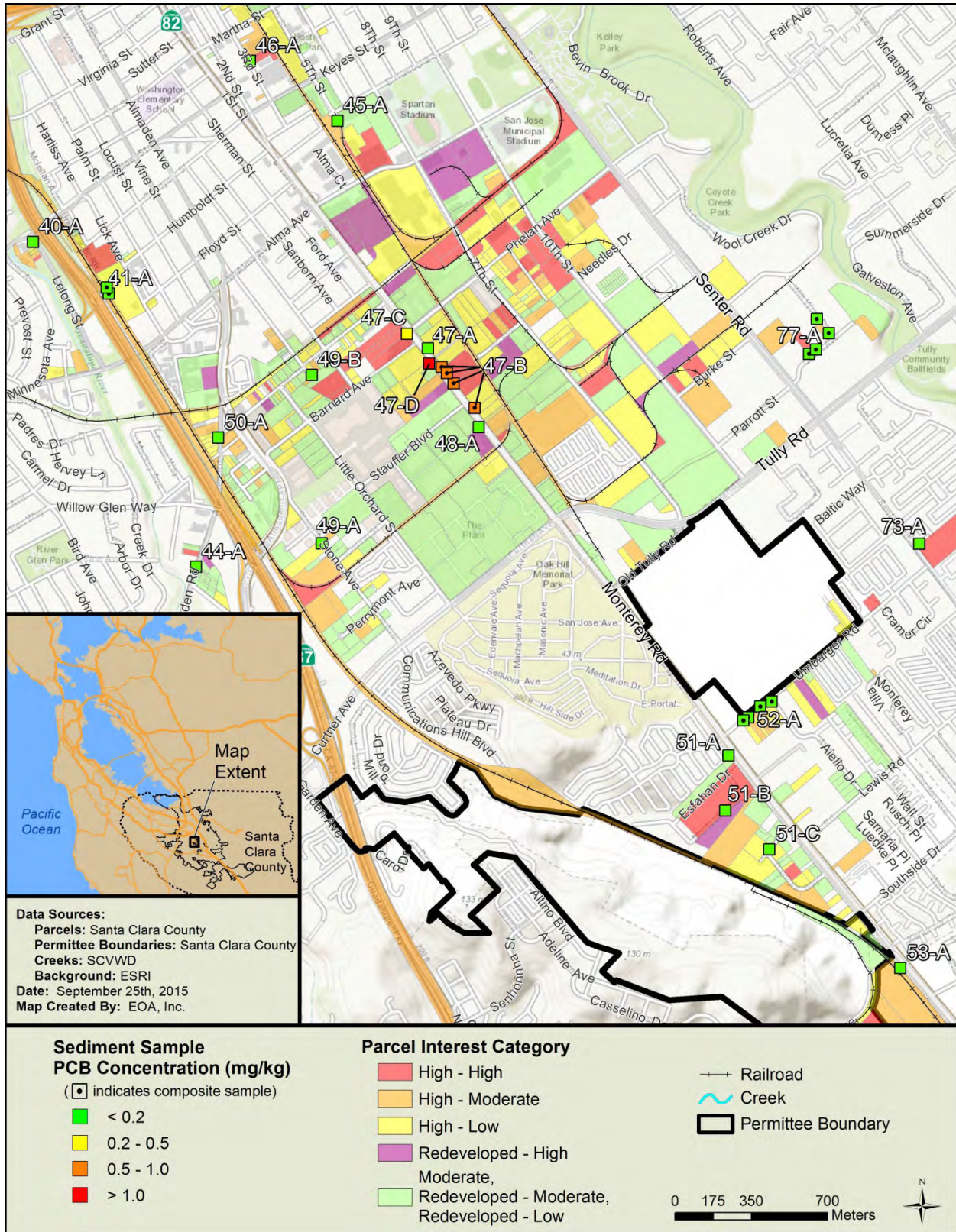


Figure B-9. Map of PCB sampling results for the City of San Jose - South.

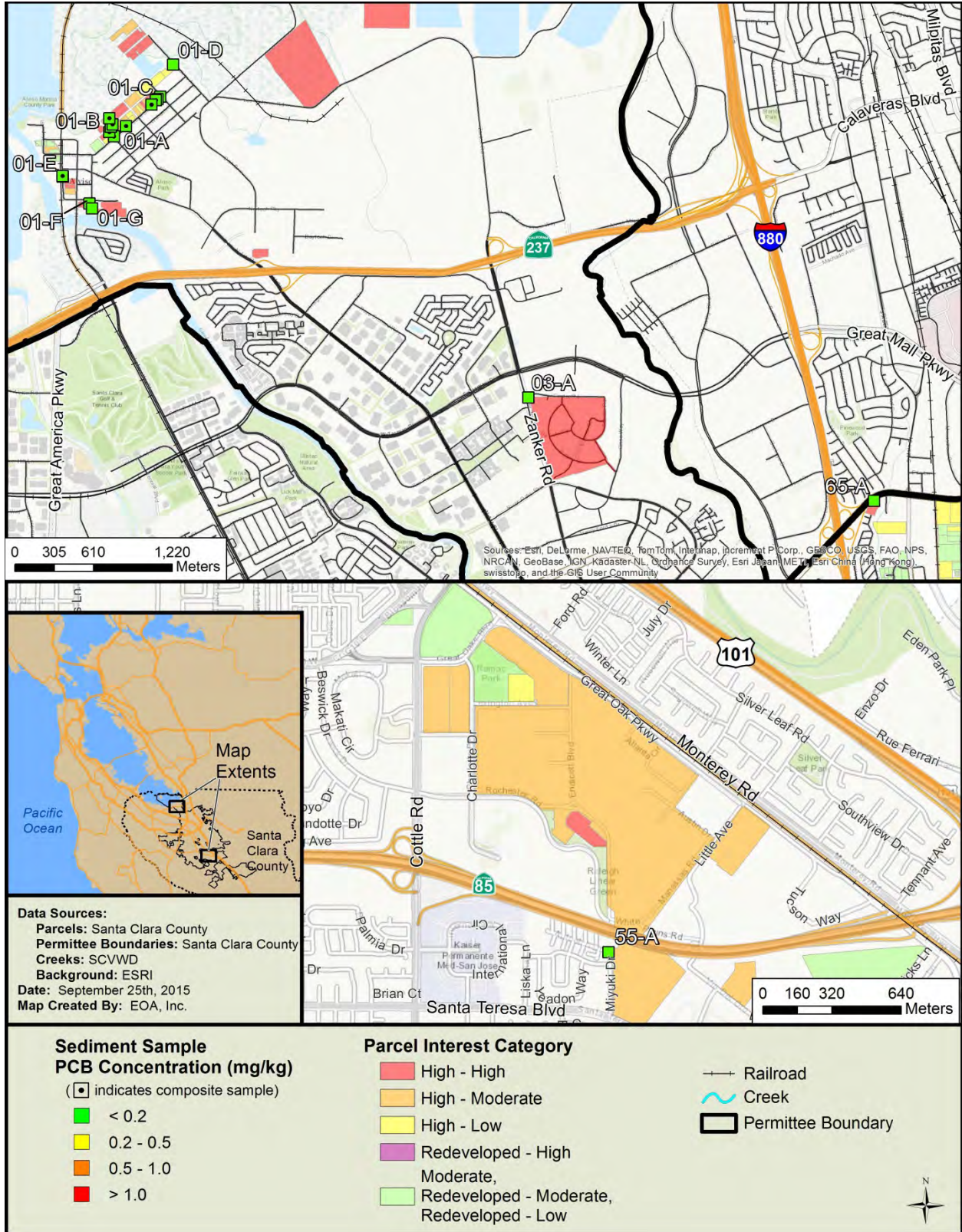


Figure B-10. Map of PCB sampling results for the City of San Jose – Alviso and IBM.

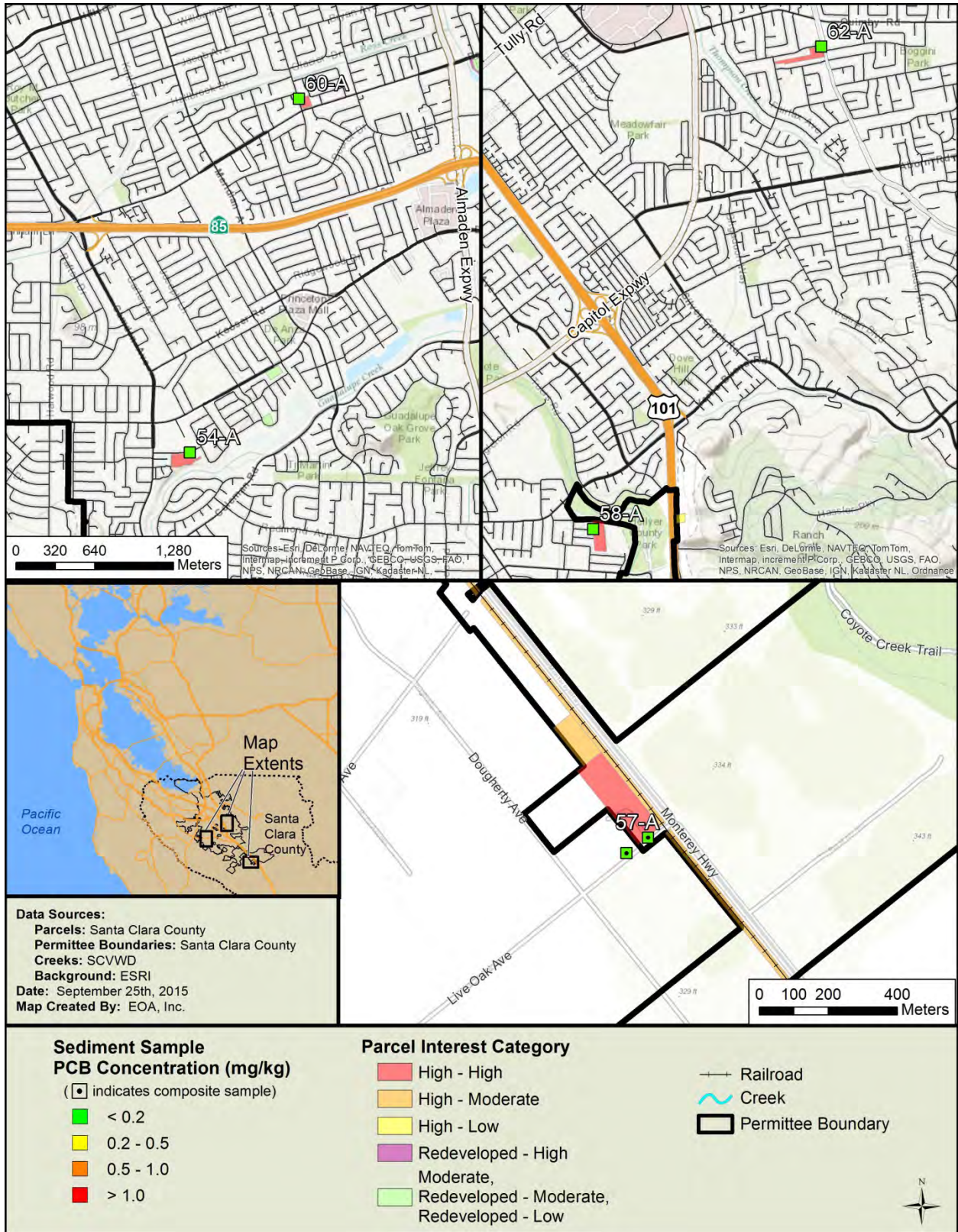


Figure B-11. Map of PCB sampling results for the City of San Jose - Other.

City of Santa Clara

PCB Results

There were 38 samples collected in Santa Clara in locations that drain a total of approximately 609 acres. **Two** of these samples had an elevated PCBs concentrations (greater than 0.5 mg/kg), with the highest sample having a concentration of 0.83 mg/kg. Sediment sampling locations in the City of Santa Clara are mapped in Figure B-12 and Figure B-13.

- Sample **SC-SCL-01-A** had a total PCBs concentration of 0.84 mg/kg (1.62 mg/kg using method 1668A) and was collected from a manhole at the southwest end of Brokaw Road adjacent to the near the Union Pacific Railroad tracks (Figure B-13). Most of the sediment was collected from a pipe flowing into this manhole from the now vacant shipping business on the north side of Brokaw Road, which is currently being redeveloped. However, at the time of the sampling, the property was fully paved, and there was now visible risk factors associated with PCBs. There is also an electrical substation and unpaved equipment storage yard that is accessed through the parking lot of the shipping facility, and appears to be a large source of sediment to the private storm drainage system of the shipping facility. It is also likely that the adjacent railroad was also a source of sediment to this sample, and that a portion of the railroad may drain toward the shipping facility. A detailed map of the catchment is available in Figure C-6.
- Sample **SC-SCL-02-E** had a total PCBs concentration of 0.80 mg/kg (0.80 mg/kg using method 1668A) and was collected from an inlet along the east side of Lafayette Street 500 feet north of Walsh Avenue (Figure B-13). The inlet drains a relatively small area including a portion of an old industrial railroad track and south along Lafayette Street to Walsh Road. The now vacant industrial track area appears to be on both the parcel to the north and south, but is likely not the source of most of the sediment in the sample. The sediment appeared to originate from a twenty foot wide stretch of unpaved area adjacent to the inlet. The majority of the adjacent parcel does not appear to drain to the street and contains several businesses and the railroad. A detailed map of the catchment is available in Figure C-6.

Mercury Results

- Sample SC-SCL-23-B had a mercury concentration of 3.21 mg/kg, and was collected from two inlets along Martin Avenue. There are various industries along this road including several auto repair business, and an arborist business that is categorized as the highest interest area in the catchment. A very large construction project is currently underway at the San Jose Airport along Martin Street, and may be the source of some of the sediment in the sample.

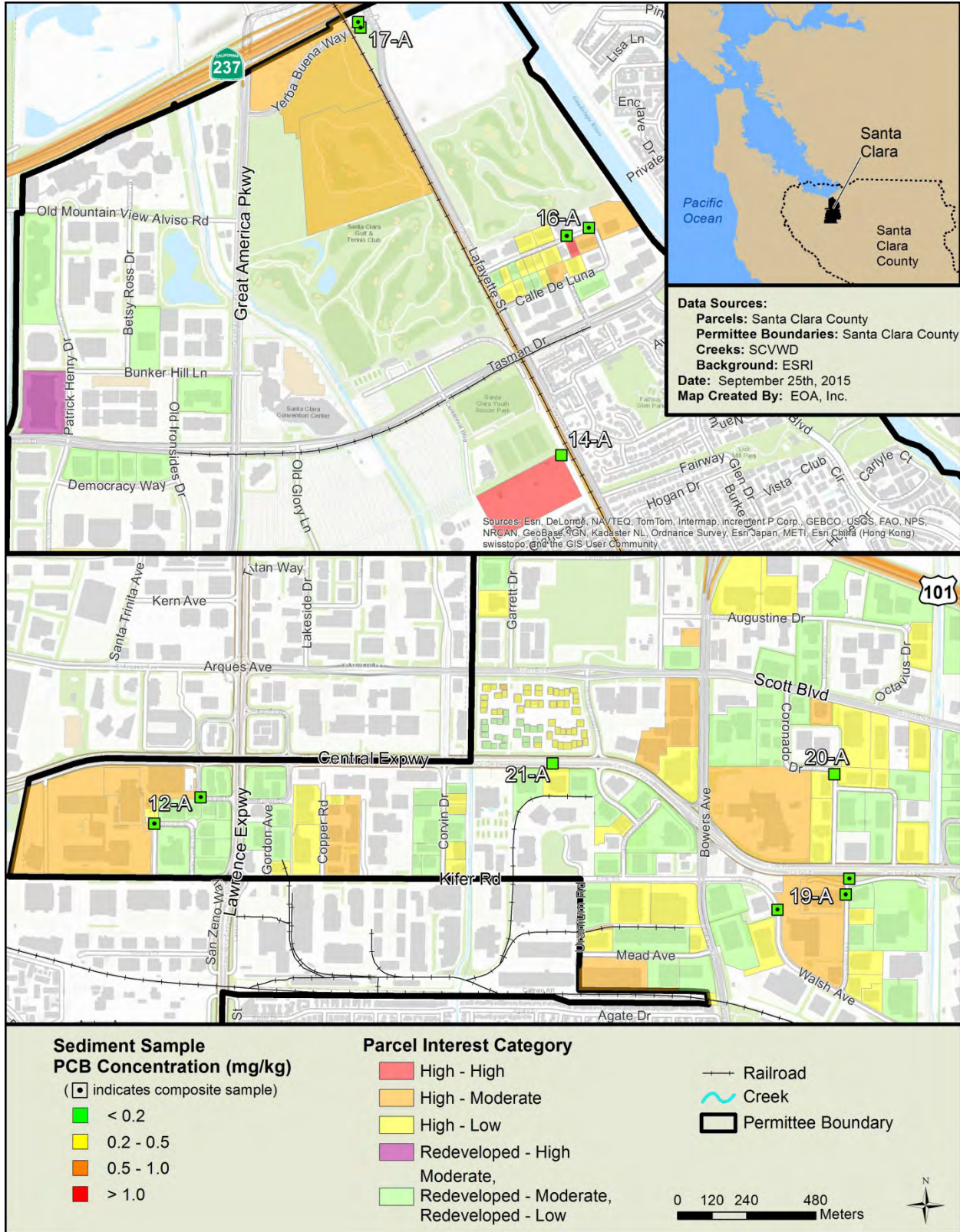


Figure B-12. Map of PCB sampling results for the City of Santa Clara – North and West.

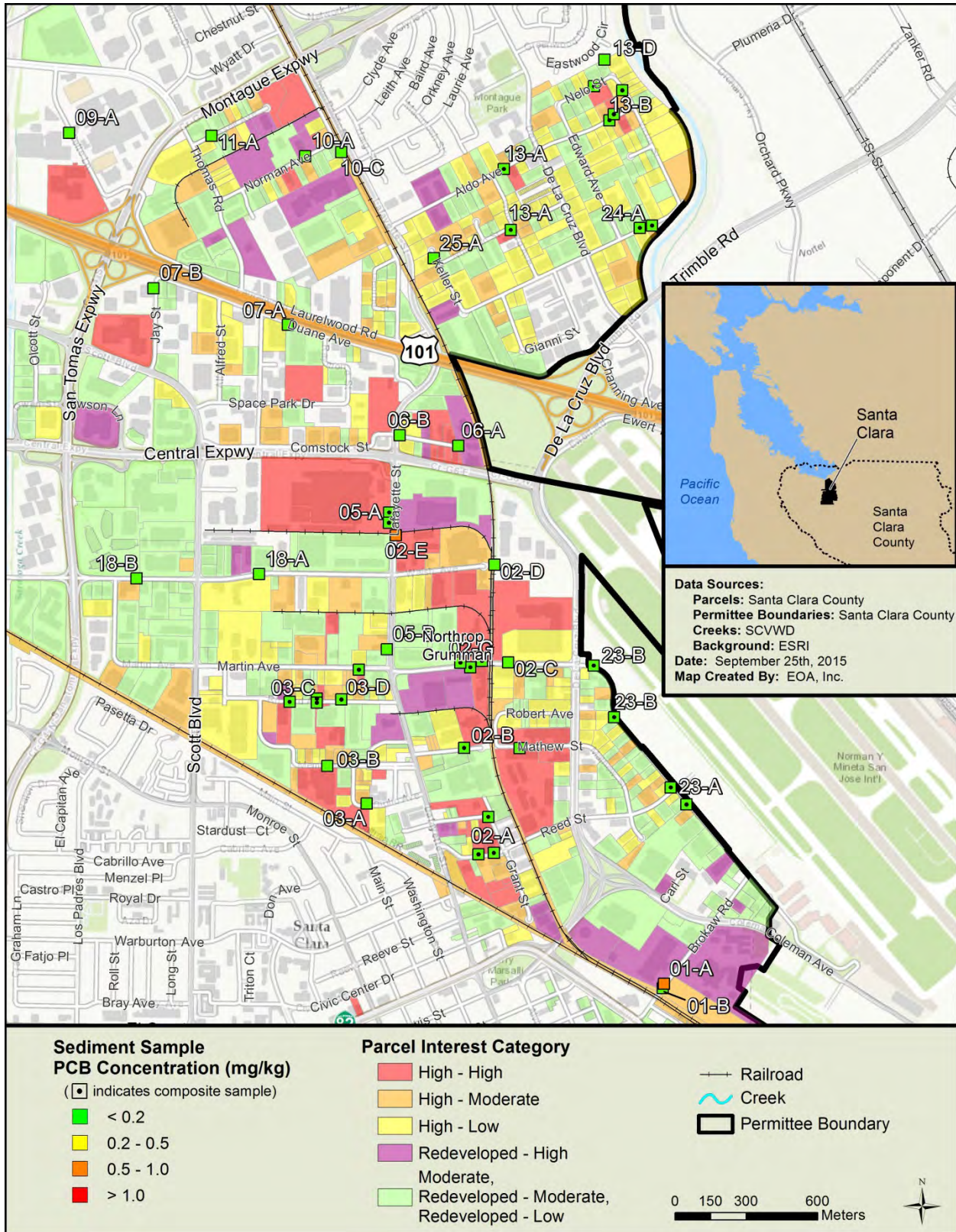


Figure B-13. Map of PCB sampling results for the City of Santa Clara - South.

County of Santa Clara (Unincorporated)

There were 2 samples collected in Unincorporated Santa Clara County in locations that drain a total of approximately 4 acres. Neither of the samples had elevated concentrations, and the highest total PCBs concentration was 0.02 mg/kg. PCB sampling results for sediments collected in unincorporated Santa Clara County are mapped in Figure B-14.

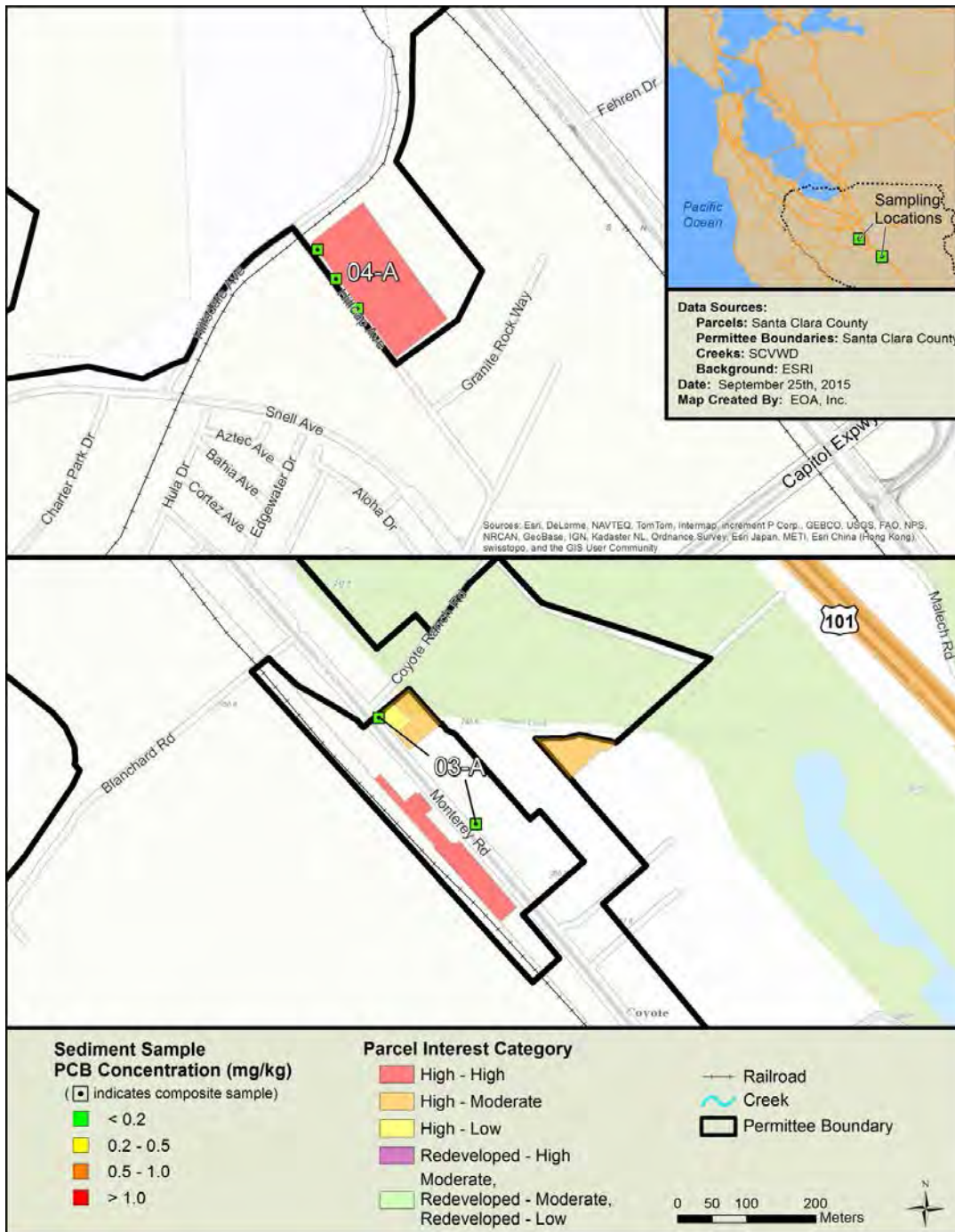


Figure B-14. Map of PCB sampling results for unincorporated Santa Clara County.

City of Sunnyvale

PCB Results

There were 22 samples collected in Sunnyvale in locations that drain a total of approximately 376 acres. The two highest total PCBs concentration of all the samples in this study were measured in Sunnyvale samples, with the highest having a value of 4.84 mg/kg. The twenty remaining Sunnyvale samples all had concentrations below 0.2 mg/kg. PCB sampling results for sediments collected in the City of Sunnyvale are mapped in Figure B-15.

- Sample **SC-SNV-10-A** had a total PCBs concentration of 4.84 mg/kg, and a field duplicate collected at this location had a concentration of 5.68 mg/kg. The sample was collected from a manhole in the intersection of California Avenue and Morse Avenue. The manhole has only one pipe flowing into it from an adjacent inlet along the south side of California Avenue, and this inlet has a 15-inch diameter pipe flowing into it from the Northrop Grumman property. Much of the property is unpaved and is probably a large source of sediment into the storm drainage system. It is highly likely that the source of sediment from the sample is from Northrop Grumman, and therefore it is recommended that this property be referred to the Water Board. Previous sampling has also revealed elevated PCB levels around this property (Yee and McKee 2010). The Northrop Grumman property has been on the Federal "Superfund" National Priorities list since 1986 for PCBs and other pollutants. The goals of the current remediation are to remove or cap surface soils exceeding 25 mg/kg and to place deed restrictions on the site. The purposes of these cleanup goals are to "protect human health and the environment", but do not address the more strict requirements to meet TMDL goals for PCBs. A detailed map of the catchment is available in Figure C-8.
- **SC-SNV-10-C** had a total PCBs concentration of 3.71 mg/kg and was collected from sweeping up driveway sediments along the main gate of Northrop Grumman along California Avenue (Figure C-8). Significant vehicle tracking of sediment was observed at the time of sampling.

Mercury Results

- Sample SC-SNV-09-A had a mercury concentration of 1.57 mg/kg, and was collected from driveway sediments of National Chemsearch Corporation at 932 Kifer Road.

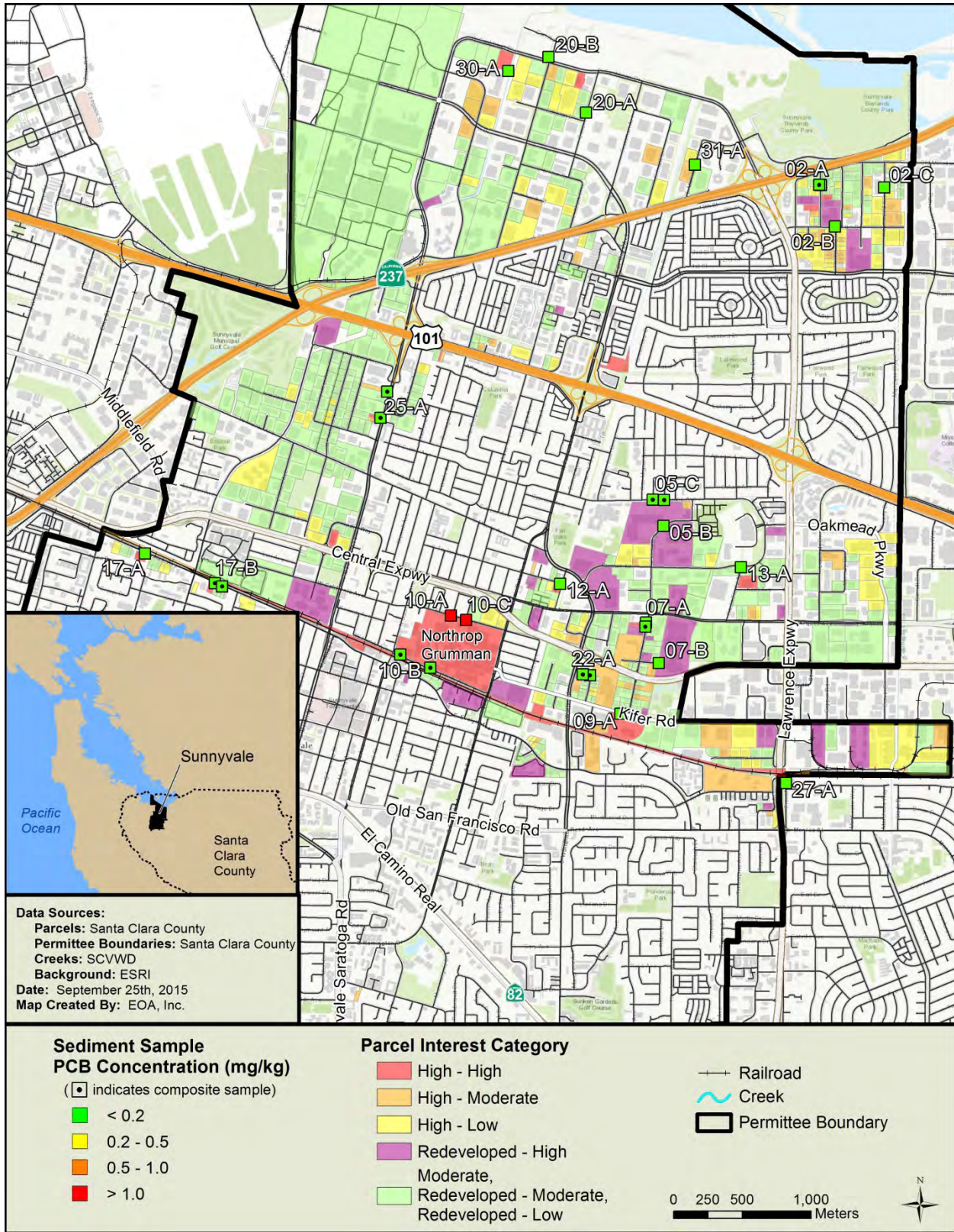


Figure B-15. Map of PCB sampling results for the City of Sunnyvale.

Appendix C

Catchment Maps for Elevated PCB Samples

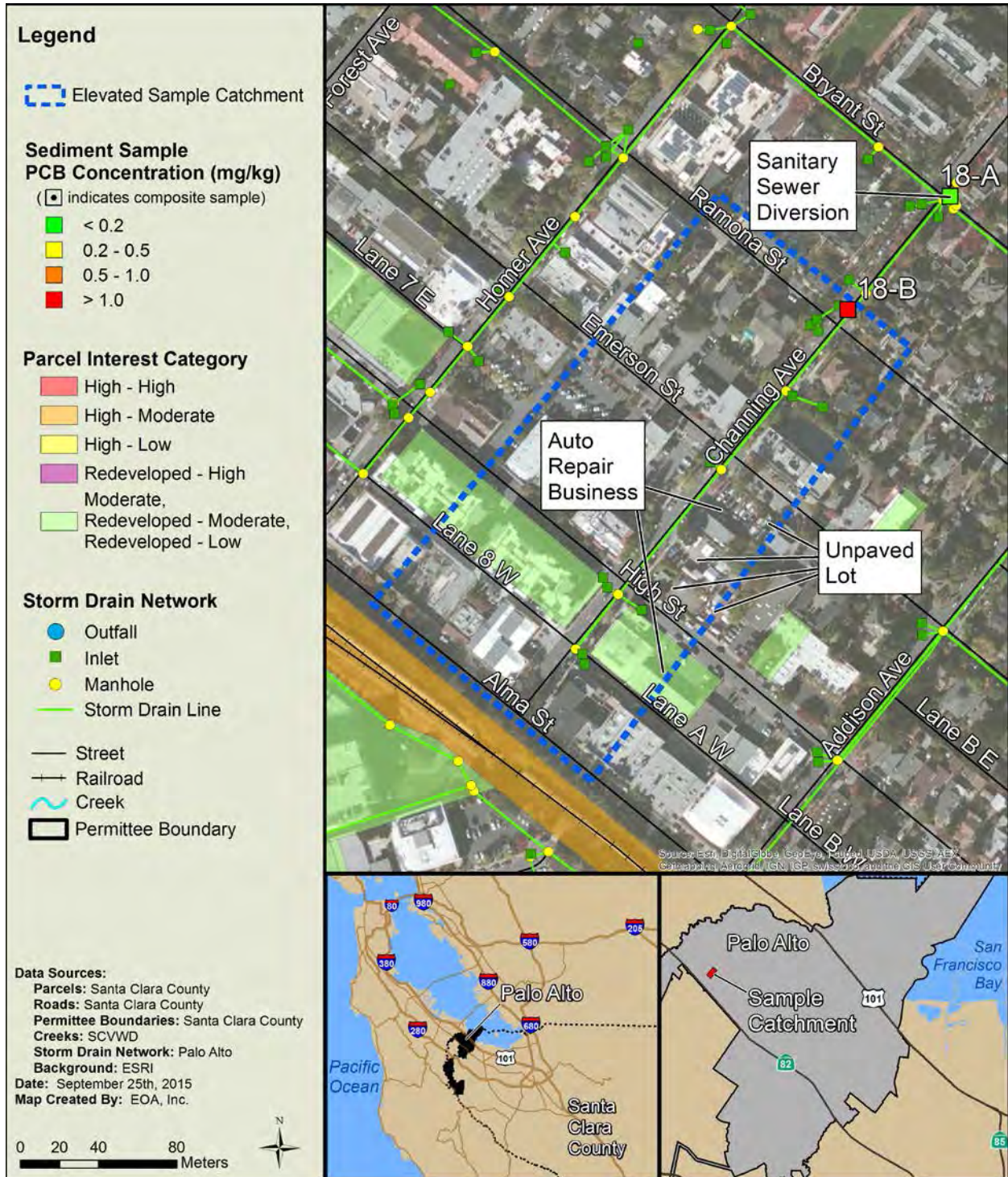


Figure C-1. Map of the approximate catchment area for elevated sample SC-PAO-18-B, City of Palo Alto.

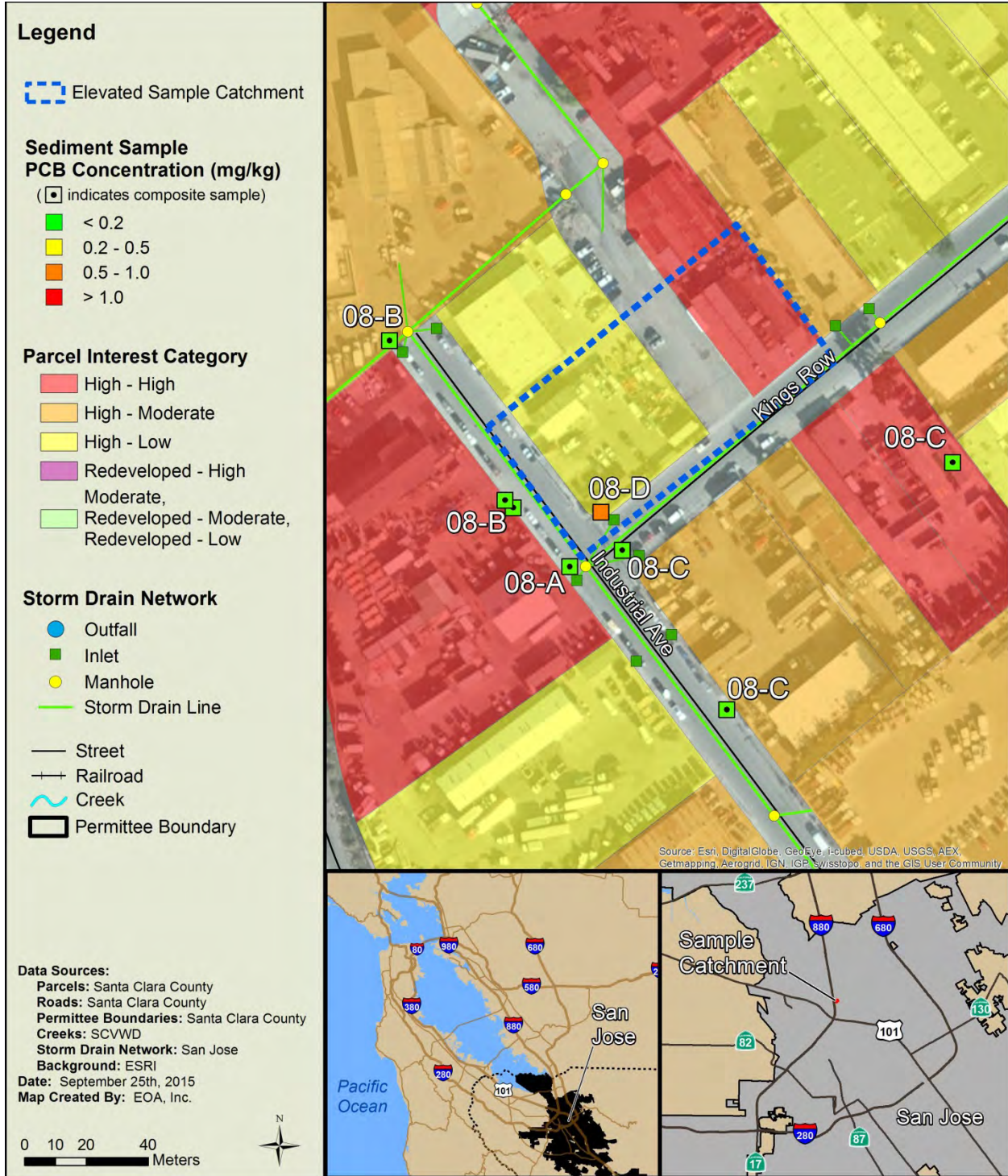


Figure C-2. Map of the approximate catchment area for elevated sample SC-SJY-08-D, City of San Jose.

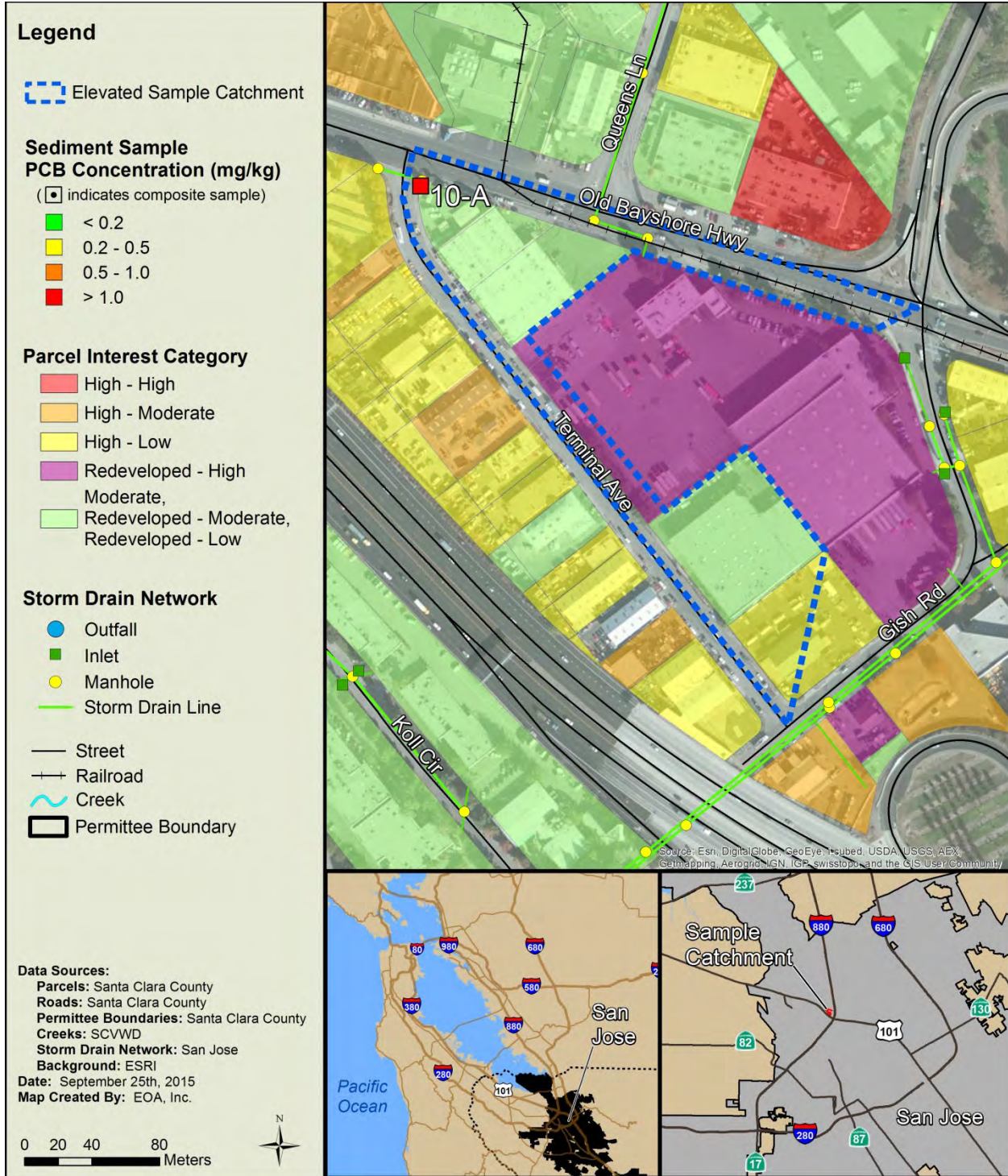


Figure C-3. Map of the approximate catchment area for elevated sample SC-SJY-10-A, City of San Jose.

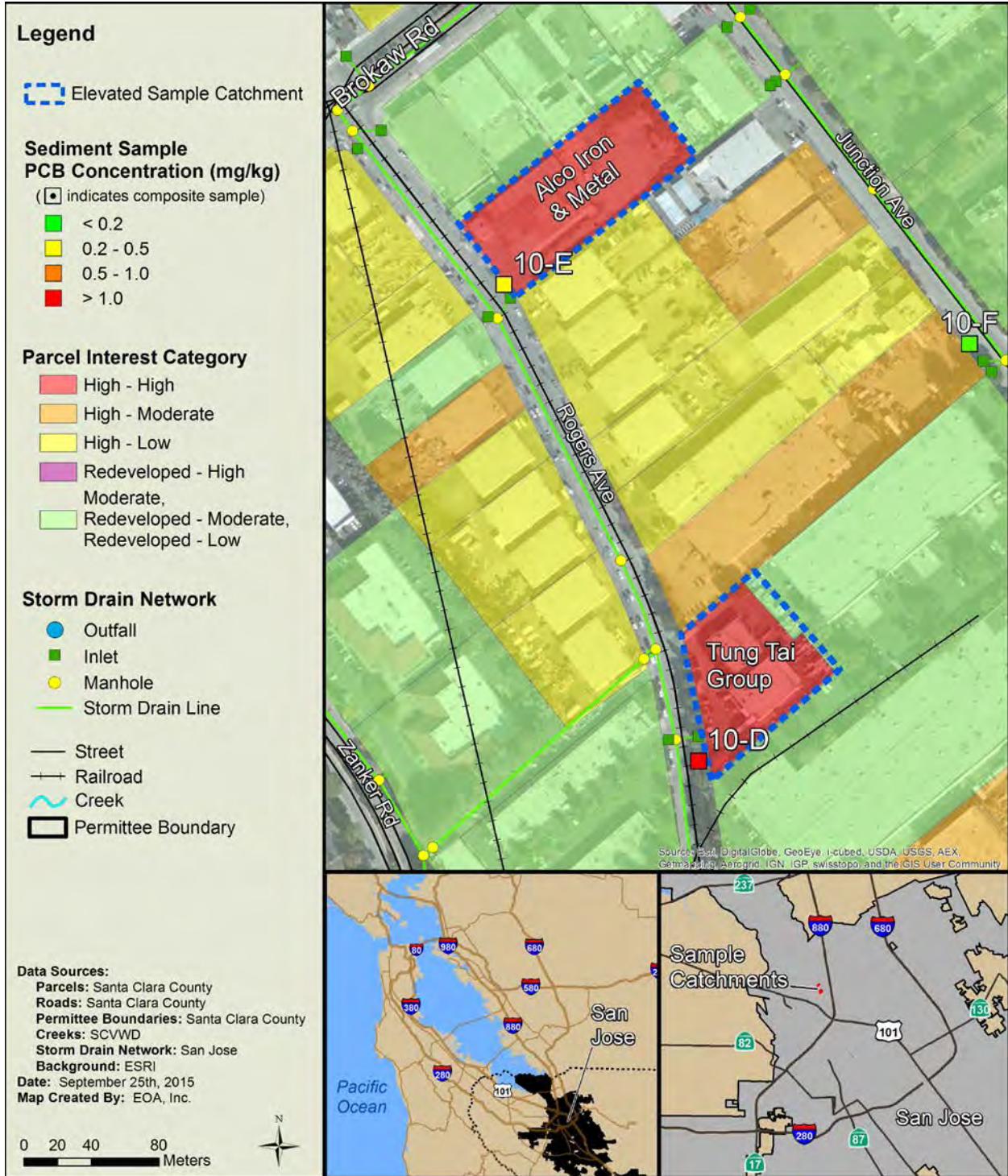


Figure C-4. Map of the approximate catchment areas for elevated sample SC-SJY-10-D and moderately elevated sample SC-SJY-10-E, City of San Jose.

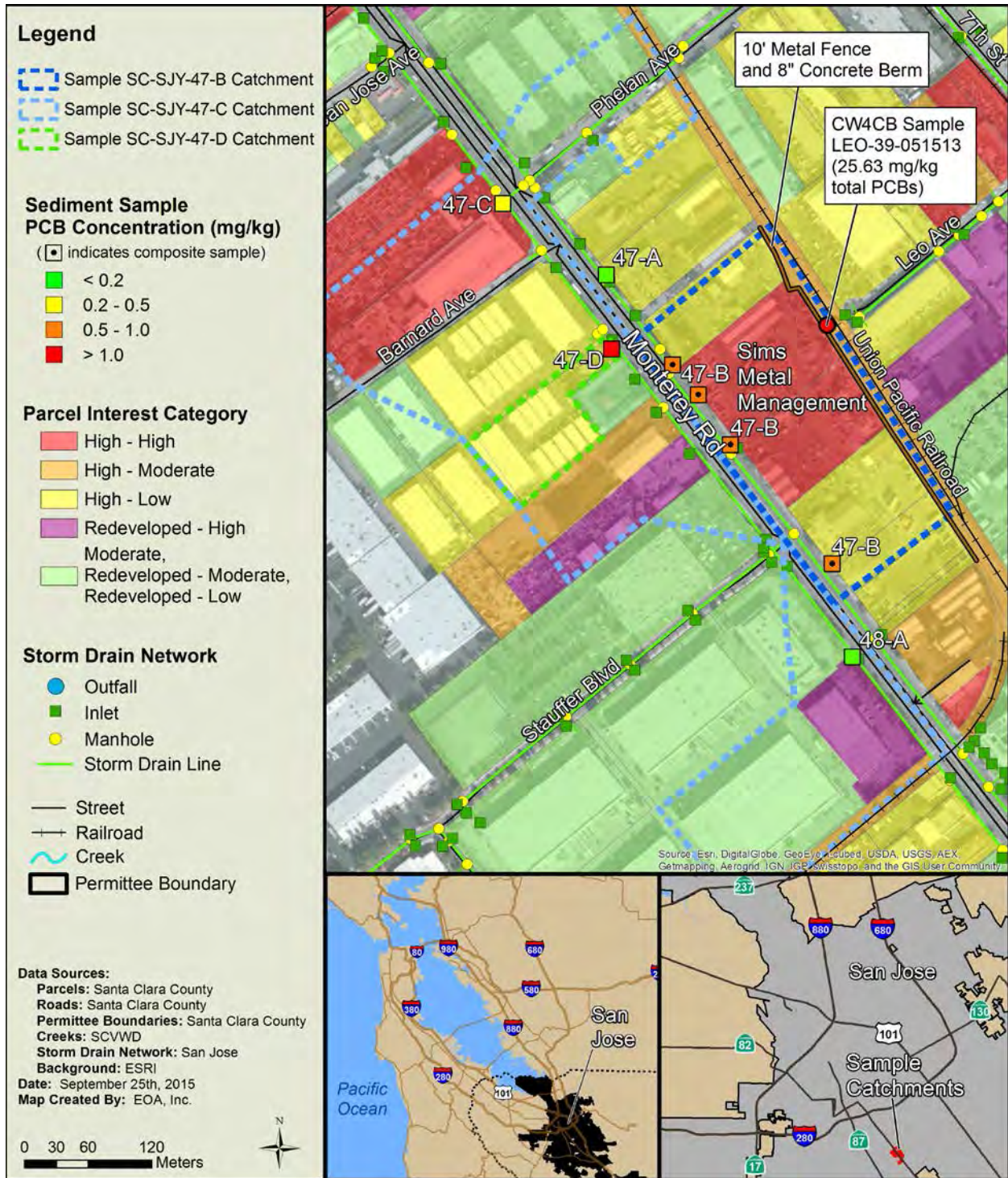


Figure C-5. Map of the approximate catchment areas for elevated samples SC-SJY-47-B, SC-SJY-47-C and SC-SJY-47-D, City of San Jose.

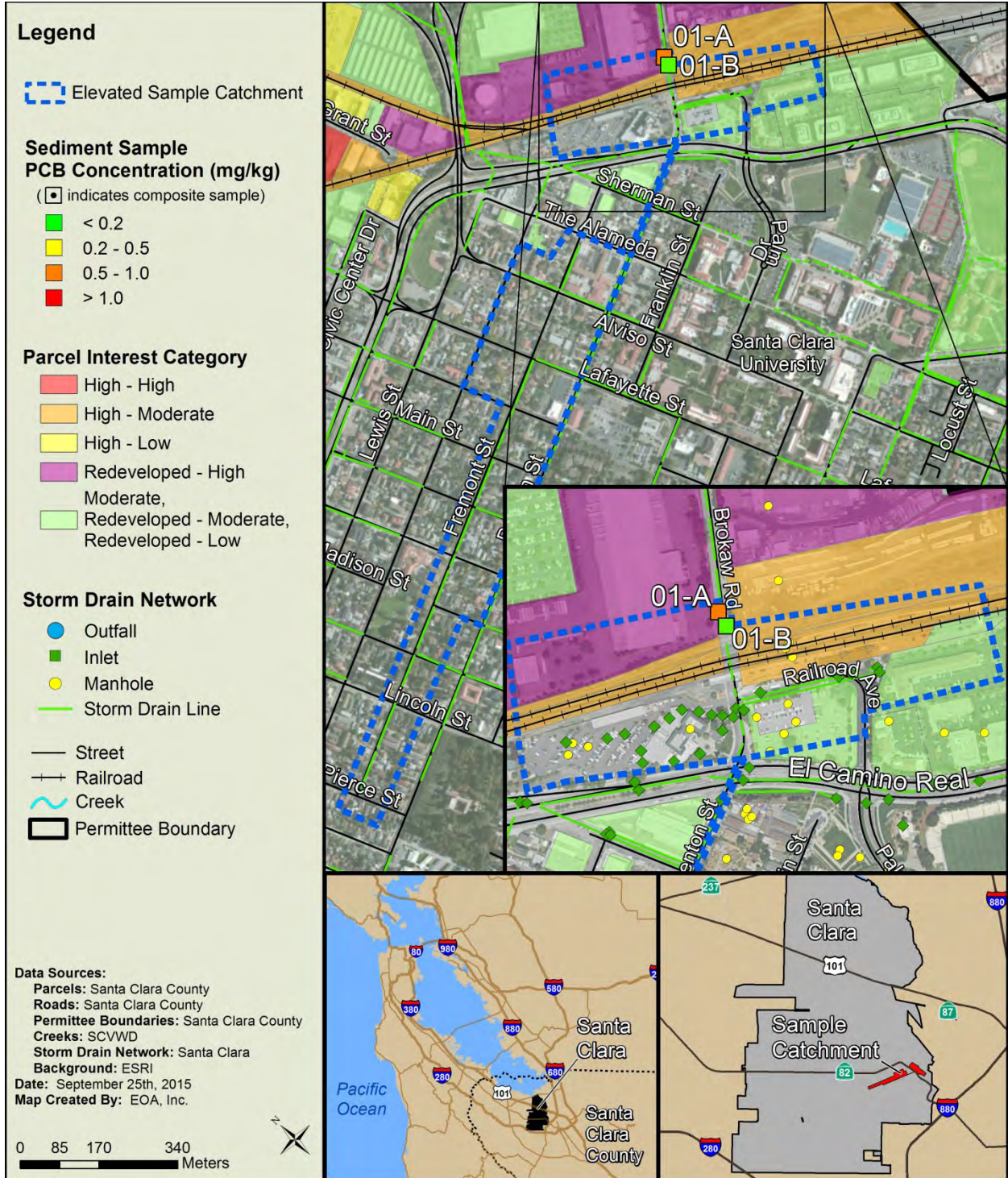


Figure C-6. Map of the approximate catchment area for elevated sample SC-SCL-01-A, City of Santa Clara.

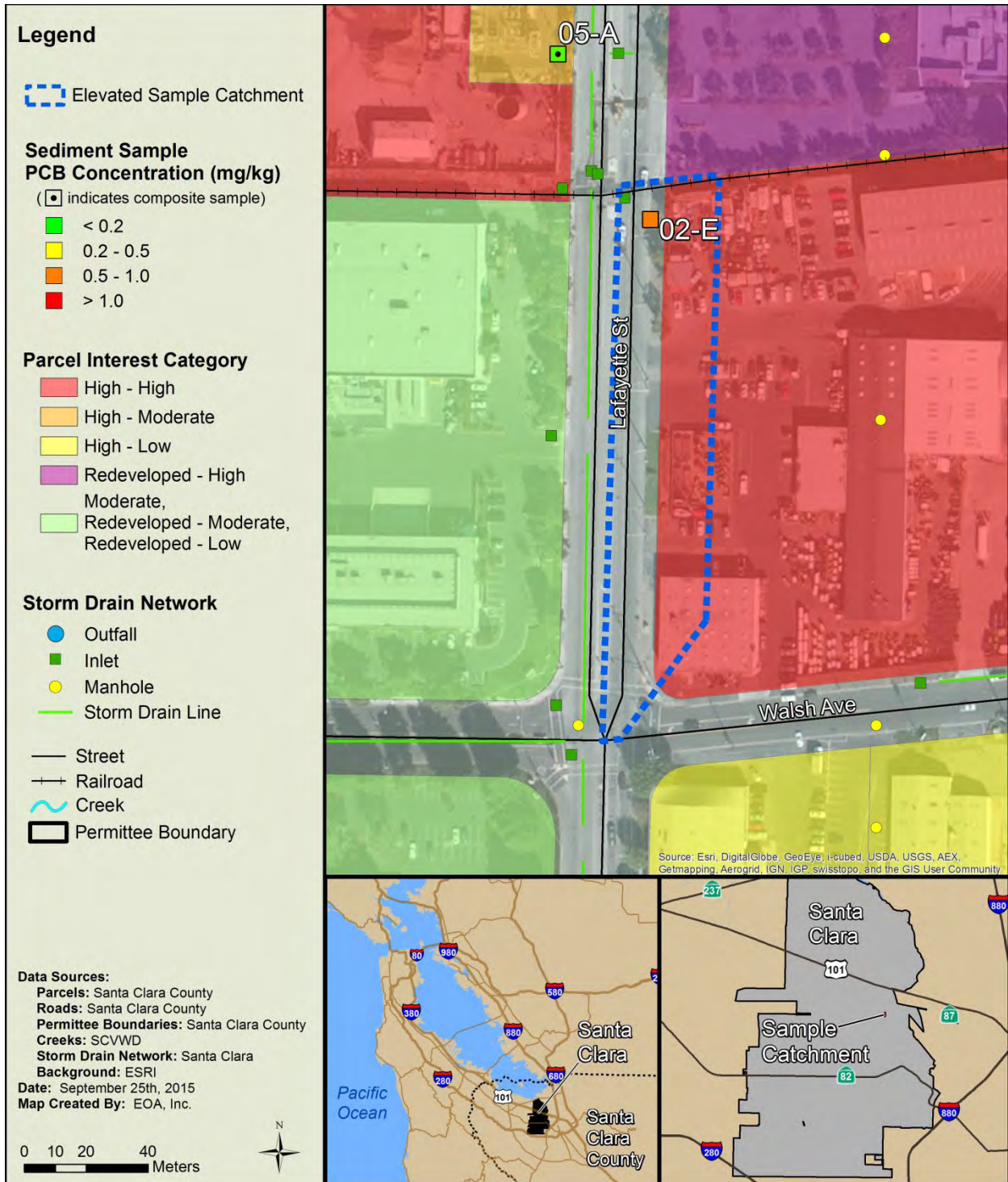


Figure C-7. Map of the approximate catchment area for elevated sample SC-SCL-02-E, City of Santa Clara.

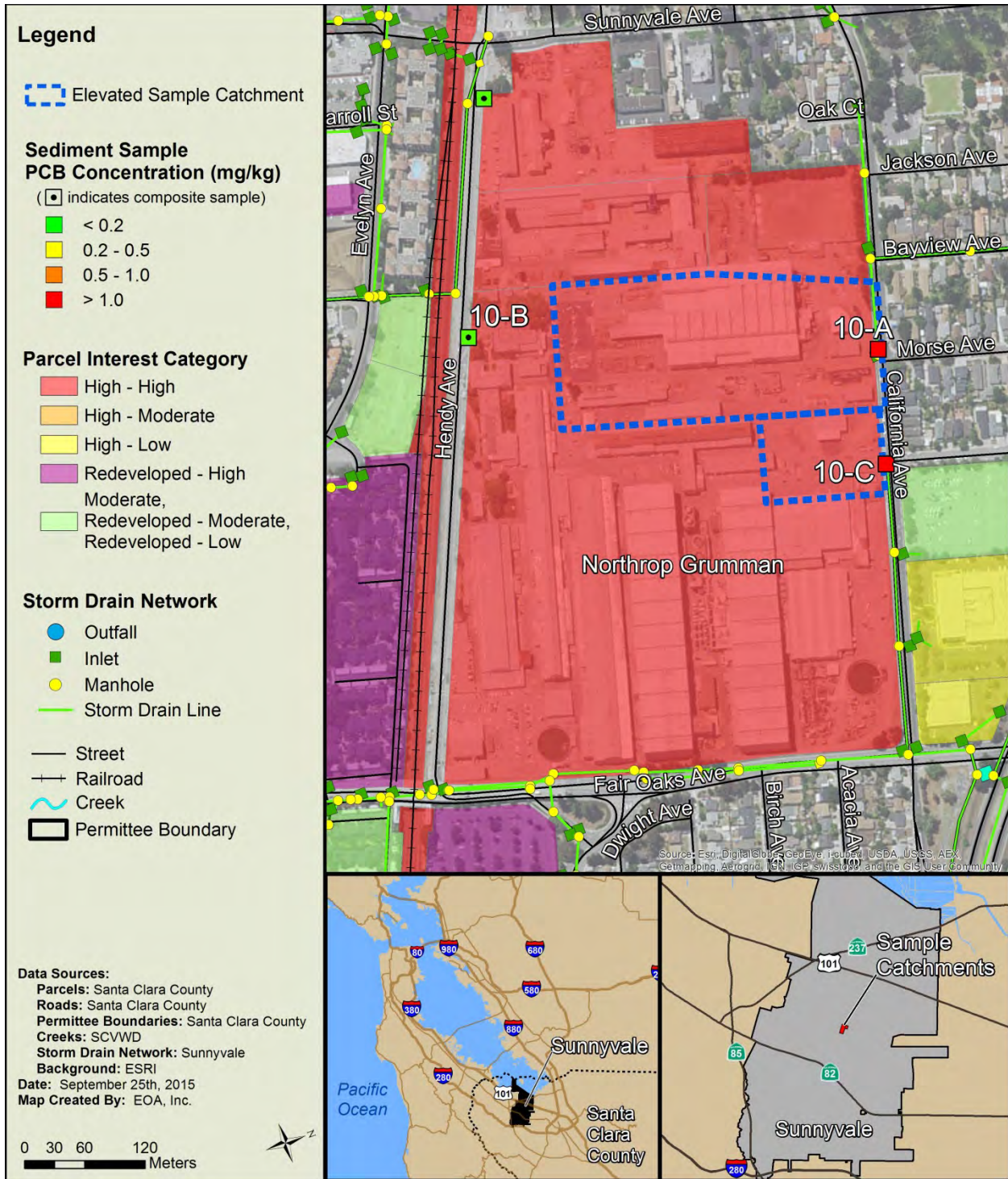


Figure C-8. Map of the approximate catchment areas for elevated sample SC-SNV-10-A and SC-SNV-10-C, City of Sunnyvale.

Appendix D


Blank KLI Sampling Form

PCB/Hg Sampling Form				Contractor:	
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City:	Date (mm/dd/yyyy): / /	Personnel:
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Sample ID:	Arrival Time:	Departure Time:	*Sample Time (1st sample):
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Photos (Y / N)	Photo IDs:	GPS Device:	Address, Location, and Sketches
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Env. Conditions		WIND DIRECTION (from):		Beaufort Scale:	
SKY CODE:	Clear, Partly Cloudy, Overcast, Fog, Smoky, Hazy				
SITE ODOR:	None, Sulfides, Sewage, Petroleum, Smoke, Other _____				
PRECIP:	None, Fog, Drizzle, Rain				
PRECIP (last 24 hrs):	None, Unknown, < 0.1", 0.1 - 0.25", > 0.25"				
SOIL ODOR:	None, Sulfides, Sewage, Petroleum, Mixed, Other _____				
SOIL COLOR:	Colorless, Green, Yellow, Brown				
SOIL COMPOSITION:	Silt/Clay, Sand, Gravel, Cobble, Mixed, Debris				
SOIL POSITION	Submerged, Exposed				

Samples Taken	Field Dup at Site? YES / NO: (create separate datasheet for FDs, with unique IDs (i.e., blind samples) Field Dup ID:
----------------------	--

COLLECTION DEVICE:	Equipment type used: Scoop (SS / PC / PE), Core (SS / PC / PE), Grab (Van Veen / Eckman / Petite Ponar), Broom (nylon, natural fiber)
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SubSampleID	MH / Inlet / Street Dirt / Other	Depth Collec (cm)	Composite / Grab (C / G)	# Containers Filled	PCBs	Hg	Other	Latitude (dd.ddddd)	Longitude (ddd.ddddd)

SITE/SAMPLING DESCRIPTION AND COMMENTS:
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Appendix E

Blank EOA Sampling Form

POC Sampling Form

Staff: _____ Sample ID: _____

City: _____ Date: _____ Time: _____

Photo IDs: _____

Address 1: _____ Latitude: _____

MH / CB / SED / Other: _____ Subsample ID: _____ Longitude: _____

Address 2: _____ Latitude: _____

MH / CB / SED / Other: _____ Subsample ID: _____ Longitude: _____

Address 3: _____ Latitude: _____

MH / CB / SED / Other: _____ Subsample ID: _____ Longitude: _____

Address 4: _____ Latitude: _____

MH / CB / SED / Other: _____ Subsample ID: _____ Longitude: _____

Composite: yes / no Field Duplicate: yes / no ID: _____ Time: _____

Notes: (Electrical/Heavy equipment, drums, scrap metal, oil stains, sediment transport, drainage patterns, etc.)

Sketch: (include north arrow, street names, inflow/outflow pipes with diameters, private inlets, flow directions, etc.)