AB 617 COMMUNITY AIR MONITORING PLAN (CAMP) FOR THE SOUTHEAST LOS ANGELES COMMUNITY

South Coast Air Quality Management District

October 2020

Version 1

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1 Background

Community air monitoring plays an important role in supporting effective actions to reduce emissions and exposure within communities that are disproportionally impacted by air pollution. Assembly Bill (AB) 617, passed by the California legislature in 2017, is a law that focuses on reducing air pollution in Environmental Justice (EJ) communities throughout the State. This law provides an opportunity for the South Coast Air Quality Management District (South Coast AQMD) to further address community air quality issues in disadvantaged areas. For each community approved by the California Air Resources Board (CARB), South Coast AQMD staff will form and work with a community steering committee (CSC), local stakeholders, and members of the public to assess their major air pollution concerns and propose specific action strategies. Depending on the specific needs of each community, South Coast AQMD staff will develop and implement a tailored Community Emissions Reduction Plan (CERP) and a Community Air Monitoring Plan (CAMP). South Coast AQMD staff will work with CARB and other stakeholders to implement the CERP and CAMP to reduce local air pollution emissions and benefit public health.

The main purpose of this CAMP is to outline the air monitoring that will be conducted to address each community's top priority air quality issues and support effective implementation of the CERP. This could include augmenting ongoing and/or upcoming community-led and agency-led air monitoring programs and conducting new monitoring activities in various geographical areas within our jurisdiction to enhance our understanding of air pollution impacts in Environmental Justice (EJ) communities. A variety of air monitoring approaches will be used, and the objectives, tools, and stakeholders involved will differ from community to community and/or from air quality priority to priority.

This document only discusses the CAMP for the Southeast Los Angeles (SELA) community.

2 Community Air Monitoring Plan Objectives

This plan has been developed for the SELA community through close collaboration between the CSC and South Coast AQMD staff. It outlines the objectives and strategies for monitoring air pollution in SELA based on the air quality priorities identified by the CSC in support of the effective implementation of the CERP.

This CAMP is a flexible document that identifies specific air monitoring objectives and strategies for SELA which can be updated and modified based on community feedback, air monitoring findings, and knowledge that will be gathered through the process of implementing AB 617 in this community. Comments on the plan are welcome, and South Coast AQMD staff appreciates all the input provided by the CSC and members of the public. South Coast AQMD staff will work with the CSC to determine if and when these updates and modifications should be made.

Community air monitoring in SELA is designed to enhance our understanding of air pollution emissions from the sources of interest, potential impacts in nearby communities, and typical levels of the pollutants of interest in the community. The monitoring strategies shall meet one or more of the following basic requirements depending on the monitoring purpose:

- Provide air pollution data to the community in a timely manner;
- Support compliance and planning activities for emission source or community emissions reduction strategies. Data from monitors of various types can be used in the development of strategies and rule development. At monitoring locations near major air pollution sources, source-

oriented monitoring data can provide insight into whether an industrial source may be contributing to increased air pollution levels near the facility;

- Support air pollution and health research studies. Air pollution data can be used to supplement data collected by health researchers, atmospheric scientists, and for monitoring methods development;
- Look at air pollution levels at the community level to provide information on and guidance for further action, if necessary; and
- Provide information on when a monitoring study can be considered complete so that resources can be reallocated to a different project.

This CAMP outlines the recommended monitoring methods, approaches and strategies that will be used to support actions towards a better understanding of air quality conditions, emission and exposure reduction to air pollution, and an unbiased assessment of the effectiveness of most CERP measures over time. The air monitoring activities proposed here will complement and enhance existing South Coast AQMD and community-led programs. Overall, this CAMP has been developed to generate data to satisfy the recommendations provided in CARB's "Community Air Protection Blueprint" [1] and support a variety of actions, including:

- Identifying sources, categories of emissions, and emission types contributing to air pollution burdens within the community to support the implementation of the CERP;
- Refining air quality information at the community level to assess progress towards improved air quality and measure the effectiveness of the CERP;
- Providing real-time air quality data to inform community members of current conditions within the community and support exposure reduction strategies by informing community's daily activities and school flag programs, and protect children during school activities; and
- Providing air quality information to support public health research at the community level.

3 Purposes of Community Air Monitoring

The ongoing emphasis of the AB 617 program on community-level assessment through enhanced air monitoring and new emissions reporting requirements will continue to improve our understanding of specific air pollution problems in coming years, which will support the implementation of effective emissions reduction strategies (through the CERP) designed to improve local air quality.

The purposes of air monitoring that are specific to this CAMP include the collection of air pollution data for both short- and long-term air quality assessments. A variety of air monitoring approaches will be used for this purpose. These consists of a combination of real- (or near-real-) time and time-integrated measurements to provide information on the air pollution impact caused by specific emission sources identified in SELA, and compare air pollution levels measured in previous health studies, well-known health benchmarks and health reference standards. This comparison and analysis is intended to provide the basis for additional actions, including, but not limited to, additional monitoring, enforcement actions, and other emission and/or exposure reduction efforts. Specific purposes of air monitoring are described below.

[1] CARB (2018) *Community Air Protection Blueprint*. Available at: https://ww2.arb.ca.gov/our-work/programs/community-air-protection-program/community-air-protection-blueprint

Baseline Monitoring is used to assess the effectiveness of the strategies implemented through the CERP specific measures and metrics to track air quality and exposure progress over time. AB 617 requires that the CERP results in tangible emissions and exposure reductions, which can be demonstrated based on monitoring or other data. Therefore, while the CERP and CAMP are separate documents, they work hand-in-hand to help achieve emission reductions for specific source categories, and track emissions reductions for specific air quality concerns that have been identified by the community.

It is important to note, however, that as new air pollution emission strategies are developed and implemented, it may take several years to see significant reductions in exposure that can be measured using ambient air in the community. It may also take some time to deploy the monitoring systems necessary to measure these changes and to develop and run community-specific air quality models. These air quality and exposure metrics are, therefore, most appropriate for a final assessment at the five-year milestone mark, though interim assessments and monitoring will be done to help inform all stakeholders.

Continuation of these measurements will provide valuable data for the overall assessment of baseline conditions to evaluate the regional air toxics contribution in SELA under the AB 617 program and the effectiveness of various CERP measures, and to provide information on air toxics trends over the course of the AB 617 Program. South Coast AQMD staff will conduct monitoring surveys in the community and will work with the CSC to identify a representative location within the community boundaries for these measurements.

Concentration Mapping refers to air monitoring procedures designed for measuring the concentration of target air pollutants along the driving route in the survey area. The main applications of concentration mapping include, but are not limited to, finding hotspots of air pollution, assessing the community exposure levels near known emission sources, and/or quantifying the relative contribution of source emissions to local air quality. For these applications, the survey area should include sufficient spatial range to illustrate changes in pollutants' concentrations.

For concentration mapping applications, the measured pollutants levels and their spatial variability may vary substantially depending on the time of the measurements (e.g. morning rush hour vs. late afternoon) and meteorology (e.g. atmospheric boundary layer height and wind speed/direction during different times of the day and seasons). In addition, if the emissions from the potential sources are episodic in nature, they may not be detected during a single drive-by survey even under favorable wind conditions. Therefore, in order to produce stable and representative air pollution maps, repeated monitoring passes during different times of the day under a variety of meteorological conditions are required. Moreover, to correct for temporal biases that result from the slowly varying background concentrations over the course of a day, background data from fixed monitors may be used to develop a time-of-day adjustment factor.

Source Identification refers to air monitoring procedures designed for identifying the location(s) of previously unknown or specific sources of emissions (e.g. fugitive dust from an industrial source, leaks from oil/gas production and drilling activities), determining the contribution of different potential emission sources to the measured ambient levels, and informing subsequent air monitoring or enforcement actions.

Source Characterization refers to air monitoring procedures focus on improving our understanding of the location, variability and composition of known or previously unidentified emission sources, either by direct measurements using in-situ monitors on mobile platforms or through the acquisition of secondary data/information (e.g. infrared camera video, canister grab samples, etc.) while tracking the pollution plume to possibly locate the potential source, or during follow-up investigations. It should be noted that mobile platforms can also be used to conduct stationary measurements at appropriate locations (e.g., downwind of the emission source) for short or long periods of time (e.g., minutes to a few hours, as appropriate) to better characterize the emissions from the identified sources.

Compliance and Health-Based Information refers to air monitoring data that can be used to support regulatory and enforcement actions and/or provide the basis for comparing against air pollution standards and known health thresholds. To achieve the data quality that is needed to support these actions, air monitoring methods and equipment that are capable of producing data of appropriate quality shall be selected.

Community Engagement and Educational monitoring is primarily achieved by working with community members to deploy low-cost sensors for measuring certain particle and gaseous pollutants. Sensors have the potential to provide meaningful local air quality data as part of a coordinated, well-designed community-led air monitoring. They can be used alone or within a network to engage and educate citizen scientists and community members in different aspects of the air monitoring process.

Emissions Estimation is the approach used to estimate source emission rates usually from a remote vantage point. In this approach, the emission rates are estimated using gas column measurements by remote sensing instruments (onboard Mobile Platform #2 discussed later in the CAMP) combined with wind data integrated across plume transects at various locations. For emissions estimation applications, the basic premise is usually to characterize the source by encircling or "boxing" the source (i.e. moving the mobile platform upwind and downwind of the source during multiple passes).

4 Existing and Ongoing Monitoring Programs in the SELA Community

South Coast AQMD staff has conducted air quality measurement activities in the SELA community in the past. Below is information regarding existing and upcoming rules, projects, and programs at South Coast AQMD that will focus on air monitoring from a variety of sources within the SELA area. The monitoring data that will be collected from these other initiatives will be used to complement the data that will be gathered during AB 617 and will greatly enhance our understanding of the impact that industrial emissions have on air quality in this community. The CAMP is developed based on sound scientific principles and successful practices that build from knowledge gained through the existing and upcoming community air monitoring programs described below. This approach allows for the ability to accommodate the diversity of air monitoring objectives in each community.

4.1 Air Monitoring Around Exide Technologies

The Exide Technologies plant in Vernon (located north of the Bell, Bell Gardens, and Cudahy community) was a secondary lead smelting facility that recovered lead from recycled lead acid batteries (such as automotive batteries). When this plant was in operation, South Coast AQMD staff conducted multiple investigations, ambient air monitoring efforts, and series of source tests to measure the emissions of lead, arsenic, and other metals from Exide's stacks, which resulted in several violations of the ambient air quality standards and South Coast AQMD rules. The ambient monitoring has been conducted in close proximity to the Exide plant by the South Coast AQMD and an Exide contractor. Until the end of 2011 ambient monitoring results[2] showed that average lead concentrations consistently exceeded both the Federal Standard for lead and the limit established by South Coast AQMD's Rule 1420.1 - Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities (0.15 µg/m^3). However, the monitoring data has been showing an overall decreasing trend in lead levels since the adoption of Rule 1420.1 in 2008. Lead concentrations measured at all monitoring sites around Exide have been below the Federal 0.15 µg/m^3 3-month average limit since all requirements of Rule 1420.1 became fully effective in January 2012. Additionally, Rule 1420.1 has a 30-day average limit for lead of 0.100 µg/m^3, and a daily limit for arsenic of 10 ng/m^3. In 2010, a health risk assessment based on source testing results found the average arsenic levels (the main risk driver for cancer risk from this facility's emissions) were consistently higher than the average arsenic levels measured during the Multiple Air Toxics Exposure Study (MATES IV) study (see below). As part of AB 2588 (Air Toxics "Hot Spots" Information and Assessment Act) requirements, the facility's Risk Reduction Plan was approved in March 2014, and an amendment to Rule 1420.1 was adopted in January 2014 to further control toxic emissions from the facility. On July 10, 2014, the Hearing Board issued an Order for Abatement requiring Exide to remain shut down, pending installation of upgrades to its air pollution control systems. On April 7, 2015, Exide notified South Coast AQMD of its intent to permanently close the facility as part of a Non-Prosecution Agreement with the U.S. Department of Justice (DOJ) that came as a result of a Department of Toxic Substance Control (DTSC) investigation. Based on this decision, on June 2, 2015, the Hearing Board found good cause to terminate the Order for Abatement.

The facility then proceeded with a Closure Plan, which was approved by DTSC in 2016. Since then, under the oversight of DTSC, Exide has been remediating the historic contamination at Vernon site. Fenceline ambient air monitoring has continued to be conducted by Exide at five fenceline monitors, plus three off site monitors operated by South Coast AQMD. Results for these monitors have demonstrated compliance with regulatory limits for lead and arsenic during this closure process.

In early 2020, Exide filed for liquidation bankruptcy to abandon all of its North American assets, including the Vernon site. During the public comment period for this process, South Coast AQMD submitted a comment to the U.S. Attorney General's Office to oppose this decision and request that the DOJ hold a public hearing to provide the public with information on the proposed abandonment and orphaning of the Exide facility in Vernon and to allow for full community engagement[3]. The court approved the bankruptcy in October 2020, and control of the Vernon site will be transferred to DTSC. The South Coast AQMD is still operating three lead and arsenic monitors at different distances from Exide Technologies facility's perimeter. In addition, DTSC has executed contracts to continue to operate the five fenceline lead monitors near the property line to comply with the monitoring requirements of Rule 1420.1. This monitoring helps capture data on emissions or transport of re-suspended particles containing lead from the Exide facility. DTSC is evaluating options to continue the remediation of the Vernon site. The project involving the remediation of soil in the residential areas affected by emissions from Exide was not affected by the court's decision, and that clean-up effort is continuing.

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[2] Exide Technologies Updates: http://www.aqmd.gov/home/news-events/community-investigations/exide-updates

[3] http://www.aqmd.gov/docs/default-source/exide/letter-to-doj-10-6-2020.pdf?sfvrsn=8

4.2 Multiple Air Toxics Exposure Study (MATES)[4]

The MATES program is an Environmental Justice initiative that provides information on air toxic pollutants monitored at about ten site locations throughout the Basin for a one to two-year period. Over 30 air pollutants are measured at each fixed station, including gaseous and particulate air toxics. These measurements allow tracking the ambient concentration of the measured pollutants over time. MATES also include the development of an air toxics emissions inventory, and modeling activities to characterize health risks from long-term exposure to regional air toxics levels in residential and commercial areas. The most recently completed MATES study (MATES IV) was conducted from 2012-2013.

Monitoring and sampling activities for MATES V were conducted from April 2018 to May 2019, and a report to summarize the findings of this fifth chapter of MATES is currently being drafted (as of October 2020). MATES V results along with some of the measurement data that will be gathered within the boundaries of SELA as part of AB 617, will provide useful air toxic information for this community. One of the MATES V fixed monitoring stations was located at the Gage Middle School at 2975 Zoe Street, Huntington Park 90255, which is within the SELA community boundary.

As the MATES is repeated periodically it can provide information on air toxics trends over the course of the AB 617 Program and be used for tracking the effectiveness of emission reduction strategies. More information on MATES can be found at: http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies.

4.3 U.S. Environmental Pollution Agency (EPA) Science to Achieve Results (STAR) Grant Program

In 2016 the South Coast AQMD was awarded a U.S. EPA STAR Grant to "Engage, Educate, and Empower California Communities on the Use and Applications of Low-cost Air Monitoring Sensors." This study has been providing local California communities with the knowledge necessary to appropriately select, use, and maintain low-cost air pollution sensors and to correctly interpret sensor data. A total of ten communities in the South Coast Air Basin were selected to use the sensors, including an area in South Gate within the boundaries of the SELA community. Here South Coast AQMD staff has been collaborating with California Environmental Health Action Team (CEHAT; a local community group) to deploy 18 sensors for measuring $PM_{2.5}$, O_3 and NO_2 near specific sources of air pollution and better understand the spatial and temporal variations of these pollutants. These sensor network has been in operation since early 2017 and is still collecting data. Regular public meetings and other outreach activities have been organized in South Gate to educate the public on the capabilities of these sensors and their limitations. The results of this innovative work will be presented to the CSC and members of the public to explore the possibility of expanding the scope of the STAR Grant to include goals and objectives that are specific to the AB617 program.

5 Air Monitoring Equipment and Methods

Selecting a scientific air monitoring approach and appropriate monitoring methods and equipment is crucial to the success of the CAMP and to satisfy community specific air monitoring objectives. SELA covers a large geographical area that is affected by a variety of air pollution sources. Consequently, multiple air

[4] Multiple Air Toxics Exposure Study (MATES): http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies

monitoring methods are necessary to address the community's air quality priorities. South Coast AQMD staff will use a combination of existing and new air monitoring equipment to conduct air monitoring to support the implementation of community-driven and measurement-based emission and exposure reduction strategies. These methods include mobile and fixed-site air monitoring that can be supplemented by low-cost air quality sensors. Mobile air monitoring can be conducted using real-time instruments to allow for wide scale community air pollution mapping, help identify air pollution hotspots and provide more detailed information about air pollution levels at specific locations, at specific times. Fixed site air monitoring can be strategically placed at specific locations near one or more air pollution sources of interest to fully characterize emissions in the community and assess residents' exposure to air pollution. Mobile and fixed air monitoring can be further supplemented through the deployment of low-cost air quality sensors to enhance the geographical coverage in the community and provide real-time air pollution information on a limited number of species (e.g., particulate matter, ozone and nitrogen dioxide).

5.1 Fixed (Stationary) Monitoring

Fixed air monitoring is conducted by placing an air monitor or a suite of air monitors at strategic locations to satisfy community specific air monitoring objectives. The fixed monitoring locations are determined after evaluating a variety of site selection criteria and will depend on the ability to obtain appropriate site access permissions. Some of these criteria include but are not limited to: site suitability for air quality monitoring; proximity to emission source(s) and/or receptors; infrastructure, access and safety; and long-term availability.

The most common monitoring methods that are used for AB 617 community air monitoring applications using fixed monitoring can be categorized as: *Established and regulatory monitors*, *research-grade monitors*, and *low-cost sensors and sensor networks.*

5.2 Fixed Monitoring with Established and Regulatory Monitors

South Coast AQMD monitors and conducts laboratory analyses to satisfy the requirements of federal and state programs using established and regulatory monitoring methods. This includes collection of time-integrated samples (often followed by subsequent chemical analysis, depending on the monitoring purpose), as well as operation of continuous monitors. The selection of air monitoring method will have to satisfy both the short- and long-term objectives of monitoring. Time-integrated samples are typically collected over a 24-hour period and can help assess trends over the long-term, detect typical urban variations of the target pollutant(s), and determine potential air quality impacts at specific locations. Continuous monitoring is sometimes necessary to evaluate the immediate impact of emissions, identify sources of pollution, or provide high time-resolution data in near real-time (e.g. hourly). The length of time for which these fixed monitoring trailers will be deployed depends on the specific air monitoring objectives for the area of interest but could vary between several weeks and several months, or until a higher priority area has been identified by the CSC within the SELA community.

Well established and regulatory monitors can be installed inside air monitoring stations or in trailers to conduct measurements at strategic locations (e.g. in an easily accessible and safe area downwind of an identified air pollution source) in the community to provide the basis for comparing against air pollution standards and known health thresholds, assessing regional air quality and community impact, and tracking the progress of emission reduction strategies. The monitoring stations and trailers will also be equipped with wind measurement systems to better characterize and potentially locate the source(s) of the measured air pollutants.

When applicable, battery-operated portable monitors can be deployed near (e.g. upwind and downwind) a potential emission source to determine its contribution to the observed ambient levels. This type of monitoring can help characterize the emissions from a specific source and gather insight into the specific process(es) that are leading to those emissions.

Established and regulatory monitors can provide the basis for comparing the measured levels against known health thresholds with a high level of confidence. They can also provide actionable data for comparing the measured levels against rules limits and requirements in support of compliance and enforcement actions. The Quality Assurance Project Plan (QAPP) included as part of the CAMP, outlines the procedures that will be taken to ensure that the fixed station data that will be collected as part of this project is of the appropriate quality and meets the project requirements.

5.3 Fixed Monitoring with Research-Grade Monitors

New technological advances are transforming and revolutionizing air quality measurements. South Coast AQMD staff is actively leading research to further develop, evaluate, and implement the use of a wide array of new air quality monitoring approaches and technologies. South Coast AQMD continuously evaluates advanced air monitoring technologies and methods to enhance its capability for air quality investigations and expand the air monitoring and analysis toolbox. These efforts are mainly focused on the use of instrumentation for real-time or near real-time measurements of particle and gaseous pollutants with a particular focus on air toxics. This is necessary for achieving an accurate characterization of potential health impacts and for facilitating the identification and apportionment of emission sources. More established monitoring methods (e.g., those used for regulatory purposes) used for air toxic measurements are generally based on the collection of 24-hour integrated average samples, which are then analyzed in the laboratory using robust but labor-intensive analytical procedures. As a result, samples may take weeks to process and results are often delayed and not readily available. Moreover, time integrated (e.g., a single sample collected over a continuous 24-hour period) samples do not fully account for shifts in environmental conditions, such as short-term spikes in ambient concentrations of the pollutant(s) of interest. Air quality is dynamic and complex, and often exhibits large temporal and spatial variations due to changes in meteorological conditions, local topography, and source emission rates, which contribute to variations in emissions, transport and deposition of air pollutants. Advances in measurement technology continue to provide innovative, reliable and practical solutions to quantify the ambient levels of gaseous and particulate air pollutants over averaging times ranging from seconds to hours. The new generation of high-time resolution monitors can capture the temporal variability of air pollutants continuously and in real- or near real-time. However, these instruments are expensive and require specific siting and data infrastructure, as well as additional time for data validation and analysis.

Overall, research-grade monitors can be used for different purposes in AB 617 community air monitoring projects, and are usually employed when trying to measure air toxic pollutants that are more difficult to monitor with more traditional air monitoring techniques and when monitoring goals and objectives require simultaneous measurements of various species in real- or near real-time.

5.4 Low-Cost Air Quality Sensors

With recent advancements in sensor technology, low-cost devices for measuring particle and gaseous pollutants are now available for community monitoring. For the purpose of most AB 617 Community Air Monitoring projects, air quality sensors will be used as stationary monitors to characterize the spatial and temporal variability of the pollutant(s) of interest. Stationary sensors may also be used for community near-source monitoring, community education and outreach, and hotspot identification. Low-cost sensors are capable of providing real-time air quality information with spatial and temporal resolution that is often greater than what can be achieved by other, more established monitoring technologies. Although sensors offer great potential, they can only measure a limited number and types of pollutants (criteria pollutants such as particulate matter, ozone and nitrogen dioxide, but not air toxics) and their accuracy, reliability and overall performance vary widely and have a lot of uncertainty in the results. Despite these limitations, sensors can be used effectively for community monitoring, provided their performance has been well characterized prior to their use, and is appropriate for their intended application. For the purpose of this CAMP, air quality sensors will mainly be used to supplement data from fixed monitoring stations, to characterize the spatial and temporal variability of the pollutant(s) of interest, to educate the community members in the correct use and operation of this technology, and to engage them in the air monitoring process that will be developed and implemented in SELA.

Public education and outreach are important to increase the public's awareness and knowledge of air quality in their communities. Low-cost sensors and sensor networks are excellent tools to engage and empower local community members in the various aspects of air pollution monitoring, while gathering hyper local air quality information in the area(s) of interest. Where there is community interest to learn more about sensors, South Coast AQMD staff will conduct training workshops to talk about the appropriate use and operation of this technology and how to interpret sensor data. Through its newly developed sensor library program, the South Coast AQMD will be able to provide sensors that community members can use for a limited period of time (e.g., weeks or months depending on needs) to address specific community needs and concerns, better characterize air pollution at the neighborhood level, increase community engagement and support the effective implementation of the CERP. Through this program, South Coast AQMD staff will work with the CSC to build a community-driven sensor network in SELA. South Coast AQMD staff has extensive experience working with communities in the South Coast Air Basin and throughout the State of California in the development, operation and maintenance of low-cost sensor networks for air quality measurements.

Additional information on commercially available sensor technology can be found on South Coast AQMD's Air Quality Sensor Performance Evaluation Center (AQ-SPEC) website[5]. AQ-SPEC is the most comprehensive sensor evaluation program in the Unites States and its main goal is to provide citizen scientists and other sensor users with unbiased information on sensor performance based on rigorous field and laboratory testing.

5.5 Mobile Platforms

Ambient levels of air pollutants can vary substantially within short distances in areas with multiple sources of air pollution. One of the strategies employed by the South Coast AQMD to capture the spatial variability of air pollutants and identify/quantify the major emission sources in communities involves the deployment of high-time resolution instruments on mobile platforms and collect air quality data while in

[5] Air Quality Sensor Performance Evaluation Center (AQ-SPEC): http://www.aqmd.gov/aq-spec

motion. This strategy can provide snapshots of air pollutant concentrations at a specific location and time and is ideal to survey vast areas in a relatively short period of time. The ability of the mobile measurement platforms to drive in and around a community and follow the emission plumes as they are transported through the neighborhood by wind can be critical for hotspot identification. Mobile measurements can be conducted using real-time instruments to allow for large-scale community air pollution mapping at a fraction of the cost of conventional approaches and at a higher spatial and temporal resolution. Mobile platforms are equipped with robust monitoring technologies (established and regulatory monitors and/or research-grade monitors) to provide on-site, high quality, analytical capabilities. This will allow South Coast AQMD staff to locate pollution hotspots for subsequent fixed monitoring, identify potential sources of emissions, better understand local exposure levels, and track changes over time. Mobile monitoring also allows for rapid deployments and helps South Coast AQMD staff to react quickly in response to emerging air quality issues.

Mobile monitoring also provides guidance on where to redirect focus and resources for subsequent and more detailed stationary monitoring. Moreover, mobile measurement platforms can be used to take stationary measurements for a relatively short period of time, when appropriate (e.g. for source characterization purposes).

SELA includes large and diverse industrial areas with a multitude of emission sources (e.g. truck traffic, railyard, metal processing facilities, rendering facilities, and other industrial sources). Areas that have such clustering of diverse sources are difficult to study and characterize using conventional air monitoring approaches (e.g. fixed site). For the purpose of AB 617 implementation in the SELA community, mobile platforms will be used on a recurring basis to identify persistent elevated pollutant concentrations (air pollution hotspots), indicate potential contributing sources, and to track the progress towards emission reductions as actions are taken to reduce known sources of air pollution of concern. South Coast AQMD currently has four mobile platforms, each equipped with different instrumentation for the measurement of particulate and gaseous pollutants including air toxics. Mobile measurements may not be appropriate for situations in which the pollutant concentrations change significantly over time or emissions are expected to be intermittent.

The procedures that will be taken to ensure that the mobile monitoring data that will be collected as part of AB 617 program is of the appropriate quality and meets the project requirements is outlined in the QAPP document. Below is a brief description of each mobile platform and its capabilities:

Mobile Platform #1: This platform is equipped with a mix of regulatory and research-grade instruments to measure the mass and number concentrations of particulate matter (PM) of various sizes, black carbon (BC), nitrogen dioxide (NO_2), and methane (Table 5.1). The time-resolution of these air monitoring instruments ranges from seconds to minutes. This mobile platform is a powerful tool for identifying areas most impacted by diesel PM emissions. It can also be used to identify diesel PM hotspots, estimate the exposure impact of railyards, transportation corridors and idling spots, and to track progress of targeted emission reduction strategies.

This mobile platform is also equipped with an anemometer and a Global Positioning System (GPS) to determine wind speed and direction and to map vehicle location, speed and bearing during air quality measurements. Real-time data is logged and displayed on on-board monitors, allowing the field operator to rapidly detect potential emission sources and follow plumes of interest. It should be noted that although this platform is capable of detecting the ambient concentration of various air pollutants in real-or near-real time, it typically takes a few days to fully validate and process the collected information and visualize it for public consumption. A few pictures of this platform and the instruments configuration/set-up are shown in Figure 5.1 below.

Figure 5.1 - Pictures of Mobile Platform #1

Table 5.1 - Air Quality Monitors Installed Inside Mobile Platform #1 and Measured Pollutants

Monitor	Measured Pollutant
Teledyne (T640)	PM_{10} & $PM_{2.5}$ Mass
GRIMM (EDM 164)	PM1, PM2.5, PM10, TSP, Number Size Distribution (0.25-35 µm)
Teledyne (T500U)	NO_2
Aerosol Devices Inc. (MAGIC CPC)	Particle Number
Droplet Measurement Technologies (Photoacoustic Extinctiometer (PAX))	Black Carbon
Li-830	CO2
Li-7700	CH4

Mobile Platform #2: This platform is equipped with multiple research-grade monitors including advanced remote optical sensing (ORS) monitors that are capable of measuring the ambient concentration (and in some cases the emission rate) of a wide range of gaseous pollutants including air toxics (e.g. methane, non-methane VOCs, NO_2, SO_2, NH_3, benzene, toluene, ethylbenzene and xylenes; see Table 5.2) with time resolutions ranging between 1 and 30 seconds. Modern ORS techniques offer unique capabilities for monitoring trace gas emissions from point and area sources in near-real time. They are especially valuable for identifying leaks from fugitive emission sources, which are often extremely challenging to spot and/or quantify. This mobile platform is also equipped with a GPS for real-time recording of the position of the vehicle and onboard monitors for real-time data analysis and visualization. A Light Detection and Ranging (LIDAR; which provides vertical wind profiles) instrument for wind measurements is often deployed in conjunction with this vehicle for more accurate estimations of emission rates of VOCs from refineries and other industrial facilities. This state-of-the-art mobile laboratory will be utilized for accurate characterization of facility-wide emissions from industrial sources of VOC emissions, leak detection and follow up, concentration mapping, and assessment of community exposure to air toxics. Although this platform is capable of detecting the ambient concentration of various air pollutants in real- or near-real time, it takes a few days to fully validate and process the collected information and visualize it for the public. Pictures of this platform and of its instrument configuration/set-up are shown in Figure 5.2.

Figure 5.2 - Picture of Mobile Platform #2

Table 5.2 - Air Quality Monitors Installed Inside Mobile Platform #2 and Measured Pollutants

Monitor	Measured Pollutant
Solar Occultation Flux (SOF)	Total Alkane, Carbon-number, Alkenes, NH_3
Sky Differential Optical Absorption Spectroscopy (SkyDOAS)	NO_2, SO_2, HCHO
Mobile Extractive Fourier Transform InfraRed (MeFTIR)	Alkane, CH_4, C_2H_4, C_3H_6, C_4H_8, NH_3, CO, CO_2, N_2O
Mobile White Cell Differential Optical Absorption Spectroscopy (MWDOAS)	Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)

Mobile Platform #3: This platform is equipped with a state-of-the-art Proton-Transfer-Reaction – Time-of-Flight Mass Spectrometer (PTR-ToF-MS) capable of simultaneous real-time monitoring of hundreds of volatile organic compounds (VOCs) such as aromatics (e.g., BTEX), oxygenates (e.g., acetaldehyde and acetone), sulfur species (e.g., methanethiol and mercaptans), and many others, present in ambient air. This is a fast-response instrument with a time-resolution of 1 second, which has high sensitivity to low concentrations of a wide range of VOCs (limit of detection (LOD) typically 1-100 pptv). The high sensitivity and broad suite of analyte detection of this mobile platform will allow the South Coast AQMD to identify VOC hotspots and potential sources of VOCs, detect leaks, and conduct more detailed investigations of odor complaints.

Similar to the other mobile platforms, this platform is also equipped with a weather station and GPS to determine wind speed and direction, ambient temperature and relative humidity, and vehicle location and bearing. In addition, this platform is equipped with a $CH_4/CO_2/H_2O$ detector for coarse plume source identification. An onboard computer system allows for real-time data visualization to facilitate rapid detection and tracking of air pollutant plumes. Although this platform is capable of detecting signals of various air pollutants in real time, processing, validation and visualization of the data is time consuming and can take from a few days to weeks to complete.

Table 5.3 - Air Quality Monitors Installed Inside Mobile Platform #3 and Measured Pollutants

Monitor	Measurement(s)
Tofwerk PTR-ToF-MS (Vocus-S)	Variety of VOCs
LI-COR (LI-7810)	CH_4, CO_2, water vapor
AirMar (WS-220WX-RH)	Location, heading, vehicle speed, wind speed/direction, RH, temperature, pressure

Mobile Platform #4: This platform is equipped with an X-Ray Fluorescence (XRF) instrument that is capable of measuring ambient concentrations of several particulate metals (e.g., arsenic, nickel, chromium, manganese, lead, copper, etc.). The platform is also equipped with a mix of regulatory and research-grade instruments to measure the mass and number concentrations of particulate matter (PM) of various sizes, black carbon (BC), nitrogen dioxide (NO_2), and carbon dioxide (CO_2) (Table 5.4). The time-resolution of this air monitoring equipment ranges from seconds to minutes. This mobile platform can be used to identify particulate metal pollution hotspots, characterize emissions from sources of particulate metals (e.g., metal processing facilities and auto body shops), and assess the potential community impact of metal emissions. It can also be used to identify diesel PM hotspots, assess the exposure impact of railyards, transportation corridors and idling spots, and to track progress of targeted emission reduction strategies.

This platform is also equipped with an anemometer for wind measurements, a Global Positioning System (GPS), and real-time data logging capabilities. This information is used by the operator to guide the mobile measurements, as well as to position the platform such that it can best capture emissions from potential sources. Although this platform is capable of detecting the ambient concentration of multiple metals and other air pollutants in real- or near-real time, it takes a few days to weeks to fully validate and process the collected information and visualize it for public consumption. Figure 5.3 shows a few pictures of this mobile platform and the on-board instruments.

Figure 5.3 - Pictures of mobile platform #4

Table 5.4 - Air Quality Monitors Installed Inside Mobile Platform #4 and Measured Pollutants

Monitor	Measured Pollutant
Xact 625i	Particulate Metals
GRIMM (EDM 164)	PM1, PM2.5, PM10, TSP, Number Size Distribution (0.25 - 35 µm)
Teledyne (T500U)	NO_2
Aerosol Devices Inc. (MAGIC CPC)	Particle Number
Droplet Measurement Technologies (Photoacoustic Extinctiometer (PAX))	Black Carbon
Li-830	CO2
Airmar 200WX	Wind Speed and Wind Direction

6 General Community Air Monitoring Approach

Considering that the SELA community covers a vast geographical area characterized by a wide variety of air pollution sources, an approach that integrates all air monitoring strategies described earlier seems appropriate for addressing the numerous air quality concerns identified by the CSC in an effective and comprehensive manner.

The general monitoring approach in SELA consists of performing wide area surveys using mobile platforms. This will allow South Coast AQMD staff to locate and quantify potential emissions of air pollutants in/near priority areas identified by the CSC in this community. In instances where elevated levels of pollutants are detected, the plume will be mapped by driving away from the source. Further source identification can be performed by detecting the pollution plume(s) and triangulating from the plumes back to the source using wind direction to guide the measurements. When a potential source of emission is identified, mobile platforms can be used to perform stationary monitoring near the potential source to characterize the emissions. While the mobile platforms are powerful tools for surveying a large area in a relatively short period of time, as well as for comprehensive source identification and characterization, they can only provide a “snapshot” of the measured pollutants when the monitoring occurred. Therefore, mobile measurements generally do not capture daily variations in pollutant concentrations; when such data is needed, fixed air monitoring is conducted to gather further information.

When emission sources are clearly identified as high priorities for air monitoring by the CSC and an initial assessment through mobile measurements is not needed, nearby locations will be surveyed to check the possibility of conducting fixed monitoring without preliminary mobile measurements prior. Fixed monitoring allows for a more comprehensive characterization of air pollution trends over an extended period of time, but it only provides air quality information at the specific location. The use of both mobile and fixed monitoring will allow for these methods to effectively complement each other.

In addition, the deployment of low-cost sensors will augment the capabilities of fixed monitoring by expanding the spatial distribution of the air quality measurements for certain air pollutants (mainly particulate matter, ozone and nitrogen dioxide). These sensors are becoming an attractive means for governmental agencies, local environmental groups and individuals to evaluate air quality. As stated earlier, most of these devices are designed to measure criteria pollutants, although new sensors are being developed for monitoring total VOCs and BC. It should be noted that the deployment of sensor networks within the SELA community will only be considered if the pollutant(s) of interest can be measured using technology with an appropriate level of performance, as characterized by South Coast AQMD’s AQ-SPEC[5].

Table 6.1 summarizes how different monitoring approaches can be used to achieve specific monitoring objectives.

Table 6.1 - Monitoring Approaches for Satisfying Specific Monitoring Objectives

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	**Research-grade Monitors**	**Low-cost Sensors and Sensor Networks**	**Mobile Measurement Platforms**
Baseline Monitoring (BM)	Established and regulatory monitors can be installed in air monitoring stations or in trailers to conduct measurements at specific locations in targeted communities to provide the basis for comparing against standards and known health thresholds, assessing regional air quality and community impact, and tracking the progress of emission reduction strategies with a high level of confidence	Research-grade monitors can be installed in air monitoring stations or in trailers to conduct measurements at specific locations in targeted communities to provide the basis for comparing against standards and known health thresholds, assessing regional air quality and community impact, and tracking the progress of emission reduction strategies	N/A	N/A
Concentration Mapping (CM)	N/A	N/A	Low-cost sensor networks can be used to characterize the spatial and temporal variability of certain particle and gaseous pollutants within a community or a wide geographical area, and to identify pollution hotspots for certain particle and gaseous pollutants	Mobile platforms can be equipped with established and regulatory monitors and/or research-grade monitors for continuous measurements of particulate and gaseous pollutants for conducting wide area and targeted surveys, pollution hotspot Identification, or concentration mapping

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	Research-grade Monitors	Low-cost Sensors and Sensor Networks	Mobile Measurement Platforms
Source Identification (SI)	When applicable, fixed/stationary battery-operated portable monitors can be deployed near (e.g. upwind and downwind) of a potential emission source to determine the contribution to the observed ambient levels	N/A	Low-cost sensors can be deployed at the fenceline of a facility to better characterize the spatial and temporal variability of certain particle and gaseous pollutants and help identify potential sources of emissions	Mobile platforms are powerful tools that can "chase" air pollution plumes and conduct investigative monitoring to identify the specific source(s) of emission
Source Characterization (SC)	Established and regulatory monitors can be deployed at the fenceline or near a facility (e.g. downwind) to characterize the temporal variability of targeted pollutants and gather insight into the specific process(es) that are leading to those emissions	Research-grade monitors enable simultaneous real-time measurement of various analyte groups that can be deployed near a facility (e.g. downwind) to characterize the temporal variability of targeted pollutants and gather insight into the specific process(es) that are leading to those emissions	Low-cost sensors can be deployed at the fenceline of a facility to better characterize the temporal variability of certain particle and gaseous pollutants and gather insight into the specific process(es) that are leading to those emissions	Mobile monitoring can help improve our understanding of the composition and variability of known emission sources and determine emission source signatures

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	Research-grade Monitors	Low-cost Sensors and Sensor Networks	Mobile Measurement Platforms
Compliance and Health-Based Information (CHBI)	Established and regulatory monitors used for measurements conducted at specific locations (e.g. upwind and/or downwind of an emission source) can provide the basis for comparing against known health thresholds and/or rules limits and requirements with a high level of confidence	Research-grade monitors used for measurements conducted at specific locations (e.g. upwind and/or downwind of an emission source) can provide the basis for comparing against known health thresholds and/or can be used in monitoring investigations to provide information in support of compliance and enforcement activities	N/A	Mobile measurements can provide the basis for more robust monitoring, onsite measurements, and supplemental air monitoring in support of compliance and enforcement investigations
Community Engagement and Educational (CEE)	N/A	N/A	Low-cost sensors for measuring particle and gaseous pollutants are excellent education and outreach tools, and can be used alone or within a network to engage citizen scientists and community members in different aspects of the air monitoring process	N/A

Air Monitoring Purpose	Air Monitoring Approach			
	Stationary Air Monitoring			Mobile Air Monitoring
	Established and Regulatory Monitors	Research-grade Monitors	Low-cost Sensors and Sensor Networks	Mobile Measurement Platforms
Emissions Estimation (EE)	N/A	N/A	N/A	One of the mobile platforms is equipped with remote sensing instruments that can be used to estimate emission rates using gas column measurements conducted by driving the mobile platform upwind and downwind of the source during multiple passes

7 Air Quality Priorities in the Southeast Los Angeles (SELA) Community

Each community has unique air quality challenges, and local community members have first-hand knowledge of necessary information, including emission sources and sensitive receptor locations. In order to ensure a collaborative process in developing and implementing a successful CERP and a CAMP, it is critical to understand the specific air quality concerns in the SELA community. The CSC meetings provide a forum for identifying community-specific air quality priorities and potential contributing sources of air pollution to develop consensus and a shared understanding of specific air pollution challenges. In addition to the active collaboration with the CSC, the South Coast AQMD engages in a robust public process to provide opportunity for broad engagement both during CAMP development and throughout its implementation. This is achieved through periodic community meetings, workshops, South Coast AQMD Committee meetings, and South Coast AQMD Governing Board meetings. Input and feedback provided by the CSC will continue to be incorporated to improve and update the monitoring strategies throughout the implementation of this CAMP.

South Coast AQMD staff gathered information on the main CSC air quality concerns through a series of community meetings. The following categories were selected as the highest priorities: Truck Traffic and Freeways, Railyards, Rendering Facilities, Metal Processing Facilities, General Industrial Facilities, and Green Spaces. A detailed description on each of these air quality priorities is provided in the following sections.

7.1 Trucks and Freeways

The SELA community is surrounded by the Interstate 105 to the south, Interstate 110 to the west, and Interstate 710 (I-710) to the east. The I-710 is a vital transportation corridor for goods movement out of the Ports of Los Angeles and Long Beach, the busiest container ports in the United States. The SELA community has expressed concern about emissions from heavy-duty trucks traveling along the I-710 and idling near storage yards and fueling stations. Community residents are also concerned about the general traffic congestion in their neighborhoods and the potential of large warehouses or fulfillment centers opening in the future, which may also increase truck activity.

The traffic in the community consists of a high fraction of diesel trucks due to the presence of railyards, warehouses, and the associated goods movement in the area. Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is often referred to as diesel particulate matter (DPM), which is a component of PM2.5. There is no technique to directly measure DPM (a major contributor to health risk); therefore, indirect measurements based on surrogates for diesel exhaust are used, specifically black carbon (BC). DPM is typically composed of carbon particles ("soot", also called BC) and numerous organic compounds. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds (VOC) and NOx.

The monitoring strategy to study and characterize this air quality priority consists of comprehensive measurements conducted using a mobile platform capable of monitoring a wide range of particulate and gaseous pollutants, including BC, PM, ultrafine particles (UFP), and nitrogen dioxide (NO2), for purposes of Concentration Mapping, Source Identification, and Source Characterization Mobile monitoring is first conducted at locations that are identified by the CSC, such as areas with heavy-duty trucks idling near storage yards and fueling stations, as well as roadways with traffic congestion in neighborhoods, prioritized based on the available truck and traffic density information.

“Truck flow” data from the Countywide Strategic Truck Arterial Network 2015 dataset was used to screen for routes with the highest truck traffic excluding freeways (Figure 7.1). The residential areas from SCAG’s 2016 land use dataset were also overlaid on the same map to understand which truck routes are the closest to the residential areas.

“Traffic density” data from CalEnviroScreen 3.0 was also used to screen for areas with the highest traffic impacts (Figure 7.2). Based on this information, the highest traffic area in the community is around the highway I-710 on the east side of the community. It should be noted that the traffic density index provided by CalEnviroScreen 3.0 to identify areas with increased motor vehicle traffic does not separate truck traffic from general traffic and does not provide any information about idling trucks.

Based on these two maps, an approximate region was prioritized for mobile monitoring activity around the I-710 highway and Florence Ave intersection (shown as a red rectangle in figures 7.1 and 7.2) because of high truck flow, traffic density, and residential land use. This area is shown in more detail in figure 7.3.

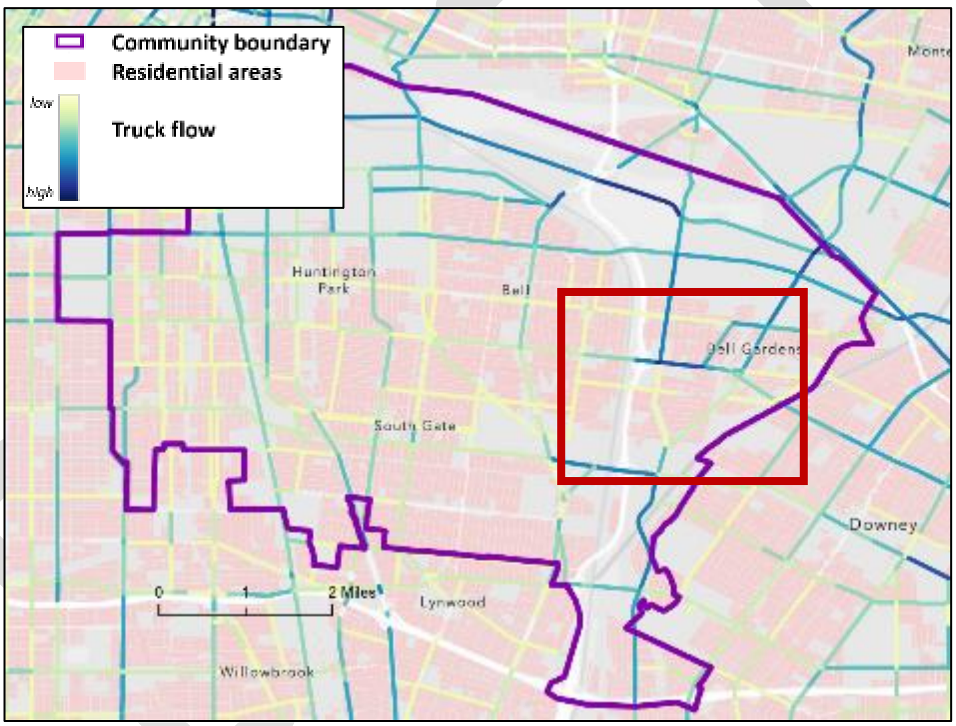

Figure 7.1 - Truck flow on the routes in the SELA community excluding freeways along with the residential areas. The red rectangle shows the higher priority area for mobile monitoring

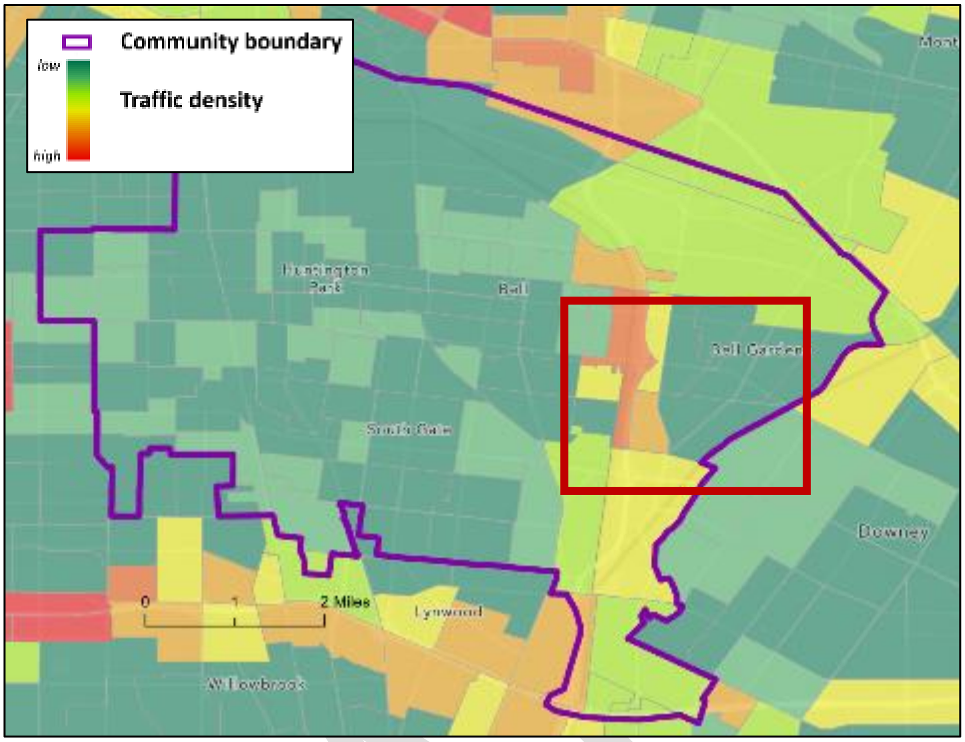

Figure 7.2 - Traffic density by CalEnviroScreen 3.0. The red rectangle shows the higher priority are for mobile monitoring

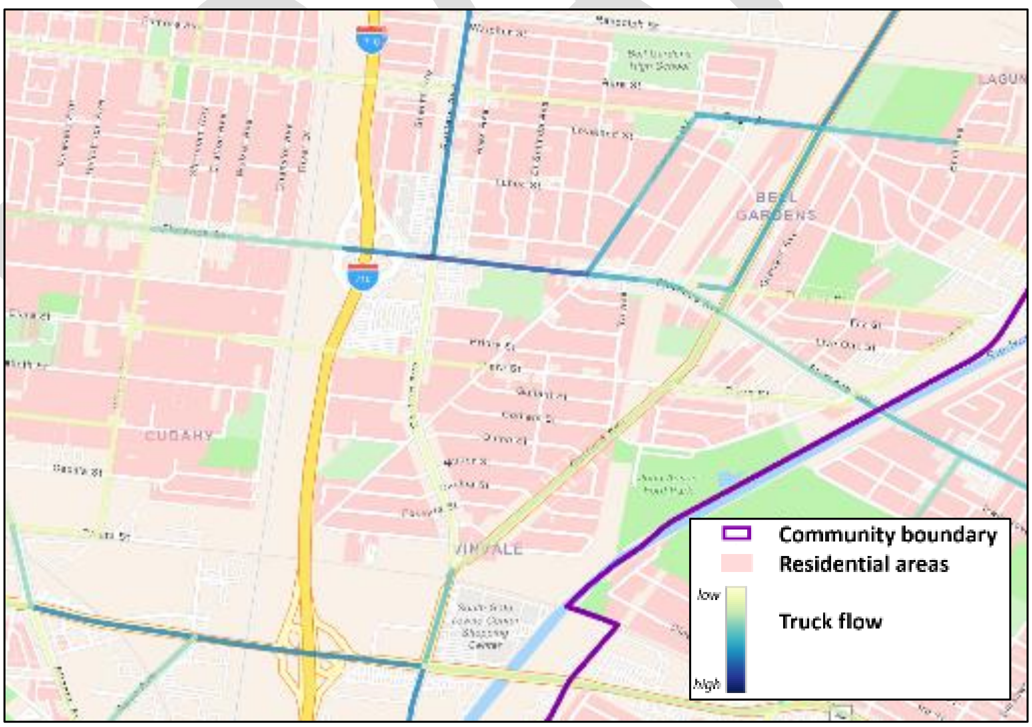

Figure 7.3 - Priority area for mobile monitoring around the intersection of Florence Ave and I-710

The main strategy to characterize emissions will center around monitoring with a mobile platform for the purposes of Concentration Mapping, Source Identification, and Source Characterization. The mobile measurements will also extend to other areas within the SELA community to support the implementation of emission reduction strategies and help track their progress, identify air pollution hotspots, and help assess trends of key pollutants in the community that are indicators of truck emissions.

7.2 Railyards

The CSC identified emissions from railyards as one of their highest air quality concerns in this community. Air pollution related to this air quality priority is mainly generated by equipment and vehicles which move containers and railcars. Examples of equipment and vehicles involved in railyard operations include locomotives (including switchers and line-haul locomotives), drayage trucks, cargo handling equipment (e.g., cranes and off-road yard trucks), transportation refrigeration units, and other miscellaneous equipment (e.g., fuel trucks). Emissions can also be generated from maintenance testing activities such as load testing. The major pollutants of concern generated by these sources are related to diesel emissions and include particulate matter (PM), black carbon (BC), nitrogen dioxide (NO_2), ultrafine particles (UFPs), volatile organic compounds (VOCs), and other air toxics, including metals.

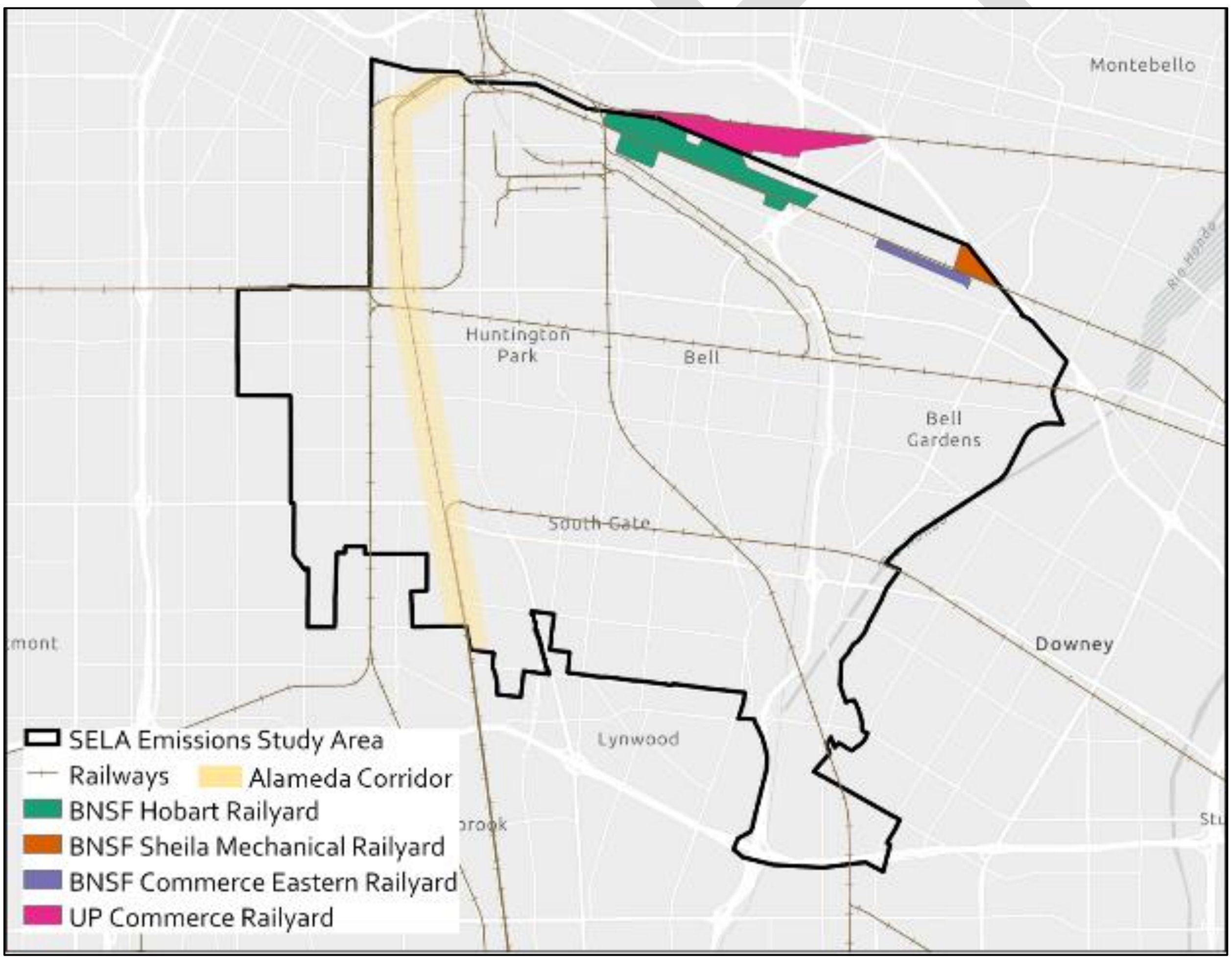

Figure 7.4 – SELA emissions study area, railyards, and railways

There are three railyards along the northern border of the SELA emissions study area (Figures 7.4 and 7.5): BNSF Hobart Railyard, BNSF Commerce Eastern Railyard, and BNSF Sheila Mechanical Railyard. In addition to these three railyards, the Union Pacific Commerce Railyard is located immediately to the north of the emissions study area and may also contribute to air pollution in the community. While railyards were identified as a priority air quality concern by the CSC, some of the emissions related to railyards occur due to emissions from trains moving along railways; therefore, railways that run through this community are also of particular concern. For example, the SELA community includes parts of the Alameda Corridor that contains three rail tracks used to transport trains to and from the Ports of Long Beach and Los Angeles and carries a high volume of trains. Additionally, stations and rail lines for passenger rail services (LA Metro, Amtrak, Metrolink) also run through this community.

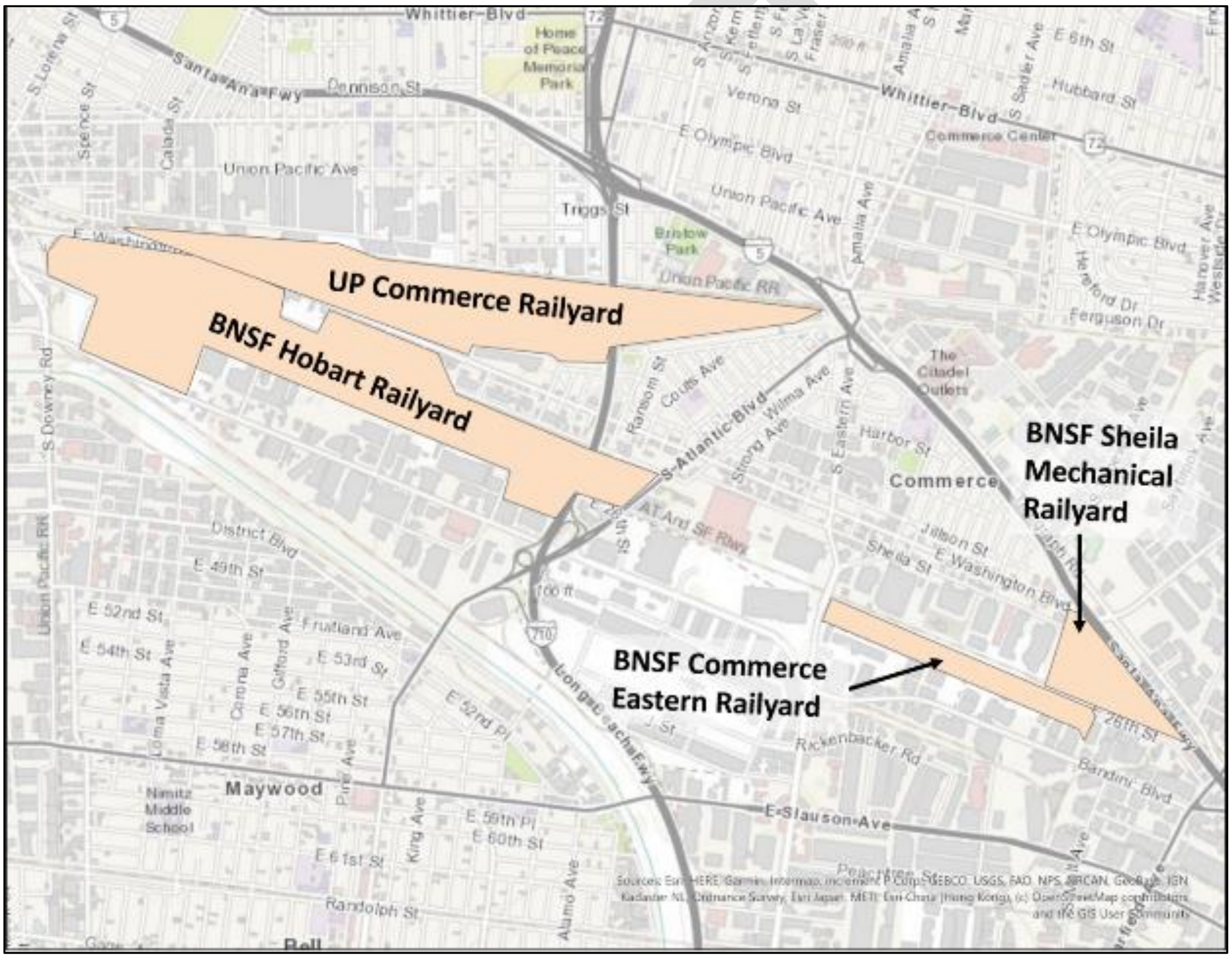

Figure 7.5 – Railyards in and nearby the SELA community

In this case, the main strategy to characterize emissions will center around monitoring with a mobile platform for the purposes of Concentration Mapping, Source Identification, and Source Characterization. Monitoring will help quantify the amount and variability of emissions from railyards, determine specific emission sources, identify activities that may lead to increase in emissions, identify potential sites for fixed monitoring if needed, and help track the progress of emission reduction strategies. Mobile monitoring will focus on the measurement of diesel emission markers such as BC, NO_2, PM, UFPs, and other air toxics. Monitoring will also integrate meteorological measurements (e.g., wind speed and direction) to help identify the specific sources of air pollution related to railyard operations and distinguish them from nearby, unrelated sources (e.g., general industrial facilities). Measurements will be prioritized in the areas immediately surrounding the three railyards in this community and along major railways (e.g., Alameda Corridor). These railyards, as well as the UP Pacific Commerce Railyard, are also covered as part of the monitoring plan for the East Los Angeles, Boyle Heights, West Commerce community. While the listed areas will be prioritized for monitoring purposes, air quality measurements will also extend to other areas in the SELA community to assess how railway and railyard emissions contribute to the overall air pollution burden in this community.

7.3 Metal Processing Facilities

The CSC identified exposure to fugitive emissions from metal processing facilities as one of the main air quality priorities for this community. Fugitive emissions are episodic in nature and are not controlled through existing air pollution controls; they can be emitted into the ambient air or accumulate on surfaces in and around the facility. If deposited on surfaces or on the ground they can be re-entrained from foot traffic, vehicular traffic, wind, or other activities. Impact of fugitive emissions to the surrounding areas is intermittent and are also dependent on environmental conditions such as wind speed and direction.

Metal processing facilities include a wide variety of operations such as metal finishing (e.g., plating, anodizing, metal spray coating), metal forging, heat treating, plasma arc cutting, and metal recycling. These processes can emit particles (dust), especially dust containing metals such as lead, arsenic, chromium, nickel, and hexavalent chromium (Cr6+), which are classified as toxic air contaminants (TAC), or air toxics, according to the California Office of Environmental Health Hazard Assessment (OEHHA)[6]. Based on the South Coast AQMD Facility Information Detail (FIND)[7] database, there are 132 metal processing facilities in the emission study area (ESA) of the SELA community. The locations of all these metal processing facilities are shown in Figure 7.6. Certain areas within the SELA community have higher density of metal processing facilities, which are prioritized for air monitoring as shown in Figure 7.6 below.

[6] https://oehha.ca.gov/air/toxic-air-contaminants
[7] https://www.aqmd.gov/nav/FIND

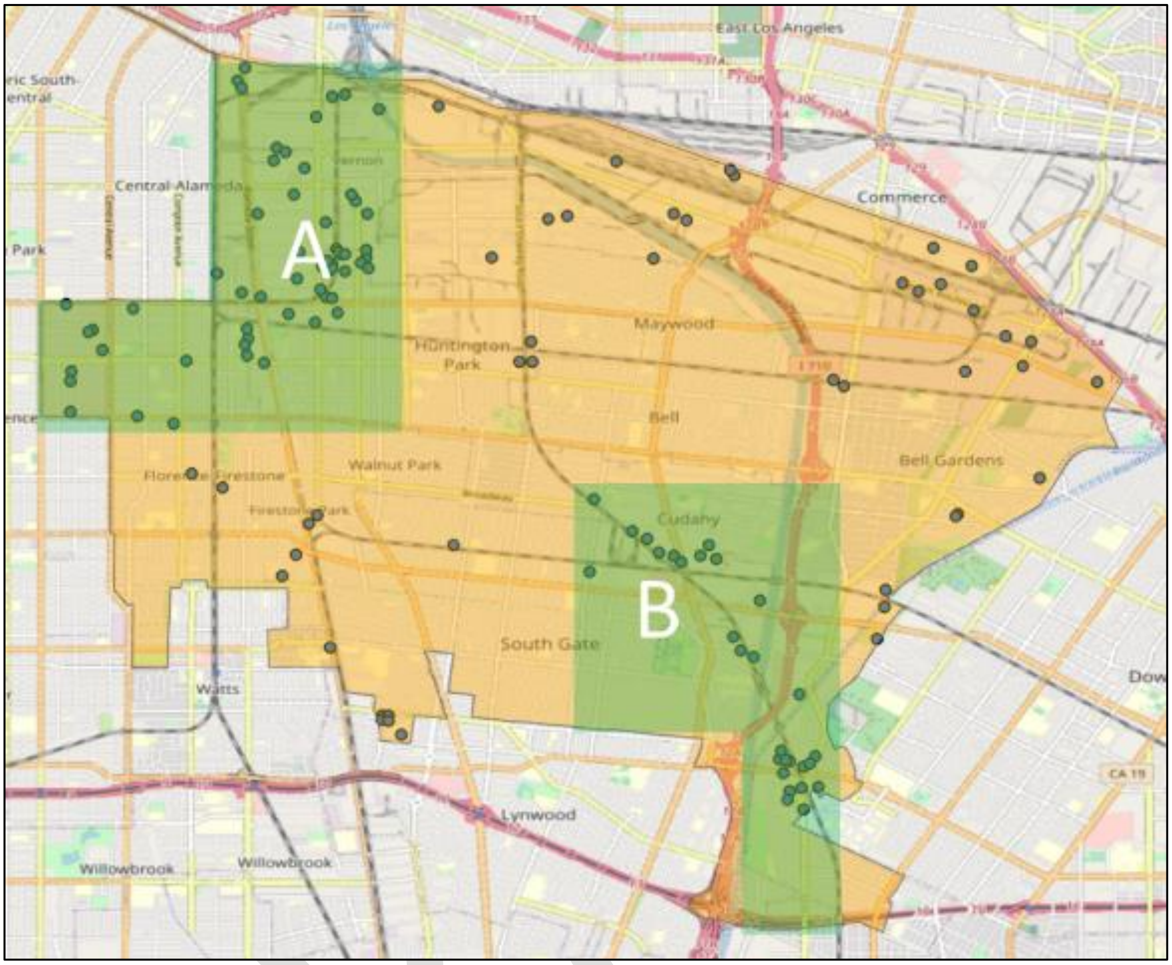

Figure 7.6 - Location of metal processing facilities in the SELA community. The prioritized areas for monitoring are also highlighted

South Coast AQMD's efforts to address this air quality priority in the SELA community entail a comprehensive scheme to systematically identify and characterize sources of air toxic metals emissions using a combination of advanced air monitoring technologies and traditional methods. This monitoring strategy comprises fixed monitoring, mobile monitoring, and follow-up measurements and investigative actions as appropriate to characterize emissions for the purposes of Concentration Mapping, Source Identification, Source Characterization, and for gathering Compliance and Health-Based Information.

Mobile monitoring will begin with an area-wide survey for air toxic metals around the metal processing facilities and surrounding communities, starting with the priority areas with high density of facilities to identify pollution hotspots and assess the potential impact of emissions from metal processing facilities on the air quality of the nearby residential neighborhoods. Even though mobile monitoring will begin in high priority areas, measurements will extend to other areas of SELA where metal processing facilities are located.

If potential sources are identified through mobile monitoring, stationary measurements will be conducted near the identified sources (e.g. downwind of the identified facility) to better characterize their emissions. For this purpose, ambient levels of particulate metals concentrations will be measured using either high time-resolution continuous measurements with the mobile platform (operated at one or more fixed locations), or 24-hr time-integrated sampling method, or a combination of both. Meteorological parameters (e.g., wind speed and direction) will be measured concurrently to help in locating the source(es) of emissions. In case there is evidence that the operations utilized by the metal-processing facility of concern can potentially emit Cr6+, fixed monitoring of Cr6+ (through the collection of time-integrated samples and subsequent chemical analysis) will also be carried out. Findings from these monitoring efforts will provide information to support actions consistent with the CERP.

7.4 Rendering Facilities

The CSC has raised concerns regarding the strong odors from rendering facilities in or adjacent to the Vernon area. These facilities are located north of SELA and within the boundaries of emissions study area. The East Los Angeles/ Boyle Heights/ West Commerce (ELABHWC) community, which was designated as an AB 617 community in 2018, is located just north of SELA and their CSC shares the concern of malodors from these same rendering facilities. For more information the ELABHWC CAMP can be found online[8] and previous monitoring efforts conducted in the ELABHWC community are discussed in the Rendering Facility progress report.[9] Figure 7.7 shows the five rendering facilities found in the SELA emissions study area; these include Baker Commodities, Darling International, Legacy By Products, Clougherty Packing/Farmer John, and Coast Packing Co.

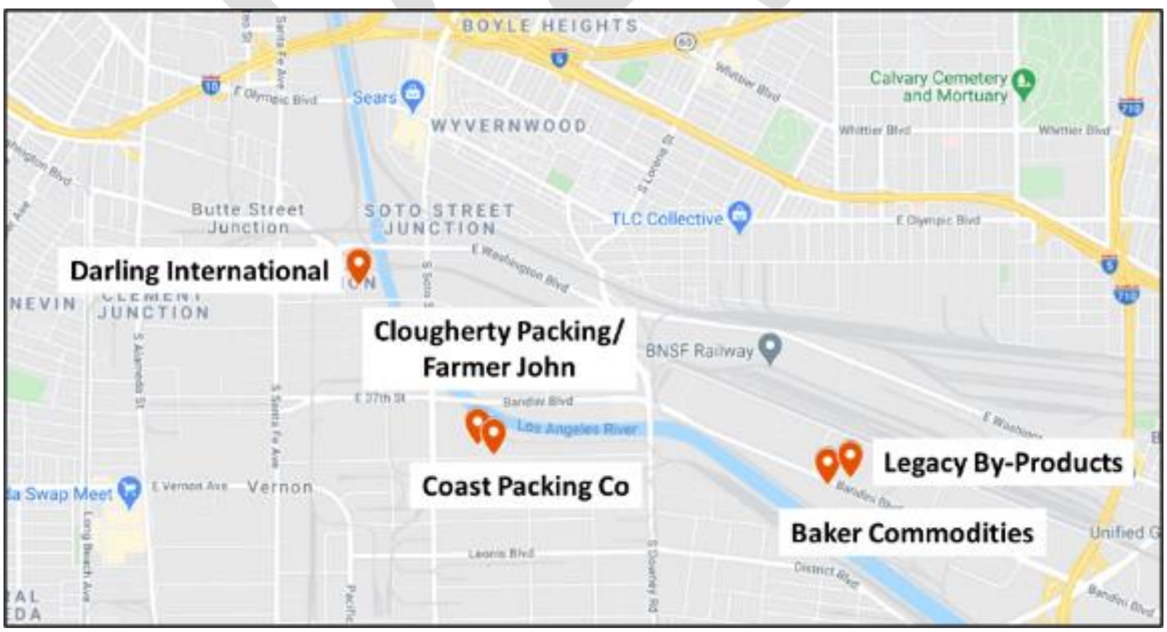

Figure 7.7 – Map of Rendering Facilities

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[8] SCAQMD, AB 617 Community Air Monitoring Plan (CAMP) for the East Los Angeles, Boyle Heights, West Commerce Community. http://www.aqmd.gov/docs/default-source/ab-617-ab-134/camps/elabhwc-camp.pdf. Accessed September 25, 2020.

[9] SCAQMD, Progress Report – Rendering Facilities. http://www.aqmd.gov/docs/default-source/ab-617-ab-134/camps/elabhwc-progress-reports/elabhwc-rendering-facilities---coming-soon.pdf. Accessed September 25, 2020.

In November 2017 the South Coast AQMD adopted rule 415 to reduce odors from rendering facilities by requiring implementation of best management practices within 90 days of the rule's adoption and installation of emission controls by 2022. Facilities are also required to do a specific cause analysis for any odor events and post signs with contact information for the public to report odor complaints. The rendering process involves many steps, each of which is a potential source of fugitive odors at a facility. Figure 7.8 shows some of the possible odor emission points in the continuous rendering process.

The rendering process can release odors that cause health effects and reduced quality of life. The symptoms that accompany odors include coughing, sore throat, burning eyes, runny nose, headache, nausea, and respiratory irritation.[10] In general, odors are mainly comprised of VOCs, some of which are classified as air toxics. Examples of odorous compounds which may be emitted from rendering facilities include volatile fatty acids (e.g., butanoic acid, acetic acid), aldehydes and sulfur compounds.[11] Examples of hazardous compounds that may be emitted include benzene, ethylbenzene, heptanal, and caprolactam.[9]

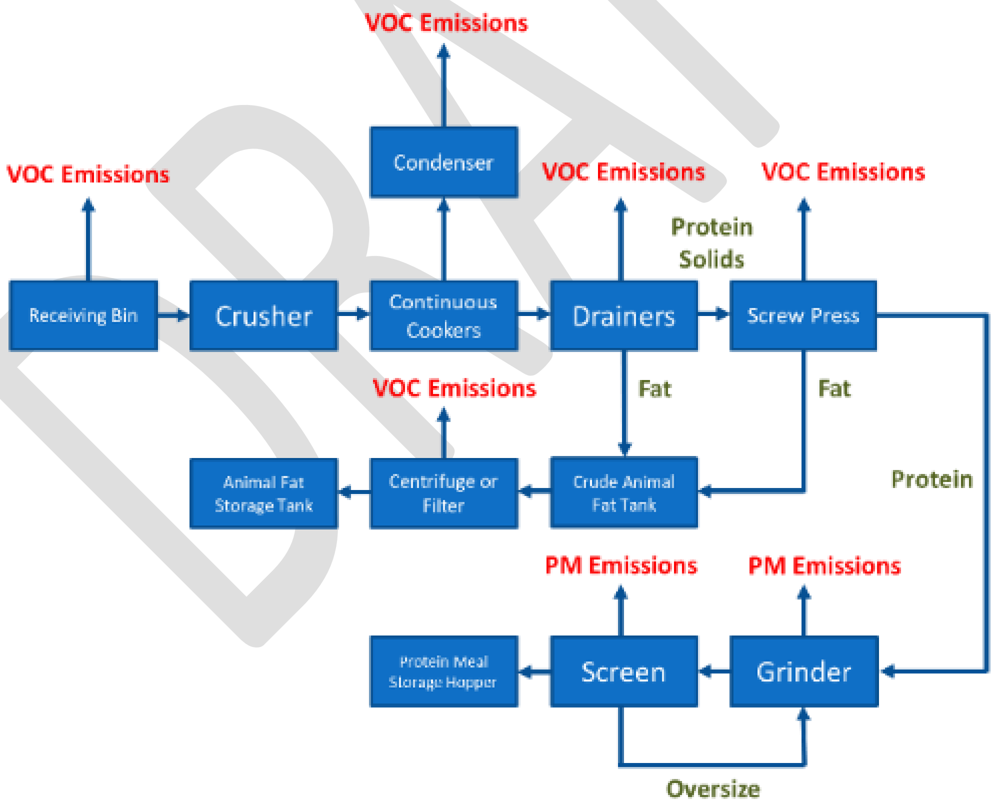

Figure 7.8 - Potential Odor Emission Points in the Continuous Rendering Process[12]

[10] Science of Odors as a Potential Health Issue, Journal of Environmental Quality, (Susan Schiffman and C.M. Williams, 34:129-138 (2005)

[11] Sakali, E. and Leotsinidis, M. Odor nuisance and health risk assessment of VOC emissions from a rendering plant, Air Quality, Atmosphere & Health (2020)

[12] U.S. EPA, AP42, section 9.5.3 – Meat Rendering Plants. https://www3.epa.gov/ttn/chief/ap42/ch09/final/c9s05-3.pdf. Accessed September 9, 2020.

Even with modern air monitoring techniques, sources of odors are difficult to measure, and the human nose is often a better detector of the presence of odiferous compounds. Odors are often the product of a number of different compounds present in a single plume and an approach that captures as many of these VOCs as possible provides the best chance to understand odor sources. To address this community concern mobile monitoring of VOCs will be conducted near the five rendering facilities identified in the emissions study area. These measurement activities will be conducted using the Proton-Transfer-Reaction – Time-of-Flight – Mass Spectrometer (PTR-ToF-MS) mobile platform (mobile platform #3), which is capable of simultaneous real-time monitoring of hundreds of VOCs at very low levels (limit of detection (LOD); typically 1-100 parts per trillion). Concurrent measurements of VOCs and wind speed/direction while driving near target facilities will enable locating potential source(s) of emissions, and onboard data visualization tools will be used to detect and track plumes of interest in real time. Overall, community monitoring will be conducted to assess the extent to which emissions from rendering facilities impact the air quality of the nearby community. This mobile platform will be used for the purposes of Source Identification, Source Characterization and to support Compliance and Health-Based Information (CHBI) measurements where appropriate to aid compliance investigations of Rule 415.

7.5 General Industrial

There are nearly 200 general industrial facilities in SELA, and the CSC has expressed concern about the impact emissions from these facilities has on the community. Facility types of concern include autobody shops, waste transfer stations, manufacturing, chemical operations, and oil and gas terminals, which typically require permits from South Coast AQMD or other agencies to operate. Emissions from these facilities can include air toxics, VOCs and metals, and facilities can also cause odors and emit fugitive dust, both of which are addressed by existing South Coast AQMD regulations.

Given the large number of facilities and wide variety of industries located in the community, the approach described in the CERP is to work with the CSC to determine the types of priority industries and emissions located in the community and identify target pollutants, and using this information to recommend appropriate monitoring methods and a more targeted monitoring strategy to address this concern. Additional details regarding this specific air quality concern and the monitoring methods and strategies that will be implemented to address these specific concerns will be added as the conversation with the CSC progresses.

7.6 Green Spaces

The CSC expressed the need for increasing the amount of green spaces in their community. Examples of green spaces include parks, sporting fields, greenways and trails, and community gardens spaces. Potential actions to increase green spaces in the community are described in the CERP. Unlike the other air quality priorities in this community, green spaces are not a source of air pollution. Therefore, there are no air monitoring measurements proposed for this air quality priority.

8 Data Reporting

As discussed in the General Community Air Monitoring Approach section above, air quality data is collected in two main modes: stationary (i.e., at a fixed-site location) and mobile (i.e., with a moving vehicle). This data is shared with the community in different ways depending on the monitoring on how it is collected, the data type, and the reporting purpose.

8.1 Fixed Monitoring

Data collected in stationary mode is categorized into continuous (near real-time) and time-integrated. Continuous, near real-time data refer to long-term measurements made at South Coast AQMD stationary monitoring sites with hourly or sub-hourly time resolution. This data is averaged every hour and becomes publicly available shortly after the measurements on the AB 617 air monitoring data display tool[13]. The online data display tool shows a map of each AB 617 community with markers for each South Coast AQMD stationary monitoring site within each community boundary (Fig. 8.1). Selecting one of these station markers displays additional information about the station (site name, description, current wind speed and direction) and provides a link to the raw data. The data sidebar shows a list of pollutants measured at that site (e.g., ozone, carbon monoxide, oxides of nitrogen, particulate matter, others) and their concentrations for the previous hour as well as the previous 24-hour averages. In addition to the current concentration of pollutants, time series of pollutants are available in the sidebar and through the historical search function, where a user may display the time series of the pollutant of interest over a custom time frame. This data is also available for download on the site in spreadsheet format.

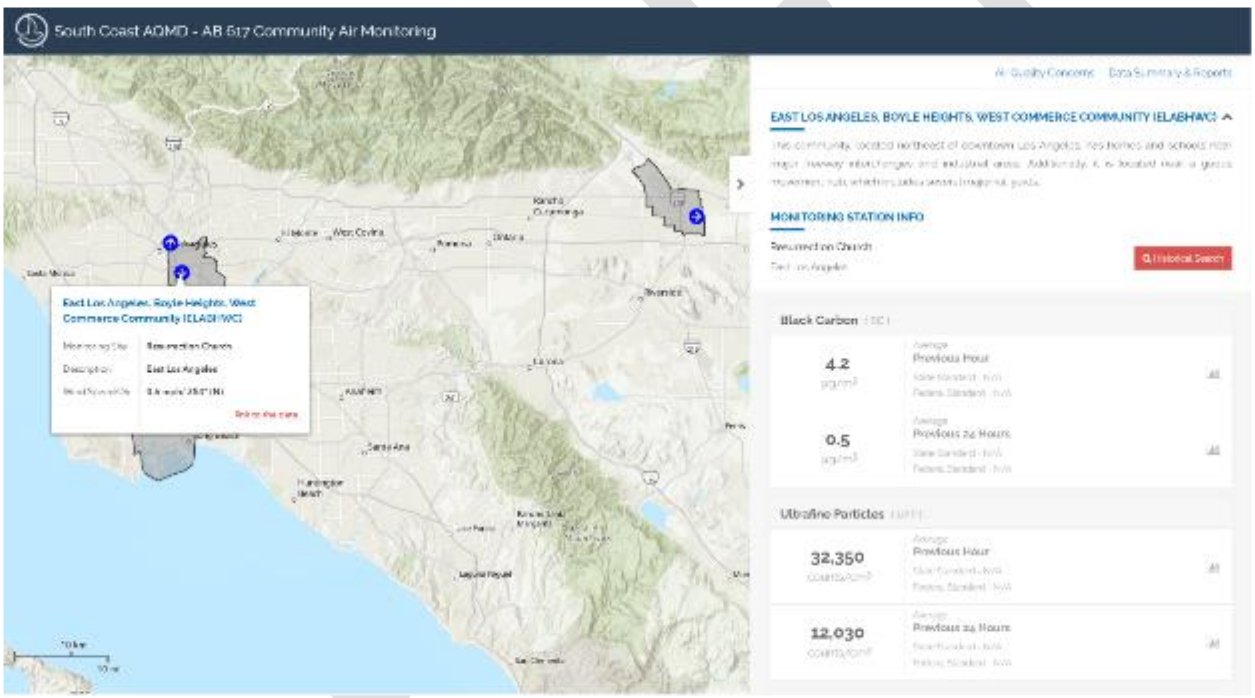

Figure 8.1 - Portal for air monitoring data display tool. Map of communities with fixed air monitoring sites is shown on the left with a list of measured pollutants and their current concentrations on the right

In comparison to near real-time data, time-integrated data collected at fixed monitoring sites is made available periodically after laboratory analysis. Some examples of time-integrated data include gas canister samples for VOC analysis and filter samples for PM mass and composition (e.g. organic carbon, metals, etc.). The longer analysis, validation and processing time for this data precludes it from being

[13] http://xappprod.aqmd.gov/AB617CommunityAirMonitoring/Home/Index

shown in continuously and in real-time manner; instead it will be shown in an interactive data dashboard (under development) that will be updated on a regular basis when laboratory data has been processed. Similar to the continuous data display tool, the time-integrated data dashboard will include a map of stationary monitoring sites where time-integrated samples are collected, options for selecting the available pollutants, and different data visualization options (e.g., time series, box plots, other). The interactive nature of the data dashboard makes it possible to share a large amount of data in an efficient and easy to understand manner and allows the users to explore the data on their own. Furthermore, this allows the South Coast AQMD to share data with the community before writing a comprehensive summary report, which typically takes longer.

8.2 Mobile Monitoring

Similar to the stationary time-integrated data, mobile monitoring results will be available using an interactive dashboard (currently under development) when a representative number of measurements have been taken within the community and the data have been carefully validated, analyzed and processed. This interactive dashboard will provide a map of air quality data collected during multiple days of mobile monitoring that enables the users to identify hot spots and visualize air quality levels near potential areas of concern.

In addition to the above ways which data is shared, regular written updates will be provided to the community in the form of air monitoring progress updates and progress reports. These documents will be posted on the South Coast AQMD webpage dedicated to the AB 617 Community Air Monitoring program[14]. Progress updates consist of a one-page summary that provide a quick overview of the CAMP implementation for each air quality priority identified by the CSC. Moreover, each air quality priority in the update contains a link to an in-depth progress report. These progress reports, which are specific to each air quality priority, include sections describing the background and objectives of monitoring, the monitoring methods used, preliminary results, and next steps. In addition, each progress report includes one or more attachments with an in-depth description of all monitoring and data analysis methods.

As described above, separate tools and platforms are used to disseminate the air monitoring results to the community. New ways of sharing data and reports are being explored with the goal of integrating all of these tools into a single platform and to consolidate all air monitoring results for easier public access and use.

[14] http://www.aqmd.gov/nav/about/initiatives/community-efforts/environmental-justice/ab617-134/ab-617-community-air-monitoring

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List of Acronyms

AB 617	Assembly Bill 617
AB 2588	Assembly Bill 2588
AQ-SPEC	Air Quality Sensor Performance Evaluation Center
Basin	South Coast Air Basin
BC	Black Carbon
BM	Baseline Monitoring
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
C_2H_4	Ethylene
C_3H_6	Propene
C_4H_8	Butene
CAMP	Community Air Monitoring Plan
CARB	California Air Resources Board
CEE	Community Engagement and Educational
CERP	Community Emission Reduction Plan
CH_4	Methane
CHBI	Compliance and Health-Based Information
CM	Concentration Mapping
CO	Carbon Monoxide
CO_2	Carbon Dioxide
Cr6+	Hexavalent Chromium
CSC	Community Steering Committee
DTSC	Department of Toxic Substance Control
DPM	Diesel Particulate Matter
EE	Emissions Estimation
EJ	Environmental Justice
ELABHWC	East Los Angeles, Boyle Heights, West Commerce
ESA	Emission Study Area
FIND	Facility Information Detail database
GPS	Global Positioning System
HCHO	Formaldehyde
I-710	Interstate 710
LIDAR	Light Detection and Ranging
LOD	Limit of Detection
MATES	Multiple Air Toxics Exposure Study
MeFTIR	Mobile Extractive Fourier Transform InfraRed
MWDOAS	Mobile White Cell Differential Optical Absorption Spectroscopy
N_2O	Nitrous Oxide
NH_3	Ammonia
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides

OEHHA	Office of Environmental Health Hazard Assessment
OP-FTIR	Open Path Fourier Transform Infrared Spectroscopy
ORS	Remote Optical Sensing
PAX	Photoacoustic Extinctiometer
PM	Particulate Matter
PM10	Coarse PM
PM2.5	Fine PM
PTR-ToF-MS	Proton Transfer Reaction – Time-of-Flight – Mass Spectrometer
QAPP	Quality Assurance Project Plan
RH	Relative Humidity
SC	Source Characterization
SCAG	Southern California Association of Governments
SELA	Southeast Los Angeles
SI	Source Identification
SkyDOAS	Sky Differential Optical Absorption Spectroscopy
SO_2	Sulfur Dioxide
SOF	Solar Occultation Flux
South Coast AQMD	South Coast Air Quality Management District
TAC	Toxic Air Contaminant
TSP	Total Suspended Particles
UFP	Ultrafine Particles
U.S. EPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
XRF	X-Ray Fluorescence