STATE OF CALIFORNIA

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

In the Matter of:	Docket No. HSA-FY 20/21-003
The Exide Technologies Site 2700 S. Indiana Street Vernon, California 90058	IMMINENT AND SUBSTANTIAL ENDANGERMENT DETERMINATION
	Health and Safety Code Sections 25355.5, subdivision (b)(3), 25358.3, 58009 and 58010

1.0 INTRODUCTION

1.1 Parties. The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), issues this Imminent and Substantial Endangerment Determination for the Site described below.[1]

1.2 Site. This Imminent and Substantial Endangerment Determination applies to the Exide Technologies, LLC (Exide) former secondary lead smelting facility located at 2700 South Indiana Street, Vernon, California (Vernon Plant) and the areal and vertical extent of contamination that resulted from activities at the Vernon Plant (hereinafter, the Site).

1.3 Jurisdiction. This determination is issued by DTSC pursuant to its authority under Health and Safety Code sections 25355.5, subdivision (b)(3), 25358.3, 58009, and 58010.

Health and Safety Code Section 25355.5, subdivision (b)(3), authorizes the DTSC to expend appropriated funds from the Toxic Substances Control Account (established pursuant to 25173.6) when DTSC determines that removal or remedial action is necessary at a site because there may be an imminent and substantial endangerment to the public health or welfare or to the environment, because of a release or threatened release of a hazardous substance.

Health and Safety Code section 25358.3 authorizes DTSC to take various actions, including issuance of an Imminent and Substantial Endangerment Determination and Order, when DTSC determines that there may be an imminent and substantial

[1] This determination is an update and expansion of the Imminent and Substantial Endangerment Determination DTSC made for this Site on November 12, 2015 (Docket No. HSA-FY 15/16-054) that addressed the residential areas surrounding the Exide Site. Both determinations are fully in effect until the endangerments listed are addressed to the satisfaction of DTSC.

endangerment to the public health or welfare or to the environment, because of a release or a threatened release of a hazardous substance.

Health and Safety Code Section 25358.3, subdivision (a)(2), authorizes DTSC to take or contract for any necessary removal or remedial action when DTSC determines that there may be an imminent and substantial endangerment to the public health or welfare or to the environment because of a release or a threatened release of a hazardous substance.

Health and Safety Code section 58009 authorizes DTSC to commence and maintain all proper and necessary actions and proceedings to enforce its rules and regulations; to enjoin and abate nuisances related to matters within its jurisdiction which are dangerous to health; to compel the performance of any act specifically enjoined upon any person, officer, or board, by any law of this state relating to matters within its jurisdiction; and/or on matters within its jurisdiction, to protect and preserve the public health.

Health and Safety Code section 58010 authorizes DTSC to abate public nuisances related to matters within its jurisdiction.

2.0 FINDINGS OF FACT

DTSC hereby finds:

2.1 Physical Description of the Site

The Site includes the Vernon Plant and the complete areal and vertical extent of contamination that resulted from past and current activities at the Vernon Plant.

2.1.1 The Vernon Plant

The approximate 15-acre Vernon Plant includes the former manufacturing areas that occupy an area of approximately 13.5 acres, between East 26th Street towards the north, Bandini Avenue towards the south and South Indiana Street to the east, and an approximate 1.5-acre parcel situated on the northeast corner of Indiana Street and Bandini Avenue where the Exide Administration Building resides. This parcel is not part of the Vernon Plant, although it is part of the Site due to the areal and vertical extents of contamination. A concrete-lined drainage channel owned by the Los Angeles County Flood Control District bisects the Vernon Plant in a north-south direction, and a Union Pacific Railroad (UPRR) right-of-way (ROW) intersects the Vernon Plant in an east-west direction. Coordinates for the Vernon Plant are 34º 00’22” north latitude and 118º 11’48” west longitude. General reference terms used to describe current areas of the Vernon Plant are as follows:

North Yard – Located west of South Indiana Street and east of the concrete-lined drainage channel and bounded by East 26th Street to the north and the railroad ROW to the south. The North Yard contained battery recycling operations from battery breaking through lead refining from the early 1980s through 2014, when the Vernon Plant ceased operations. Prior to the beginning of Closure at the Vernon Plant pursuant to the Hazardous Waste Control Law, which began November 2017, the North Yard contained forty-five

(45) Interim Status Units. Much of the aboveground equipment associated with these Interim Status Units was removed from the Vernon Plant during the ongoing Closure. However, Closure of these Interim Status Units is not yet complete because many tasks listed in the Exide Phase 1 Closure Plan (dated December 8, 2016) are not complete and documentation of how remaining Interim Status Units and contamination of soil and groundwater will be addressed in Phase 2 Closure has not been submitted.

South Yard – Located west of South Indiana Street and east of the concrete-lined drainage channel and bounded by the railroad ROW to the north and Bandini Boulevard to the south. The South Yard includes 28 Interim Status Units that are undergoing RCRA Closure including former container storage areas used to store spent batteries, a wastewater treatment plant, and stormwater collection system (including a large surface impoundment). Prior to the beginning of battery process and lead smelting operations in the North Yard in 1982, the South Yard was the location of battery recycling, lead and other metals smelting, and refining activities.

West Yard – North of Bandini Boulevard and west of the concrete-lined drainage channel. The West Yard includes the primary truck entrance, scale and truck tire wash, and maintenance and storage facilities. The West Yard contains two Interim Status Units - a mobile equipment washing station and a truck wash.

2.1.2 The Site

The Site includes the Vernon Plant and any area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located. This includes groundwater that has been impacted by the hazardous substances identified in Section 2.4.

Groundwater is encountered at various depths beneath the Site, including a shallow zone, perched zone, and the Exposition Aquifer. The first occurrence of groundwater beneath the Vernon Plant occurs intermittently where water has accumulated at a depth of approximately 20 to 25 feet below ground surface (bgs). The next groundwater occurs at approximately 80 feet bgs and is referred to as the perched zone. The Exposition Aquifer is unconfined and is encountered at a depth of approximately 140 to 150 feet beneath the Vernon Plant. The Exposition Aquifer is the first main aquifer in the Upper Pleistocene age Lakewood Aquifer System. The Lakewood Aquifer System (LAS) ranges in thickness from 150 to 400 feet.[2] Beneath the Exposition Aquifer are the deeper LAS Gardena and Gage Aquifers.

The Site also includes the commercial/industrial, residential areas, and public lands beyond Vernon Plant boundaries. Residential areas beyond the Vernon Plant boundaries include all residential, daycare/childcare, school and park

[2] Source: U.S. Geological Survey (USGS), 2003, *Geohydrology, Geochemistry, and Ground-Water Simulation-Optimization of the Central and West Coast Basins, Los Angeles County, California,* Water-Resources Investigations Report 03-4065. Prepared in cooperation with the Water Replenishment District of Southern California.

properties. The industrial/commercial and residential areas are in the incorporated and/or unincorporated cities of Vernon, Maywood, Boyle Heights, East Los Angeles, Commerce, Bell, and Huntington Park. The estimated population for these areas is approximately 90,000 with approximately 8,200 under the age of 4 and 21,000 aged 5 to 17.[3] The California Environmental Protection Agency's (CalEPA) Office of Environmental Health Hazard Assessment (OEHHA) provides a screening tool to help identify communities disproportionally burdened by multiple sources of pollution, i.e. CalEnviroScreen. The CalEnviroScreen results for these areas surrounding the Vernon Plant typically rank as having the highest scores for pollution burdens.[4]

Investigation of the areal extent of lead contamination is ongoing; however, a preliminary estimate of the contribution of Vernon Plant operations to contamination of the Site is shown on Figure 1. Figure 1 presents the "Preliminary Investigation Area (PIA)" within approximately 1.7 miles of the Vernon Plant. However, the complete areal and vertical extent of contamination that resulted from activities at the Vernon Plant is not yet known, and thus Site boundaries are not yet entirely defined.

2.2 Vernon Plant History

2.2.1 Ownership and Operations

The exact date that operations at the Vernon Plant began is unknown. The first known owner and operator of the Vernon Plant is Morris P. Kirk & Son, Inc. which began secondary smelting and processing operations at the Vernon Plant for aluminum, lead, and zinc in the 1920s. NL Industries (NL) acquired the real property, where the Vernon Plant operated, from its subsidiary, Morris P. Kirk & Son, Inc., in 1974 and continued operations. In 1979, Gould, Inc. (Gould) acquired the Vernon Plant from NL and maintained operations until 1984. In 1984, GNB Technologies bought the Vernon Plant from Gould. In September 2000, Exide acquired GNB and merged GNB into Exide. Exide has owned and operated the Vernon Plant since September 2000. Exide processed lead-bearing scrap materials obtained from spent lead-acid batteries and lead bearing scrap until approximately March 14, 2014.

Exide operated the Vernon Plant under hazardous waste facility "interim status" authorization, which allows a facility to continue operations pending a decision on its permit application. In 2015, DTSC informed Exide that the company would not receive a permit to continue operation and Exide agreed to comply with state and federal cleanup requirements described in orders that DTSC issued to Exide. Concurrently, the United States Attorney's Office for the Central District of California ("USAO") agreed not to criminally prosecute Exide for violations of hazardous waste laws in exchange for ceasing

[3] Population and demographics provided by U.S. Census Bureau's, American Community Survey 2008 to 2012.
[4] Based on CalEnviroScreen 3.0 Results (June 2018 Update) https://oehha.ca.gov/calenviroscreen/maps-data

operations at the Vernon facility and agreeing to abide by DTSC's cleanup requirements.

2.2.2 Bankruptcy

On May 19, 2020, Exide filed a voluntary petition for relief under Chapter 11 of the U.S. Bankruptcy Code in the United States Bankruptcy Court for the District of Delaware, its third bankruptcy since 2002. As part of this bankruptcy, Exide plans to liquidate all its North American holdings—including the Vernon Plant—and, as a result of this bankruptcy, Exide will likely leave in place a Site with contaminants of concern (COC) that will continue to release and threaten to release hazardous substances and will continue to threaten and harm human health and the environment. Exide has stopped performing actions required under the DTSC-approved Closure Plan for the Vernon Plant that are necessary to safely dismantle the Vernon Plant, and, if permitted to abandon the Vernon Plant under the Bankruptcy Code, is likely to stop performing required maintenance activities that are necessary to guard against further releases of hazardous substances from the Vernon Plant.

2.3 Hazardous Substances Found in Soils at the Site

DTSC has concluded that excessive amounts of lead and other heavy metals (on the order of thousands of tons) have been emitted into the atmosphere and deposited to the ground and other surfaces around the Vernon Plant. Much of this deposited contamination is then re-suspended by wind events or passing trucks and vehicles resulting in secondary fugitive emissions that transport heavier particulates even farther from the facility into surrounding areas.

Lead is the primary COC in dust and soil at the Site. Concentration ranges of lead found at the Site (Vernon Plant, Industrial Area, and Residential Area) are described briefly below. Other heavy metals have also been detected at the Site above their respective screening levels.

At the Vernon Plant, the following Constituents of Potential Concern (COPCs) have been detected, including the metals aluminum, antimony, arsenic, cadmium, cobalt, lead, mercury, selenium, thallium, and zinc.

In addition to metals, the following volatile organic compounds (VOCs) were detected and identified as COPCs in soils at the Vernon Plant: 1,2,4-trimethylbenzene;1,3,5-trimethylbenzene; 1,2-dichlorobenzene; 1,4 dichlorobenzene; benzene; bromomethane; methylene chloride; naphthalene; n-butylbenzene; tetrachloroethene (PCE); trichloroethene (TCE); and, o-xylene.

In general, COPCs are include those contaminants that have historically been detected at the Site (above detection limits).

2.3.1 Lead has been found in soils and dust at the Vernon Plant and up to 4.5 miles from the Vernon Plant. DTSC's preliminary analysis of the soil sample data collected to date indicate that lead from the Vernon Plant has contributed to the elevated lead concentration levels in industrial/commercial and residential soils within approximately 1.7 miles of the Vernon Plant boundary. However,

this analysis is preliminary and subject to further investigation and attribution studies to determine the extent of contamination.

2.3.2 The detected concentrations of lead in soil and dust at the Vernon Plant measure as high as 106,000 mg/kg, thereby exceeding DTSC's modified Screening Level (DTSC-SL)[5] and the U.S. Environmental Protection Agency's Regional Screening Level (EPA-RSL) for lead in industrial soils at 320 mg/kg and 800 mg/kg, respectively.

2.3.3 The detected concentrations of lead in soil and dust collected from 45 industrial properties within 7,900 feet of the Vernon Plant measure as high as 52,000 mg/kg, thereby exceeding the DTSC-SL and EPA-RSL for lead in industrial soils at 320 mg/kg and 800 mg/kg, respectively.

2.3.4 Surface dust (from paved surfaces) and soil samples were collected from locations stepping out from the boundary of the facility to the residential neighborhood located 4,500 feet away as part of the investigation to determine the nature and extent of contamination originating from the Vernon Plant. These samples show that concentrations of lead are highest closest to the facility and gradually drops off as the distance from the facility increases. For instance, lead concentrations in all soil and surface dust samples collected from the first 500 foot radius around the outside of the facility exceeded the commercial/industrial screening level of 320 mg/kg, with maximum concentrations in soils and dust reaching 6,700 mg/kg and 4,800 mg/kg, respectively. Arsenic concentrations also exceeded the upper bound Southern California ambient level of 12 mg/kg in six out of ten dust samples and six out of nine soil samples collected from the first 500 ft radius stepping out from the facility.

2.3.5 The detected concentrations of lead in soil collected from 8,113 residential properties in the subject area measure as high as 73,200 mg/kg, thereby exceeding the DTSC-SL and EPA-RSL for lead in residential soils at 80 mg/kg and 400 mg/kg, respectively.

2.4 <u>Hazardous Substances Found in Groundwater at the Site</u>

2.4.1 Groundwater occurs in three sequential zones, including:

a) "shallow" groundwater that occurs at a depth of approximately 20 feet known to be present in isolated portions beneath of the Vernon Plant;

b) "perched" groundwater that occurs sporadically site-wide at a depth of about 80 feet; and,

c) unconfined groundwater at a depth of approximately 140 to 150 feet – known as the Exposition Aquifer.

COCs for groundwater are contaminants that exceed their associated Maximum Contaminant Level (MCL). The investigation process is still ongoing

[5] DTSC – Human Health Risk Assessment (HHRA) Note Number 3, DTSC-modified Screening Levels; June 2020.

and the potential for the upper groundwater zone (i.e. shallow and perched) to impact the deeper groundwater systems (i.e. Exposition Aquifer and deeper aquifers), as a whole, is not known at this time. The known contamination poses a threat or potential threat to the environment, namely the groundwater sources that have been designated as beneficial use by the State.

2.4.2 Testing of the shallow groundwater found a concentration of dissolved arsenic at 0.0384 milligrams per liter (mg/L) (the MCL for arsenic in groundwater is 0.01 mg/L). A dissolved concentration of antimony at 0.0181 mg/L (MCL=0.006 mg/L) also was detected in the shallow groundwater zone. Sulfate concentrations are as high as 740 mg/L (Secondary MCL=250 mg/L) in the shallow groundwater samples. Barium has also been detected above its MCL of 2 mg/L.

2.4.3 Testing in December 2019 (the most recent monitoring event as of August 2020) of the semi-perched groundwater approximately 70 to 90 feet bgs found concentrations above the respective MCLs for the metals including arsenic, beryllium, cadmium, cobalt, lead, mercury, nickel, selenium, vanadium, zinc; the VOCs naphthalene (compared to tap water screening level), and trichloroethene (TCE); as well as sulfate and total dissolved solids (TDS) (as compared to secondary MCLs). TCE has been detected in the upper groundwater zone (perched zone) at concentrations slightly less than 1 microgram per Liter (ug/L) to as high as 5,500 ug/L - exceeding the California maximum contaminant level (MCL) of 5 ug/L.

2.4.4 In December 2019 (the most recent monitoring event as of August 2020) the VOCs TCE and carbon tetrachloride have been detected in the Exposition Aquifer at concentrations as high as 200 ug/L (exceeding the respective MCL of 5 ug/L) indicates that VOCs released onsite are likely to have migrated deep beyond the perched groundwater zone into the Exposition Aquifer. Further investigation is needed to confirm. Arsenic, cadmium, selenium, lead, mercury, zinc, cis-1,2-dichloroethene (DCE), and trans-1,2-DCE have also been detected in the Exposition Aquifer at concentrations below their respective groundwater MCLs.

2.5 Other Environmental Investigations

2.5.1 Vernon Plant Dust and Debris Sampling

On April 21, 2020, DTSC staff received the lab results from a November 21, 2019 sampling event, where DTSC staff performed dust and dirt sampling at the Vernon Plant. The samples from this event were delivered following chain-of-custody protocols to DTSC's Environmental Chemistry Laboratory in Pasadena, California. The samples were analyzed for 16 metals using United States Environmental Protection Agency's (EPA) Method 6010B. The results showed high levels of lead in the samples, ranging from 10,500 mg/kg to 48,800 mg/kg; antimony 142 mg/kg to 1,750 mg/kg; arsenic from 38 mg/kg to 314 mg/kg; cadmium from 16 mg/kg to 127 mg/kg; and zinc from 5,350 mg/kg

to 32,100 mg/kg. Each of these metals were detected at the site exceeding their respective DTSC-SL and/or EPA RSL threshold values.

2.5.2 Human Health and Ecological Risk Assessment

The National Contingency Plan (NCP) (40 CFR § 300) is commonly used as the basis for target risk and hazard levels. According to the NCP, lifetime incremental cancer risks posed by a site should not exceed the risk management range of one in a million (1×10^{-6}) to one hundred in a million (1×10^{-4}), and non-cancer hazards should not exceed 1.

In 2015, a Human Health and Ecological Risk Assessment (HHERA) was finalized for the Vernon Plant using available soils, dust, groundwater, and soil vapor data. Soils, groundwater, soil vapor and dust samples collected over several phases of investigation (2005 to 2014) both on and off-site, as part of the RCRA Facility Investigations, were used in the evaluation. Cancer risks, non-cancer hazards and blood lead levels were estimated for theoretical onsite commercial/industrial workers and construction workers.

Vernon Plant Dust Samples – Concentrations of lead in dust cited in the above referenced HHERA ranged from 40,000 mg/kg to 58,000 mg/kg, while arsenic was present at concentrations ranging from 96 mg/kg to 280 mg/kg mg/kg. According to the DTSC-modified Adult Lead Model (ALM) the maximum concentration of lead detected (58,000 mg/kg) would correspond to an incremental increase of blood lead level of 182 micrograms per deciliter (µg/dL) among fetuses of adult workers. These estimated blood lead levels are far higher than the benchmark developed by the CalEPA OEHHA, where the incremental increase in blood lead level, as a result of exposure to site contamination, should not exceed 1 µg/dL. For a commercial/industrial scenario, the maximum concentrations of arsenic (290 mg/kg) in roadway dust would correspond to excess lifetime cancer risks of 1×10^{-3}. Chronic commercial exposure to the maximum concentrations of antimony, arsenic, and cadmium would correspond to noncancer Hazard Quotient (HQ) of 5, 0.8, and 27, respectively. The estimated cancer risks and noncancer hazards to commercial/industrial workers are above USEPA's risk management range (10^{-6} to 10^{-4}) and non-cancer hazard of 1. Cumulative cancer risks and non-cancer hazards would be even higher as it would be the compiled total risks and hazards of all contaminants at the Vernon Plant.

Vernon Plant Soils – Cancer risks, non-cancer hazards and blood lead levels were estimated in the 2015 HHERA for commercial/industrial workers encountering arsenic, cadmium and lead. COCs were identified as contaminants, as noted in Section 2.3, with estimated cancer risk above 1×10^{-6} non-cancer hazard above 1 and/or a modeled incremental blood lead level increase at the 90th percentile of greater than 1 µg/dL. These estimates were conducted for four distinct areas on the Vernon Plant (North East Yard, North West Yard, South East Yard and West Yard). For each of these yards, soils collected from shallow depths (0-2 feet bgs) and depths up to 10 feet bgs (0-10 ft bgs) were evaluated separately. Current controls such as paving, fencing, or required personal protective equipment were not incorporated into

the assumptions due to uncertainty in the future management of the Vernon Plant.

The following is a summary of those findings. Exposure point concentrations (EPCs) for arsenic, cadmium, and lead, which is the 95% upper confidence level (UCL) of the mean of the contaminant concentration, was calculated at each of these areas separately, and used in the risk evaluations.[6]

North East Yard

For a commercial/industrial worker, exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils in North-East Yard at less than two feet bgs would result in excess lifetime cancer risks of 7×10^{-5} and 9×10^{-9}, respectively, and noncancer hazards of 0.03 and 6, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils 0-10 feet bgs would correspond to excess lifetime cancer risks of 3×10^{-5} and 6×10^{-9}, respectively, and noncancer hazards of 0.01 and 4, respectively.

The 95% UCL on the mean lead concentration for soils less than two feet bgs is 3,201 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 10 µg/dL among fetuses of adult workers. The 95% UCL on the mean lead concentration for soils 0 to 10 feet bgs is 767 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 2.4 µg/dL among fetuses of adult workers.

North-West Yard

For a commercial/industrial scenario, exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils in North-West Yard at less than two feet bgs would correspond to excess lifetime cancer risks of 5×10^{-5} and 1×10^{-9}, respectively, and noncancer HQs of 0.02 and 0.9, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils 0-10 feet bgs would correspond to excess lifetime cancer risks of 4×10^{-5} and 1×10^{-9}, respectively, and noncancer hazards of 0.02 and 0.6, respectively.

The 95% UCL on the mean lead concentration for soils less than two feet bgs is 1,839 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 5.8 µg/dL among fetuses of adult workers. The 95% UCL on the mean lead concentration for soils 0 to 10 feet bgs is 444 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 1.4 µg/dL among fetuses of adult workers.

[6] UCL is a standard statistical methodology that USEPA, CalEPA, DTSC and other public and private entities use to assess risks from contaminants based on their analytical results.

South-East Yard

For a commercial/industrial scenario, exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils in the South-East Yard at less than two feet bgs would correspond to excess lifetime cancer risks of 2×10^{-4} and 6×10^{-9}, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of antimony, arsenic, and cadmium for soils less than two feet bgs would correspond to noncancer HQs of 0.09, 0.09, and 4, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils 0-10 feet bgs would correspond to excess lifetime cancer risks of 6×10^{-4} and 5×10^{-9}, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of antimony, arsenic, and cadmium for soils 0-10 feet bgs would correspond to noncancer HQs of 0.8, 0.3, and 3, respectively.

The 95% UCL on the mean lead concentration for soils less than two feet bgs is 5,301 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 17 µg/dL among fetuses of adult workers. The 95% UCL on the mean lead concentration for soils 0 to 10 feet bgs is 19,928 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 63 µg/dL among fetuses of adult workers.

West Yard

For a commercial/industrial scenario, exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils less than two feet bgs in the West Yard would correspond to excess lifetime cancer risks of 2×10^{-4} and 6×10^{-9}, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of antimony, arsenic, and cadmium for soils less than two feet bgs in the West Yard would correspond to noncancer HQs of 0.8, 0.09, and 4, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of arsenic and cadmium for soils 0 - 10 feet bgs in the West Yard would correspond to excess lifetime cancer risks of 4×10^{-4} and 2×10^{-9}, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of antimony, arsenic, and cadmium for soils 0-10 feet bgs in the West Yard would correspond to noncancer HQs of 3, 0.2, and 1, respectively.

The 95% UCL on the mean lead concentration for soils less than two feet bgs is 25,716 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 81 µg/dL among fetuses of adult workers. The 95% UCL on the mean lead concentration for soils 0 to 10 feet bgs is 15,269 mg/kg, and according to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 48 µg/dL among fetuses of adult workers.

Dust Samples Taken Beyond the Vernon Plant Boundary – The HHERA examined the results of dust and soils samples collected within sidewalks and public areas within 500 feet of the Vernon Plant in the industrial area. Under a commercial/industrial scenario, chronic commercial exposure to the 95% UCL on the mean concentrations of arsenic and cadmium in dust would correspond to excess lifetime cancer risks of 8×10^{-5} and 3×10^{-9}, respectively. Chronic commercial exposure to the 95% UCL on the mean concentrations of arsenic and cadmium in dust would correspond to noncancer hazards of 0.04 and 2, respectively. According to the DTSC-modified ALM this would correspond to an incremental blood lead level increase at the 90th percentile of 10 µg/dL among fetuses of adult workers.

2.6 Vernon Plant Closure

Exide began on-site Closure activities, as described in the December 8, 2016 Phase 1 Closure Plan, in November 2017. The containment building is where the main on-site recycling and lead processing was conducted in recent years and is maintained under negative pressure to prevent fugitive emissions of lead and other COCs. This building consists of three "Segments". The west segment (Segment 1) includes the Raw Materials Processing System (RMPS), Desulfurization, and the Lower and Upper Reverb Feed Room Buildings. The east segment (Segment 2) includes the Blast Feed Room and Smelter Building. The center segment (Segment 3) includes the Bag House and Corridor. As of August 2020, Exide has completed approximately 65% of Phase 1 Closure including all work associated with Segment 1, most of the work associated with Segment 2 and a portion of the work associated with Segment 3. Phase 1 Closure was scheduled to be completed by December 2021 (based on the most recently amended schedule proposal submitted by Exide on November 6, 2019). However, on March 21, 2020, Exide suspended active Closure work at the facility. Exide claims the COVID-19 pandemic has created a force majeure situation, preventing active closure work from continuing. DTSC disagrees with Exide's force majeure assertion and has directed Exide to resume work. Basic maintenance and security measures to prevent a release from the Vernon Plant continue; however, the suspension of Closure activities is further exacerbated by Exide's May 19, 2020 bankruptcy filing.

Regardless of Exide's excessive delay (approximately 15 months) from the original schedule to complete Phase 1, the closure work has generally been completed in accordance with the Closure Plan and applicable rules and regulations except for three incidents as described below.

Exide's full enclosure unit (FEU) has experienced multiple tears since Phase 1 Closure began in late 2017; including a large tear identified the morning of June 10, 2020. While the June 10, 2020 tear did not result in a complete loss of negative pressure, previous tears have led to violation notices issued by South Coast Air Quality Management District (SCAQMD) and DTSC due to loss of adequate negative pressure in the FEU. SCAQMD has issued three prior notices of violation and DTSC issued one since Closure began. Regardless of ongoing inspections and maintenance, this history of FEU tears, coupled with the large amount of lead-laden dust that still resides inside the FEU, demonstrates the imminent and substantial risk of release of hazardous substances into the environment. Such risk will be

exacerbated by continued weathering and deterioration of the FEU simply due to exposure to the elements.

Previous tears to the FEU include one on December 26, 2019, where heavy plastic sheeting covering the FEU ripped during a seasonal wind event.[7] The incident did not result in exceedances of lead or arsenic air quality standards, which are measured at air monitoring stations along the Vernon Plant's perimeter (as specified in Exide's Title V permit and the DTSC approved-Closure Plan). DTSC and SCAQMD issued separate Notices of Violation to Exide following this incident for not maintaining the required negative pressure vacuum. Exide responded to the incident and completed repairs the same day and added upgraded protections within approximately one week. A similar incident also occurred on February 17, 2019. In response to the February 17, 2019, incident SCAQMD issued a notice of violation to Exide on March 15, 2019.

Additionally, the Vernon Plant's wastewater treatment plant, surface impoundment, and stormwater conveyance system were scheduled to remain in place through the end of the Phase 2 Closure. These systems work together to ensure that lead-contaminated wastewater and stormwater does not flow from the facility into the surrounding area and into municipal stormwater systems during rain events and is instead treated and released to the municipal sanitary sewer system under a Los Angeles County Sanitation District Waste Discharge Permit. Exide's failure to operate and maintain these critical systems upon abandoning the property could result in the release of lead-contaminated stormwater onto the sidewalks and streets surrounding the facility, as well as to local surface water bodies via the municipal stormwater system.

The surface impoundment is an open, in-ground, L-shaped, lined collecting pool with a capacity of 2,350,000 gallons. It is in the South Yard of the Vernon Plant. Exide is required to remove any accumulated stormwater/rainwater and sediment within 24 hours and conduct frequent inspections and any necessary maintenance and repairs to "maintain the integrity" of the liner system. If Exide abandons the property and such tasks are not conducted in a timely manner, particularly during a heavy storm event, water contaminated with COCs could overflow and enter the Los Angeles River, a water body listed under Section 303(d) of the Clean Water Act as an "impaired water."

2.7 Health Effects of COCs Present at the Site

Lead is a neurotoxin that accumulates both in soft tissues, bones, and teeth. Lead is a highly poisonous metal (through ingestion and inhalation pathways), affecting almost every organ and system in the body. It has adverse effects on learning and memory and causes other neurological effects (such as peripheral neuropathy and psychiatric problems), anemia, damage to the kidneys, high blood pressure in middle-aged and older people and brain damage, cardiovascular effects, immunological, reproductive and developmental effects. It may cause miscarriage in pregnant women exposed to high levels of lead. According to the Agency for Toxic

[7] Seasonal Santa Ana winds are fairly common annual weather events for this area of California that occur when the dominant on-shore ocean wind patterns change to higher velocity and drier wind patterns originating inland.

Substances and Disease Registry (ATSDR), many of the adverse effects of lead (listed above, including neurological, renal, cardiovascular, hematological, immunological, reproductive, and developmental) occur at blood lead levels of less than 5 µg/dL.

Arsenic is a known human carcinogen. Chronic, long term exposures to arsenic causes cancer of the liver, bladder, and lungs in people exposed to it. Inhaling high levels of arsenic even for brief periods of time or lower levels can irritate the throat and lungs. It can damage blood vessels, have adverse effects on the heart (abnormal heart rhythm), cause peripheral neuropathy characterized by numbness of hands and feet ‘pins and needles’ sensation and cause kidney damage, anemia (decreased production of red and white blood cells). It can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso, when exposure occurs over a longer period. Acute high dose exposures or chronic lower dose exposures can lead to nausea, vomiting and diarrhea, and irritation of the gastrointestinal tract.

Antimony toxicity occurs either due to occupational exposure, environmental exposures (smelters, coal-fired plants, and garbage incinerators) or during therapy. Occupational exposure may cause respiratory, skin and eye irritation, pneumoconiosis, antimony spots on the skin, muscle and joint pains, and gastrointestinal symptoms. Antimony trioxide is possibly carcinogenic to humans.

Barium can cause an increase in blood pressure, gastrointestinal problems, muscle weakness, and affects the nervous and circulatory system.

Beryllium can be harmful when inhaled. Breathing high levels of beryllium for long periods of time can cause acute beryllium disease, which resembles pneumonia. This can develop into chronic beryllium disease (CBD) that can occur many years after exposure to the higher levels. CBD can cause anorexia, weight loss, enlargement of the heart and heart disease. Long term exposure to beryllium can cause cancer.

Cadmium exposure can lead to a variety of adverse health effects including cancer. Breathing high levels of cadmium can severely damage the lungs. Acute inhalation exposure (high levels over a short period of time) to cadmium can result in flu-like symptoms (chills, fever, and muscle pain). Chronic exposure (low level over an extended period) can result in kidney, bone and lung disease.

Cobalt has both beneficial and detrimental effects. However, exposures to high levels of cobalt can result in serious effects on the lungs, including asthma, pneumonia and wheezing. It can also cause allergies and skin rashes.

Mercury can damage the brain, kidneys, and the developing fetus. It can cause irritability, tremors, changes in vision or hearing, and memory problems. Exposure to high levels of mercury for even short periods of time can cause lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation. In the developing fetus, it can cause brain damage, mental retardation, incoordination, blindness, and seizures.

Naphthalene inhalation may cause skin and eye irritation; gastrointestinal symptoms, such as nausea, vomiting, abdominal cramps, and diarrhea; neurologic symptoms, such as confusion, excitement, and convulsions; renal problems, such as acute renal shutdown; and hematologic features, such as icterus and severe anemia. The erythrocytes of individuals with glucose-6-phosphate dehydrogenase deficiency are more susceptible to hemolysis by naphthalene (1-3).

Nickel causes skin sensitization in people coming in dermal contact with the metal. Workers breathing very large amounts of nickel can develop chronic bronchitis and lung and nasal sinus cancers. It can cause stomachache and damage the kidneys.

Selenium is a trace element and essential to good health. However, exposures to high levels can result in neurological effects and brittle hair and deformed nails. Exposure to selenium vapors can cause dizziness, fatigue, irritation of mucous membranes, and respiratory effects. Short term exposures to high levels of selenium through the oral route can cause nausea, vomiting and diarrhea. Selenosis, characterized by hair loss, nail brittleness, and neurological abnormalities (such as numbness and other odd sensations in the extremities), can occur after high exposures to this metal.

Sulfate may have a laxative effect that can lead to dehydration and is of special concern for infants. With time, people and young livestock will become acclimated to the sulfate and the symptoms disappear. Sulfur-oxidizing bacteria pose no known human health risk.

Trichloroethylene (TCE) is a known human carcinogen. Acute (short-term) and chronic (long-term) inhalation exposure to very high concentrations of trichloroethylene can cause dizziness, headaches, confusion, euphoria, facial numbness, weakness, unconsciousness and even death. It can cause cardiac heart malformations in the developing fetus and liver and kidney damage, and adversely affect the immune system. It is classified as a carcinogen and may cause kidney and liver cancer.

Vanadium can cause lung damage when breathed in at high levels. Nausea, mild diarrhea, and stomach cramps have been reported in people exposed to vanadium compounds.

Zinc is an essential element. However, at high doses, it can cause stomach cramps, nausea, vomiting, anemia and changes in cholesterol levels. Inhaling large amounts of zinc as dust or fumes can cause a specific short-term disease called metal fume fever.

2.8 Routes of Exposure

Exposure to COCs can occur through inhalation, ingestion and dermal contact, although most exposure occurs through ingestion or inhalation. DTSC has determined that a potential for complete exposure pathways exists at the Site. Residents, on-site and off-site workers including construction workers may ingest, inhale, or have dermal contact with bare or manually disturbed dust and soils containing elevated concentrations of COCs.

The investigation process is still ongoing to determine the extent of contamination in below grade soil and groundwater. While the extent of the impact to the groundwater system as a whole is not known at this time, the known contamination in the surface and subsurface soil and groundwater poses a threat to the environment, namely the known impacts to groundwater sources with designated beneficial use.

2.9 Population at Risk

Current on-site and off-site workers, residents, future residents, and residential construction workers are at risk. Occupants of the Vernon Plant, industrial/commercial properties, residential properties, children at schools and in parks may be exposed to the COCs by way of any of the exposure routes described above. A particular area of interest is comprised of residential, school and park properties where vulnerable populations including children and pregnant women have the highest exposure to lead in contaminated soil as well as the potential for release or exposure to extremely high levels of lead in dust at and near the Vernon Plant, especially by pregnant women.

3.0 CONCLUSIONS OF LAW

3.1 The substances listed in Section 2.3 and 2.4 are "hazardous substance" as defined in Health and Safety Code section 25316.

3.2 There has been a "release" and/or there is a "threatened release" of a hazardous substance listed in Section 2.3 and 2.4 at the Site, as defined by Health and Safety Code section 25320.

3.3 The actual release of a hazardous substance at the Site may present an imminent and substantial endangerment to the public health or welfare or to the environment.

3.4 Response action is necessary to abate a public nuisance and/or to protect and preserve the public health.

4.0 DETERMINATION

4.1 Based on the foregoing findings of fact and conclusions of law, DTSC hereby determines that a public nuisance exists at the Site that needs to be abated and that a response action is necessary at the Site because there has been a release and/or there is a threatened release of a hazardous substance.

4.2 Based on the foregoing findings of fact and conclusions of law, DTSC hereby determines that there may be an imminent and substantial endangerment to the

public health or welfare or to the environment because of the release or threatened release of the hazardous substance at the Site.

DATE: 10-12-2020

Grant Cope, Deputy Director
Site Mitigation and Restoration Program
Department of Toxic Substances Control

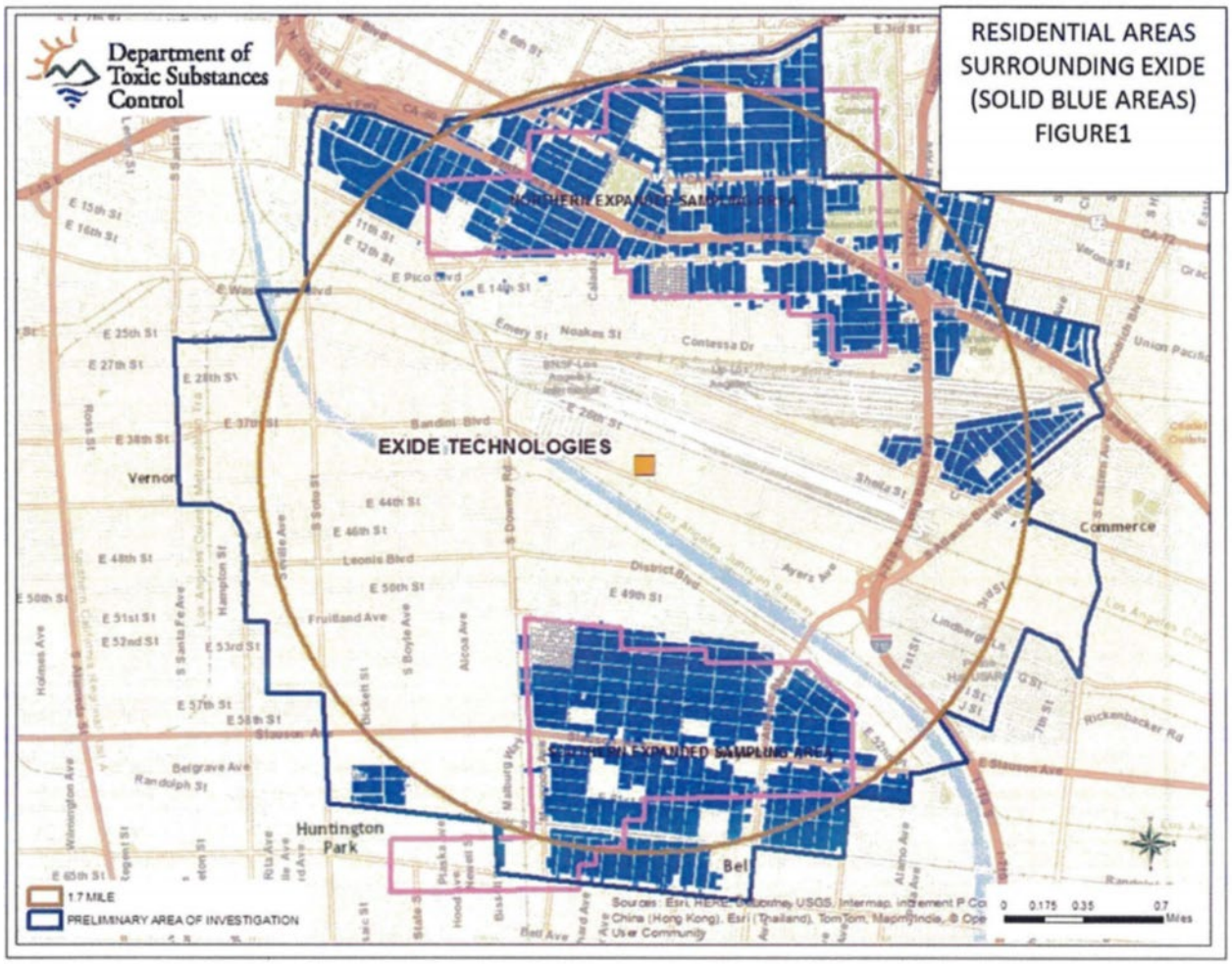

Figure 1 - Exide Site Vicinity Location Map Showing Vernon Plant and the Preliminary Investigation Area

Source: USGS Los Angeles & South Gate Topographic Maps

Figure 2 – Exide Site General Location Map