CITY OF OAKLAND

FILED
OFFICE OF THE CITY CLERK
OAKLAND

2016 JUN 24 AM 9: 08

AGENDA REPORT

TO: Sabrina B. Landreth
City Administrator

FROM: Claudia Cappio
Assistant City Administrator

SUBJECT: Public Hearing To Consider a Report and Recommendation for Options To Address Coal And Coke Issues

DATE: June 23 , 2016

City Administrator Approval Date: 6/23/16

RECOMMENDATION

City Staff Recommends That The City Council Conduct a Public Hearing and Upon Conclusion Consider A Report and Recommendation for Options to address Coal and Coke issues, including **Introducing** An Ordinance (1) Amending The Oakland Municipal Code To Prohibit The Storage And Handling Of Coal And Coke At Bulk Material Facilities Or Terminals Throughout The City Of Oakland And (2) Adopting California Environmental Quality Act (CEQA) Exemption Findings **And Adopting** A Resolution (A) Applying Ordinance No. _____C.M.S. [The Above Ordinance] To The Proposed Oakland Bulk And Oversized Terminal Located In The West Gateway Development Area Of The Former Oakland Army Base; And (B) Adopting CEQA Exemption Findings And Relying On The Previously Certified 2002 Army Base Redevelopment Plan EIR And 2012 Addendum.

EXECUTIVE SUMMARY

The Oakland City Council has taken several actions related to development on the OAB including approving, via resolution or ordinance, the amended OAB Reuse Plan and related documents, a Lease Disposition and Development Agreement (LDDA), Development Agreement (DA), and a Ground Lease.

The City Council has also adopted a resolution opposing the transportation of hazardous fossil fuel materials, including crude oil, coal, and petroleum coke, through the City of Oakland. Concerns have been raised by community stakeholders with respect to transportation, transloading, handling and/or export of coal through the OBOT. As such the City Council a held public hearing to solicit comments regarding the health and/or safety effects of coal and types of coal, including coke for further City Council consideration and action.

Based upon on an independent evaluation of all the evidence and the public record, City staff has determined that pre-existing local, state and/or federal laws as well as potential regulation or mitigation are inapplicable and/or insufficient to protect and promote the health, safety and/or general welfare of Oakland citizens, residents, workers, employers and/or visitors many of who

suffer disproportionately from the effects of nearby industrial activity and who would be uniquely and adversely impacted by the storage, loading, unloading, stockpiling, transloading and handling of coal and coke at bulk material facilities or terminals within the City.

Therefore, staff recommends adoption of the Ordinance to amend the OMC to prohibit the storage and handling of coal and coke at facilities within the City. The Ordinance would **not** apply to the transport of coal or coke (for example, by train or marine vessel) through the City of Oakland or to or from a coal or coke bulk material facility, nor to small amounts of coal or coke for personal, scientific, recreational or incidental purposes, nor to on-site manufacturing facilities where the coal or coke is consumed on-site at that facility's location and utilized on-site as an integral component in a production process. Staff also recommends that the City Council adopt the Resolution to find and determine that the Ordinance should be applied to OBOT because (i) the Developers do not have a vested right not to be subject to the Ordinance and (ii) it is necessary to prevent conditions substantially dangerous to the health and/or safety of existing and/or future occupants or users of the Project and Adjacent Neighbors. Staff also believes that each individual finding of evidence presented in this report constitutes a separate and independently sufficient basis to adopt the Resolution.

Staff has determined, based on the entire public record, that the Ordinance is not a Project under the California Environmental Quality Act (CEQA) and is exempt pursuant to CEQA Guidelines Sections 15378; 15307; 15308; 15061(b)(3); and/or CEQA Guidelines Section 15183 each of which provides a separate and independent basis as well as an overall basis for CEQA compliance.

BACKGROUND / LEGISLATIVE HISTORY

Oakland Army Base

On June 12, 2012, the Oakland City Council approved the amended OAB Reuse Plan which included a mix of industrial, warehousing, logistics and commercial uses including maritime, rail, and open space (Resolution No. 83930 C.M.S.). This action also included adopting the 2012 OAB Initial Study/Addendum to the 2002 Army Base Redevelopment Plan Environmental Impact Report, making related CEQA findings, and adopting a Standard Conditions of Approval/Mitigation Monitoring and Reporting Program (SCAMMRP) for the Plan.

On July 3, 2012, the City Council approved a LDDA with Prologis CCIG Oakland Global, LLC (Developers) (Ordinance No. 13131 C.M.S.) The LDDA provided for development on approximately 130 acres of the Gateway Development Area on the OAB including, but not limited to, the OBOT for the shipping of bulk commodities overseas.

On July 16, 2013, the City Council approved a DA between the City of Oakland and the Developers for the Gateway Development Area (Ordinance No. 13183 C.M.S.).

In September of 2015, Terminal Logistics Solutions (TLS), who entered into an Exclusive Negotiating Agreement with the OBOT Developers to construct a purpose built bulk facility, submitted a basis of design (BOD) package to the City, dated July 21, 2015. The BOD contains

preliminary engineering, site plan drawings and a list of potential commodities including bituminous coal, fuel oils and gasoline (***Attachment A***).

On or about February 16, 2016, the City, as Landlord, and OBOT, as Tenant, entered into an Army Base Gateway Redevelopment Project Ground Lease for West Gateway (the West Gateway Ground Lease or Lease), for a 66-year term, for the West Gateway Property.

The West Gateway Ground Lease, including Article 5 thereof, obligates the Tenant to comply with all present and future ordinances, regulations and requirements applicable to the parties or to the Premises, including any approvals or permits required or granted by the City or any other governmental agency having jurisdiction. It also provides that nothing in the Lease limits or restricts the City in the exercise of its regulatory powers and authority with respect to the Tenant, the Premises or otherwise. Note also that the City entered a Third Amendment to the LDDA, dated February 16, 2016, which expressly acknowledges and reserves the right of the City, notwithstanding the Developers' vested rights under the DA, to consider, adopt and apply to the Project, future City regulations pursuant to applicable provisions of the DA, including but not limited to "regulations pertaining to the transportation, transloading, handling and/or export of coal or petroleum coke."

Public Hearings/Meetings on Coal/Coke

On June 17, 2014, the City Council adopted Resolution No. 85054 C.M.S. (2014 Resolution), opposing the transportation of hazardous fossil fuel materials, including crude oil, coal, and petroleum coke, through the City of Oakland (***Attachment B***). The purpose of the resolution was to address impacts to public health (to all residents and specifically vulnerable and disadvantaged communities), safety, property, air quality and surface and groundwater caused by the transport of these materials through the City Oakland.

Concerns were later raised by community stakeholders with respect to transportation, transloading, handling and/or export of coal through the OBOT. In response, the City Council held an informational public hearing on September 21, 2015 to receive written and oral testimony regarding the health and/or safety effects of coal and types of coal, including coke (which includes petroleum coke (petcoke), to help inform potential future City Council actions. The written public hearing comment period ended on or about October 6, 2015, but comments submitted and received after that date are considered part of the administrative record and are posted on the City's website at the following location:

(http://www2.oaklandnet.com/government/o/CityAdministration/d/NeighborhoodInvestment/OAK038485)

In addition to coal, other potential fossil fuel commodities, which are listed in the BoD for the OBOT, include fuel oils and gasoline, which are fossil fuels and have characteristics similar to crude oil per the 2014 Resolution. On May 9, 2016, the City Council held an informational public hearing to receive written and oral testimony and obtain more information regarding the health and/or safety effects of transporting and handling these materials as well as crude oil. The written public hearing comment period ended on May 16, 2016. Several comments received related to coal rather than fuel oil, gasoline and crude oil. All comments received are also part of the administrative record and posted on the City's website cited above.

Additional evidence was submitted before, during and after the above public hearings and is also part of the administrative record and posted on the City's website cited above.

ESA Contract

Subsequent to the September 21, 2015 informational public hearing, the City Council requested that City staff evaluate all of the information and public testimony and assess what types of expertise and assistance would be necessary to develop potential follow-up actions for the City Council. On May 3, 2016, the City Council authorized the City Administrator to enter into a professional services contract with Environmental Science Associates (ESA) for an analysis of potential health and/or safety effects of certain commodities proposed for transport through the City of Oakland and the OBOT.

ESA's June 23, 2016 Report, titled "Report on the Health and/or Safety Impacts Associated with the Transport, Storage, and/or Handling of Coal and/or Coke In Oakland, Including at the Proposed Oakland Bulk and Oversized Terminal in the West Gateway Area of the Former Oakland Army Base" (hereafter "ESA Report") is included as ***Attachment C.***

Coal Characteristics

Coal and coke can be ignited and burned to produce energy in the form of heat and as a raw material (source of carbon for industrial applications). Both coal and coke are highly dusty, volatile and subject to explosion. The coal and coke proposed to be transported to and through the OBOT for export is from Utah and other western states.

Other Facilities which Use or Transport Coal and/or Coke within the Bay Area

Several other Ports or private facilities use or transport coal or coke in the Bay Area including coal by rail exported through the Ports of Richmond and Stockton, petcoke shipped through the Port of Benicia (APS West Coast), and coke and coal transported via truck from the Pittsburg Marine Terminal (Koch Carbon, LLC). In addition, the East Bay Municipal Utility District (EBMUD) uses anthracite coal in its surface water treatment plants (for filtration purposes). Most of the EBMUD plants use the same coal for about 20 years and any related replacement coal is transported to the plants in sealed bags that arrive directly from the supplier via tractor trailer trucks, not rail. Finally, AB&I Foundry, an iron foundry that manufactures cast iron pipe and fittings (located near the Coliseum BART station), receives petcoke via a rail spur.

Under normal conditions, it is not expected that trains carrying coal on the rail routes to the Ports of Richmond and Stockton would pass through the City of Oakland. Routing of trains through Oakland to Richmond and Stockton would only occur if there were a bottleneck on the other two rail corridors. Coal is also shipped via rail to the Port of Long Beach. However, coal trains passing through Oakland to reach Long Beach would be inefficient and again, would only occur if there was a mainline blockage on the preferred routes. See ***Attachment D*** for rail routes in California.

According to a Port of Oakland representative, the Port currently does not have any tenants with bulk coal facilities; bulk coal is not shipped from the Port (***Attachment E***).

California Environmental Protection Agency (CALEPA) Disadvantaged Communities

The OBOT site, portions of West Oakland (including a portion of southern Emeryville) and western San Leandro are all classified as "disadvantaged communities" by the California Environmental Protection Agency (CALEPA). Disadvantaged communities are areas disproportionately burdened by and vulnerable to existing multiple sources of pollution. Within these disadvantaged community boundaries, West Oakland West Oakland and a portion of southern Emeryville have an affected population of 13,309. These populations are immediately adjacent to the northerly route of the mainline rail, the OBOT, a new rail spur to the OBOT, and the new Port Railyard. Disadvantaged Communities within portions of San Leandro (population 20,080) may also be affected if the coal is transported by rail via the southerly route to the OBOT.

BAAQMD TOPICS

Air Quality Standards

Particulate matter (PM), one of six EPA criteria air pollutants, is a mixture of particles that can include organic chemicals, dust, soot and metals. PM10 is respirable air particulate matter of 10 micrometers or less; PM2.5 is smaller than PM10 and are 2.5 micrometers (about one ten-thousandth of an inch) or less in diameter. Both PM10 and PM2.5 are of concern because they can move into the lungs causing serious health effects (asthma, heart and lung disease, and chronic illness) and exposure contributes to death. The BAAQMD enforces the EPA standards locally.[1]

Non-Attainment Status

The EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criterion air pollutant, based on whether or not the National Ambient Air Quality Standards have been achieved. The Bay Area's ambient air quality is currently designated as nonattainment for six standards including ozone (both 1 hour and 8 hour standards), particulate matter (PM10 for the 24 hour and annual standards) and fine particulate matter (PM2.5 for the 24 hour federal and the annual state standards). Oakland and West Oakland have both experienced exceedances of the state and federal ambient air quality standard levels for PM2.5 which have

[1] The Bay Area Air Quality Management District is considering whether to adopt new regulations to address health, safety and/or general welfare issues.
(See https://pdoth.s3.amazonaws.com/production/uploads/portals/234/forum/674/issue/3745/issue_asset/asset/4776/SS33_PM_from_Coke_andCoal1.pdf (SS33: Particulate Matter from Coke and Coal) and https://pdoth.s3.amazonaws.com/production/uploads/portals/234/forum/674/issue/3745/issue_asset/asset/4779/SS36_Fugitive_Dust.pdf (SS36: Fugitive Dust).The City could only speculate whether BAAQMD will ultimately adopt regulations and if so, the content of such regulations. The very fact that BAAQMD is considering such regulations, and the reasons stated by BAAQMD therefor, further demonstrates that the City is justified to take action now to advance the health, safety and/or general welfare objectives set forth in the proposed Ordinance and Resolution. Moreover, the air quality analysis from ESA Report (Attachment C and the summary table excerpted in this report on page 13) was based upon an enclosed facility and use of the Best Available Control Technology, which is what BAAQMD is currently considering. Thus, the air quality analysis would not change. And, the City believes there is still estimated to be a significant and unavoidable air quality impact even if the proposed regulations are actually adopted.

contributed to the designation of the entire Air District as a nonattainment area. There have been no exceedances of PM10.

Community Air Risk Evaluation Program

Multiple studies have shown that low-income communities, communities with higher populations of racial or ethnic minorities, communities with combined stressors such as noise, crime, and under-employment have less access to health care, elevated stress levels, and reduced resiliency to the added health burden of air pollution. Moreover, communities whose residents are most vulnerable frequently contain more high-emissions source areas. In 2004, BAAQMD initiated the Community Air Risk Evaluation (CARE) program to identify areas with high concentrations of air pollution and populations most vulnerable to air pollution's health impacts. All of Oakland below I-580 is considered an "impacted community" (***Attachment F***) equating to over 400,000 people in Oakland and approximately 25,000 people in the West Oakland area (***Attachment G***). Initially, the CARE program and its analyses included only toxic air contaminants (TAC). Since 2010, the focus of the CARE program has broadened to consider cancer risk from TACs and updated methods for increased mortality and illnesses from PM2.5 and ozone above background levels.

Legal Framework

Ordinance

As detailed below, the proposed City-wide Ordinance is necessary because City staff has determined that pre-existing local, state and/or federal laws are inapplicable and/or insufficient to protect and promote the health, safety and/or general welfare of Oakland citizens, residents, workers, employers and/or visitors (hereafter called "Constituents"), including without limitation the health, safety and/or general welfare of Constituents in the West Oakland neighborhoods, many of who suffer disproportionately from the effects of nearby industrial activity (e.g., increased cancer and asthma rates), and who would be uniquely and adversely impacted by the operation of a coal and coke bulk material facility or terminal.

The proposed Ordinance is generally-applicable legislation which bans, throughout the City, the storing, loading, unloading, stockpiling, transloading or otherwise handling and/or managing (Storing or Handling) of coal or coke at facilities (Coal or Coke Bulk Material Facilities) at which coal or coke are or may be Stored or Handled. For example, the Ordinance prohibits the owner or operator of a Coal or Coke Bulk Material Facility from maintaining piles of coal or coke, operating chutes or conveyors to transport coal or coke, and transferring coal or coke between or among a motor vehicle, ship or train.

The Ordinance does not regulate the transportation of coal or coke, for example, by train or marine vessel, through the City of Oakland or to or from a Coal or Coke Bulk Material Facility. The Ordinance also exempts from the definition of Coal or Coke Bulk Material Facility (i) non-commercial facilities (e.g., educational facilities or residential property on which persons may Store or Handle small amounts of coal or coke for personal, scientific, recreational or incidental use), and (ii) on-site manufacturing facilities where all of the coal or coke is consumed on-site at that facility's location and utilized on-site as an integral component in a production process, and which are operated pursuant to, and consistent with, permits granted by the (BAAQMD).

The Ordinance also provides a process by which a party subject to the Ordinance may petition the City to be excepted from the Ordinance on the ground that application of the Ordinance would constitute a taking (inverse condemnation) of their property.

The Ordinance authorizes the City Administrator to prepare implementing regulations, subject to review and approval by the City Attorney, and directs the City Administrator to submit any such rules and regulations or written interpretation to the City Council within 60 days of adoption, for informational purposes.

A violation of the Ordinance would be a misdemeanor, pursuant to Section 1.28.010 of the Oakland Municipal Code which provides that a violation of the Code is a misdemeanor unless otherwise stated.

The Ordinance is based on extensive findings, as discussed in this report and set forth in the Ordinance.

Staff believes the proposed Ordinance is a proper exercise of the City Council's legislative authority, as detailed below, and meets the appropriate legal standards, including without limitation the City's police power, the Oakland City Charter, the Oakland Municipal and Planning Codes, and the City's General Plan and other land use plans/policies.

Resolution

Because the City has existing agreements with the Developers of the West Gateway Area on the former OAB and the proposed OBOT, the City needs to review whether those agreements restrict the City from applying newly enacted regulations to OBOT. A resolution would be a mechanism for the City to make a determination that the Ordinance applies to OBOT. The Resolution would go into effect when the Ordinance goes into effect.

Staff believes that the proposed Ordinance **would apply** to OBOT because:

1) The Developer Entities have no right, under the DA or otherwise, not to be subject to the Ordinance. The application of the Ordinance does not impair any vested right regarding development or use of the subject property and thus falls outside the limitations on subsequent regulation, including as set forth in Exhibit D-2-2 and Sections 3.2 and 3.4.1 of the DA.

   The DA, as well as the LDDA and the West Gateway Ground Lease (collectively "Agreements"), do not provide any right to Store or Handle *any and all* bulk goods, *nor any certain* bulk goods at the Project Site. Nor do the Agreements provide that the City may not prohibit actions to Store or Handle any particular bulk goods at the Project Site. Instead, the Agreements provide Developers certain rights regarding the *development* and *use* of the property at the Project Site, which development and use does not include any right per the Agreements to Store or Handle any particular bulk goods.

2) Separately and independently, Section 3.4.2 of the DA authorizes the City to impose subsequently adopted regulations, as an exception to Developers' vested rights under

the DA, where the City determines, based on substantial evidence and after a public hearing, that certain standards have been satisfied.

Specifically, Section 3.4.2 of the DA provides:

> "Notwithstanding any other provision of this Agreement to the contrary, City shall have the right to apply City Regulations adopted by City after the Adoption Date, if such application (a) is otherwise permissible pursuant to Laws (other than the Development Agreement Legislation), and (b) City determines based on substantial evidence[2] and after a public hearing that a failure to do so would place existing or future occupants or users of the Project, adjacent neighbors, or any portion thereof, or all of them, in a condition substantially dangerous to their health or safety. ..."

Thus, City staff recommends that the City Council determine that the Ordinance applies to OBOT for each of these reasons. As to the first reason, because the Ordinance does not affect any vested right. As to the second reason, because, based upon its independent review of the evidence, the City Council finds and determines that, pursuant to DA Section 3.4.2, the Ordinance may be applied to OBOT as an exception to any vested right the Developers might claim, including for reasons stated below and otherwise in the record – that is, the Ordinance is necessary to prevent conditions substantially dangerous to the health and/or safety of existing and/or future occupants or users of the OBOT and adjacent neighbors.

ANALYSIS AND EVALUATION OF EVIDENCE

Staff has reviewed and evaluated the BOD, the ESA Report, reports submitted by Zoe Chafe, Ph.D.,[3] the Public Health Advisory Panel on Coal in Oakland[4], and the other information submitted in the public record in order to evaluate options and make recommendations for the City Council to consider to address coal and coke issues. Below is a summary of the major points and/or conclusions of staff's review of the evidence.

General OBOT Operations and Design

- The BOD for the OBOT includes consideration and capability to receive, store, and handle commodities such as coal and coke for export.

---

[2] The DA does not define "substantial evidence." California courts (including the First District Court of Appeal, which has jurisdiction over cases appealed from the Alameda County Superior Court), have explained that substantial evidence can be defined either as "as evidence of ponderable legal significance ... reasonable in nature, credible, and of solid value," or as "relevant evidence that a reasonable mind might accept as adequate to support a conclusion." (*Desmond v. County of Contra Costa* (1993) 21 Cal.App.4th 330, 335.) In a letter to the City dated May 2, 2016, the Developers' counsel David Smith quoted from a prior opinion of the First District Court of Appeal (*Bowers v. Bernards* (1984) 150 Cal.App.3d 870, 873), which opinion describes the "ponderable legal significance" articulation of these equally valid, comparable definitions of substantial evidence. In any event, the record includes substantial evidence which satisfies all of these tests.

3 Analysis of Health and/or Safety Impacts and Other Issues/Concerns Related to the Transport, Transloading, Handling, and Storage of Coal and/or Petroleum Coke (Petcoke) in Oakland and at the Proposed Oakland Bulk Oversized Terminal dated June 22, 2016

[4] An Assessment of the Health and Safety Implications of Coal Transport through Oakland, dated June 14, 2016

- The OBOT design is described as preliminary at this time, but is to be built consistent with the BOD submitted to the City of Oakland. However, the Developers now state that "The ultimate design for the terminal at the West Gateway has not been completed. This is a purpose-built facility and that 'purpose' has yet to be defined with any degree of certainty. Thus, the foundational and defining aspects of the ultimate design for the terminal remain unconfirmed." [5]

- While the Developers have not committed to specific commodities, the BOD notes two commodity types (A and B) that could be processed through the OBOT. Commodity A is described as "very dusty, exhibits spontaneous combustion behavior, potentially explosive" and a maximum 3-inch lump size. Based on these physical characteristics, Commodity A would include coal and/or coke.

- The planned throughput for Commodity A is up to 5.0 million metric tons (MMT) per year. However, the Developers have stated that the total throughput for all commodities will vary and range from 6.5 to 7.5 MMT per year, with no specific throughput committed for coal or coke. Therefore, most of the OBOT's throughput would be Commodity A including potentially coal and/or coke.

- If Commodity A includes coal and/or coke and the throughput is as stated above, 437 unit trains per year or approximately 1.2 trains per day would arrive at the OBOT. Each train would include 104 rail cars which will then be split into four batches of 26 rail cars along a new rail spur for subsequent processing. Each car is expected to be designed to bottom dump the commodity at the terminal. If Commodity A includes coal, the Developers indicate that rail covers will be used.

- Commodity A will be released from rail cars into a deep underground transfer compartment and then moved within the OBOT via enclosed conveyance systems to storage facilities. Commodity A would then be transferred onto ships through the use of dual telescoping quadrant shiploaders. Dust is proposed to be contained through enclosed facilities, dry fog and/or water sprays and wash down at ship loading points.

ESA Report

ESA completed its analysis of potential health and/or safety effects of coal and coke proposed

5 Developers previously stated that the only substantial evidence is that submitted based upon the specific BoD (See Phil Tagami and Jerry Bridges letter to Claudia Cappio, Assistant City Administrator, dated October 6, 2015). More recently, however, they contend that the BoD cannot be relied upon as evidence that coal and/or coke are proposed to be shipped or otherwise handled at the OBOT. (See letter from David Smith, counsel for Developers, to Claudia Cappio, Assistant City Administrator, dated May 2, 2016 (asserting that the BoD represents a mere 10% of the OBOT design and that there is not yet any commitment to ship or otherwise handle any particular commodity, among other assertions).) Thus, on one hand, Developers assert that the BoD is reliable evidence regarding their plans, and on the other hand, they seek to disavow the value of the BoD. In any event, it is clear that the Developers have indicated their position that coal and/or coke are commodities which they may ship or otherwise handle at the OBOT, including without limitation because the DA authorizes them to proceed to develop a Terminal for non-containerized bulk goods, and the BoD identifies coal and/or coke as a common non-containerized bulk good which may be shipped or otherwise handled at the OBOT. Likewise, the Developers previously requested the City move expeditiously to conclude its health/safety review (see letter from OBOT's Phil Tagami to City Council President Gibson-McElhaney, dated March 1, 2016), but more recently contend it is premature for the City to conduct the health/safety review (see previously referenced May 2, 2016 letter from David Smith to Claudia Cappio).

for transport through the City of Oakland (***Attachment C***). The analysis applies to any facility which proposes such activities. However, ESA has also analyzed the proposed OBOT as one illustrative example of such a facility. The evaluation included potential impacts on adjacent neighbors as a result of:

- Rail transport (main rail line, staging at Port railyard and transport on rail spur to OBOT),
- Unloading, storage and transfer,
- Maritime transloading, and
- Pollution, greenhouse gas (GHG) emission and sea level rise impacts in Oakland due to the burning of coal or coke overseas.

Adjacent Neighbors [6]*:* Within the analysis, adjacent neighbors included the following as shown in ***Attachment H***:

- Army Base Redevelopment Plan Area,
- West Oakland Specific Plan Area (all of West Oakland),
- Portions of the cities Oakland (including a southern portion of Emeryville) and San Leandro that are designated CALEPA disadvantaged communities,
- Sensitive receptors including two (2) schools, a child care center, and parks which are within 1,000 feet of the Port railyard, within 0.5-mile of the rail spur between the Port Railyard and the OBOT and within 1.5-miles of the OBOT,,
- Areas within the cities of Oakland, Emeryville and San Leandro within 1,000 feet of the rail line,
- Workers and commuters at the Oakland Toll Plaza for the San Francisco-Oakland Bay Bridge (within approximately 1,000 feet of the proposed OBOT),
- East Bay Regional Park District's (EBRPD) Alexander Zuckermann Bicycle and Pedestrian Path (located along the southern edge of the Bay Bridge's eastern span),
- The future 170 acre Gateway Park (located along the southern edge of the Bay Bridge's eastern span), and the
- Public shoreline access immediately west of the OBOT.

Evaluation of Dust Controls:[7] The BoD proposes the use of rail car covers to control fugitive coal dust along the trip from Utah or other western states to the OBOT. Approximately four companies produce rail covers in the United States (U.S.). However, none of these manufacturers have rail covers either in current use or tested specifically to reduce fugitive dust from rail cars carrying coal or coke. EcoFab's covers have been certified by the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration regulations for the containment of hazardous material for transport, again, not coal or coke. However, based upon the test criteria, this evaluation was based upon containment, worker safety and functionality, not upon air emissions or public health and safety. Furthermore, rail car covers used in coal and coke transport in Portugal are not available in the U.S. Although these rail car covers were tested, the authors stated that they were unable to reliably confirm their study results to determine the level of dust control from the use of rail car covers for coal trains

[6] The DA does not define "adjacent neighbors."
[7] The same conclusions were generally reached by Zoe Chafe, Ph.D., the Public Health Advisory Panel on Coal in Oakland and other commenters.

in Portugal. Thus, even the author questions the validity of their own study. Even if this study were applicable, there appears to still be significant differences in applying these results to coal transportation for the OBOT due to the difference in the number of cars per unit train, number of unit trains, the train trip length, topography travelled, train speeds, coal type and weather. In sum, there is a lack of published scientific data for field testing in the U.S. proving the effectiveness of rail car covers to reduce fugitive dust from coal and, as such, City staff believes covered coal cars cannot be relied upon to reduce fugitive dust from coal. Moreover, no covers have been reported to be used on coke-filled rail cars.

While the BOD includes the use of covered rail cars, topping agents or surfactants have reportedly been sprayed on top of coal to reduce fugitive dust. The Burlington Northern and Santa Fe (BNSF) Railway requires an 85% reduction in coal dust through the use of a topping agent or surfactant for Wyoming or Montana coal based on a recent study of fugitive dust from Powder River Basin coal conducted by BNSF and Union Pacific Railroad in 2010 (BNSF Super Trial). The BNSF Super Trial study was not publicly published in a peer reviewed scientific journal, did not fully disclose highly relevant parameters associated with the study, or disclose results about the effectiveness of the applied dust topper over long haul distances. Furthermore, Norfolk & Southern retained a consultant to analyze coal dust emissions and material loss during transport. The consultant cited, in their findings, that settling often leads to the cracking and ultimate failure of chemical binders. The consultant found there is no credible estimate of dust reduced from its application and an 85% crust retention does not necessarily produce an 85% emission reduction. In any event, the application of a topping agent would not reduce coal dust escaping from the bottom of the rail car which could be re-entrained (dust deposited and then re-suspended by rail activity and local winds). In sum, there is a lack of scientific data proving the continuous effectiveness of topping agents or surfactants to reduce coal dust emissions from open rail cars from Utah to Oakland, within the staging area at the Port and the OBOT.

Finally, there are no enforceable provisions from the U.S. Department of Transportation Surface Transportation Board, the Federal Railroad Administration, or from railroads themselves to require the coal supplier or Developers to utilize dust controls (topping agent or rail car covers) for coal from Utah.

Health Impacts [8]

- *Fugitive Coal/Coke Dust:* Scientific research points to potential significant public health hazards related to coal/coke dust. The main health impact from coal or coke would be from the inhalation fugitive dust emissions resulting in heart and lung issues, cancers, childhood growth and development problems. Fugitive dust is generated as the coal/coke is broken down into smaller pieces during transport in uncovered rail cars along the rail route, while waiting at the Port railyard, traveling along the local spur track and within the enclosed rail car transfer building, conveyor transfer points, storage piles, and ship loading.

[8] Ibid

- Per the table below, the overall emissions from the OBOT project are expected to exceed both the daily and annual PM10 and PM2.5 City of Oakland CEQA Thresholds of Significance[9], which would be considered a significant unavoidable impact under CEQA and thus presumptively a substantially dangerous condition to health.

  Based upon the total emissions estimates for fugitive coal dust for all activities associated with OBOT noted below, as well as the re-entrainment of accumulated fugitive coal dust, the cumulative contributions of particulates would further degrade existing air quality. Specifically, this cumulative contribution of emissions from the OBOT would be likely to cause additional exceedances of ambient air quality standards at the air monitoring station in West Oakland. Since the ambient air quality would not improve, and the standards would likely continue to be exceeded, this degraded local air quality would continue to adversely impact the health of the adjacent neighbors.

SUMMARY OF EMISSIONS ESTIMATES FROM RAIL TRANSPORT, STAGING/SPUR TRAVEL, UNLOADING, STORAGE, TRANSFER AND SHIP LOADING OF COAL AT OBOT

Fugitive Coal Dust Emissions Source*	tons/yr			lbs/day		
	TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
Rail Transport*						
BAAQMD	2,102	988	148	12,012	5,646	847
Oakland	82	38	6	468	220	33
So Emeryville	35	17	3	203	95	14
San Leandro	98	46	7	562	264	40
Staging at Port Railyard, Rail Spur Trip to OBOT	156	78	18	889	445	67
SUBTOTAL - Oakland	238	**116**	**18**	1,357	665	100
OBOT Operations						
Unloading	11.9	5.7	0.9	66.0	31.2	4.7
Storage	3.2	1.5	0.2	17.7	8.4	1.3
Transfer	10.4	4.9	0.7	57.6	27.2	4.1
Transloading	11.9	5.7	0.9	66.0	31.2	4.7
SUBTOTAL	37.5	17.7	2.7	207.3	98.1	14.8
PROJECT TOTAL– Oakland**	276	**134**	**21**	1,564	**763**	**115**

[9] Oakland considers a significant CEQA impact if there are greater than average daily emissions of 54 pounds per day of PM2.5 or 82 pounds per day of PM10; or result in maximum annual emissions of 10 tons per year of PM2.5 or 15 tons per year of PM10.

The risk of fugitive dust and air emissions of particles are expected to be at least similar, if not greater, for coke due to its composition. The EPA believes that significant quantities of fugitive dust from petcoke storage and handling operations present a health risk.

- *Worker Health:* Workers onsite at the railyard and the rail spur line would be the closest to where coal dust or petcoke emissions would be concentrated (fully loaded coal rail cars traveling up the rail spur to OBOT for unloading). Workers will also be present inside the enclosed OBOT facilities where coal will be Stored and Handled and will be exposed to high levels of coal dust. These dust accumulations can be re-suspended when disturbed by wind, train travel or operational activities, and provide an additional opportunity for worker exposure to respirable, fine particulates.

  Further, the LDDA includes an Operations Jobs Policy for the West Gateway. This policy sets forth certain requirements regarding hiring and employment for operation jobs at the OBOT. Specifically, the policy requires efforts to fill on-site jobs with residents and Disadvantaged Workers (a resident meeting eligibility criteria for California Enterprise Zone Hiring Credits, as set forth in Cal. Rev. & Tax Code Sec. 23622.7(b)(4)(A)) per the following priorities:

  - First Priority: Residents of zip codes 94607, 94612, 94608, and 94609,
  - Second Priority: Residents of the Oakland Enterprise Zone Targeted Employment Area as of the LDDA Execution Date,
  - Third Priority: other residents of the City of Oakland.

  Furthermore, compliance would be determined if at least fifty percent (50%) of workers hired for on-site jobs during a particular year were residents, and for whom at least twenty-five percent (25%) of workers hired during a particular year were Disadvantaged Workers.

  The Jobs Policy was meant to provide economic benefits to local residents, not to place these same residents in a further unhealthy environment. As noted above, air quality would be further impacted due to the Storage and Handling of coal and coke at the OBOT. Potential OBOT workers from the priority zip codes and in much of the City are already living in CARE program impacted areas and CALEPA disadvantaged communities where air pollutant concentrations and toxics are higher than the average. These residents already exhibit higher rates of asthma and other health impacts. While job-related exposure to coal dust is limited by Occupational Safety and Health Administration (OSHA) standards; these standards do not consider the cumulative effect of workers exposure to already impacted air quality. For dust from petroleum coke, there are no specific occupational exposure limits for workers.

  Constituents' Health (adjacent neighbors, recreation users, commuters, and sensitive receptors): In the summer months, when people spend the greatest amount of time outdoors, the wind is 100% of the time from the west. In the winter time the wind is from the west about 70% of the time. This means that during the entire year coal dust from the rail and OBOT operations, along with the re-entrainment of accumulated fugitive coal

dust, will likely be transported directly into Oakland residential and outdoor recreational areas, particularly West Oakland. Adjacent neighbor's health, including populations in West Oakland and the southern portion of Emeryville, are already disproportionately affected by air pollution and will be even further impacted by the additional fugitive dust emissions from coal and coke processing at the OBOT. Furthermore, commuters, and the occasional recreational user of the new EBRB's bike and pedestrian path, Gateway Park, and the public access to the Bay to be located directly west of the OBOT will also be exposed to an increase in air pollutants.

Safety Impacts[10]

- *Spontaneous Combustion:* The spontaneous combustion of coal and the resulting subsequent fires are a well-known phenomenon. During rail transport, small fires have occurred associated with the spontaneous combustion of coal including thirteen (13) rail car fires in the US between 2001 and 2015. Spontaneous combustion and fires in arriving coal cars and coal storage piles are also common. Major fires at coal terminals have happened in the past including Scotland and Australia as well as two major fires at the Port of Los Angeles coal terminal in 2000 and 2001.

- *Coal Dust Explosions:* The risk of dust explosions in confined air spaces from bituminous coal and petcoke also has occurred in coal processing facilities such as proposed by the OBOT.

- *Combustion and Toxic Smoke, Dust and Ash*: The uncontrolled combustion of coal will result in the potential exposure of smoke, toxic gases, dust and ash. Toxic air pollutant emissions associated with a coal fire or explosion would be very similar to emissions from a coal-fired power plant, but without the emissions control systems that are required at coal-fired power generating facilities. As a result, both acute and chronic health impacts can be expected for people in close proximity to a coal fire (at and near a facility such as the OBOT or along the rail route). Emissions from coal fires also would include fine particulate matter, a wide variety of metals, especially mercury, toxic hydrocarbon/volatile organic compound species and small amounts of uranium.

- *Emergency Response*: For coal fires where the combustion is taking place on the surface of the coal, standard firefighting techniques can be employed, including the application of water and foam. Micelle-encapsulating agents and water are preferred to extinguish fires in coal piles. However, coal fires can be difficult to control when spontaneous combustion occurs within a coal pile and the application of water or foam may not be effective in extinguishing a fire. Fire departments that need to respond to a coal fire require specialized equipment and training to allow them to identify the precise location of a fire within a coal pile and apply fire-fighting agents to the fire. In addition, the proximity of the OBOT to Interstate-80 and the San Francisco-Oakland Bay Bridge could present additional safety and emergency access issues in the event of a major fire that disperses smoke over the highway.

[10] Ibid.

Pollution & Sea Level Rise (Burning Overseas Impacts in Oakland)[11]

- *Greenhouse Gases:* GHG's are produced during the combustion of coal and coke, and also during the process of steel and iron production. Common GHGs associated with coal combustion and coke production are carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). There is the potential for an incremental increase of GHG emissions globally resulting in local impacts from global warming (e.g., sea level rise), and for transported air pollutants resulting from coal and coke combustion overseas to adversely impact local air quality. The total GHG emissions (including CH4 and N2O), produced per year if all OBOT-related exported coal were combusted in power plants by the end user overseas would be approximately 18.3 MMT of CO2e. For comparison, the addition of 18.3 MMT of CO2e emissions globally is greater than the annual emissions of CO2e from all five oil refineries in the San Francisco Bay Area (that total is 14.4 MMT of CO2e for 2014). While coke is not typically exported to be directly combusted overseas, if all of the coke were combusted under similar conditions, the CO2e emissions would be about 10% greater than the combustion emissions described above for coal, and would provide a similar contribution to global climate change and sea level rise and local impacts.

- *Other Air Pollutants and Their Long Range Transport:* Air pollutants and trace metals are also emitted through coal combustion and during the use of coke or coal during manufacturing that can have impacts on human health and the environment. These emissions are likely to be transported to Oakland, including West Oakland, where they would contribute to already high pollutant concentrations, contribute to the existing number of days of exceedances of the ambient air quality standards (for PM2.5) and exacerbate health effects in three local communities classified as disadvantaged communities.

- *Sea Level Rise*: Sea level rise vulnerability was one of the many projected local climate impacts expected to be experienced in Oakland per the City's Climate and Energy Action Plan (ECAP). Climate change vulnerability is a function of exposure to climate impacts, sensitivity to those impacts, and the capacity to adapt and recover. All members of the Oakland community could be affected by some of these impacts, but certain population segments may be especially vulnerable. For example, more frequent and severe heat events could exacerbate existing public health problems related to poor air quality, especially affecting the elderly and those living or working in areas with high concentrations of air pollutants. Increased flooding danger in low lying areas is of additional concern. According to the Bay Conservation and Development Commission approximately 6,000 Oakland residents would be at risk in a 16-inch sea level rise scenario (expected by 2050), and 15,000 residents would be at risk with a 55-inch sea level rise, which is expected by the year 2100. Oakland facilities that are at risk from a 16 inch sea level rise by 2050 include two fire stations, five health care facilities, two homeless shelters and three schools.

[11] Ibid

Per the City's Local Hazard Mitigation Plan, significant infrastructure and facilities that are vulnerable to sea level rise including I-880, surface streets, the Union Pacific Railroad line, two fire stations, power transmission facilities, stormwater facilities and wastewater facilities.

Based upon staff's review of the ESA Report as summarized above, staff recommends adoption of the proposed City-wide Ordinance because pre-existing local, state and/or federal laws are inapplicable and/or insufficient to protect and promote the health, safety and/or general welfare of Oakland Constituents, including without limitation the health, safety and/or general welfare of Constituents in the West Oakland neighborhoods. The proposed Ordinance is generally-applicable legislation that is a proper exercise of the City Council's legislative authority and meets the appropriate legal standards, including without limitation the City's police power, the Oakland City Charter, the Oakland Municipal and Planning Codes, and the City's General Plan and other land use plans/policies. Moreover, staff recommend that the City Council find and determine that the Ordinance should be applied to OBOT because (i) the Developers do not have a vested right not to be subject to the Ordinance and (ii) it is necessary to prevent conditions substantially dangerous to the health and/or safety of existing and/or future occupants or users of the Project and Adjacent Neighbors.

Summary of Other Health, Safety and Environmental Evidence from the Public Comments[12]

Health Impacts

- Coal and coal dust contains silica (crystalline quartz), which the State of California has recognized as a known carcinogen. Respirable-sized silica particles are liberated during crushing, loading, and dumping coal. Tiny pieces of silica (quartz) cause chronic scarring in the lungs (leading to silicosis and other respiratory diseases). OSHA recently adopted a final rule guiding "Occupational Exposure to Respirable Crystalline Silica", regulating silica even at levels much lower than those of generalized coal dust in occupational settings.

- There is no safe level of exposure to fine coal dust particles (PM2.5). There is no known threshold below which those exposed to a certain level of PM2.5 are completely safe per the World Health Organization (WHO), U.S. Environmental Protection Agency (USEPA), and California Environmental Protection Agency (CalEPA) based on evidence from scientific studies.

- When coal is burned, it often results in the release of mercury and lead and other trace or heavy metals into the environment, where food sources (such as urban gardens) become contaminated.

- The federal government has documented the role that coal dust build-up plays in destabilizing railroad tracks and degrading roadbeds, causing an increase in coal train

[12] Similar conclusions reached in the ESA Report are generally not restated here.

derailments. These derailments will likely increase the potential for fugitive dust dispersal as coal is spilled out of the rail cars.

- *Worker Health*: Despite occupational health regulations and vetted infrastructure designs, high concentrations and buildup of coal dust within industrial settings is a documented problem. Wetting methods might place workers at risk by reducing the efficacy of the respirators they would likely be required to wear while in the vicinity of coal or coal dust.

Safety Impacts [13]

- Coal dust explosions create incredibly damaging forces. The speed and duration of the moving air in an explosion is capable of dispersing additional coal dust causing/feeding a secondary fire and/or explosion.

- Emergency personnel responding to a coal fire could generate a dust cloud that leads to an explosion. This complication has resulted in the deaths of emergency responders in the past.

- Careful facility design will not prevent coal fires or combustion. Several scientific studies have found that many (perhaps even the majority of) explosions in coal processing and storage facilities occur as a result of "human error" and "technical failure/malfunction of component or equipment."

- Federal agencies are calling for stricter standards on combustible dust, indicating that current standards do not adequately protect workers in the U.S. and that failure to create a comprehensive combustible dust standard could cost lives.

Environmental Impacts

- Topping agents, applied to reduce fugitive coal dust, may have negative aquatic and environmental effects, including surface and groundwater quality deterioration, soil contamination and impacts on native plants and animals.

General Welfare Impacts

- In addition to a health impact, coal dust build-up and the subsequent destabilization of railroad tracks and spurs and degradation of roadbeds is also a potential economic impact if the tracks need to be reconstructed or maintained in a unique way. It is likely that the City and its taxpayers would have increased financial burden for these major improvements, including possibly the OBOT facility itself.

- There are significant financial risks to the City with coke or coal bulk facilities, as a number of them have shuttered in recent years, leaving the taxpayers to pay the closure and/or clean-up costs. For example, the Port of Los Angeles' coal export facility closed

[13] October 5, 2015 Letter from John Sutter, Director of EBRPD.

and was dismantled, citing unfavorable market conditions for coal and petcoke. The City of Los Angeles wrote off $19 million of capital investment, and forfeited $94 million in expected revenue. In another example, a coal terminal was built in Portland in the 1980s and subsequently failed due to a lack of coal demand in Asian markets, leaving barely-used equipment that had to be sold. The Port and investors spent $25 million building the coal export terminal.

The City has adopted many General Plan Policies which relate to the protection of the health, safety and general welfare in the City and the environment (***Attachment I***). In addition, the ECAP adopted by City Council (Resolution 82129 C.M.S.) approved a preliminary planning GHG emissions reduction target for the year 2020 at 36% below 2005 levels for the entire City. The purpose of the ECAP is to identify and prioritize actions the City can take to reduce energy consumption and GHG emissions associated with Oakland and contribute to the reduction of the climate change impacts both globally and locally. Though emissions have been reduced more than eight percent since 2005, the City's core emissions are not on track to meet the 2020 goal.[14] To meet this goal, Oakland must further reduce emissions by 850,000 MT CO2e by 2020.

It is inevitable that if the coal exported from the OBOT is combusted in power plants overseas, there would be an incremental increase of GHG emissions globally. According to the ESA report, approximately 18.3 MMT of CO2e would be produced per year if all OBOT-related exported coal were combusted in power plants by the end user overseas. This is approximately 5.6 times Oakland's total annual emissions[15] (2.78 MMT) generated in Oakland in 2013 per the 2013 Greenhouse Gas Emissions Inventory Report dated March 2016. As such, exporting of coal/coke for burning overseas contradicts the purpose of the ECAP and negates the hard work of Oakland's Constituents to reduce GHG emissions.

- The Developers have argued that the coal to be shipped is identified as some of the cleanest burning coal and is likely to replace dirtier coals, leading to a reduction in pollution and climate change risk and likely transportation of air contaminants. This argument does not address the fact that additional health and safety impacts will be produced by the mining, transport, processing, storing and otherwise handling of coal/coke for populations along the rail route and at the OBOT, for disadvantaged and impacted communities in Oakland, southern Emeryville and possibly San Leandro.

  In addition, there is an argument that if the coal/coke is not shipped from Oakland it will be shipped from other terminals or ports. Historically, the Ports of Portland and Los Angeles operated coal terminals; however, each of these two ports has closed their coal terminals. Several Western coastal ports have been requested by terminal developers and coal mine owners to dedicate large terminals to ship US coal to Asia. However, many ports have declined to build and operate coal export terminals based upon environmental and market risk concerns. Recently, the Port of Oakland, Port of Tacoma

14 The emissions referenced are core emissions. Measurement of core emissions is the typical method used by cities to measure GHG emissions, making comparisons from city to city more simple.
15 Ibid

on Puget Sound, and the Columbia River ports of Vancouver, Kalama, and Portland have all considered and rejected coal export proposals. Therefore, it is unlikely that the coal/coke would be shipped from the west coast. It is further unlikely that western coal would be shipped to the east coast based on distance and the availability of mid-west and east coast coal.

Based upon staff's review of the Other Health, Safety, Environmental and General Welfare evidence as summarized above, staff recommends adoption of the proposed City-wide Ordinance because pre-existing local, state and/or federal laws are inapplicable and/or insufficient to protect and promote the health, safety and/or general welfare of Oakland Constituents, including without limitation the health, safety and/or general welfare of Constituents in the West Oakland neighborhoods. The proposed Ordinance is generally-applicable legislation that is a proper exercise of the City Council's legislative authority and meets the appropriate legal standards, including without limitation the City's police power, the Oakland City Charter, the Oakland Municipal and Planning Codes, and the City's General Plan and other land use plans/policies. Moreover, staff recommends that the City Council find and determine that the Ordinance should be applied to OBOT because (i) the Developers do not have a vested right not to be subject to the Ordinance and (ii) it is necessary to prevent conditions substantially dangerous to the health and/or safety of existing and/or future occupants or users of the OBOT and adjacent neighbors.

Conclusions

Based upon its independent evaluation of all the evidence, City staff has determined that pre-existing local, state and/or federal laws are inapplicable and/or insufficient to protect and promote the health, safety and/or general welfare of Oakland Constituents, including without limitation of the health, safety and/or general welfare of Constituents in the West Oakland neighborhoods, many of who suffer disproportionately from the effects of nearby industrial activity (e.g., increased cancer and asthma rates), and who would be uniquely and adversely impacted by the Storing or Handling of coal and coke.

Therefore, staff recommends adoption of the Ordinance to amend the OMC to prohibit the Storage and Handling of coal and coke at facilities within the City, with specified, limited exceptions.

Moreover, based upon staff's review of the entire record, as summarized above, staff recommends that the City Council find and determine that the Ordinance should be applied to OBOT because (i) the Developers do not have a vested right not to be subject to the Ordinance and (ii) it is necessary to prevent conditions substantially dangerous to the health and/or safety of existing and/or future occupants or users of the Project and Adjacent Neighbors.

Staff also believes that each individual finding presented in this Report constitutes a separate and independently sufficient basis to adopt the Resolution. Staff recommends that the City Council find and determine that each of the findings in this Report is separately and independently adopted and expressly applicable to OBOT and should a court of competent jurisdiction determine than any particular finding(s) is or are insufficient to support the adoption of the Resolution, such determination shall have no effect on the validity of the remaining findings and their applicability to the OBOT. Moreover, when viewed collectively,

the health and/or safety findings in this Report constitutes an overall basis of substantial evidence to support adoption of the Resolution.

POLICY ALTERNATIVES

The City Council has several alternatives in considering an action on the potential storage, loading, unloading stockpiling, transloading and handling of coal and coke at within the City. The options to consider include:

1) Take no action
2) Require CEQA on any further coal/coke discretionary permits/approval
3) Regulate coal/coke
4) Amend the OMC to prohibit (ban) coal/coke (staff recommendation)

Alternative # 1	***Take No Action*** This alternative would result in no action by the City Council in regards to the potential Storage and Handling of coal and coke at facilities within the City. The proposed OBOT project, as well as similar future projects, would be processed in accordance with existing rules/regulations.
Pros	Taking no action on this proposal could limit the City exposure to legal actions by the Developers or other parties. However, alternatively taking no action could also increase exposure to legal action by opponents to coal/coke export.
Cons/Reasons for rejecting	Taking no action would result in significant health, safety and or general welfare impacts, as noted above, if OBOT or similar projects proceed.

Alternative # 2	***Require CEQA on any further coal/coke discretionary permits/approval*** This alternative would require CEQA review for subsequent discretionary permits or approvals for the potential Storage and Handling of coal and coke at facilities within the City, including the OBOT.
Pros	Further CEQA review may provide additional information on CEQA topics not covered by the current review.
Cons / Reasons for rejecting	While the City Council could take action to require additional CEQA review for the OBOT, when the City takes an action on a subsequent discretionary permit, as the 2012 Army Base Addendum did not include specific analysis of potential commodities, further CEQA review may only delay final action on the Developers' proposal without new permanent regulations. However, the City retains its authority to require additional CEQA review in the future if it decides such action is warranted.

Alternative # 3	***Regulate coal/coke*** This proposal would develop and apply potential further regulations or mitigations to address the impacts of potential Storage and Handling of coal and coke at facilities within the City, including possibly a conditional use permit requirement.
Pros	Staff did not identify any reasons to support this action.
Cons/Reasons rejecting	This alternative would not prohibit the Storage and Handling of coal and coke within Oakland. Staff has concluded, based on the independent ESA analysis as well as review of the public record, that this type of facility could NOT be adequately regulated to reduce or eliminate the significant health, safety and or general welfare impacts, as noted above.

Alternative # 4 (Staff Recommendation)	***Amend the OMC to prohibit (ban) coal/coke*** This alternative would amend the OMC to prohibit the Storage and Handling of coal and coke at facilities within the City. An accompanying resolution would implement the Ordinance and apply it to the OBOT.
Cons	Prohibiting or banning coal and coke within Oakland could result in City exposure to legal actions by the Developers or other parties. However, alternatively taking no action could also result in legal action by opponents of the Developers' plans to ship coal (though the theory for such a suit and the potential viability thereof are speculative).
Pros/Reasons for recommending	This action would protect the health, safety and/or general welfare of the workers, visitors, recreational users, residents, wildlife and habitat, and water and soil quality within Oakland and adjacent communities and prevent conditions substantially dangerous to Adjacent Neighbors.

FISCAL IMPACT

The adoption of the Ordinance and Resolution would potentially create a new administrative responsibility for follow up and enforcement. These costs can be absorbed by current staff and resources. More seriously, the passage of this Ordinance could lead to the bulk commodity terminal being delayed, reduced in size or not moving ahead. If either of these events happen, the City would have difficulty in meeting its $242 million Trade Corridor Infrastructure Fund (TCIF) match for the Army Base Redevelopment Project. Without the minimum private investment on the West Gateway site, the funding gap would be approximately $30 million. The City could request a revised agreement or a grant match extension from the State, but it is not certain whether we would be successful. If a smaller project or bulk commodity terminal were constructed that would yield a decreased amount of private investment, the City would need to fill a TCIF grant match gap of approximately $5 million.

PUBLIC OUTREACH / INTEREST

As discussed above, the City Council conducted two public hearings after the 2014 Resolution related to the transportation of hazardous fossil fuel materials including coal, coke, fuel oil, gasoline and crude oil through the City of Oakland. There is significant interest in this topic and

the City has received extensive comments which constitute the public record and can be found posted on the City's website noted previously.

A legal ad for this public hearing was placed in the Oakland Tribune on Friday, June 17, 2016. In addition, on the same date, notices were mailed and emailed to interested parties, posted on the Army Base Project website, the Public Notice Kiosks at City Hall and was available at the City Clerk's office. Courtesy, reminder notices were also emailed on Friday, June 24th.

COORDINATION

This agenda report and legislation have been reviewed by the Office of the City Attorney and Bureau of Planning.

SUSTAINABLE OPPORTUNITIES

Economic: Staff's recommendation to prohibit the Storage and Handling of coal and coke at facilities within the City and accompanying Resolution to apply to the Ordinance to the OBOT, would protect the health and safety of Oakland's Constituents and would likely result in an economic benefit. Specifically, the harmful effects of air pollution include, but are not limited to, disease, missed school and work days and emergency room and hospital visits. Considering the populations included in the CARE program and CALEPA Disadvantaged Communities, the effect of these health impacts are significant economically to Oakland's Constituents and the overall City.

Environmental: The Ordinance would protect and improve air quality and reduce GHGs, reduce the transport of hazardous materials and protect water, earth and wildlife.

Social Equity: As detailed above and throughout the public record, communities in Oakland are highly sensitive and already vulnerable to chronic diseases from air pollution and adjacent industry, safety concerns, and economic stresses as well as potential global warming and sea level rise. The proposed Ordinance and Resolution would protect the health, safety and general welfare of these impacted communities.

CEQA REVIEW

Proposed Ordinance Complies with CEQA

Staff has determined, based on the entire public record, that the Ordinance is (1) not a Project under the CEQA and is, therefore, exempt pursuant to CEQA Guidelines Sections 15378; and (2) exempt from CEQA pursuant to CEQA Guidelines Sections 15307 (action to protect natural resources); 15308 (action to protect the environment); 15061(b)(3) ("Common Sense" exemption, no reasonable possibility of a significant effect on the environment); and/or CEQA Guidelines Section 15183 (Projects Consistent with a Community Plan, General Plan, or Zoning). Each of the foregoing provides a separate and independent basis for CEQA compliance and, when viewed collectively, provides an overall basis for CEQA compliance. The following is an analysis discussing the reasons why the Ordinance is exempt from CEQA.

CEQA Guidelines Section 15378

Per CEQA Guidelines Section 15378, a "Project" means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. The Ordinance will not result in a direct or reasonably foreseeable indirect adverse physical change in the environment or a significant adverse effect on the environment. As described above, the Ordinance would minimize the negative impacts above due to the storage, loading, unloading stockpiling, transloading and handling of coal and coke at coal or coke bulk material facilities.

CEQA Guidelines Section 15061(b)(3)

As a separate and independent basis, the proposed Ordinance would not have a significant effect on the environment. On the contrary, the Ordinance would minimize the negative impacts above due to the storage, loading, unloading stockpiling, transloading and handling of coal and coke at coal or coke bulk material facilities. Specifically, the Ordinance would protect and improve air quality and reduce GHGs; reduce the transport of hazardous materials through and within the City of Oakland; improve water and soil quality, and minimize the strain on local services that would need to respond to potential emergencies by prohibiting these facilities.

CEQA Guidelines *Section 15307*

In addition, as a separate and independent basis, the proposed Ordinance qualifies for a categorical exemption under CEQA Guidelines Section 15307, Actions by Regulatory Agencies for Protection of Natural Resources. Specifically, the Ordinance would minimize the negative impacts above due to the storage, loading, unloading stockpiling, transloading and handling of coal and coke at coal or coke bulk material facilities on air and water resources (Oakland Estuary and San Francisco Bay), earth (soil), and plant and animal resources (plant communities, and wildlife such as fish and aquatic life in Oakland Estuary and San Francisco Bay).

CEQA Guidelines *Section 15308*

Furthermore, a separate and independent basis, the proposed project qualifies for a Categorical Exemption under CEQA Guidelines Section 15308, Actions by Regulatory Agencies for Protection of the Environment. The Ordinance would improve air quality and reduce GHGs; reduce the transport of hazardous materials through and within the City of Oakland; improve water quality (Oakland Estuary and San Francisco Bay), soil, and wildlife habitat (fish and aquatic life in Oakland Estuary and San Francisco Bay), and minimize the strain on local services that would need to respond to potential emergencies by prohibiting these facilities.

CEQA Guidelines *Section 15183*

Finally, as a separate and independent basis, staff has concluded the Ordinance is exempt under CEQA Guidelines Section 15183 (Consistency with a Community Plan, General Plan, and Zoning). The Ordinance is consistent with numerous policies enacted to support, protect and promote the health, safety and/or general welfare within the Open Space, Conservation and

Recreation Element, Public Safety Element and 1998 Land Use and Transportation Element (LUTE) of the City's General Plan, as well as the Oakland Planning Code, and Oakland's ECAP.

Resolution Complies with CEQA

As described above staff has determined based on the entire public record, that the Resolution is (1) not a Project under CEQA and is therefore exempt pursuant to CEQA Guidelines section 15378; (2) exempt from CEQA pursuant to CEQA Guidelines Sections 15307 (action to protect natural resources); 15308 (action to protect the environment); and/or 15061(b)(3) ("Common Sense" exemption, no reasonable possibility of a significant effect on the environment).

Furthermore, as a separate and independent basis, the Resolution is also consistent with the 2012 Army Base Addendum to the 2002 Army Base Redevelopment Plan EIR and thus no further CEQA review is required pursuant to CEQA Guidelines Sections 15162-15164. Each of the foregoing provides a separate and independent basis for CEQA compliance and when viewed collectively provides an overall basis for CEQA compliance.

ACTION REQUESTED OF THE CITY COUNCIL

City Staff Recommends That The City Council Conduct A Public Hearing And Upon Conclusion Consider A Report And Recommendation For Options To Address Coal And Coke Issues, Including **Introducing** An Ordinance (1) Amending The Oakland Municipal Code To Prohibit The Storage And Handling Of Coal And Coke At Bulk Material Facilities Or Terminals Throughout The City Of Oakland And (2) Adopting California Environmental Quality Act (CEQA) Exemption Findings **And Adopting** A Resolution (A) Applying Ordinance No. _____C.M.S. [The Above Ordinance] To The Proposed Oakland Bulk And Oversized Terminal Located In The West Gateway Development Area Of The Former Oakland Army Base; And (B) Adopting CEQA Exemption Findings And Relying On The Previously Certified 2002 Army Base Redevelopment Plan EIR And 2012 Addendum.

For questions regarding this report, please contact Heather Klein, Planner III, at (510) 238-3659 or obot@oaklandnet.com.

Respectfully submitted,

CLAUDIA CAPPIO
Assistant City Administrator

Reviewed by:
Darin Ranelletti, Deputy Director
Bureau of Planning

Prepared by:
Heather Klein, Planner III
Bureau of Planning

Attachments (9):

A. TLS Basis of Design package for the OBOT, dated July 21, 2015 (http://www2.oaklandnet.com/government/o/CityAdministration/d/NeighborhoodInvestment/OAK038485) and List of Potential Commodities

B. Resolution No. 85054 C.M.S., A Resolution Opposing the Transportation of Hazardous Fossil Fuel Materials, Including Crude Oil, Coal, and Petroleum Coke, Through the City of Oakland

C. ESA Report, dated June 23, 2016

D. Map of Rail Routes between Utah and Bay Area

E. Correspondence, June 22, 2016 from the Port of Oakland regarding coal/coke shipments from the Port

F. Community Air Risk Evaluation (CARE) Program Oakland Impacted Communities, http://www.baaqmd.gov/plans-and-climate/community-air-risk-evaluation-care-program (Screenshots)

G. CARE Impacted Communities (Oakland Zip Codes Only) http://www.baaqmd.gov/plans-and-climate/community-air-risk-evaluation-care-program/documents

H. Map of West Oakland and Army Base (Coal and Coke Issues)

I. Adopted Plans and Policies Related to Health, Safety and General Welfare, including the General Plan and Energy and Climate Action Plan

REPORT ON THE HEALTH AND/OR SAFETY IMPACTS ASSOCIATED WITH THE TRANSPORT, STORAGE, AND/OR HANDLING OF COAL AND/OR COKE IN OAKLAND, INCLUDING AT THE PROPOSED OAKLAND BULK AND OVERSIZED TERMINAL IN THE WEST GATEWAY AREA OF THE FORMER OAKLAND ARMY BASE

Prepared for
City of Oakland

June 23, 2016

ESA

ATTACHMENT C

REPORT ON THE HEALTH AND/OR SAFETY IMPACTS ASSOCIATED WITH THE TRANSPORT, STORAGE, AND/OR HANDLING OF COAL AND/OR COKE IN OAKLAND, INCLUDING AT THE PROPOSED OAKLAND BULK AND OVERSIZED TERMINAL IN THE WEST GATEWAY AREA OF THE FORMER OAKLAND ARMY BASE

Prepared for
City of Oakland

June 23, 2016

ESA

550 Kearny Street
Suite 800
San Francisco, CA 94108
415.896.5900
www.esassoc.com

Irvine
Los Angeles
Oakland
Orlando
Petaluma
Portland
Sacramento
San Diego
Santa Monica
Seattle
Tampa
Woodland Hills

150774

OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.

TABLE OF CONTENTS

Report on the Health and/or Safety Impacts Associated with the Transport, Storage, and/or Handling of Coal and/or Coke In Oakland, Including at the Proposed Oakland Bulk and Oversized Terminal in the West Gateway Area of the Former Oakland Army Base

	Page
Executive Summary	**ES-1**
1. Introduction	**1-1**
1.1 Purpose of Review	1-1
1.2 Summary of Public Record	1-3
1.2.1 Citations in this Report	1-5
2. Project Description and Operation	**2-1**
2.1 Overview	2-1
2.1.1 OBOT Facility Design and Operation	2-2
2.2 Review of Key Features of the OBOT Facility Design	2-10
2.2.1 Proposed Controls for Dust Reduction during Rail Transport and Staging	2-10
2.3 West Coast Terminal Experience, Prior Proposals and Existing Rail Traffic	2-18
2.3.1 Introduction	2-18
2.3.2 San Francisco Bay Region	2-18
2.3.3 Southern California	2-20
2.3.4 Pacific Northwest Ports	2-21
2.3.5 Existing Rail Traffic	2-22
3. Commodities Characterization	**3-1**
3.1 Coal	3-1
3.1.1 Introduction – Coal	3-1
3.1.2 Coal Rank	3-1
3.1.3 Coal Resources	3-2
3.1.4 Uses of Coal	3-3
3.1.5 Processing Coal	3-4
3.1.6 Transporting Coal	3-4
3.1.7 Exporting Coal	3-4
3.1.8 Utah and Western Bituminous Coals	3-5
3.1.9 Coal Analysis	3-7
3.2 Petcoke	3-9
3.2.1 Introduction – Petcoke	3-9
3.2.2 Petcoke Composition	3-10
3.2.3 Petcoke Uses	3-10
3.2.4 Fugitive Petcoke Dust and Human Health	3-11

Page

4. Local Setting **4-1**
4.1 Overview 4-1
4.2 Existing Setting of Adjacent Neighbors 4-2
4.2.1 Overview 4-2
4.2.2 Health and Air Quality 4-4
4.2.3 Conclusion 4-12

5. Health Effects **5-1**
5.1 Overview 5-1
5.2 Coal 5-1
5.2.1 Mainline Rail Transport 5-2
5.2.2 Staging for Unloading and Spur Transport to OBOT 5-10
5.2.3 Unloading of Coal 5-12
5.2.4 Storage 5-13
5.2.5 Transfer to Storage and Shiploaders via Conveyors 5-14
5.2.6 Transloading to Ships 5-14
5.2.7 Conclusions 5-14
5.3 Petcoke 5-18
5.3.1 Overview 5-18
5.3.2 Evaluation 5-18
5.3.3 Conclusions for Petcoke 5-19
5.4 Health Effects – Worker Exposure 5-20

6. Safety Effects **6-1**
6.1 Overview 6-1
6.2 Combustion of Coal 6-1
6.2.1 Spontaneous Combustion 6-1
6.2.2 Coal Dust Explosions 6-2
6.2.3 Coal Firefighting Issues 6-3
6.2.4 Air Toxic Emissions Associated with Coal Fires and Explosions 6-4
6.3 Conclusion 6-4

7. Greenhouse Gas Emissions, Climate Effects and Air Pollutants **7-1**
7.1 Overview 7-1
7.2 Background 7-1
7.3 Coal Combustion 7-2
7.3.1 Public Comments 7-2
7.3.2 Conclusions 7-4
7.4 Petcoke Use 7-7
7.5 Other Air Pollutants and Their Long Range Transport 7-7
7.5.1 Public Comments 7-8
7.5.2 Conclusions 7-9

8. Report Preparation **8-1**

Appendices

A. Summary of Public Comments A-1
B. OBOT Schematic Figures B-1

C. Port of Oakland, Supplemental Agenda Report, Rejection of All Proposals Received in Response to RFP No. 13-14/06 for Lease of the Charles P. Howard Terminal (Berths 67-68), February 27, 2014 C-1
D. GHG Emissions from Coal Combustion as Estimated by Public Commenters D-1
E. Selected Photos of Rail and Terminal Activities E-1

Page

List of Tables

2-1 Basis of Design Documents Referred to in this Report 2-23
2-2 OBOT Potential Commodity List 2-24
3-1 Coal Heating Value and Carbon Content 3-2
3-2 Western Region Coal 3-3
3-3 Utah Coal Mines and 2014-2015 Production 3-6
3-4 Utah Bituminous Coal Quality Data for 2013 -2014 3-7
3-5 Comparison of Trace Elements of Interest in Coal from the Major Basins in the Us 3-8
4-1 State and Federal Ambient Air Quality Standards and Attainment Status 4-3
4-2 Calenviroscreen Scores for West Oakland and Emeryville 4-4
4-2 Exceedances of 24-Hour $PM_{2.5}$ Standard 4-11
5-1 Estimated Fugitive Coal Dust Emissions from Open Rail Cars During Transport from Utah to the Port Railyard, Oakland, Ca for Delivery at OBOT 5-3
5-2 Estimated Fugitive Coal Dust Emissions Remaining After Control from Open Rail Cars During Transport from Utah to the Port Railyard, Oakland, CA for Delivery at OBOT 5-6
5-3 Scientific Studies Documenting the Health Effects of Particulates 5-10
5-4 Estimated Fugitive Coal Dust Emissions from Staging of Rail Cars at the Port Railyard and Transit on Spur for Unloading at OBOT 5-12
5-5 Estimated Fugitive Coal Dust Emissions Remaining After Control from Staging of Rail Cars at the Port Railyard, Oakland, CA and Transit on Spur for Unloading at OBOT 5-12
5-6 Estimates of Controlled Fugitive Coal Dust Emissions from Unloading, Storage, Transfer, and Transloading of Coal at OBOT 5-13
5-7 Summary of Emissions Estimates from Rail Transport, Staging/Spur Travel, Unloading, Storage, Transfer and Ship Loading of Coal at OBOT 5-17
7-1 EPA Emission Factors for Bituminous Coal Combustion, per Ton of Coal Combusted 7-2
7-2 CO_2 and Other GHG Emissions from Coal Combustion Estimated by Public Commenters and by ESA 7-3

List of Figures

2-1 Rail Routes Between Utah and Bay Area 2-5
2-2 Oakland (Coal and Coke Issues) 2-6
2-3 West Oakland & Army Base (Coal and Coke Issues) 2-7
2-4 OBOT and Port Railyard 2-8
4-1 Projected Bay Area Cancer Risk-Weighted Emissions for 2015 4-7
4-2 Potential Cancer Risk from Toxic Air Contaminants for the Bay Area in Year 2005 and 2015 4-8
4-3 Cancer Risk and Air Pollution Levels Mapped to Zip Code Areas 4-9

This page intentionally left blank

EXECUTIVE SUMMARY

ES.1 Purpose and Scope of Review

The City of Oakland retained ESA's team to conduct a review of public comments that the City received regarding the potential health and/or safety effects of rail transport, handling, and storage, and transloading of coal and petroleum coke. This analysis would apply to any facility which proposes such activities. As an illustrative example of such a facility, the City has requested that ESA analyze the proposed new Oakland Bulk and Oversized Terminal (OBOT).

The OBOT is proposed to be located at the former Oakland Army Base and developed through a joint venture consisting of Prologis, L.P. (Prologis) and California Capital Investment Group (CCIG)—Prologis CCIG Oakland Global, LLC—and Oakland Bulk and Oversized Terminal, LLC, and operated by Terminal Logistics Solutions (TLS).

The purpose of this review is to assist the City in evaluating information in its public record regarding (1) health, safety and/or general welfare evidence that the City Council might consider generally applicable to legislation regulating or banning certain activities regarding coal and coke, e.g., the handling, and storage, and transloading of such material, and (2) whether the development of coal and/or coke facilities would result in a condition substantially dangerous to the health and/or safety of adjacent neighbors which might justify the application of such legislation to projects such as the OBOT which have already obtained some land use approvals.

The scope of this review is focused on certain activities regarding coal and coke, e.g., the handling, and storage, and transloading of such material within the City of Oakland and the adjacent communities of Emeryville and San Leandro. This study scope did not include a review of the: (i) rail transportation of coal or coke from the point of origin to the OBOT vicinity, except as the effects occur along the rail lines within the City of Oakland, including within the OBOT, and to a lesser extent within portions of the cities of Emeryville and San Leandro, or (ii) transportation of coal or coke by ship from the point at which the commodity is on-boarded at the OBOT to its ultimate destination. Because numerous public commenters noted the contribution of the greenhouse gas emissions of coal when combusted by the end user overseas, this study also includes a review of those comments.

The scope of this review is also specifically limited as this is not a California Environmental Quality Act (CEQA) review. ESA reviewed the health and safety issues raised by commenters along with citations to substantiate their statement of impacts. ESA also reviewed additional

scientific information relevant to the consideration by the City Council, based on the comments received.

ES.2 Summary of Public Record

The City received numerous public comments regarding the potential health and/or safety effects of rail transport, handling, and storage of coal and petcoke at the OBOT. These include comments received prior to, at and after the public hearings on June 17, 2014, September 21, 2015, and May 16, 2016. Public comments were received from four government agencies: the U.S. Environmental Protection Agency, the Bay Area Air Quality Management District, the East Bay Regional Park District, and the Alameda County Public Health Department. Comments also were received from approximately 20 national and local environmental advocacy organizations and approximately 185 individuals submitted letters and/or emails. In addition, approximately 30 letters were submitted by individuals and/or companies and other organizations that are in support of the project. The total volume of comments exceeded 3,000 pages.

The OBOT Proponents[1] submitted materials prior to the September 21, 2015 public hearing and also responded to applicable follow-up questions. Among the documents submitted by the proponents was the Basis of Design (BoD) for the OBOT which includes 15 documents totaling over 1,300 pages.

ES.3 Project Description

The OBOT Proponents propose to construct and operate a bulk and oversized commodity marine terminal, the "OBOT" within the city limits of Oakland, California, along the San Francisco Bay. The site is immediately adjacent to and south of the Bay Bridge Toll Plaza and approximately 1.5 miles southwest of residential and commercial areas in West Oakland and the City of Emeryville. The export terminal would be capable of receiving, stockpiling, blending, and loading bulk commodities by conveyor onto ships for export. The specific capability to receive, stockpile, blend, and load commodities for export from the OBOT includes bituminous coal as stated in the BoD. [2]

Based upon the public comments received, the conceptual designs included in the BoD for the OBOT were reviewed for information relevant to the health and safety issues raised by commenters; a comprehensive review of the BoD was not included in this scope of work. ESA understands that the project design for the OBOT is conceptual at this time and that design features for the OBOT would be similar to any marine terminal facility at a port which proposes such activities as rail transport, handling, storage and transloading of bulk commodities for export.

[1] Prologis, CCIG, Oakland Bulk and Oversized Terminal, LLC ("OBOT"), and/or TLS
[2] *Ibid.*

ES.4 Local Setting

In this report, ESA includes consideration of the Army Base Redevelopment Plan Area, West Oakland Specific Plan Area, all of West Oakland, and the southern portion of the City of Emeryville that is physically adjacent to West Oakland Specific Plan area boundary. Due to their proximity to the OBOT site, adjacent neighbors[3] to the OBOT also would include the occupants of structures in the southern portion of the City of Emeryville. This area of Emeryville is about 1.5 miles from the proposed OBOT and less than 1.0 mile from the Port Railyard that would serve OBOT. The analysis also considers areas generally within 1,000 feet of the rail routes that travel through the City of Oakland to the OBOT. The cities of Emeryville and San Leandro also would be affected by the transport of coal by rail to the OBOT.

The following sensitive receptors in West Oakland are located within 1,000 feet of the Port Railyard that would be used for staging rail cars prior to unloading at the OBOT: two schools, a child care center, and parks near I-880. These same sensitive receptors are within 0.5-mile of the rail spur between the Port Railyard and the OBOT, and within 1.5-miles of the OBOT itself.

Adjacent neighbors also include workers and commuters at the Oakland Toll Plaza for the San Francisco-Oakland Bay Bridge. The Oakland Toll Plaza is within approximately 1,000 feet of the proposed OBOT.

The Army Base Redevelopment Plan Area includes the East Bay Regional Park District's (EBRPD) Alexander Zuckermann Bicycle and Pedestrian Path along the southern edge of the eastern span of the San Francisco-Oakland Bay Bridge.[4] The proposed expansion of the pathway will connect to the Bay Trail at the east end of the bridge, immediately adjacent to the OBOT, as planned to be transferred to the EBRPD from the City of Oakland for the development of Gateway Park. In addition, the area immediately west of the OBOT has been reserved for public shoreline access as required by the Bay Conservation and Development Commission.

The OBOT site, a large portion of West Oakland, southern Emeryville, and portions of western San Leandro are all classified as "disadvantaged communities" by CalEPA. The Bay Area Air Quality Management District (BAAQMD) in their Community Air Risk Evaluation (CARE) program identified these areas as having high concentrations of air pollution and populations most vulnerable to air pollution's health impacts. Disadvantaged communities are areas disproportionately burdened by and vulnerable to existing multiple sources of pollution. Within these disadvantaged community boundaries, West Oakland has an affected population of 8,995 and the area of southern Emeryville has a population of 4,314.

All of these adjacent neighbors are located within the Bay Area Air Quality Management District where the current ambient air quality is in nonattainment for 6 standards including ozone (both 1 hour and 8 hour standards), particulate matter (PM_{10} for the 24 hour and annual standards) and fine particulate matter ($PM_{2.5}$ for the 24 hour federal and the annual state standards).

[3] The term "adjacent neighbors" is not defined in the Development Agreement. The OBOT Proponents proposed the dictionary definition of the term "adjacent" as either "having a common border" or "nearby, not distant."

[4] http://www.baybridgeinfo.org/path

In particular, local air quality monitoring demonstrates that Oakland and West Oakland have both experienced exceedances of the state and federal ambient air quality standard levels for the $PM_{2.5}$ 24-hour average of 35 $\mu g/m^3$. West Oakland also has exceeded the average annual ambient air quality standard of 12 $\mu g/m^3$. In 2015, Oakland had one day of exceedance and West Oakland had three days of exceedances of the 24-hour standard for $PM_{2.5}$.

ES.5 Health Effects

Coal. Based upon the total uncontrolled and controlled emissions estimates for all activities associated with OBOT for coal export and the re-entrainment of accumulated fugitive coal dust, the contributions of particulates to local levels of total PM, PM_{10} and $PM_{2.5}$ could cause additional local exceedances of ambient air quality standards and impact the health of the adjacent neighbors in the disadvantaged communities of West Oakland, southern Emeryville, and western San Leandro (as identified by CalEPA and the BAAQMD). As well, other adjacent neighbors that would be affected are users of the adjacent EBRPD path and new park, commuters and workers at the Oakland Bay Bridge Toll Plaza, and users of the public access to the San Francisco Bay.

Thus, the OBOT operations at the terminal itself, OBOT operations at the new Port Railyard, and the new OBOT rail spur (serving the OBOT) could impact the health of adjacent neighbors from the expected increase into the ambient air in the form of total suspended particulates and fine particulates (TSP, PM_{10}, and $PM_{2.5}$) and increased days of exceedances of the PM_{10} and $PM_{2.5}$ standards, from the transport by rail, staging/spur transit, unloading, storage, transfer, and transloading of coal for export. Since we were unable to estimate the amount of emissions from re-entrained or resuspended fugitive coal dust from the rail transport within Oakland, staging of unit trains at the new Port Railyard, and transit along the OBOT spur, the emissions estimates provided here do not include those emissions and thus, are conservative.

Petcoke. The volume of emissions of fugitive petcoke dust into the ambient air in the form of total suspended particulates (and PM_{10} and $PM_{2.5}$) are expected to be similar, if not greater, for petcoke. This is expected to occur for petcoke similar to the coal related activities at the OBOT and the Port Railyard including rail transport, staging, unloading, storage, transfer, and transloading. Thus, the levels of fugitive petcoke dust emissions from the OBOT activities could contribute to existing particulate concentrations in ambient air and similarly affect adjacent neighbors.

In addition, any OBOT workers who live in West Oakland are living within a disadvantaged community designated by CalEPA and within an area of degraded air quality designated by the BAAQMD CARE program where air pollutant concentrations of PM_{10} and toxics are higher than the average, and as well where residents exhibit higher rates of asthma and other adverse health related indicators. Thus, the air quality of the OBOT worker's residential environment is currently degraded, future fine particulate levels of PM_{10} and $PM_{2.5}$ from either coal or petcoke are likely to increase with transport to OBOT and the worker's environment at OBOT provides West Oakland residents with an additional source of exposure to respirable, fine particulates.

ES.6 Safety Impacts

The spontaneous combustion of coal is a well-known phenomenon that has been observed in both coal storage piles and rail cars. Between 2001 and 2015, 13 rail car fires were reported nationally, most of which were likely caused by spontaneous combustion.[5]

The risk of organic dust explosions in confined air spaces, such as from bituminous coal and petcoke, has also been well studied and documented. These types of incidents have been commonly observed in coal mines and coal processing facilities.

Fire departments that need to respond to a coal fire require specialized equipment and training. The specific equipment necessary to adequately extinguish a coal fire is dependent on the characteristics of the fire. For coal fires where the combustion is taking place on the surface of the coal, standard firefighting techniques can be employed, including the application of water and foam. However, coal fires can be difficult to control when spontaneous combustion occurs within a coal pile. Depending on the circumstances, the application of water or foam may not be effective in extinguishing a fire, especially in cases of spontaneous combustion within a coal pile.

The uncontrolled combustion of coal results in the potential exposure to smoke, toxic gases, dust, and ash. Exposure could lead to adverse health impacts, as well as potentially significant environmental impacts associated with the fire and firefighting efforts. Toxic air pollutant emissions associated with a coal fire or explosion would be very similar to emissions from a coal-fired power plant, but without the emissions control systems that are required at coal-fired power generating facilities. Unlike coal fired power plants, where emissions are routed through emission control devices and tall stacks, pollutants emitted from a coal fire are uncontrolled and emitted near ground level, increasing potential exposure. As a result, both acute and chronic health impacts can be expected for people in close proximity to a coal fire; either near a facility such as the OBOT or along the rail route that would serve as the access route to the facility.

ES.7 Greenhouse Gas Emissions, Climate Effects and Other Air Pollutants

Several public commenters estimated CO_2 emissions produced from the combustion of coal could exceed 14 million metric tons of CO_2 annually. For total greenhouse gas (GHG) emissions (including CH_4 and N_2O), ESA calculated that approximately 18.3 million metric tons of CO_2e would be produced per year if all exported coal were combusted in power plants by the end user overseas. Using U.S. Environmental Protection Agency emission factors, ESA estimates approximately 15.65 million metric tons of CO_2 would be produced annually if all exported coal were combusted in power plants overseas.

It is inevitable that if the coal exported from the OBOT is combusted in power plants overseas, there would be an incremental increase of GHG emissions globally, which we estimate to be approximately 18.3 million metric tons of CO_2e. This increase in GHG emissions would

[5] National Response Center Spills and Accidents Database, available at http://www.nrc.uscg.mil/.

contribute incrementally to global climate change along with sea level rise that would be experienced locally in Oakland.

Many public commenters noted that sea level rise vulnerability was one of the many projected local climate impacts expected to be experienced in Oakland as stated in the City's Climate and Energy Action Plan. Climate change vulnerability is a function of exposure to climate impacts, sensitivity to those impacts, and the capacity to adapt and recover. All members of the Oakland community could be affected by some of these impacts (e.g., water use restrictions), and certain population segments may be especially vulnerable. For example, more frequent and severe heat events could exacerbate existing public health problems related to poor air quality, especially affecting the elderly and those living or working in areas with high concentrations of air pollutants. Increased flooding danger in low-lying areas is of additional concern near land or facilities containing hazardous materials. Public commenters concluded there would be secondary impacts from the incremental contribution to global levels of GHGs from combustion overseas of coal exported from the OBOT and that over the term of the OBOT lease (66 years) an associated incremental impact upon global climate change, including sea level rise, could occur locally in Oakland.

The City's Local Hazard Mitigation Plan (May 2016)[6] notes that the San Francisco Bay Development Conservation Commission's (BCDC) "Oakland/Alameda Resilience Study" released in November 2015[7] found significant infrastructure and facilities that are vulnerable to sea level rise. These vulnerable facilities include ground transportation via Interstate-880, Oakland surface streets, and the Union Pacific Railroad line; Fire Stations #27 and #29; power transmission facilities owned by Pacific Gas and Electric Company; stormwater facilities owned by the City of Oakland and wastewater facilities owned by EBMUD.[8] Projections of future inundation of highway, rail lines, fire stations, and utilities would not only affect local residents and business in West Oakland but could also impact the operations of OBOT and the new Port Railyard in West Oakland.

Thus, these projected impacts for future flooding affect the West Oakland area as well as rail and highway infrastructure in the Oakland area which would affect the supply chain for OBOT. This could possibly interrupt operations by 2050 within the lease period (66 years) of the OBOT. Also in future scenarios of increasing sea level rise, emergency response by firefighters to local communities is also projected to be impacted.

If the petcoke were combusted overseas, the additional emissions of CO_2e would provide a similar contribution to global climate change and sea level rise as described above.

6 City of Oakland 2016. City of Oakland Local Hazard Mitigation Plan. http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak058455.pdf

7 BCDC, 2015. "Oakland/Alameda Resilience Study Phase 1 Report: Vulnerability and Risk Assessment Findings, November 2015 Draft", pgs -20-31. Available at: http://www.bcdc.ca.gov/cm/2015/0903-Oakland-Alameda.pdf

8 City of Oakland 2016. City of Oakland Local Hazard Mitigation Plan. http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak058455.pdf

Coal combustion and petcoke/coal use for iron and steel production emit other air pollutants that can have impacts to human health and the environment, both locally and globally. Although those emissions can be difficult to quantify due to the number of variables influencing emissions, there is substantial and credible scientific evidence that some of these air pollutants would be transported to Oakland, including West Oakland, southern Emeryville, and western San Leandro, where these pollutants would contribute to already high pollutant concentrations, contribute to the existing number of days of exceedances of the ambient air quality standards (for $PM_{2.5}$ in particular) and exacerbate health effects in three local communities classified as disadvantaged.

This page intentionally left blank

CHAPTER 1
Introduction

1.1 Purpose of Review

The City of Oakland retained ESA's team of qualified air quality, public health, safety, and risk assessment analysts to conduct a review of public comments[1] that the City received regarding the potential health and/or safety effects of rail transport, handling, and storage, and transloading of coal and coke. This analysis would apply to any facility which proposes such activities. As an illustrative example of such a facility, the City has requested that ESA analyze the proposed new Oakland Bulk and Oversized Terminal (OBOT). The OBOT is proposed to be located in the West Gateway Area of the former Oakland Army Base and developed through a joint venture consisting of Prologis, L.P. (Prologis) and California Capital Investment Group (CCIG)—Prologis CCIG Oakland Global, LLC—and Oakland Bulk and Oversized Terminal, LLC, and operated by Terminal Logistics Solutions (TLS).

The purpose of this review is to assist the City in evaluating information in its public record regarding (1) health, safety and/or general welfare evidence for which the City Council might consider generally-applicable legislation regulating or banning certain activities regarding coal and coke, e.g., the handling, and storage, and transloading of such material, and (2) whether the development of coal and/or coke facilities would result in a condition substantially dangerous to the health and/or safety of adjacent neighbors which might justify the application of such legislation to projects such as OBOT which have already obtained some land use approvals.

This public health and/or safety finding may include, but is not necessarily limited to, the requirements of the *2013 Development Agreement By and Between City of Oakland and Prologis CCIG Oakland Global, LLC Regarding the property and Project Known as "Gateway Development/Oakland Global"* (DA) sections 3.4.2 and 3.4.4.[2]

---

[1] "Public comments" and "public record" in this document refers to documents submitted to the City and/or listed in the City's project record including comments received prior to, at and after (1) the public hearing on June 17, 2014 adopting Oakland City Council Resolution No. 85054 C.M.S; (2) the public hearing on September 21, 2015 regarding public health and/or safety impacts of the transportation, transloading, handling, and/or export of coal or petcoke in or through the City of Oakland; (3) the public hearing on May 9, 2016 regarding public health and/or safety impacts of the transportation, transloading, handling, and/or export of fuel oil, gasoline, or crude oil products in or through the City of Oakland; (4) any additional comments or evidence uncovered while reviewing the public record; and (5) any additional comments received.

[2] We understand that the City also has authority to apply new regulations to the OBOT project, separately and independently from section 3.4.2 of the DA. Thus, ESA's report considers evidence which may meet the standards set forth in section 3.4.2 and evidence which may meet non-DA, general law standards.

Specifically, pursuant to the DA section 3.4.2, if the City finds, based upon substantial evidence, that…"a failure to [adopt City Regulations] would place existing or future occupants or users of the Project, adjacent neighbors, or any portion thereof, or all of them, in a condition substantially dangerous to their health or safety," the City may impose new regulations on the Project. In addition, under DA section 3.4.4, the City can impose new Building and/or Fire Codes on the Project.

The scope of this review is focused on coal and coke. The current list of potential commodities to be exported from the OBOT includes coal but does not include coke. Coke in the form of petroleum coke (petcoke) is included here because it is produced by local San Francisco Bay Area refineries as a by-product and is already a commonly exported commodity.

Notably these two commodities were directly addressed in the 2014 Oakland City Council Resolution No. 85054 C.M.S., opposing transportation of coal and other "hazardous fossil fuel materials" through the City of Oakland. Specifically, these commodities include:

a) bituminous coal (washed coal, clean coal, or soft coal);

b) fuel oils (heating oil, off-road diesel fuel, high-sulfur diesel, residual fuel oils for furnaces and boilers, and fuel for low and medium speed diesel engines);

c) gasoline (all grades);

d) crude oil; and

e) petcoke.

This study does not include a review of the: (i) rail transportation of coal or petcoke from the point of origin to the OBOT vicinity, except as the effects occur along the rail lines within the City of Oakland, including within the OBOT, and to a lesser extent within portions of the cities of Emeryville and San Leandro, or (ii) transportation of coal or petcoke by ship from the point at which the commodity is on-boarded at the OBOT to its ultimate destination. Because numerous public commenters noted the contribution of the greenhouse gas emissions of coal when combusted by the end user overseas, this study also includes a review of those comments.

The scope of this review is also specifically limited to the potential health and/or safety effects to people, which may include DA section 3.4.2, above. This is not a California Environmental Quality Act (CEQA) review, and thus, is not limited to CEQA topics or the use of regulatory standards as significance criteria, but rather evaluates the public comments (see next section, "Summary of Public Record"), and other relevant evidence, as they may apply to health and/or safety effects.

Specifically, ESA reviewed background information and public comments that could be useful to the City in determining whether or not there is substantial evidence that the rail transport and terminal activities for the export of coal or petcoke would support a finding that development of coal and/or coke facilities could result in a condition substantially dangerous to the health and/or safety of the adjacent neighbors, as well as information that will help the City in determining whether to adopt and apply such regulations for those situations in which the standards of section

3.4.2 of the DA do not apply. ESA reviewed the health and safety issues raised by commenters along with their citations to regulations, technical reports, technical journal articles, or data to substantiate their comments. ESA also reviewed additional technical reports, journal articles, agency documents, and other scientific information that is relevant.

ESA examined documentation related to:

- adjacent neighbors of the OBOT who are disproportionately at an increased risk of health effects due to their race, ethnicity, income, and/or level of exposure to other health risks;
- potential levels of fugitive coal dust;
- various particulate and other air pollutant characteristics and quantities, by commodity and by the specific design and operation of receiving, storage, and shipping facilities; and
- equipment and practices for reducing fugitive coal dust emissions during transport to and at the OBOT.

1.2 Summary of Public Record

The City received numerous public comments regarding the potential health and/or safety effects of rail transport, handling, and storage of coal and petcoke at the OBOT. These include comments received prior to, at and after the public hearings on June 17, 2014, September 21, 2015, and May 16, 2016. However, while public comments received after June 12 and at the public hearing noticed for the June 27 Special Meeting of the City Council to consider coal and coke storage and handling in the City of Oakland are part of the public record, these comments were not evaluated in this study.

Comments were received both prior to and following the September 21, 2015 public hearing, as well as at the hearing itself. The City collected the documents received at this hearing and posted a summary that is available on the City's website at:

http://www2.oaklandnet.com/government/o/CityAdministration/d/NeighborhoodInvestment/OAK056137

The comments are generally arranged in the chronological order in which they were received and they are also grouped by certain categories, e.g., "Letters of Opposition," and "Letters of Support." Some of the comment letters are further delineated by specific topic, e.g., "Coal Trains and Dust." Many commenters included attachments and appendices that included such items as scientific studies or other reports pertaining to the proposed OBOT project. Other materials submitted by commenters included newspaper articles and petitions opposing the proposed shipment of coal through Oakland. Public comments submitted after the hearing included many that responded to follow-up questions that the City presented in a memorandum dated September 28, 2015, available here:

http://www2.oaklandnet.com/w/OAK055119.

Public comments were received from four government agencies: the U.S. Environmental Protection Agency, the Bay Area Air Quality Management District, the East Bay Regional Park

District, and the Alameda County Public Health Department. Comments also were received from approximately 20 national and local environmental advocacy organizations, including Earthjustice, the Sierra Club, Communities for a Better Environment, the Natural Resources Defense Council, No Coal in Oakland, the West Oakland Environmental Indicators Project, and San Francisco Baykeeper. Approximately 185 individuals submitted letters and/or emails. In addition, approximately 30 letters were submitted by individuals and/or companies and other organizations that are in support of the project. The total volume of comments exceeded 3,000 pages. **Appendix A** to this report presents a summary table of the comments organized by the type of commenter and checkboxes that categorize the substance of the comment by three general topics: health, safety, or greenhouse gas effects.

The OBOT Proponents[3] submitted materials prior to the public hearing and also responded to applicable follow-up questions listed in the September 28, 2015 memorandum. Among the documents submitted by the proponents was the Basis of Design (BoD) for the OBOT. The BoD includes 15 documents totaling over 1,300 pages. Regarding the BoD, the OBOT Proponents state the following:

> While much lies ahead in terms of commodity selection, terminal design, and commodity-specific utility, TLS will agree to abide by the 4-volume Basis of Design submitted to the City of Oakland on September 8, 2015, which provides the foundation of minimum requirements that will apply to TLS facility development and operations, regardless of commodity being handled at any given time. The TLS Basis of Design is intended to provide the City with context for the project's operating environment and desired performance parameters; and it is a project deliverable that marks the beginning of a process, as referenced in the introduction of Volume 1.[4]
>
> ...the Basis of Design simply compiles and documents the universe of statues, regulations, and conditions of approval with which the project must comply. It is not a confirmed articulation of what commodities will or will not pass through the terminal over its useful life, nor is it a full or even partial articulation of the suites of specific safety measures that will be implemented on the project site relative to each commodity once confirmed for transport. Again, it is a foundation and minimal-standard starting-point upon which all such commodity-specific safety measures will be based.[5]

[3] Prologis, CCIG, Oakland Bulk and Oversized Terminal, LLC ("OBOT"), TLS, and/or Oakland Global Rail Enterprise ("OGRE")
[4] Responses from CCIG/OBOT/TLS to City Questions, September 6, 2015. (**OAK055267**)
[5] Letter dated April 1, 2016 from David C. Smith of Stice & Block, LLP to Heather Klein, Planner III, City of Oakland.

As noted above, public comments received prior to, at and after the public hearings on June 17, 2014 and May 16, 2016, and additional comments received through June 12, 2016, also were reviewed and considered in this report. Comments submitted at these hearings and any other additional comments that are used as references in this report are cited appropriately with footnotes. These public comments are available at the City's website here:

http://www2.oaklandnet.com/Government/o/CityAdministration/d/NeighborhoodInvestment/OAK038485

1.2.1 Citations in this Report

Documents submitted to the City of Oakland during the September 2015 public comment period for the Army Base Gateway Redevelopment Project were the primary source of material reviewed in this report. Footnote citations use a consistent reference notation (OAKXXXXXX) that correspond to the documents available on the City's website. The documents and letters are available online at:

http://www2.oaklandnet.com/Government/o/CityAdministration/d/NeighborhoodInvestment/OAK038485

Individual documents cited in this report are available online by substituting the appropriate document number in the link shown below after "OAKXXXXXX."

http://www2.oaklandnet.com/w/OAKXXXXXX.

Technical reports and journal articles are also referenced in footnotes and the public commenter who cited them is noted. ESA has cited additional technical reports, journal articles, agency documents, and other scientific information that is relevant.

This page intentionally left blank

CHAPTER 2
Project Description and Operation

2.1 Overview

The analysis below would generally apply to any bulk commodity facility which proposes the rail transport, handling, and storage, and transloading of coal and petcoke for export. As one illustrative example of such a facility, ESA analyzed the proposed new Oakland Bulk and Oversized Terminal (OBOT) facility to be located at the former Oakland Army Base in West Oakland. ESA relied upon the OBOT Proponent's Basis of Design (BoD)[1] and correspondence with the City of Oakland for this analysis of the proposed OBOT.[2, 3] The BoD is considered conceptual at this stage by the OBOT Proponents.[4] However, ESA notes that this design might be used as a basis for any similar bulk commodity facility located at a port.

In 2012, the Oakland City Council approved a Lease Disposition and Development Agreement (LDDA) with Prologis CCIG Oakland Global, LLC, which provided for the development on approximately 130 acres of the Gateway Development Area at the former Oakland Army Base. CCIG awarded a 66-year lease for building and operating OBOT to an Oakland-based company, TLS.

The OBOT Proponents propose to construct and operate a bulk and oversized commodity export terminal, the Oakland Bulk and Oversized Terminal ("OBOT" or "Terminal") within the city limits of Oakland, California, along the San Francisco Bay. The site is immediately adjacent to and south of the Bay Bridge Toll Plaza and approximately 1.5 miles southwest of residential and commercial areas in West Oakland and the City of Emeryville (see **Figures 2-2** and **2-3**). The export terminal would be capable of receiving, stockpiling, blending, and loading bulk commodities by conveyor onto ships for export. As discussed below, the BoD and associated Port Railyard include the specific consideration and capability to receive, stockpile, blend, and load commodities such as coal by conveyor onto ships for export.[5] Bituminous coal is listed as item 4 on the potential commodities list for OBOT in the BoD.[6]

This study is based upon a screening level review of the preliminary BoD for the Terminal. It is anticipated that the OBOT will submit detailed design plans beyond this initial design stage when

1 HDR, Basis of Design (BoD), Oakland Bulk and Oversized Terminal, Preliminary Engineering, Prepared for California Capital Investment Group, Sections 1 -19c and Appendix. (**OAK054818** thru **OAK054832**)
2 Letter from P.H. Tagami, OBOT to C. Cappio, Assistant City Administrator, City of Oakland, sent via email, May 16, 2016.
3 Letters to the City of Oakland from OBOT/CCIG (**OAK054816**), TLS (**OAK054817**); and CCIG. (**OAK055098**)
4 Letter from P.H. Tagami, OBOT to C. Cappio, Assistant City Administrator, City of Oakland, sent via email, May 16, 2016.
5 BoD, Section 8. (**OAK054825**)
6 *Ibid.*

it has confirmed a particular operator for the Terminal and committed to a commodity to be shipped. These design features might be used as a basis for any similar new bulk commodity facility handling coal and/or petcoke that is located at a port.

The most recent information from the OBOT Proponents was relied upon for the analysis, including the BoD[7] and correspondence with the City of Oakland. This section contains an overview of the facility design parameters for OBOT that ESA used in this report. Each is accompanied by specific citations to the source of that information in the proponents' documents and letters.

2.1.1 OBOT Facility Design and Operation

ESA understands that the project design for the OBOT is conceptual and the design features for the OBOT would be similar to any marine terminal facility at a port which proposes activities such as rail transport, handling, storage and transloading of bulk commodities for export. Although the design is preliminary at this time, the BoD prepared by HDR and submitted to the City by the OBOT Proponents was utilized in this analysis of the OBOT facility. The BoD is contained in 15 documents containing over 1,300 pages[8] and with additional details contained in several letters filed with the City by or on behalf of TLS, OBOT, and CCIG.[9] Maps and schematic diagrams of the proposed Terminal prepared by the proponents are available online in the BoD.[10] See **Table 2-1** at the end of this chapter, which contains a list of the BoD documents.

The OBOT design is described as preliminary at this time, but is to be built consistent with the BoD submitted to the City of Oakland by TLS. In a letter dated May 16, 2016 to the City of Oakland, the OBOT Proponents state:

> The ultimate design for the terminal at the West Gateway has not been completed. This is a purpose-built facility and that "purpose" has yet to be defined with any degree of certainty. Thus, the foundational and defining aspects of the ultimate design for the terminal remain unconfirmed.[11]

TLS has previously described the terminal as a "state-of-the-art multi-commodity bulk terminal facility"[12] and stated that:

> whatever is designed and proposed for the West Gateway will definitely comply with the BoD. That in no way, however, limits the universe of potential facilities that could be required on the West Gateway based upon whatever commodity ends up being confirmed. Whether soda ash, grain, wood pellets, liquids, coal, or break bulk, it will comply with the BoD.[13]

1) **Throughput.** The expected total throughput at the Terminal has been stated by the OBOT Proponents in the BoD and in letters in varying quantities that range from 6.5 million metric tons to 7.5 million metric tons per year.[14]

---

7 HDR, Basis of Design (BoD), Oakland Bulk and Oversized Terminal, Preliminary Engineering, Prepared for California Capital Investment Group, Sections 1 -19c and Appendix. (**OAK054818** thru **OAK054832**)
8 HDR, Basis of Design (BoD), Oakland Bulk and Oversized Terminal, Preliminary Engineering, Prepared for California Capital Investment Group, Sections 1 -19c and Appendix. (**OAK054818** thru **OAK054832**)
9 Letters to the City of Oakland from OBOT/CCIG (**OAK054816**), TLS. (**OAK054817**); and CCIG (**OAK055098**)
10 BoD. (**OAK054822** and **OAK05829**)
11 Letter from P.H. Tagami, OBOT to C. Cappio, Assistant City Administrator, City of Oakland, sent via email, May 16, 2016.
12 Letter from Jerry Bridges, President and CEO, TLS to Mayor Libby Schaaf, July 15, 2015. (**OAK054817**)
13 *Ibid.*
14 Metric ton = 1,000 kilograms or approximately 2,204.6 pounds.

2) **Commodities for Export.** The BoD submitted by TLS describes a terminal that would handle two types of commodities simultaneously ("Commodity A" and "Commodity B") that are described generally by attribute. The commodity types planned for export from OBOT were not disclosed in earlier documents that CCIG filed related to the Development Agreement with the City of Oakland for the former Oakland Army Base. The specific types of commodities have not been committed to yet in writing, although a table on page 2 in Section 8 of in the BoD shows 20 commodities along with coal, fuel oils, and gasoline, see **Table 2-2** at the end of this chapter.[15] TLS states there is no commodity currently under contract for the TLS facility at OBOT and that they have 15 commodities under consideration presently."[16]. Further, in a letter dated May 16, 2016 to the City of Oakland, OBOT states "...the expectation previously was for dry bulk commodities, but even that is not a certainty at this point...."[17]

3) **Coal and Petcoke.** Commodity A is assumed to include coal and/or petcoke. Commodity A is described in BoD documents as "very dusty, exhibits spontaneous combustion behavior, potentially explosive" and a maximum 3-inch lump size. Commodity B is described as "very dusty, hygroscopic" and the size is described as granules.[18] Coal could not be considered Commodity B as it would not meet the commodity characteristics noted above.

   a. The state of Utah has approved providing a loan to the Terminal Proponents for the development of terminal capacity to transport of Utah goods from Oakland, California. On April 2, 2015, the state of Utah's Permanent Community Impact Board (CIB) approved a loan totaling $53 Million to Sevier, Emery, Carbon and Sanpete Counties to help finance construction of a marine export terminal in Oakland, California. The loan is for 30 years at 2.0% interest with funds from the Major Infrastructure Set Aside Fund and is contingent on legal authorization.[19] In February 2016, the Utah Legislature approved a bill (Senate Bill 246), which the Utah Governor signed, authorizing the loan by CIB through a fund swap. In short, the legislation swaps Utah state tax revenue for CIB funds (which include federal funds from mineral lease royalties, for which the U.S. government limits CIB's authority to distribute) for the purpose of allowing CIB to make the loans without the strings attached to its federal funds.

   b. According to the CIB meeting minutes: "The loan is for the purpose of through-put capacity in Oakland, California consisting of the construction of a 330 acre multi-commodity deep draft marine terminal for the export of Utah goods to the Pacific Rim economies. The Proponents indicate that Utah goods could be transported internationally."[20] According to meeting minutes, on behalf of the OBOT, Mark McClure, Vice President of CCIG, appeared in Salt Lake City, Utah at the CIB meeting to provide a statement on April 2, 2015.[21]

   c. Utah reached a peak production of coal in 2001 of 27 million (short) tons. In 2013, a little over 16.9 million tons of coal was produced in Utah, down about 39 percent

15 BoD. (**OAK054825**)
16 Letter dated Oct 6, 2015 from Phil Tagami, CCIG/OBOT and Jerry Bridges, TLS to Claudia Cappio, City of Oakland. (**OAK055267**)
17 Letter from P.H. Tagami, OBOT to C. Cappio, Assistant City Administrator, City of Oakland, sent via email, May 16, 2016.
18 BoD. (**OAK054820**)
19 Permanent Community Impact Board, April 2, 2015 Meeting Minutes. Department of Workforce Services, Housing and Community Development Division, Salt Lake City, Utah, https://jobs.utah.gov/housing/cib/documents/040215 cibminutes.pdf
20 *Ibid.*
21 *Ibid.*

from 2001. Carbon County mines, namely Dugout, West Ridge, and Skyline, account for almost half of the state of Utah's total coal production, with the only coal produced in Sevier County originating from the SUFCO mine.[22]

4) **Coal and/or Petcoke Throughput.** The planned throughput to the Terminal for Commodity A is up to 5.0 million metric tons per year.[23] In letters from the OBOT Proponents, the total throughput for all commodities at the OBOT has been stated in quantities that vary and range from 6.5 to 7.5 million metric tons per year, with no specific throughput committed for coal or petcoke.[24]

5) **Railcar transport.** Commodity A will be transported via unit train to Oakland. See **Figure 2-1** for rail routes to Oakland from Utah. **Figure 2-2** shows the rail routes to the OBOT from the north through the City of Emeryville and from the south through the City of San Leandro. This figure also shows the new Port Railyard and the rail spur from the Port Railyard to the OBOT. **Figure 2-3** shows the rail lines entering West Oakland as well as residential areas, schools, parks, and the California Environmental Protection Agency's Disadvantaged Community area. If Commodity A includes coal and is throughput as stated above:

   a. The BoD allows for delivery of approximately 437 unit trains per year, or approximately 1.2 trains per day. In order to accommodate an occasional intermittent train, one additional unit train was added every five days, which resulted in the 1.2 trains per day assumption. Each train would include 104 rail cars.[25] Each incoming unit train would be split into four batches of 26 rail cars.[26] Each 26-car segment would be separated and staged in sequence for travel along a new rail spur from the storage tracks at the Port Railyard to the unloading building at the OBOT facility. Based upon the design provided, these storage tracks are to be newly constructed and located at a new railyard on Port of Oakland property immediately adjacent to I-880. See **Figure 2-4**.

   b. Commodity A rail cars are expected to be bottom dump aluminum construction, closed top hopper cars, with a gross weight of 130 metric tons, cargo capacity of approximately 110 metric tons.[27]

   c. Commodity A rail cars will be bottom hopper, rapid discharge style cars, with removable, fiberglass covers.[28] CCIG/OBOT/TLS states that "with respect to coal, if it is a commodity exported through the TLS bulk terminal, TLS proposes to use "EcoFab" rail car covers (or car covers with similar specifications provided by other manufactures *[sic]*)."[29]

   d. Thus, the export terminal is anticipated to receive coal and/or petcoke via rail and transport them by ocean-going ships via the San Francisco Bay and Pacific Ocean to overseas markets in Asia.

---

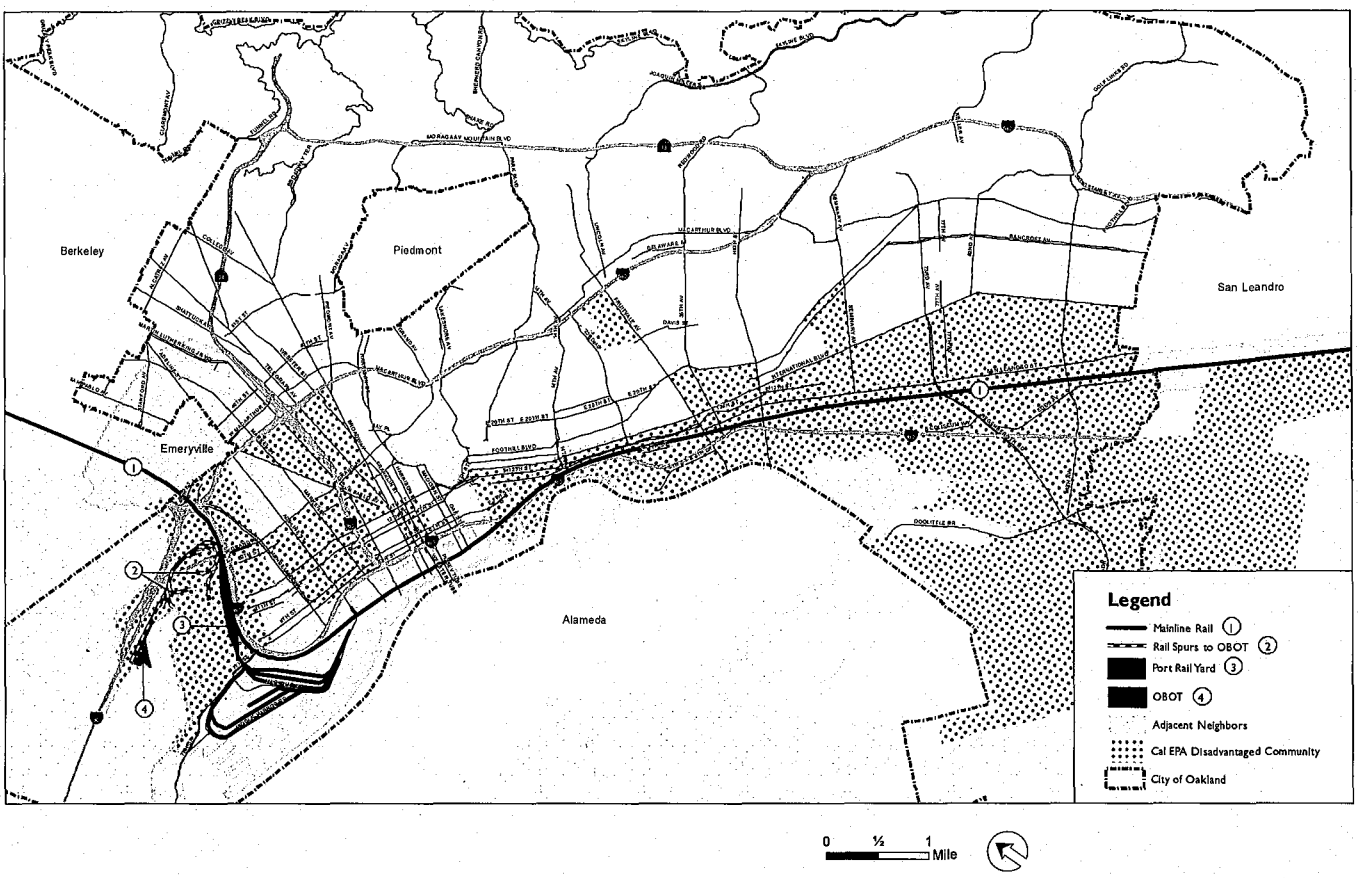
22 Utah Geological Survey and U.S. Bureau of Land Management, http://www.blm.gov/ut/st/en/prog/energy/coal.html
23 BoD. Table 6-1, Terminal Throughput. **(OAK054820)**
24 Letters from OBOT/CCIG Representative. **(OAK054816)** TLS **(OAK054817)**; and CCIG. **(OAK055098)**
25 BoD. **(OAK054829)**
26 *Ibid.*
27 *Ibid.*
28 Letter from Jerry Bridges, President and CEO of TLS, to Mayor Libby Schaaf, July 15, 2015. **(OAK054817)**
29 Responses from CCIG/OBOT/TLS to City Questions, September 6, 2015. **(OAK055267)**

SOURCE: Oakland Planning and Building Department, June 2016

OBOT Health and Safety Effects . 150774

Figure 2-1

Rail Routes Between Utah and Bay Area

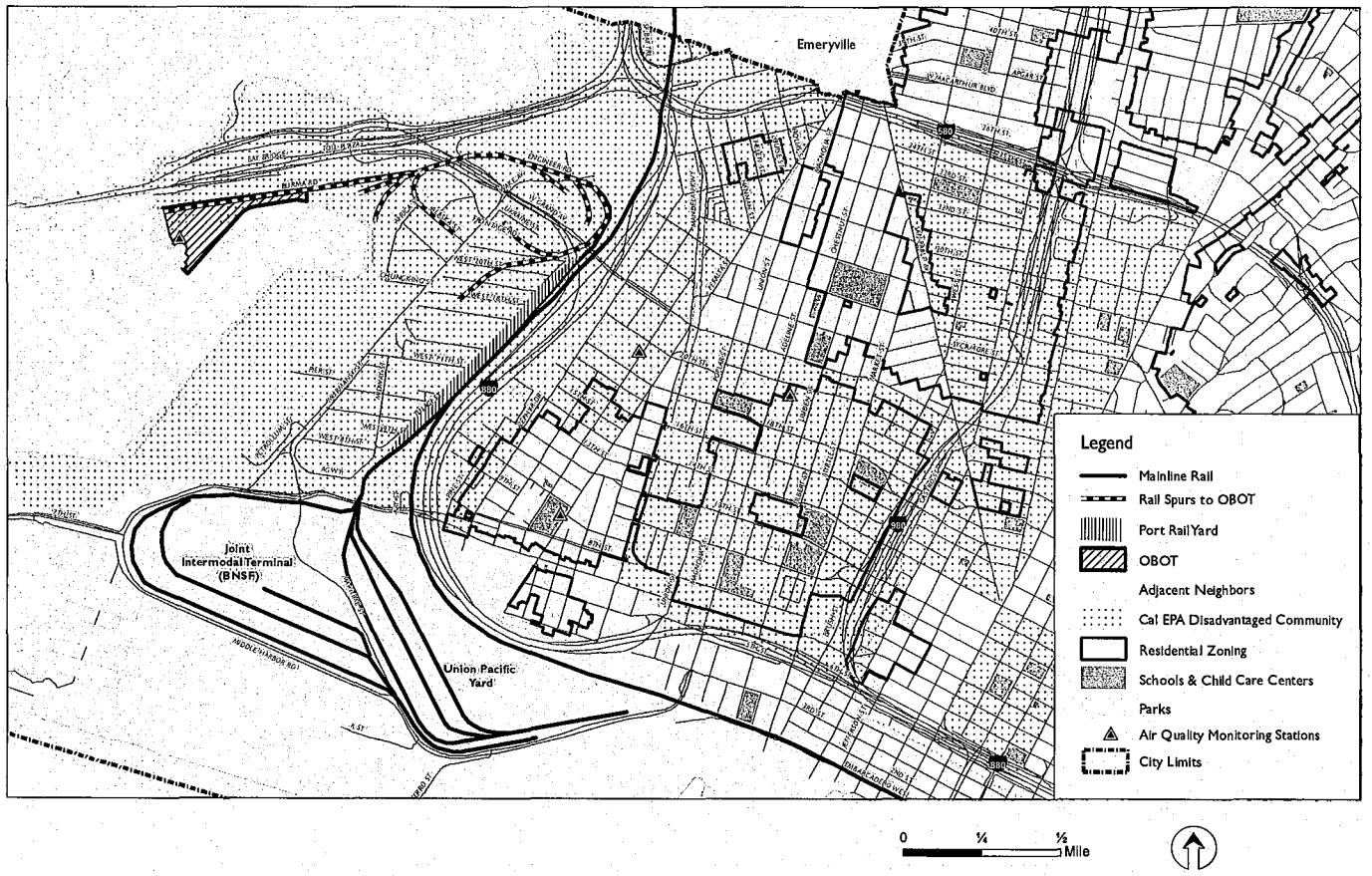


SOURCE: Oakland Planning and Building Department, June 2016

OBOT Health and Safety Effects . 150774

Figure 2-2

Oakland (Coal and Coke Issues)

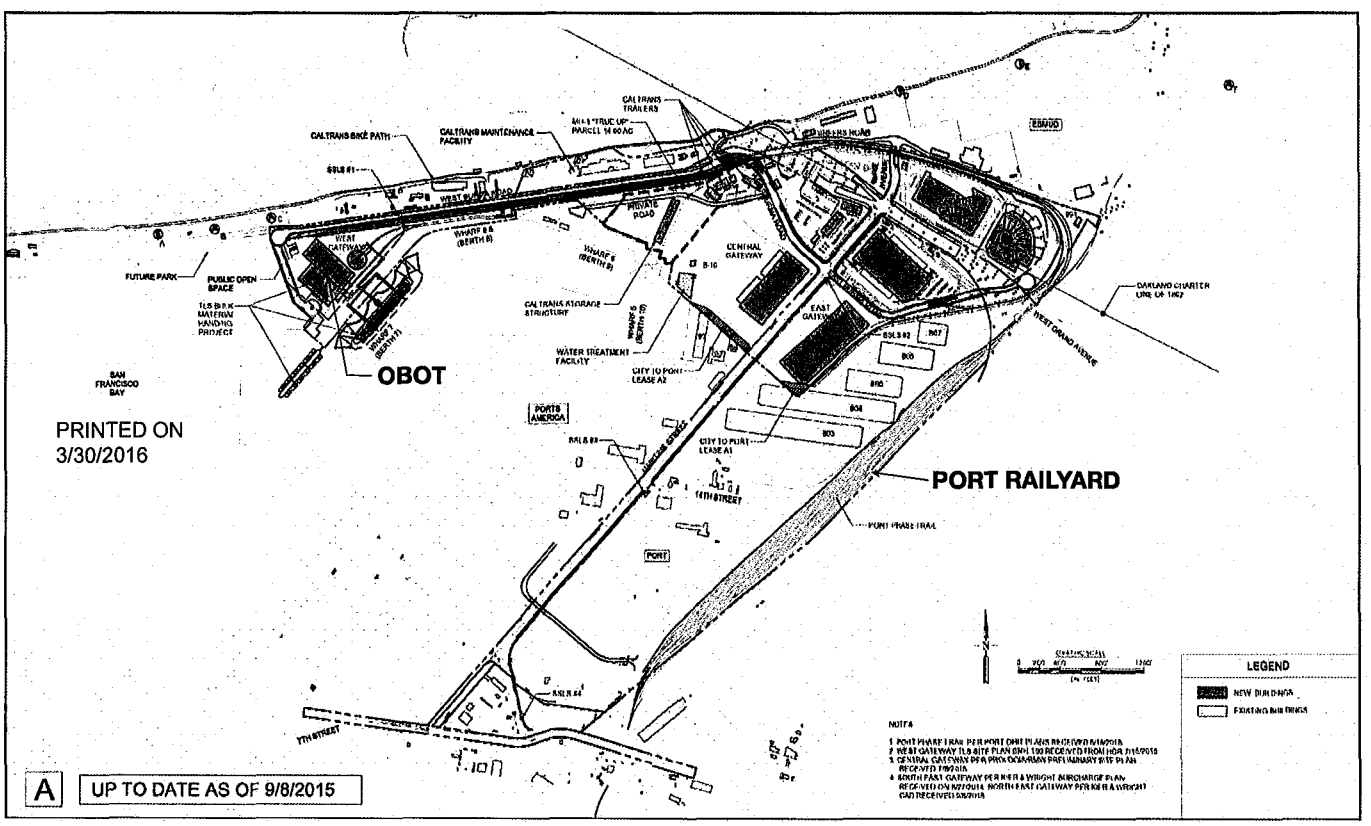


SOURCE: Oakland Planning and Building Department, June 2016

OBOT Health and Safety Effects . 150774

Figure 2-3

West Oakland & Army Base (Coal and Coke Issues)



SOURCE: Architectural Dimensions

OBOT Health and Safety Effects . 150774

Figure 2-4
OBOT and Port Railyard

6) **Commodity Handling.** TLS is to "use covered bottom-release rail cars designed to release the commodities, including coal, into a deep underground transfer compartment with dust collection systems installed for total dust mitigation."[30] See **Figure App-1** in **Appendix B** for a schematic of the proposed rail car unloading facility. Coal and/or petcoke would be moved within the Terminal in enclosed conveyance systems with dust control and collection technology. TLS states that the various commodities would be "transferred via a completely covered and contained system of ...fully encapsulated conveyors."[31] Commodity A conveyors will be 48 or 84 inches equipped with 45° CEMA class C6 or E7 idlers, troughed fabric belts, electric drive units and remote gravity take-ups and a maximum angle of 15 degrees. Where practical, drive units will be located at ground level with vehicle access. All conveyors will be housed in fully-enclosed galleries with single sided walkways and designed with ample access to tail pulleys and other critical areas for maintenance.[32] See **Figure App-2** for a schematic of the conveyor for Commodity A. **Figure App-4** shows a schematic of the conveyor for Commodity B.

7) **Onsite storage.** The BoD states that Commodity A material will be stored in a series of covered longitudinal stockpiles. Two rectangular storage buildings for the stockpiles are to be constructed with a metal truss frame and a fabric cover or skin.[33] Stacking to the longitudinal stockpiles will be accomplished by the use of an overhead conveyor and tripper.[34] The Commodity A storage capacities for the longitudinal stockpiles are for Pile 1 - 105,000 metric tons; Pile 2 - 75,000 metric tons. Material will be manually reclaimed from the longitudinal stockpiles by bulldozers into a series of dozer traps. In the case of segregated storage piles within the storage building, storage building 1 will have an estimated capacity of 84,000 metric tons; Building 2 will have an estimated capacity of 55,000 metric tons.[35] See **Figure App-3** for a schematic of the Commodity A storage facility and **Figure App-5** for Commodity B.

8) **Ship Loading.** Commodities will be loaded onto ships using enclosed ship loaders with dust control. Commodity A shiploading will be accomplished with the use of dual telescoping quadrant shiploaders. Each shiploader will be equipped with loading spoons for hatch trimming, and will be designed to accommodate wash down of the system between shipments.[36] The BoD notes that blending of commodities could take place during shiploading: stating that "The blending process is expected to be accomplished through reclaiming operations performed during ship loading." There is reported to be no evidence to indicate blending of coal or coke by any permitted sources in the BAAQMD. There is also apparently no blending of other commodities such as fertilizer, at the site of any permitted source facilities within the Air District.[37]

9) **Dust Control.** In addition to covered rail cars, enclosed conveyors and covered storage, for Commodity A, TLS states that dust will be controlled by:[38]

- Dry fog and/or water sprays at the covered rail car dumper building

30 *Ibid.*
31 *Ibid.*
32 BoD. (**OAK054820**)
33 BoD. (**OAK054829**)
34 BoD. (**OAK054820**)
35 BoD. (**OAK054820**)
36 *Ibid.*
37 Personal Communication, A. Kirk to ESA, June 16, 2016,
38 BoD. (**OAK054820**)

- Enclosed transfers
- Dry fog and/or water sprays at transfer points and stockpiles

2.2 Review of Key Features of the OBOT Facility Design

This section provides a review of key features of the facility design related to the health and safety issues of most interest and concern to public commenters, i.e., dust control and air emissions.

2.2.1 Proposed Controls for Dust Reduction during Rail Transport and Staging

Regulations for Covered Coal Cars

Public commenters noted that there are relatively new requirements for use of dust suppressants on open rail cars shipping from Wyoming and Montana. This is due to the dustiness of Powder River Basin (PRB) coal and its detrimental impact upon rail infrastructure.[39] The new BNSF requirements are based upon a recent study of fugitive dust from PRB coal and conducted by BNSF and Union Pacific Railroad in Wyoming in 2010.[40] Dust toppers for rail cars showing an 85% removal rate or higher are required by BNSF for use on Wyoming and Montana coals and are shown in a table prepared by BNSF.[41] Photos of this treatment are included in **Appendix E**.

In addition, ESA identified a 2013 requirement by CSX Transportation (CSX) for dust suppressants to address fugitive coal dust originating from rail cars carrying metallurgical and pulverized coal from within CSX's network in the eastern U.S.[42] This requirement applies to types of eastern bituminous coal that are similar in quality to western bituminous coal from Utah.

The U.S. Environmental Protection Agency (US EPA) also regulates emissions to protect the public from harmful levels of general types of dust under ambient air quality standards for particulates (PM_{10} and $PM_{2.5}$), dust from coal preparation plants, and emissions from combustion of coal in power plants. The US EPA typically regulates emission sources by categories, but does not currently regulate fugitive coal dust emissions from coal-filled rail cars during transport. This contribution of fugitive coal dust to local concentrations of particulates, including fine particulates is generally regulated under US EPA ambient air quality standards. However, there are no regulations to control emissions from the source of these fugitive coal dust emissions, i.e., rail cars.

---

39 BNSF Price List 6041-B, Providing rules and regulations governing unit train and volume all-rail coal service, Effective October 9, 2011, BNSF price Management, Fort Worth, Texas: 200 pps. Cited in Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)

40 BNSF, 2010, Summary of BNSF/UP Super Trial 2010. http://www.bnsf.com/customers/pdf/coal-super-trial.pdf

41 http://www.bnsf.com/customers/what-can-i-ship/coal/include/dust-toppers.xls

42 CSX Tariff 8200, Effective March 1, 2013. https://www.csx.com/index.cfm/library/files/customers/commodities/coal/8200-archive/tariff-8200-j-supplement-23/ Response to Questions on CSX 8200 Tariff.

The Surface Transportation Board regulates rail transportation and although they have jurisdiction, they have not enacted regulations generally addressing control of fugitive dust emissions from coal-filled rail cars during transport for the purpose of public health. As of this date, neither the federal government (US DOT, STB, US EPA) nor the state of California directly limit the fugitive dust emissions from coal-filled rail cars for the purposes of protecting public health.

Thus, there are currently no enforceable provisions from the U.S. Department of Transportation Surface Transportation Board, the Federal Railroad Administration, or from railroads themselves to require a coal supplier, a terminal developer or operator in Oakland to utilize any dust controls for coal shipped from Utah. Similarly, there are currently no enforceable provisions for a coke supplier or a terminal developer or operator in Oakland to utilize any dust controls for coke shipped via rail from suppliers in northern California.

Rail Car Covers

As mentioned previously, the OBOT Proponents state in a written response to Question 3c) from the City of Oakland that with respect to coal, if it is a commodity exported through the TLS bulk terminal, TLS proposes to use "EcoFab" rail car covers or car covers with similar specifications provided by other manufacturers.[43]

EcoFab Covers. In their responses to Question 3c) and 13c) from the City of Oakland, the OBOT Proponents refer to the EcoFab website for finding further information, and provides a list of commodities and countries where EcoFab has experience with covers for bulk materials; the lists provided by the OBOT Proponents indicate that EcoFab has applied their rail car covers for multiple bulk commodities but not for rail cars filled with coal.[44] Since public commenters noted that coal was not listed among the prior applications of EcoFab's covers, ESA contacted EcoFab directly for clarification. [45,46] The EcoFab representative confirmed to ESA in writing that to date, EcoFab covers have not been tested for covering rail cars filled with coal.[47]

In response to Question 13b) from the City regarding testing of the car covers the OBOT Proponents refer to the U.S. Department of Transportation (US DOT)'s determination that the "Ecofab Railcar Cover System" meets the criteria for a closed transport vehicle, as specified in Title 49 CFR 173.403(c).[48] Based upon further research by ESA, we could only locate one US DOT determination covering use of EcoFab covers, for rail cars carrying low level radioactive waste. ESA was not able to find evidence demonstrating a US DOT determination confirming that EcoFab covers in fact meet the criteria for a closed transport vehicle for rail cars carrying coal or petcoke.[49] These criteria that were met by the EcoFab covers are from the US DOT

43 Responses from CCIG/OBOT/TLS to City Questions, September 6, 2015. (**OAK055267**)
44 *Ibid.*
45 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)
46 Memo dated June 2, 2016 from No Coal in Oakland to C. Cappio et al.Submitted via Email. (**OAK059212**)
47 Email dated May 24, 2016 from Doug Bock, EcoFab to D.Sloat, ESA.
48 Responses from CCIG/OBOT/TLS to City Questions, September 6, 2015. (**OAK055267**)
49 www.ecofab.com/standard_rigid_cover.html, site accessed June 2, 2016.

Pipeline and Hazardous Materials Safety Administration regulations for the containment of hazardous material for transport. However, based upon the test criteria, this evaluation was based upon containment, worker safety and functionality, not upon air emissions or public health and safety.[50]

The US DOT Pipeline and Hazardous Materials Safety Administration does not address the emissions from low level radioactive waste to protect human health and safety nor does this agency or US DOT address the emissions of fugitive dust from coal cars to protect human health and safety. The US EPA has this regulatory authority, that is, the authority to address protection of human health and safety issues from radiation exposure and air emissions including coal dust (from some sources). The US EPA regulates the radiation exposure of the public from the management of spent nuclear fuel and radioactive waste prior to its disposal (Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel and Transuranic Radioactive Wastes in 40 CFR Part 191).

In contrast to the US DOT, the US EPA requires testing procedures for application of new air pollution control technology along with monitoring/recordkeeping requirements that ensure the effectiveness of the controls is demonstrated for reduction of air pollutants that are harmful to health.[51]

In response to Question 13c) from the City regarding engineering specifications for covers for rail cars filled with coal, the OBOT Proponents refers to the "EcoFab" website for these details: www.ecofab.com.[52] ESA visited that website and could not locate any engineering specifications in our review of the EcoFab website; a public commenter cited the same result.[53]

Three other manufacturers of coal car covers were identified and cited by a public commenter.[54] These were reviewed by ESA and the results are provided below.

CoalCap Covers. Based upon information provided to ESA verbally by the company representative, their covers are not currently being manufactured and thus, are not in use yet. There have been no studies or analyses concerning the efficacy of their product to control coal dust or any other product.[55] He mentioned their products, if manufactured, would 'meet the 85% control required' by BNSF for coal shipped from Wyoming and Montana (mentioned above). These covers would also meet the requirement by CSX for eastern coals.

ClearRRails LCC Covers: A search yielded no manufacturer website and no readily available contact information.

---

50 See regulation at: https://www.gpo.gov/fdsys/pkg/CFR-2011-title49-vol2/pdf/CFR-2011-title49-vol2-sec173-403.pdf

51 https://www3.epa.gov/ttncatc1/rblc/htm/welcome.html

52 Responses from CCIG/OBOT/TLS to City Questions, September 6, 2015. (**OAK055267**)

53 Memo dated June 2, 2016 from No Coal in Oakland to C. Cappio et al. Submitted via Email. (**OAK059212**)

54 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)

55 Personal Communication from Darrell D. Dial, Chairman, Founder & Chief Engineer of CoalCap. June 2, 2016.

Strategic Rail Systems (SRS) Covers: The company representative stated that SRS is a part of Rush-Co.[56] Approximately 8 years ago, SRS built a plant to manufacture automatic rail car covers for coal shipped via Union Pacific Railroad, and the plant ultimately closed due to a lack of a requirement for covered coal cars. SRS also produces manual covers, and the company representative stated that there are no studies on the application of those products on coal cars.

Coal rail car covers have been studied for application in Australia; however, rail car covers or "wagon lids" for coal cars are not currently required nor used in Australia, despite the public concern for the health effects of fugitive coal dust.[57] Coal rail car covers are in active use in Portugal for a short trip length between a port and the delivery site (a power plant). Ferreira and Vaz conducted full-scale measurements of coal dust emitted from these rail cars carrying coal in Portugal over this 220-mile trip. Some of the rail cars were equipped with mechanical covers that partially covered the coal load but left some of the coal exposed. The authors stated that they were unable to reliably confirm their study results to determine the level of dust control from the use of rail car covers for coal trains in Portugal.[58] Even if this study were applicable, there appears to still be significant differences in applying these results to coal transportation for OBOT due to the difference in the number of cars per unit train, number of coal unit trains, the coal train trip length, topography travelled, train speeds, coal type and weather.

Conclusions

TLS states that "using covered cars will eliminate fugitive dust and debris blowing off the train as it travels to or from our Terminal."[59] ESA was not able to confirm the historical use of rail car covers, nor could we confirm their effectiveness based upon documentation in scientific field demonstrations or peer reviewed journal studies; thus, ESA was not able to confirm that covers are available commercially and that they would safely and effectively eliminate fugitive dust from rail cars carrying coal or petcoke into Oakland. This is consistent with the findings submitted by other public commenters.[60] Thus, ESA was unable to confirm that the statement from TLS is true that the use of covered cars for coal or petcoke would eliminate fugitive dust and debris blowing off the train cars as they travel to and from the OBOT Terminal.

In addition, as other public commenters noted, ESA confirmed that currently there are no enforceable provisions to require the coal supplier, Terminal developer, or Terminal operator to utilize rail car covers for coal shipped from Utah (although, as mentioned above there are BNSF requirements for suppressing dust from coal shipped from Wyoming and Montana and CSX dust

56 Personal Communication from Evan Jones, Strategic Rail Systems Covers, June 2, 2016.

57 Katestone Environmental Pty. Ltd. And NSW EPA. 2014. Literature Review of Coal Train Dust Management Practices. Prepared for NSW Environment Protection Authority. December 2014. Available at: http://www.epa.nsw.gov.au/resources/epa/coaltrain-litreview.pdf

58 Ferreira, A.D. , D.X. Viegasa, A.C.M. Sousa. 2003. Full-scale measurements for evaluation of coal dust release from train wagons with two different shelter covers. Journal of Wind Engineering and Industrial Aerodynamics 91 (2003) 1271–1283. Available at https://estudogeral.sib.uc.pt/bitstream/10316/4267/1/file96f6b81b011048b0a49332dc1130935f.pdf

59 Letter from Jerry Bridges, President and CEO of TLS, to Mayor Libby Schaaf, July 15, 2015. (**OAK054817**)

60 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)

suppressant requirements for eastern coal).[61] As discussed below, dust control topping agents or surfactants have reportedly been sprayed onto the top of the coal (to coat the surface) within the rail car to meet the CSX and BNSF requirements.

Dust Suppressants

In their response to Question 13d) from the City of Oakland, CCIG/OBOT/TLS states that covering of rail cars is not a prerequisite to the safe and legal shipping of coal by rail cars, and that the application of surfactants and specific stacking and layering of coal will adequately mitigate any potentially material release of fugitive dust from rail cars.[62] They cite the HDR report submitted to the City:[63]

> Utilization of such measures, as documented in the HDR white paper, eliminates health and safety concerns related to coal transport....

Public testimony by Dr. Bart Ostro, an air pollution expert, provided detailed comments on this HDR white paper.[64] These comments contain points to include here. This public commenter notes that HDR stated there will be little erosion of coal from coal transport by citing field testing of dust from stationary coal piles; however, the commenter states that moving trains will likely produce a distinctly different level of dust emissions. In addition, the commenter states the erosion potential of coal in open rail cars will be impacted at the West Oakland location since 100% of the time in the summer months, when people spend the greatest amount of time outdoors, the wind is from the west. Further he states that this means that coal dust from the rail operations will transport any fugitive coal dust directly into Oakland residential areas, particularly West Oakland. In the winter time, about 70% of the time, the wind is from the west. In addition, the local data indicate that on many days during the year the wind speeds are above 10 mph.[65]

Furthermore, this commenter and others cite empirical evidence of fine particle concentrations near and at a coal delivery site that indicates a significant increase in concentrations due to coal trains.[66] These public commenters note that this empirical evidence is contrary to statements in the HDR white paper that proximate to the coal mine is the only place that will be impacted by erosion of coal in open rail cars. These commenters noted that in one of the few field studies conducted on this topic, scientists at the University of Washington examined the contribution to $PM_{2.5}$ from coal versus freight trains, close to the destination of the trains (Jaffe et al., 2015).[67]

---

61 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit B – Environmental, Health and Safety Impacts of the Proposed OBOT by P. Fox, PhD, PE. **(OAK055094)**

62 Responses from CCIG/OBOT/TLS to City Questions, September 6, 2015. **(OAK055267)**

63 CCIG Submittal dated 9/15/15, HDR Engineering Air Quality & Human Health and Safety Assessment. **(OAK054936)**

64 Undated Testimony by Dr. Bart Ostro. Former Chief of the Air Pollution Epidemiology Section, California Environmental Protection Agency (retired). **(OAK055095)**

65 Fujita, E.M. & Campbell, D.E. (2010). West Oakland Monitoring Study. Desert Research Institute. Retrieved from http://www. baaqmd.gov/~/media/Files/Planning%20and%20Research/ CARE%20Program/DRI_WOMS_final_ report.ashx

66 **(OAK055095)**, **(OAK055094)**

67 Jaffe, Daniel et al. 2015. Diesel particulate matter and coal dust from trains in the Columbia River Gorge, Washington State, USA. Atmospheric Pollution Research. Volume 6, Issue 6, November 2015, Pages 946–952. http://www.sciencedirect.com/science/article/pii/S1309104215000057.

In this peer reviewed publication, Jaffe et al. reported that the average peak in near-by concentrations of $PM_{2.5}$ from coal trains was twice that of freight trains. In addition, Jaffe et al. reported several events with concentrations greater than 75 micrograms and ranging up to concentrations of 230 micrograms and state that:

> For four coal trains, the videos revealed large plumes of coal dust emanating from the uncovered coal cars. These trains also had the highest peak $PM_{2.5}$ concentrations recorded during our study (53–232 $\mu g/m^3$).[68]

The researchers conclude that "passage of a diesel powered open-top coal train results in nearly twice as much respirable $PM_{2.5}$ compared to passage of a diesel-powered freight train." [69]

The HDR report cites the testing of dust suppressants on coal filled rail cars during the BNSF Super Trial[70] as the sole evidence of their effectiveness on fugitive dust reduction from coal filled rail cars. In this study BNSF concludes dust suppression rates of 75% to 93% for Wyoming and Montana coal at the time of rail car loading (depending on the type of dust suppression topical surfactant used).

Other public commenters also noted this BNSF study and reviewed publicly available information, which is limited.[71] [72] Their comments noted the fact that the dust topper sprays or surfactant used to cover the coal could degrade over time; the timeframe for the topper surfactant degradation was not noted by BNSF in publicly available results of their study. In the Super Trial, BNSF stated that they added an additional surface spray facility along the rail route from Montana, however, the details of where and when additional topper surfactant was applied were not provided by BNSF in publicly available results of their study. For transport of coal to the OBOT it is not indicated in the HDR report whether an additional surface spray facility would be included as part of the project's coal dust mitigation strategy.

Commenters also noted that the specific details of the BNSF testing were never made publically available nor were they published in a peer reviewed scientific journal. There are significant caveats to both the BNSF testing and results. Along with other commenters, ESA finds the same issues, and we note specifically that the BNSF Super Trial study has significant missing data issues, as enumerated below:

- Amount of initial surfactant sprayed,

68 Still photos from this video can be viewed on page 951 of the paper at: http://www.atmos.washington.edu/jaffegroup/modules/APOLLO/Jaffe_DPM_coal_dust_trains_ColumbiaRivGorge_2015.pdf

69 Jaffe, Daniel et al. 2015. Diesel particulate matter and coal dust from trains in the Columbia River Gorge, Washington State, USA. Atmospheric Pollution Research. Volume 6, Issue 6, November 2015, Pages 946–952. http://www.sciencedirect.com/science/article/pii/S1309104215000057

70 BNSF, 2010, Summary of BNSF/UP Super Trial 2010. http://www.bnsf.com/customers/pdf/coal-super-trial.pdf

71 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)

72 Undated Testimony by Dr. Bart Ostro. Former Chief of the Air Pollution Epidemiology Section, California Environmental Protection Agency (retired). (**OAK055095**)

- coal train travel distance during the study and location and amount of additional surfactant applied,
- the track gradient transited,
- weather conditions during the test,
- technical information on the monitors and samplers used,
- evidence of the condition of the topping agent at the end point of the train transit during the test (to determine whether the topper agents were still intact and in good condition).

Additional information on the latter topic was recently provided to the Surface Transportation Board (STB) in a proceeding where the BNSF study was challenged as the basis for BNSF's new requirement for dust reduction.[73] Photographs from the BNSF study were submitted into evidence in the STB proceeding and apparently indicated that the topper agents had failed by the end point of the tests, i.e., the crust created by the topper had cracked and broken apart.[74] However, those photographs are not otherwise published or available to the public.

In addition, ESA located an additional requirement for dust suppressants on coal for rail transport. Rail transport of eastern coal in open cars is subject to recent dust suppression requirements. On March 1, 2013 CSX issued a new 8200 Tariff provision to address fugitive coal dust originating from rail cars carrying metallurgical and pulverized coal from origins on CSX's network. Dust control measures were instituted by CSX due to state of Virginia legislative attention to the issue along with increasing violations from regulatory agencies and complaints from communities related to coal dust from rail cars.[75,76]

The CSX tariff requires freight payers to ensure that the affected coals are shipped via rail utilizing a load-out chute with a "bread loaf" shaped profile to decrease the wind erosion of the top of the coal load. In addition, the tariff provision requires freight payers to ensure that an effective topical dust suppressant be applied to each loaded rail car carrying coal (which would not affect the dust accumulation and escape from the bottom of the coal car). The tariff provision authorizes use of a latex-based chemical suppressant to satisfy this requirement; and CSX will also consider alternative suppressant methodologies. This requirement is for open-top hopper coal rail cars or gondola coal rail cars originating from a CSX service area for certain eastern coals. A copy of this current CSX tariff is online[77] with the initial version adopted with an effective date of March 1, 2013. No percent reduction of dust mitigation is explicitly specified in

73 Surface Transportation Board Decision, Docket No. FD 35557. Reasonableness Of BNSF Railway Company Coal Dust Mitigation Tariff Provisions Service Date – May 15, 2015. http://www.nationalcoaltransportation.org/images/stories/pdf/STB-35557-Decison-of-051315.pdf

74 *Ibid.*

75 https://www.csx.com/index.cfm/customers/commodities/coal/news/rail-car-dust-suppressant-reminder/

76 Letter dated March 1, 2012 to CSXT producers from CSX. Visible fugitive dust emissions. https://www.csx.com/index.cfm/customers/commodities/coal/news/coal-emissions-letter/

77 CSX Tariff 8200, Effective March 1, 2013. https://www.csx.com/index.cfm/library/files/customers/commodities/coal/8200-archive/tariff-8200-j-supplement-23/ Response to Questions on CSX 8200 Tariff. https://www.csx.com/index.cfm/customers/commodities/coal/news/response-to-questions-on-the-csxt-8200-coal-dust-tariff/Revised. Effective July 2016. https://www.csx.com/index.cfm/library/files/customers/commodities/coal/pricing/8200-effective-july-1-2016/

the CSX tariff. If suppressants other than a latex based chemical dust suppressant are proposed for use, then testing and approval by CSX is required. No public information or technical studies could be located by ESA that demonstrate the effectiveness of these dust suppressants.

ESA noted that this CSX tariff is applicable to Eastern bituminous coal due to the fact that frequently it qualifies as metallurgical grade coal, as does Western bituminous coal. Thus, if CSX were operating the rail line for Utah coal delivery to OBOT, under these tariff provisions, there would be a requirement for profiling and a topical dust suppressant to be applied on loaded coal cars traveling to OBOT.

However, there would still be coal dust accumulation in the bottom of the rail car and this dust can escape during transport and deposit along the rail tracks or to adjacent properties (depending upon the speed of the train and the wind conditions). Coal dust settles and compacts in the bottom of the rail car during transport. Thus, some coal dust may also leak out around the doors of bottom-dump cars (cars with doors that open on the bottom). Bottom dump cars are typically used and are proposed for the transport of commodities to OBOT. The coal dust deposited along the rail tracks can be stirred up by wind or trains passing, this resuspends the dust into the ambient air such that the same dust can be re-entrained over and over again.[78]

Conclusions

We note, as did public commenters, that the BNSF Super Trial study was not publicly published in a peer reviewed scientific journal. And since the BNSF Super Trial document did not fully disclose highly relevant parameters associated with the study nor disclose results relative to the effectiveness of the applied dust topper over long haul distances, we believe this study should not be relied upon to draw conclusions regarding the control of fugitive coal dust with spray on dust toppers for coal shipped via rail to OBOT.

ESA also notes the CSX requirement in the eastern U.S. for fugitive dust mitigation on coal types similar to Western bituminous coal. However, we could not locate publicly available information or technical journal studies to demonstrate the dust control effectiveness of these CSX required measures for profiling the load shape and using spray on dust suppressants.

Thus, there is a lack of objective scientific data proving the continuous effectiveness of topping agents or surfactants to reduce Utah coal dust emissions from open rail cars during a complete long distance rail trip over mountainous terrain (over 700 miles) from Utah to Oakland, California. For this reason, ESA is unable to confirm an effectiveness rate for dust control using surfactants (topping agents) for application on coal cars for a long distance rail trip (such as from Utah to Oakland, California).

Therefore, we agree with several commenters that the coal topping agents will not provide effective control for fugitive coal dust emissions for the duration of the coal train trip from Utah

[78] Katestone Environmental Pty. Ltd. And NSW EPA. 2014. Literature Review of Coal Train Dust Management Practices. Prepared for NSW Environment Protection Authority. December 2014. Available at: http://www.epa.nsw.gov.au/resources/epa/coaltrain-litreview.pdf

to the Port Railyard Facility and the OBOT in Oakland.[79] In addition, there are no enforceable provisions to require the coal supplier, OBOT developer, or Terminal operator to utilize a topping agent for coal shipped from Utah (although there are BNSF requirements for suppressing dust from coal shipped from Wyoming and Montana). We conclude that even with the use of a topper agent on rail cars, coal car dust emissions will be expected to occur within the City of Oakland.

2.3 West Coast Terminal Experience, Prior Proposals and Existing Rail Traffic

2.3.1 Introduction

This section summarizes the existing coal and petcoke exports in the San Francisco Bay region, in so far as data are available, and recounts the experiences of other ports with coal exports from the West Coast of the United States. It also provides background information regarding existing shipment of coal by rail in the San Francisco Bay area.

Historically, the Ports of Portland and Los Angeles operated coal terminals; however, each of these two ports has closed their coal terminals. Several Western coastal ports have been requested by terminal developers and coal mine owners to dedicate large terminals to ship U.S. coal to Asia. However, many ports have declined to build and operate coal export terminals based upon environmental and market risk concerns. Recently, the Port of Oakland, Port of Tacoma on Puget Sound, and the Columbia River ports of Vancouver, Kalama, and Portland have all considered—and rejected—coal export proposals (see the discussion below).

2.3.2 San Francisco Bay Region

Port of Richmond

The privately owned Levin-Richmond Terminal located at the Port of Richmond exports petcoke and coal. Coal is delivered by Union Pacific Railroad (UPRR) to this facility, which has a railyard capacity of two 105-car trains and a storage capacity of approximately 45,000 metric tons.[80] Photos of this facility are included in **Appendix E**.

Port of Benicia

The Port of Benicia exports petcoke from the Valero Benicia Refinery. Once a day, up to 12 rail cars loaded with petcoke leave the Refinery for the marine terminal and AMPORTS Benicia Port Terminal Company facility directly to the south. The petcoke is off-loaded into storage silos near the dock for eventual loading onto marine vessels for export. The empty petcoke rail cars are brought back onto the refinery for reloading for the next day's transfer operations.[81]

---

79 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)

80 https://www.up.com/customers/coal/ports-docks/levin/index.htm

81 City of Benicia, Valero Crude by Rail Project, Revised Draft Environmental Impact Report, August 2015.

Port of Stockton

The Port of Stockton currently receives coal by rail from UPRR and ships it for export. The Port has a railyard capacity of 84 rail cars and a storage capacity of approximately 227,000 metric tons, which is expandable to 454,000 metric tons.[82] Director Richard Aschieris stated that coal cargo volume was down in 2015, to just over a million metric tons in 2015, from 2014's 1.74 million metric tons. And in January 2016 Aschieris expects, based on discussions with cargo carriers that coal exports may disappear entirely in 2016 because of shifts in global demand and monetary exchange rates. "It's too expensive on the international markets," he said. "The value of the dollar is so high, other places in the world can provide coal at half to a third of the cost (of U.S. coal)." "I am very pleased that we have diversified away from coal and to see other products are moving up," he said.[83]

Port of Oakland

According to a Port of Oakland representative, the Port currently does not have any tenants with bulk coal facilities and bulk (non-containerized) coal is not shipped through the Port.[84] There are databases that track commodity shipments that may suggest that coal is shipped through the Port. Some of these shipments are likely to be coal-derivative products. The Port is not aware of the specific origin, destination, or nature of these shipments.[85]

The Port of Oakland recently (2014) declined one proposal for coal received by rail for export and one proposal from CCIG and partners that was inferred to include coal for export.

In February 2014 the Board of Port Commissioners declined a proposal to accept coal by rail for export through the Charles P. Howard Terminal (Berths 67-68) at the Port of Oakland (see **Appendix C**). The proposal was authored by Bowie Resources, LLC for bulk commodity shipping of coal for export as well as borax, petroleum coke, coal, and iron ore pellets and fines. These materials were to be brought into the Howard Terminal by rail and handled on-site through a system of conveyors and storage domes (150 feet high x 190 feet diameter), for ultimate loading onto ships for export.

Reasons given for the Port denial were environmental concerns related to the handling of commodities such as coal and stem primarily from issues of fugitive dust and climate change. Port staff recommended that operations such as those proposed by Bowie conflict with recently adopted Port policies and programs intended to create or support environmental sustainability. Another concern expressed was controversy and litigation over coal and coal export facilities and the impacts along the *entire* supply chain, which has been significant in recent years throughout the U.S., including on the West Coast.

82 https://www.up.com/customers/coal/ports-docks/stockton/index.htm

83 Available at http://www.portofstockton.com/port-sees-record-in-ship-traffic.

84 Personal communication with Delphine Prevost, Manager, Administration and Finance Services, Port of Oakland, June 16, 2016.

85 *Ibid.*

Also in February 2014 the Board declined a proposal from CCIG/Kinder Morgan/Metro Ports for bulk/commodity operations on the same property, but the type of commodities and details of the proposed operation were not specified. Based on other operations of the proposal team elsewhere in the U.S., it was inferred that commodities similar to those proposed by Bowie Resource Partners (including coal) may be handled under this proposal, but this was not confirmed through the request for supplemental information (CCIG did not submit such information).

Pittsburg, California. Pittsburg Marine Terminal

Koch Carbon, LLC operates dry bulk transfer terminal for marine and truck shipments originating from and destined for both international and regional locations. The facility receives and transfers cement and cementitious materials, aggregates, sand and gravel, gypsum, bauxite, scrap metal, limestone, lumber, and grains. All materials are moved throughout the facility pneumatically or within enclosed or covered conveyors. The types of materials handled was expanded in 1995 to include other non-hazardous materials as classified by the US EPA.[86] These commodities include coke and coal according to Koch Carbon, LLC.[87] Photos of this facility are included in **Appendix E.**

2.3.3 Southern California

Los Angeles, California. Port of Los Angeles

The Port of Los Angeles approved construction of a coal export facility that was built in 1993; the consortium effort was originally led by Peabody Coal. The port had an annual handling capacity of 3 million tons of coal and 2 million tons of petroleum coke.[88] Peabody dropped out of the consortium before the terminal was built.

The terminal experienced at least two fires in 2000 and 2001 after large amounts of coal dust accumulated in the ship-loading machinery. Two fires occurred within five months of each other on a coal and petcoke shiploader operating at the Port. The first fire occurred in September 2000; approximately eight hours after the shiploader had ceased operating for the day. The shiploader was reconstructed to its original design and after approximately 500 hours of operation, a second fire occurred in February 2001, one hour after the shiploader had ceased operating.[89] In each case, a portion of the equipment malfunctioned, causing temperatures high enough to ignite coal and petcoke particles that had entered the equipment bearings. This caused a chain reaction that caused the fire to spread to other parts of the equipment. Photos of the fires are included in **Appendix E**.

After six years of operation, the facility closed in 2006 and was dismantled, citing unfavorable market conditions for coal and petcoke. When the facility shut down, the City of Los Angeles wrote off $19 million of capital investment, and forfeited $94 million in expected revenue.

86 City of Pittsburg, Pittsburg Marine Terminal, Addendum #2 to the Environmental Impact Report, September 28, 1995.
87 www.kochcarbon.com
88 Article available at http://articles.latimes.com/2003/jun/14/local/me-coal14
89 Available at http://www.exponent.com/Coke-and-Coal-Shiploader-Fire-Los-Angeles-Port/

Ultimately, the city was sued for improperly managing the site – and for failing to consider alternative uses of the site – and taxpayers paid $28 million to settle the lawsuit. [90]

Long Beach, California. Port of Long Beach

Coal is delivered by UPRR to this facility, which has a railyard capacity of 184 rail cars and a storage capacity of approximately 136,000 metric tons.[91]

2.3.4 Pacific Northwest Ports

Longview, Washington. Millennium Bulk Terminal

This proposed terminal is still pending approval or denial. On April 29, 2016, Washington Department of Ecology released their draft Environmental Impact Statement for Millennium Bulk Terminal's proposed 44 million metric tons of coal per year export terminal. The terminal site is located along the Columbia River in Longview, Washington at the site of the former Reynolds Aluminum smelter, in Cowlitz County.[92] The report comes after the agency received over 215,000 public comments on the proposed coal export terminal.

Ferndale, Washington. Gateway Pacific Terminal

Gateway Pacific Terminal was proposed by Pacific International Terminals, LLC (PIT), a joint venture between SSA Marine and Cloud Peak Energy to be located at Cherry Point near Ferndale, Washington. A denial by the Army Corps of Engineers was issued for the Gateway Terminal on May 9, 2016 ruling the project would impact the legally-protected treaty fishing rights of the Lummi Nation. The Gateway Terminal was proposed to export up to 54 million metric tons of coal per year along with petcoke from a rural site.

Tacoma, Washington. Port of Tacoma

The Port of Tacoma stated that it rejected a large export proposal in 2010 because of a multitude of business and community factors. Local citizens had concerns about the health effects of coal dust and the impact of coal trains.[93]

Kalama, Washington. Port of Kalama

Kalama rejected a coal export proposal from Millennium Bulk Terminals in 2010. After the rejection, Millennium now seeks to site its project in Longview.[94]

90 Article available at http://articles.latimes.com/2003/jun/14/local/me-coal14
91 https://www.up.com/customers/coal/ports-docks/l-beach/index.htm
92 Available at http://millenniumbulk.com/
93 Available at http://portoftacoma.com/
94 Available at http://portofkalama.com/

Vancouver, Washington. Port of Vancouver

Larry Paulson, the Port of Vancouver's executive director, pointed out that "coal facilities have a tendency to come and go," and that was a major reason why Vancouver favored a terminal for potash, a more stable commodity. The Port's operations manager, Mike Schiller, put it even more directly: "coal is the most risky bulk mineral market." [95]

Portland, Oregon. Port of Portland

Before the Port of Los Angeles experience, a coal terminal was built in Portland in the 1980s and subsequently failed due to a lack of coal demand in Asian markets, leaving barely-used equipment that had to be sold. The Port and investors spent $25 million building the coal export terminal. [96]

2.3.5 Existing Rail Traffic

Coal is currently exported by unit train through three California ports: Richmond, Stockton, and Long Beach. Under normal conditions, it is not expected that any coal train would pass through the City of Oakland on the rail routes to these ports. The most likely route to Richmond and Stockton from coal mines served by UPRR and BNSF would be along UPRR's Overland Route, which enters California at the Donner Pass. Coal trains would not pass through Oakland when accessing these ports along the Overland Route. Trains also could access Richmond from another rail route through the Central Valley, but this route would again approach Richmond from the north and not through Oakland. It is possible that trains traveling via this corridor could be diverted through Livermore and then through Oakland on the way to Richmond. There is a third route that would pass through Oakland (Coast Line), but this line would only be used when there is a bottleneck on the other two lines. Therefore, it is possible that unit trains destined for Richmond could occasionally pass through Oakland, but this would be an anomaly. This information has been corroborated by statements made by officials from the Port of Oakland and UPRR.[97]

Under normal circumstances coal trains headed to Long Beach would not use the coast route (thus passing through Oakland), but would approach Southern California either through the desert east of Long Beach (i.e., Las Vegas to Barstow and onward to Long Beach), or would drop south from Roseville through the Central Valley. Passing through Oakland to reach Southern California would be inefficient and would only occur if there was a mainline blockage on the preferred routes.

The East Bay Municipal Utility District (EBMUD) uses anthracite coal in their six surface water treatment plants for filtration. Most of the plants use the same coal for about 20 years. On a rare occasion some portion of the coal has to be replaced as part of regular inspections or renovations.

95 Available at www.portvanusa.com/
96 https://www.portlandoregon.gov/transportation/article/542469
97 Laura Jo Foo, Response to Question #8. **(OAK055274)**

The replacement coal is transported to the plants in sealed bags that arrive directly from the supplier via tractor trailer trucks. No rail transport of this coal occurs to EBMUD facilities.[98]

AB&I Foundry, an iron foundry that manufactures cast iron pipe and fittings (located near the Coliseum BART station in Oakland), receives petcoke via a rail spur. Its coke pile has a permitted capacity of 13,000 cubic feet.[99]

TABLE 2-1
BASIS OF DESIGN DOCUMENTS REFERRED TO IN THIS REPORT

Document	Link to City of Oakland website
TLS Preliminary Operating Plan (Operations Management System; Operations Procedure Manual)	OAK054818
TLS Basis of Design - Intro thru Section 3 (Throughput, commodities list)	OAK054820
TLS Basis of Design - Section 4 (Development Agreement)	OAK054821
TLS Basis of Design - Sections 5 & 6 (Maps)	OAK054822
TLS Basis of Design - Section 7a (Permitting and Fees)	OAK054823
TLS Basis of Design - Section 7b (Permit Application Info and Forms)	OAK054824
TLS Basis of Design - Section 8 (Potential Commodities and MSDS Sheets)	OAK054825
TLS Basis of Design - Sections 9 & 10 (Potential Commodities: NFPA 704 – material hazards)	OAK054826
TLS Basis of Design - Sections 11 thru 13 (Potential Alternative Systems For Handling Bulk Commodities)	OAK054827
TLS Basis of Design - Sections 14 & 15 (Fire and Life Safety)	OAK054828
TLS Basis of Design - Sections 16 thru 18 (Conceptual Drawings)	OAK054829
TLS Basis of Design - Section 19a (Wharf 6, 6 ½ and 7, Structural Analysis and Seismic Upgrade Plan)	OAK054830
TLS Basis of Design - Section 19b (Schematic Drawings of Wharf 6, 6 ½ and 7 Structural/Seismic Plan)	OAK054831
TLS Basis of Design - Section 19c (Oakland Army Base Wharves, Concrete Strength Results)	OAK054832
TLS Basis of Design – Appendix (OBOT Basis of Design, Appendix dated 7/21/2015; Manuals for air monitoring samplers, dewatering O&M)	OAK054819

98 Personal communication with Jim Smith, Superintendent of Water Treatment, EBMUD, June 15, 2016.
99 www.baaqmd.gov/~/media/files/engineering/title-v-permits/a0062/a0062_2014-08_mr_final-permit.pdf?la=en

TABLE 2-2
OBOT POTENTIAL COMMODITY LIST

	Commodity
1	Animal Feed (BIOFOS Additive)
2	Basic Chemicals (Melamine)
3	Bauxite*
4	Bituminous Coal
5	Borax
6	Cereal Grains (Ground Corn)
7	Copper Concentrate
8	Dried Distillers Grain
9	Fertilizer (Mosaic Micro Essentials SZ)
10	Fuel Oils
11	Gasoline
12	Iron Ore
13	Logs (Douglas Fir)
14	Metallic Ores (Zinc Ore)
15	Muriate of Potash
16	Portland Cement*
17	Soda Ash
18	Sodium Sulfate
19	Soybean (Meal)
20	Waste/Scrap (Aluminum)

SOURCE: TLS Basis of Design, Section 8. (**OAK054825**)

CHAPTER 3
Commodities Characterization

This section provides a general description of coal and petcoke along with a characterization of chemical attributes that are relevant to human health and safety effects.

3.1 Coal

3.1.1 Introduction – Coal

This section describes and compares the characteristics of coal and petcoke for export from OBOT. Coal is a black or brown sedimentary rock that can be ignited and burned to produce energy in the form of heat. Coal's chemical makeup is a complex mix of elements that include carbon, oxygen, hydrogen, nitrogen and sulfur, as well as many other minerals. Coal is classified as a nonrenewable energy source because it takes millions of years to form geologically.

3.1.2 Coal Rank

Coal is classified into four main types, or ranks: anthracite, bituminous, subbituminous, and lignite. The ranking depends on the types and amounts of carbon the coal contains and on the amount of heat energy the coal can produce. The rank of a coal deposit is determined by the amount of pressure and heat that acted on the plants over time.

Anthracite contains 86%–97% carbon, and generally has the highest heating value of all ranks of coal. Anthracite accounted for less than 1% of the coal mined in the United States in 2014. All of the anthracite mines in the United States are located in northeastern Pennsylvania. Anthracite is mainly used by the metals industry.

Bituminous coal contains 45%–86% carbon. Bituminous coal in the United States is between 100 and 300 million years old. Bituminous coal is the most abundant rank of coal found in the United States, and it accounted for 48% of total U.S. coal production in 2014. Bituminous coal is used to generate electricity, and it is an important fuel and raw material for making iron and steel. West Virginia, Kentucky, Pennsylvania, Illinois, and Indiana were the five main bituminous coal-producing states in 2014, accounting for 70% of total bituminous production.[1] Approximately 8%of the bituminous coal mined in the U.S. is from the Colorado Plateau in the states of Utah, Colorado, New Mexico, and Arizona.

[1] EIA Coal Production and Number of Mines by State and Coal Rank, 2014http://www.eia.gov/coal/annual/pdf/table6.pdf

Subbituminous coal typically contains 35%–45% carbon, and it has a lower heating value than bituminous coal. Most subbituminous coal in the United States is at least 100 million years old. About 44% of total U.S. coal production in 2014 was subbituminous, and nearly 90% was produced in Wyoming.

Lignite contains 25%–35% carbon and has the lowest energy content of all coal ranks. Lignite coal deposits tend to be relatively young and were not subjected to extreme heat or pressure. Lignite is crumbly and has high moisture content, which contributes to its low heating value. Lignite accounted for 8% of total U.S. coal production in 2014. About 92% of total lignite production is mined in Texas and North Dakota, where it is burned at power plants to generate electricity.

TABLE 3-1
COAL HEATING VALUE AND CARBON CONTENT

Rank	Range of Heating Value (Btu/lb)		Range of Fixed Carbon (%)	
Anthracite	Greater than	12,000	86	97
Bituminous	11,500	14,000	45	86
Subbituminous	8,300	11,500	35	45
Lignite	4,000	8,300	25	35

SOURCE: USGS National Coal Resource Data System, http://energy.usgs.gov/Tools/NationalCoalResourcesDataSystem.aspx#3826121-related-links

3.1.3 Coal Resources

In 2013, 985 million short tons[2] of coal were mined in 25 states. Coal is mined in two ways: surface mining and underground mining. In 2015 the US mined 895.93 million short tons of coal. Of that, 8.2% or 73.96 million short tons were exported.[3]

Surface mining is used to produce most of the coal in the United States because the method is less expensive than underground mining. Surface mining can be used when the coal is less than 200 feet underground. In surface mining, large machines remove the top soil and layers of rock known as overburden to expose the coal seam.

Underground mining, sometimes called deep mining, is used when the coal is several hundred feet below the surface. Some underground mines are 1,000 feet deep, and many extend for miles.

Surface mines were the source of 65% of total U.S. coal production and accounted for 60% of the total number of mines. In Utah, there is only 1 surface mine.[4]

2 Short ton or "ton" = 2,000 pounds.
3 EIA U.S. Coal Production, 2009 – 2015 http;//www.eia.gov/coal/production/quarterly/pdf/t1p01p1.pdf
4 EIA Coal Production and Number of Mines by State and Coal Rank, 2014http://www.eia.gov/coal/annual/pdf/table6.pdf

Five states accounted for approximately 69% of total U.S. coal production in 2013 (Utah was ranked at 13th with 1.8%):

- Wyoming (39%)
- West Virginia (12%)
- Kentucky (8%)
- Illinois (5%)
- Pennsylvania (5%)

Coal is mainly found in three regions, the Appalachian coal region, the Interior coal region, and the Western coal region.

TABLE 3-2
WESTERN REGION COAL

Facts for 2013 (the latest update year)
• Alaska, Arizona, Colorado, Montana, New Mexico, North Dakota, Utah, Washington, and Wyoming.
• Of the coal produced in the United States, 54% was produced in the Western coal region.
• Wyoming produced 73% of the coal mined in the Western coal region, and it is the largest coal-producing state in the United States.
• Nine of the top-10 producing coal mines in the United States are located in Wyoming, and all of those mines are surface mines
• Surface mines produced 90% of the Western coal region's total coal production
SOURCE: Energy explained https://www.eia.gov/energyexplained/

3.1.4 Uses of Coal

Coal is most commonly used to generate electric power, but it has many other uses. The general descriptions below highlight some common uses. Coal is used to produce about 39% of all the electricity generated in the United States.[5] Coal is typically blended to meet contract requirements regarding heating value, sulfur, ash and/or moisture. Power plants can make steam by burning coal. The steam then turns turbines (machines for generating rotary mechanical power) to generate electricity. Many industries and businesses have their own power plants, and some use coal to generate electricity, mostly in combined heat and power plants (known as cogeneration).

The concrete and paper industries burn large amounts of coal to produce heat for use during their manufacturing process. The steel industry uses coal indirectly to manufacture steel.

Coal can be turned into gases and liquids, which can be used as fuels or processed into chemicals to make other products. These gases or liquids are sometimes called synthetic fuels or synfuels. Synthetic fuels are made by heating coal under controlled conditions. These fuels produce fewer air pollutants when burned than burning coal directly. There are currently no commercially operating facilities in the United States that produce liquids from coal, but coal has been converted to liquids in South Africa for decades.

5 EIA Generation by Utility-Scale Facilities, http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3

3.1.5 Processing Coal

After coal is removed from the ground, it may be processed at a preparation plant located near the mining site. The plant processes coal to remove rocks and dirt, ash, sulfur, and other unwanted materials. This process, commonly called coal cleaning or beneficiation, increases the heating value of the coal. Coal resources west of the Mississippi River are not processed or cleaned after mining generally. About 95% of the coal mined east of the Mississippi River in the Appalachian and Illinois Basins are processed and cleaned to some extent.

3.1.6 Transporting Coal

After coal is mined and processed, it is transported to market, which can be more expensive than the cost of mining it. Nearly 70% of coal delivered in the United States is transported for at least part of its trip to market by train.[6] The rest was transported by waterway, truck, or—for power plants located near a coal mine—by conveyor.

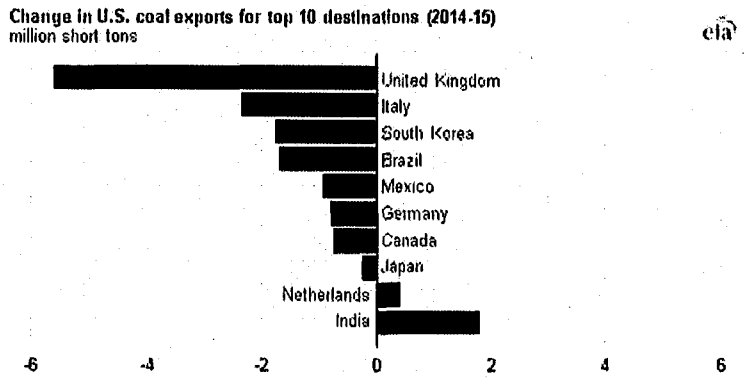
3.1.7 Exporting Coal

The United States remains a net exporter of coal, exporting 74.0 million short tons (MMst) in 2015.[7] Coal exports fell for the third consecutive year in 2015, ending the year 23 MMst lower than in 2014 and more than 50 MMst less than the record volume of coal exported in 2012. Slower growth in world coal demand, lower international coal prices, and higher coal output in other coal-exporting countries contributed to the decline in U.S. coal exports. Lower mining costs, cheaper transportation costs, and favorable exchange rates (compared to the U.S. dollar) continue to provide an advantage to producers in other major coal-exporting countries such as Australia, Indonesia, Colombia, Russia, and South Africa.

One of the only increases in U.S. coal exports in 2015 was for exports to India, which increased by almost 2 MMst, bringing its share of U.S. coal exports to 9%, up from 5% in 2014. Coal exports to the rest of Asia fell. Europe has traditionally been a leading destination for coal exports, but exports were down 14.6 MMst (28%) in 2015.

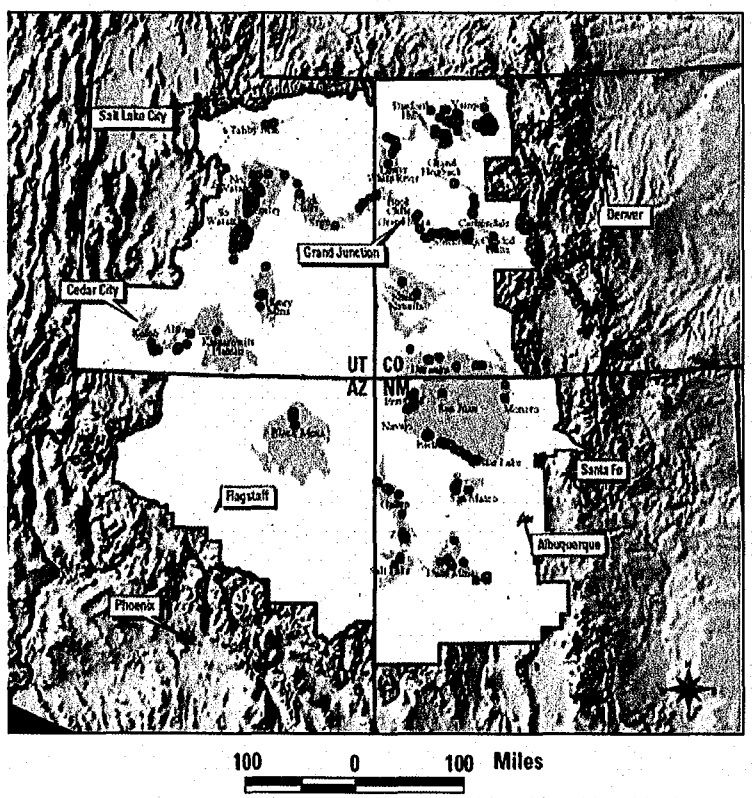
U.S. coal exports are mainly shipped from six customs districts that together accounted for 90% of U.S. exports in 2015. Norfolk, Virginia, the largest coal port, shipped 26.2 MMst of coal, accounting for 35% of total U.S. exports. Baltimore, Maryland, was the only major customs district (districts that generally export more than 1 MMst of coal annually) to increase exports in 2015, largely driven by increased exports to India.

6 EIA Annual Coal Distribution Report, http://www.eia.gov/coal/distribution/annual/
7 EIA US Coal Exports, www.eia.gov/coal/production/quarterly/pdf/t7p01p1.pdf



3.1.8 Utah and Western Bituminous Coals

The coal proposed to be transported to and through the OBOT for export is coal from Utah and other western states producing bituminous coals.[8] Western bituminous coal is produced primarily from four states. The coal fields in Utah are part of the Colorado Plateau that covers an area centered around the Four Corners and includes coal fields in Utah, Colorado, New Mexico and Arizona.[9]



8 Letter from Jerry Bridges, President and CEO, TLS to Mayor Libby Schaaf, July 15, 2015. (**OAK054817**)
9 National Coal Resource Assessment: Geologic Assessment of Coal in the Colorado Plateau: Arizona, New Mexico, and Utah, Chapter G, http://pubs.usgs.gov/pp/p1625b/

Coal has been mined in Utah since the 1870s.[10] There are currently 17 mineable coal fields in Utah.[11] 97% of the Utah coal is currently mined from the Wasatch Plateau and Book Cliffs coal fields.

TABLE 3-3
UTAH COAL MINES AND 2014-2015 PRODUCTION

Company	Mine	County	Coalfield	2014	2015
				Thousand Short Tons	
UtahAmerican Energy, Inc. - Murray Energy Corp.	Aberdeen[1]	Carbon	Book Cliffs	--	--
	Pinnacle[1]	Carbon	Book Cliffs	--	--
	Lila Canyon	Emery	Book Cliffs	335	350
Canyon Fuel, LLC - Bowie Resources, Inc.[2]	Dugout Canyon	Carbon	Book Cliffs	676	763
	Skyline #3[3]	Emery/Carbon	Wasatch Plateau	4,170	4,409
	SUFCO	Sevier	Wasatch Plateau	6,539	6,024
CONSOL Energy[4]	Emery	Emery	Emery	--	--
Castle Valley Mining LLC[5] – Rhino Resources	Castle Valley #1	Emery	Wasatch Plateau	--	--
	Castle Valley #3	Emery	Wasatch Plateau	--	177
	Castle Valley #4	Emery	Wasatch Plateau	1,061	789
Energy West Mining Co.	Deer Creek	Emery	Wasatch Plateau	2,083	15
	Trail Mountain	Emery	Wasatch Plateau	--	--
GENWAL Resources, Inc. - UtahAmerican Energy, Inc. - Murray Energy Corp.	Crandall Canyon[6]	Emery	Wasatch Plateau	--	--
	South Crandall Canyon[6]	Emery	Wasatch Plateau	--	--
Hidden Splendor Resources, Inc. - America West Resources, Inc.	Horizon[7]	Carbon	Wasatch Plateau	--	--
Lodestar Energy, Inc.	Whisky Creek #1	Carbon	Wasatch Plateau	--	--
	White Oak #2	Carbon	Wasatch Plateau	--	--
West Ridge Resources, Inc. - UtahAmerican Energy, Inc. - Murray Energy Corp.	West Ridge[6]	Carbon	Book Cliffs	2,514	1,580
Alton Coal Development	Coal Hollow (surface)	Kane	Alton	555	316
	Burton #1 (underground)	Kane	Alton	--	11
Total				**17,933**	**14,434**

SOURCE: Utah Geological Survey, Coal Production in Utah by Coal Mine 2001-2015, http://geology.utah.gov/resources/energy/utah-energy-and-mineral-statistics/#toggle-id-2

Of the 17 mining companies listed, 8 are active mines and 12 were inactive in 2014-2015. Alton is the only surface mine and is in Kane County. All other mines are underground mines.

The following coal quality data for 2013-2014 indicates the mined coal is all bituminous, low in sulfur and ash. The Utah coal has similar characteristics to eastern Appalachian coal but the sulfur content of Colorado Plateau coals is relatively low when compared to all other U.S. coals. In the Colorado Plateau, most of the sulfur is in the form of organic sulfur with small amounts of pyritic sulfur, and little sulfate sulfur.

10 *Ibid.*
11 Utah Geological Survey, Coal Production in Utah by Coal Field 1982-2015, http://geology.utah.gov/resources/energy/utah-energy-and-mineral-statistics/#toggle-id-2

TABLE 3-4
UTAH BITUMINOUS COAL QUALITY DATA FOR 2013 -2014

Company	Mine	Coal Field	Bed(s)	Heat content Btu/lb.	% Sulfur	% Ash	% Moisture
Canyon Fuel, LLC	Dugout Canyon	Book Cliffs	Gilson	12,049	0.7%	NA	NA
WEST RIDGE Resources, Inc.	West Ridge	Book Cliffs	Lower Sunnyside	12,365	1.0%	8.6%	7.5%
Rhino Resources	Castle Valley #4	Wasatch	Tank	12,043	0.7%	11.5%	6.7%
Canyon Fuel, LLC	Skyline #3	Wasatch	Lower O'Connor 'A'	11,500	0.5%	10.1%	8.7%
Canyon Fuel, LLC	SUFCO	Wasatch	Upper Hiawatha	10,911	0.3%	11.9%	9.4%
Energy West Mining Co.	Deer Creek	Wasatch	Hiawatha/Blind Canyon	11,414	0.7%	13.9%	8.2%
Utah American Energy, Inc.	Lila Canyon	Book Cliffs	Sunnyside	11,736	1.3%	12.3%	7.0%
Alton Coal Development	Coal Hollow	Alton	Smirl	10,000	1.0%	8.0%	17.0%
		Northern Appalachia	*Pittsburgh Seam*	*13,000*	*1.8%*	*11.7%*	*4.7%*

SOURCE: Utah Geological Survey, Average Coal Quality at Utah Mines, 2004-2014, http://geology.utah.gov/resources/energy/utah-energy-and-mineral-statistics/#toggle-id-2

3.1.9 Coal Analysis

Understanding the composition of coal is a critical component to understanding the performance of the material for a specific purpose. The American Society for Testing and Materials (ASTM) has standardized over 50 analytical procedures specifically designed for analyzing coal, including proper sampling, physical properties and chemical analysis.[12] Other organizations have also standardized other analytical procedures.

Physical Characterization

The physical characteristics of the coal are important for mining, processing, and transporting the coal. The most common analytical procedures include bulk density, coal handling, ash resistivity, grindability, sizing, and washability. All of these tests are empirical in nature, and although standardized by various organizations, the results can vary widely between laboratories.

Coal handling includes four tests and is the most relevant for this report. Those tests include abrasiveness, size stability, friability and compaction strength. Abrasiveness of the coal is a factor for maintenance of the equipment used for processing and transportation. Abrasiveness is attributable primarily to minerals associated with coal rather than the coal itself.

Size stability refers to the ability of the coal to maintain size and not shatter when dropped. Friability is the tendency of a material to crumble or degrade in size. Friable coals may contribute

[12] ASTM Volume 05.06 Gaseous Fuels; Coal and Coke; Bioenergy and Industrial Chemicals from Biomass; Catalysts, https://www.astm.org/BOOKSTORE/BOS/0506.htm

to excess fine materials (dust) build-up in coal handling systems and fugitive dust during transportation.

Chemical Analysis

A wide range of elements occurs in coal, encompassing both organic and inorganic materials. The elements in coal can be separated into two groups: major and minor elements, which make up approximately 99% of the weight of most typical coals. Trace elements occur in amounts much less than 1%. Elemental analysis gives empirical formulas such as $C_{137}H_{97}O_9NS$ for bituminous coal. This translates to a material with 85% C (carbon [which is the energy producing component]).

Two general categories of analytical analysis apply: the determination of elements in the coal and the determination of elements in the ash. The ASTM[13] has standardized procedures for the analysis of the major elements in coal of carbon, hydrogen, nitrogen, sulfur and oxygen. All elements are found in coal. The U.S. Geological Survey (USGS) usually analyzes 80 elements for each of the samples listed in their database known as CoalQual.[14] Trace element analysis in coal is much more challenging but the ASTM has standardized procedures for the analysis. As a result of the 1990 Clean Air Act Amendments, certain trace elements in coal became of concern because of the potential impact on the environment.

The table below shows a comparison of trace elements of concern in the coal from the major basins in the continental U.S. Utah coal is mined from the Colorado Plateau. The results below are on a whole coal basis, not an ash basis, meaning this is the expected concentration in the coal that would be mined and transported.

TABLE 3-5
COMPARISON OF TRACE ELEMENTS OF INTEREST IN COAL FROM THE MAJOR BASINS IN THE US

	Colorado Plateau	Appalachian Basin	Interior Province	Gulf Coast	Western U.S. (Wyoming, Montana)
Element	**Mean (ppm)**	**Mean (ppm)**	**Mean (ppm)**	**Mean (ppm)**	**Mean (ppm)**
Antimony	0.5	1.4	1.5	1	0.6
Arsenic	1.6	35	20	10	7.4
Beryllium	1.2	2.5	2.4	2.4	1.1
Cadmium	0.1	0.1	4.2	0.55	0.1
Chromium	4.5	17	19	24	10
Cobalt	1.5	7.2	10	7.2	3.5
Lead	6.5	8.4	40	21	4.2
Manganese	22	29	78	150	60
Mercury	0.06	0.21	0.15	0.22	0.12
Nickel	3.7	17	27	13	4.6
Selenium	1.2	3.5	3.2	5.7	0.7
Uranium	1.3	1.7	3.1	23	1.7

SOURCE: National Coal Resource Assessment: Geologic Assessment of Coal in the Colorado Plateau: Arizona, New Mexico, and Utah, Chapter G, http://pubs.usgs.gov/pp/p1625b

13 *Ibid.*
14 USGS Coal Qual Database, http://ncrdspublic.er.usgs.gov/coalqual/

Bituminous coal is a sedimentary rock composed of up to 86% carbon, along with a complex mix of elements that include oxygen, hydrogen, nitrogen and sulfur, as well as many other minerals. Minor and trace constituents are included in the coal matrix or associated as clays or other minerals. Silica is associated with clays and quartz, barium is associated with sulfur. Arsenic, lead and mercury are associated with organically bound sulfur or with pyrite. The elements, silica, mercury, lead, arsenic and barium are in mineral form in the coal and not available as elements, nor are these elements bio-available (able to have an effect when it enters circulation in the human body). Trace constituents in coal dust are in the same mineral form as that in the whole coal (e.g., pyrite) and are also not bio-available. Further, trace constituents in coal dust remain at the same concentration as in the whole coal. That is, trace constituents represent less than 1% of a typical coal particle, by weight, while carbon makes up 99% by weight.

Although these trace elements in coal are not bioavailable based upon their chemistry, they are to be included in risk assessments as though they are, based upon regulatory agency guidance. There is variability in environmental factors influencing the bio-availability of coal dust constituents, such that U.S. Environmental Protection Agency (US EPA) risk assessment guidance recommends in the absence of data to the contrary, 100% of the chemical constituents in coal dust should be assumed to be bio-available.[15]

During the mining process, which is regulated by the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA), volatile gases including methane are diluted and vented. The amount of volatile gas in the coal deposit is very dependent on the formation and history of the deposit.

3.2 Petcoke

3.2.1 Introduction – Petcoke

Petroleum coke (petcoke) is typically used as a source of energy, or as a source of carbon for industrial applications. Fuel grade petcoke represents nearly 80% of worldwide production and is a source of fuel for cement kilns and electric power plants.

Petcoke is a black colored solid composed primarily of carbon, and may contain limited amounts of elemental forms of sulfur, metals and non-volatile inorganic compounds. Crude oil is processed into gasoline, diesel fuel, jet fuel, lubricating oils and waxes, leaving some residual crude that can undergo additional processing at the oil refinery. The crude residue may be further refined by a process known as coking. A coker breaks down, or cracks, large hydrocarbon molecules to produce petcoke, a solid, which has a variety of uses including as a cost-effective fuel.

[15] U.S. Environmental Protection Agency (US EPA), 2007, Guidance for Evaluating the Oral Bioavailability of Metals in Soils for Use in Human Health Risk Assessment. Office of Solid Waste and Emergency Response, and US EPA, 2004, An Examination of EPA Risk Assessment Principles and Practices. EPA/100/B-04/001. Office of the Science Advisor,

Cokers have been an integral unit of many oil refineries since the 1930s. The vast majority of crude oils in the world will produce petcoke if they are refined in a refinery equipped with a coker, although the amount produced will vary. Crude oil such as Arab Medium will yield approximately eight percent by weight as petcoke, while heavier crude oils from Venezuela, Mexico, or Alberta yield approximately twice as much petcoke. Today, delayed cokers are being built and operated in refineries to process a variety of crude oils in locations such as China, India, the Middle East and South America, to maximize the yield of transportation fuels from a barrel of crude.

The U.S. Energy Information Administration (EIA) categorizes three types of petcoke from refineries[16]:

- Catalyst Petcoke is used in the petroleum refining process. It is usually burned as fuel at the oil refinery and does not contribute to exports.
- Marketable Fuel-Grade Petcoke contains higher sulfur and heavy metals content than most coal and is used mainly as a fuel at cement plants and power plants.
- Marketable Calcined Petcoke has the highest carbon purity and is used to make electrical components, such as capacitors.

Nearly half of U.S. petroleum refineries (56 or more) use a coking process to convert crude oil into refined petroleum products including petcoke. In the San Francisco Bay area all of the five refineries produce petcoke. In 2012, the U.S. Energy Information Administration reported that U.S. refineries produced in excess of 56 million metric tons of petcoke, of which 80% was exported.

3.2.2 Petcoke Composition

Petcoke is typically 90-95% carbon. The specific chemical composition of petcoke depends on the composition of the petroleum feedstock used in refining. Petcoke impurities (i.e., the nonelemental carbonaceous substances) include some residual hydrocarbons left over from processing (referred to as volatiles), as well as elemental forms of nitrogen, sulfur, nickel, vanadium, and other heavy metals. These impurities exist as a hardened residual captured within coke's carbon matrix. Most chemical analyses of petcoke, as referenced by the US EPA, find it to be highly stable and nonreactive at ambient environmental conditions.

3.2.3 Petcoke Uses[17]

Although it is a refining co-product, petcoke has economic value as both a heating fuel and raw material in manufacturing. Thus, petroleum coke is typically used as a source of energy, or as a source of carbon for industrial applications. Fuel grade petcoke represents nearly 80 percent of worldwide production and is a source of fuel for cement kilns and electric power plants. Calcined petcoke has the highest carbon purity and is used as a source of carbon in the aluminum, graphite electrode, steel, titanium dioxide and other carbon consuming industries.

16 EIA, Today in Energy http://www.eia.gov/todayinenergy/detail.cfm?id=6430
17 Congressional Research Service, Petroleum Coke: Industry and Environmental Issues.

From 1992 to 2008, approximately 55 percent of U.S. petcoke was exported. That number jumped to 80 percent in 2012, driven by a global market for petcoke as a source of electricity generation in large part because of its high caloric value, low ash, and lower price relative to coal. The United States provides over one-half of the petcoke traded in the global market. China buys more U.S. petcoke than any other country; shipments averaged 86 thousand barrels per day during the January 2012 to February 2012 period, double the volumes from a year earlier. After China, the biggest export markets for American petcoke include Japan, India, Brazil, Turkey, and Mexico. These six countries collectively accounted for more than 55% of U.S. petcoke exports during the first two months of and the remaining 45% of exports went to about two dozen other countries.

3.2.4 Fugitive Petcoke Dust and Human Health

The US EPA has surveyed the potential human health and environmental impacts of petcoke through its High Production Volume (HPV) Challenge Program and found the material to be highly stable and non-reactive at ambient environmental conditions.

However, the handling and storage of petcoke may create instances of reduced air quality due to releases of fugitive dust into the atmosphere. Public complaints regarding petcoke are primarily related to the amenity impacts of the dust, i.e., dusting of cars and homes, soiling of laundry and clothing. There are concerns about contributions of petcoke dust to background particulate levels and also due to the potential for health effects from particulate inhalation. This topic is discussed in Chapter 5.

This page intentionally left blank

CHAPTER 4
Local Setting

4.1 Overview

As noted in Chapter 1, Introduction, this report analyzes the potential health and/or safety effects of rail transport, handling, and storage, and transloading of coal and petcoke in the City of Oakland. ESA analyzed the proposed new OBOT facility to be located at the former Oakland Army Base in West Oakland as an illustrative example of a coal or petcoke export facility.

The OBOT Proponents propose to construct and operate a bulk and oversized commodity export terminal, the Oakland Bulk and Oversized Terminal ("OBOT" or "Terminal") within the city limits of Oakland, along the San Francisco Bay. The OBOT site is immediately adjacent to and south of the Bay Bridge Toll Plaza and approximately 1.5 miles southwest of residential and commercial areas in West Oakland and the City of Emeryville (see Figures 2-1 and 2-2 in Chapter 2, Project Description and Operation).

In this report, ESA includes consideration of the Army Base Redevelopment Plan Area, West Oakland Specific Plan Area, all of West Oakland, and the southern portion of the City of Emeryville that is physically adjacent to West Oakland Specific Plan area boundary. Due to their proximity to the OBOT site, adjacent neighbors[1] also would include the occupants of structures in the southern portion of the City of Emeryville. This area of Emeryville is about 1.5 miles from the proposed OBOT and less than 1.0 mile from the Port Railyard that would serve the OBOT. The analysis also considers areas generally within 1,000 feet of the rail routes that travel through the City of Oakland to the OBOT. The cities of Emeryville and San Leandro also would be affected by the transport of coal by rail to the OBOT (as would any community along the mainline rail route from a coal mine to an export terminal). See Figure 2-2.

Adjacent neighbors also include workers and commuters at the Oakland Toll Plaza for the San Francisco-Oakland Bay Bridge. The Oakland Toll Plaza is within approximately 1,000 feet of the proposed OBOT.

The Army Base Redevelopment Plan Area includes the East Bay Regional Park District's (EBRPD) Alexander Zuckermann Bicycle and Pedestrian Path along the southern edge of the eastern span of the San Francisco-Oakland Bay Bridge, which is located within 1,000 feet of the

[1] The term "adjacent neighbors" is not defined in the Development Agreement. The Project Proponents proposed the dictionary definition of the term "adjacent" as either "having a common border" or "nearby, not distant." Letter dated Oct 6, 2015 from Phil Tagami, CCIG/OBOT and Jerry Bridges, TLS to Claudia Cappio, City of Oakland. **(OAK055267)**

OBOT.[2] For the first time in history, pedestrians and cyclists can travel across the new eastern span of the bridge. Two-thirds of the Bay Bridge Trail opened to the public in September 2013, allowing visitors to traverse just past the bridge span's 525-foot signature tower. Two of three access points provide a direct route to the bicycle and pedestrian path from the East Bay; one is at Shellmound Street in Emeryville, (just outside the IKEA store) and a second is at the corner of Maritime Street and Burma Road in West Oakland (within the former Army Base). This path is now a destination of regional significance according to the EBRPD.[3] The proposed expansion of the pathway will connect to a segment of the Bay Trail on the spit of U.S. Army property located at the east end of the bridge, immediately adjacent to the OBOT. This is planned to be transferred to the EBRPD from the City of Oakland for the development of Gateway Park. See Figure 2-3 for a map of the area designated for the future regional park. In addition, the area immediately west of the OBOT has been reserved for public shoreline access as required by the Bay Conservation and Development Commission.

The following sensitive receptors in West Oakland are located within 1,000 feet of the Port Railyard that would be used for staging rail cars prior to unloading at the OBOT: two schools, a child care center, and parks near I-880. These same sensitive receptors are within 0.5-mile of the rail spur between the Port Railyard and the OBOT, and within 1.5-miles of the OBOT itself.

4.2 Existing Setting of Adjacent Neighbors

4.2.1 Overview

This section provides an overview of the existing setting of the adjacent neighbors to the OBOT facility and operations. Several public commenters noted the existing high levels of ambient air pollutants and the evidence of disproportionate health impacts in West Oakland and other adjacent neighbors of the OBOT and Port Railyard.[4] Data for both existing air quality and current health indicators applicable to these adjacent neighbors are discussed further in detail below.

The Federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (US EPA) to identify National Ambient Air Quality Standards (NAAQS or "national standards") to protect public health and welfare. National standards have been established for ozone, CO, NO_2, SO_2, respirable particulate matter (PM_{10} and $PM_{2.5}$), and lead. Pursuant to the 1990 CAA amendments, the US EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the NAAQS had been achieved.

2 http://www.baybridgeinfo.org/path
3 Letter dated 10/5/2015 and Email dated 9/29/2015 from John Sutter, East Bay Regional Park District. (**OAK055721**).
4 Letter dated Sept. 21, 2015 from EarthJustice and Exhibit B – Environmental, Health and Safety Impacts of the Proposed OBOT by P. Fox, PhD, PE. Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**).
Undated Testimony by Dr. Bart Ostro. Former Chief of the Air Pollution Epidemiology Section, California Environmental Protection Agency (retired). (**OAK055095**)
Letter dated September 14, 2015 from Paul English, PHD, MPH (**OAK054937**)

Table 4-1 shows the current national and State ambient air quality standards for each pollutant as well as the attainment status of the Bay Area with respect to these standards.

TABLE 4-1
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS

Pollutant	Averaging Time	State (SAAQS[a])		Federal (NAAQS[b])	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1 hour	0.09 ppm	**N**	NA	See Note c
	8 hour	0.07 ppm	**N**[d]	0.070 ppm	**N**/Marginal
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	A	100 ppb	U
	Annual	0.030 ppm	NA	53 ppb	A
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	A	75 ppb	A
	24 hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM_{10})	24 hour	50 μg/m^3	**N**	150 μg/m^3	U
	Annual[e]	20 μg/m^3 [f]	**N**	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24 hour	NA	NA	35 μg/m^3	**N**
	Annual	12 μg/m^3	**N**	12 μg/m^3	U/A
Sulfates	24 hour	25 μg/m^3	A	NA	NA
Lead	30 day	1.5 μg/m^3	A	NA	NA
	Cal. Quarter	NA	NA	1.5 μg/m^3	A
	Rolling 3-Month Average	NA	NA	0.15 μg/m^3	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8 hour	See Note g	U	NA	NA

NOTES:
A = Attainment; **N** = Nonattainment; U = Unclassified; NA = Not Applicable, no applicable standard; ppm = parts per million; μg/m^3 = micrograms per cubic meter.

a SAAQS = state ambient air quality standards (California). SAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

b NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the three-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM10 standard is attained when the three-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour PM2.5 standard is attained when the three-year average of the 98th percentile is less than the standard.

c The United States Environmental Protection Agency (US EPA) revoked the national 1-hour ozone standard on June 15, 2005.

d This state 8-hour ozone standard was approved in April 2005 and became effective in May 2006.

e State standard = annual geometric mean; national standard = annual arithmetic mean.

f In June 2002, the California Air Resources Board (CARB) established new annual standards for PM2.5 and PM10.

g Statewide visibility-reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

SOURCE: Bay Area Air Quality Management District (BAAQMD), Standards and Attainment Status, 2015, http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, accessed December 17 2015; and U.S. EPA National Ambient Air Quality Standards, 2015, http://www.epa.gov/air/criteria.html, accessed December 13, 2015.

4.2.2 Health and Air Quality

California Environmental Protection Agency – Disadvantaged Communities

The OBOT site, a large portion of West Oakland, southern Emeryville, and portions of San Leandro are all classified as "disadvantaged communities."[5] West Oakland (within zip code 94607), including the OBOT site within the former Oakland Army Base, was designated by the California Environmental Protection Agency (CalEPA) as a disadvantaged community in October 2012 (this area also includes a portion of southern Emeryville). Disadvantaged communities are areas disproportionately burdened by and vulnerable to existing multiple sources of pollution. Within these disadvantaged community boundaries, West Oakland and a portion of southern Emeryville has an affected population of 13,309.[6]

Disadvantaged communities are identified by CalEPA by census tract and score at or above the 75th percentile using the methodology in the California Communities Environmental Health Screening Tool (CalEnviroScreen) for ranking communities burdened by environmental and socioeconomic issues.[7] CalEnviroScreen is a tool that assesses all census tracts in California to identify those areas disproportionately burdened by and vulnerable to multiple sources of pollution. See **Table 4-2** with a listing of these census tracts affected in Oakland and Emeryville along with the CalEPA EnviroScreen scoring.

TABLE 4-2
CALENVIROSCREEN SCORES FOR WEST OAKLAND AND EMERYVILLE

Census Tract	Population	CalEnviroScreen Percentile Range	PM2.5 (µg/m³)	PM2.5 Percentile	DPM (µg/m³)	DPM Percentile	Toxic Release Percentile	Asthma Percentile	Low Birth Weight Percentile
West Oakland									
6001403000	2,788	**86-90%**	7.77	21.06	52.33	96.63	72.18	99.78	27.93
6001402600	1,151	**81-85%**	7.75	20.67	69.27	98.32	70.28	99.79	42.23
6001402500	1,784	**81-85%**	7.74	20.48	69.24	98.27	65.92	99.93	93.73
6001410500	2,193	**81-85%**	7.72	20.25	68.77	98.24	59.96	99.93	77.22
6001402400	2,351	**76-80%**	7.74	20.52	69.27	98.32	23.48	99.93	74.31
6001401700	2,667	**76-80%**	7.66	19.42	65.29	97.96	98.89	99.66	37.28
6001401400	4,314	**81-85%**	7.75	20.70	53.95	96.91	83.50	99.00	95.50
San Leandro									
6001432501	4,839	**81-85%**	8.09	25.18	38.11	91.11	87.78	59.71	51.36
6001433200	6,897	**81-85%**	8.15	25.89	37.31	90.49	96.79	63.88	96.52
6001432400	5,814	**81-85%**	8.05	24.65	23.08	70.91	83.50	38.04	51.33
6001433103	3,530	**76-80%**	8.16	25.96	37.03	90.31	55.22	34.25	93.01

Note: DPM – Diesel Particulate Matter
SOURCE: SB 535 List of Disadvantaged Communities, available at http://www.calepa.ca.gov/EnvJustice/GHGInvest/.

5 CalEPA http://www.calepa.ca.gov/EnvJustice/GHGInvest/
6 CalEPA http://www.calepa.ca.gov/EnvJustice/GHGInvest/
7 Maps and other supporting documents are available at http://www.calepa.ca.gov/EnvJustice/GHGInvest/

Based upon the proximity and predominate wind direction, operation of the proposed OBOT would primarily affect adjacent neighbors in West Oakland and adjacent neighbors in the southern portion of the City of Emeryville.

For West Oakland, CalEnviroScreen results indicate an average of 7.7 micrograms per cubic meter ($\mu g/m^3$) for average annual $PM_{2.5}$. The California Air Resources Board (CARB) and the US EPA standard for $PM_{2.5}$ for the annual average is 12 $\mu g/m^3$.West Oakland is a community where the residents already suffer from elevated cases of asthma and other pollution-related ailments. Table 4-1 indicates the CalEPA EnviroScreen scores for these areas and provides the existing levels of specific pollution and exposure indicators based upon monitoring data measured for these geographic areas. Pollution burden represents the potential exposures to pollutants and the adverse environmental conditions caused by pollution.

Particulate matter (PM), one of six US EPA criteria air pollutants, is a mixture of particles that can include organic chemicals, dust, soot and metals. These particles can come from cars and trucks, factories, wood burning, and other activities. $PM_{2.5}$ is very small particles in air that are 2.5 micrometers (about 1 ten-thousandth of an inch) or less in diameter. This is less than the thickness of a human hair. This indicator is included in CalEnviroScreen because:

- The smaller the particles, the deeper they can move into the lungs when we breathe.
- Fine particle pollution has been shown to cause many serious health effects, including heart and lung disease.
- Exposure to $PM_{2.5}$ contributes to deaths across California.
- Children, the elderly, and people suffering from heart or lung disease, asthma, or chronic illness are most sensitive to the effects of $PM_{2.5}$ exposure.

BAAQMD – Community Air Risk Evaluation Program

The Bay Area Air Quality Management District (BAAQMD), the regional agency responsible for air pollution control in the San Francisco Air Basin (Bay Area), is committed to improving air quality for all Bay Area residents. This commitment, coupled with the efforts of state and federal partner agencies, has resulted in significant air quality improvements throughout the Bay Area, as indicated by measurement trends at regional air monitoring locations. Yet, in spite of significant air quality improvements, there are still locations within the Bay Area where air pollution levels remain relatively high, especially near localized emissions sources. Moreover, while pollution levels are dropping in nearly all parts of the Bay Area, BAAQMD's measurement sites still sometimes record episodes of fine particulate matter and ozone at levels above state and federal standards.

Some Bay Area communities suffer poorer health and may be more vulnerable to the adverse health consequences of air pollution than others. Multiple studies have shown that low-income communities, communities with higher populations of racial or ethnic minorities, communities with combined stressors such as noise, crime, and under-employment have less access to health care, elevated stress levels, and reduced resiliency to the added health burden of air pollution. Moreover, communities whose residents are most vulnerable frequently contain more high-emissions source areas.

In 2004, BAAQMD initiated the Community Air Risk Evaluation (CARE) program to identify areas with high concentrations of air pollution and populations most vulnerable to air pollution's health impacts. The goals of the CARE program parallel recent California and federal legislation that require their respective environmental agencies to address the disproportionate adverse health effects pollution can have on minority and low-income populations. Through the CARE program, BAAQMD has worked to identify communities most adversely impacted by air pollution. Once a community is identified as impacted, BAAQMD focuses grants, enforcement programs, local scale studies, and other activities to help reduce pollution exposures within the community.[8,9]

Maps of communities impacted by air pollution, generated through the CARE program, are being integrated into many of BAAQMD's programs.

The CARE program has three policy goals:

- **Goal 1** – Identify areas within the Bay Area where air pollution is most contributing to health impacts and where populations are most vulnerable to air pollution impacts;
- **Goal 2** – Apply sound science and robust technical analyses to design and focus effective mitigation measures in areas with highest impacts; and
- **Goal 3** – Engage the communities and other stakeholder groups in the program and develop productive relationships with local agencies to craft mitigations that extend beyond what the Air District could do alone.

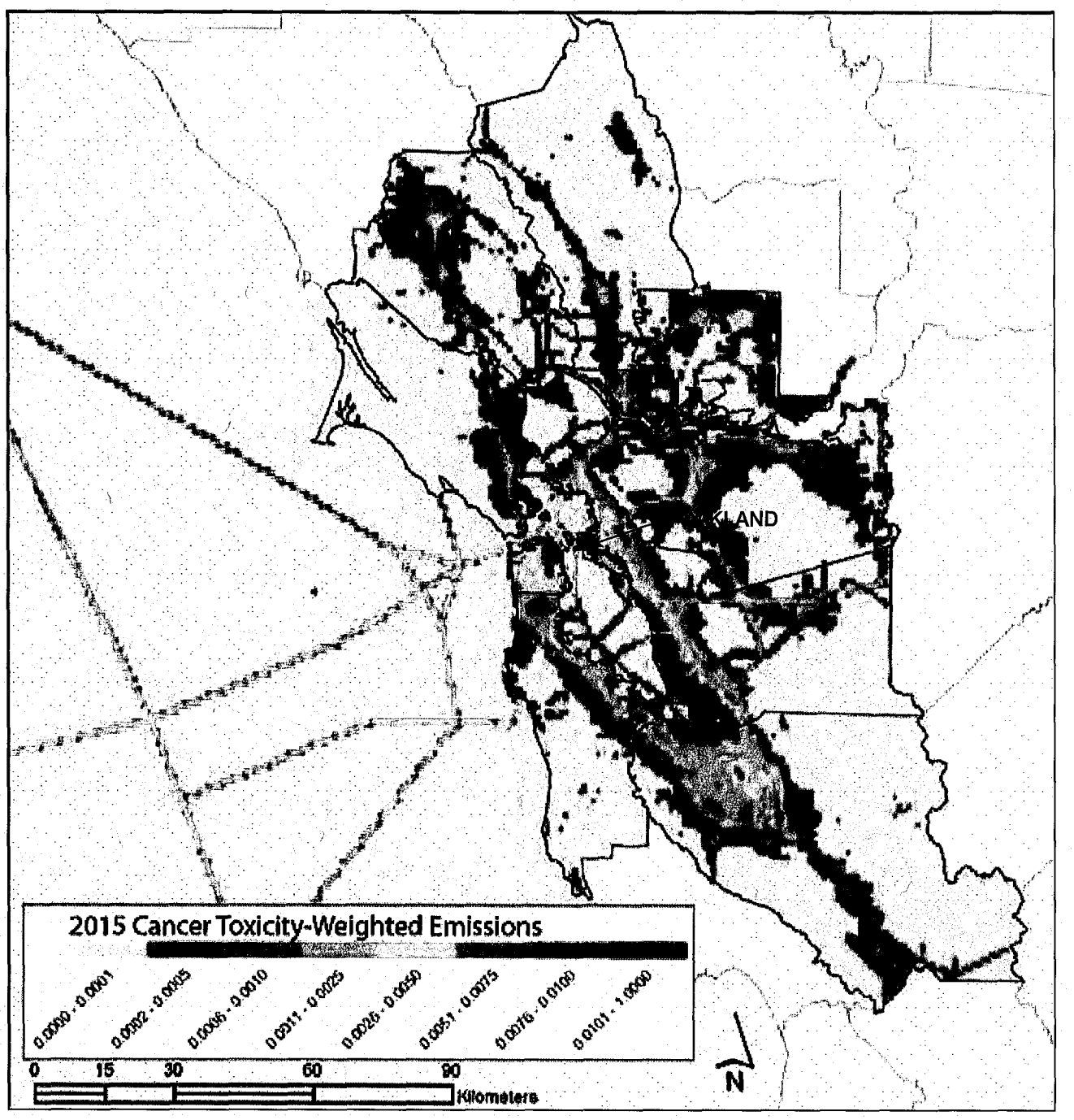
Initially, the CARE program and its analyses included only toxic air contaminants (TAC). Since 2010, the focus of the CARE program has broadened to consider other pollutants in addition to TAC. Specifically, many recent CARE analyses have included PM2.5. The decision to include $PM_{2.5}$ in CARE analyses was motivated primarily by many health studies that have shown the significant health impacts of $PM_{2.5}$. An added concern was that concentrations of $PM_{2.5}$ are elevated in close proximity to busy roadways, present in many Bay Area communities.

Figures 4-1 through **4-3** depict cancer-toxicity weighted emissions, modeled cancer risks from TAC, cancer risks from air toxics, and annual $PM_{2.5}$ levels for the Bay Area.

In 2006, for the first time, BAAQMD undertook the creation of a regional emissions inventory for TAC from major sources of emissions in the Bay Area, including nearly 200 toxic gases or particles. Emissions inventories for years 2005 and 2015 were input to a regional air quality model to predict concentrations of key toxic compounds and cancer risk associated with them. Some of the key findings from this work were that particulate matter emitted from diesel engines (diesel PM) contributed more than 85% of the total inventoried cancer risk and that simulated potential cancer risk from TAC is highest near major diesel PM sources.

8 BAAQMD, Identifying Areas with Cumulative Impacts from Air Pollution in the San Francisco Bay Area, Version 2, March 2014.

9 BAAQMD, Improving Air Quality and Health in Bay Area Communities, Community Air Risk Evaluation Program Retrospective and Path Forward (2004 – 2013), April 2014.

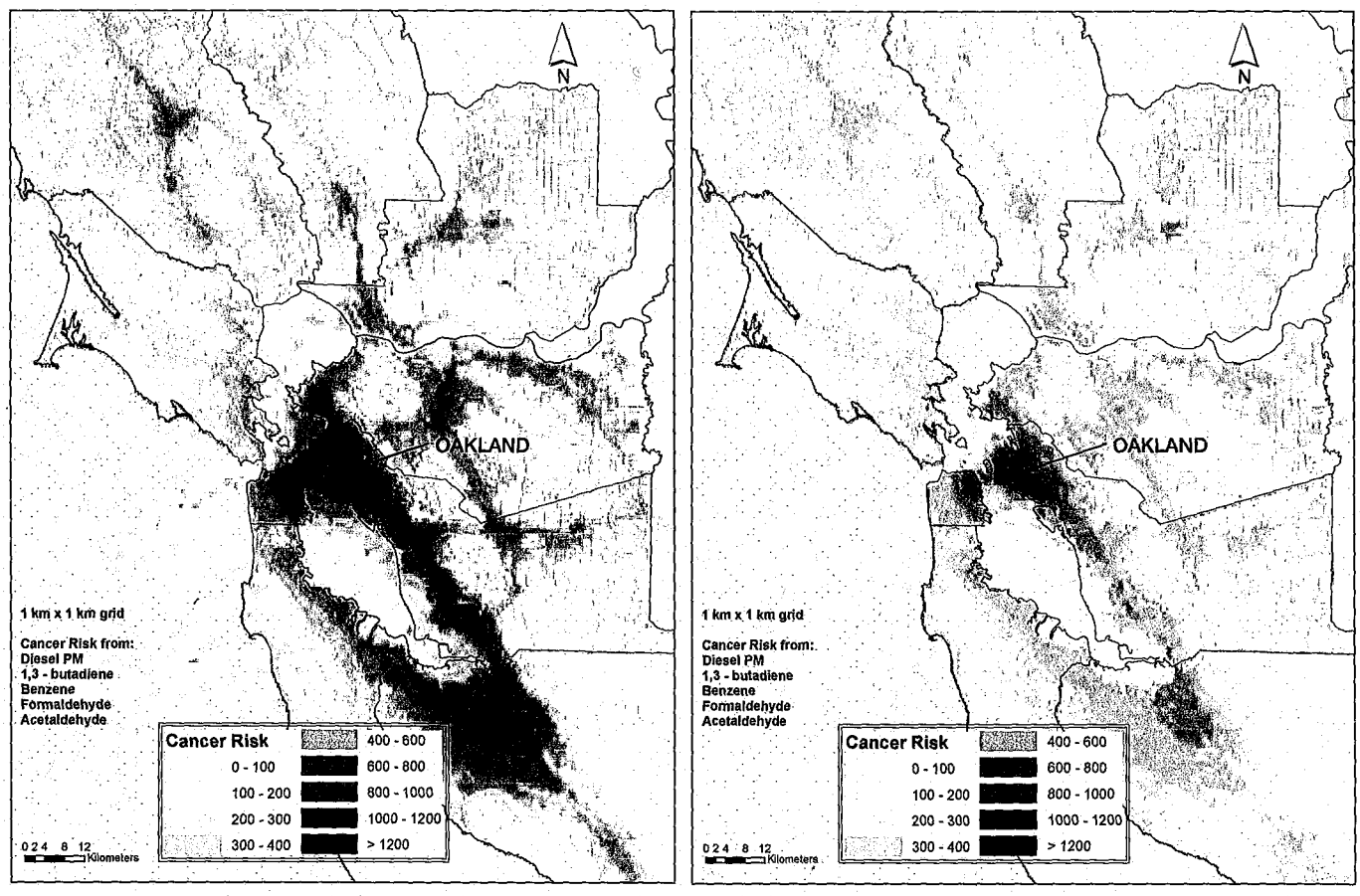


SOURCE: BAAQMD, CARE Retrospective, 2014

OBOT Health and Safety Effects . 150774

Figure 4-1

Projected Bay Area Cancer Risk-Weighted Emissions for 2015

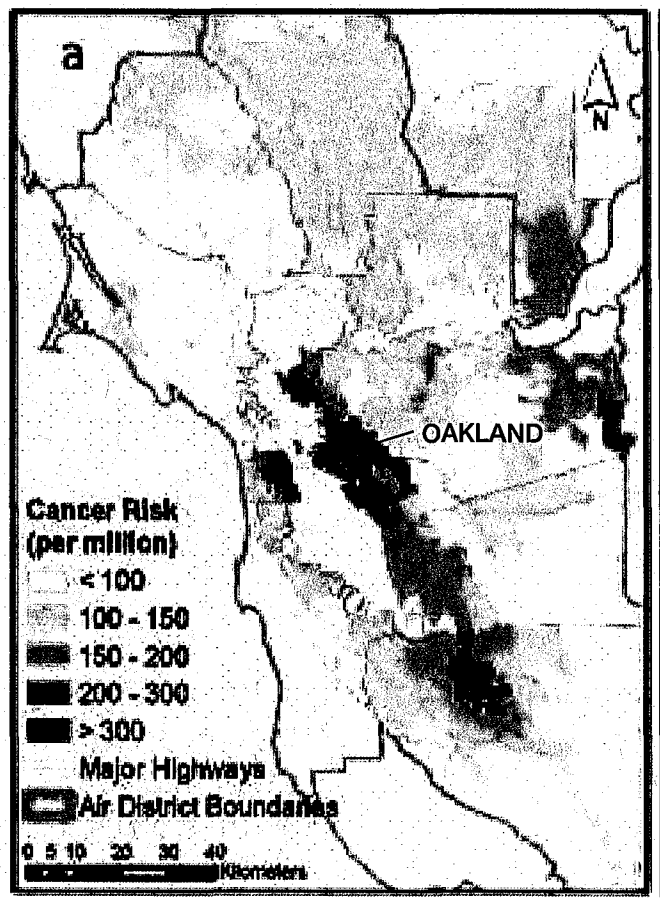


SOURCE: BAAQMD, CARE Retrospective, 2014

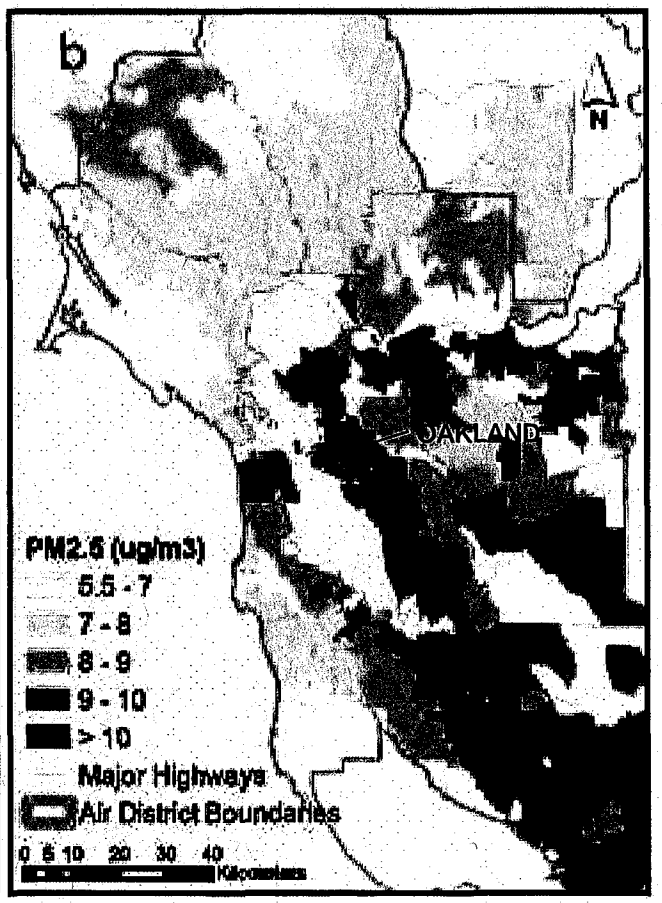
OBOT Health and Safety Effects . 150774

Figure 4-2

Potential Cancer Risk from Toxic Air Contaminants for the Bay Area in Year 2005 (left) and 2015 (right)



Cancer Risk from Air Toxics



Annual $PM_{2.5}$

SOURCE: BAAQMD, CARE Retrospective, 2014

OBOT Health and Safety Effects . 150774

Figure 4-3

Cancer Risk and Air Pollution Levels Mapped to Zip Code Areas

In 2009, BAAQMD developed initial maps of areas within the Bay Area with relatively high levels of toxic air pollution and with people who are relatively more vulnerable to the harmful health impacts of air pollution. Cumulative impact areas were identified as those with highest potential cancer risk from TAC exposure (top 50%) for youths and seniors, with nearby areas of high TAC emissions (top 25%), and with areas of low household income (more than 40% of families below 185% of the federal poverty level).

In 2013, BAAQMD updated the maps of cumulative impact areas, incorporating more recent data and using new methods. The new method accounted for areas with high cancer risk as before, using the 2015 TAC modeling to estimate cancer risk, instead of 2005 modeling. In addition to cancer risk from TAC, the updated method accounted for increased mortality and illnesses from fine particulate matter ($PM_{2.5}$) and ozone above background levels. Population vulnerability was accounted for in estimating health impacts from air pollution by using a community's existing baseline rates of mortality and illnesses (determined from health records) to determine increases in mortality and illness from air pollution. Socioeconomic data were not used in the updated method. However, once impacted areas were identified, subsequent investigation revealed a clear correlation between areas of impact and socioeconomic factors such as race, income, and education level.

In addition to regional studies and analyses, to more accurately assess exposures and health impacts in a neighborhood, BAAQMD has undertaken many local-scale air quality studies. The goal of local-scale studies has been to develop information and tools to reduce exposures to local sources of air pollution and reduce associated health impacts, especially in impacted communities. Four of these studies—completed by BAAQMD in partnership with other agencies, community groups, and air quality researchers—assessed air pollution in West Oakland, an area bounded by the Maritime Port of Oakland (the Port), the Union Pacific rail yard, and I-580, I-880, and I-980 freeways.

West Oakland Monitoring Study

A 2010 West Oakland Monitoring Study prepared by Desert Research Institute (DRI) for BAAQMD suggests that elevated health risks to many West Oakland residents may go unobserved. DRI's conclusion was that BAAQMD's one long-term monitoring station in West Oakland does not adequately represent pollutant concentrations within 1,000 feet of major roadways, where the worst conditions might be expected. DRI's study attempted to present a more current, more accurate picture by gathering new PM data at multiple sites over four weeklong sampling periods during two seasons.

The study found an average total $PM_{2.5}$ concentration of 10.975 $\mu g/m^3$ and diesel PM levels of 1.4 $\mu g/m^3$. Overall $PM_{2.5}$ levels showed no reduction from 2005 levels, but diesel PM levels were in alignment with the 40-60% reduction from 2005 anticipated by CARB. Even these most recent measurements show the air in West Oakland to be in exceedance of the World Health Organization guideline for $PM_{2.5}$, which is 10 $\mu g/m^3$.[10,11]

[10] Adapt Oakland, Green Paper 02, Current Air Quality in West Oakland, 2013.

Oakland Global Air Quality Web Portal

For calendar years 2014 and 2015, and one quarter of 2013, the cumulative data collected from two monitors (AQM-1 and AQM-3) in West Oakland for the Oakland Army Base Redevelopment Project show higher levels of 24-hour averages for $PM_{2.5}$, more frequently, compared to data from BAAQMD's monitor in West Oakland.[12]

For 2015, the data for AQM-3, located at Prescott Elementary School, show multiple higher spikes in $PM_{2.5}$ levels in all quarters (but not for 2014). For 2014, the data for AQM-1, located at the OBOT site, show multiple higher spikes in $PM_{2.5}$ levels in all calendar quarters; the data for 2015 do not.[13]

BAAQMD – Exceedances of Air Quality Standards

Annual average $PM_{2.5}$ in 2015 at the West Oakland BAAQMD site is 10.2 $\mu g/m^3$, with a maximum hourly average of 75 $\mu g/m^3$occurring in January 2015. A maximum hourly average of 123 $\mu g/m^3$ was measured in April 2016.[14]

The federal health standard for $PM_{2.5}$ is 35 $\mu g/m^3$ averaged over a 24-hour day. Any daily 24-hour average measurement of 35.5 $\mu g/m^3$ or higher for $PM_{2.5}$ is an exceedance of the federal standard. The federal and state standard ambient air quality standard for $PM_{2.5}$ is 12 $\mu g/m^3$ averaged over a year.

Oakland and West Oakland have both experienced exceedances of the state and federal ambient air quality standard levels for the $PM_{2.5}$ 24-hour average of 35 $\mu g/m^3$, according to BAAQMD monitoring data. West Oakland also has exceeded the average annual ambient air quality standard of 12 μg/m3.

In 2015, Oakland had one day of 24-hr standard exceedance and West Oakland had three days of exceedances for $PM_{2.5}$. **Table 4-3** shows exceedances for Oakland and West Oakland over the last five years.

TABLE 4-3
EXCEEDANCES OF 24-HOUR PM2.5 STANDARD

	2011	2012	2013	2014	2015
Oakland	3	0	2	1	1
West Oakland	Not available	Not available	2	1	3

11 Fujita, E.M. & Campbell, D.E. (2010). West Oakland Monitoring Study. Desert Research Institute. Retrieved from http://www. baaqmd.gov/~/media/Files/Planning%20and%20Research/ CARE%20Program/DRI_WOMS_final_ report.ashx

12 Reports are available at http://ngem.com/OAB_AQM/.

13 *Ibid.*

14 http://www.baaqmd.gov/about-air-quality/current-air-quality/air-monitoring-data?DataViewFormat=yearly&Data View=tech&StartDate=1/1/2016&ParameterId=316&StationId=1027

For West Oakland, CalEnviroScreen results indicate an average of 7.7 $\mu g/m^3$ of 12 $\mu g/m^3$ allowable for average annual $PM_{2.5}$.

4.2.3 Conclusion

The OBOT site, a large portion of West Oakland, southern Emeryville, and portions of western San Leandro are all classified as "disadvantaged communities" by CalEPA. Disadvantaged communities are areas disproportionately burdened by and vulnerable to existing multiple sources of pollution. Within these disadvantaged community boundaries, West Oakland has an affected population of 8,995 and the area of southern Emeryville has a population of 4,314.

West Oakland and southern Emeryville are immediately adjacent to the northerly route of the mainline rail, the OBOT, a new rail spur to the OBOT, and the new Port Railyard. Portions of San Leandro (that are classified as disadvantaged) may also be affected if the coal is transported by rail via a southerly route to the OBOT.

All of these adjacent neighbors are located within the BAAQMD where the current ambient air quality is designated as nonattainment for 6 standards including ozone (both 1 hour and 8 hour standards), particulate matter (PM_{10} for the 24 hour and annual standards) and fine particulate matter ($PM_{2.5}$ for the 24 hour federal and the annual state standards).

Local air quality monitoring demonstrates that Oakland and West Oakland have both experienced exceedances of the state and federal ambient air quality standard levels for the $PM_{2.5}$ 24-hour average of 35 $\mu g/m^3$. West Oakland also has exceeded the average annual ambient air quality standard of 12 $\mu g/m^3$. In 2015, Oakland had one day of 24-hr standard exceedance and West Oakland had three days of exceedances, both for $PM_{2.5}$. These exceedances have contributed to the designation of the entire Air District as nonattainment.

CHAPTER 5
Health Effects

5.1 Overview

This section addresses the health effects of the handling, and storage, and transloading of coal and/or petcoke from the proposed new Oakland Bulk and Oversized Terminal (OBOT) at the project site and upon adjacent neighbors. This analysis would apply to any facility which proposes such activities. ESA has analyzed the OBOT facility as just one illustrative example of such a facility.

Expected activities associated with the OBOT include rail transport of petcoke in open rail cars to the Port Railyard, staging of trains in the Port Railyard, travel along the new railroad spur from the Port Railyard to the OBOT for unloading, conveyor transfer to storage facilities and conveyor transfer to ships for export.

5.2 Coal

Emissions during operation of the proposed facility have been estimated for fugitive coal dust emissions. Fugitive dust emission sources evaluated in this analysis include uncovered rail cars transporting coal along the mainline rail route, while waiting at the Port Railyard, and traveling along the local spur track, the partially enclosed rail car transfer building, the enclosed conveyor transfer points, the enclosed storage pile, and ship loading. Each of these emissions estimates is discussed in separate sections below.

1) Mainline Rail Transport
2) Staging at Port Railyard and Transport on Rail Spur to OBOT
3) Unloading, Storage, Transfer, Transloading at OBOT

Emissions estimates provided by ESA are based on the methods noted along with the U.S. Environmental Protection Agency (US EPA) emissions estimation methodology contained within AP-42, *Compilation of Air Pollutant Emission* Factors (EPA 2006, EPA 2009).[1][2] Appropriate particulate matter (PM) control efficiencies have been applied to the estimates based on

1 EPA, 2006. AP-42, *Compilation of Air Pollutant Emission Factors, Chapter 13.2.4 and 13.2.5.* Available at: https://www3.epa.gov/ttn/chief/ap42/ch13/index.html. Accessed June 3, 2016.
2 EPA, 2009. Emission Factors for Locomotives. Available at: https://www3.epa.gov/nonroad/locomotv/420f09025.pdf. Accessed June 3, 2016.

statements by the OBOT Proponents for control measures that are proposed and described above in Section 2.

5.2.1 Mainline Rail Transport

Overview

Based upon the analyses in Section 2, ESA found that OBOT Proponent's proposed use of covers for rail cars or alternatively, dust suppressants (surfactants), represent currently unproven methods for controlling fugitive coal dust from rail cars during the entire duration of the mainline rail trip from a Utah mine to arrival at the OBOT Terminal in West Oakland. Thus, ESA is unable to determine that fugitive coal dust emissions from rail transport will be controlled. In the analysis below we have estimated the anticipated uncontrolled emissions of fugitive coal dust that would occur at the project site and in West Oakland and southern Emeryville.

Fugitive Dust from Rail Car Transport

Here we provide two estimates for coal dust generation from rail transport of uncovered coal in bottom unloading rail cars with no fugitive dust mitigation. One estimate is from a public commenter using a railroad industry factor (BNSF) [3] for estimating coal dust generation from rail transport of sub-bituminous coal originating from the Powder River Basin in Wyoming and Montana. The second estimate by ESA is based upon rail industry factors that apply to bituminous coal and the most recent information available in the OBOT Proponent's BoD.

In the next section, emissions are also estimated for the fugitive coal dust from rail cars awaiting unloading and during the local trips of the 26-car portions of the unit train from the Port Railyard on the spur line to the OBOT unloading facility.

For fugitive coal dust emissions from the mainline rail transport of coal to Oakland from Utah, the public commenter's analysis yielded an estimate[4] of 68,500 tons per year of fugitive coal dust that could be released from uncovered rail cars along the train route during the approximately 750 mile long rail trip from Utah to West Oakland. Assuming the uncovered unit coal trains enter California at Donner Pass on the mainline of the northerly rail route to Oakland, for the 200 mile portion of the route within California, this commenter estimated that about 27% of the coal dust (or 18,300 tons) would be released within the state. Since it possible that sub-bituminous coal from Wyoming or Montana could also be exported through OBOT, and this 'PRB' coal is

3 A representative of BNSF testified before the Rail Energy Transportation Advisory Committee (RETAC) that coal loss from an uncovered bottom unloading car during a typical 400 mile trip is on the average of 45 lb from the bottom and 600 lb from the top, for a total of 645 lb of dust per car. Minutes, Rail Energy Transportation Advisory Committee, September 10, 2009. https://stb.dot.gov/stb/docs/RETAC/2009/September2009/Minutes%209-10-09.pdf. Cited in Letter dated Sept. 21, 2015 from EarthJustice, Exhibit B – Environmental, Health and Safety Impacts of the Proposed OBOT by P. Fox, PhD, PE. And in Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. **(OAK055094)**

4 Coal dust calculation used by public commenter: For total distance from Utah to Oakland, CA (645 lbs/rail car x 750 mi/400 mi x 104 cars/unit train x 3 trains/day x 362 da/yr)/2000 lbs/ton. Letter dated Sept. 21, 2015 from EarthJustice, Exhibit B – Environmental, Health and Safety Impacts of the Proposed OBOT by P. Fox, PhD, PE. **(OAK055094)**

considerably dustier than bituminous coal, this estimate provides a worst case estimate for fugitive coal dust.

To compare, ESA used operational parameters from the OBOT Proponents[5] and a Norfolk & Southern fugitive dust emission factor from coal-carrying rail cars. That factor is based on field study measurements of similar coal types and characteristics as bituminous coal (which is listed as a potential commodity for export from OBOT).[6] Along with a different assumption regarding unit train frequency, use of the Norfolk & Southern coal dust emissions rate (1 pound per rail car per mile) yields an estimate of coal dust emissions that differs from the commenter's. Both of these estimates are provided below in **Table 5-1**. These results represent an expected range of fugitive coal dust emissions from uncovered rail cars that would be expected to be deposited within California, the Bay Area Air Quality Management District (BAAQMD), West Oakland, southern Emeryville (based upon the northern rail route trip length), and San Leandro.

TABLE 5-1
ESTIMATED FUGITIVE COAL DUST EMISSIONS FROM OPEN RAIL CARS DURING TRANSPORT FROM UTAH TO THE PORT RAILYARD, OAKLAND, CA FOR DELIVERY AT OBOT

Coal dust emission factor source	Trip Description	Approximate Trip length (mi)	tons per year			lbs per day		
			Total Suspended Particulates (TSP)	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
BNSF	California*	200	18,300					
Norfolk & Southern**	California	200	5,460	2,566	385	31,200	14,664	2,200
	BAAQMD	77	2,102	988	148	12,012	5,456	847
	West Oakland	3	82	38	6	468	220	33
	Emeryville	1.3	35	17	3	203	95	14
	San Leandro	3.6	98	46	7	562	264	40

* Calculation in Letter dated Sept. 21, 2015 from EarthJustice, Exhibit B – Environmental, Health and Safety Impacts of the Proposed OBOT by P. Fox, PhD, PE. (OAK055094). Calculation based on 3 trains per day and 3% loss of coal during transit.
** ESA estimate using industry dust factor and based on 3 train arrivals every 2 days and 350 working days (OAK055267).

Within California, ESA estimates indicate open rail cars carrying coal would result in 5,460 tons of emissions of total coal dust per year or 31,200 (lbs)/day, with 2,566 tons per year of PM_{10} (14,664 lbs/day) and 385 tons per year of $PM_{2.5}$ (2,200lbs/day). Within the boundaries of BAAQMD, ESA estimates indicate open rail cars carrying coal would result in 2,102 tons of emissions of total coal dust per year or 12,012 lbs/day, with 988 tons per year of PM_{10} (5,456 lbs/day) and 148 tons per year of $PM_{2.5}$ (847 lbs/day).

5 OBOT operating parameters (**OAK055267**) of estimated coal throughput of 5 million metric tons per year and 350 working days.

6 Simpson Weather Associates Inc., 1993. *Norfolk & Southern Rail Emission Study.* In Virginia Senate Document No. 58, Report of the Joint Subcommittee Studying Ways to Reduce Emissions From Coal-Carrying Railroad Cars dated 1994. http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/SD581994/$file/SD58_1994.pdf

The distance of the northern rail route from the City of Oakland boundary to West Oakland is about 3 miles. ESA estimates that about 82 tons per year from open coal cars would be released during the approximately 3-mile train trip to the new Port Railyard, a trip that transits through and terminates in West Oakland. This equates to estimated emissions in West Oakland of about 453 lbs per day of fugitive coal dust, of which about 6 tons per year or 33 lbs per day would be attributable to $PM_{2.5}$. For the 1.3-mile trip through the southern portion of the adjacent neighboring city of Emeryville, about 35 tons per year of fugitive coal dust (total suspended particles or TSP) can be expected; of this, about 14 lbs/day would be $PM_{2.5}$ emissions.

If a southerly rail route to OBOT were used by the unit trains, then the train would pass for about 4 miles through San Leandro. During the transit of the coal filled rail cars, for the trip through a portion of San Leandro, about 98 tons per year of fugitive coal dust (total suspended particles or TSP) is estimated to be released; of this, about 40 lbs/day would be $PM_{2.5}$ emissions.

Contributions to Emissions From Re-entrainment of Coal Dust. The emissions of coal dust into the rail corridor and subsequent wind erosion causes re-entrainment or resuspension of the dust in the wakes of moving trains and during wind events. Public commenters mentioned this impact in general.[7] ESA includes specific qualitative consideration of these additional contributions to local particulate levels in concentrations of PM_{10} and $PM_{2.5}$. This accounts for the impact of the cumulative fugitive coal dust that is deposited and then wind blown and resuspended (or re-entrained) by all rail activity and local winds. The propensity for coal dust to be deposited and resuspended in a rail corridor, rail spur or railyard has been found to depend on the following factors and circumstances:

- Properties of coal being transported
- Air speed during transport (both ambient wind speed and the air speed induced by train movement)
- Rail corridor capacity and utilization
- Transport distance
- Precipitation at mine sites and along the transport route
- Coal dust management practices applied at loading and unloading facilities

Review of the literature relating to monitoring of air quality in rail corridors carrying coal trains reveals a recurring theme. Dust levels were generally found to increase during and immediately after the passing of a train, be it a loaded coal train, unloaded coal train, freight train or passenger train. Some studies suggest that highest fugitive dust levels are associated with loaded and unloaded coal trains; however, the magnitude of differences in dust levels between train types

7 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit B – Environmental, Health and Safety Impacts of the Proposed OBOT by P. Fox, PhD, PE. And in Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)

was not substantial.[8] This impact is difficult to quantify as there is currently no specific guidance from US EPA for this analysis of re-entrained dust from rail cars carrying coal.[9] Current US EPA guidance for consideration of re-entrained dust is for dust from paved and unpaved roads. Due to the volume of fugitive dust emissions expected from transport of uncovered coal in rail cars, the quantity of resuspended dust that could along the rail line is expected to be significant in terms of additional contributions to local concentrations of PM_{10} and $PM_{2.5}$.Thus, since we were unable to estimate the amount of emissions from re-entrained or resuspended fugitive coal dust from unit trains traveling through Oakland, we are unable to estimate these emissions, thus, the emissions estimates provided here are conservative.

Evaluation of Control of Fugitive Dust from Rail Cars

Dust mitigation for open coal filled rail cars. The OBOT Proponents propose to cover the rail cars to reduce fugitive dust during transport from Utah to Oakland and during staging of train cars waiting in the Port Railyard for unloading at the OBOT Terminal. However, there is a lack of evidence to demonstrate the reliability and effectiveness of these air pollution controls to mitigate fugitive dust from coal filled rail cars arriving in West Oakland after a long distance trip from the mine in Utah. Specifically to summarize what was noted earlier in Chapter 2 of this report:

(1) *Dust Suppressants or Surfactants*: There is a lack of scientific data proving the continuous effectiveness of topping agents or surfactants to reduce Utah coal dust emissions from open rail cars during a complete long distance rail trip over mountainous terrain (over 700 miles) from Utah to Oakland, California. As well, a peer reviewed journal article by Jaffe et al.[10] cited by several public commenters states that "we are unaware of any studies reported in the scientific literature that evaluate the effectiveness of the BNSF surfactant and the impact of the reduction in coal dust upon air quality."

(2) *Rail Car Covers.* There is a lack of published scientific data for field testing in the U.S. proving the effectiveness of rail car covers to reduce fugitive dust from Utah coal. There is a lack of evidence of the commercial availability of rail car covers as well as a lack experience with their use for controlling fugitive dust from coal rail cars. A concern was expressed by multiple public commenters that if rail car covers were used, the coal in covered cars would be subject to spontaneous combustion.

(3) *Requirements.* There are no enforceable provisions requiring the coal supplier, Terminal developer, or Terminal operator to use topping agents or rail car covers for coal from Utah (although there are BNSF requirements for coal exported from Wyoming and Montana).

8 Katestone Environmental Pty. Ltd. And NSW EPA. 2014. *Literature Review of Coal Train Dust Management Practices.* Prepared for NSW Environment Protection Authority. December 2014. Available at: http://www.epa.nsw.gov.au/resources/epa/coaltrain-litreview.pdf

9 AP-42 Re-entrained dust, https://www3.epa.gov/ttn/chief/ap42/ch13/index.html

10 Jaffe, Daniel et al. 2015. Diesel particulate matter and coal dust from trains in the Columbia River Gorge, Washington State, USA. Atmospheric Pollution Research. Volume 6, Issue 6, November 2015, Pages 946–952. http://www.sciencedirect.com/science/article/pii/S1309104215000057

Coal dust reductions assuming a topping agent (surfactant). If these uncontrolled emissions of fugitive coal dust from rail cars were able to be reduced by surfactants or by coal car covers during long haul transport and local staging/transit on the spur, current coal car dust reduction requirements that are applicable elsewhere aim for reductions of 85%. The use of spray on surfactants on coal causes a crust to form on the top layer of coal in the rail car, with the intention that it remain intact during the rail trip to control fugitive coal dust releases.

In prior studies the amount of settling of the coal within the rail car that occurs on the trip between the mine and the port offered challenges to the structural integrity of chemical binders (or topping agents or surfactants). Norfolk & Southern's consultant cited their findings that this settling often leads to the cracking and ultimate failure of chemical binders. And in subsequent evaluations by Norfolk & Southern's consultant they found that 85% crust retention does not necessarily produce an 85% emission reduction of fugitive coal dust. Without data for the percentage reduction in fugitive coal dust that can be demonstrated in practice from the use of topping agents, neither public commenters nor ESA were able to make a credible estimate of the dust reduced from its application. In addition, the application of a topping agent would not be able to reduce the coal dust escaping from the bottom of the rail car during transport (worst case emissions of 0.4 lbs per car per mile of bottom dust of 1 lb per car per mile for bituminous coal, Norfolk & Southern).[11] Photos of rail transport of coal are included in **Appendix E**.

None of the public commenters provided estimates of any coal dust reductions. To provide a comparison, here, ESA estimated potential reductions in coal dust emissions assuming this level of reduction and provides the results in **Table 5-2**.

TABLE 5-2
ESTIMATED FUGITIVE COAL DUST EMISSIONS REMAINING AFTER CONTROL FROM OPEN RAIL CARS DURING TRANSPORT FROM UTAH TO THE PORT RAILYARD, OAKLAND, CA FOR DELIVERY AT OBOT

(Assumes emissions reductions of 85%)			tons per year			lbs per day		
Coal dust emission factor source	Trip Description	Approximate Trip length (mi)	TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
Norfolk & Southern	California	200	819	385	58	4,680	2,200	330
	BAAQMD	77	315	148	22	1,802	847	127
	West Oakland	3	12	6	1	70	33	5
	Emeryville	1.3	5	3	0.4	30	14	2
	San Leandro	3.6	15	7	1	84	40	6

The application of a topping agent would not reduce the coal dust escaping from the bottom of the rail car during transport; this dust settles to the bottom of the car and escapes through the rapid discharge doors on the bottom of the rail car. This type of release has previously been

[11] NCTA Report 2007 cited in http://www.blm.gov/style/medialib/blm/wy/information/NEPA/hpdo/south_gillette/feis.Par.57426.File.dat/vol1.pdf

estimated at 45 lbs per rail car for a 400 mile trip per BNSF (about 9 lbs per car/mile) for sub-bituminous coal from Wyoming and Montana; however, this rate does not compare well with other observations of rail car dust from hauling similar bituminous coal.[12] Based upon measurements by railroads and the National Coal Transportation Association (NCTA), the NCTA references an average for coal dust emissions from the bottom of rail cars rate to be 0.09 lbs/car/mile with a worst case of 0.40 lbs/mile; the NCTA states that this release can be decreased with adjustment of the bottom doors.[13]

If fugitive coal dust generation from uncovered coal cars could be mitigated by a topping agent (surfactant) that was effective at the estimated control rate, there would still be emissions of fugitive coal dust and increased fine particulate air pollutants in Oakland, Emeryville and (depending upon the rail route) San Leandro. This assumes a topping agent can remain effective over 750 miles to reduce fugitive coal dust blowing from the top of the car. In Table 5-2, ESA's estimates are based on assuming an industry emission rate of dust per car, application of a surfactant to bituminous coal and 85% effectiveness over the entire long haul rail transport, and result in 819 tons of emissions of total coal dust per year in California, with 385 tons per year of PM_{10} and 58 tons per year of $PM_{2.5}$.With the boundaries of BAAQMD, ESA's estimates of coal dust emissions are 315 tons of coal dust per year (1,802 lbs per day), with 148 tons per year of PM_{10} (847 lbs per day) and 22 tons per year of $PM_{2.5}$ (127 lbs per day).

ESA's estimates of coal dust emissions for Oakland are 12 tons of coal dust per year (70 lbs per day), with 6 tons per year of PM_{10} (33 lbs per day) and 1 ton per year of $PM_{2.5}$ (5 lbs per day). For the 1-mile trip through the southern portion of the adjacent neighboring city of Emeryville, we estimate these emissions to this area would be about 5 tons per year, or 30 lbs per day of fugitive coal dust, with 3 tons per year of PM_{10} (14 lbs per day) and 0.4 ton per year of $PM_{2.5}$ (2 lbs per day).

Contributions of fugitive coal dust to local $PM_{2.5}$ levels. As mentioned in Section 2, based upon uncovered rail cars carrying coal along a mainline rail route, a November 2015 study cited by commenters and authored by Jaffe et al. concluded that:

> Statistically higher peak PM2.5 concentrations during passage of coal trains compared to freight trains. Passage of a diesel powered open-top coal train results in nearly twice as much respirable $PM_{2.5}$ compared to passage of a diesel-powered freight train. [14]

Jaffe et al. found average $PM_{2.5}$ contributions of 8.8 and 16.7 $\mu g/m^3$, respectively, for freight and coal trains in urban locations in Washington state near the local terminal for export of these commodities. He concludes this implies that the coal train $PM_{2.5}$ emissions consist of approximately half DPM (from fuel consumption) and half coal dust. As well, the significant contribution of coal dust to the $PM_{2.5}$ concentrations collected during the passage of the coal

12 *Ibid.*
13 NCTA Report 2007 cited in http://www.blm.gov/style/medialib/blm/wy/information/NEPA/hpdo/south_gillette/feis.Par.57426.File.dat/vol1.pdf
14 Jaffe, Daniel et al. 2015. Diesel particulate matter and coal dust from trains in the Columbia River Gorge, Washington State, USA. Atmospheric Pollution Research. Volume 6, Issue 6, November 2015, Pages 946–952. http://www.sciencedirect.com/science/article/pii/S1309104215000057

trains was demonstrated in the Jaffe study through concentrations in particle samples, particle size differences and statistical analysis. Thus, it was demonstrated in these field studies that peaks of $PM_{2.5}$ from fugitive coal dust from uncovered rail cars during rail transport increased local concentrations of $PM_{2.5}$.

Dust Modeling for the Coal Train Proposal in the Tongue River Rail Project EIS [15, 16]
Based upon public comments submitted by Ostro within an EarthJustice Letter,[17] Ostro concludes the results of a modeling study for a coal train proposal in Montana that is cited by the OBOT Proponent's consultant, HDR in their White Paper, do not apply to Oakland.

> ...a coal dust study [was] conducted by the Surface Transportation Board (STB) regarding a proposed rail line in Montana (also known as the Tongue River Rail Project). Based on a modeling exercise they [STB] report that incremental concentrations of airborne coal dust from train cars are expected to be below the standards set in the NAAQS (US EPA National Ambient Air Quality Standards) and the Montana Ambient Air Quality Standards (Montana AAQS) to protect human health. I believe they [HDR] wish the reader to infer that therefore, the proposed project in Oakland will also not impact public health. However, there are major differences between these two sites.

Ostro identifies these differences as the rural location and the significantly lower existing background levels of $PM_{2.5}$ concentrations in the region of Montana affected by the proposed rail project. Ostro points out that the concentrations of fine particles in the two counties (Rosebud and Powder River) immediately impacted by the proposed railroad are 5.5 and 6.7 ug/m^3 of $PM_{2.5}$ for the annual average. In contrast, Ostro states that Oakland is part of a major metropolitan area with multiple sources of fine particulate pollution, and that the current ambient levels of $PM_{2.5}$ in West Oakland are routinely higher than in Montana and higher than the background levels used in modeling by the STB consultants.

ESA also reviewed this STB modeling study and we identified several additional issues. First, the modeling methodology applied in the STB study did not utilize US EPA emission factors and other modeling assumptions recommended under their standards (AP-42).[18] Second, the STB modeling study did not employ data collected by the railroad industry in the U.S.; instead, emissions factors were used from rail car coal dust studies completed in Australia. Thus, the STB's modeling assumptions and methods were inconsistent with US EPA air quality modeling methods that are recommended to be utilized for studies in the U.S.

ESA also noted issues with the conclusions inferred from the STB study for applicability to Oakland and West Oakland. First, each of these two Montana counties affected in the STB study are currently in attainment for the annual average and 24-hr average ambient air quality standards

15 Surface Transportation Board. 2015. Draft EIS for the Tongue River Rail Project. Ch 6. Coal Dust. http://www.tonguerivereis.com/draft_eis.html
16 Note that on April 26, 2016, the STB issued a decision dismissing the Tongue River Railroad proceeding without prejudice. As a result, the environmental review for this case has been discontinued.
17 Letter from EarthJustice. **(OAK055095)**
18 EPA, 2006. AP-42, *Compilation of Air Pollutant Emission Factors, Chapter 13.2.4 and 13.2.5.* Available at: https://www3.epa.gov/ttn/chief/ap42/ch13/index.html. Accessed June 3, 2016.
18 EPA, 2009. Emission Factors for Locomotives. Available at: https://www3.epa.gov/nonroad/locomotv/420f09025.pdf. Accessed June 3, 2016.

for $PM_{2.5}$. This is not true in Oakland and West Oakland where exceedances of both of the $PM_{2.5}$ standards for California and federal standards have been routinely recorded at local air quality monitoring stations. Second, in addition, the BAAQMD region is designated as nonattainment for $PM_{2.5}$ under California and federal standards.

As such, the expected contribution of coal dust would most likely contribute to increasing the violations in West Oakland of both the state and federal 24-hr average standards of 12 ug/m^3. Modeling would be necessary to determine the number of additional exceedances that would occur in West Oakland. Thus, ESA agrees with Ostro's conclusion that: "It is inappropriate to use the study in Montana to infer the consequences of coal transport in the Oakland corridor."

Health effects of fugitive coal dust. Public commenters noted that there are significant public health concerns related to transporting coal by rail through densely populated areas adjacent to the rail corridor, including areas that are predominantly disadvantaged communities, such as West Oakland and Emeryville.[19] Scientific research points to potential public health hazards related to coal dust. Inhalation of fugitive coal dust could result in heart and lung issues, cancers, childhood growth and development problems.[20]

Public commenters noted that scientific studies in peer reviewed journals have demonstrated that there is a clear causal relationship between both very short (a day or multiple days) and longer-term (several months to years) exposure to $PM_{2.5}$ and a wide range of adverse health outcomes.[21] This commenter and others cited numerous studies from around the world and from California demonstrating that $PM_{2.5}$ is associated with respiratory symptoms, school and work loss, asthma exacerbation, emergency room visits, non-fatal heart attacks, adverse birth outcomes (premature births, low birth weight), hospital admissions, and death from cardiovascular disease. The populations at greatest particular risk (though other groups are susceptible) include children, asthmatics and older individuals with pre-existing cardiovascular or respiratory disease.

Commenters found that numerous epidemiologic studies have documented associations between long-term exposure to fine particulate matter $PM_{2.5}$ and increased death rates in urban populations in the U.S. (e.g., Brook et al. 2010; Dockery et al. 1993; Eftim et al. 2008; Krewski et al. 2000; Ostro et al. 2010; Ozkaynak and Thurston 1987; Pope et al. 1995, 2002, 2004). For example, areas with high levels of coal dust in local ambient air have increased infant mortality rates and decreased life expectancies (Brook et al. 2010). In a community near a large coal terminal in Virginia, the number of residents suffering from asthma was found to be more than twice the city and state average.[22]

For California, numerous peer reviewed studies from technical journals were cited by public commenters showing some of these health effects. Globally, the World Health Organization (WHO) estimates that roughly 3 million people die each year as a result of outdoor ambient

19 Letter dated July 30, 2015 from Union of Concerned Scientists. (**OAK058414**)
20 *Ibid.*
21 Undated Testimony by Dr. Bart Ostro. Former Chief of the Air Pollution Epidemiology Section, California Environmental Protection Agency (retired). (**OAK055095**)
22 "Health Needs Assessment of the Southeast Community City of Newport News 2005," Peninsula Health District, Virginia Department of Health.

particulate matter air pollution exposures (WHO 2014), indicating that air pollution is one of the world's largest single environmental health risks. ARB estimates for California range from 10 to 30 thousand deaths per year depending on the assumptions in the analysis and the air standard used. These studies were cited by several commenters.

In **Table 5-3** we identify the specific references cited by the public commenter to indicate the scientific journal articles and additional technical documents from the American Heart Association, the US EPA, and other sources that demonstrate the evidence for significant health effects of particulate air pollution, especially fine particulates.

TABLE 5-3
SCIENTIFIC STUDIES DOCUMENTING THE HEALTH EFFECTS OF PARTICULATES

• Brook RD, Rajagopalan S, Pope CA III, Brook JR, Bhatnagar A, Diez-Roux AV, et al. 2010. Particulate matter air pollution and cardiovascular disease: an update to the scientific statement from the American Heart Association. Circulation 121:2331–2378.
• Dockery DW, Pope CA III, Xu X, Spengler JD, Ware JH, Fay ME, et al. 1993. An association between air pollution and mortality in six U.S. cities. N Engl J Med 329:1753–1759.
• Eftim SE, Samet JM, Janes H, McDermott A, Dominici F. 2008. Fine particulate matter and mortality: a comparison of the Six Cities and American Cancer Society cohorts with a Medicare cohort. Epidemiology 19:209–216.
• Krewski D, Burnett RT, Goldberg MS, Hoover K, Siemiatycki J, Jerrett M, et al. 2000. Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality: Investigators' Report. HEI Special Report 2000-01-01. Cambridge, MA:Health Effects Institute.
• Ostro B, Lipsett M, Reynolds P, Goldberg D, Hertz A, Garcia C, et al. 2010. Long-term exposure to constituents of fine particulate air pollution and mortality: results from the California Teachers Study. Environ Health Perspect 118:363–869, doi: 10.1289/ehp.0901181.
• Ozkaynak H, Thurston GD. 1987. Associations between 1980 U.S. mortality rates and alternative measures of airborne particle concentration. Risk Anal 7:449–460.
• Pope CA III, Burnett RT, Thun MJ, Calle EE, Krewski D, Ito K, et al. 2002. Lung cancer, cardiopulmonary mortality and long-term exposure to fine particulate air pollution. JAMA 287:1132–1141.
• Pope CA III, Burnett RT, Thurston GD, Thun MJ, Calle EE, Krewski D, et al. 2004. Cardiovascular mortality and long-term exposure to particulate air pollution: epidemiological evidence of general pathophysiological pathways of disease. Circulation 109:71–77.
• Pope CA III, Thun MJ, Namboodiri MM, Dockery DW, Evans JS, Speizer FE, et al. 1995. Particulate air pollution as a predictor of mortality in a prospective study of U.S. adults. Am J Respir Crit Care Med 151(3 pt 1):669–674.
• WHO. 2014. 7 Million Premature Deaths Annually Linked to Air Pollution. Available: http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/.

5.2.2 Staging for Unloading and Spur Transport to OBOT

Overview

This section addresses the impact of staging of the four segments of the coal unit trains at the Port Railyard while waiting unloading at the OBOT. The timing and sequence of the movement of the rail cars from the Port Railyard to the OBOT is based on the "Preliminary Simulation" prepared for the OBOT Proponents by HDR.[23] Coal unit trains of 104 cars are to be separated into four segments of 26 cars each upon arrival at the Port Railyard in West Oakland. The first 26-car segment is then transported from the railyard to the OBOT unloading facility by a switcher

[23] BoD. (**OAK054829**)

locomotive. Once the rail cars are unloaded, the switcher returns the empty 26-car segment to the Port Railyard and picks up the second 26-car segment for transport to the OBOT. The process continues until all four 26-car segments have been unloaded at the OBOT. The simulation assumes 2 hours total for switching and 5.2 hours for unloading, resulting in a total unloading time for each unit train of 7.2 hours. This excludes the time required to reassemble the empty trains and prepare for departure.

Evaluation

Based upon the analyses in Section 2, ESA found that OBOT Proponent's proposed use of covers for rail cars or alternatively, dust suppressants (surfactants) represent currently unproven methods for consistently controlling fugitive coal dust from rail cars during the staging of segments of the coal unit trains at the railyard while awaiting unloading at the OBOT Terminal in West Oakland.

Thus, ESA is unable to determine that fugitive coal dust emissions will be controlled during staging for unloading. In the analysis below we have estimated the anticipated uncontrolled emissions of fugitive coal dust from staging for unloading that would occur at the project site and that would be dispersed within West Oakland and southern Emeryville.

Multiple commenters noted the potential for uncontrolled fugitive coal dust emissions once the coal loaded rail cars arrive at the new Port Railyard and are staged awaiting unloading along with a trip up the new rail spur for unloading at the OBOT Terminal.[24]

One commenter provided estimates for fugitive coal dust emissions from uncovered coal cars in the staging area and rail spur transit. For about 5 million tons of coal delivered per year to OBOT, using standard air quality factors, the commenter predicted emissions into West Oakland of 323 tons per year of fugitive coal dust (TSP or total suspended particulates).[25] This translates to 1,770 lbs per day of fugitive coal dust in TSP or 125 lbs per day of $PM_{2.5}$. ESA presents the commenter estimates in **Table 5-4** along with ESA's revised estimates. ESA's revised estimates use the same US EPA AP-42 emission factors as was used by the commenter, but adjusts those estimates. The adjustments included revising the number of rail cars per day to 156 (commenter assumed 300) and adjusting the peak wind speed downward from that used by the commenter.

Assuming that the coal covers or surfactant could reduce these above emissions by 85% (the amount required for Wyoming coal), ESA calculated the remaining uncontrolled emissions based on the commenter's estimate and using ESA's estimate. Those controlled emissions are shown in **Table 5-5**.

24 Letter dated July 30, 2015 from Union of Concerned Scientists. Letter dated September 2, 2015 from Earth Justice (**OAK058414**). Letter dated Sept. 21, 2015 from EarthJustice, Sierra Club, West Oakland Environmental Indicators Project, San Francisco Baykeeper and Communities for a Better Environment. (**OAK055094**). Testimony dated September 21, 2015 by Prof. J. Ansar, Mills College. (**OAK055095**)

25 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge. (**OAK055094**)

TABLE 5-4
ESTIMATED FUGITIVE COAL DUST EMISSIONS FROM STAGING OF RAIL CARS AT THE PORT RAILYARD AND TRANSIT ON SPUR FOR UNLOADING AT OBOT

Estimate	tons/yr			lbs/day		
	TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
Public Commenter*	323	NC	NC	1,770	NC	125
ESA **	156	78	11.7	889	445	67

* Earthjustice, 2015. (OAK055094)
** Emissions estimated using similar approach as Earthjustice (2015) but adjusted to account for 1.5 trains per day at 104 rail cars per train and to include updated wind speed.

TABLE 5-5
ESTIMATED FUGITIVE COAL DUST EMISSIONS REMAINING AFTER CONTROLFROM STAGING OF RAIL CARS AT THE PORT RAILYARD, OAKLAND, CA AND TRANSIT ON SPUR FOR UNLOADING AT OBOT

Estimate	tons/yr			lbs/day		
	TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
Commenter *	48	NC	NC	266	NC	19
ESA**	23	12	2	133	67	10

* Emissions are those shown in EarthJustice, 2015 but reduced by 85 percent to account for use of surfactants or coal covers.26
** Emissions are based on the ESA's adjusted emissions shown in Table 5-3 but further reduced by 85 percent to account for the use of surfactants or coal car covers.

Dust from staging of rail cars and transit on the spur could also be re-suspended and increase particulate levels, degrading local air quality. As mentioned above, this impact is very difficult to quantify for rail transportation due to the lack of an accepted methodology from the US EPA. However, due to the estimated volume of fugitive coal dust from rail transport and staging of rail cars and transit on the spur, particulate levels could be significant. Thus, dust resuspension or re-entrainment could make an additional contribution to increasing local ambient PM_{10} and $PM_{2.5}$. Since we were unable to estimate the amount of emissions from re-entrained or resuspended fugitive coal dust from the staging of unit trains at the Port Railyard, and transit along the OBOT spur, the emissions estimates provided here do not include those emissions and thus, are conservative.

5.2.3 Unloading of Coal

Overview

The OBOT Proponents are proposing to use bottom-release rail cars designed to unload the commodities, including coal, into a deep underground transfer compartment with dust collection

26 Niemeier et al. (**OAK055094**) uses the standard approach from US EPA AP-42 except 1) assuming 6 trains per day at 50 cars per day, which is 50% higher than the frequency assumed by OBOT, and 2) a higher wind speed of 65 mph (peak wind gust) to estimate dust emissions. ESA used the AP-42 recommended 2-minute average peak wind gust, which is 40 mph for Oakland.

systems installed for dust mitigation. Coal and/or petcoke is proposed to be moved within the OBOT in enclosed conveyance systems with dust control and collection technology. Various commodities would be transferred via a completely covered and contained system of fully encapsulated conveyors.

Evaluation

These control measures are currently in use in the San Francisco Bay Area and at some locations within the South Coast Air Quality Management District. Use of these control measures for fugitive coal dust would likely be considered Best Available Control Technology in the San Francisco Bay Area.

Using standard US EPA AP-42 procedures, ESA performed a calculation that provided a preliminary estimates of 11.9 tons per year of fugitive coal dust as total particulates (TSP) and 0.9 tpy of $PM_{2.5}$ for coal unloading within the proposed enclosed building where bottom dumping coal cars are to be unloaded. This converts to emissions of 66 lbs/day of TSP and 4.7 lbs/day of $PM_{2.5}$. These estimates are shown below in **Table 5-6**.

TABLE 5-6
ESTIMATES OF CONTROLLED FUGITIVE COAL DUST EMISSIONS FROM UNLOADING, STORAGE, TRANSFER, AND TRANSLOADING OF COAL AT OBOT

	tons/yr			lbs/day		
	TSP	PM_{10}	$PM_{2.5}$	TSP	PM_{10}	$PM_{2.5}$
Unloading	11.9	5.7	0.9	66.0	31.2	4.7
Storage	3.2	1.5	0.2	17.7	8.4	1.3
Transfer	10.4	4.9	0.7	57.6	27.2	4.1
Transloading	11.9	5.7	0.9	66.0	31.2	4.7
SUBTOTAL	37.5	17.7	2.7	207.3	98.1	14.8

5.2.4 Storage

Overview

A rectangular building is proposed by OBOT Proponent's for storage of coal and petcoke as Commodity A. Two rectangular storage buildings for the stockpiles are to be constructed with a metal truss frame and a fabric cover or skin.

Evaluation

Storage domes are currently in use in the San Francisco Bay Area for storing petcoke and coal. Use of storage domes for fugitive coal dust control would likely be considered Best Available Control Technology by the BAAQMD

ESA performed a search of dust control effectiveness estimates for experience with coal storage using a rectangular building with a fabric cover and found that these were not readily available in public documents or technical journals.

Using standard US EPA AP-42 procedures, ESA performed a calculation that provides a preliminary estimate of 3.2 tons per year of fugitive coal dust as total particulates (TSP) and 0.20 tpy of $PM_{2.5}$ for storage within the proposed enclosed building. This converts to emissions of 17.7 lbs/day of TSP and 1.3 lbs/day of $PM_{2.5}$. These estimates are shown above in Table 5-6.

5.2.5 Transfer to Storage and Shiploaders via Conveyors

Overview

As described in Section 2, after rail cars are unloaded, commodities are to be transferred from the unloading facility to the storage building and then to ship loaders. These transfers would occur using encapsulated conveyors. Commodity A, presumed to be coal, is planned to be handled in this manner at OBOT.

Evaluation

Enclosed conveyors are currently in use in the San Francisco Bay Area for storing petcoke and coal. Use of enclosed conveyors for fugitive coal dust control would likely be considered Best Available Control Technology by the BAAQMD.

Using standard US EPA AP-42 procedures, ESA performed a calculation that provides a preliminary estimate of 10.4 tons per year of fugitive coal dust as total particulates (TSP) and 0.70 tpy of $PM_{2.5}$ for transfer activities via encapsulated conveyors. Emissions are expected at transfer points. This converts to emissions of 57.6 lbs/day of TSP and 44.1 lbs/day of $PM_{2.5}$. These estimates are shown above in Table 5-6.

5.2.6 Transloading to Ships

Overview

As described in Section 2, commodities are to be loaded onto ships using enclosed ship loaders with dust control. Shiploading of Commodity A (presumed to be coal) is to be accomplished with the use of dual telescoping quadrant ship loaders that are each equipped with loading spoons for hatch trimming, and designed to accommodate wash down of system between shipments.

Evaluation

Use of this type of ship loader for fugitive coal dust control would likely be considered Best Available Control Technology by the BAAQMD.

Using standard US EPA AP-42 procedures, ESA performed a calculation that provides a preliminary estimate of 11.9 tons per year of fugitive coal dust as total particulates (TSP) and 0.9 tpy of $PM_{2.5}$ for transloading. This converts to emissions of 66 lbs/day of TSP and 4.7 lbs/day of $PM_{2.5}$. These estimates are shown above in Table 5-6.

5.2.5 Conclusions

Mainline Rail Transport, Staging, and Spur Transit to OBOT

Based upon information available in the public commenters' estimates and ESA's emissions calculations for rail transport, staging and transit on the spur, the uncontrolled emissions of fugitive coal dust (total particulates) in West Oakland and southern Emeryville from uncovered coal unit trains would exacerbate already poor air quality and would likely add to the existing number of exceedances of the California and federal $PM_{2.5}$ ambient air quality standards. These emissions could also contribute to additional health issues experienced by residents living in West Oakland and southern Emeryville. If a southerly route for rail transport is used, the emissions of fugitive coal dust would be deposited within western San Leandro.

All three of these areas of impact are designated as disadvantaged communities by CalEPA due to being disproportionately burdened by and vulnerable to multiple sources of air and other categories of pollution. Also based upon higher air pollutant concentrations of PM_{10} and toxics, all three areas are designated as BAAQMD CARE program communities. In West Oakland, southern Emeryville, and western San Leandro, the added coal dust emissions could negatively impact public health in each of these three areas where higher than average rates of asthma and cancer are already present (as demonstrated in CalEPA compiled data).

Regardless of the rail route taken to OBOT, the coal unit trains will be using the new Port railyard for staging and the spur for travel to OBOT for unloading. Within 1,000 feet of the new Port railyard, there are sensitive receptors in the West Oakland area that would be directly affected: two schools, a child care center and park areas next to I-880. These same sensitive receptors are within 0.5-mile of the rail spur. All of these areas are adjacent neighbors to the new Port railyard and to the rail spur.

The Oakland Toll Plaza for the Bay Bridge is also located within 1,000 feet of the OBOT Terminal and unloading facility. In addition, the newly opened East Bay Regional Parks District's Alexander Zuckermann Bicycle and Pedestrian Path is located within 1000 feet of the Terminal and unloading facility. The proposed expansion of the Parks District's pathway will connect to a segment of the Bay Trail on the spit of former Army Base property located at the east end of the bridge, immediately adjacent to the OBOT Terminal. This is planned to be transferred to the EBRPD from the City of Oakland for the development of Gateway Park. Additionally, public access to the Bay directly west of the OBOT facility will be required by the Bay Conservation and Development Commission. All of these areas are adjacent neighbors to the OBOT unloading operations at the Terminal and the rail spur serving the Terminal.

Although no emission estimates were provided in their report, HDR concludes that a "negligible" amount of fugitive coal dust would be deposited in West Oakland based on rail cars that are covered with a top or coated with a dust suppressant. ESA disagrees with this conclusion, since based upon the current lack of information available to confirm the effectiveness of rail car dust control.

Whether uncontrolled or controlled, the coal dust emissions resulting from the staging area for loaded coal cars in the new Port Railyard and from transit on the rail spur to the unloading facility would be the largest contributor to local air pollutants from activities related to operation of the OBOT Terminal. The estimated quantities of these emissions would degrade local air quality.

Specifically, additional levels of fugitive coal dust emissions would increase levels of PM_{10} above existing levels and be expected to add to the existing number of exceedances of the $PM_{2.5}$ standard as recorded in West Oakland. This would similarly affect southern Emeryville.

Although no estimates were provided in their report, HDR concludes that a "negligible" amount of fugitive coal dust would be deposited in West Oakland based on rail cars that are covered with a top or coated with a dust suppressant. ESA disagrees with this conclusion, based upon the lack of dust estimates and a control effectiveness estimates in HDR's report.

Impacts such as short-term visible dust and deposited coal dust could also cause nuisance impacts or *amenity impacts* (impacts on features that have value). Airborne coal dust is typically deposited on houses, cars, outdoor furniture, and other property; this typically includes the larger coal dust particles in the PM_{10} size range or larger. Among the amenity impacts most commonly reported are buildup of particulate matter on surfaces in residences and cars stored outside, resulting in the need to clean more frequently, and soiling of laundry dried outdoors.[27]

Mainline Rail Transport, Unloading, Storage, Transfer, and Transloading at OBOT

Table 5-7 summarizes estimated emissions for all of the sources that were discussed above in this section for rail transport of coal and all activities for export of coal at the OBOT facility. Due to the estimated volume of fugitive coal dust from rail transport, staging of rail cars and transit on the spur, particulate levels could be significant. Due to this volume of fugitive dust emissions the quantity of resuspended dust is expected to be significant in terms of providing additional contributions to local concentrations of PM_{10} and $PM_{2.5}$. This dust resuspension or re-entrainment could make an additional contribution to increasing local ambient PM_{10} and $PM_{2.5}$. Since we were unable to estimate the amount of emissions from re-entrained or resuspended fugitive coal dust from the staging of unit trains at the Port Railyard, and transit along the OBOT spur, the emissions estimates provided here do not include those emissions and thus, are conservative.

27 Katestone Environmental Pty. Ltd. And NSW EPA. 2014. Literature Review of Coal Train Dust Management *Practices.* Prepared for NSW Environment Protection Authority. December 2014. Available at: http://www.epa.nsw.gov.au/resources/epa/coaltrain-litreview.pdf

TABLE 5-7
SUMMARY OF EMISSIONS ESTIMATES FROM RAIL TRANSPORT, STAGING/SPUR TRAVEL, UNLOADING, STORAGE, TRANSFER AND SHIP LOADING OF COAL AT OBOT

	tons/yr			lbs/day		
Fugitive Coal Dust Emissions Source	**TSP**	**PM_{10}**	**$PM_{2.5}$**	**TSP**	**PM_{10}**	**$PM_{2.5}$**
Rail Transport*						
BAAQMD	2,102	988	148	12,012	5,646	847
Oakland	82	38	6	468	220	33
So Emeryville	35	17	3	203	95	14
San Leandro	98	46	7	562	264	40
Staging at Port Railyard, Rail Spur Trip to OBOT	156	78	18	889	445	67
SUBTOTAL - Oakland	238	116	18	1,357	665	100
OBOT Operations						
Unloading	11.9	5.7	0.9	66.0	31.2	4.7
Storage	3.2	1.5	0.2	17.7	8.4	1.3
Transfer	10.4	4.9	0.7	57.6	27.2	4.1
Transloading	11.9	5.7	0.9	66.0	31.2	4.7
SUBTOTAL	37.5	17.7	2.7	207.3	98.1	14.8
PROJECT TOTAL – Oakland	276	134	21	1,564	763	115

* Uncontrolled air emissions of fugitive dust from open coal filled rail cars. .

Based upon the total emissions estimates for fugitive coal dust for all activities associated with OBOT and the re-entrainment of accumulated fugitive coal dust, we conclude that these cumulative contributions of particulates to local levels of TSP, PM_{10} and $PM_{2.5}$ would further degrade existing air quality. This cumulative contribution would be likely to cause additional exceedances of ambient air quality standards for PM_{10} and particularly $PM_{2.5}$, at the air monitoring station in West Oakland. Since the ambient air quality would not improve, and the standards would likely continue to be exceeded, this degraded local air quality would continue to impact the health of the adjacent neighbors. These adjacent neighbors are in CalEPA designated disadvantaged communities and in BAAQMD CARE identified communities of West Oakland, southern Emeryville and western San Leandro. These communities have been explicitly identified to address the disproportionate adverse health effects pollution can have on minority and low-income populations. Specifically, within 0.5-mile of the proposed new rail spur and OBOT facility, there are sensitive receptors in the West Oakland area that would be directly affected due to their proximity: two schools, a child care center and park areas next to I-880.

Other adjacent neighbors that could be affected are users of the adjacent EBRPD path and new park, commuters and workers at the Oakland Bay Bridge Toll Plaza and users of the public access to the San Francisco Bay. The Oakland Toll Plaza for the Bay Bridge is located within 1,000 feet of the OBOT Terminal and unloading facility. In addition, the newly opened East Bay Regional Parks District's Alexander Zuckermann Bicycle and Pedestrian Path is located within 1,000 feet of the Terminal and unloading facility. The proposed expansion of the Parks District's pathway

will connect to a segment of the Bay Trail on the spit of former Army Base property located at the east end of the bridge, immediately adjacent to the OBOT Terminal. This is planned to be transferred to the EBRPD from the City of Oakland for the development of Gateway Park. Additionally, public access to the Bay to be located directly west of the OBOT facility will be required by the Bay Conservation and Development Commission, and is also within 1000 feet of the OBOT operations. All of these areas are also adjacent neighbors to the OBOT operations at the Terminal and the new rail spur serving the Terminal, and will be impacted by the projected increase in air pollutants from fugitive dust emissions.

5.3 Petcoke

5.3.1 Overview

Expected activities associated with the OBOT include rail transport of petcoke in open rail cars to the Port Railyard, staging of trains in the Port Railyard, travel along the new railroad spur from the Port Railyard to the OBOT Terminal for unloading, conveyor transfer to storage facilities and conveyor transfer to ships for export.

There are different types of coke that vary widely. Petcoke can be the feedstock for metallurgical coke, however the feedstock for metallurgical coke is typically coal (and usually it is bituminous coal). Petcoke is the feedstock for calcined coke, a purified type of coke. Petcoke is the least purified version in the refinery supply chain. Calcined coke is produced locally; however, petcoke is the form of refinery derived coke that is most frequently exported from the San Francisco Bay Area. Thus, since we primarily analyzed coal and focused upon bituminous coal in our report, ESA's analysis of air quality impacts for coke focused upon refinery derived coke or petcoke, as it is known.

5.3.2 Evaluation

Air Emissions. The risk of fine PM blowing into surrounding neighborhoods is similar for petcoke as for coal.[28] While the silt content for petcoke (21.2%) is greater than coal (4.6%), no significant correlation between silt content and emissions was found during US EPA tests.[29] A recent report for the City of Chicago found that bulk material piles can in general be significant sources of dust and contribute to localized exceedances of ambient air quality standards in Chicago.[30]

Thus, the air emissions of fugitive dust particulates are expected to be similar for petcoke, for the same throughput quantity, for the total of coal related activities including at OBOT and the Port Railyard including Rail Transport, Train Staging, Unloading, Storage, Transfer, and

28 CDM Smith. City of Chicago Fugitive Dust Study, 2014. Available online: http://www.cityofchicago.org/content/dam/city/depts/cdph/environmental_health_and_food/PetCoke_Public_Comments/102512DustReport031314.pdf.

29 EPA, 2006. AP-42, Compilation of Air Pollutant Emission Factors, Chapter 13.2.4. Available at: https://www3.epa.gov/ttn/chief/ap42/ch13/index.html. Accessed June 3, 2016.

30 CDM Smith. City of Chicago Fugitive Dust Study, 2014. Available online: http://www.cityofchicago.org/content/dam/city/depts/cdph/environmental_health_and_food/PetCoke_Public_Comments/102512DustReport031314.pdf.

Transloading. The quantities of petcoke that might be exported from OBOT are not known, so estimates of dust emissions were not made.

Health Effects. US EPA believes that significant quantities of fugitive dust from pet coke storage and handling operations present a health risk. US EPA's research does not suggest that petroleum coke poses a different health risk than PM_{10}.[31] US EPA is particularly concerned about particles that are 10 micrometers in diameter or smaller (referred to as PM_{10}) because those are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. While trace amounts of toxic materials have been measured in petroleum coke, studies on rats show that petroleum coke itself has a low level of toxicity and that there is no evidence of carcinogenicity.

A recent review study in 2015 concluded that the main threat to urban populations in the vicinity of petcoke piles is most likely the fugitive dust emissions in the form of fine particulate matter.[32] This study cited inhalation as the most prevalent concern, as black dust has observed to be blown off open piles under extreme weather conditions, and was found to accumulate on residential properties in the vicinity of stockpiled petcoke in Chicago and Detroit. They conclude that airborne petcoke dust has the potential to exacerbate pre-existing lung ailments, or may have additive or synergistic effects with other environmental toxins. This study cites among other studies, evidence of the existing impact in the neighborhood where petcoke is currently stored, South Deering in Chicago, Illinois and where this area has particularly higher than average rates of asthma, as do many of the surrounding neighborhoods of Southeast Chicago.[33]

5.3.3 Conclusions for Petcoke

The rate of emissions of fugitive pet coke dust in into the ambient air in the form of total suspended particulates (and PM_{10} and $PM_{2.5}$) is expected to be similar for petcoke. This is expected to occur as mentioned above for coal for the total of coal related activities at OBOT and the Port Railyard including Rail Transport, Train Staging, Unloading, Storage, Transfer, and Transloading. However, at this time, since we do not know the expected volume of petcoke that will be exported through OBOT, we are not able to predict the volume of emissions of fugitive petcoke dust.

Thus, these levels of fugitive pet coke emissions from OBOT activities could contribute to existing particulate concentrations in ambient air and similarly affect adjacent neighbors. The conclusions stated above for public health in local communities are applicable here.

31 https://www.epa.gov/petroleum-coke-chicago/health-effects-petroleum-coke

32 Caruso, J.A., K. Zhang, N.J. Schroeck, B. McCoy and S.P. McElmurry 2015. Petroleum Coke in the Urban Environment: A Review of Potential Health Effects. Int. J. Environ. Res. Public Health 2015, 12, 6218-6231; doi:10.3390/ijerph120606218

33 Gupta, R.S.; Zhang, X.; Sharp, L.K.; Shannon, J.J.; Weiss, K.B., The protective effect of community factors on childhood asthma. J. Allergy Clin. Immunol. 2009, doi:10.1016/j.jaci.2009.03.039.

5.4 Health Effects – Worker Exposure

The staging of coal and/or petcoke rail cars in the new Port Railyard would generate wind-generated fugitive dust that would settle out in the West Oakland area. Additional dust would be released as fully loaded rail cars travel up the rail spur to the OBOT for unloading. In addition, coal and/or petcoke dust that has settled out in the area and on the tracks will be resuspended during wind events and by trains passing through the area. As a result, workers at the railyard and the rail spur line, along with residents in West Oakland, would likely be exposed to increased concentrations of PM_{10} and $PM_{2.5}$ from these dust sources. Several public commenters provided comments on this topic.[34] These elevated concentrations are in addition to the already elevated PM_{10} and $PM_{2.5}$ concentrations in West Oakland that contribute to this area's designation as a disadvantaged community.

At the OBOT facility, coal and/or petcoke handling would occur in enclosed buildings and structures. Handling would include unloading of rail cars (enclosed building), storage of commodities (fabric-covered building), transfer ('encapsulated' conveyors), and transloading to ships. Workers will be present inside the enclosed facilities where coal and petcoke will be handled and will be exposed to elevated dust levels. For dust from petroleum coke, there are no specific occupational exposure limits for workers.

A public commenter (who serves as the County Health Officer and Director of the Alameda County Public Health Department) expressed concern that within the OBOT facility, the buildup of dust (for instance on floors, equipment, vehicles, and other surfaces) was anticipated by Project Proponents and this commenter was concerned that proper housekeeping practices and occupational health and safety regulations were adequate to protect workers. This commenter expressed concern that workers at the Terminal, within the Development Area of the former Army Base, and the Port of Oakland are another population that will be impacted and continuously exposed to working conditions dangerous to their health and safety.[35]

Under the OBOT employment goals in the Development Agreement with Oakland, a special policy applies to give first priority to hiring qualified workers who are from the West Oakland area are to be employed at OBOT. The LDDA includes an Operations Jobs Policy for the West Gateway that has certain requirements regarding hiring and employment for operation jobs at the OBOT. Specifically, the policy requires efforts to fill on-site jobs with residents and disadvantaged workers (a resident meeting eligibility criteria for California Enterprise Zone Hiring Credits, as set forth in Cal. Rev. & Tax Code Sec. 23622.7(b)(4)(A)) per the following priorities:

- First Priority: Residents of zip codes 94607, 94612, 94608, and 94609

[34] Letter dated September 2, 2015 from Earth Justice (**OAK058414**). Letter dated Sept. 21, 2015 from EarthJustice, Sierra Club, West Oakland Environmental Indicators Project, San Francisco Baykeeper and Communities for a Better Environment. (**OAK055094**). Letter from Muntu Davis. (**OAK055272**)

[35] Letter from Muntu Davis (County Health Officer and Director of the Alameda County Public Health Department). (**OAK055272**)

- Second Priority: Residents of the Oakland Enterprise Zone Targeted Employment Area as of the LDDA Execution Date
- Third Priority: Other Residents of the City of Oakland.

Furthermore, compliance would be determined if at least 50% of workers hired for on-site jobs during a particular year were residents, and for whom at least 25% of workers hired during a particular year were Disadvantaged Workers. Note that for zip codes 94607 and 94608, census tracts in these same areas are designated as disadvantaged communities by CalEPA and are included in the BAAQMD CARE program based upon existing degraded air quality for PM_{10} and toxics.

In conclusion, any OBOT workers who live in West Oakland are living within a disadvantaged community designated by CalEPA and within an area of degraded air quality designated by the BAAQMD CARE program where air pollutant concentrations of PM_{10} and toxics are higher than the average, and as well where residents exhibit higher rates of asthma and other adverse health related indicators. Thus, the air quality of the OBOT worker's residential environment is currently degraded, future fine particulate levels of PM_{10} and $PM_{2.5}$ from either coal or petcoke are likely to increase with transport to OBOT and the worker's environment at OBOT provides West Oakland residents with an additional source of exposure to respirable, fine particulates.

This page intentionally left blank

CHAPTER 6
Safety Effects

6.1 Overview

Several commenters discussed the safety issues surrounding the potential for coal to spontaneously combust or result in a coal dust explosion.[1] As described in Chapter 2, Project Description and Operation, Commodity A is assumed to include coal and/or petcoke. The OBOT Proponents also acknowledge that Commodity A is "very dusty, exhibits spontaneous combustion behavior, potentially explosive."[2]

6.2 Combustion of Coal

6.2.1 Spontaneous Combustion

The spontaneous combustion of coal is a well-known phenomenon that has been observed in both coal storage piles and rail cars. Spontaneous combustion, or self-heating, of coal is a naturally-occurring process caused by the oxidation of coal. The self-heating of coal is a function of a number of controllable and uncontrollable factors. Controllable factors include close management in the terminal facility of coal storage in stockpiles, silos/bunkers, and mills and management during coal transport. Uncontrollable factors include the coal itself and ambient conditions. According to the International Energy Agency Clean Coal Centre:

> When coal is exposed to air it undergoes exothermic chemisorption of oxygen which is followed by formation of surface oxides and to some extent oxidation of the coal, resulting in emission of various gases (the most prominent of which are [carbon dioxide (CO_2), water vapor (H_2O) and carbon monoxide (CO)]. Large coal stockpiles, especially those stored for long periods, may develop hot spots due to self-heating. In some cases spontaneous combustion may result. The self-heating process depends on many factors including coal rank, temperature, airflow rate, the porosity of the coal pile, ash and moisture content of the coal, humidity as well as particle size of coal. Emissions of molecular hydrogen, carbon monoxide and low molecular weight hydrocarbons can also accompany the oxidation

1 Letter dated September 18, 2015 from No Coal in Oakland (**OAK055274**), Letter dated Sept. 21, 2015 from EarthJustice, Exhibit B – Environmental, Health and Safety Impacts of the Proposed OBOT, prepared for Sierra Club by Phyllis Fox, Ph.D., PE (**OAK055094**), and Letter dated July 30, 2015 from Adrienne Alvord, Union of Concerned Scientists, Attachment B, Multnomah County Health Department, The Human Health Effects of Rail Transportation of Coal Through Multnomah County, Oregon, February 2013. (**OAK55095**)

2 BoD. (**OAK054820**)

process. These processes raise environmental and economical problems for coal producers and consumers, who transport and store large coal piles.[3]

Spontaneous combustion is a time-dependent phenomenon. Early attention to the potential sources of problems may prevent occurrences of heating progressing to full-scale spontaneous combustion. In comparison, petcoke is much less volatile than bituminous coal, and has a substantially lower risk of fires and explosions.

Between 2001 and 2015, 13 rail car fires were reported nationally, most of which were likely caused by spontaneous combustion.[4] Major fires have occurred at terminals located in Los Angeles, Scotland, and Australia. See Section 2.2.2 in Chapter 2 for description of the fires that occurred at the Port of Los Angeles coal terminal in 2000 and 2001. Small fires, mainly associated with spontaneous combustion in coal storage piles, and fires in arriving rail cars are more common, but poorly documented. Many of these fires appear to be related to specific coal compositions that are known to have a higher tendency for spontaneous combustion, such as Powder River Basin coal from Montana and Wyoming. The uncontrolled combustion of coal results in the potential exposure to smoke, toxic gases, dust, and ash. Exposure could lead to adverse health impacts, as well as potentially significant environmental impacts associated with the fire and firefighting efforts.

6.2.2 Coal Dust Explosions

The risk of organic dust explosions in confined air spaces, such as from bituminous coal and petcoke, has been well studied and documented. These types of incidents have been commonly observed in coal mines and processing facilities that store and process organic matter that generated organic dust (e.g., grain mills, coal processing facilities, etc.).

There are three necessary elements which must occur simultaneously to cause a fire: fuel, heat, and oxygen. These elements form the three legs of the fire triangle. By removing any one of these elements, a fire becomes impossible. For example, if there were very little or no oxygen present, a fire could not occur regardless of the quantities of fuel and heat that were present. Likewise, if insufficient heat were available, no concentrations of fuel and oxygen could result in a fire.

For an explosion to occur, there are five necessary elements which must occur simultaneously: fuel, heat, oxygen, suspension, and confinement. These form the five sides of the explosion pentagon. Like the fire triangle, removing any one of these requirements would prevent an explosion from propagating. For example, if fuel, heat, oxygen, and confinement occurred together in proper quantities, an explosion would still not be possible without the suspension of the fuel. However, in this case, a fire could occur. If the burning fuel were then placed in suspension by a sudden blast of air, all five sides of the explosion pentagon would be satisfied and an explosion would be imminent.

3 IEA Clean Coal Centre, Propensity of Coal to Self-Heat, Profiles, December 2010, cited in Letter dated September 18, 2015 from No Coal in Oakland (**OAK055274**)

4 National Response Center Spills and Accidents Database, available at http://www.nrc.uscg.mil/.

A coal dust explosion can generate sufficient air pressure to disperse dust from surfaces and draw it into the expanding combustion zone. Heat transfer to coal dust particles results in the production of volatiles and tars from these particles. At high temperatures, the product reacts with the oxygen in the air and the heat released from this exothermic reaction is converted into work of expansion of the semi-confined air.

OSHA's instruction No. CPL 03-00-008 is the guiding directive for controlling dust in manufacturing facilities. CPL 03-00-008 and NFPA 654 define the conditions under which plants must immediately remove dust accumulations that are 1/32 inch thick. OSHA standard No. 29 CFR 1910.269(v)(11)(xii) requires the elimination or control of ignition sources when coal-handling operations may produce a combustible atmosphere. NFPA 654, which includes a comprehensive list of dust control, ignition sources, and damage control provisions, is also an invaluable reference.

6.2.3 Coal Firefighting Issues

For coal fires where the combustion is taking place on the surface of the coal, standard firefighting techniques can be employed, including the application of water and foam. However, coal fires can be difficult to control when spontaneous combustion occurs within a coal pile.

Fire departments that need to respond to a coal fire require specialized equipment and training. The specific equipment necessary to adequately extinguish a coal fire is dependent on the characteristics of the fire. Depending on the circumstances, the application of water or foam may not be effective in extinguishing a fire, especially in cases of spontaneous combustion within a coal pile. The surface tension of water does not allow it to penetrate deep below the coal's surface and reach the fire unless large quantities are injected. Wetting agents can decrease surface tension, but may not be adequate for the water to reach the hot spot. Water and foam will not percolate deep enough into a coal pile to reach the fire. To complicate matters, applying a stream of water into an enclosed storage area could suspend coal dust and result in an explosion.

In addition to very specific training, fire departments fighting coal fires need thermal imaging equipment to allow them to identify the precise location of a fire within a coal pile, as well as piercing rods to directly apply fire-fighting agents to the fire. Micelle-encapsulating agents and water are preferred to extinguish fires in coal piles. The agents encapsulate both the liquid and vapor phase molecules of the fuel and immediately render them non-flammable. Surface tension reduction agents reduce the surface tension of water by 58% providing up to a 1,000% increase in the wetted area, compared with using water alone.

Clearly, a significant investment in both equipment and training is necessary for local fire departments to respond to a coal fire. In addition, the proximity of the OBOT to I-80 and the San Francisco-Oakland Bay Bridge could present additional safety and emergency access issues in the event of a major fire that disperses smoke over the highway.

6.2.4 Air Toxic Emissions Associated with Coal Fires and Explosions

Toxic air pollutant emissions associated with a coal fire or explosion would be very similar to emissions from a coal-fired power plant, but without the emissions control systems that are required at coal-fired power generating facilities. Unlike coal fired power plants, where emissions are routed through emission control devices and tall stacks, pollutants emitted from a coal fire are uncontrolled and emitted near ground level, increasing potential exposure. As a result, both acute and chronic health impacts can be expected for people in close proximity to a coal fire; either near a facility such as the OBOT or along the rail route.

Combustion produces oxides of carbon, including carbon dioxide (CO_2), oxides of sulfur (mainly sulfur dioxide, SO_2), and various oxides of nitrogen (NOx). Because of the hydrogenous and nitrogenous components of coal, hydrides and nitrides of carbon and sulfur are also produced during the combustion of coal in air. These include hydrogen cyanide (HCN), sulfur nitrate (SNO_3) and other toxic substances. Emissions from coal fires also would include fine particulate matter, a wide variety of metals, especially mercury, toxic hydrocarbon/volatile organic compound species and small amounts of uranium. These would become bio-available during combustion. See also Section 3.1.9 for discussion of bio-availability of the elements in coal.

6.3 Conclusion

The spontaneous combustion of coal is a well-known phenomenon that has been observed in both coal storage piles and rail cars. The risk of dust explosions in confined air spaces from coal and petcoke also has occurred in coal processing facilities such as proposed by the OBOT. Fire departments that need to respond to a coal fire require specialized equipment and training. Coal fires can be difficult to control when spontaneous combustion occurs within a coal pile. Depending on the circumstances, the application of water or foam may not be effective in extinguishing a fire, especially in cases of spontaneous combustion within a coal pile.

The uncontrolled combustion of coal results in the potential exposure to smoke, toxic gases, dust, and ash, which could lead to adverse health impacts. Toxic air pollutant emissions associated with a coal fire or explosion would be very similar to emissions from a coal-fired power plant, but without the emissions control systems that are required at coal-fired power generating facilities. Unlike coal fired power plants, where emissions are routed through emission control devices and tall stacks, pollutants emitted from a coal fire are uncontrolled and emitted near ground level, increasing potential exposure. As a result, both acute and chronic health impacts can be expected for people in close proximity to a coal fire; either near a facility such as the OBOT or along the rail route that would serve as the access route to the facility.

CHAPTER 7

Greenhouse Gas Emissions, Climate Effects and Air Pollutants

7.1 Overview

This section addresses greenhouse gas (GHG) and other emissions from the use of coal and petcoke shipped from OBOT to overseas destinations. As well, this analysis would apply generally to any bulk cargo marine terminal that receives stores and transloads coal and/or petcoke for export.

Primary uses of coal and petcoke overseas are combustion for steam and power as well as direct use in the process of production of steel and iron. GHGs are produced during the combustion of coal and petcoke, and also during the process of steel and iron production.

There is potential for an incremental increase of GHG emissions globally with resulting local impacts from global warming (e.g., sea level rise), and for transported air pollutants resulting from coal combustion overseas to adversely impact local air quality.

7.2 Background

Greenhouse gases are assigned a Global Warming Potential (GWP) based on how much energy the emissions of one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide. Common GHGs associated with coal combustion and coke production are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Carbon dioxide is assigned a GWP of 1, methane has a GWP of 28 over 100 years, and nitrous oxide has a GWP of 265-298 over 100 years[1]. To compare these different GHGs using a common unit, carbon dioxide equivalent (CO_2e) is used. The CO_2e for a gas is derived by multiplying the tons of gas by the associated GWP.

GHGs are produced during the expected end-uses of the coal and petcoke exported from OBOT. These end-uses include coal combustion and direct use in iron and steel production.

1 Environmental Protection Agency, 2016. Understanding Global Warming Potentials. Available at: https://www3.epa.gov/climatechange/ghgemissions/gwps.html. Accessed June 8, 2016. Used GWP values from AR5.

7.3 Coal Combustion

When coal is combusted, nearly all of the fuel carbon (99 percent) in coal is converted to CO_2 during the combustion process, and is relatively independent of firing configuration. CO_2 emissions for coal vary by the coal's carbon content, and carbon content varies between the classes of bituminous and subbituminous coals. Further, carbon content also varies within each class of coal based on the geographical location of the mine.

Formation of nitrous oxide during the combustion process is governed by a complex series of reactions and its formation is dependent on many factors including combustion temperature and excess air. Methane emissions vary with the type of coal being fired and firing configuration, but are highest during periods of incomplete combustion, such as the start-up or shut-down cycle for coal-fired boilers. Typically, conditions that favor formation of nitrous oxide also favor emissions of methane.

The US EPA estimates that bituminous coal from the United States emits 2.76 to 3.13 tons of carbon dioxide per ton of coal combusted. Based on the worst-case emissions of methane from coal combustion units, coal would emit approximately 0.0025 tons of methane per ton of coal combusted. Similarly, based on the worst-case emissions of nitrous oxide from fluidized bed combustion, coal would emit approximately 0.00175 tons of nitrous oxide per ton of coal combusted.[2] **Table 7-1** presents US EPA's emission factors based on GWP.[3]

TABLE 7-1
EPA EMISSION FACTORS FOR BITUMINOUS COAL COMBUSTION, PER TON OF COAL COMBUSTED

Fuel	CO_2	CH_4	N_2O
Coal - Bituminous	2.76 to 3.13 tons	0.07 tons	0.463 tons

Based on the US EPA emission factors, approximately 13.8 to 15.65 million metric tons of CO_2 would be produced per year if all OBOT-related exported coal was combusted in power plants. For total GHG emissions (including CH_4 and N_2O), approximately 18.3 million metric tons of CO_2e would be produced per year if all OBOT-related exported coal were combusted in power plants by the end user overseas.

7.3.1 Public Comments

Multiple public commenters noted the inconsistency of supporting a proposal for coal export through Oakland, California, while the state of California has adopted multiple legislative initiatives and associated regulations towards reducing the effects of climate change to provide incentives and plans for clean cars, clean fuels, renewable energy, and also stringent caps on

2 Environmental Protection Agency, 1998. AP-42, Compilation of Emission Factors, Chapter 1.1. Available at: https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s01.pdf. Accessed June 8, 2016.

3 GWP values from AR5. http://ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20(Feb%2016%202016).pdf

carbon emissions on power generation and industries.[4] Further, in an effort to reduce climate change by influencing coal use beyond California's boundaries, in October 2015 Governor Brown signed a measure requiring the state's public pension funds to liquidate their investments in thermal coal by July 2017. Senate Bill 185 requires the California Public Employees' Retirement System and California State Teachers' Retirement System to divest investments worth between $100 million and $200 million for CalPERS and about $40 million for CalSTRS.[5]

Several public commenters estimated the amount of CO_2 associated with the combustion of the exported coal. **Table 7-2** presents the source, estimate, and assumptions used. As detailed below, based on emission factors and methodology used by public commenters, ESA recalculated these estimates to reflect 5 million metric tons of coal throughput annually at OBOT, producing the estimates of CO_2 emissions from the combustion of coal ranging from 9.4 to 14.3 million metric tons of CO_2 annually. The commenters did not address the total GHG emissions in terms of CO_2e (carbon dioxide equivalent). ESA also made a calculation for CO_2e that is inclusive of the additional GHGs noted above. The estimates made in the public comments listed in Table 7.2 are described and analyzed in more detail in **Appendix D.**

TABLE 7-2
CO_2 AND OTHER GHG EMISSIONS FROM COAL COMBUSTION ESTIMATED BY PUBLIC COMMENTERS AND BY ESA

Source	Combustion Emissions Estimate (metric tons of CO_2 per yr, unless noted)	Basis for Estimate (tons of coal shipped per year)	ESA Recalculation of Estimate (metric tons of CO_2 per yr)*
Earth Justice et al. by SSR, Niemeyer et al.[6]	30 million	10.5 million tons	14.3 million
Earth Justice[7]	26 million	10 million tons	13 million
Haya[8]	17 million	9 million tons	9.4 million
No Coal in Oakland[9]	Over 1.5 billion tons of CO_2 over 66-years or 22.7 million tons per year	10 million tons year over 66-years**	11.4 million
Josiah Johnston[10]	13 million	4.4 million metric tons	14.3 million
Deborah Silvey of Fossil Free California[11]	12.5 million tons of GHG per year	Unknown	N/A
Berkeley Climate Action Coalition[12]	1.5 billion tons of CO_2	Unknown	N/A
ESA	15.65 million	5.51 million tons	18.3 million metric tons, CO_2e

* Assuming the commenter's emission factor and 5.0 million metric tons/5.51 million tons/yr of coal shipped
** Time limit of the OBOT lease (66-years)

4 See information at: http://www.arb.ca.gov/cc/facts/facts.htm
5 See text of SB 185 at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB185
6 Letter dated Sept. 21, 2015 from EarthJustice, Exhibit C – Technical Memorandum: Air Quality, Climate Change and Environmental Justice Issues from Oakland Trade and Global Logistics Center by Sustainable Systems Research, LLC by Prof. D. Niemeier; D. Rowangould, PhD and M. Eldridge (**OAK055094**).
7 Letter dated September 2, 2015 from EarthJustice. (**OAK054814**)
8 Email dated October 6, 2015 from B. Haya, PhD (**OAK055274**)
9 Letter dated Sept. 18, 2015 from No Coal in Oakland (**OAK055274**)
10 Email dated October 6, 2015 from Josiah Johnston (**OAK055274**)
11 Email dated October 5, 2015 from Deborah Silvey on behalf of Fossil Fuel California (**OAK055274**)
12 Letter dated October 5, 2015 from Berkeley Climate Action Coalition (**OAK055274**)

7.3.2 Conclusions

Using US EPA emission factors, ESA estimates approximately 15.65 million metric tons of CO_2 would be produced per year if all exported coal were combusted in power plants overseas.

Public commenter estimates of CO_2 emissions produced from the combustion were adjusted for throughput of 5 million metric tons of coal per year and range from 9.4 to 14.3 million metric tons of CO_2 annually. The commenters did not address the total GHG emissions (i.e., $CO2_e$).

For total GHG emissions (including CH_4 and N_2O), ESA calculated that approximately 18.3 million metric tons of CO_2e would be produced per year if all exported coal were combusted in power plants by the end user overseas.

It is inevitable that if the coal exported from OBOT is combusted in power plants overseas, there would be an incremental increase of GHG emissions globally, which we estimate to be approximately 18.3 million metric tons of CO_2e. This increase in GHG emissions would contribute incrementally to global climate change along with sea level rise that would be experienced locally in Oakland.

For comparison, the addition of 18.3 million metric tons of CO_2e emissions per year into the atmosphere globally is

- 5.6 times larger than the total GHG emissions inventoried for the City of Oakland in calendar year 2013 (2,768,150 metric tons of CO_2e emissions),[13] and
- greater than the annual emissions of CO_2e from all five oil refineries in the San Francisco Bay Area (14.4 million metric tons of CO_2e for 2014).[14]

Many public commenters noted that sea level rise vulnerability was one of the many projected local climate impacts expected to be experienced in Oakland as stated in the city's Climate and Energy Action Plan. The Climate and Energy Action Plan published in 2012 states: [15]

> Projected local impacts of climate change include significantly decreased snowpack in the Sierra Mountains (the source of most of Oakland's potable water supply); rising Bay and Delta waters: increased fire danger; greater frequency and intensity of heat events; added stress on infrastructure; pricing and quality of life impacts; and ecological impacts.

Further, the Plan notes the vulnerability of Oakland and its residents to climate impacts:

> Climate change vulnerability is a function of exposure to climate impacts, sensitivity to those impacts, and the capacity to adapt and recover. All members of the Oakland community could be affected by some of these impacts (e.g., water use restrictions), and

13 City of Oakland 2016. City of Oakland 2016 Greenhouse Gas Emissions Inventory Report (2013 Data Year) http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak059097.pdf

14 Mandatory GHG Reporting – Emissions Reported to the ARB, 2014. http://www.arb.ca.gov/cc/reporting/ghg-rep/reported-data/ghg-reports.htm [Refinery CO_2e emissions in million metric tons/yr as reported for 2014, rounded: Chevron Richmond: 4.1; Shell Martinez: 4; Valero Benicia: 2.7; Tesoro Martinez: 2.3; Phillips 66: 1.3]

15 City of Oakland. 2012. Oakland Climate and Energy Action Plan. http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak039056.pdf

> certain population segments may be especially vulnerable. For example, more frequent and severe heat events could exacerbate existing public health problems related to poor air quality, especially affecting the elderly and those living or working in areas with high concentrations of air pollutants. Increased flooding danger in low-lying areas is of additional concern near land or facilities containing hazardous materials.

As noted in the City's plan, a set of climate scenarios were prepared by the California Energy Commission and projected that mean sea level along the California coast could rise by as much 4.5 feet by 2100.[16] That assessment of future flood risk with sea-level rise shows significant flooding is possible at California's major ports including Oakland, stating:

> In addition to directly affecting port operations, sea-level rise may cause other interruptions to goods movement at ports. We also note the connection between possible direct impacts of sea-level rise on the ports themselves and possible flooding of transportation (rail and road) corridors to and from the ports.

Several public commenters pointed out that according to maps produced by the Bay Conservation and Development Commission (BCDC) and Oakland-based Pacific Institute, many low-elevation areas of Oakland would be vulnerable to flooding events under these CEC scenarios predicting sea level rise of 4.5 feet.[17] The Pacific Institute published a photo overlay map of projected sea level rise for 'California Flood Risk: Oakland West Quadrangle, which indicates these vulnerable areas.[18] This photo overlay map indicates that flood risk due to sea level rise with projected inundation to occur extensively at the OBOT site itself, on the rail spur site and at over half of the site of the new Port Railyard. In addition, portions of the residential and commercial sections of West Oakland and coastal areas of southern Emeryville adjoining West Oakland would also be subject to flood risk due to climate change. This map may be viewed at the web link cited below.

Thus, public commenters concluded there would be secondary impacts from the incremental contribution to global levels of GHGs from combustion overseas of coal exported from OBOT and that over the term of the OBOT lease (66 years) an associated incremental impact upon global climate change including sea level rise could occur locally in Oakland.

In November 2015, the San Francisco Bay Development Conservation Commission (BCDC) made findings that approximately 6,000 Oakland residents would be at risk in a 16-inch sea level rise scenario (expected by 2050) and 15,000 residents would be at risk with a 55-inch sea level rise, which is expected by the year 2100. Oakland facilities that are at risk from a 16 inch sea

---

16 California Energy Commission 2012. Impacts of Sea Level Rise on SF Bay, White paper from CEC's Cal Climate Change Center. http://www.energy.ca.gov/2012publications/CEC-500-2012-014/CEC-500-2012-014.pdf

Heberger, M., H. Cooley, P. Herrera, P. H. Gleick, and E. Moore. 2009. *The Impacts of Sea Level Rise on the California Coast.* California Climate Change Center. California Energy Commission, Public Interest Energy Research Program. CEC-500-2009-024-F.

17 Gleick, P. H., and E. P. Maurer. 1990. Assessing the Costs of Adapting to Sea Level Rise: A Case Study of San Francisco Bay. Pacific Institute, Oakland, California. 97 pages with two maps. www.pacinst.org/reports/sea_level_rise/.

18 Photo Overlay: California Flood Risk: Oakland West Quadrangle http://www2.pacinst.org/reports/sea_level_rise/hazmaps/Oakland_West.pdf

level rise by 2050 are two fire stations, five health care facilities, two homeless shelters and three schools.[19]

In May 2016 the City of Oakland released their Local Hazard Mitigation Plan which also notes the BCDC study findings along with specific vulnerabilities of concern for Oakland.[20]

> Predictions are that global climate change will increase the elevation of San Francisco Bay, and that the frequency and extent of short term, temporary coastal floods will increase. Eventually, permanent daily tidal inundation will be reached. Low-lying coastal residential areas, the Port of Oakland, the former Oakland Army Base, and a variety of low-lying areas near the Coliseum, Oakland International Airport, and Interstate-880 are most at risk.
> Storms are expected to increase in intensity, as well. With Oakland's older stormwater drainage system, processing the water from the predicted higher tides and larger storms could lead to significant increases in both coastal and urban flooding and flood damage. As recently as December 2014, a combination of coastal and urban flooding closed roads, businesses and schools throughout the City; this was without the predicted tidal inundation from sea-level rise.

The City's Local Hazard Mitigation Plan notes that the San Francisco Bay Development Conservation Commission's (BCDC) "Oakland/Alameda Resilience Study" released in November 2015[21] found significant infrastructure and facilities that are vulnerable to sea level rise. These include ground transportation via Interstate-880, Oakland surface streets and the Union Pacific Railroad line; Fire Stations #27 and #29; power transmission facilities owned by Pacific Gas and Electric Company; stormwater facilities owned by the City of Oakland and wastewater facilities owned by EBMUD. [22]

Projections of future inundation of highway, rail lines, fire stations and utilities would not only affect local residents and business in West Oakland but could also impact the operations of OBOT and the new Port Railyard in West Oakland.

Thus, impacts are projected by BCDC for future flooding that will affect the West Oakland area as well as rail and highway infrastructure in the Oakland area which would affect the supply chain for OBOT. This could possibly interrupt operations by 2050 within the timeframe of OBOT's lease with the City (66 yrs). Also in future scenarios of increasing sea level rise, emergency response by firefighters to local communities is also projected to be impacted.

---

19 BCDC, 2015. "Oakland/Alameda Resilience Study Phase 1 Report: Vulnerability and Risk Assessment Findings, November 2015 Draft", pgs -20-31. Available at: http://www.bcdc.ca.gov/cm/2015/0903-Oakland-Alameda.pdf

20 City of Oakland 2016. City of Oakland Local Hazard Mitigation Plan. http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak058455.pdf
BCDC, 2015. "Oakland/Alameda Resilience Study Phase 1 Report: Vulnerability and Risk Assessment Findings, November 2015 Draft", pgs -20-31. Available at: http://www.bcdc.ca.gov/cm/2015/0903-Oakland-Alameda.pdf

22 City of Oakland 2016. City of Oakland Local Hazard Mitigation Plan. http://www2.oaklandnet.com/oakca1/groups/ceda/documents/report/oak058455.pdf

7.4 Petcoke Use

Petcoke is used during the production of iron and steel. Petcoke is used directly in this process; however, it is not typically combusted as part of that process.

Fuel grade petcoke represents nearly 80 percent of worldwide production and can be a source of fuel for cement kilns and electric power plants. Calcined petcoke has the highest carbon purity and is used in the aluminum, graphite electrode, steel, titanium dioxide and other carbon consuming industries.

Petcoke is over 90 percent carbon and emits about 10 percent more CO_2 than Western bituminous coal on a per-unit-of-energy basis when it is combusted.[23] As petcoke has higher energy content than coal, less is needed to per unit of weight to generate the same amount of heat.

Public Comments

There were no public comments identified that related to the use of the exported petcoke for iron and steel production or other applications.

Conclusions

Typically petcoke is not exported to be directly combusted overseas; however, if all of the petcoke were combusted under similar conditions, the CO_{2e} emissions would be about 10% greater than the combustion emissions described above for coal.

If the petcoke were combusted overseas, the additional emissions of CO_{2e} , would provide a similar contribution to global climate change and sea level rise as described above.

7.5 Other Air Pollutants and Their Long Range Transport

Other pollutants are emitted during coal combustion and during the use of petcoke and coal in production of iron and steel. Principal pollutants include particulate matter (PM), sulfur oxides (SO_X), and nitrogen oxides (NO_X). Some unburned combustibles, including carbon monoxide (CO) and numerous organic compounds are emitted. Hydrogen chloride (HCl) and hydrogen fluoride (HF) are emitted as well. Smaller amounts of trace metals are also emitted during coal combustion.

Pollutants other than GHGs are difficult to quantify due to the number of variables that influence emissions. Pollutant emissions from coal combustion depend on the rank and composition of the fuel, the type and size of the boiler, firing conditions, load, type of control technologies, and the level of equipment maintenance. PM composition and emission levels are a complex function of boiler firing configuration, boiler operation, pollution control equipment, and coal properties.

[23] Congressional Research Service. 2013. Petroleum Coke: Industry and Environmental Issues. http://education.afpm.org/wp-content/uploads/CRS-RPT_R43263_2013-10-29.pdf

SO_X emissions include sulfur dioxide (SO_2), with a much lower quantity of sulfur trioxide (SO_3) and gaseous sulfates.

Air pollutants can be transported long distances from the point where they are emitted. However, characterizing the magnitude and impacts of transported pollution is difficult, but since some of the impacts could influence the days of exceedances, these transported contributions could be considered noteworthy from a regulatory and public health perspective. Characteristics of long-range transport vary by pollutant. For ozone, a broad, diffuse increase in background concentrations occurs. For PM, episodic, concentrated pollution plumes occur. The amount of pollution being transported on international scales is generally quite small compared to domestic sources.[24]

7.5.1 Public Comments

Neimeier et al. cites multiple studies regarding the long range transport of emissions due to the combustion of coal.[25] One study shows that the transport of fine dust, less than 2.5 μm in diameter, from Asia to the eastern Pacific and western North America (including California) is a regular component of North American tropospheric aerosol.[26] Furthermore, the concentration of fine dust attributed to Asia (5 $\mu m/m^3$ for PM_{10} and approximately 3 $\mu m/m^3$ for $PM_{2.5}$) is approximately one fourth of the health-based annual PM_{10} and $PM_{2.5}$ particle standards adopted by California[27]. Other studies trace airborne lead and polycyclic aromatic hydrocarbons from Asia to the west coast of the United States.[28,29]

Dr. David Pepper cited three scientific papers regarding the impact of air pollutant emissions from China on air quality in the United States[30]. These papers describe increased ozone and sulfate pollution in the United States from emissions originating in Asia.[31,32,33]

24 National Academy of Sciences, 2009. Global Sources of Local Pollution. Available at: http://dels.nas.edu/resources/static-assets/materials-based-on-reports/reports-in-brief/global_sources_brief_final.pdf. Accessed June 8, 2016.

25 Neimeier at al. 2015. Technical Memorandum Air Quality, Climate Change, and Environmental Justic Issues from Oakland Trade and Global Logistics Center. September 18, 2015.

26 VanCuren, R., T. Cahill (2006) Asian aerosols in North America: Frequency and concentrations of fine dust, Journal of Geophysical Research, 111(D20), DOI: 10.1029/2002JD002204

27 Ibid.

28 Ewing, S., J. Christenson, S. Brown, R. et al (2010) Pb Isotopes as an Indicator of the Asian Contribution to Particulate Air Pollution in Urban California, Environmental Science and Technology, 44(23): 8911-8916.

29 Lafontaine, S. J. Schrlau, J. Butler et al (2015). Relative influence of trans-Pacific and regional Atmospheric Transport of PAHs in the Pacific Northwest, US.

30 Email dated October 6, 2015 from Dr. David Pepper, Related Scientific Papers re: Transport of burned Coal pollutant from China – back to Oakland. (**OAK055274**)

31 Zhang, Lin, et al. 2008. "Transpacific transport of ozone pollution and the effect of recent Asian emission increases on air quality in North America: an integrated analysis using satellite, aircraft, ozonesonde, and surface observations."

32 Zhang, Lin, et al. 2009. "Intercontinental source attribution of ozone pollution at western US sites using an adjoint method."

33 Lin, Jintai, et al. 2014. "China's international trade and air pollution in the United States."

7.5.2 Conclusions

Coal combustion and petcoke/coal use for iron and steel production emit other air pollutants that can have impacts to human health and the environment. Although those emissions can be difficult to quantify due to the number of variables influencing emissions, it is reasonable to assume that some of these air pollutants will be transported to Oakland, including West Oakland, where they would contribute to already high pollutant concentrations, contribute to the existing number of days of exceedances of the ambient air quality standards (for PM2.5 in particular) and exacerbate health effects in three local communities classified as disadvantaged by CalEPA and by BAAQMD under the CARE program.

This page intentionally left blank

CHAPTER 8
Report Preparation

Report Preparers

Environmental Science Associates

350 Frank H. Ogawa Plaza, Suite 300
Oakland, California 94612

Project Director: Crescentia Brown, AICP
Project Manager: Victoria Evans
Deputy Project Manager: Cory Barringhaus

Technical Analysts:	Tim Rimpo Dan Sloat
Graphics, Production and Editing:	Logan Sakai Lisa Bautista Ron Teitel

Adelante Consulting, Inc.

Barbara Toole O'Neil, QEP
Principal Scientist

Marine Research Specialists

Steve Radis
Principal

This page intentionally left blank

Appendix A
Summary of Public Comments

ESA

TABLE A-1
SUMMARY OF PUBLIC COMMENTS FROM THE SEPTEMBER 21, 2015 PUBLIC HEARING

#			Health Effects	Safety Effects	GHG Effects
	Government Agencies				
	US Environmental Protection Agency				
1	*10-5-15 Letter - from EPA*	OAK055269	XX		
	Bay Area Quality Management District				
2	*Email 10/5/15 - Henry Hilken for BAAQMD/Air District re: Question 17*	OAK055270	XX		
	East Bay Regional Park District				
3	*Letter from John Sutter 10/5/15*	OAK055271	XX	XX	
	Alameda County Department of Public Health				
4	*Emailed Memorandum 10-6-15 - Muntu Davis, MD, MPH for Alameda County re F/U Qs 1, 2, 11, 12, 16*	OAK055272	XX	XX	
	Environmental & Other Organizations				
	Earthjustice				
1	*Letter 9/2/15 - Irene Gutierrez for Earthjustice*	OAK054814	XX	XX	XX
	Letter 9/14/15 - Irene Gutierrez for Earthjustice	OAK055275			
	Letter 9/21/2015 - Irene Gutierrez for Earthjustice	OAK055094	XX	XX	XX
	Letter 10/6/15 - Jessica Yarnall & Irene Gutierrez for Sierra Club/ Earthjustice et al re CCIG Studies & F/U Qs	OAK055275	XX	XX	XX
	Sierra Club				
2	*Email 10/6/15 - Jess Dervin-Ackerman for Sierra Club*	OAK055276	XX	XX	XX
	Golden Gate University Environmental Law and Justice Clinic				
3	*Letter 10/6/15 - from for Golden Gate University on behalf of Greenaction*	OAK055268			
	No Coal in Oakland				
4	*Email & Letter 9/18/15 - Lora Jo Foo for No Coal in Oakland*	OAK055274	XX	XX	XX
	Email 10/2/15 - Lora Jo Foo re: F/U Q 8	OAK055274	XX	XX	
	Other Groups				
5	*Email 10/6/15 - Dr. David Pepper for **Medical Advocates for Health Air***	OAK055274	XX		
6	*Email 10/6/15 - Colin Miller & Corrine Van Hook for **Bay Localize***	OAK055274	XX	XX	XX
7	*Email 10/6/15 Letter from Washington Burns, MD--**Prescott-Joseph Center for Community Enhancement***	OAK055274	XX	XX	
8	*Email 10/5/15 - Jahmese Myers for **East Bay Alliance for a Sustainable Economy***	OAK055274	XX		
9	*Email 10/5/15 - Deborah Silvey for **Fossil Free California***	OAK055274	XX		XX
10	*Email 10/5/15 - Rebecca Milliken for **Berkeley Climate Action Coalition***	OAK055274	XX		XX
11	*Letter 10/3/15 - Vien Truong for **Green for All***	OAK055274	XX		XX
12	*Letter 10/5/15 - Beth Gundston for **League of Conservation Voters of the East Bay***	OAK055274	XX		XX
13	*Email 9/6/15 - Al Brown, **West Oakland Project Area Committee** Member*	OAK054814	XX		
14	*Letter 9/5/15 - Michael Taffet for **Oak Center Neighborhood Association***	OAK054814	XX		XX
15	*Letter 7/30/15 - Adrienne Alvord for **Union of Concerned Scientists***	OAK054814	XX	XX	XX
	*Letter 4/23/15 - from Dr. Laura Wiseland for **Union of Concerned Scientists***	OAK055095	XX		XX

TABLE A-1 (Continued)
SUMMARY OF PUBLIC COMMENTS FROM THE SEPTEMBER 21, 2015 PUBLIC HEARING

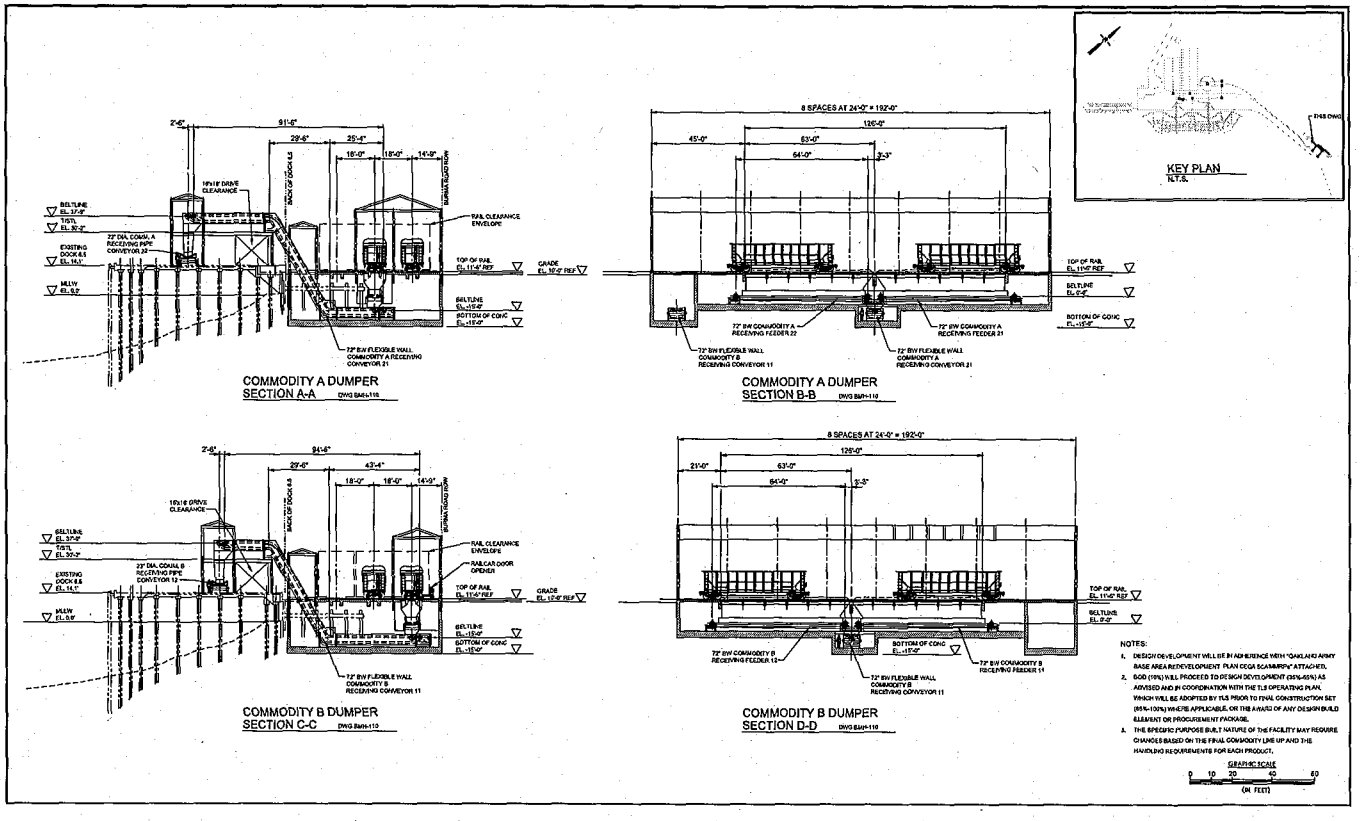
#			Health Effects	Safety Effects	GHG Effects
	Environmental & Other Organizations (cont.)				
	Other Groups (cont.)				
16	*Letter - 9/21/15: Morgan Wyenn for **Natural Resources Defense Council***	OAK055096	XX		XX
17	*Letter 9/21/15 - Jessica Wan and Ian Wren for **San Francisco Baykeeper***	OAK055096	XX	XX	XX
	Labor Organizations				
18	*Resolution 10/7/15 - Josie Camacho for Alameda Labor Council*	OAK055277	XX	XX	XX
19	*Letter 10/5/15 - Derrick Muhammad for ILWU*	OAK055277	XX		
20	*Letter 10/5/15 - Marie Walchek for California Nurses Association attaching ALC Resolution*	OAK055277	XX		XX
	Individuals				
1	*Email 10/5/15 - from Richard Grassetti, Environmental Consultant/CEQA Expert, re F/U Q 18*	OAK055273	XX	XX	
2	*Email 10/6/15 - Hilary Pearson for Sungevity*	OAK055274			XX
3	*Email 10/6/15 - John Behrens, videographer*	OAK055274	XX	XX	
4	*Email 10-6-15 - Paul Sanford, layperson*	OAK055274			XX
5	*Email 10-6-15 - from Barbara Haya, PhD re: F/U Qs 2 & 7-- UCBerkeley*	OAK055274			XX
6	*Email 10/6/15 - Josiah Johnson, PhD re: F/U Q 7*	OAK055274			XX
7	*Email 10/6/15 - Carolyn Norr, layperson re: F/U Qs 1, 3, 4, 7, 9*	OAK055274	XX		XX
8	*Email 10/5/15 - Kevin Mulvey, layperson*	OAK055274	XX	XX	XX
9	*Email 10/5/15 - Debra Singer, layperson*	OAK055274	XX		
10	*Email 10-4-15 - Paul Sanford, layperson*	OAK055274	XX	XX	
11	*Email 10/2/15 - James Vann, layperson*	OAK055274	XX		
12	*Email 10/1/15 - Jeff Perloff, Professor of Agriculture & Economics*	OAK055274	XX		XX
13	*Email 10/1/15 - Matthew Hart, layperson*	OAK055274	XX		XX
14	*Letter 9/14/15 - Paul English, epidemiologist PHD/MPH*	OAK054937	XX	XX	XX
15	*Email 9/16/15 - Michelle Levinson*	OAK054937			
16	*Email 9/8/15 - Musia Stagg*	OAK054814	XX		
17	*Testimony to City Council 9/21/15 - Dr. Jasmin Ansar, Economics Professor at Mills College*	OAK055095	XX	XX	XX
18	*Manuscript - Dr. Daniel Jaffer et al., "Diesel Particulate Matter and Coal Dust from Trains in the Columbia River Gorge"*	OAK055095	XX		
19	*Letter 9/21/15 - Dr. Bart Ostro*	OAK055095	XX	XX	XX
20	*Letter - Anita Loche for the Anita Loche Foundation*	OAK055096	XX		XX
21	*Letter/Memo - Maximilian Auffhammer*	OAK055096	XX		XX
22	*Email 4/8/15 - Jeff Holt from BMO Capital on Negative Press [partially redacted]*	OAK055096			
23	*Letter 9/21/15 - Paul Koretz, Councilmember for City of Los Angeles*	OAK055096	XX		XX
	Emails in Response to Follow-up Questions				
171	*157 Opposed / 14 Support*	OAK055278	XX	XX	XX

TABLE A-1 (Continued)
SUMMARY OF PUBLIC COMMENTS FROM THE SEPTEMBER 21, 2015 PUBLIC HEARING

#			Health Effects	Safety Effects	GHG Effects
	Letters of Support				
	Additional Letters of Support				
1	*Letter 9/16/15 - Wahid Tadros for California Engineering*	OAK054935			
2	*Letter 9/14/15 - Martin O'Neill for Flexco*	OAK054935	XX	XX	
3	*Letter - Bruce Giron for Giron Construction*	OAK054935	XX		XX
4	*Letter - Bishop Robert Jackson for ACTS Gospel*	OAK054935	XX	XX	
5	*Letter 9/15/15 - Victor Rollandi for SDV Services*	OAK054935	XX	XX	XX
6	*Letter 9/10/15 - Robert Selna*	OAK054935		XX	
7	*Letter 8/5/15 - Rome Aloise for Teamsters Jt. Council #7*	OAK054935	XX		XX
8	*Letter 9/9/15 - Washington Burns, MD*	OAK054935	XX		XX
9	*Letter 9/8/15 - Gregory Bohm for Alarcon Bohm*	OAK054815	XX		
10	*Letter 9/8/15 - Stephen Biggs for Biggs Cardosa Inc*	OAK054815	XX		
11	*Letter 9/8/15 - Martin Kaufman for Core Security*	OAK054815	XX		
12	*Letter 9/8/15 - Michael G. Yoell for Core Security*	OAK054815	XX		
13	*Letter 9/8/15 - Tony Prada for D-Line Constructors*	OAK054815	XX		
14	*Letter 9/8/15 - Chris Stotka for Industrial Railways Company*	OAK054815	XX		
15	*Letter 9/8/15 - Gregory McConnell for Jobs and Housing Coalition*	OAK054815	XX		
16	*Letter 9/7/15 - Kevin Jones for Riverside Terminal Concepts*	OAK054815	XX		
17	*Letter 9/8/15 - Daniel Nourse for ROJE Consulting*	OAK054815	XX		
18	*Letter 9/8/15 - Robert Au for ROJE Consulting*	OAK054815	XX		
19	*Letter 9/8/15 - Joe Sarapochillo for SK Builders*	OAK054815	XX		
20	*Letter 9/8/15 - Mary Larsen for Stormwater Specialists*	OAK054815	XX		
21	*Letter 9/8/15 - Gregory McConnell for The McConnell Group*	OAK054815	XX		
22	*Letter 9/8/15 - Brian Gates for Top Grade Construction*	OAK054815	XX		
23	*Letter 9/8/15 - Scott Erwin for Turner Flatiron*	OAK054815	XX		
24	*Letter 9/8/15 - Michael O'Brien for Turner Construction*	OAK054815	XX		
25	*Letter 9/8/15 - Steven Rule for Turner Construction*	OAK054815	XX		
26	*Letter 9/8/15 - Clifford Kunkel for Turner Flatiron*	OAK054815	XX		
27	*Letter - Ronald Batiste for Eagle Environmental Construction [partially illegible]*	OAK055097	XX	XX	
28	*Letter 9/18/15 - Andre Dubuque for Intermodal Sciences Liquids, LLC*	OAK055097	XX	XX	
29	*Letter 9/16/15 - Arthur Washington for Nor-Cal FDC*	OAK055097	XX	XX	XX
30	*Letter 9/18/15 - Joseph Sarapochillo for Oakland Builders Alliance*	OAK055097			

Appendix B
OBOT Schematic Figures

ESA

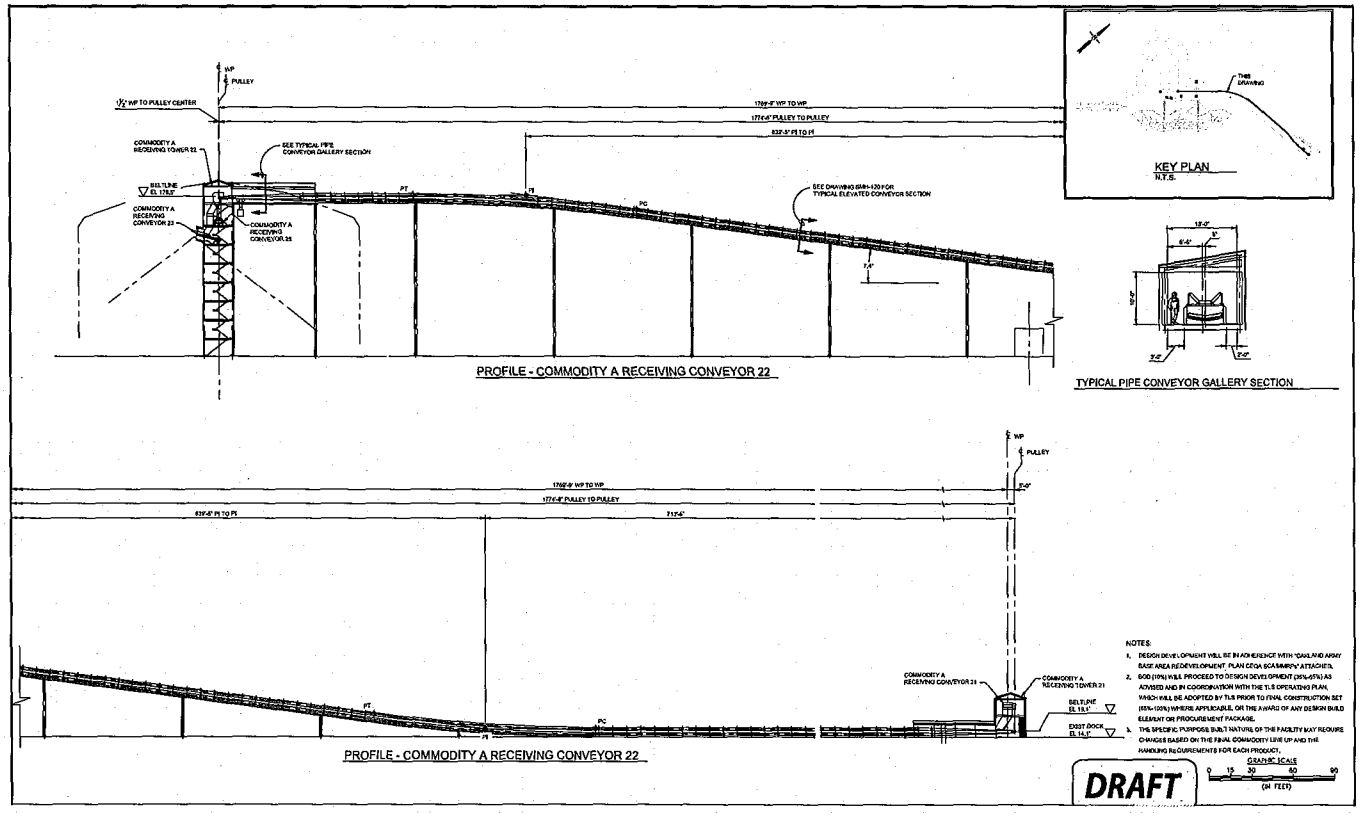


SOURCE: HDR

OBOT Health and Safety Effects . 150774

Figure App-1

Rail Car Unloading Facility

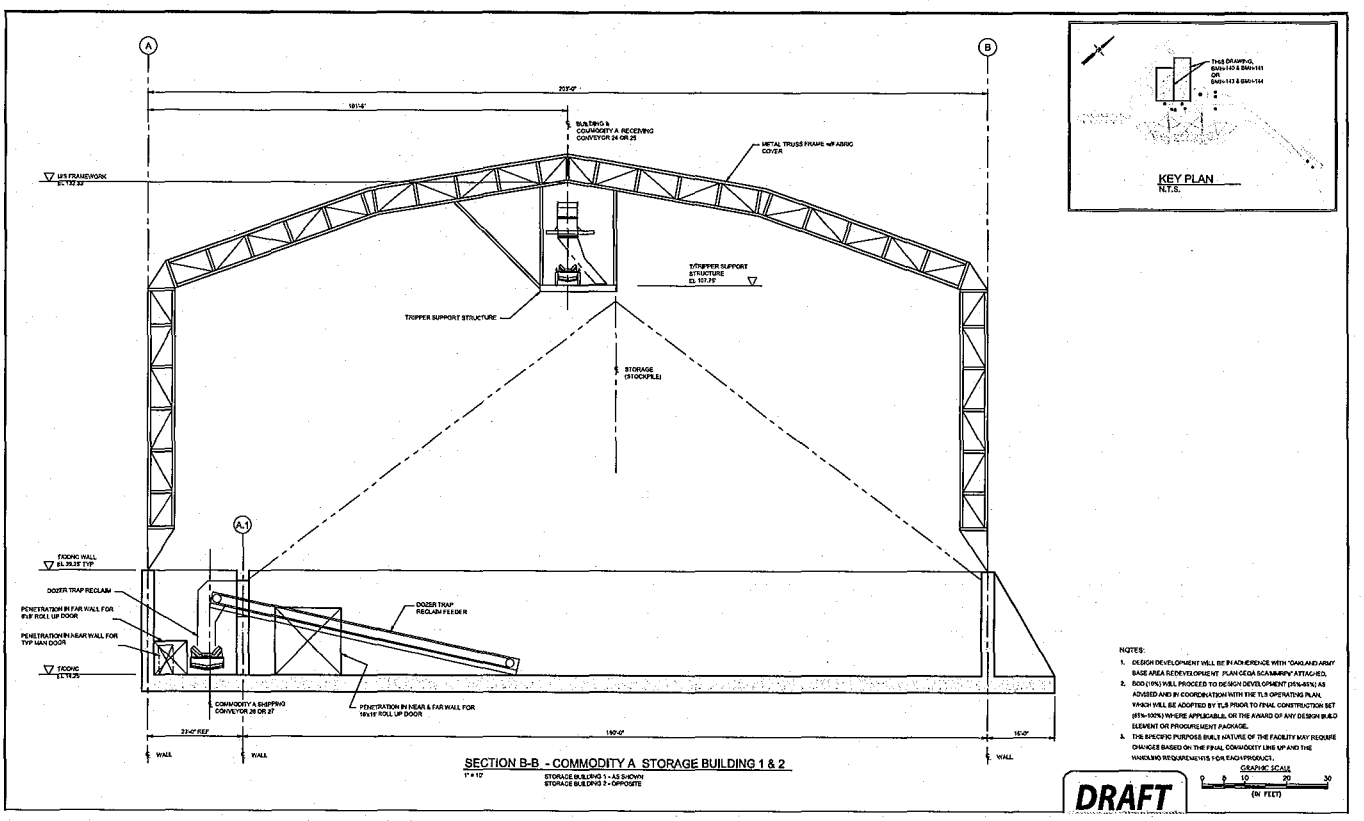


SOURCE: HDR

OBOT Health and Safety Effects . 150774

Figure App-2

Commodity A Conveyor

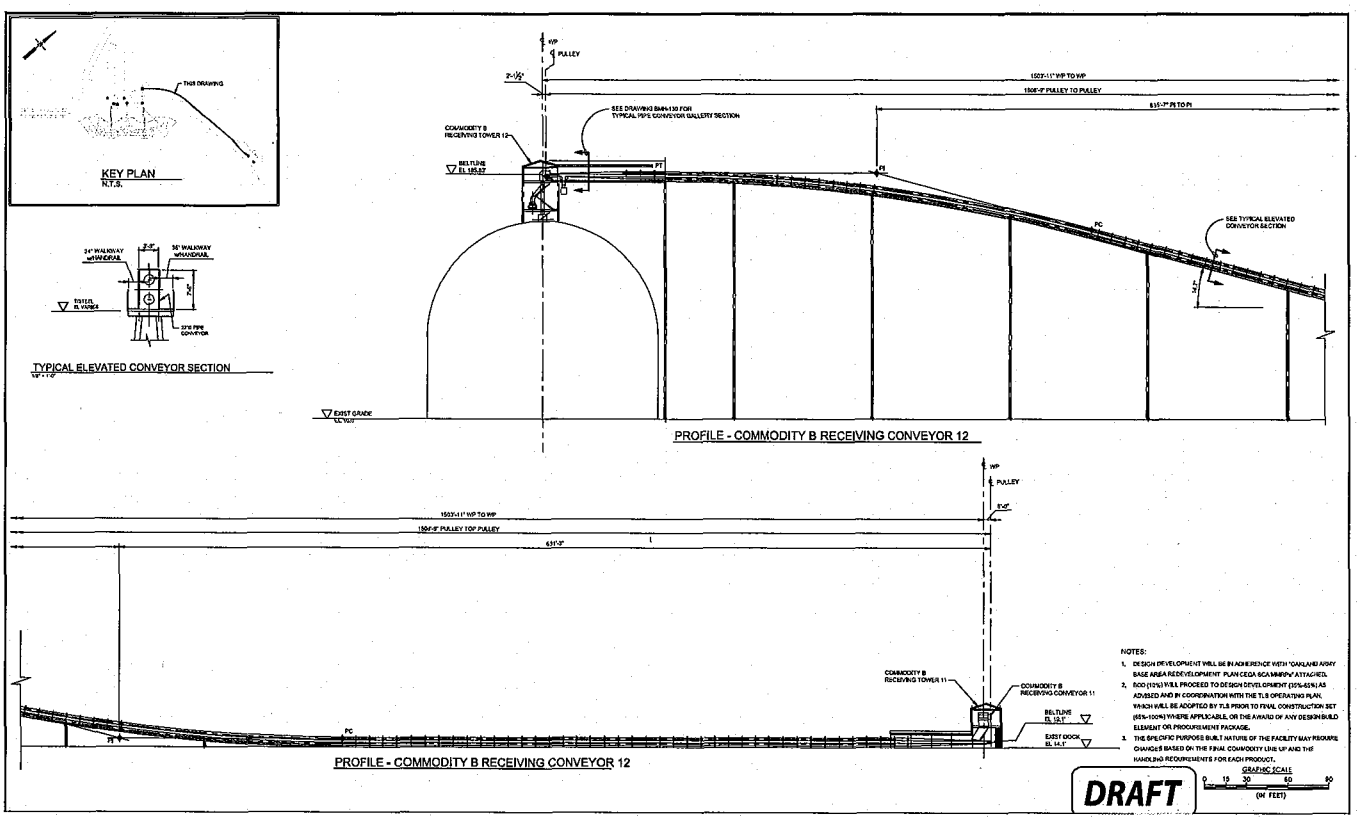


SOURCE: HDR

OBOT Health and Safety Effects . 150774

Figure App-3

Commodity A Storage Facility

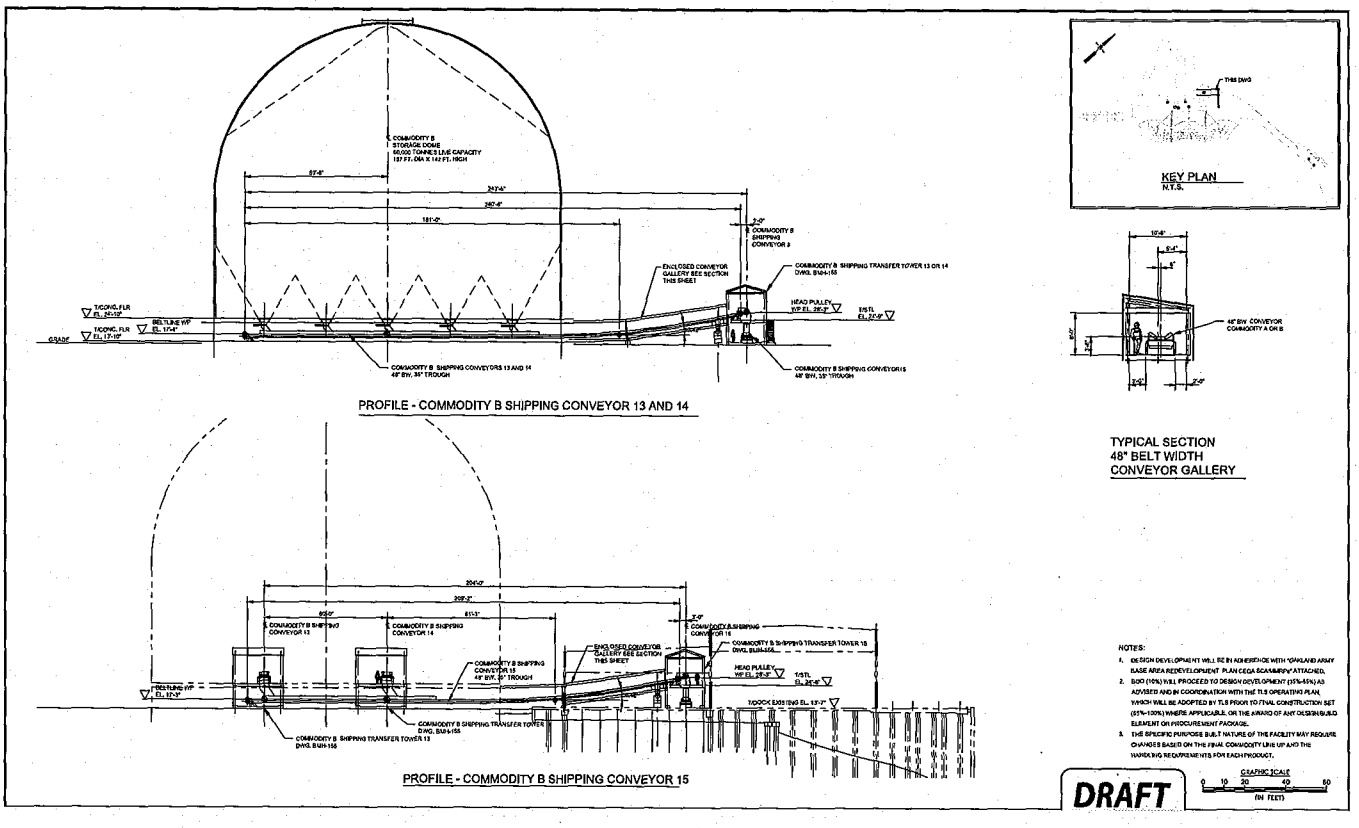


SOURCE: HDR

OBOT Health and Safety Effects , 150774

Figure App-4

Commodity B Conveyor



SOURCE: HDR

OBOT Health and Safety Effects . 150774

Figure App-5

Commodity B Storage Facility

Appendix C

Port of Oakland, Supplemental Agenda Report, Rejection of All Proposals Received in Response to RFP No. 13-14/06 for Lease of the Charles P. Howard Terminal (Berths 67-68), February 27, 2014

ESA

BOARD MTG. DATE: 2/27/14

SUPPLEMENTAL AGENDA REPORT

TITLE: Rejection of All Proposals Received In Response to Request for Proposals (RFP) No. 13-14/06 for Lease of the Charles P. Howard Terminal (Berths 67-68)

AMOUNT: Not applicable

PARTIES INVOLVED:

Corporate Name/Principal	Location
Bowie Resource Partners, LLC	Louisville, KY
California Capital Group/Kinder Morgan/MetroPorts	Oakland, CA
Schnitzer Steel Industries, Inc.	Oakland, CA

TYPE OF ACTION: Resolution

SUBMITTED BY: John C. Driscoll, Maritime Director

APPROVED BY: J. Christopher Lytle, Executive Director

SUMMARY

On October 7, 2013, Port staff issued Request for Proposals (RFP) No. 13-14/06 for lease of the Charles P. Howard Terminal (Berths 67-68). The Port received three proposals in response to the RFP. After reviewing and analyzing all the proposals received, staff recommends rejection of all proposals.

FACTUAL BACKGROUND

On September 26, 2013, Port staff presented an informational report to the Board of Port Commissioners (Board), recommending the issuance of an RFP for maritime uses at Charles P. Howard Terminal (Berths 67-68; the "property"). The RFP solicited broadly for any maritime use, as described in the September 2013 informational report, attached here as Exhibit A.

On October 7, 2013, the Port issued RFP No. 13-14/06 for lease of the property; the response period was 60 days. The RFP was disseminated in a variety of ways:

- Port website
- Advertisement in the Oakland Tribune
- Advertisement in 3 trade journals and/or affiliated websites (Journal of Commerce, American Journal of Transportation, and American Association of Port Authorities)
- Directly e-mailed to 54 seaport customers and maritime industry contacts
- Verbal communication with known interested parties or in response to inquiries about available property within the seaport

During the response period, seven companies attended the pre-proposal meeting held on October 18, 2013, 21 companies downloaded the RFP from the Port website, and three companies visited the data room to review documents made available for proposers to perform due diligence.

The RFP required respondents to address the following topics:

1. Company Information
2. Knowledge and Experience
3. Land Area Intended for Use/Occupancy
4. Term of Occupancy
5. Intended Use
6. Improvements
7. Rent
8. Financial Capacity
9. Additional Information

Item 5 included a request for detailed information on proposed measures or methods to minimize or avoid emissions of air pollutants, including but not limited to greenhouse gases, and other measures to maintain and enhance environmental performance. Item 9 provided proposers an opportunity to present any information the proposer believed was necessary to more fully describe the intended use and occupancy of the property but not otherwise covered in Items 1-8.

On the deadline of December 6, 2013, the Port received three proposals in response to the RFP. On December 27, 2013, Port staff transmitted a request for additional information to each of the proposers, with a submittal deadline from proposers of January 8, 2013. The purpose of the request was to clarify or address missing items in the proposals. The requests for supplemental information were tailored to each proposal and included items such as clarification of team members, current project references, measures to enhance environmental performance, experience with CEQA review, and proposed rent. Staff received supplemental information from two of the three proposers on or before the deadline.

ANALYSIS

Discussion of Proposals Received

The three proposals received were from the following entities:

- Bowie Resource Partners, LLC
- California Capital Group/Kinder Morgan/Metro Ports
- Schnitzer Steel Industries, Inc.

Bowie Resource Partners, LLC ("Bowie")
Bowie proposes a bulk operation on the entire 50-acre property, to handle borax, petroleum coke, coal, and iron ore pellets and fines. These materials would be brought into the Howard Terminal by rail and handled on-site through a system of conveyors and storage domes (150 feet high x 190 feet diameter), for ultimate loading onto ships for

export. This proposal provides for a minimum annual rent at commencement of the lease, along with increases in minimum rent and participation rent based upon volume, over the proposed 30-year lease term for the site (with one 30-year option).

Upon review and analysis of the Bowie proposal, staff believes that Bowie's proposed use and operation of the property raises environmental concerns related to the handling of commodities such as coal. Environmental concerns about handling commodities such as coal stem primarily from issues of fugitive dust and climate change. Port staff believes that operations such as those proposed by Bowie conflict with recently adopted Port policies and programs intended to create or support environmental sustainability, in particular:

- In 2009, the Port adopted the Maritime Air Quality Improvement Program (MAQIP), which aims to significantly reduce air pollutant emissions, and the associated health risk, from Port seaport operations. While the MAQIP focuses on diesel particulate matter, emissions of other pollutants such as greenhouse gases are also considered in the Port's air quality improvement efforts. The Port has received strong positive support and recognition from legislative, regulatory, and community organizations for its efforts in this area, through the implementation of initiatives such as the Comprehensive Truck Management and Shore Power Programs. The Port and its business partners have collectively spent hundreds of millions of dollars supporting the MAQIP goals. As a result of these and related efforts, in collaboration with all our stakeholders, the Port has seen an approximate 70% reduction in the amount of diesel particulate matter emissions and significant reductions in other air pollutant emissions since 2005 (baseline year).

- In 2010, the Port adopted a 5-year Strategic Plan, which sets forth a Guiding Principle of environmental stewardship for all Port activities, and a Strategic Goal of sustaining healthy communities through leading edge environmental stewardship. The adoption of this Guiding Principle and Strategic Goal was intended to further cement the Port's policy priorities with respect to environmental performance.

Additionally, the State of California has adopted a climate change policy that supports reductions in global greenhouse gas emissions, such as those produced by coal-fired plants. Although this policy applies only to California, it has become a vehicle for certain groups to oppose activities that promote greenhouse gas emissions. Controversy and litigation over coal and coal export facilities and the impacts along the *entire* supply chain has been significant in recent years throughout the U.S., including on the West Coast. Current (active) coal and petroleum coke terminals in California are located at the Ports of Long Beach, Benicia, and Stockton. A terminal at the Port of Los Angeles is no longer operational; the Port understands this was due primarily to changes in commodity market demand.

The proposed use also raises some potentially significant operational concerns about rail capacity, blockage of traffic along certain streets, and interference with other seaport

operations, due to a large number of rail car transfers between the property and near-dock railyard(s).

Staff does not believe that the Bowie proposal warrants long term leasing discussion in response to this RFP due to the practical difficulties posed by the above-stated potential conflicts with Port environmental policies and the stakeholder/community concerns that the proposed use is likely to present for the Port.

California Capital Group/Kinder Morgan/Metro Ports ("CCIG")
The CCIG proposal is also for bulk/commodity operations on the entire 50-acre property, but the type of commodities and details of the proposed operation are not specified. Based on other operations of team members elsewhere in the U.S., staff infers that commodities similar to those proposed by Bowie Resource Partners may be handled under this proposal, but this was not confirmed through the request for supplemental information (CCIG did not submit such information). No specific rental amount was included in the response.

Staff believes that the CCIG proposal does not provide sufficient information for staff to evaluate the uses proposed, the operations proposed, or the rent to be received by the Port. Therefore, staff believes that this proposal does not warrant further review in response to this RFP.

Schnitzer Steel Industries ("Schnitzer")
Schnitzer currently operates a metal recycling facility on private property adjacent to Howard Terminal. Schnitzer proposes relocating their current maintenance facility to a 3-acre portion of the property to improve operational efficiencies. They propose rent consistent with the existing Port Tariff 2-A rates applicable to the property, and request a term of 25 years.

The Schnitzer proposal is for only 3 acres of the total 50-acre site, which represents only about 6% of the property. While the proposal identifies a rental payment to the Port consistent with Port Tariff rates, staff believes that due to the small portion of the site proposed to be utilized, this proposal does not warrant long term leasing discussions in response to this RFP.

Supplemental Information

At the Board meeting of February 13, 2014, the Board received public comment from two of the proposers, who both requested an opportunity to provide staff with additional information regarding their proposals. The Board directed staff to meet with all three proposers to gather such additional information and to contact key stakeholders, including local community groups, to solicit feedback on the matter before the Board for consideration. Staff met with Bowie and Schnitzer on February 19, 2014, and has scheduled a meeting with CCIG on February 25, 2014 (the earliest date CCIG was available to meet). Staff has also contacted key community representatives from the Jack London District, co-chairs of the Port Maritime Air Quality

Improvement Plan Task Force[1], and Waterfront Action. Additionally, following a Public Records Act Request, staff has scheduled a meeting on February 21, 2014 with the Sierra Club, and other environmental organizations, at their request.

Staff has reviewed and analyzed the information provided by Bowie and Schnitzer during the meetings of February 13, 2014.

Bowie

Bowie provided a thorough explanation of its proposed operations at the Howard Terminal, including methods to minimize dust emissions on and off the property. In particular, as a modification to their original proposal, Bowie discussed its intent to pursue the use of covered rail cars for transport of material from the point of origin to the property. While the meeting with Bowie was very informative, staff believes the information received does not alter the previous conclusion reached by staff.

Attachment B to this Report (which also includes California Assembly Joint Resolution No. 35 "Relative to Exportation of Coal") presents staff's analysis of environmental concerns associated with the handling of commodities such as coal. Local community stakeholders contacted to date have expressed concern with establishing coal operations at the property for environmental and health reasons.

In sum, Bowie's proposal continues to raise concerns about air quality, greenhouse gas emissions and related issues of climate change and associated sea level rise, and about the high likelihood of a protracted and lengthy entitlement, environmental review, and permitting process if a use such as proposed by Bowie were to be pursued for the property. Furthermore, pursuit of such a proposal for this property is likely to generate significant local opposition from community stakeholders and environmental groups in the vicinity of the property. Since the Port would be the lead agency for review under the California Environmental Quality Act (CEQA) for the property, this opposition may expose the Port to potential litigation, in addition to a lengthy permit/entitlement process. For these reasons, commencement of operations on the property could be significantly delayed.

Schnitzer

While the meeting with Schnitzer did not yield new information, Schnitzer further explained its intended use of property, including the potential reconfiguration of operations at its current (privately owned) facility that could be accomplished with a long term lease of a 3-acre portion of the Port's property. Schnitzer also expressed some flexibility about the location of the acreage and the lease term proposed, although reiterated the desire for a long term lease to justify the capital improvements to their current facility. Staff continues to believe that entering into a long term lease of a 3-acre portion of the property at this time is not advantageous to the Port.

[1] Co-Chairs: GSC Logistics, West Oakland Environmental Indicators Project, Bay Area Air Quality Management District, Port of Oakland.

CCIG
CCIG is not available to meet until February 25, 2014; therefore, staff will provide a verbal update on this meeting at the Board meeting of February 27. While CCIG's proposal did not identify the types of commodities it proposes to handle at the property, to the extent coal is one such commodity, staff directs the reader to Attachment B of this Report.

In conclusion, based on Port staff's review and analysis of the proposals received, and of the information provided by the proposers in follow-up meetings as of the publication date of this Report, none of the proposals received appears to be suitable for commencing negotiations for lease of the property. Therefore, staff recommends rejection of all proposals received in response to the subject RFP.

Staff will continue to pursue short to medium-term or "interim" uses of the property in order to generate revenue, while continuing to consider options for long-term use of the property.

STRATEGIC PLAN

The action described herein would help the Port achieve the following goal and objective of the Port's Strategic Plan:

STRATEGIC PRIORITY AREAS	GOAL	OBJECTIVE	HOW THIS PROJECT IMPLEMENTS + WHEN
Sustainable Economic and Business Development	Create sustainable economic growth for the Port and beyond.	1. Increase revenue, job creation and small business growth. 4. Pursue strategic partnerships at all levels: local, regional, national and international.	The proposed rejection of all proposals received promotes the Port's partnerships with regulatory and community organizations in support of Port economic growth, and allows the Port to continue seeking opportunities to generate revenue from Port property.
Stewardship and Accountability	G. Sustain Healthy Communities Through Leading Edge Environmental Stewardship	1. Ensure effective communication and education regarding environmental and safety standards with business partners and the community. 2. Partner to share risk, accountability, benefits and improve environmental and safety compliance.	The proposed rejection of all proposals received promotes the Port's environmental initiatives, and allows the Port to continue seeking opportunities to generate revenue from Port property.

BOARD MTG. DATE: 2/27/14

BUDGET & FINANCIAL IMPACT

Port staff budgeted $~~750~~375,000 for revenue from the property in Fiscal Year (FY) 2013-14. This revenue may not be realized as a result of the proposed action. Given timing considerations and the results of the RFP, the budgeted revenue may not be realized even if staff were recommending entering into lease negotiations with one or more of the proposers.

STAFFING IMPACT

The proposed action will not have a staffing impact.

SUSTAINABILITY

The proposed action does not provide opportunities for sustainability.

ENVIRONMENTAL

The proposal to reject all proposals received in response to RFP No. 13-14/06 for lease of the Charles P. Howard terminal is not a project as defined by the California Environmental Quality Act (CEQA) and therefore is not subject to CEQA, and no environmental review is required (CEQA Guidelines Sections 15378 and 15060(c)(3)). Further, neither extension of the RFP response period nor negotiations with the proposers would result in a physical change in the environment, and therefore those options are not subject to CEQA (Section 15061(b)(3)). Any projects that may be proposed will undergo environmental review and will be brought to the Board for approval of CEQA findings.

MARITIME AND AVIATION PROJECT LABOR AGREEMENT (MAPLA)

The matters addressed under this action are not within the scope of the Port's MAPLA and the provisions of the MAPLA do not apply to this action.

OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

The proposed action is not subject to the Port's OCIP.

GENERAL PLAN

The proposed action does not change the use of any existing facilities or create new facilities; therefore a General Plan conformity determination pursuant to Section 727 of the City of Oakland Charter is not required.

LIVING WAGE

Living wage requirements, in accordance with the Port's Rules and Regulations for the Implementation and Enforcement of the Port of Oakland Living Wage Requirements (the "Living Wage Regulations"), do not apply because the proposed action is not an agreement, contract, lease, or request to provide financial assistance within the meaning of the Living Wage Regulations.

BOARD MTG. DATE: 2/27/14

OPTIONS

Staff has identified the following options for the Board's consideration:

1. Reject all proposals received in response to Request for Proposals No. 13-14/06 for lease of the Charles P. Howard Terminal (Berths 67-68); or
2. Direct staff to negotiate with one or more of the proposers who responded to Request for Proposals No. 13-14/06 for lease of the Charles P. Howard Terminal (Berths 67-68); or
3. Direct staff to extend the response period for Request for Proposals No. 13-14/06 to allow more time for potential interested parties to submit proposals

RECOMMENDATION

Staff recommends that the Board reject all proposals received in response to Request for Proposals No. 13-14/06 for lease of the Charles P. Howard Terminal (Berths 67-68).

BOARD MTG. DATE: 2/27/14

ATTACHMENT A

September 26, 2013 Informational Report re: Charles P. Howard Terminal

INFORMATIONAL REPORT

Request for Proposals – Howard Terminal (Berths 67-68)

September 26, 2013

The Maritime Division recommends the issuance of a Request for Proposals ("RFP") for maritime uses at Howard Terminal (Berths 67-68; the "property"). This recommendation is based on the following key reasons:

- Urgency of revenue
- Diversification of maritime activity at the seaport
- Entitlement and regulatory framework currently governing use of the property

This report outlines staff's approach for the RFP and requests input from the Board of Port Commissioners ("Board"), including scope, timeline, and any other matters.

Background

Pursuant to the Settlement Agreement amongst SSAT[1], SSAT Oakland, and the Port dated July 18, 2013 (the "Settlement Agreement") and the Termination Agreement between SSAT and the Port (the "Howard Termination Agreement") terminating SSAT's NEPAA at Howard Terminal, SSAT is required to vacate Howard Terminal with the understanding that the Matson Navigation operations will move to the Berths 60-63 terminal. While originally anticipated to occur on October 1, 2013, this relocation may occur as late as January 2014.

Given the impending vacancy of Howard Terminal, there is urgency to maintain business and revenue continuity for the property. As such, staff proposes to issue an RFP for Howard Terminal as expeditiously as possible and to limit such solicitation to maritime-related uses of the property.

Land Use Considerations

Staff proposes the RFP be limited to maritime and maritime-related uses, as opposed to all potential uses, given the following considerations and constraints:

Urgency of Revenue

With the loss of about $10 million/year of revenue at Howard Terminal starting October 1, 2013, finding a new tenant that can quickly establish operations and pay rent to the Port is critical. Because the property is already generally permitted and entitled for maritime and maritime-related uses, maintaining land use consistency will help expedite occupancy. However, it should be noted that even some maritime uses may require additional entitlement work; for example, construction of extensive break bulk facilities may require some California Environmental Quality Act ("CEQA") analysis and permitting work. This work, however, is expected to be relatively limited as compared to non-maritime uses of the property.

[1] The term "SSAT" in the Settlement Agreement refers to both SSA Terminals, LLC and SSA Terminals (Oakland), LLC. However, for purposes of this report, "SSAT" refers to SSA Terminals, LLC, and "SSAT Oakland" refers to SSA Terminals (Oakland), LLC.

Diversification of Maritime Activity
Howard Terminal provides an opportunity to diversify cargo type within the seaport. While the property may no longer be suitable for long-term container terminal operations due to the size, location, and other features of the property, it could be utilized for other maritime related uses such as break bulk, ro-ro autos/equipment, refrigerated cargo. These uses may yield revenue and/or indirect business benefits that the Port does not currently capture, which could help diversify the Port's maritime business model as well as marginally reduce exposure to future risk from over-reliance upon container terminal operations alone.

BCDC Seaport Plan
Howard Terminal is included in the Bay Conservation and Development Commission ("BCDC") Seaport Plan as a "Port Priority Use" area. This designation is based on a Bay-wide study performed by BCDC periodically to determine whether enough capacity exists across all Bay Area ports to accommodate anticipated cargo growth in the long-term future. Using Howard Terminal for non-maritime uses conflicts with this designation, and de-designation of lands from Port Priority Use requires a Seaport Plan amendment, which is a fairly lengthy and involved process. To pursue an amendment, the Port would be required to provide evidence that sufficient capacity exists within the remaining Port seaport properties, or elsewhere within the Bay Area Port priority lands, to support the long term maritime growth demands for the region. BCDC would then independently analyze that information before proceeding with an amendment.

Tidelands Trust Compliance
Howard Terminal is currently encumbered by the Tidelands Trust. Uses of the property are therefore generally limited to water oriented commerce, navigation, fisheries, and regional or state-wide recreational uses. Approval from the State Lands Commission would be required for any uses of the property that are not Tidelands Trust compliant. Many non-maritime activities are not considered Trust compliant uses and thus may require lengthy negotiations with the State Lands Commission, and potential legislation, before the Port could proceed with such non-Trust uses for the property.

Other Entitlement, Environmental & Regulatory Issues
Howard Terminal is subject to a complex set of regulatory permits and deed restrictions related to the hazardous materials in the soil and groundwater underlying the property. Development of new structures that penetrate the ground surface or changes in land use will require notices to regulatory agencies, and compliance with existing health, safety and soil management plans. Non-maritime uses will likely require extensive and expensive clean-up or other protective environmental measures, precluding expeditious turn-over of the property to a new rent-paying tenant. Further, non-maritime uses will likely require numerous land use entitlements including local land use permits, an amendment to the Oakland General Plan, and CEQA review. These activities could take several years to complete.

Proposal Evaluation
In order to review and evaluate proposals as expeditiously and meaningfully as possible, the scope of the RFP must be well defined. Staff believes that the "maritime only use" category will allow for diverse proposals while ensuring a robust evaluation process. Broadening the RFP scope further would complicate the evaluation process.

RFP - Scope

Staff proposes to structure the RFP in a manner that allows for diverse responses within the confines of maritime and maritime-related uses. Key scope elements will include:

Permitted Uses: Maritime port uses, including, without limitation, the following: (i) container terminal; (ii) ro-ro auto and vehicle processing; (iii) ro-ro equipment; (iv) break-bulk; (v) refrigerated cargo & warehousing; (vi) lumber, steel and building materials; (vii) local dry bulk – aggregate, cement; (viii) other dry bulk industrial products; (ix) dry bulk agricultural & forest products; (x) marine construction and vessel services; and (xi) truck parking or chassis/empty container storage. Uses that have significant adverse impacts, including, but not limited to, operational impacts on maritime activities elsewhere in the seaport, as determined by the Port, will not be considered.

Term: To be determined by Proposer; maximum of 66 years allowed.

Site Improvements: Performed by tenant at tenant's sole cost; property would be leased "as-is." Tenant responsible to obtain all applicable permits and other entitlements.

Payment Structure: Monthly minimum rent, with or without "up side."

RFP – Selection Process

Staff proposes to negotiate with up to three proposers. Because the proposals may be diverse in nature, the content and key issues for the negotiations that follow the initial selection of the top proposer(s) will be shaped by the proposed uses of the property. The following key criteria will guide the selection process; however the Port reserves the right to exercise broad discretion in the review and evaluation of all proposals received.

1. Compliance with stated maritime uses of the property and compatibility with other current uses at the seaport
2. Amount of minimum annual rent to the Port
3. Financial capacity of proposer to operate/develop property
4. Timing of occupancy (sooner is better)
5. Demonstrated experience to operate/develop property
6. Job generation, quality/type of jobs, and environmental considerations
7. Local participation and compliance with applicable Port policies

RFP – Schedule & Next Steps

Staff is proposing a relatively aggressive schedule for the RFP process, based on the following approximate milestone dates. This schedule may need to be revised based on the proposals received, the number of proposers with whom the Port chooses to negotiate, and the complexity of the proposals under consideration.

September 26, 2013	Informational report to Board
October 4, 2013 (on or about):	Issue RFP, subject to extent of input from the Board on 9/26/13
December 5, 2013 (or 60 days after issuance)	Proposals due
December 2013	Identify short list of proposers, if appropriate responses received
January 2014	Start negotiations (or evaluate options for tenancy if RFP process did not result in desirably responses)
March 2014	Conclude negotiations with winning proposer(s)
April 2014	Finalize deal documents (if negotiations were successful) and present to the Board for approval

If the proposed RFP process does not yield responses in line with Port's strategic goals, staff will return to the Board to discuss pursuing other available options.

BOARD MTG. DATE: 2/27/14

ATTACHMENT B

February 19, 2014 Port Staff Memo re:
Environmental Issues Associated with Handling Export Coal, including Assembly Joint Resolution No. 35 "Relative to Exportation of Coal"

PORT OF OAKLAND

MEMO

TO: Mr. Richard Sinkoff, Director of Environmental Programs and Planning

FROM: Ms. Anne Whittington, Environmental Assessment Supervisor

DATE: February 19, 2014

SUBJECT: Environmental Issues Associated With Handling Export Coal

On December 20, 2013, staff were asked to prepare an analysis of issues associated with handling export coal cargo based on proposals received by the Port of Oakland (Port) in response to the Howard Terminal Request for Proposals (RFP) No. 13-14/06. Mr. Jerry Jakubauskas, Assistant Environmental Planner, and I prepared this memo in response to that request.

The Trafigura/Impala/Bowie proposal describes their proposed bulk cargo, including coal, in some detail, so the analysis below is based on information in their proposal. Their projected annual throughput volume by the 5th year of operations is 8.3 million tons, consisting of coal (4.0 million tons), iron ore fines (2.0 million tons), iron ore pellets (1.0 million tons), petroleum coke (1.0 million tons) and borax (0.3 million tons).

The CCIG/Metro Ports/Kinder-Morgan proposal did not contain enough information to evaluate proposed uses, but we note that this proposal also appeared to indicate coal as one of the possible commodities that could be handled at Howard Terminal.

The environmental issues associated with handling export coal at Howard Terminal (Berths 67-68) can be parsed into three broad areas based on location and the Port's ability to control or address relevant environmental issues. Some of the topics for environmental analysis are identified below:

Terminal site (most control)

- Fugitive coal dust and local air quality. The Port should require that the facility be state of the art (storage domes or silos to store coal; enclosed conveyor and ship-loader systems). This is technically feasible, and is largely described in the proposal.
- Bituminous coal, one of the proposed cargo types, is associated with a risk of explosions; the proposer noted in a clarification letter dated January 8, 2014 that "coal is subject to spontaneous combustion under the right conditions" (p. 8)
- Train lengths of up to 1.5 miles and rail crossings in surrounding areas and within the port.
- New spur tracks and other Port operations.
- Deepening dredging of Berths 67-68 (and associated environmental and permit review) could potentially be required to accommodate larger and more heavily laden vessels than those now calling at Howard Terminal.
- Terminal redevelopment would trigger the latest storm water regulations.
- Visual impacts of the proposed eleven 190 ft. wide by 150 ft. high storage domes.
- Noise impacts of the loading, unloading and conveyor systems.
- Increased rail traffic could reduce previously approved and mitigated rail capacity for future

container cargo at the Port of Oakland.

- Construction of a 4,000 ft. long underground conveyor transport system in 10 ft. by 8 ft. tunnels to serve the storage domes will likely encounter hazardous materials in the soil and groundwater, and will require the developer to remediate as needed and install a protective cap in accordance with the "Covenant to Restrict Use of Property, Environmental Restriction, The Charles P. Howard Terminal Site, Oakland, Alameda County" that has been recorded with Alameda County on March 3, 2003. This would be true of any development that involves ground disturbance and digging, but hazardous materials management becomes a larger issue with the extensive soil disturbance proposed by an underground conveyor system. The weight of the proposed bulk cargo on the terminal could affect migration of the plume of hazardous coal tar located underneath the existing cap.
- Potential legal challenges may delay implementation of the project.
- Diesel particulate matter from train engines (although Trafigura/Impala/Bowie proposes Tier IV switch locomotives to reduce those impacts) and the emissions from Oakland's overall cargo growth have already been analyzed and mitigated[1]. The railroads (BNSF and UP) have a memorandum of understanding with the California Air Resources Board (CARB) about locomotive emissions.

Transport of coal from source to terminal (moderate control)

- BNSF representatives testified at a 2009 U.S. Department of Transportation Rail Energy Transportation Advisory Committee meeting[2] that, over a 400-mile trip, 645 pounds of coal dust were lost per car. With an average coal train length of 125 cars, 80,625 pounds of fugitive coal dust would be released into the surrounding environment per 400-mile trip.
- Although BNSF now requires that coal loading operators apply a surfactant, which can reduce coal dust by up to 85 percent, it is estimated that approximately 15 percent (12,000 pounds or 6 tons) is still being released into the environment and adjacent communities over the course of a 400-mile journey. Furthermore, coal dust may be deposited on ballast (the rock that lines the tracks) resulting in potential future clean-up requirements for ballast along the length of the track.
- The approximate distance from Utah and Colorado to the Port of Oakland is 800 to 1,200 miles, so Port staff estimate that 12 to 18 tons of coal dust could be lost during a trip from mines in those areas to the Port (other coal mining areas such as Wyoming and Montana are in the range of 1,100 miles from Oakland).
- The effect of train lengths of up to 1.5 miles on rail crossings in communities along the rail line and noise from train safety horns and rail crossing barriers.
- While studies recommend that coal rail cars should be covered to avoid release of coal dust, that is not yet a standard industry practice in the United States. If all rail cars are completely covered throughout the trip, as Bowie is proposing, this may considerably reduce, or even eliminate, the loss of coal dust.

[1] Emissions from overall cargo throughput at the Port of Oakland were analyzed and mitigated through environmental documents considered and adopted by the Board of Port Commissioners: "Oakland Army Base Area Redevelopment Plan Environmental Impact Report" (2002), "2012 Oakland Army Base Project Initial Study/Addendum" (2012), and Standard Conditions of Approval/Mitigation Monitoring and Reporting Program (2012).

[2] http://www.stb.dot.gov/stb/docs/RETAC/2009/September2009/Minutes%209-10-09.pdf

Coal consumption in Asia (little or no control)

- The proposed project may run counter to California climate change policy that supports reductions in global greenhouse gas (GHG) emissions, such as those produced by coal-fueled plants, to slow down climate change. Increased GHG concentrations in the atmosphere promote global warming, with increased ocean temperatures leading to sea level rise.
- The California Assembly passed, and Governor Jerry Brown signed, Joint Resolution 35, Chapter 139 - Relative to exportation of coal[3], which urges the President and Congress to restrict waterborne export of coal for electricity generation to any nation that fails to adopt regulations on GHG or hazardous air emissions as restrictive as those adopted by the U.S., or to secure and approve international agreements that result in emissions reductions equal to those in the U.S.
- International trade of cheap coal as compared to cleaner domestic energy sources, such as solar and wind.
- The potential for increased acid rain and atmospheric mercury deposition in the Pacific Ocean and Western U.S. from particulates that travel from Asia to North America due to wind patterns.

CEQA/NEPA and permits

The Port as lead agency will determine the type of California Environmental Quality Act (CEQA) document (i.e., Initial Study [IS]/Negative Declaration [ND], IS/Mitigated Negative Declaration [MND], or Environmental Impact Report [EIR]), the subject matter covered, public outreach procedures and schedule, document review cycles and other matters pertinent to cost and schedule.

Preparation and approval of a ND or MND may take six to nine months to complete, while an EIR may take a year or longer to complete. Time frames could be further extended, depending on the environmental topic studies required, the level of controversy, the number of comments, and any legal challenges. An EIR may be warranted to protect the project from certain types of legal challenge.

A permit from the San Francisco Bay Conservation and Development Commission (BCDC) would be required for new construction since most of Howard Terminal is within the BCDC jurisdictional area. Permit approval would take approximately nine months or longer, and BCDC would likely require public access mitigation for new construction. Furthermore, due to existing environmental deed restrictions, coordination with and approvals from the Department of Toxic Substances Control would also be required.

Any in-water work, such as berth deepening, that is not covered by an existing U.S. Army Corps of Engineers regulatory permit may necessitate environmental review under the National Environmental Policy Act (NEPA).

[3] http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120AJR35

Potential controversy and other coal export facilities

Opposition to a coal export facility could come from the State of California (see attached California Assembly Joint Resolution 35, Chapter 139 - Relative to exportation of coal) and from any number of environmental and community groups that have expressed public concern regarding potential local, regional, and global impacts of U.S. ports exporting coal to Asia, and the harmful effects of burning coal on global warming and sea-level rise. Furthermore, U.S. Environmental Protection Agency staff wrote a letter to the U.S. Army Corps of Engineers about the potential health impacts, controversy, and endangered species impacts of coal export facilities, along with the need to examine cumulative impacts from the mine to the final user in Asia[4]. See *Figure 1: Major North American Coal Ports* for a summary of major coal ports in North America. Current coal terminal facility proposals facing tremendous public scrutiny include:

Gateway Pacific Terminal (Bellingham, WA)

- Opposed by community, environmental and local Native American groups
- Terminal, transport, and foreign consumption issues similar to those previously mentioned for Howard Terminal

Millennium Bulk Terminal (Longview, WA)

- Over 163,000 comments received on scope of environmental review
- Opposed by community and environmental groups
- Terminal, transport, and foreign consumption issues similar to those previously mentioned for Howard Terminal

Based on this information, the Port could be involved in protracted discussions and potential litigation regarding operation of a coal export facility.

West Coast coal terminals no longer operating

Port of Portland (1980s)

- Coal market proved to be unstable and unreliable

Port of Los Angeles (1997-2006)

- Demand failed to meet minimum annual guarantee requirements and the terminal was shut down.

Existing coal and petroleum coke terminals in California

Port of Long Beach - Metro Ports (Pier G)

- Terminal supports the receipt, storage and vessel loading of coal and petroleum coke sold for export and consists of six enclosed petroleum coke and coal storage facilities
- Terminal is 23 acres (Howard Terminal is 50 acres), with covered storage for 540,000 tons
- Other handled products include potash, borax, sodium sulfate, soda ash, concentrates, and prilled sulfur

Port of Benicia - Benicia Industries (Wharf No. 95)

- Exports petroleum coke and petroleum products

[4] http://media.oregonlive.com/environment_impact/other/EPA%20letter%20about%20PEIS.PDF

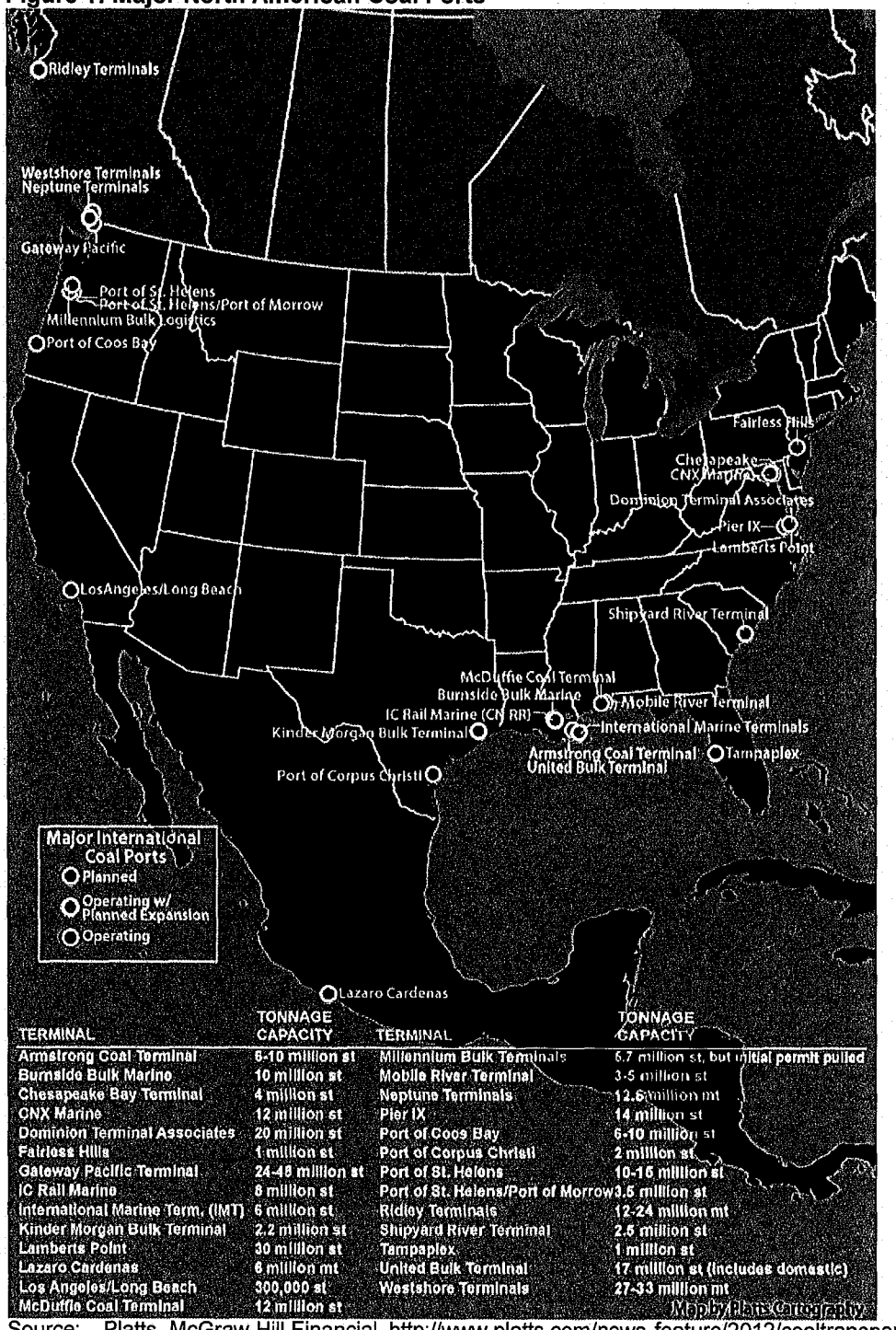
Port of Stockton

- Exports 2.3 million tons of coal per year

Attachment: *California Assembly Joint Resolution 35, Chapter 139, Relative to exportation of coal*

cc: Anne Whittington, Environmental Programs and Planning
Jerry Jakubauskas, Environmental Programs and Planning
Delphine Prévost, Maritime

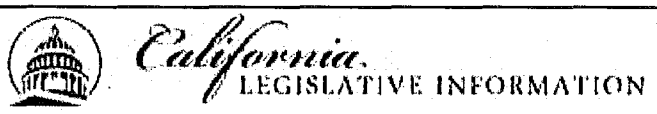
Figure 1: Major North American Coal Ports



TERMINAL	TONNAGE CAPACITY	TERMINAL	TONNAGE CAPACITY
Armstrong Coal Terminal	6-10 million st	Millennium Bulk Terminals	6.7 million st, but initial permit pulled
Burnside Bulk Marine	10 million st	Mobile River Terminal	3-5 million st
Chesapeake Bay Terminal	4 million st	Neptune Terminals	12.5 million mt
CNX Marine	12 million st	Pier IX	14 million st
Dominion Terminal Associates	20 million st	Port of Coos Bay	6-10 million st
Fairless Hills	1 million st	Port of Corpus Christi	2 million st
Gateway Pacific Terminal	24-48 million st	Port of St. Helens	10-16 million st
IC Rail Marine	8 million st	Port of St. Helens/Port of Morrow	3.5 million st
International Marine Term. (IMT)	6 million st	Ridley Terminals	12-24 million mt
Kinder Morgan Bulk Terminal	2.2 million st	Shipyard River Terminal	2.5 million st
Lamberts Point	30 million st	Tampaplex	1 million st
Lazaro Cardenas	6 million mt	United Bulk Terminal	17 million st (includes domestic)
Los Angeles/Long Beach	300,000 st	Westshore Terminals	27-33 million mt
McDuffie Coal Terminal	12 million st		

Map by Hans Cartography

Source: Platts, McGraw-Hill Financial, http://www.platts.com/news-feature/2012/coaltransport/map, accessed February 19, 2014.



AJR-35 Exportation: coal. (2011-2012)

Assembly Joint Resolution No. 35

CHAPTER 139

Relative to exportation of coal.

[Approved by Governor September 18, 2012. Filed with Secretary of State September 18, 2012.]

LEGISLATIVE COUNSEL'S DIGEST

AJR 35, Williams. Exportation: coal.

This measure urges the President of the United States and the 112th Congress to enact legislation to restrict the transshipment for waterborne export of coal for electricity generation to any nation that fails to adopt rules and regulations on the emissions of greenhouse gases or hazardous air emissions that are at least as restrictive as those adopted by the United States or, in the alternative, to secure and approve international agreements to ensure all nations adopt regulations and technology that result in emissions reductions equal to those in place in the United States. The measure would urge the Governor of California to inform the Governors of the States of Oregon and Washington of the significant health risks to the people of the Pacific Coast states if large coal export terminals and coal transport expansions are licensed and permitted to operate on or near the coast of the States of Oregon and Washington.

Fiscal Committee: yes

WHEREAS, California law requires electricity providers to procure not less than 33 percent of retail sales of electricity from renewable energy resources by December 31, 2020; and

WHEREAS, California has emerged as a global leader in the transition from fossil fuel dependence to a clean energy economy; and

WHEREAS, California law limits long-term investments in baseload generation by utilities to powerplants that meet strict greenhouse gas emissions standards. According to the State Energy Resources Conservation and Development Commission, no existing coal plant has demonstrated that it currently complies with the greenhouse gas emissions limit on long-term investments in baseload generation; and

WHEREAS, The United States Environmental Protection Agency in December 2011 issued regulations requiring coal -fired powerplants to significantly reduce emissions of mercury, arsenic, and other toxic pollutants within four years; and

WHEREAS, Hazardous emissions from coal powerplants threaten health locally and at great distances; and

WHEREAS, Coal exports from United States ports to Asia have risen by almost 240 percent from 3.8 million tons in 2009 to over 13 million tons in 2010; and

WHEREAS, The environmental consequences of massive coal exports to Asia are severe, including the burning of millions of tons of coal that releases hazardous air emissions into the atmosphere and increased mountaintop removal projects; and

WHEREAS, Burning coal for electricity generation worldwide is the main cause of greenhouse gas emissions and the planetary climate crisis; and

WHEREAS, Coal burning has contributed to significant human health risks in all age groups through the emissions of ozone, sulfur dioxide (SO2), particulate matter, nitrogen oxides (NOx), mercury, and carbon dioxide (CO2); now, therefore, be it

Resolved by the Assembly and the Senate of the State of California, jointly, That the Legislature urges the President of the United States and the 112th Congress to enact legislation to restrict the transshipment for waterborne export of coal for electricity generation to any nation that fails to adopt rules and regulations on the emissions of greenhouse gases or hazardous air emissions that are at least as restrictive as those adopted by the United States or, in the alternative, to secure and approve international agreements to ensure all nations adopt regulations and technology that result in emissions reductions equal to those in place in the United States; and be it further

Resolved, That the Legislature urges the Governor of California to inform the Governors of the States of Oregon and Washington of the significant health risks to the people of the Pacific Coast states if large coal export terminals and coal transport expansions are licensed and permitted to operate on or near the coast of the States of Oregon and Washington; and be it further

Resolved, That the Chief Clerk of the Assembly transmit copies of this resolution to the President and Vice President of the United States, the President pro Tempore of the United States Senate, the Speaker of the House of Representatives, to each Senator and Representative from California in the Congress of the United States, and to the author for appropriate distribution.

2/27/14
Item 6.5
DC/kk

BOARD OF PORT COMMISSIONERS
CITY OF OAKLAND

RESOLUTION REJECTING ALL PROPOSALS RECEIVED IN RESPONSE TO REQUEST FOR PROPOSALS NO. 13-14/06 FOR LEASE OF THE CHARLES P. HOWARD TERMINAL (BERTHS 67-68).

WHEREAS, the Board of Port Commissioners ("Board") has reviewed and evaluated Board Agenda Report Item No. 6.5, dated February 27, 2014 (the "Agenda Report") and related agenda materials, has received the expert testimony of Port of Oakland ("Port") staff, and has provided opportunities for and taken public comment in connection with the Agenda Report; now, therefore, be it

RESOLVED, that in acting on this matter, the Board has exercised its independent judgment in making the findings and determinations contained in this resolution based on substantial evidence in the record and facts and relies upon the facts, data, analysis, and findings set forth in the Agenda Report and in related agenda materials and by testimony and other information received in connection with the subject matter of the Agenda Report; and be it

FURTHER RESOLVED, that the Board hereby finds and determines as follows:

1. The Request for Proposal for the Lease of Charles P. Howard Marine Terminal (Berths 67-68), RFP No.: 13-14/06 (hereafter, the "RFP"), reserved to the Board the right to exercise broad discretion in the review and evaluation of all proposals received in response to the RFP, including, without limitation, the right to (a) reject any or all proposals, (b) cancel or modify in part or in its entirety the RFP, and (c) decide to undertake the project or to terminate the project at any time prior to approval of a formal contract.

2. For reasons stated in the Agenda Report and other information received in connection with the Agenda Report, it is in the best interest of the Port to reject all proposals received in response to the RFP; and be it

300764

FURTHER RESOLVED, that in the exercise of the broad discretion reserved to itself in the RFP, the Board hereby rejects all proposals received in response to the RFP and elects to terminate the RFP immediately; and be it

FURTHER RESOLVED, that the Executive Director is hereby directed to issue any notices and take such other steps as the Executive Director, in consultation with the Port Attorney, determine to be necessary to reject all such proposals and to terminate the RFP.

DRAFT

300764

Appendix D
GHG Emissions from Coal Combustion as Estimated by Public Commenters

ESA

APPENDIX D

GHG Emissions from Coal Combustion as Estimated by Public Commenters

Earth Justice et al. by SSR, Neimeier et al.

This commenter states: "The proposed 10.5 million tons of coal shipped annually through OBOT will contribute approximately 30 million tons of CO2 each year to climate change. This is approximately equivalent to the size of seven average power plants."

The commenter used an emission factor of 2.86 tons of carbon dioxide per ton of coal combusted. This emission factor is based on coal with a carbon content of 78% and a heating value of 14,000 Btu per pound, which would emit about 204.3 pounds of carbon dioxide per million Btu when combusted and would be similar to the coal shipped through OBOT (bituminous coal from Utah would produce 204.1 pounds of carbon dioxide per million Btu when combusted)[1]. However, while the commenter estimated carbon dioxide emissions using a representative emission factor, the estimate of 30 million tons of carbon dioxide each year is based on 10.5 million tons of coal shipped annually through OBOT. According to the Basis of Design, approximately 5.51 million tons of coal will be shipped through OBOT annually. Based on this coal throughput, approximately 14.3 million metric tons of carbon dioxide would be produced if all coal was combusted using methodology the commenter used.

Earth Justice cites the Union of Concerned Scientists when they mention:

> "Each ton of coal burned by a typical coal plant will generate 2.6 million tons of carbon dioxide. Thus, Oakland exports of 10 million tons of coal will result in 26 million tons of carbon dioxide emissions."

It appears that the commenter made a misstatement in their calculation. If each ton of coal burned would generate 2.6 million tons of carbon dioxide, then 10 million tons of coal would produce 26 trillion tons of carbon dioxide. However, the combustion of coal does not produce 2.6 million tons of carbon dioxide per ton of coal. The commenter most likely meant to say that each ton of coal burned would generate 2.6 tons of carbon dioxide, which is supported by their referenced footnote from the Union of Concerned Scientists (a coal-fired power plant that burns 1,430,000 tons of coal produces 3.7 million tons of carbon dioxide, which approximately equals 2.6 tons of

1 Energy Information Administration, Quarterly Coal Report, January-April 1994, DOE/EIA-0121(94/Q1) (Washington, DC, August 1994), pp. 1-8.

carbon dioxide per ton of coal combusted)[2]. This emission factor is reasonable and similar to other emission factors for the amount of carbon dioxide produced per ton of coal combusted.

According to the Basis of Design, approximately 5.51 million tons of coal will be shipped through OBOT annually. Based on this coal throughput, a recalculation provides that approximately 13 million metric tons of carbon dioxide would be produced if all coal was combusted using methodology the commenter used. This emission factor is reasonable and similar to other emission factors for the amount of carbon dioxide produced per ton of coal combusted.

Haya states:

> "I understand that the coal terminal would be able to export approximately nine million tons of coal per year. If this amount were exported and combusted, it would produce around 17 million tonnes of carbon dioxide per year..."

In calculating the amount of carbon dioxide produced, the commenter used reasonable assumptions (though not referenced). However, while the commenter estimated carbon dioxide emissions using a representative emission factor, the estimate of 17 million tonnes (metric tons) of carbon dioxide each year is based on nine million tons of coal shipped annually through OBOT. According to the Basis of Design, approximately 5.51 million tons of coal will be shipped through OBOT annually. Based on this coal throughput, approximately 9.4 million metric tons of carbon dioxide would be produced if all coal was combusted using methodology the commenter used. The emissions calculated are reasonable and similar to other emission factors for the amount of carbon dioxide produced per ton of coal combusted.

No Coal in Oakland comments:

> "Building an export terminal designed to send up to 10 million tons per year of coal to Asian export markets for the next 66 years is a massive carbon commitment. Indeed, the magnitude of this carbon commitment is staggering. As a matter of simple arithmetic, dedication of OBOT facility to coal exports could result in the burning of two-thirds of a billion tons of coal during the 66-year term of the developer's lease-a quantity of coal sufficient to produce over 1.5 billion tons of CO_2."

The commenter uses the same reference as Earth Justice et al. by SSR, Niemeyer et al[3]. However, the commenter extends the time period looked at to sum the total amount of CO_2 emissions produced over a 66-year lease. The commenter also used 10 million tons per year of coal; according to the Basis of Design, approximately 5.51 million tons of coal will be shipped through OBOT annually. The commenter is correct in that the combustion of 10 million tons of coal per year for 66-years would result in over 1.5 billion tons of CO_2 released to the atmosphere (specifically, 1.9 billion tons of CO_2 based on 2.86 tons of CO_2 released per ton of coal combusted).

---

2 Union of Concerned Scientists. How Coal Works. Available at: http://www.ucsusa.org/clean_energy/coalvswind/brief_coal.html#.V1nUgPkrK74. Accessed June 9, 2016.

3 See (EIA, 1994).

Josiah Johnston states:

> "If 4.4 million metric tons of coal is exported and burned annually, its direct carbon emissions would be three times larger than California's entire annual emission reductions (See this spreadsheet for calculation: https://goo.gl/16qeyh)."

The commenter calculated 13 million metric tons of CO_2 produced from the 4.4 million metric tons of coal assumed to be exported. The commenter uses the same emission factor as Earth Justice et al. by SSR, Niemeyer et al. and No Coal in Oakland[4]. The calculation is reasonable and in the expected range for the amount of coal assumed to be combusted. At the terminal's proposed throughput (5 million metric tons of coal annually), the amount of CO_2 annually would be approximately 14.3 million metric tons.

Deborah Silvey of Fossil Free California states:

> "It therefore makes no sense for Oakland to allow such a damaging coal project to endanger its citizens—especially its most vulnerable—at the same time as it would add over 12.5 million tons of greenhouse gas emissions per year."

The commenter does not provide any reference or citations as to how the quantity of greenhouse gas emissions was estimated. Therefore, a review of the calculations cannot be performed. Based on other commenters, the range of greenhouse gas emissions presented is within the range that can be reasonably expected for the combustion of coal.

Berkeley Climate Action Coalition comments:

> "So while the state is setting aggressive carbon-reduction targets, this terminal would allow significant amounts of the most carbon-polluting fuel to be brought to market, resulting in the release of as much as 1.5 billion tons of CO_2."

The commenter does not provide any reference or citations in how the quantity of greenhouse gas emissions was estimated. Therefore, a review of the calculations cannot be performed. Based on an estimate by another commenter (No Coal in Oakland), this estimate may have been performed for the timeframe of the lease (66-years).

4 See footnote 11 (EIA, 1994).

Appendix E

Selected Photos of Rail and Terminal Activities

ESA

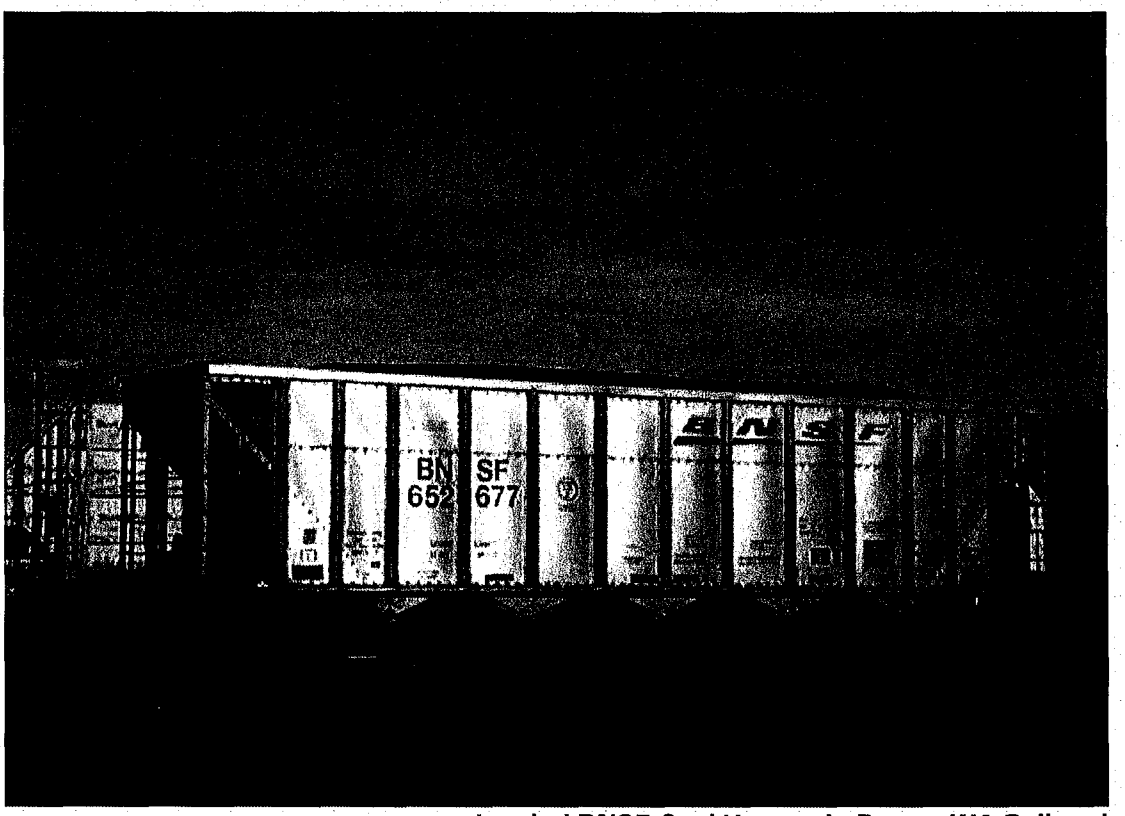
BNSF coal train from Powder River Basin, Wyoming

CSX coal train

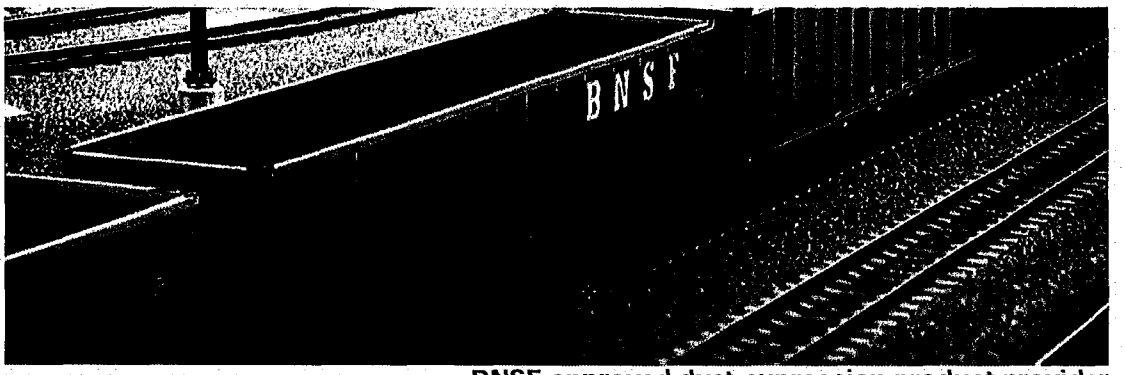
Norfolk and Southern coal train

Machines contour and spray coal when loading on rail cars to prevent dust releases

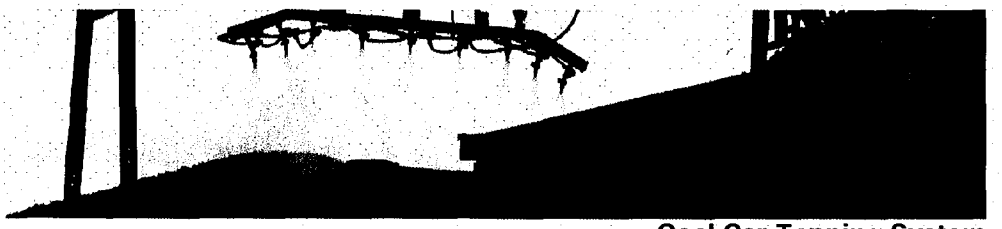
SOURCE: Jo Dee Black, Great Falls (Mont.) Tribune



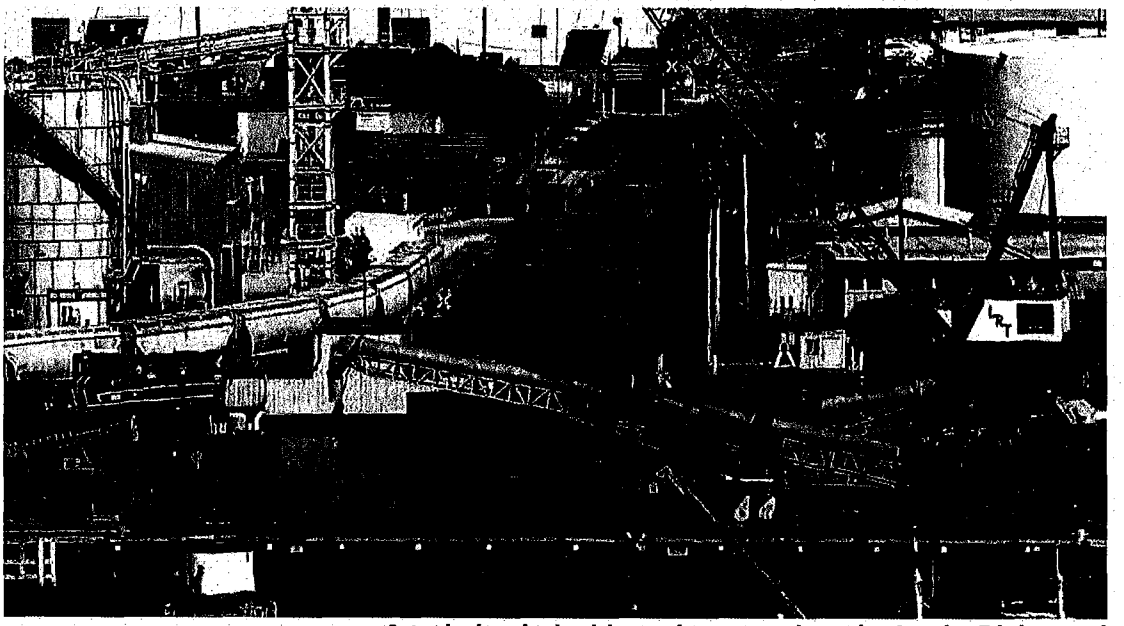
Loaded BNSF Coal Hopper in Pasco, WA Railyard
SOURCE: Coal Train Fact Check for the League of Women Voters by Bob Vance, P.E



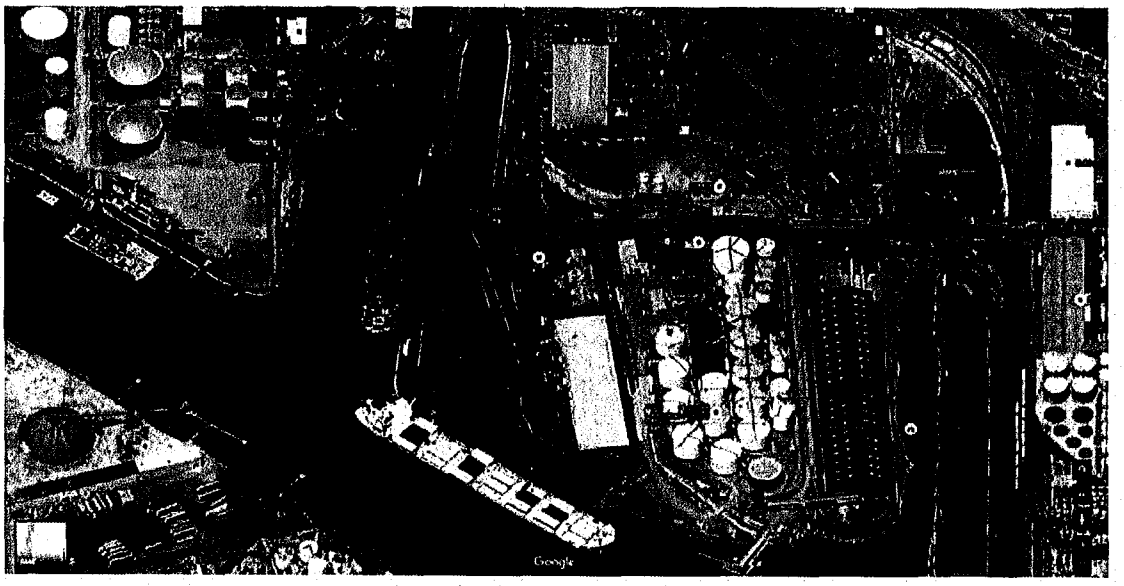
BNSF approved dust supression product provider
SOURCE: http://www.midwestind.com/applications/rail-car-topping/



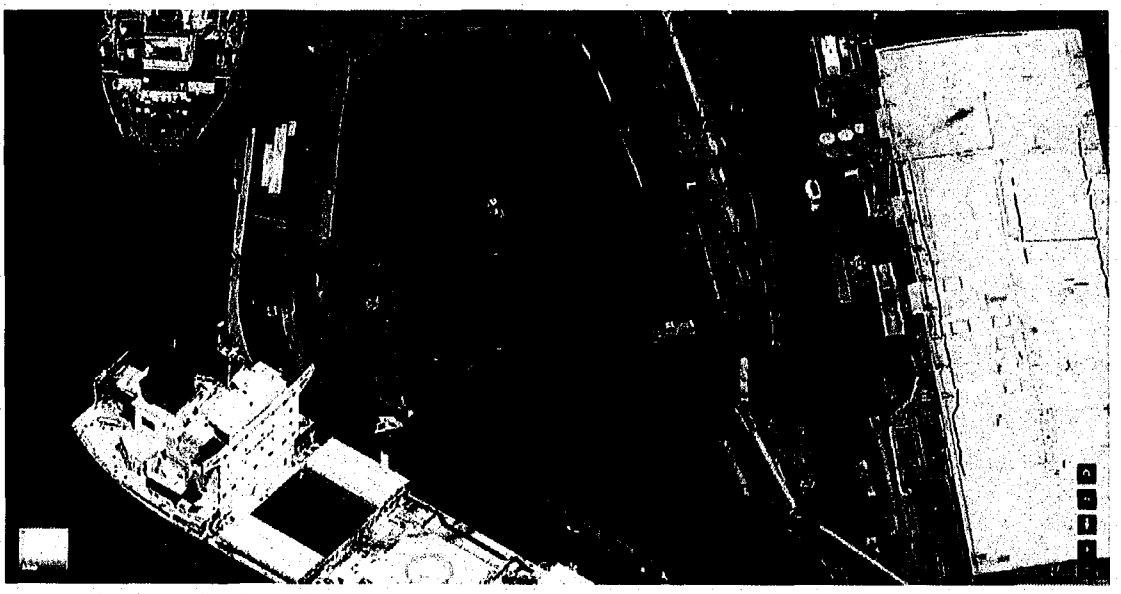
Coal Car-Topping System
SOURCE: http://www.midwestind.com/product/coal-car-topping-system/

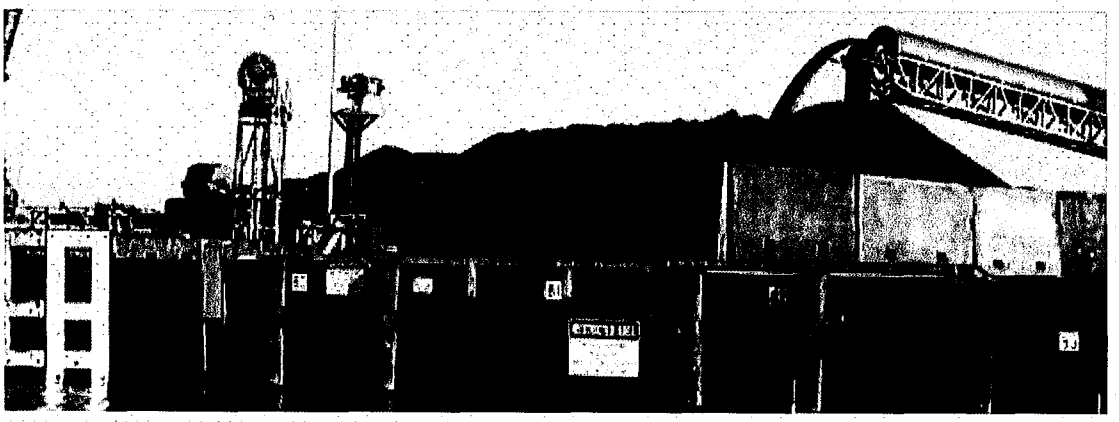


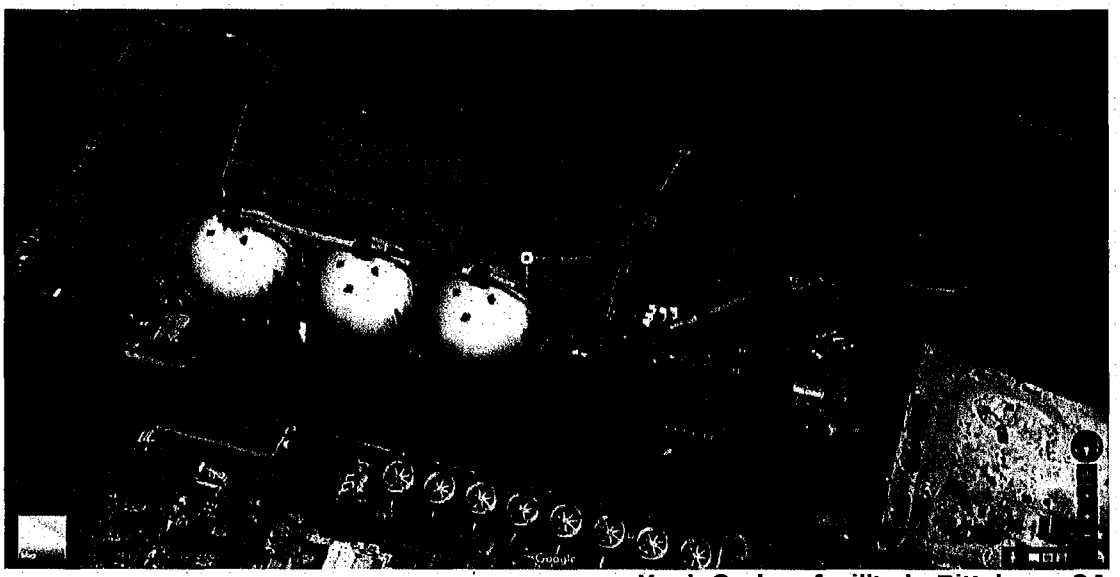
A train loaded with coal approaches the Levin-Richmond Terminal in Richmond, Calif., on Thursday, July 23, 2015
PHOTO: Carlos Avila Gonzalez, The Chronicle



Google







Koch Carbon facility in Pittsburg, CA

Coke and Coal Shiploader Fire: Los Angeles Port

Related Capabilities

- Fire Origin / Cause Investigations
- Heavy Equipment Fires
- Metallurgy / Materials Evaluation

Two fires occurred within five months on a coal and petroleum coke shiploader operating at the Los Angeles Port. The first fire occurred in September 2000; approximately eight hours after the shiploader had ceased operating for the day. The shiploader was reconstructed to its original design and after approximately 500 hours of operation, a second fire occurred in February 2001, one hour after the shiploader had ceased operating.

Exponent's investigation of these fires included a design assessment of the shiploader that incorporated a unique shuttling and luffing conveyor system. We also determined the fire origin and spread mechanism by analyzing the burn patterns on the shiploader and conducting belt-stretch analysis, laboratory scale combustion tests on coke and coal mixtures, metallurgical examination of the conveyor idlers and bearings, and review of applicable standards.

Figure 1: Shiploader during first fire.

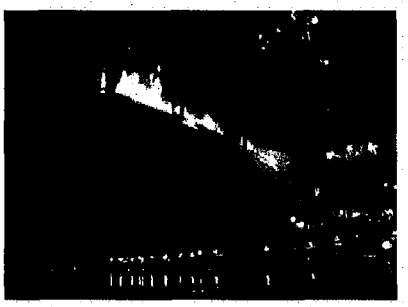


Figure 2: Shiploader during second fire

Our investigation demonstrated that the outer race of a failed bearing from one of the conveyor return idlers reached temperatures over 1100°F, sufficient to ignite coal and coke particles that had migrated into the bearing. The hot embers ignited a significant amount of coal and coke debris that had accumulated in a pocket near the bearing due to the geometry of the conveyor idler frame. This initial fire ignited the non fire-retardant conveyor belt that was part of the original design. The belt eventually snapped after it caught fire, spreading the fire to other parts of the shiploader and causing extensive damage.

Exponent determined that design considerations are available to prevent coke and coal accumulations around rotating machinery and conveyors and these design alternatives can minimize the likelihood of similar fires.

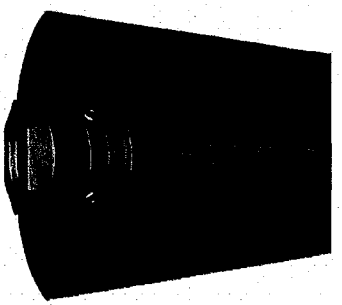
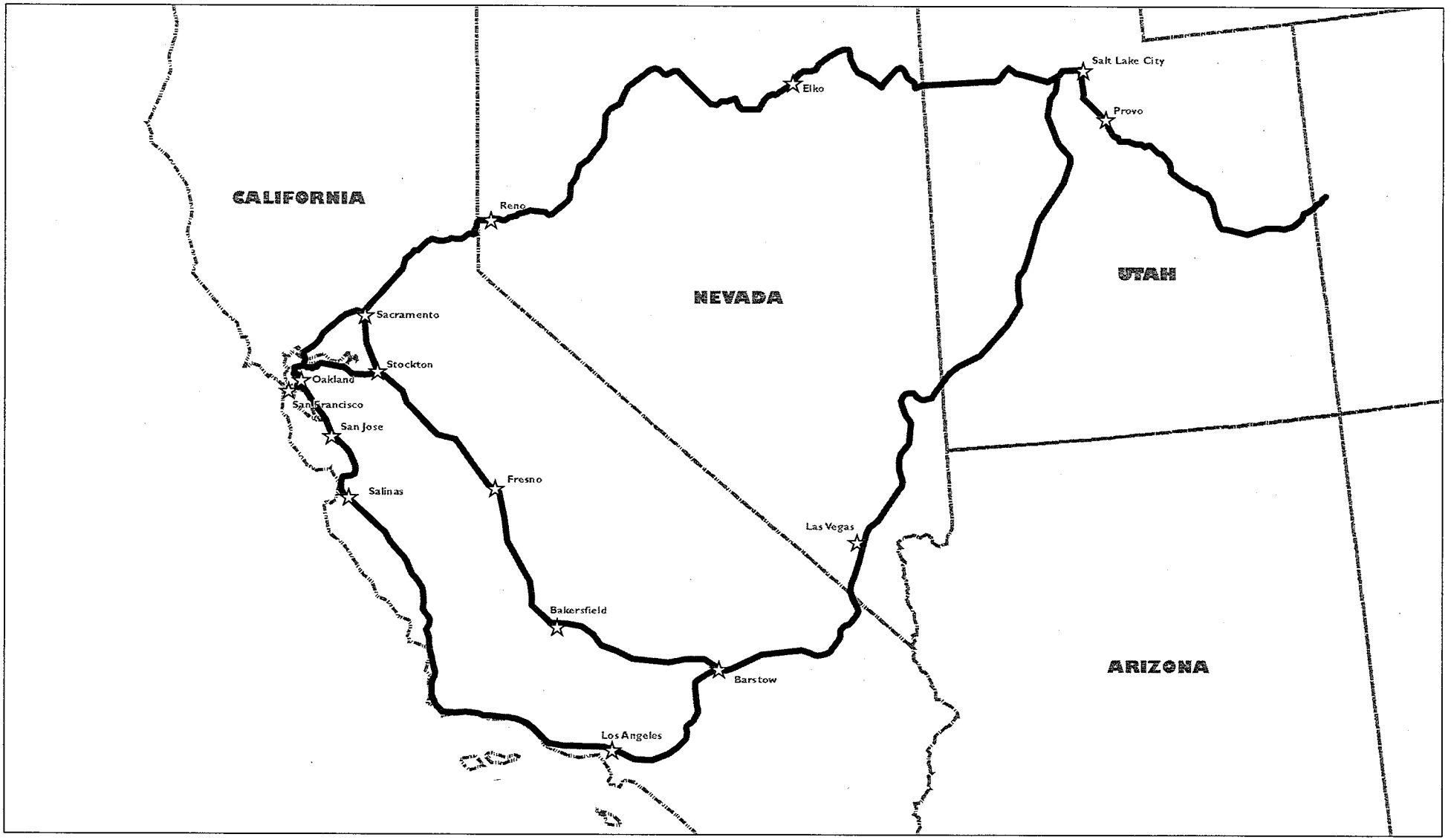


Figure 3. Cutaway view of roller showing bearing and seal.

Related Publication: Carnahan, R, Reza, A. Dracup, B., Ross, B., and Christiansen, E., "A Case Study of Two Shiploader Fires in a Coal and Pet Coke Facility," 11th International Conference, Fire and Materials, San Francisco, CA,



Rail Routes between Utah and Bay Area

0 50 100 Mile

Planning and Building Department June 2016

ATTACHMENT D

Klein, Heather

From: Woo, Winnie
Sent: Thursday, June 23, 2016 12:45 PM
To: Klein, Heather
Subject: FW: Confirming no bulk coal at Port of Oakland

From: John Driscoll [mailto:jdriscoll@portoakland.com]
Sent: Wednesday, June 22, 2016 4:57 PM
To: Cappio, Claudia
Cc: Chris Lytle
Subject: Confirming no bulk coal at Port of Oakland

Dear Ms. Cappio:

This email is to reiterate and confirm exchanges of information between Port and City representatives of the following regarding the shipment, handling or processing of bulk coal on Port of Oakland property.

In 2014 during its deliberations on the uses for one of the Port's terminal facilities, the Board of Port Commissioners specifically rejected the handling or processing of bulk coal on and from Port-owned terminal facilities. Coal is a bulk product and shipped in bulk. Bulk coal is not shipped through the Port of Oakland maritime terminals. Neither the Port of Oakland nor its tenants own or operate facilities on Port property that handle or process bulk coal.

Rgds,

John

John C. Driscoll
Director of Maritime
Port of Oakland
Office: (510) 627-1243
Cell: (510) 775-4031
Email: jdriscoll@portoakland.com

Attachment E

Community Air Risk Evaluation Program

The Community Air Risk Evaluation Program unites government, communities, and businesses to address areas of concentrated air pollution and related public health effects in the Bay Area.

While overall air pollution continues to decrease in the Bay Area, some communities still experience higher pollution levels than others. These communities are generally near pollution sources (such as freeways, busy distribution centers, and large industrial facilities) and negative impacts on public health in these areas are greater. The CARE Program aims to reduce these health impacts linked to local air quality.

The goals of the CARE Program are to:

- Identify areas where air pollution contributes most to health impacts and where populations are most vulnerable to air pollution.
- Apply sound scientific methods and strategies to reduce health impacts in these areas.
- Engage community groups and other agencies to develop additional actions to reduce local health impacts.

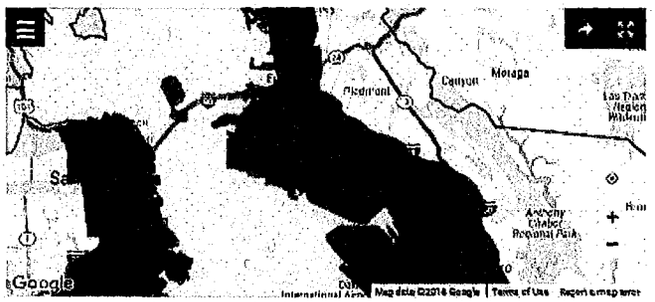
Impacted Areas

The map below shows areas with elevated pollution levels based on detailed emissions inventories and air dispersion modeling that the Air District has identified as impacted. ArcGIS shapefiles for these areas are available.

CARE Program Report

In 2014, the Air District issued a report summarizing the accomplishments of the CARE Program and appointed Task Force over the past decade. The report describes how the program provides a useful framework for guiding policy decisions, developing effective air quality programs in impacted areas, and fostering positive partnerships with community groups.

This report, local field studies, and other CARE Program documents are available for review.

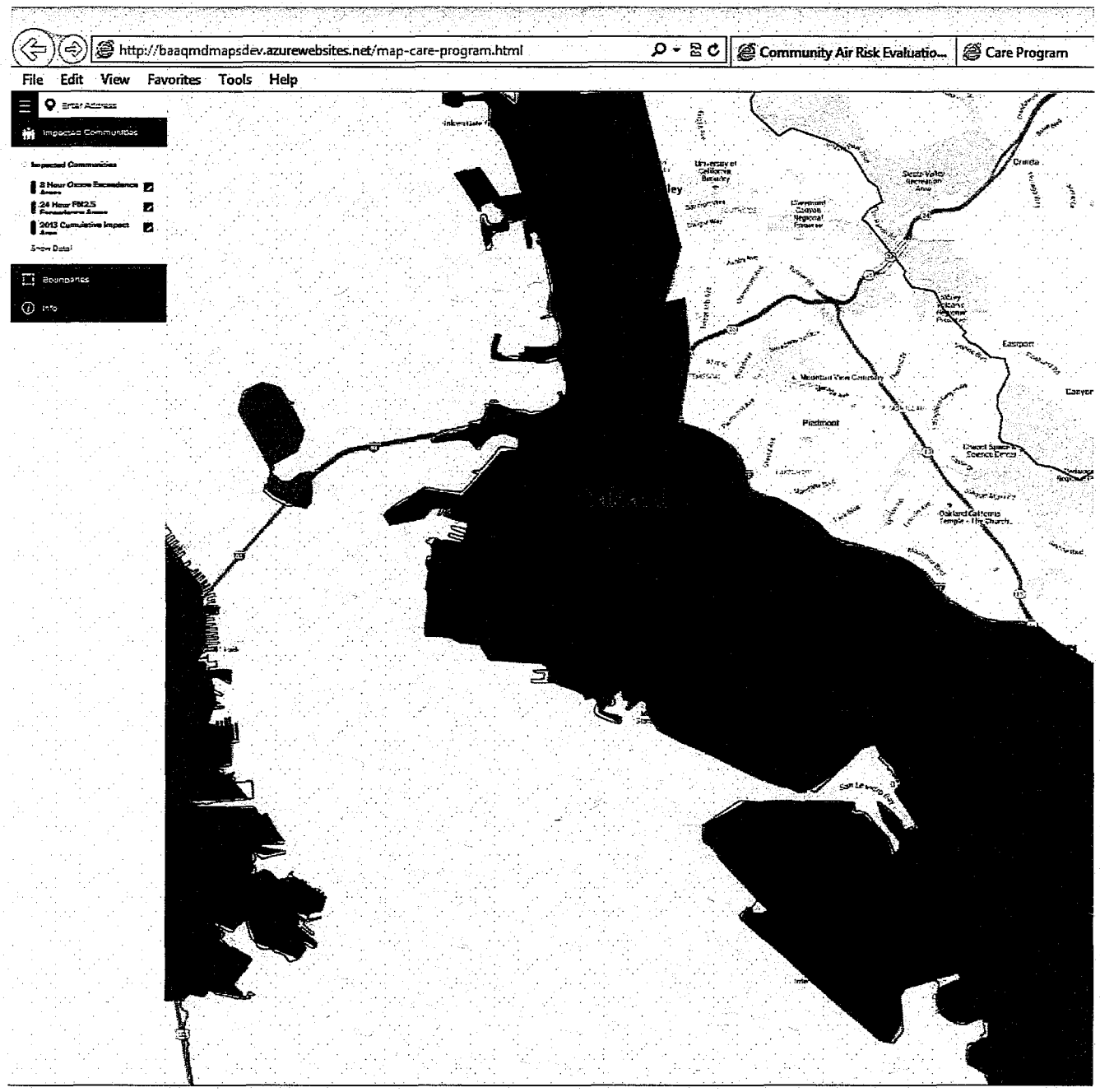


Contact Us

Virginia Lau
Advanced Project Advisor, Planning and Research
415.749.4696

Contact Us >

Attachment F

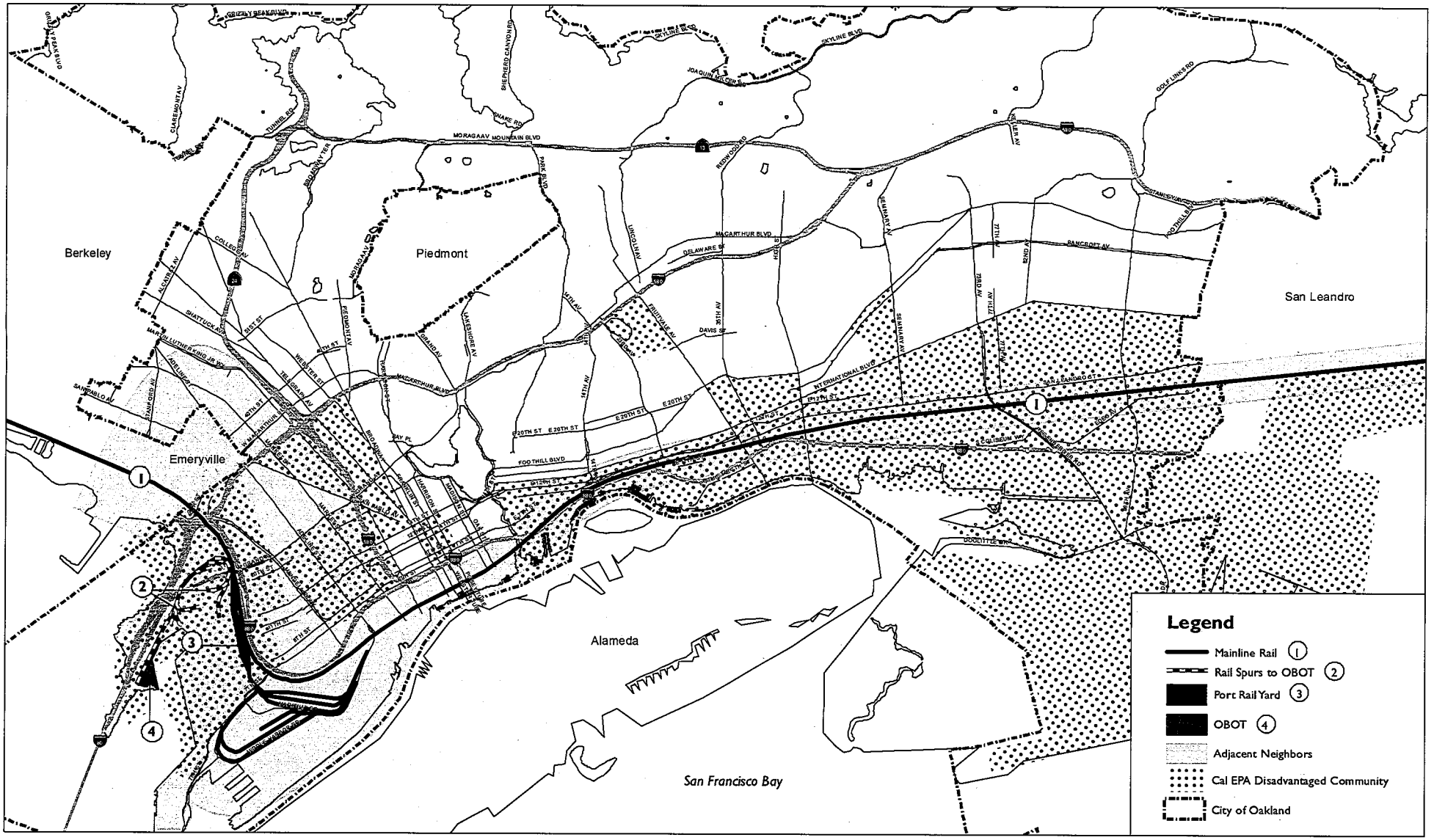

http://baaqmdmapsdev.azurewebsites.net/map-care-program.html
Community Air Risk Evaluatio...
Care Program
File
Edit
View
Favorites
Tools
Help
Enter Address
Impacted Communities
Impacted Communities
8 Hour Ozone Exceedance Areas
24 Hour PM2.5 Exceedance Areas
2013 Cumulative Impact Areas
Show Detail
Boundaries
Info
University of California Berkeley
Orinda
Piedmont
Oakland California Temple - The Church
San Leandro Bay

CARE Impacted Communities (Oakland Zip Codes Only)

http://www.baaqmd.gov/plans-and-climate/community-air-risk-evaluation-care-program/documents

zip code area	zip code	zip code location	zip area population (2010)	mortality rate	total morbidity costs	pollutant mortality rate	pollutant morbidity costs	cancer risk per million	pollution-vulnerability index	pollution index	zip code area	PM2.5 (annual ug/m3)	Ozone (annual mean
94601	94601	Oakland	50294	714.1	713.9	41.6	7.6	443.4	96.3	89.6	94601	10.7	0.18
94602	94602	Oakland	28329	591.6	521.4	26.8	4.3	284.9	70.4	65.7	94602	9.4	0.17
94603	94603	Oakland	31403	881.0	889.1	43.9	8.0	224.9	93.4	71.4	94603	9.9	0.20
94605	94605	Oakland	39016	672.1	648.7	28.4	4.9	184.7	70.8	54.1	94605	9.1	0.20
94606	94606	Oakland	36672	660.1	552.1	38.4	5.9	543.0	91.6	89.3	94606	10.7	0.15
94607	94607	Oakland	24978	702.8	585.6	40.9	6.3	689.2	94.7	89.2	94607	10.7	0.13
94608	94608	Emeryville	28019	770.0	663.7	41.9	6.5	496.9	95.0	83.1	94608	10.3	0.12
94609	94609	Oakland	20596	768.7	680.2	40.1	6.5	384.7	92.7	77.6	94609	10.1	0.12
94610	94610	Oakland	29287	580.6	420.7	33.8	4.4	398.3	78.8	88.0	94610	10.7	0.13
94611	94611	Oakland	36565	492.4	404.5	22.3	3.3	267.1	57.1	64.7	94611	9.4	0.14
94612	94612	Oakland	14389	683.5	609.0	39.8	6.4	591.4	94.5	88.8	94612	10.7	0.13
94618	94618	Oakland	16046	472.2	409.9	24.6	3.8	263.0	63.3	76.2	94618	10.1	0.13
94619	94613	Oakland	24014	585.1	530.1	33.9	5.5	248.3	84.0	86.7	94619	10.7	0.19
94619	94619	Oakland	24014	585.1	530.1	33.9	5.5	248.3	84.0	86.7	94619	10.7	0.19
94621	94621	Oakland	29870	882.4	867.1	45.5	7.9	255.8	94.7	75.0	94621	10.0	0.20
			433492										

Attachment G

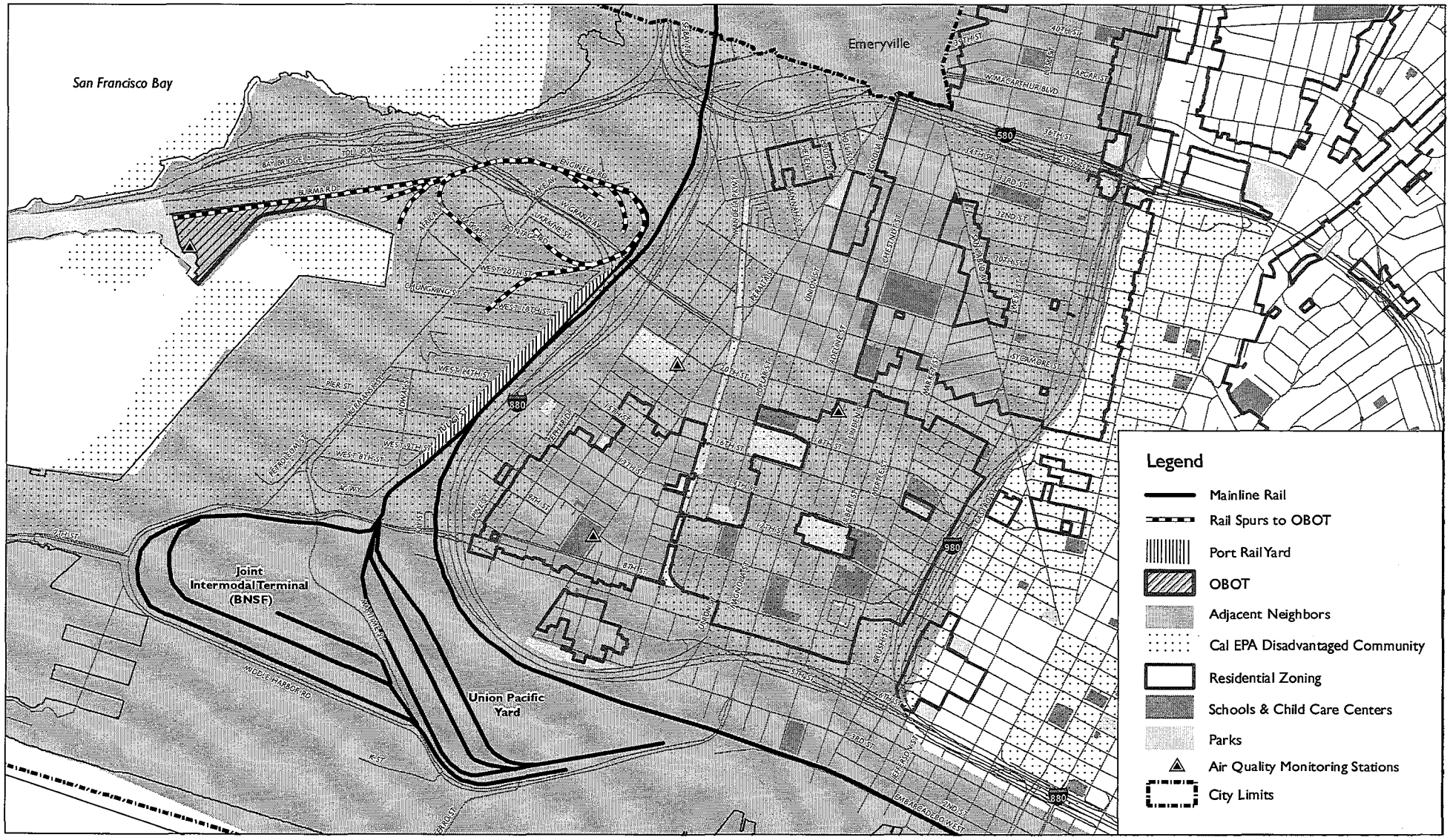


Planning and Building Department
June 2016

Oakland (Coal & Coke Issues)

0 ½ 1 Mile

ATTACHMENT H



CITY OF OAKLAND

West Oakland & Army Base

(Coal & Coke Issues)

0 ¼ ½ Mile

Planning and Building Department
June 2016

Adopted Plans and Policies Related to Health, Safety and General Welfare, including the General Plan and Energy and Climate Action Plan

Specifically, the Ordinance is consistent with, including but limited to, the following goals, objectives and policies:

Land Use and Transportation Element:

- Objective I/C4 (Minimize land use compatibility conflicts in commercial and industrial areas),
- Policy I/C4.2 (Minimizing Nuisances),
- Policy I/C5.2 (Planning for the Oakland Army Base),
- Policy T4.9 (Gateway Public Access),
- Policy T6.4 (Making the waterfront accessible),
- Policy W1.3 (Reducing land use conflicts),
- Policy W2.2 (Buffering heavy industrial uses),
- Objective W3 (Preserve the high quality and uniqueness of the natural and built environment on the waterfront),
- Policy W3.1 (Requiring consistency with conservation objectives and policies),
- Policy W3.2 (enhancing the quality of the natural and built environment),
- Policy W3.3 (Protecting and preserving wetland plant and animal habitats),
- Policy W4.2 (Considerations for the OBRA process),
- Policy W7.1 (Developing Lands in the Vicinity of the Seaport/Airport)
- Policy N5.1 (Environmental Justice)
- Policy N5.2 (Buffering Residential Areas)
- Policy N7.2 (Defining Compatibility

Open Space Conservation and Recreation Element:

- Goal CO-1 (Natural Resource that are conserved and prudently used to sustain life, support urban activities, protect public health and safety,and provide asource of beauty and enjoyment) (Goal defines natural resources)
- Objective CO-1 (To protect and preserve soil as a resource for healthy plant, animal, and human life)
- Policy CO-1.2 (Soil Contamination Hazards)
- Objective CO-5 (Water Quality)
- Action CO-5.3.6 (Hazardous Spills Prevention)
- Policy CO-6.5 (Protection of Bay and Estuary Waters)
- Policy CO-9.1 (Habitat Protection)
- Objective CO-12 (Air Resources)

Safety Element:

- Policy PSA-1 (Maintain and Enhance the City's ability to respond to disasters and emergencies)
- Action PS-1.2.1 (Follow the Local Hazard Mitigation Plan)

Attachment I

- Policy F1-1 (Maintain and enhance the City's capacity for emergency response, fire prevention, and fire-fighting.
- Policy HM-1 Minimize the potential risks to human and environmental health and safety associated with the past and present use, handling, storage and disposal of hazardous materials.
- Policy HM-2 Reduce the public's exposure to toxic air contaminants through appropriate land use and transportation strategies.
- Policy HM-3 Seek to prevent industrial and transportation accidents involving hazardous materials, and enhance the city's capacity to respond to such incidents.

Local Hazard Mitigation Plan:

Energy and Climate Action Plan:

City Council adoption of Resolution 82129 C.M.S. approved a preliminary planning GHG emissions reduction target for the year 2020 at 36% below 2005 levels.

- Objective: Reduce GHG emissions associated with the Port of Oakland and its tenants
- Action TLU-43 (Land Use and Planning Decisions (e.g. plans for former Army Base) to reduce GHG emissions and other air pollutants)
- Objective: Train workers for new green jobs to support energy and climate actions.

Planning Code:

- 17.07.30 (Purposes of the zoning regulations)
- 17.101F (D-GI Gateway Industrial District Zone Regulations)
- 17120 (Performance Standards)

Attachment I

FILED
OFFICE OF THE CITY CLERK
OAKLAND

2016 JUN 24 AM 8:53

APPROVED AS TO FORM AND LEGALITY

City Attorney

OAKLAND CITY COUNCIL

RESOLUTION No._____C.M.S.

A RESOLUTION (A) APPLYING ORDINANCE NO. _____C.M.S. [AN ORDINANCE (1) AMENDING THE OAKLAND MUNICIPAL CODE TO PROHIBIT THE STORAGE AND HANDLING OF COAL AND COKE AT BULK MATERIAL FACILITIES OR TERMINALS THROUGHOUT THE CITY OF OAKLAND AND (2) ADOPTING CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EXEMPTION FINDINGS] TO THE PROPOSED OAKLAND BULK AND OVERSIZED TERMINAL LOCATED IN THE WEST GATEWAY DEVELOPMENT AREA OF THE FORMER OAKLAND ARMY BASE; AND (B) ADOPTING CEQA EXEMPTION FINDINGS AND RELYING ON THE PREVIOUSLY CERTIFIED 2002 ARMY BASE REDEVELOPMENT PLAN EIR AND 2012 ADDENDUM

WHEREAS, on June 12, 2012, the Oakland City Council, via Resolution No. 83930 C.M.S., approved the amended Oakland Army Base (OAB) Reuse Plan (Master Plan), including adopting the 2012 OARB Initial Study/Addendum to the 2002 Army Base Redevelopment Plan Environmental Impact Report, making related California Environmental Quality Act (CEQA) findings, and adopting the Standard Conditions of Approval/Mitigation Monitoring and Reporting Program (SCAMMRP); and

WHEREAS, on July 3, 2012, the Oakland City Council approved, via Ordinance No. 13131 C.M.S., a Lease Disposition and Development Agreement ("LDDA") with Prologis CCIG Oakland Global, LLC, a Delaware Limited Liability Company, which provided for the development on approximately 130 acres of the Gateway Development Area of a mixed-use industrial (warehousing and logistics) and commercial, including billboard, maritime, rail, and open space project at the Oakland Army Base, on real property which real which was, is and will continue to be owned by the City, and other related matters; and

WHEREAS, on July 16, 2013 the Oakland City Council approved the Development Agreement By and Between City of Oakland and Prologis CCIG Oakland Global, LLC Regarding Property Commonly Known as "Gateway Development/Oakland Global" (the "DA"), via Ordinance No. 13183 C.M.S. (an Ordinance, As Recommended By The City Planning Commission, Authorizing The City Administrator To Execute A Development Agreement Between The City Of Oakland And Prologis CCIG Oakland Global, LLC, A Delaware Limited Liability Company, For The Development On Approximately 160 Acres In The Gateway Development Area Of The Former Oakland Army Base To Be In A Form And Content Substantially In Conformance With The Attached Documents); and

WHEREAS, Prologis CCIG Oakland Global, LLC ("Developer") is a joint venture consisting of Prologis, L.P. ("Prologis") and CCIG Oakland Global, LLC ("CCIG"); and

WHEREAS, the Developer, Prologis, CCIG, Oakland Bulk and Oversized Terminal, LLC ("OBOT") (collectively, "Developer Entities") are pursuing the development of a "Project" at the West Gateway "Project Site" (as those terms are defined in the DA) with, among other things, the Oakland Bulk Oversized Terminal ("Terminal"), as described in the DA, and are currently pursuing plans to ship, transport, store, load, unload, stockpile, transload and/or handle (collectively "Store or Handle," as defined in the Ordinance (1) Amending the Municipal Code to Prohibit the Storage and Handling of Coal and Coke at Bulk Materials Facilities or Terminals Throughout the City of Oakland and (2) Adopting CEQA Exemption Findings (the "Coal-Coke Ordinance")) Coal and/or Coke (as those terms are defined in the Coal-Coke Ordinance) at the Project Site, including in and around the Terminal and at the Project Site; and

WHEREAS, on February 16, 2016, pursuant to the authority of Council Ordinance No. 13131 C.M.S. and Council Ordinance No. 13283 C.M.S., City, as Landlord, and OBOT, as Tenant, entered into an Army Base Gateway Redevelopment Project Ground Lease for West Gateway (the "West Gateway Ground Lease") which provides for the lease, for a term of 66 years, of the "West Gateway Property," comprised of an approximately 26.02 acre portion of the former Oakland Army Base, and the "Railroad R/O/W Property," comprised of an approximately 7.82 acre portion of the former Oakland Army Base, all as more particularly set forth in the West Gateway Ground Lease; and

WHEREAS, the proposed Terminal may be considered a Coal or Coke Bulk Material Facility, as defined in the Coal-Coke Ordinance; and

WHEREAS, the DA, as well as the LDDA and the West Gateway Ground Lease (collectively "Agreements"), do not provide any right to Store or Handle *any and all* bulk goods, *nor any certain* bulk goods at the Project Site. Nor do the Agreements provide that the City may not prohibit actions to Store or Handle any particular bulk goods at the Project Site. Instead, the Agreements provide Developer certain rights regarding the *development* and *use* of the property at the Project Site, which development and use does not include any right per the Agreements to Store or Handle any particular bulk goods, as discussed below (all capitalized terms used below are as defined in the DA and Coal-Coke Ordinance) and in the record, including the June 27, 2016 City Council Agenda Report, incorporated herein by reference.

1. As set forth in Exhibit D-2-2 of the DA, the DA provides for the development of "[a] ship-to-rail terminal designed for the export of non-containerized bulk goods and import of oversized or overweight cargo ('Bulk Oversized Terminal')," and does not provide for the development of a Terminal for any and all bulk goods, or certain bulk goods. Thus, application of the Coal-Coke Ordinance to the Project, the Project Site and the Developer Entities (which includes any successors or assigns) (collectively, "Project Facilities and Tenants") does not impair any right granted by the City to any Developer Entity.

2. As set forth in Section 3.2 of the DA, the DA "vests in Developer the right to *develop* the Project in accordance with the terms and conditions of" the DA, City Approvals and

Existing City Regulations, and provides that the "the permitted *uses* of each Phase of the Project, the density and intensity of use of each Phase, and the siting, height, envelope, and massing and size of proposed buildings in each Phase, shall consist only of those described in and expressly permitted by, and subject to all terms, conditions and requirements of, the City Approvals, the Subsequent Approvals, the LDDA, and the applicable Ground Lease for each Phase" [italics added], and does not provide any right to develop the Project to Store or Handle any and all bulk goods or any particular bulk goods. Thus, application of the Coal-Coke Ordinance to the Project Facilities and Tenants does not impair any right granted by the City to any Developer Entity.

3. As set forth in Section 3.4.1 of the DA, the "City shall not impose or apply any City Regulations on the *development* of the Project Site that are adopted or modified by City after the Adoption Date." The DA does not provide any right to develop the Project to Store or Handle any and all bulk goods or any particular bulk goods at the Project Site. Thus, application of the Coal-Coke Ordinance to the Project Facilities and Tenants does impair any right granted by the City to any Developer Entity.

   Further, Section 3.4.1 of the DA lists categories of regulations adopted or modified by the City after the Adoption Date, which would concern *development* of the Project Site, each of which further shows that application of the Coal-Coke Ordinance to the Project Facilities and Tenants does not impair any right granted by the City with respect to development of the Project Site.

   This list from Section 3.4.1, which is summarized below, describes types of development regulations:

   (i) application of the Coal-Coke Ordinance is not inconsistent or in conflict with the intent, purpose, terms, standards or conditions of the DA; (ii) application of the Coal-Coke Ordinance will not materially change, modify or reduce the permitted uses of the Project Site[1], the siting, height, envelope, massing, design requirements, or size of the proposed buildings in the Project, or provisions for City fees or exactions; (iii) application of the Coal-Coke Ordinance will not materially increase the cost of development of the Project; (iv) application of the Coal-Coke Ordinance will not materially change or modify, or interfere with, the timing, phasing, or rate of development of the Project; (v) application of the Coal-Coke Ordinance will not materially interfere with or diminish the ability of a Party to perform its obligations under the City Approvals, including the DA, or Subsequent Approvals, or expand, enlarge or accelerate Developer's obligations under the City Approvals, including the DA, or the Subsequent Approvals; or (vi) application of the Coal-Coke Ordinance will not materially modify, reduce or terminate the rights vested in City Approvals or the Subsequent Approvals.

---

1 Chapter 17.101F of the Oakland Planning Code lists permitted and conditionally permitted uses at the Project Site. Under section 17.10.584, Regional Freight Transportation Industrial Activities is a permitted use, but there is no provision permitting the Storage and Handling of *any and all* goods.

(ii) These types of development regulations listed section 3.4.1 do not limit the application of new regulations to regulate or prohibit any action to Store or Handle any particular goods; and

WHEREAS, separately and independently, Section 3.4.2 of the DA authorizes the City to impose subsequently adopted regulations, as an exception to Developer's vested rights under the DA, where the City determines, based on substantial evidence and after a public hearing, that certain standards have been satisfied. Specifically, Section 3.4.2 of the DA provides (capitalized terms used below are as defined in the DA and the Coal-Coke Ordinance):

> "Notwithstanding any other provision of this Agreement to the contrary, City shall have the right to apply City Regulations adopted by City after the Adoption Date, if such application (a) is otherwise permissible pursuant to Laws (other than the Development Agreement Legislation), and (b) City determines based on substantial evidence and after a public hearing that a failure to do so would place existing or future occupants or users of the Project, adjacent neighbors, or any portion thereof, or all of them, in a condition substantially dangerous to their health or safety. The Parties agree that the foregoing exception to Developer's vested rights under this Agreement is in no way intended to allow City to impose additional fees or exactions on the Project, beyond the City Fees described below in Section 3.4.5, that are for the purpose of general capital improvements or general services (except in the event of a City-wide emergency)."

The City Council thus finds and determines that, pursuant to DA Section 3.4.2, the Coal-Coke Ordinance may be applied to the Project Facilities and Tenants as an exception to any vested right Developer or any Developer Entity might claim, including for reasons stated herein and in the record, including the June 27, 2016 City Council Agenda Report, incorporated herein by reference; and

WHEREAS, on June 17, 2014 the Oakland City Council, at a duly noticed public meeting, adopted Resolution No. 85054 C.M.S. (A Resolution to Oppose Transportation of Hazardous Fossil Fuel Materials, including Crude Oil, Coal, and Petroleum Coke, Along California Waterways, Through Densely Populated Areas, Through the City of Oakland); and

WHEREAS, a duly noticed public hearing was held at a special meeting of the City Council on September 15, 2015, regarding types of coal and coke products that are transported, the public health and safety impacts, and other impacts, of the transportation, transloading, handling and export of those products in and through the City of Oakland, the adequacy of existing regulations, and the City's ability to regulate the transportation and handling of such products; and

WHEREAS, additional written materials were submitted by interested parties; and

WHEREAS, a duly noticed public hearing was held at a special meeting of the City Council on May 9, 2016, regarding the health and safety impacts of fuel oils, gasoline and/or crude oil products, including without limitation the public health and/or safety impacts of transportation, transloading, handling and/or export of fuel oil, gasoline, and crude oil products, the adequacy of existing regulations and the City's ability to regulate the transportation and handling of such products; and

WHEREAS, additional written materials were submitted by interested parties, including materials relating to coal and coke; and

WHEREAS, the City undertook an independent evaluation of the evidence submitted during and after the aforementioned public hearings and meetings and reviewed other relevant evidence; and

WHEREAS, based upon its independent evaluation of the evidence, the City has determined that pre-existing local, state and/or federal laws are inapplicable and/or insufficient to protect and promote the health and safety of the City's citizens, residents, workers, employers and/or visitors (hereafter called "Constituents"), and for such reasons (among others) has introduced the Coal-Coke Ordinance and, by the adoption of this Resolution resolves to apply the Coal-Coke Ordinance to the Project Facilities and Tenants, and each of them, and/or any Owner or Operator of a Coal or Coke Bulk Material Facility (as defined in the Coal-Coke Ordinance), upon the effective date of the Coal-Coke Ordinance (as stated more specifically in the resolves set forth below); and

WHEREAS, based upon its independent evaluation of the evidence, the City has also determined that pre-existing local, state and/or federal laws are inapplicable and/or insufficient to protect and promote the general welfare of the City's Constituents; and

WHEREAS, Article XI, Section 5 of the California Constitution provides that the City, as a home rule charter city, has the power to make and enforce all ordinances and regulations in respect to municipal affairs, and Article XI, Section 7, empowers the City to enact measures that protect the health, safety, and/or general welfare of its Constituents; and

WHEREAS, Section 106 of the Oakland City Charter provides that the City has the right and power to make and enforce all laws and regulations with respect to municipal affairs; and

WHEREAS, numerous policies supporting protecting the health, safety and/or general welfare of Oakland's Constituents are contained in the Open Space, Conservation and Recreation Element, Public Safety Element and 1998 Land Use and Transportation Element (LUTE) of the City's General Plan, as well as the Oakland Planning Code, Oakland Municipal Code, and Oakland's Energy and Climate Action Plan; and

WHEREAS, pursuant to Chapter 657 of the Statutes of 1911, as amended, the Oakland Army Base Public Trust Exchange Act (Chapter 664 of the Statutes of 2005, as amended) ("Exchange Act"), and the public trust land exchange effectuated pursuant to the Exchange Act, the City holds the 16.7 acre waterfront portion of the Gateway Development Area ("Parcel E") in

trust for the people of California. Under the public trust doctrine, the power of the State of California to control, regulate, and utilize public trust lands when acting within the terms of the public trust is absolute. As the State's grantee, the City has a duty to administer the public trust with respect to Parcel E and may not delegate that responsibility to any other party; and

WHERAS, the Developer Entities (both in an Oakland Bulk and Oversized Terminal March 1, 2016 letter to Oakland City Council President Gibson-McElhaney and a Stice-Block (Developer's attorneys) April 19, 2016 letter to State Senator Bob Wiekowski) acknowledged that the City has the independent police powers, separate and distinct from DA Section 3.4.2, to protect and promote the health and/or safety of its Constituents and thus has a right to adopt legislation, like the Coal-Coke Ordinance, and apply it to the Project, the Project Facilities and Tenants; and

WHEREAS, this Resolution is supported by sufficient and substantial evidence and meets the appropriate legal standards of the DA, the Oakland City Charter, and the City's General Plan and other land use plans/policies, Public Trust Doctrine, and/or police power; and

WHEREAS, this Resolution was considered at a duly noticed public hearing, during a special meeting of the City Council on June 27, 2016, where interested parties were given ample opportunity to participate in the public hearing by submittal of oral and/or written comments; and

WHEREAS, the public hearing was closed by the City Council on June 27, 2016; now, therefore

THE COUNCIL OF THE CITY OF OAKLAND DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. The recitals contained in this Resolution are true and correct and are an integral part of the Council's decision, and are hereby adopted as findings.

Section 2. The City Council, based upon its own independent review, consideration, and exercise of its independent judgment, hereby finds and determines, on the basis of substantial evidence in the entire record before the City, that this Resolution is (1) not a Project under the California Environmental Quality Act ("CEQA") and is therefore exempt pursuant to CEQA Guidelines section 15378; (2) exempt from CEQA pursuant to CEQA Guidelines sections 15307 (action to protect natural resources); 15308 (action to protect the environment); and/or 15061(b)(3) ("Common Sense" exemption, no reasonable possibility of a significant effect on the environment); and/or (3) consistent with the 2012 Army Base Addendum and thus no further CEQA review is required pursuant to CEQA Guidelines section 15162-15164. Each of the foregoing provides a separate and independent basis for CEQA compliance and when viewed collectively provides an overall basis for CEQA compliance.

Section 3. The Coal-Coke Ordinance applies to the Project Facilities and Tenants and each of them, and/or any Owner or Operator of a Coal or Coke Bulk Material Facility (as defined in the Coal-Coke Ordinance), because Developer Entities have no right, under the DA or otherwise, not to be subject to the Coal-Coke Ordinance. The application of the Coal-Coke Ordinance does not impair any vested right regarding development or use of the subject property and thus falls outside the limitations on subsequent regulations, including as set forth in Exhibit D-2-2 and Sections 3.2 and 3.4.1 of the DA.

Section 4. Separately and independently, the Coal-Coke Ordinance applies to the Project Facilities and Tenants, and each of them, and/or any Owner or Operator of a Coal or Coke Bulk Material Facility (as defined in the Coal-Coke Ordinance), because the City Council hereby finds and determines, based on substantial evidence in the record, after conducting public hearings, that failure to apply the Coal-Coke Ordinance to the Project Facilities and Tenants, and each of them, and/or to any Owner or Operator of a Coal or Coke Bulk Material Facility (as defined in the Coal-Coke Ordinance), would place existing and/or future occupants or users of the Project, adjacent neighbors, or any portion thereof, or all of them, in a condition substantially dangerous to their health and/or safety (as stated in the DA) if the Project Site is developed with a Coal or Coke Bulk Material Facility.

In addition, the City Council incorporates by reference and adopts each of the health and/or safety findings set forth in section 8.60.020(B)(1) of the Oakland Municipal Code, which was introduced adopted as part of Section 3 of Ordinance No. _____ C.M.S [AN ORDINANCE (1) AMENDING THE OAKLAND MUNICIPAL CODE TO PROHIBIT THE STORAGE AND HANDLING OF COAL AND COKE AT BULK MATERIAL FACILITIES OR TERMINALS THROUGHOUT THE CITY OF OAKLAND AND (2) ADOPTING CEQA EXEMPTION FINDINGS], and finds and determines they are expressly applicable to the Project Facilities and Tenants, and each of them.

Each individual finding presented in this Section 4 constitutes a separate and independently sufficient basis to adopt the Resolution. The City Council finds and determines that each of the findings in this Section 4 is separately and independently adopted and expressly applicable to the Project Facilities and Tenants, and each of them and should a court of competent jurisdiction determine than any particular finding(s) is or are insufficient to support the adoption of this Resolution, such determination shall have no effect on the validity of the remaining findings and their applicability to the Project Facilities and Tenants, and each of them.

Moreover, when viewed collectively, the health and/or safety findings in this Section 4 constitute an overall basis to support adoption of the Resolution.

Section 5. If any party with a legal interest in the DA, including without limitation any party to the DA or successor or assign, seeks to challenge the City's authority to apply the Coal-Coke Ordinance, it must first comply with the provisions of the DA.

Section 6. The Environmental Review Officer, or designee, is directed to cause to be filed a Notice of Exemption and Notice of Determination with the appropriate agencies.

Section 7. Nothing in this Resolution shall be interpreted or applied so as to create any requirement, power, or duty in conflict with any federal or state law.

Section 8. The record before this Council relating to this Resolution and supporting the findings made herein includes, without limitation, the following:

1. All final staff reports, and other final documentation and information produced by or on behalf of the City, including without limitation supporting technical studies and all related/supporting final materials, and all final notices relating to aforementioned public hearings and meetings;
2. All oral and written evidence received by the City regarding the subject matter of this Ordinance through the close of the public hearing on June 27, 2016;
3. All matters of common knowledge and all official enactments and acts of the City, such as (a) the City's General Plan; (b) the Oakland Municipal Code and Planning Code; (c) other applicable City policies and regulations; and (d) all applicable state and federal laws, rules and regulations.

The custodians and locations of the documents or other materials which constitute the record of proceedings upon which the City Council's decision is based are respectively: (a) Planning and Building Department –Bureau of Planning, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, California; and (b) Office of the City Clerk, One Frank H. Ogawa Plaza, 1st Floor, Oakland California.

Section 9. This Resolution shall only be effective if the Coal-Coke Ordinance is adopted, and, if the Coal-Coke Ordinance is adopted, shall become effective upon the effective date of the Coal-Coke Ordinance.

Section 10. The provisions of this Resolution are severable. If a court of competent jurisdiction determines that any word, phrase, clause, sentence, paragraph, subsection, section, chapter or other provision (collectively called "Part") is invalid, or that the application of any Part of this Resolution to any person or circumstance is invalid, such decision shall not affect the validity of the remaining Parts of this Resolution. The City Council declares that it would have adopted this Resolution irrespective of the invalidity of any Part of this Resolution or its application to such persons or circumstances have expressly excluded from its coverage.

1921827v1

IN COUNCIL, OAKLAND, CALIFORNIA, _____

PASSED BY THE FOLLOWING VOTE:

AYES- BROOKS, CAMPBELL WASHINGTON, GALLO, GUILLEN, KALB, KAPLAN, REID, AND PRESIDENT GIBSON MCELHANEY

NOES-

ABSENT-

ABSTENTION-

ATTEST:_____
LaTonda Simmons
City Clerk and Clerk of the Council
of the City of Oakland, California

FILED
OFFICE OF THE CITY CLERK
OAKLAND

2016 JUN 24 AM 8: 53

APPROVED AS TO FORM AND LEGALITY

City Attorney

OAKLAND CITY COUNCIL

ORDINANCE NO. _____C.M.S.

Introduced by Mayor Schaaf and Councilmember Kalb

AN ORDINANCE (1) AMENDING THE OAKLAND MUNICIPAL CODE TO PROHIBIT THE STORAGE AND HANDLING OF COAL AND COKE AT BULK MATERIAL FACILITIES OR TERMINALS THROUGHOUT THE CITY OF OAKLAND AND (2) ADOPTING CALIFORNIA ENVIRONMENTAL QUALITY ACT EXEMPTION FINDINGS

WHEREAS, on June 17, 2014 the Oakland City Council, at a public meeting, adopted Resolution No. 85054 C.M.S. (A Resolution to Oppose Transportation of Hazardous Fossil Fuel Materials, including Crude Oil, Coal, and Petroleum Coke, Along California Waterways, Through Densely Populated Areas, Through the City of Oakland); and

WHEREAS, the developers of the West Gateway Area of the former Oakland Army Base are pursuing the development of a "Project" at the West Gateway "Project Site" (as those terms are defined in the Development Agreement By and Between City of Oakland and Prologis CCIG Oakland Global, LLC Regarding Property Commonly Known as "Gateway Development/Oakland Global") with, among other things, the Oakland Bulk Oversized Terminal ("Terminal"), as described in the Development Agreement, and are currently pursuing plans to ship, transport, store, load, unload, stockpile, transload and/or handle at the Project Site, including in and around the Terminal, and have disclosed plans to receive and/or ship coal and coke through the Terminal; and

WHEREAS, a duly noticed public hearing was held at a special meeting of the City Council on September 15, 2015, regarding types of coal and coke products that are transported, the public health and safety impacts, and other impacts, of the transportation, transloading, storage, handling and export of those products in and through the City of Oakland, the adequacy of existing regulations, and the City's ability to regulate the transportation and handling of such products; and

WHEREAS, additional written materials were submitted by interested parties; and

WHEREAS, a duly noticed public hearing was held at a special meeting of the City Council on May 9, 2016, regarding the health and safety impacts of fuel oils, gasoline and/or crude oil products, including without limitation the public health and/or safety impacts of transportation, transloading, storage, handling and/or export of fuel oil, gasoline, and crude oil products, the adequacy of existing regulations and the City's ability to regulate the transportation and handling of such products; and

WHEREAS, additional written materials were submitted by interested parties, including materials relating to coal and coke; and

WHEREAS, the City undertook an independent evaluation of the evidence submitted during and after the aforementioned public hearings and meetings and reviewed other relevant evidence; and

WHEREAS, many communities in the City of Oakland, including without limitation West Oakland where the Terminal facility is proposed, and their residents are disadvantaged and disproportionately suffer health problems and bear the brunt of health-related impacts caused by industrial or other activities, as has been acknowledged by (1) the California Environmental Protection Agency, which using the California Communities Environmental Health Screening Tool (CalEnviroScreen), a tool that assesses all census tracts in California, has identified the community of West Oakland as a disadvantaged community disproportionately burdened by, and vulnerable to, multiple sources of pollution; and (2) the Bay Area Air Quality Management District ("BAAQMD") which designated West Oakland as a CARE ("Community Air Risk Evaluation") program community, i.e., one of the geographic areas within the Air District with high concentrations of air pollution and populations most vulnerable to health impacts from air pollutants (particularly toxic air contaminants (TACs) and fine particulate matter ($PM_{2.5}$)); and

WHEREAS, storing, loading, unloading, stockpiling, transloading and/or otherwise handling and/or managing, temporarily or permanently ("Storing or Handling") coal and coke, at facilities such as the Terminal which is proposed for the West Gateway Area of the former Oakland Army Base, and elsewhere in Oakland, are associated with and/or cause health and safety impacts in humans, including without limitation due to fugitive coal dust, which the American Lung Association considers to be a source of particulate matter that is dangerous to breathe, which the World Health Organization describes (including silica and asbestos) as responsible for most occupational lung diseases due to airborne particulate, which the United States Environmental Protection Agency ("U.S. EPA") has linked to significant health problems per the U.S. EPA's citation to numerous scientific studies, and which results in dangerous health and safety conditions to the nearby population, as well as workers and visitors in and near facilities such as the proposed Terminal; and

WHEREAS, Storing or Handling coal and coke negatively impact the environment, including because coal dust and leachates can pollute waterways, often with long-lasting impacts, and impact and contaminate sensitive habitat within the City, and which cause carbon dioxide emissions, which fuel climate change and are contrary to Oakland and California's climate change reduction goals, resulting in local climate change-related impacts to Oakland's residents and its already vulnerable populations; and

WHEREAS, based upon its independent evaluation of the evidence, the City has determined that pre-existing local, state and/or federal laws are inapplicable and/or insufficient to protect and promote the health, safety and/or general welfare of citizens, residents, workers, employers and/or visitors (hereafter called "Constituents"), including without limitation of the health, safety and/or general welfare of Constituents in the West Oakland neighborhoods, many of who suffer disproportionately from the effects of nearby industrial activity (e.g., increased cancer and asthma rates), and who would be uniquely and adversely impacted by the Storing or Handling of coal and coke; and

WHEREAS, Article XI, Section 5 of the California Constitution provides that the City, as a home rule charter city, has the power to make and enforce all ordinances and regulations in respect to municipal affairs, and Article XI, Section 7, empowers the City to enact measures that protect and promote the health, safety, and/or welfare of its Constituents; and

WHEREAS, Section 106 of the Oakland City Charter provides that the City has the right and power to make and enforce all laws and regulations in respect to municipal affairs; and

WHEREAS, numerous policies enacted to support, protect and promote the health, safety and/or general welfare of Oakland's Constituents are contained in the Open Space, Conservation and Recreation Element, Public Safety Element and 1998 Land Use and Transportation Element ("LUTE") of the City's General Plan, as well as the Oakland Planning Code, Oakland Municipal Code, and Oakland's Energy and Climate Action Plan; and

WHEREAS, this Ordinance is supported by sufficient justifications and/or evidence, including for reasons stated herein and in the record, including the June 27, 2016 City Council Agenda Report, incorporated herein by reference, and meets the appropriate legal standards, including without limitation the City's police power, the Oakland City Charter, the Oakland Municipal and Planning Codes, and the City's General Plan and other land use plans/policies; and

WHEREAS, this Ordinance was considered at a duly noticed public hearing, during a special meeting of the City Council on June 27, 2016, where interested parties were given ample opportunity to participate in the public hearing by submittal of oral and/or written comments; and

WHEREAS, the public hearing was closed by the City Council on June 27, 2016; now, therefore

THE COUNCIL OF THE CITY OF OAKLAND DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. The recitals contained in this Ordinance are true and correct and are an integral part of the City Council's decision, and are hereby adopted as findings.

Section 2. The City Council, based upon its own independent review, consideration, and exercise of its independent judgment, hereby finds and determines, on the basis of substantial evidence in the entire record before the City, that this Ordinance is (1) not a Project under the California Environmental Quality Act ("CEQA") and is therefore exempt pursuant to CEQA Guidelines section 15378; and (2) exempt from CEQA pursuant to CEQA Guidelines sections 15307 (action to protect natural resources); 15308 (action to protect the environment); and/or 15061(b)(3) ("Common Sense" exemption, no reasonable possibility of a significant effect on the environment). Each of the foregoing provides a separate and independent basis for CEQA compliance and, when viewed collectively, provides an overall basis for CEQA compliance.

Section 3. Chapter 8.60 is hereby added to the Oakland Municipal Code to read as follows:

Chapter 8.60 PROHIBITION ON THE STORING AND HANDLING OF COAL AND COKE

Article I – General Provisions
8.60.010 – Purpose.
8.60.020 – Findings.
8.60.030 – Definitions and Interpretation of Terms.
8.60.040 – Applicability; Prohibitions.

Article II – Miscellaneous
8.60.100 – Conflicting Provisions.
8.60.110 – Administrative Regulations.
8.60.120—Enforcement.

Article I – General Provisions

8.60.010 – Purpose.

The purpose of this chapter is to establish a citywide ban on the storage, loading, unloading, stockpiling, transloading and handling of Coal and Coke, as defined below, throughout the City of Oakland, by the Owner or Operator of a Coal or Coke Bulk Material Facility, as defined below, to protect and promote the health, safety and/or general welfare of its citizens, residents, workers, employers and/or visitors (hereafter called "Constituents") by eliminating any risk of release into the environment (including without limitation airborne particulate or release into the soil or water or onto persons) from storage, loading, unloading, stockpiling, transloading and handling of Coal and Coke and to ensure that the handling of such materials does not create a public nuisance or cause any adverse public health, safety and/or general welfare impacts (including with respect to property values, aesthetics, and economic interests). Notwithstanding anything to the contrary contained in this chapter, the purposes and intent of this chapter are **not** to regulate the transportation of Coal or Coke, for example, by train or marine vessel, including without limitation through the City of Oakland or to or from a Coal or Coke Bulk Material Facility; nor does this chapter actually regulate such. Rather, the purpose and intent of this chapter is to address the unique and peculiar health, safety and/or other impacts of Coal or Coke in Oakland, and specifically West Oakland.

8.60.020 – Findings.

A. This Ordinance serves the public interest and is necessary to protect and promote the health, safety, and/or welfare of the City of Oakland's Constituents, and is enacted pursuant to Article XI, Sections 5 and 7, of the California Constitution, Section 106 of the Charter of the City of Oakland, the City's General Plan, Oakland's Energy and Climate Action Plan, specific plans and other land use plans.

B. Specifically, the City Council finds and determines:

1) The transport and Storing or Handling of Coal or Coke in the City of Oakland, including without limitation to and from West Oakland, would have many public health and/or safety impacts, including without limitation the creation of conditions that would be substantially dangerous to the health and/or safety of Oakland's Constituents:

a. Characteristics of Coal and Coke pose many risks to public health and/or safety, including without limitation because Coal and Coke release fugitive dust, as particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$), toxic and non-toxic, which negatively affects air quality and the health and/or safety of persons who breathe in such particulate matter and fine particulate matter (including without limitation heart and lung disease and lung cancer). Coal contains toxic heavy metals including mercury, arsenic, and lead, and exposure to these toxic heavy metals is linked to cancer and birth defects. Coal is highly combustible (including by spontaneous combustion), which poses risks to the health and/or safety of persons who are residing, working or playing nearby as well as to public safety personal who would respond to such incidents.

b. Many communities in the City of Oakland, including without limitation West Oakland, and their residents are disadvantaged and disproportionately suffer health problems (including without limitation elevated levels of asthma, premature and low-weight births, cardiovascular disease, increased levels of emergency and non-emergency hospital admissions, and other pollution- and non-pollution-related ailments) and bear the brunt of health-related impacts caused by industrial or other activities, which is a matter of common knowledge and documented in healthy studies, and has been recognized by regulatory agencies (including the California Environmental Protection Agency which has determined West Oakland to be a Disadvantaged Community area and the Bay Area Air Quality Management District has designated West Oakland as a CARE ("Community Air Risk Evaluation") program community, i.e., one of the geographic areas within the Air District with high concentrations of air pollution and populations most vulnerable to health impacts from air pollutants (particularly toxic air contaminants (TACs) and fine particulate matter ($PM_{2.5}$)). The American Lung Association considers coal dust a source of particulate matter that is dangerous to breathe. The World Health Organization cites coal dust, including silica and asbestos, as responsible for most occupational lung diseases due to airborne particulate. Uses in and around facilities where Coal or Coke would be Stored or Handled include residences, schools, child care facilities, parks, and other locations at which vulnerable persons spend substantial amounts of time. The existing air quality of Oakland, including West Oakland, is poor, and in particular is currently in nonattainment for several state and federal ambient air quality standards,

including ozone, particulate matter, and fine particular matter, and monitored levels have often exceeded state and federal ambient air quality standards. The Storage or Handling of Coal or Coke would cause additional exceedances of ambient air quality standards, and would create conditions substantially dangerous to the health and/or safety of persons in these communities for this and other reasons which are discussed further below.

c. The rail transport of Coal or Coke through the City, including without limitation to and from West Oakland, would have substantial public health and safety impacts to Constituents, including without limitation West Oakland, and would create conditions substantially dangerous to the health and/or safety of such persons. Reasons include without limitation that there are not sufficiently effective, safe means to prevent the release of fugitive coal dust during the rail transport of Coal or Coke (whether through use of dust suppressants (surfactants) or use of covered rail cars, and covered rail cars or application of a topping agent would not reduce the coal dust escaping from the bottom of the rail car during transport and deposited along the rail tracks or to adjacent properties to be resuspended into the ambient air and re-entrained over and over again). As to fugitive coal dust, for example, the best available means for preventing fugitive coal dust, whether by dust suppressant (surfactant) or covered rail cars (which have not been shown to be safer or more effective than dust suppressants and which are an unproven technology) would result in no more than 85% effectiveness (based upon railroad-furnished data that cannot be independently verified), which still would result in high amounts of fugitive coal dust through rail transport of Coal and Coke. No covers have been reported to be used on Coke-filled railcars. Furthermore, the overall emissions from a Coke or Coal Bulk Materials Facility are expected to exceed both the daily and annual PM_{10} and $PM_{2.5}$ City of Oakland California Environmental Quality Act (CEQA) Thresholds, which would be considered a significant unavoidable impact under CEQA and thus presumptively a substantially dangerous condition to health.

d. Storing or Handling of Coal or Coke would have substantial public health and safety impacts to Oakland Constituents, including without limitation West Oakland, and would create conditions substantially dangerous to the health and/or safety of such persons. Reasons include without limitation that, as discussed above, there are not sufficiently effective, safe means to prevent the release of fugitive coal dust, or to prevent combustion (including spontaneous combustion) when Coal or Coke is delivered to and from, or stored at, rail-switching facilities or terminals. Contributions of particulates to local levels of total particulate matter, PM_{10} and $PM_{2.5}$, would cause additional exceedances of ambient air quality standards and cause conditions substantially dangerous to the health of the adjacent neighbors in disadvantaged communities, including without limitation West Oakland. Workers would be closest to the fugitive coal dust and respirable fine particulates during transport and staging of loaded cars for

unloading and within the enclosed facilities. Further, Coal is prone to spontaneous combustion, due to controlled factors (e.g., management techniques) and uncontrollable factors (e.g., the qualities of the Coal, air temperatures), and the subsequent risks associated with fire are substantial. Coal fires have been well documented, including during rail transport, storage piles and at shipping facilities such as the proposed Terminal. Coal fires are often difficult to control when spontaneous combustion occurs, particularly within a Coal pile, and fire personnel need specialized equipment and training. Coal dust explosions more likely to occur in enclosed facilities. Firefighting personnel responding to a Coal fire could generate a dust cloud that leads to an explosion. Toxic air pollutants released by Coal fires would be similar to Coal-fired power plant emissions, but without treatment by the emission control systems, and both acute and chronic health impacts can be expected for persons in close proximity to a Coal fire including workers, emergency responders, and other adjacent Constituents. Emissions from Coal fires would include fine particulate matter, a wide variety of metals, especially mercury, toxic hydrocarbon/volatile organic compound species and small amounts of uranium.

e. The export of Coal from facilities at the City of Oakland, including in West Oakland, would lead to the burning of Coal overseas, where it is expected to be combusted in power plants. That would cause incremental increase of greenhouse gas ("GHG") emissions globally. This increase in GHG emissions would contribute incrementally to global climate change along with sea level rise and flooding that would be experienced locally in Oakland and which could disproportionally affect already vulnerable populations and significant City public-safety related infrastructure and utilities.

f. The export of Coal from facilities at the City of Oakland, including in West Oakland, would lead to the burning of Coal overseas, where it would be combusted in power plants. That would cause incremental increase of pollutants globally, which would be experienced locally in Oakland, contributing to the Bay Area's already high pollutant concentrations and further exceedances of the ambient air quality standards and exacerbating the health effects in adjacent communities.

2) The Storing or Handling of Coal or Coke in the City of Oakland, including without limitation to and from the West Oakland, would be detrimental to the general welfare of Oakland Constituents, for all the reasons stated in this Ordinance (including without limitation the above findings of health and safety impacts). Storing or Handling Coal and Coke also causes the following policy impacts: Exporting Coal to be burned in Asia and other regions increases emission of harmful air pollutants, including carbon dioxide emissions, which fuel climate change and violate Oakland and California's climate change reduction goals. The export of Coal interferes with the City's ability to address and mitigate impacts resulting from climate change. In addition, the rise of cleaner forms of energy such as natural gas,

wind and solar, have contributed to a reduction of Coal production, closure of Coal plants, and the filing of bankruptcy of major Coal companies. Reliance of businesses in the City on Coal or Coke industry is neither in the City's environmental nor economic interests, and reliance on Coal exports for the facilities would not constitute sound economic development. Coal dust build-up may destabilize railroad tracks and degrade roadbeds, resulting in an increased financial risk for Oakland taxpayers to reconstruct or maintain these major improvements. There are significant financial risks to the City with Coke or Coal Bulk Materials Facilities, as a number of them have shuttered in recent years, leaving the taxpayers to pay the closure and/or clean-up costs.

3) The Storing or Handling of Coal and Coke in the City of Oakland, including without limitation to and from the West Oakland, would have many detrimental impacts to the existing, natural environment, including without limitation because the burning of Coal and Coke, including the potential for Coal combustion and the application of topping agents could result in the release of toxic air contaminants such as mercury, lead and other trace metals into the environment polluting waterways, soil and sensitive habitat within the City. Coal contains toxic heavy metals and Polycyclic Aromatic Hydrocarbons ("PAHs"), at levels that are harmful to fish and other wildlife.

C. Each individual finding presented in Sections A and B above constitutes a separate and independently sufficient basis to adopt the Ordinance. The City Council finds and determines that each of the findings in Sections A and B above is separately and independently adopted and applicable and should a court of competent jurisdiction determine than any particular finding(s) is or are insufficient to support the adoption of this Ordinance, such determination shall have no effect on the validity of the remaining findings. Moreover, when viewed collectively, the above findings constitute an overall basis to support adoption of the Ordinance.

8.60.030 – Definitions and Interpretation of Terms.

A. As used in this chapter, the following terms have the following meanings, and to the extent a Planning Code and/or Municipal Code Chapter and/or Section is referenced herein, such reference shall also include future amendments, if any:

1) ASTM means the American Society for Testing and Materials.

2) Coal means a solid, brittle, carbonaceous rock classified as anthracite, bituminous, subbituminous, or lignite by ASTM Designation D388-77.

3) Coke means a solid carbonaceous material derived from the distillation of Coal (including Metallurgical Coke) or from oil refinery coker units or other cracking processes (including Petroleum Coke and/or Petcoke).

4) Coal or Coke Bulk Material Facility means an existing or proposed source, site, or facility, including all contiguous land, structures, other appurtenances, and improvements thereon, or any part thereof, where Coal or Coke is or may be Stored

or Handled.

5) Constituents or Oakland Constituent means the citizens, residents, workers, employers and/or visitors of the City of Oakland.

6) Conveyor Shuttle or Traveler or Tripper means a device supporting a conveyor that can travel forwards or backwards along a feed conveyor as needed to allow the conveyor to load material onto a selected area, including without limitation of a ship, rail car, pile or pit.

7) Fugitive Dust means any solid particulate matter that becomes airborne by natural or human-made activities, excluding engine combustion exhaust and particulate matter emitted from a properly permitted exhaust stack equipped with a pollution control device.

8) Metallurgical Coke or Metcoke means a carbon material resulting from the manufactured purification of multifarious blends of bituminous Coal.

9) Owner or Operator means any person who has legal title to any Coal or Coke Bulk Material Facility, who has charge, care or control of any Coal or Coke Bulk Material Facility, who is in possession of any Coal or Coke Bulk Material Facility or any part thereof, and/or who is entitled to control or direct the management of any Coal or Coke Bulk Material Facility.

10) Petroleum Coke or Petcoke means a solid carbonaceous residue produced from a coker after cracking and distillation from petroleum refining operations, including such residues produced by petroleum upgraders in addition to petroleum refining.

11) Pile or Stockpile means any amount of Coal or Coke which attains a height of three feet or more, or a total surface area of 150 square feet or more (whether in a single pile or two or more piles), including without limitation covered and uncovered piles, piles located above ground, underground or within containers.

12) Store or Handle, or Storing or Handling, or Storage or Handling means to store, load, unload, stockpile, transload or otherwise handle and/or manage, temporarily or permanently, physical material including without limitation Coal and Coke.

13) Telescoping Loading Chute means a length adjustable chute which completely encloses the material during loading or unloading operations.

14) Transfer Point means the location at or within a facility where material being moved, carried, or conveyed is dropped or deposited.

15) Transloading means transferring Coal or Coke from one mode of transportation (including without limitation a railcar, truck or ship) to another (including without limitation a railcar, truck or ship) or transferring goods from one container (including without limitation an import container) to another container (including without limitation a domestic container).

B. Interpretation of Terms. References to Coal and Coke shall be interpreted to mean Coal and/or Coke. References to Owner or Operator of a Coal or Coke Bulk Material Facility shall be interpreted to mean an Owner and/or Operator of such facility. References to Store or Handle Coal and Coke shall be interpreted to mean Store or Handle Coal and/or Coke.

8.60.040 – Applicability, Prohibitions.

A. The regulations, requirements and provisions of this chapter shall apply to any Owner or Operator of a Coal or Coke Bulk Material Facility, and to any other person who Stores or Handles Coal and Coke at a Coal or Coke Bulk Material Facility, unless exempt or excepted from this chapter.

B. An Owner or Operator of a Coal or Coke Bulk Material Facility shall not do any of the following at a Coal or Coke Bulk Material Facility:

1. Allow or maintain any Pile of Coal or Coke;
2. Operate any Telescoping Loading Chute for the transport of Coal or Coke.
3. Operate any Conveyor Shuttle or Traveler or Tripper for the transport of Coal or Coke or in any manner which creates a Transfer Point on site.
4. Load, unload, transload or transfer any Coal or Coke between any mode of transportation, including without limitation between or among a motor vehicle (e.g., a truck), ship or train.
5. Otherwise Store or Handle any Coal or Coke.

C. Exemptions. The following are not included within the definition of Coal or Coke Bulk Material Facility: (i) non-commercial facilities (e.g., educational facilities or residential property on which persons may Store or Handle small amounts of Coal or Coke for personal, scientific, recreational or incidental use), and (ii) on-site manufacturing facilities where all of the Coal or Coke is consumed on-site at that facility's location and utilized on-site as an integral component in a production process, and which are operated pursuant to, and consistent with, permits granted by the Bay Area Air Quality Management District.

D. Exception, Procedure.

1. Any person (including any entity) who contends application of this Ordinance to him or her would constitute an uncompensated taking of property (in violation of the Fifth and Fourteenth Amendments of the U.S. Constitution or Article 1, Section 19, of the California Constitution) may petition the City Administrator to be excepted from the application of the Ordinance.

2. Petitions must be on the form provided by the Planning Bureau of the Planning and Building Department ("Department") and submitted to the Department to the attention of the Planning Director. Failure to submit such a Petition will preclude such person from challenging this chapter in court. The Petition shall identify the name and address of the applicant and property owner, the affected application

number, and shall state specifically and completely how this chapter applied to him or her would constitute an uncompensated taking of property (in violation of the Fifth and Fourteenth Amendments of the U.S. Constitution or Article 1, Section 19, of the California Constitution), and shall include payment of fees in the same amount as specified in the City's Master Fee Schedule for appeals of zoning determinations to the City Planning Commission. Failure to raise each and every issue and provide appropriate supporting evidence will constitute waiver of that issue and be grounds for denial of the Petition.

3. The Petition may be granted only if the City Administrator finds, based upon substantial evidence, that both (a) the application of any aspect of this Ordinance would constitute an unconstitutional taking of property, and (b) the exception will allow additional or continued land uses only to the minimum extent necessary to avoid such a taking. If the Petition is granted, the City may impose reasonable conditions on the project.

4. The City Administrator, or designee, shall mail to the applicant a written determination accepting or rejecting the Petition.

5. If any interested party seeks to challenge the written determination of the City Administrator, he or she must appeal to the City Council and such appeal must be filed within ten (10) calendar days of the date from which the City Administrator's written determination was issued, by 4:00 p.m. Appeals must be on the form provided by the Department and submitted to the Department to the attention of the Planning Director. The appeal must state specifically wherein it is claimed there was error or abuse of discretion by the City Administrator and/or wherein the decision is not supported by substantial evidence. The appeal also must include payment of fees in the same amount as specified in the City's Master Fee Schedule for zoning appeals to the City Council of decisions by the City Planning Commission.

6. Failure to make a timely appeal will preclude any interested person from challenging the City's decision in court. The appeal itself must raise each and every issue that is contested, along with all arguments and evidence in the record which support the basis for the appeal. Failure to do so will preclude any interested person from raising such issues during the appeal and/or in court. However, the appeal will be limited to issues and/or evidence presented in the Petition to the City Administrator.

7. The City Council will conduct a public hearing and render a final administrative decision on the appeal via a resolution. The Petition may be granted only if the City Council finds, based upon substantial evidence, that both (1) the application of any aspect of this Ordinance would constitute an unconstitutional taking of property, and (2) the exception will allow additional or continued land uses only to the minimum extent necessary to avoid such a taking. If the Petition is granted, the City may impose reasonable conditions on the project.

Article II – Miscellaneous

8.60.100 – Conflicting Provisions.

Where a conflict exists between the requirements in this chapter and applicable requirements contained in other chapters of this Code and/or the Planning Code, the applicable requirements of this chapter shall prevail.

8.60.110 – Administrative Regulations.

The City Administrator is hereby authorized to adopt rules and regulations consistent with this chapter as needed to implement this chapter, subject to the review and approval of the Office of the City Attorney, and to develop all related forms and/or other materials and take other steps as needed to implement this chapter, and make such interpretations of this chapter as he or she may consider necessary to achieve the purposes of this chapter. Within 60 days of the adoption by the City Administrator of any rules and regulations or written interpretation implementing this chapter, the City Administrator shall submit those rules and regulations or written interpretation to the City Council, for informational purposes.

8.60.120 – Enforcement.

A. Failure to comply with any of the provisions of this chapter is declared to be prima facie evidence of an existing major violation and shall be abated by the City Administrator in accordance with the provisions of this chapter. Any person in violation will be subject to civil penalties, civil action and/or other legal remedies.

B. If an Owner or Operator fails to comply with any provisions of this chapter, the City may take any of the following actions:

1. Withhold issuance of any planning and/or building-related permits;
2. Record a Special Assessment or other lien or liens against the real property;
3. Revoke or suspend the temporary certificate of occupancy and/or certificate of occupancy and/or planning-related permits;
4. Assess civil penalties against an Owner or Operator who fails to comply with this chapter, pursuant to Chapter 1.08 of this Code, and/or enforce any violation as a misdemeanor or by administrative citation per Chapters 1.12 or 1.28 of this Code; and/or
5. Take any other action necessary and appropriate to abate the violation.

Violations of this chapter are considered to be "Major" pursuant to Section 1.08.040D of this Code. The daily civil penalties described in subsection (4) above shall continue until the violations are cured. Civil penalties authorized in this chapter are in addition to any other administrative or legal remedy which may be pursued by the City to address violations identified in this chapter.

Section 4. The record before this Council relating to this Ordinance and supporting the findings made herein includes, without limitation, the following:

1. All final staff reports, and other final documentation and information produced by or on behalf of the City, including without limitation supporting technical studies and all related/supporting final materials, and all final notices relating to aforementioned public hearings and meetings;
2. All oral and written evidence received by the City regarding the subject matter of this Ordinance through the close of the public hearing on June 27, 2016, and other such evidence and other information regarding the subject matter of this Ordinance which is in the public domain, no matter when or where such evidence or other information became public; and
3. All matters of common knowledge and all official enactments and acts of the City, such as (a) the City's General Plan; (b) the Oakland Municipal Code and Planning Code; (c) other applicable City policies and regulations; and (d) all applicable state and federal laws, rules and regulations.

The custodians and locations of the documents or other materials which constitute the record of proceedings upon which the City Council's decision is based are respectively: (a) Planning and Building Department –Bureau of Planning, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, California; and (b) Office of the City Clerk, One Frank H. Ogawa Plaza, 1st Floor, Oakland California.

Section 5. The provisions of this Ordinance are severable. If a court of competent jurisdiction determines that any word, phrase, clause, sentence, paragraph, subsection, section, chapter or other provision (collectively called "Part") is invalid, or that the application of any Part of this Ordinance to any person or circumstance is invalid, such decision shall not affect the validity of the remaining Parts of this Ordinance. The City Council declares that it would have adopted this Ordinance irrespective of the invalidity of any Part of this Ordinance or its application to such persons or circumstances who have been expressly excluded from its coverage.

Section 6. Pursuant to Oakland City Charter section 216, this Ordinance shall take effect immediately after final adoption if it receives at least six (6) affirmative votes; otherwise, it will take effect seven days after final adoption.

Section 7. This Ordinance is enacted to serve the public interest and is necessary to protect and promote the health, safety, and/or welfare of Oakland's Constituents and is enacted pursuant to Article XI, Sections 5 and 7 of the California Constitution, Section 106 of the Oakland City Charter and the City's home rule powers, and the City's General Plan, and other land use plans.

Section 8. The City Council hereby authorizes the City Administrator or designee to make non-substantive, technical conforming changes (essentially correction of typographical and clerical errors), including omnibus cross-referencing conforming changes throughout the Oakland Municipal and Planning Codes, prior to formal publication of these amendments in the Oakland Municipal Code.

Section 9. Nothing in this Ordinance shall be interpreted or applied so as to create any requirement, power, or duty in conflict with any federal or state law.

Section 10. The Environmental Review Officer, or designee, is directed to cause to be filed a Notice of Exemption from the California Environmental Quality Act with the appropriate agencies.

1921866v1

IN COUNCIL, OAKLAND, CALIFORNIA, _____

PASSED BY THE FOLLOWING VOTE:

AYES- BROOKS, CAMPBELL WASHINGTON, GALLO, GUILLEN, KALB, KAPLAN, REID, AND PRESIDENT GIBSON MCELHANEY

NOES-

ABSENT-

ABSTENTION-

ATTEST:_____
LaTonda Simmons
City Clerk and Clerk of the Council
of the City of Oakland, California

DATE OF ATTESTATION: _____

AN ORDINANCE (1) AMENDING THE OAKLAND MUNICIPAL CODE TO PROHIBIT THE STORAGE AND HANDLING OF COAL AND COKE AT BULK MATERIAL FACILITIES OR TERMINALS THROUGHOUT THE CITY OF OAKLAND AND (2) ADOPTING CEQA EXEMPTION FINDINGS

NOTICE AND DIGEST

This Ordinance amends the Oakland Municipal Code Chapter 8.60 to establish a citywide ban on the storage, loading, unloading, stockpiling, transloading and handling of Coal and Coke, throughout the City of Oakland, by the Owner or Operator Bulk Material Facility or Terminal. This Ordinance also adopts various findings related to exemptions under the California Environmental Quality Act.