COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

ADAMS BROADWELL JOSEPH & CARDOZO
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

November 13, 2014

By: Email and Overnight Mail

Sarah Mongano
Project Manager
Division of Environmental Planning and Management
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825
Email: CEQAcomments@slc.ca.gov

Re: Comments on the Draft Environmental Impact Report for the Tesoro Avon Marine Oil Terminal Lease Consideration (SCH No. 2014042013)

Dear Ms. Mongano:

We are writing on behalf of Safe Fuel and Energy Resources California ("SAFER California") to provide comments on the Draft Environmental Impact Report ("DEIR") prepared by the California State Lands Commission ("CSLC"), pursuant to the California Environmental Quality Act ("CEQA").[1] for the Tesoro Avon Marine Oil Terminal Lease Consideration Project ("Project") in Contra Costa County. Tesoro Refining and Marketing Company, LLC ("Applicant") attempts to enter into a new 30-year lease of State sovereign land with the CSLC to continue the Avon Marine Oil Terminal ("Avon Terminal").[2] According to the DEIR, the Project objective is to continue operations at, and maintain the level of refined petroleum product exported through, the existing Avon Terminal. In addition to a renewed 30-year lease, the Applicant is also proposing to upgrade the Avon

[1] Pub. Resources Code, §§ 21000 et seq.
[2] The proposed Project involves Tesoro Refining and Marketing Company, LLC, a wholly owned subsidiary of Tesoro Petroleum Corporation.
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Terminal to meet Marine Oil Terminal Engineering and Maintenance Standards ("MOTEMS").[3]

10-1 Based upon our review of the DEIR, CSLC records, as well as pertinent public records in the possession of other agencies, we conclude that the DEIR is so inadequate under CEQA that it must be withdrawn. As a preliminary matter, the
10-2 DEIR fails to adequately describe the Project under review, precluding an accurate assessment of its impacts. CSLC's failure to use an appropriate baseline for the
10-3 analysis in the DEIR also precludes the agency and public from accurately assessing the environmental impacts. The DEIR further fails to identify and
10-4 address all of the Project's potentially significant impacts to water and air quality. Finally, the DEIR is inadequate because it fails to propose feasible mitigation
10-5 measures to reduce and avoid the potentially significant impacts caused by the Project, and illegally defers formulating some mitigation measures to a future time. These numerous defects in the DEIR, set forth in greater detail in the following
10-6 paragraphs, are fatal errors. The CSLC must withdraw the DEIR and prepare a revised DEIR which fully complies with CEQA.

10-7 We prepared these comments with the assistance of technical experts Phyllis Fox, Ph.D., QEP, PE, DEE **(Attachment A)** and marine ecologist Michael McGowan, Ph.D **(Attachment B)**. Dr. Fox's and Dr. McGowan's technical comments and curriculum vitae are attached and submitted in addition to the comments in this letter. We request that the CSLC respond to the comments of Dr Fox and Dr. McGowan separately.

I. STATEMENT OF INTEREST

SAFER California advocates for safe processes at California refineries to protect the health, safety, the standard of life and the economic interests of its members. For this reason, SAFER California has a strong interest in enforcing environmental laws, such as CEQA, which require the disclosure of potential environmental impacts of, and ensure safe operations and processes for, California oil refineries and their associated transportation, loading, and unloading facilities. Failure to adequately address the environmental impacts of crude oil transport and refining processes poses a substantial threat to the environment, worker health,

[3] MOTEMS are codified in California Code of Regulations, Title 24, California Building Code, Chapter 31F- Marine Oil Terminals (Cal. Code Regs., tit. 24, § 3101F et seq.).
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surrounding communities, and the local economy.

Refineries and their associated facilities are uniquely dangerous and capable of generating significant fires and the emission of hazardous and toxic substances that adversely impact air quality, water quality, biological resources and public health and safety. These risks were recognized by the Legislature and Governor when enacting SB 54 (Hancock). Absent adequate disclosure and mitigation of hazardous materials and processes, refinery workers and surrounding communities may be subject to chronic health problems and the risk of bodily injury and death.

Poorly planned oil industry projects also adversely impact the economic well-being of people who perform construction and maintenance work in those facilities and the surrounding communities. Plant shutdowns in the event of accidental release and infrastructure breakdown have caused prolonged work stoppages. Such nuisance conditions and catastrophic events impact local communities and can jeopardize future jobs by making it more difficult and more expensive for businesses to locate and people to live in the area. The participants in SAFER California are also concerned about projects that carry serious environmental risks and public service infrastructure demands without providing countervailing employment and economic benefits to local workers and communities.

The members represented by the participants in SAFER California live, work, recreate and raise their families in Contra Costa County, including the city of Martinez. Accordingly, these people would be directly affected by the Project's adverse environmental impacts. The members of SAFER California's participating unions may also work on the Project itself. They will, therefore, be first in line to be exposed to any hazardous materials, air contaminants, and other health and safety hazards, that exist onsite.

II. THE DEIR'S DESCRIPTION OF THE ENVIRONMENTAL SETTING RENDERS IMPACT ANALYSES FUNDAMENTALLY FLAWED AND MISLEADS DECISION MAKERS AND THE PUBLIC

CEQA requires the lead agency to include a description of the physical environmental conditions in the vicinity of a project as they exist at the time environmental review commences.[4] The description of the environmental setting

[4] CEQA Guidelines, § 15125(a); *see also Communities for A Better Environment v. South Coast Air Quality Management Dist.*, 48 Cal. 4th 310, 321 (2010).

constitutes the baseline physical conditions by which a lead agency may assess the significance of a project's impacts. The EIR must also describe the existing environmental setting in sufficient detail to enable a proper analysis of project impacts.[5]

Describing the environmental setting accurately and completely for each environmental condition in the vicinity of the project is critical to an accurate, meaningful evaluation of environmental impacts. The courts are clear that, "[b]efore the impacts of a Project can be assessed and mitigation measures considered, an [environmental review document] must describe the existing environment."[6] It is:

> a central concept of CEQA, widely accepted by the courts, that the significance of a Project's impacts cannot be measured unless the DEIR first establishes the actual physical conditions on the property. In other words, baseline determination is the first rather than the last step in the environmental review process.[7]

Additionally, it is axiomatic that the baseline information on which an EIR relies must be supported by substantial evidence.[8] The CEQA Guidelines define "substantial evidence" as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion."[9] "Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts." "[U]nsubstantiated opinion or narrative [and] evidence which is clearly inaccurate or erroneous . . . is not substantial evidence."[10]

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In this DEIR, the CSLC violated these standards by comparing the Project's lease-period operating emissions to a baseline significantly overinflated and thus not representative of existing environmental conditions. Specifically, the CSLC employed a ten-year average of ocean-going vessel ("OGV") calls to the Tesoro Avon

[5] *Galante Vineyards v. Monterey Peninsula Water Management District*, 60 Cal. App.4th 1109, 1121-22 (1997).
[6] *County of Amador v. El Dorado County Water* Agency, 76 Cal. App. 4th 931, 952 (1999).
[7] *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors*, 87 Cal. App. 4th 99, 125 (2001).
[8] *See* CEQA Guidelines, §15063(a)(3) ("An initial study may rely upon expert opinion supported by facts, technical studies or other substantial evidence to document its findings.").
[9] CEQA Guidelines, §15384.
[10] Pub. Resources Code, § 21082.2(c).
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Marine Terminal.[11] Under this approach, the CSLC estimated that the average number of ships calling on the Avon Terminal pre-project was 124.[12] CSLC stated that its 10-year average approach "recognizes that the number of vessels using the Avon Terminal can fluctuate substantially from year to year."[13] Even still, the agency's ten-year baseline grossly inflates the number of vessel calls to the Avon Terminal because it averages into the ten year baseline six operating years when two berthing stations operated: Berth 1 and Berth 5.

As Dr. Fox points out in her comments, since Berth 5 was shut down in 2009 the use of a "10-year period that includes Berth 5 operations does not accurately capture 'actual' conditions at the time CEQA review was started."[14] As the DEIR itself acknowledges, Berth 1A will operate without any changes to Avon's current ship traffic.[15] Since the decommissioning of Berth 5 in 2009, the Avon Terminal has never reached 100 ship calls.[16] Thus, all operational years prior to 2010 are unrepresentative of pre-Project conditions because they included vessel calls for the Avon Terminal when two berthing stations operated.[17] Since the proposed Project will continue to operate a single berth at current ship traffic levels, the pre-project baseline was considerably overinflated. Dr. Fox opines that a "more accurate representation of 'actual' conditions is the two years immediately prior to CEQA review, or 2012 and 2013."[18] The average number of ship calls during these years was 85.[19] Operational year 2011 was unrepresentative also because the Avon Terminal had unusually low vessel calls due to maintenance at the terminal and the refinery.

The CSLC violated CEQA by utilizing a ten-year average baseline unsupported by substantial evidence. As a result, the pre-project baseline used to compare the Project's potential impacts was 45% higher than a more representative

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[11] DEIR, p. 1-10 ("The vessel traffic numbers used as the baseline for the analysis in this EIR is the average number of vessel calls per year from 2004 to 2013.")
[12] DEIR, Table 2-4, p. 2-31.
[13] *Id.* at 2-31.
[14] Comments of Dr. Phyllis Fox, November 10, 2014 at p. 3, (hereinafter "Dr. Fox Comments") attached as **Attachment A**.
[15] DEIR, p. 1-4.
[16] DEIR, Table 2-4, p. 2-31.
[17] *Id.*
[18] *Id.*
[19] Dr. Fox Comments, p. 3.
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10-8 con't

two year average.[20] The DEIR's exaggerated baseline corrupts the DEIR's entire emissions analysis. Since the Avon Terminal will continue to operate with a single berth under the renewed 30-year lease, Dr. Fox's 2-year average baseline of 85 vessel calls is far more representative of actual conditions and supported by substantial evidence. Accordingly, the CSLC must prepare a revised DEIR that complies with CEQA Guidelines section 15125 (a). The revised DEIR must also reanalyze the Project's emissions impacts using a baseline that represents *actual* conditions.

A. The DEIR's Biological Analysis is Fundamentally Flawed Because it Relies on Out of Date and Incomplete Information

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According to Dr. McGowan's expert opinion, the DEIR relies upon obsolete and incomplete information for its analysis of biological impacts.[21] As a result, Dr. McGowan concludes that the resulting baseline in the DEIR is so deficient that the severity of the Project's impacts to biological resources cannot be estimated.[22]

10-10

Moreover, the CSLC failed to disclose and analyze all of the Project's potentially significant impacts to biological resources and failed to identify feasible mitigation measures necessary to reduce those impacts. Consequently, the CSLC must prepare a revised DEIR that accounts for all sensitive biological resources and mitigates any potentially significant impacts to them.

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Dr. McGowan begins by explaining that Table 4.2-1 in the DEIR relies on two out-of-date and incomplete sources- the 1959 Arthur Smith study (over half a century old) and the 2007 National Oceanic and Atmospheric Administration ("NOAA") Report on Subtidal Habitats and Associated Biological Taxa in San Francisco Bay.[23] Dr. McGowan finds both references fail to account for numerous native and nonindigenous species that have been found in the Project area.

Dr. McGowan provides substantial evidence that the 2007 NOAA Report is outdated with regards to the presence of blue mud shrimp (*Upogebia pugettensis*) in the San Francisco Bay. The blue mud shrimp is an important element of the benthic community because it carries a parasite driving native species extinct in

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[20] 45% figure is derived by comparing the DEIR's 10-year baseline of 124 OGV to Dr. Fox's 2-year baseline of 85 OGV.
[21] Comments of Dr. Michael McGowan, November 10, 2014 at p. 4. (hereinafter "Dr. McGowan Comments"), attached as **Attachment B**.
[22] Dr. McGowan Comments, pp. 4-5.
[23] DEIR, Table 4.2-1, pp. 4.2-4, 4.2-5.
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10-11 con't

several West Coast estuaries.[24] Contrary to the 2007 NOAA Report stating the presence of blue mud shrimp in the San Francisco Bay as "questionable," Dr. McGowan presents substantial evidence indicating that blue mud shrimp is present and was the second most abundant organism collected in the San Pablo Bay in 2010.[25] The DEIR's omission of the blue mud shrimp stems from the agency's decision to rely on obsolete sources of information. Thus, the CSLC's biological analysis was not based on substantial evidence. The CSLC must prepare a revised DEIR that identifies the blue mud shrimp and evaluates the Project's potential impacts to this species.

B. The DEIR Improperly Defers the Identification and Incorporation of Mitigation Measures

CEQA requires that "[e]ach public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so."[26] This requirement is the "core of an EIR."[27] The environmental review must identify feasible and fully enforceable mitigation measures for each significant impact.[28] This approach helps "insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug."[29]

10-12

Deferring formulation of mitigation measures to post-approval studies is generally impermissible.[30] An agency may only defer the formulation of mitigation measures when it "recognizes the significance of the potential environmental effect, commits itself to mitigating the impact, and articulates specific performance criteria for the future mitigation."[31] "A study conducted after approval of a project will inevitably have a diminished influence on decision making. Even if the study is

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[24] Dr. McGowan's Comments, p. 4.
[25] Dr. McGowan Comments, p. 4 (Dr. McGowan also stated blue mud shrimp were abundant in the San Francisco bay in a similar 2011 study).
[26] Pub. Resources Code, § 21002.1, subd. (b).
[27] *Citizens of Goleta Valley v. Bd. of Supervisors of Santa Barbara Cnty.*, 52 Cal. 3d 553, 564-65 (1990).
[28] CEQA Guidelines, § 15126.4, subd. (a)(1)(A); (a)(2).
[29] *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.*, 42 Cal. 3d 929, 935 (1986) (citations omitted).
[30] *Sundstrom v. County of Mendocino*, 202 Cal. App. 3d 296, 308-309 (1988); *see also* CEQA Guidelines, § 15126.4, subd. (a)(1)(B).
[31] *Gentry v. City of Murrieta*, 36 Cal. App. 4th 1359, 1411 (1995) (citing *Sacramento Old Cmty. Assn. v. County Council*, 229 Cal. App. 3d 1011, 1028-1029 (1991).
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subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA."[32]

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CEQA's requirement to assess feasible mitigation measures applies not only to an agency's analysis of a project, but to an agency's consideration of alternatives:

> [I]t is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.[33]

The CEQA Guidelines reiterate the state's policy that a public agency "should not approve a project as proposed if there are feasible alternatives or mitigation measures available that would substantially lessen any significant effects that the project would have on the environment."[34] Pursuant to this policy, no public agency shall approve a project unless its findings on the feasibility of alternatives and mitigation measures are supported by substantial evidence.[35]

10-13

In the DEIR, the CSLC improperly deferred to a future environmental review any discussion of twenty mitigation measures for the only two alternatives considered for the Project.[36] The CSLC considered three alternatives to the Project: the No Project alternative, the Restricted Lease alternative and the Environmentally Superior alternative (the proposed Project).[37] Under the No Project alternative, the Avon Terminal lease would not be renewed and the existing Avon Terminal would be decommissioned.[38] Under the Restricted Lease alternative, the Avon Terminal lease would be renewed but restricted from

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[32] *Sundstrom*, 202 Cal. App. 3d at 307.
[33] Pub. Resources Code, §21002.
[34] CEQA Guidelines §15021(a)(2).
[35] Pub. Resources Code, §21081.5.
[36] DEIR, p. 4.2-73.
[37] *Id.* at 3-7, 3-10.
[38] *Id.* at ES-5.

10-13 con't

transporting oil. The Avon Terminal would be placed into caretaker status and left in place to be used for alternative purposes.[39] The CSLC concluded that the Environmentally Superior alternative was the proposed Project because the No Project alternative and the Restricted Lease alternative had greater potential for adverse environmental impacts.[40] However, the CSLC failed to set forth any evidence to support this conclusion.

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The DEIR precluded both the decisionmakers and public from intelligently evaluating, analyzing, and comparing the Project alternatives to the proposed Project. The DEIR contains no discussion of mitigation measures for potentially significant or significant and unavoidable impacts related to the No Project alternative and the Restricted Lease alternative; instead, the DEIR merely lists the impacts: OS-10, OS-11, BIO-23, BIO-24, BIO-25, BIO-26, WQ-16, WQ-18, AQ-6, AQ-7, GHG-4, GHG-5, GSS-10, CR-2, LT-3, LT-4, LUR-6, LUR-8, CS-10, and CS-11. The DEIR's failure to assess and improperly deferral of mitigation measures for alternatives renders the entire alternatives analysis legally inadequate under CEQA.[41] It is impossible for the public, let alone the decisionmakers, to intelligently compare the alternatives to the proposed Project without *some* discussion of these twenty deferred mitigation measures.

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Accordingly, the CSLC's determination that the proposed Project is the Environmentally Superior alternative is not supported by substantial evidence. The CSLC arbitrarily selected the proposed Project as the Environmentally Superior alternative without fully considering the No Project and Restrict Lease alternatives, because the DEIR failed to analyze any mitigation measures associated with the only two alternatives considered in the DEIR. As the California Supreme Court held in *Citizens of Goleta Valley v. Board of Supervisors*, the discussion of mitigation measures and alternatives is the "core of an EIR."[42] The CSLC must prepare a revised DEIR that analyzes the twenty deferred mitigation measures and recirculate it for public review.

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[39] *Id.* at ES-5; ES-6.
[40] DEIR, pp. ES-16; ES-17.
[41] DEIR, Table ES-2, pp. ES-18-ES-25.
[42] *Citizens of Goleta Valley*, 52 Cal. 3d at 564.
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III. THE DEIR FAILS TO SATISFY CEQA'S PURPOSE AND GOALS

CEQA has two basic purposes, neither of which the DEIR satisfies. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.[43] CEQA requires that an agency analyze potentially significant environmental impacts in an EIR.[44] The EIR must not rely on scientifically outdated information to assess the significance of impacts, and must instead result from "extensive research and information gathering" including consultation with state and federal agencies, local officials, and the interested public.[45] To be adequate, the EIR must evidence the lead agency's good faith effort at full disclosure.[46] The EIR has been described as "an environmental alarm bell" whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return.[47] Thus, the EIR protects not only the environment but also informed self-government.[48] The EIR's purpose is to inform responsible officials of the environmental consequences of their decisions *before* those decisions are made.

The second purpose of CEQA is to require public agencies to avoid, reduce or prevent environmental damage when possible by requiring appropriate mitigation measures and through the consideration of environmentally superior alternatives.[49] The EIR serves to provide public agencies, and the public in general, with information about the effect that a proposed project is likely to have on the environment and to "identify ways that environmental damage can be avoided or significantly reduced."[50] If a project has a significant effect on the environment, the agency may approve the project only upon a finding that it has "eliminated or substantially lessened all significant effects on the environment where feasible," and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns" specified in CEQA section 21081.[51] The DEIR fails to satisfy these two basic purposes of CEQA.

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[43] CEQA Guidelines, § 15002, subd. (a)(1).
[44] Pub. Resources Code, § 21000; CEQA Guidelines, § 15002.
[45] *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm.*, 91 Cal. App. 4th 1344, 1367 (2001); *see also Schaeffer Land Trust v. San Jose City Council*, 215 Cal. App. 3d 612, 620 (1989).
[46] CEQA Guidelines, § 15151; *see also Laurel Heights I*, 47 Cal. 3d 376, 406 (1998).
[47] *County of Inyo v. Yorty*, 32 Cal. App. 3d 795, 810 (1973) (internal quotations omitted).
[48] *Citizens of Goleta Valley v. Bd. of Supervisors*, 52 Cal. 3d 553, 564 (1990) (citations omitted).
[49] CEQA Guidelines, § 15002(a)(2)-(3); *Berkeley Keep Jets Over the Bay Comm.*, 91 Cal. App. 4th at 1354.
[50] CEQA Guidelines, § 15002, subd. (a)(2).
[51] CEQA Guidelines, § 15092, subd. (b)(2)(A)-(B).
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A. The DEIR Fails to Include All the Relevant Data in a Single Report

As a preliminary matter, we hereby reserve our right to file supplemental comments at a later date because the CSLC failed to make all documents referenced in the DEIR available for review during the full comment period. The DEIR's failure to incorporate and summarize all of the relevant information in the text of the document in a manner that is understandable to the public violates CEQA's disclosure requirements. CEQA expressly requires a lead agency to make all referenced documents available to the public for the full comment period.[52] The EIR must be "a compilation of all relevant data into a single formal report . . . which would facilitate both public input and the decisionmaking process."[53]

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The DEIR failed to meet this most basic requirement of CEQA. In section 4.1 of the DEIR, it states that the probability estimates for tanker and barge spills from vessel traffic accidents was based on data developed during the preparation of the Unocal San Francisco Refinery Marine Terminal EIR (the 1994 Chambers Group Inc. report).[54] The report was not made available to the public during the entire comment period, nor provided to us in response to our October 13, 2014 request for immediate access to all documents referenced or relied upon in the DEIR.[55] By failing to provide the 1994 Chambers Group Inc. report, the CSLC impeded the public from thoroughly assessing whether the potential impacts of oil spills was accurately assessed. This error is amplified because the report is over 20 years old. As Dr. McGowan states in his comment letter, the data the agency relied upon is not substantial evidence because it is more than 20 years old.[56]

Similarly, Table 4.2-1 of the DEIR summarizes the biotic communities found in the Project area based upon the 1959 Arthur Smith report titled, *The Natural History of San Francisco Bay Region*.[57] This report was unavailable during the entire comment period and not provided to us in response to our October 13, 2014 request for immediate access to all documents referenced or relied upon in the

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[52] Pub. Resources Code, § 21092(b)(1); *see also* CEQA Guidelines, § 15087(c)(5).
[53] *Russian Hill Improvement Association v. Board of Permit Appeals*, 44 Cal. App. 3d 158, 168 (1975).
[54] DEIR, p. 4.1-33.
[55] *See* Adams, Broadwell, Joseph & Cardozo Request for Immediate Access, (hereinafter "Request for Immediate Access), sent October 13, 2014, attached as **Attachment C**.
[56] Dr. McGowan Comments, p. 2.
[57] DEIR, Table 4.2-1, pp. 4.2-4, 4.2-5; *see also* DEIR, p. 9-18.
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DEIR.[58] By failing to provide this report, the CSLC obstructed the public's ability to fully analyze whether the DEIR adequately addressed impacts to biological resources. As Dr. McGowan again states in his comment letter, the data from this fifty year old report is obsolete and thus does not constitute substantial evidence.[59]

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Public access to all supporting data for each section of the DEIR is critical for an informed review of the DEIR. The CSLC failed to provide substantial evidence to support its environmental conclusions presented in the Operational Safety and Risk of Accidents and in the Biological Resources section of the DEIR. The agency also failed to provide *all* data relied upon during the full comment period. Consequently, a revised DEIR that includes all of the relevant underlying data must be prepared for public review and comment in order to be compliant under CEQA.

B. The Project Description in the DEIR is Inadequate

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CEQA Guidelines section 15378 defines "project" to mean "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."[60] "The term 'project' refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies. The term project does not mean each separate governmental approval."[61] Courts have explained that "[a] complete project description of a project has to address not only the immediate environmental consequences of going forward with the project, but also all "*reasonably foreseeable* consequence[s] of the initial project."[62] "If a[n] . . . EIR . . . does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decisionmaking cannot occur under CEQA and the final EIR is inadequate as a matter of law."[63]

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[58] Request for Immediate Access; *see also* Adams, Broadwell, Joseph & Cardozo Public Records Act Request (hereinafter "PRA Request"), sent October 13, 2014, attached as **Attachment D**.
[59] Dr. McGowan comments, p. 3.
[60] CEQA Guidelines, §15378.
[61] CEQA Guidelines, 15378 subd. (c).
[62] *Laurel Heights Improvement Association v. Regents of University of California*, 47 Cal. 3d 376, 398 (1988) (emphasis added); *see also Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, 40 Cal. 4th 412, 449-50 (2007).
[63] *Riverwatch v. Olivenhain Municipal Water Dist.*, 170 Cal. App. 4th 1186, 1201 (2009).
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10-17 con't

The DEIR fails to meet CEQA's requirements for an adequate project description, by omitting from the analysis the reasonably foreseeable consequences of the Avon Marine Oil Terminal Lease Consideration Project. In particular, the DEIR fails to identify and analyze reasonably foreseeable changes in crude imports to the Avon Terminal.

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In *Communities for a Better Environment v. City of Richmond*, the First District Court of Appeal held that an EIR for a refinery project must disclose whether the proposed project would allow the refinery to process heavier crude where a change in feedstock is a reasonably foreseeable consequence of the proposed project.[64] There, petitioners argued that the EIR was inadequate because the project description failed to clearly and consistently state whether the project would facilitate the future processing of heavier crudes at the refinery, and to analyze the consequences of such a change.[65] In that case, the EIR acknowledged that the proposed project would allow the refinery to process a wider range of crude oils, including crude that contains a higher amount of sulfur and associated contaminants.[66] However, the lead agency denied claims that the refinery would also be able to process heavier crudes than before.[67] Petitioners pointed to conflicting statements in the EIR and the project proponent's SEC filings, as well as the project proponent's rejection of a permit limitation precluding the alteration of the baseline crude slate mix, all of which suggested that the project would (contrary to the lead agency's claim) enable the refinery to process heavier crudes.[68] The court agreed with petitioner that a crude switch was reasonably foreseeable and invalidated the EIR "because the EIR's project description ... [was] inconsistent and obscure as to whether the Project enables the Refinery to process heavier crudes."[69]

Here, the DEIR suffers from a similar error. The DEIR presents conflicting statements in the EIR about the type of oil imports occurring at the Avon Terminal. First noting that the majority of imports and all crude oil imports occur at Tesoro's Amorco Marine Terminal,[70] the DEIR then suggests crude oil is being imported at the Avon Terminal.[71] This ambiguity is exacerbated by the DEIR's failure to place

[64] *Communities for a Better Environment v. City of Richmond*, 184 Cal. App. 4th 70, 89 (2010)
[65] *See id.* at 83.
[66] *See id.* at 76-77.
[67] *Id.*
[68] *See id.* at 85-85.
[69] *See id.* at 89.
[70] DEIR, p. 2-1, note 3.
[71] DEIR, p. 4.4-11.
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10-18 con't

any limits on what the applicant can import. As a result, the DEIR leaves open the possibility of future increases of imports to the Avon Terminal.[72] Dr. Fox contends that "[t]his is a serious omission as there is nothing to prevent Tesoro from using the Avon Terminal to import crude oil. This would significantly increase indirect volatile organic compounds ("VOC") and toxic air contaminants ("TAC") emissions (e.g., benzene) from on-shore tanks."[73] Elevated VOC and TAC emissions, relative to current feedstocks, would also result in increased VOC and TAC emissions when transporting, storing and moving crude oils into and out of tanks and associated equipment, such as pumps, connectors, and valves.[74]

10-19

Dr. Fox goes on to explain that Bakken crudes have unique chemical and physical characteristics that distinguish them from currently refined crudes.[75] These unique characteristics include high volatility, flammability, and elevated concentrations of TACs and VOCs.[76] Should the applicant choose to increase Bakken crude imports, as it very well could under the current DEIR, the significant environmental impacts to air quality and public health would not be analyzed in the DEIR.[77] Moreover, Dr. Fox notes that the Material Safety Data Sheets submitted with Tesoro's Vancouver Terminal Application additionally disclosed very high concentrations of benzene in its crude oil. According to Dr. Fox, increased concentrations of benzene means the crude is more volatile.[78]

The Chief Executive Officer of Tesoro, Greg Goff, stated that Tesoro shipped 5,000 to 7,000 bbl/day of Bakken into California in the first quarter of 2014 and the Bakken supply is limited to10,000 bbl/day due to logistic constraints.[79] According to Dr Fox, these numbers are consistent with known rail imports of Bakken to Tesoro's Martinez refinery[80] which is supplied by the Avon Terminal.[81] It is also

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[72] DEIR, p. 2-8 ("a small percentage of imports occurs on an as-needed basis as discussed in Section 2.1.")
[73] Dr. Fox Comments, p. 9.
[74] *Id.* at 11.
[75] *Id.*
[76] *Id.*
[77] *Id.* at 10.
[78] *Id.* at 9-10.
[79] Q1 2014 Tesoro Corporation Earnings Conference Call (hereinafter referred to as "Q1 Conference Call"), May 1, 2014, Goff response to Barclay questions at 28:10 – 28:47 min, webcast available at: http://edge.media-server.com/m/p/thi5ed4nzb/lan/en and transcript attached as **Attachment E**; see *generally* Dr. Fox Comments, p. 12.
[80] Q3 2013 Tesoro Corporation Earnings Conference Call, November 7, 2013 Transcript, George Goff statements at p. 4 ("We also started taking up to 3 unit trains a month of Bakken crude oil into our 3187-006cv

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reasonably foreseeable that the Bakken crude could be supplied by a recently permitted Global Partners rail-to-marine terminal in Oregon[82] and the proposed 360,000 bbl/day rail-to-marine terminal facility at the Port of Vancouver in Washington (Vancouver Terminal) that Tesoro is currently building with Savage Companies.[83] The Vancouver Terminal will import North American "cost-advantaged" crudes by rail and export them by ship to California and Alaska. Dr. Fox states that this terminal is "key" to Tesoro's plans to import Bakken and other cost advantaged crudes to its west coast refineries.[84] And as explained already, nothing in the DEIR limits the amount of "cost-advantaged" crudes the Avon Terminal accepts.

Accordingly, substantial evidence shows that it is reasonably foreseeable that the Project will involve a change in amount and quality of crude imported at the Avon Terminal. The failure of the DEIR to analyze, let alone mitigate, any of the potentially significant environmental impacts associated with Bakken crude renders the DEIR inadequate. The CSLC must either expand its analysis to encompass the reasonably foreseeable possibility that Bakken crude will be imported to the Avon Terminal or condition the approval of the Project to prohibit the import of Bakken and other similar light crudes.

Martinez refinery... we have the capacity to deliver nearly 350,000 barrels per month of Bakken crude oil into our Martinez, California refinery.") and 11 ("...what we said was we can deliver three unit trains per month into the Martinez or Golden Eagle refinery as well as some additional manifest cars that we do, which allows us to maximize the use of the facilities. As a result of that, it's 350,000 barrels per month at the present time."), available at: http://phx.corporate-ir.net/phoenix.zhtml?c=79122&p=irol-transcriptsarchive, transcript attached as **Attachment F**; *see generally* Dr. Fox Comments, p. 12.

[83] Dr. Fox Comments, p. 12.

[84] *See, e.g.*, Global Wins, Tesoro Waits on Bringing Bakken Oil West, Bloomberg, August 20, 2014, Available at: http://www.bloomberg.com/news/2014-08-20/global-partners-rail-terminal-approved-as-tesoro-waits.html and Rory Carroll, Exclusive: California Getting More Bakken Crude by Barge than Rail, Reuters, October 23, 2014, Available at: http://www.reuters.com/article/2014/10/23/us-california-bakken-barge-idUSKCN0IC17L20141023, both attached as **Attachment G** and **Attachment H**, respectively; *see generally* Dr. Fox Comments, p. 10.

[85] Dr. Fox Comments, p. 10.

[86] Q1 Conference Call, *supra*, Goff response to Barclay questions at 28:54 – 30:19 min.

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IV. THE CSLC IMPROPERLY PIECEMEALED ENVIRONMENTAL REVIEW OF THE PROJECT

CEQA defines "project" broadly to encompass the "whole of the action."[83] The CEQA Guidelines state "the term 'project' has been interpreted to mean far more than the ordinary dictionary definition of the term."[84] Any activity "which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment" constitutes a "project" or the "whole of the action."[85] This includes, but is not limited to, "later phases of the project, and any secondary, support, or off-site features necessary for its implementation."[86] If later phases or future activities are reasonably foreseeable consequences of a proposed project, an agency must include a description of the actions in the environmental review document and analyze their impacts.[87]

In performing its analysis, a lead agency must not "piecemeal" or "segment" a project by splitting it into two or more segments. This approach ensures "that environmental considerations do not become submerged by chopping a large project into many little ones, each with a potential impact on the environment, which cumulatively may have disastrous consequences."[88]

10-20

Here, the DEIR improperly excluded emissions associated with on-shore tanks that receive imported products.[91] The DEIR's failure to consider these potentially significant environmental impacts directly violates 21100(b)(1) of the Public Resources Code, because VOC emissions from on-shore tanks are a reasonably foreseeable indirect or secondary effect[92] caused by the Project. Even the DEIR states in the Project Description that the objective of the Avon Terminal is to transfer products between the Refinery and/or on-shore tankage to ships berthed at the Avon Terminal, or import Refinery feedstocks to upland storage tanks that will later be transferred to Refinery process units.[93] Admittedly then,

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[83] Pub. Resources Code, §§ 21065, 21080(a); CEQA Guidelines, §§ 15002(b), 15003(h), 15165, 15378; Appendix G.
[84] CEQA Guidelines, § 15002(b).
[85] Pub. Resources Code, § 21065.
[86] CEQA Guidelines, Appendix G.
[87] *Citizens Assn. for Sensible Development v. County of Inyo*, 172 Cal. App. 3d 151, 168 (1985).
[88] *Burbank-Glendale-Pasadena Airport Authority v. Hensler*, 233 Cal. App. 3d 577, 592 (1991); *Bozung v. Local Agency Formation Commission*, 13 Cal. 3d 263, 283-284 (1975).
[91] DEIR, p. 4.4-18.
[92] CEQA Guidelines, § 15358(a)(2).
[93] DEIR, p. 2-1.
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the on-shore tanks *are* part of the Project. The CSLC illegally piecemealed the Project by excluding from CEQA review reasonably foreseeable emissions associated with on-shore tanks.

10-21

The agency further erred by concluding incorrectly and without substantial evidence that emissions from these on-shore tanks are primarily driven by diurnal temperature changes and atmospheric pressure conditions.[84] As Dr. Fox makes clear, emissions from on-shore tanks is primarily driven by the vapor pressure of the material being stored in the tanks and handled by the fugitive components.[85] Dr. Fox explains that the import of Bakken crude oils to the Avon Terminal would lead to reasonably foreseeable significant environmental impacts from emissions from on-shore tanks.[86] Thus, the DEIR must analyze the type and amount of crude oil to be imported to the Avon Terminal.

10-22

The DEIR failed to analyze reasonably foreseeable direct and indirect emissions associated with on-shore tanks because the CSLC illegally piecemealed the Project. The agency also erred by concluding, without substantial evidence, that emissions are driven by weather and atmospheric pressure, not the vapor pressure of the materials stored within them. For these reasons, the DEIR is fatally deficient under CEQA. Accordingly, the DEIR must be revised to address these potentially significant impacts or, alternatively, place restrictions on the type and amount of crude oil imports that the Avon Terminal can receive.

V. THE DEIR FAILS TO DISCLOSE OR ANALYZE ALL POTENTIALLY SIGNIFICANT IMPACTS AND SIGNIFICANT ENVIRONMENTAL IMPACTS OF THE PROJECT

An EIR must disclose all potentially significant adverse environmental impacts of a project.[87] As explained in an appellate court CEQA decision:[88]

> The EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed and it must permit the significant effects of the project to be considered

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[84] DEIR, p. 4.4-18.
[85] Dr. Fox Comments, p. 10.
[86] *Id.*
[87] Pub. Res. Code, § 21100(b)(1).
[88] *Friends of the Eel River v. Sonoma County Water Agency*, 108 Cal. App. 4th 859, 874 (2003).
1187-006cv

in the full environmental context.[99] We interpret this Guideline broadly in order to "afford the fullest possible protection to the environment."[100] In so doing, we ensure that the EIR's analysis of significant effects, which is generated from this description of the environmental context, is as accurate as possible.[101]

10-23

The DEIR for this Project fails to provide the legally required disclosure. Among other things, the DEIR provides an inadequate baseline condition from which to evaluate environmental significant and potentially significant impacts to air quality, water quality, and biological resources.

The DEIR must be revised to address these impacts and re-circulated for public review. CEQA requires re-circulation of an EIR when significant new information is added to the EIR following public review but before certification.[102] The Guidelines clarify that new information is significant if "the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project" including, for example, "a disclosure showing that . . . [a] new significant environmental impact would result from the project."[103] The following new, significant environmental impacts would result from the Project and must be addressed in a revised DEIR that is re-circulated for public review.

A. The DEIR Must Be Revised To Disclose All Potentially Significant and Significant Air Quality Impacts from Operation of the Project

1. *The DEIR's Operational Emission Estimates Are Underestimated, Significant and Not Supported By Substantial Evidence*

10-24

According to Dr. Fox, the DEIR *under*estimated the maximum potential increase in ship calls during the lease period (140 vs. over 191) and *over*estimated the number of ship calls during the "actual" baseline years (124 vs. 85).[104] In doing so, the DEIR erroneously claimed the Project would reduce emissions when in fact

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[99] Guidelines, § 15125, subd. (c).
[100] *Kings County Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 720 (1990).
[101] *See also* Remy et al., Guide to the Cal. Environmental Quality Act (10th ed. 1999), pp. 374-376.
[102] Pub. Res. Code, § 21092.1.
[103] CEQA Guidelines, § 15088.5.
[104] Dr. Fox Comments, p. 2 (emphases added).
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they would be significantly increased.[105] When the more representative two-year vessel call average is used to estimate pre-project baseline emissions, and the DEIR's emission calculations are otherwise used, the Project actually *increases* emissions, as summarized by Dr. Fox in Table 2.

Table 2.
Revised Emissions Based on
Revised Pre-Project (2012-2013 Baseline) Emissions (ton/yr)

	CO	NOx	PM10	PM2.5	VOC	SOx
Pre-Project	7.9	66.1	2.3	2.3	3.4	21.4
Post-Project	11.2	93.3	3.3	3.2	4.8	30.3
Increase	**3.3**	**27.2**	**1.0**	**0.9**	**1.4**	**8.9**

10-25

The DEIR established significance thresholds of 15 ton/yr and 88 lb/day for three pollutants: VOCs, mono-nitrogen oxides ("NOx"), and particulate matter with an aerodynamic diameter of 10 micrometers or less ("PM_{10}").[106] The DEIR then concluded that "annual emissions from the baseline year would decrease and, therefore, no significance thresholds are expected to be exceeded."[107] However, as Dr. Fox explains, the DEIR only points to emissions in ton/yr and is entirely silent on daily emissions. Dr. Fox analyzed the DEIR's emission increase calculations from a single ship call, calculated in Appendix D of the DEIR and summarized here in Table 4 below.

Table 4.
Revised Emissions Based on
Revised Ship Calls and Revised Per Ship Emissions

	CO	NOx	PM10	PM2.5	VOC	SOx
Tesoro Neg.Dec. (lb/day)	814	9,350	163	129	339	324
DEIR, Appx. D (lb/day)	186	1,555	55	53	80	504
Revised Emissions (ton/yr)	**43**	**496**	**9**	**7**	**18**	**17**

According to the DEIR, a ship call lasts about 24 hours, so Dr. Fox concluded that the ship emissions estimated in the DEIR on page 4.4-11 are daily emissions.

[105] DEIR, Table 4.4-3, p. 4.4-18.
[106] DEIR, Table 4.4-3, p. 4.4-18.
[107] *Id.*
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10-25 con't

She contends the significance of these daily emissions should have been assessed in the DEIR relative to the pre-Project daily emissions amount of zero.[108] This she explains, is the appropriate analysis because while the emissions from a single ship call are the same in the pre- and post-Project periods, there will be *many more days* where ships are called in the post-Project period than during the pre-Project baseline period. Because the DEIR utilized the exceptionally high baseline year, it erroneously concluded that the post-Project period would have *less* ship calls than during the baseline period. When using the more representative baseline of 85 ship calls annually, Dr. Fox finds that there were no ships called on 280 days (365-85 = 280) or 77% of the time. Therefore, she concludes that the DEIR's daily emission increase analysis should have utilized a zero ship emissions baseline and compared that with emissions from one ship in the post-Project period. When the more representative baseline of 85 ship calls is used, as opposed to the inflated 124 ship calls, the ship emissions summarized above from Appendix E (Table 4) are actually daily *increases* in emissions, ***not*** decreases as the DEIR concludes.

Dr. Fox goes on to explain that because Table 4 actually represents daily increases in emissions, the daily emissions from these criteria pollutants greatly exceeds the daily significance thresholds. For instance, the daily NOx emissions of 1,555 to 9,350 lb/day greatly exceed the daily significance threshold of 88 lb/day adopted by the DEIR. Likewise, the revised daily VOC emissions of 339 lb/day exceed the DEIR's VOC significance threshold (339 vs. 85 lb/day). Dr. Fox also found that although the DEIR's VOC emissions of 80 lb/day are just under the DEIR's VOC significance threshold (80 vs. 85 lb/day), she opines that VOC emissions would actually exceed the DEIR's significance thresholds if indirect emissions from on-shore tanks were included in its analyses (see section VI of this comment letter). This further exemplifies why CEQA prohibits the piecemealing of projects - piecemealing hides significant environmental impacts that would otherwise be apparent.

10-26

Dr. Fox then showed in Table 2 that annual emissions of all criteria pollutants increases as well when the more reasonable 85 vessel call baseline is used. She presented substantial evidence that the increase in NOx emissions, 27.2 ton/yr, exceeds the DEIR's CEQA significance threshold of 15 ton/yr by about a factor of two.[109] Accordingly, Dr. Fox opines that the increase in NOx emissions due

[108] Dr. Fox Comments, p. 6.
[109] DEIR, p. 4.4-13.
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to the Project are "highly significant if estimated relative to 'actual' conditions at the time that CEQA review commenced."[110]

10-26 con't

Table 2.
Revised Emissions Based on
Revised Pre-Project (2012-2013 Baseline) Emissions (ton/yr)

	CO	NOx	PM10	PM2.5	VOC	SOx
Pre-Project	7.9	66.1	2.3	2.3	3.4	21.4
Post-Project	11.2	93.3	3.3	3.2	4.8	30.3
Increase	**3.3**	**27.2**	**1.0**	**0.9**	**1.4**	**8.9**

In light of these significant errors underestimating the Project's operational emissions, a revised DEIR analyzing the Project's significant impacts on air quality must be prepared. The revised DEIR must utilize a baseline that conforms to CEQA Guidelines section 15125(a) and proposes all necessary mitigation measures to reduce the Project's significant air impacts to less than significant.

2. *The DEIR Must Be Revised To Disclose the Project's Significant PM2.5 Emissions*

10-27

The DEIR identifies particulate matter with an aerodynamic diameter of 2.5 micrometers or less ("$PM_{2.5}$") and particulate matter with an aerodynamic diameter of 10 micrometers or less ("PM_{10}") as criteria pollutants that poses a serious health hazard.[111] The DEIR's summary of $PM_{2.5}$ ambient air quality data in the vicinity of the Avon Terminal showed that the federal $PM_{2.5}$ standard was exceeded eight times in 2011, once in 2012, and seven times in 2013 near the Terminal.[112] Absent from the DEIR, however, is the disclosure that the San Francisco Bay Area Air Basin ("SFBAAB") is classified as "non-attainment" for California and national ambient air quality standards for both $PM_{2.5}$ and PM_{10} standards.[113] Dr. Fox explains that the significance of the SFBAAB being non-attainment is that any increases in $PM_{2.5}$ emissions as a result of this Project could contribute to existing

[110] Dr. Fox Comments, p. 4.
[111] DEIR, pp. 4.4-2
[112] DEIR, Table 4.4-1, p. 4.4-7.
[113] 2013 Area Designations for State Ambient Air Quality Standards PM2.5, Available at: http://www.arb.ca.gov/desig/adm/2013/state_pm25.pdf, attached as **Attachment 1**.
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10-27 con't

exceedances of ambient $PM_{2.5}$ air quality standards in the vicinity of the Project, which is a per se significant impact.[114]

In summarizing the PM_{10} and $PM_{2.5}$ ambient air quality data in the vicinity of the Avon Terminal,[115] the DEIR acknowledges that "$PM_{2.5}$ is considered even more dangerous to human health than PM_{10} due to its ability to lodge more deeply into lung tissue."[116] Yet, despite recognizing the serious human health risks associated with this criteria pollutant, and notwithstanding the fact the SFBAAB is in non-attainment of national and state ambient air quality standards, the DEIR fails to evaluate the significance of increases in both PM_{10} and $PM_{2.5}$ as a result of the Project's increase in ship calls over the lease period.

10-28

The DEIR did not establish a significance threshold for $PM_{2.5}$, stating that the Bay Area Air Quality Management District ("BAAQMD") recommended that CEQA lead agencies continue to rely upon thresholds set forth in its 1999 BAAQMD CEQA Guidelines.[117] BAAQMD in fact only withdrew its recommendation of the updated 2010 CEQA Guidelines pending an appeal before the California Supreme Court. However, this appeal has nothing to do with the merits of the thresholds and is narrowly focused on whether the adoption of these thresholds was a "project" under CEQA.[118] Nevertheless, for purposes of this DEIR, the CSLC adopted the 1999 BAAQMD CEQA significance thresholds for NOx, VOCs, and PM_{10} without considering substantial evidence demonstrating that they are outdated and incomplete.[119]

Since the BAAQMD adopted the 1999 CEQA guidance, Dr. Fox explains that significant changes have occurred in the SFBAAB that affect air quality, warranting use of a more reasonable threshold of significance for NOx, VOCs and PM_{10}.[120] Ambient air quality standards have become more stringent and new pollutants, $PM_{2.5}$ and lead, have been added to federal and state ambient air quality standards. The BAAQMD updated its CEQA significance thresholds precisely to address these significant developments in air quality, recognizing that the 1999 thresholds were outdated by omitting important criteria pollutants and too high to

[114] Dr. Fox Comments, p. 8.
[115] DEIR, pp. 4.4-2; 4.4-7.
[116] DEIR, p. 4.4-4.
[117] *Id.* at 4.4-15.
[118] *Id.* at 4.4-8, note 1.
[119] *Id.* at 4.4-8.
[120] Dr. Fox Comments, p. 9.
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adequately protect ambient air quality. Dr. Fox presented Table 5 in her comment letter to highlight the significant differences between the 1999 and 2010 BAAQMD CEQA significant thresholds. That table is recreated below.

Table 5.
Comparison of
BAAQMD CEQA Significance Thresholds
Adopted in 1999 and 2010

	ANNUAL (ton/yr)		DAILY (lb/day)	
	1999	2010	1999	2010
VOC	15	10	85	54
N0x	15	10	85	54
PM10	15	15	85	82
PM2.5	-	10	-	54

The DEIR's attempt to find refuge in the lack of significance thresholds in BAAQMD's 1999 CEQA Guidelines for $PM_{2.5}$ does not save the agency from conducting an impact analysis for this criteria pollutant under CEQA. Indeed, the CSLC was fully authorized to develop its own threshold. CEQA Guidelines Section 15064.7 states that "[e]ach agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects."[121] The CSLC could have established significance thresholds of $PM_{2.5}$ using the established thresholds of numerous other air districts throughout the state.[122] For example, the South Coast Air Quality Management District ("SCAQMD") has established two $PM_{2.5}$ significance thresholds - a regional threshold of 55 lb/day and localized thresholds, reported in lookup tables as a function of location, receptor distance, and project size.[123] These localized thresholds range from 1 lb/day to 46 lb/day, based on the size of the source and its

[121] CEQA Guidelines, § 15064.7; *see also* Pub. Res. Code, § 21082 (directing agencies to adopt procedures and criteria for evaluating projects).
[122] Dr. Fox Comments, p. 8.
[123] DEIR, pp. 4.4-2; 4.4-7.
[124] SCAQMD, Final – Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Threshold, October 2006, available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation-methodology/final_pm2_5methodology.pdf?sfvrsn=2, attached as **Attachment J**

10-28 con't

distance to the nearest receptor. The Mendocino County Air Quality Management District ("MCAQMD") also has established a $PM_{2.5}$ CEQA significance threshold of 54 lb/day.[124]

10-29

According to Dr. Fox, the Project's daily increase in $PM_{2.5}$ emissions, as estimated in the DEIR, is slightly less than the MCAQMD, BAAQMD, and SCAQMD regional thresholds (53 lb/day v. 54 and 55 lb/day), but exceeds the upper end of the range of the SCAQMD's localized thresholds (53 lb/day > 46 lb/day).[125] But when the Project's daily increase in $PM_{2.5}$ emissions is revised according to Dr. Fox's much more reasonable vessel call average (85 OGV), the Project significantly exceeds the daily regional $PM_{2.5}$ thresholds established by all three air districts (129 lb/day > 54-55 lb/day).[126] Substantial evidence therefore indicates that $PM_{2.5}$ emissions are significant when properly evaluated under CEQA using significance thresholds established by numerous other air districts and under the updated BAAQMD threshold guidelines. Dr. Fox contends that these elevated levels should at the very least trigger a re-evaluation of the emission calculations to assure that reasonably foreseeable impacts have been calculated.

10-30

Besides, the DEIR states that "[f]or purposes of this analysis, an impact was considered to be significant and to *require* mitigation if it would result in . . . a considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard . . ."[127] As discussed above, violations of the federal $PM_{2.5}$ standards have been recorded in the Project vicinity and the area is non-attainment for both federal and state $PM_{2.5}$ standards. Thus, this criterion applies to the Project. According to Dr. Fox's analyses, she presented substantial evidence in Table 3 and Table 4 (recreated here below) that the Project would increase $PM_{2.5}$ emissions by 53 to 129 lb/day[128] and 2.8 ton/yr[129] to 7 ton/yr.[130] Dr. Fox concludes these are "considerable net increases" under the DEIR's own criteria that should have been found significant and therefore requiring mitigation under CEQA.

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[124] MCAQMD, Adopted Air Quality CEQA thresholds of Significance, June 2, 2010, available at: http://www.co.mendocino.ca.us/aqmd/pdf_files/MCAQMDCEQARecommendations.pdf, attached as **Attachment K**

[125] Dr. Fox Comments, p. 9.

[126] *Id.* at 5.

[127] DEIR, p. 4.4-15 (emphasis added).

[128] *See* Dr. Fox Comments, Table 4, p. 5.

[129] *See* Dr. Fox Comments, Table 3, p. 4.

[130] *See* Dr. Fox Comments, Table 4, p. 5.

10-30 con't

Table 3.
Revised Emissions Based on
Revised Pre- and Post-Project Ship Calls (ton/yr)

	CO	N0x	PM10	PM2.5	VOC	S0x
Pre-Project	7.9	66.1	2.3	2.3	3.4	21.4
Post-Project	17.8	148.6	5.3	5.1	7.6	48.2
Increase	**9.9**	**82.5**	**3.0**	**2.8**	**4.2**	**26.8**

Table 4.
Revised Emissions Based on
Revised Ship Calls and Revised Per Ship Emissions

	CO	N0x	PM10	PM2.5	VOC	S0x
Tesoro Neg.Dec. (lb/day)	814	9,350	163	129	339	324
DEIR, Appx. D (lb/day)	186	1,555	55	53	80	504
Revised Emissions (ton/yr)	**43**	**496**	**9**	**7**	**18**	**17**

10-31

In light of the existing levels of excess $PM_{2.5}$ in the SFBAAB, and as shown by Dr. Fox, substantial evidence indicates that the Project will result in significant, unmitigated emissions of $PM_{2.5}$ in the region. This pollutant, if left unmitigated, has the potential to negatively impact labor involved with construction of the Project and communities living nearby the Avon Terminal. The CSLC must prepare a revised DEIR which analyzes the Project's significant adverse public health impacts associated with $PM_{2.5}$ emissions and include in its analysis all necessary mitigation measures that reduce the Project's potentially significant impacts to less than significant.

B. The DEIR Must Be Revised To Disclose All Significant and Potentially Significant Water Quality Impacts from the Operation of the Project

1. The DEIR Underestimates the Risk of an Oil Spill in the San Francisco Bay Estuary

10-32

According to Dr. McGowan, the DEIR's analysis of the risks of an oil spill into the San Francisco Bay as a result of this Project is flawed. Dr. McGowan

10-32 con't

explains that the DEIR understates the possible impacts of oil spills by using a mean average to summarize the frequency of spills, relies upon outdated reports, arbitrarily choosing to measure oil spills of 10,000 gallons or larger, and by estimating the risk of Avon-related shipping accidents by erroneously comparing Avon Terminal shipping traffic with *all* shipping traffic in the San Francisco Bay.[131] For the reasons explained below, Dr. McGowan concludes that the CSLC must prepare a revised DEIR that addresses these fatal errors.

10-33

The DEIR uses the expected mean time between spills inside and outside the San Francisco Bay in order to summarize the frequency of spills occurring.[132] Table 4.1-9 presents the expected mean time between spills for three sizes: 238 barrels, 1,000 barrels, and 10,000 barrels.[133] According to Dr. McGowan, the CSLC's use of the statistic "mean" understates the frequency of the Project's oil spills because the use of the mean time skews the "middle" value toward the long time between spills.[134] An average is therefore highly susceptible to being skewed by a single outlier. Instead, Dr. McGowan explains that a better measure of frequency of oil spills would be the median time.[135] The median would give a more representative expected time estimate between spills, better predict the frequency of future oil spills, and avoid being skewed by any outliers. Dr. McGowan therefore concludes that in order to better represent the risk of spills, the DEIR must be revised by replacing the "mean" frequency time with the "median."

10-34

Next, Dr. McGowan explains that the DEIR's oil spill risk assessment is inadequate under CEQA because it relies on an outdated 1994 Chambers Group Inc. report. This report is more than twenty years old and fails to constitute substantial evidence under CEQA. As a result, Dr. McGowan contends that the DEIR's conclusions regarding potential impacts from an oil spill are entirely unsupported. Because all oil spills in U.S. water must be reported to the U.S. Coast Guard,[136] this data was available online to the CSLC for the years 1990 through 2014.[137] The CSLC must prepare a revised DEIR which uses more recent data available regarding oil spills.

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[131] Dr. McGowan Comments, pp. 2-3.
[132] DEIR Table 4.1-9, p. 4.1-47.
[133] *Id.*
[134] Dr. McGowan Comments, p. 2.
[135] *Id.*
[136] *Id.*
[137] United States Coast Guard's National Response Center, available at: http://www.nrc.uscg.mil/foia/13-0187-006cy

10-35

The DEIR in Table 4.1-9 also underreported the frequency of oil spills by erroneously choosing to measure only spills of 238 barrels (10,000 gallons) or larger. No substantial evidence supports this selection. Dr. McGowan contends that many of the spills reported to the U.S. Coast Guard are smaller than 238 barrels[138] and that smaller oil spills can still have significant adverse environmental impacts.[139] Dr. McGowan contends that the DEIR's arbitrary selection of 238 barrels underreports the frequency of spills by disregarding all spills below 238 barrels.[140] As a result, the DEIR's conclusion that there is a 36 year interval between oil spills is inaccurate and unsupported by substantial evidence.[141] The CSLC must revise the DEIR to discuss the chronic impact of more frequent smaller oil spills that can have substantial environmental impacts to the San Francisco Bay.

10-36

Lastly, Dr. McGowan finds that the DEIR is inadequate because it calculated the risk of Avon-related accidents by comparing the distance traveled of all shipping traffic relative to the distance traveled by Avon-related shipping traffic.[142] There is no substantial evidence provided in the DEIR that supports the agency's analysis that the relative distance traveled is an accurate assessment of Avon-related spills. Dr. McGowan explains that the actual frequency of Avon-related shipping accidents must be compared to the total frequency of accidents and then scaled by distance. He contends that his approach better accounts for the fact that the vessels calling on the Avon Terminal may need more (or less) stringent risk reduction and mitigation measures than other vessels not calling on the Avon Terminal due to the variety of ships using the San Francisco Bay.[143] To adequately assess the risk of oil spills into the San Francisco Bay as a result of the Project, the DEIR must be revised to include the actual frequencies and sizes of all Avon-related oil spills into the San Francisco Bay over the last 30-year lease.

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[138] Dr. McGowan Comments, p. 3.
[139] *Id.* at 2.
[140] *See, e.g.*, USCG National Response Center 2013 Report, Seq. No. 1035055, reporting one gallon of oil spilled from Tesoro pipeline into Martinez waterway, available at: http://www.nrc.uscg.mil/FOIAFiles/CY13.xlsx.
[141] DEIR, Table 4.1-9, p. 4.1-47.
[142] DEIR, p. 4.1-47.
[143] Dr. McGowan Comments, p. 3
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2. *The DEIR Acknowledges But Fails to Analyze All Potentially Significant Impacts Relating to Sea Level Rise*

10-37

The DEIR acknowledges that the impacts of climate change are expected to alter the San Francisco Bay Estuary ecosystem by "inundating and eroding shoreline areas."[144] Sea level could be up to eighteen inches higher by 2050 than levels measured in 2000.[145] Although the DEIR states it considered the effects of sea level rise on operations, Dr. Gowan states that the DEIR is barren on any analysis concerning the severity and possible impacts of sea level rise to the structural and operational elements of the Avon Terminal.[146] Since the 30-year lease will almost run through the projected 2050 estimates, the DEIR must be revised to include a much more thorough analysis regarding climate change and sea-level rise.

3. *The DEIR Failed to Disclose and Analyze Impacts to Water Quality Associated with Firefighting Water & Foam Systems*

10-38

The DEIR states that the Avon Terminal is equipped with firewater and foam systems that can be activated in the event of a fire at the Terminal.[147] The DEIR discloses the following equipment associated with the fire prevention, detection and suppression systems: two 4,000-gallon-per-minute (GPM) firewater pumps with diesel drivers, each with an approximately 1,000-gallon fuel tank and a backup emergency generator; two 1,500-GPM elevated tower monitors with foam skids; local and remote-actuated motor-operated emergency shutdown valves at the Berth 1A piping manifolds and at the existing valve station; an automated fire detection system; booster pump; offshore firewater pump that takes suction from Suisun Bay; firewater supplied by the Refinery; automatic and manual fire alarms; vendor-supplied controls for new firewater pumps and elevated monitors; multiple hose reels, monitors (portable and fixed), hydrants, and foam drums; multiple portable and wheeled dry chemical extinguishers at the Avon Terminal; and an uninterruptible power supply system.[148]

Absent from the DEIR is any consideration of potentially significant environmental impacts associated with the firewater and foam systems. It is

[144] DEIR, p. 4.5-10.
[145] *Id.*
[146] Dr. McGowan Comments, p. 5.
[147] DEIR, p. 2-46.
[148] DEIR, pp. 2-15; 2-45.
0187-006av

10-38 con't

reasonable to assume that two diesel-driven firewater pumps that spray an estimated 4,000-GPM and take water from the Suisun Bay would have a potentially significant environmental impact in the region. Moreover, the CSLC was aware of these potentially significant environmental impacts from firewater discharge because, in 2007, the agency analyzed impacts associated with firewater discharge for the Chevron Long Wharf Marine Oil Terminal Lease Consideration project.[149] In that EIR, the CSLC identified firewater discharged that would occur during tests and/or maintenance on the fire protection system could have adverse impacts to marine water quality. Although it concluded that treatment of such water at the refinery would minimize impacts to less than significant, the Long Wharf EIR demonstrates that the CSLC erred in the Avon Terminal DEIR by neither disclosing or analyzing potentially significant environmental impacts from firewater discharge.[150] The CSLC also noted in the Long Wharf EIR that the "[t]esting of firewater systems is a necessary safety precaution . . ." for the Long Wharf Marine Oil Terminal.[151]

Likewise, the testing of firewater systems and foam spray at the Avon Terminal is a necessary safety precaution. It would be unreasonable to assume that these systems would be left untested during the 30-year lease period. Moreover, unlike the Long Wharf Marine Terminal, the Project includes foam spray that may have significant environmental impacts to the environment. Accordingly, the CSLC was obligated under CEQA to identify potentially significant environmental effects from firewater and foam discharge, and propose feasible mitigation measures or alternatives that may reduce or avoid them. The CSLC must prepare a revised DEIR which discloses, analyzes, and mitigates significant impacts to water quality from the Project's fire suppression system.

VI. THE MITIGATION MEASURES PROPOSED IN THE DEIR ARE INADEQUATE AND UNENFORCEABLE

CEQA prohibits agencies from approving projects with significant environmental impacts when feasible mitigation measures can substantially lessen or avoid such impacts.[152] An agency may not approve a project unless it has "[e]liminated or substantially lessened all significant effects on the environment

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[149] CSLC, Draft Environmental Impact Report for the Chevron Long Wharf Marine Oil Terminal Lease Consideration, Section 4.2, p. 4.2-39, attached as **Attachment L**.
[150] *Id.*
[151] *Id.*
[152] Pub. Resources Code, § 21002.
0187-006av

where feasible."[153] The mitigation measures that are adopted by the agency must be enforceable through conditions of approval, contracts, or other means that are *legally* binding.[154] Incorporating mitigation measures into conditions of approval ensures that the measures will be implemented, not merely adopted and ignored.[155] Therefore, a project proponent's agreement to a mitigation measure, by itself, is insufficient under CEQA. The mitigation measure must be adopted in a way that makes it an enforceable agreement that actually mitigates the significant environmental impact.[156] The DEIR contains numerous mitigation measures that are unenforceable, ineffective, and therefore inadequate under CEQA.

A. MM WQ-3 Is Unenforceable And Inadequate Under CEQA

10-39

The DEIR acknowledges that the San Francisco Bay Estuary is one of the most invaded estuaries in the world.[157] According to the DEIR, vessels may discharge properly managed, segregated ballast water from segregated ballast tanks into the San Francisco Bay Estuary as they take on product from the Avon Terminal.[158] The DEIR recognizes that this discharged segregated ballast water has the potential to contain a variety of harmful substances, most notably nonindigenous aquatic species ("NAS").[159] To inhibit the introduction and spread of NAS in California, the Coastal Ecosystems Protection Act of 2006 established performance standards for the discharge of ballast water, which are administered by the CSLC. The DEIR then concludes that the introduction of new NAS from discharged segregated ballast water as a result of continued Avon Terminal operation will likely remain significant and unavoidable.[160]

As described by Dr. McGowan in his comments and summarized in the following paragraph, mitigation measure WQ-3 only requires that the applicant "advise" agents and representatives of the shipping company about applicable regulations.[161] According to Dr. McGowan, this mitigation measure is inadequate to ensure that vessels actually comply with ballast water discharge regulations.

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[153] CEQA Guidelines, § 15092 subd. (b)(2).
[154] Pub. Resources Code, § 21081.6(b).
[155] *Federation of Hillside & Canyon Ass'ns v. City of Los Angeles*, 83 CA 4th 1252, 1261 (2000)
[156] *Woodward Park Homeowners Ass'n v. City of Fresno*, 150 CA 4th 683, 730 (2007).
[157] DEIR, p. 4.3-33.
[158] *Id.* at 4.3-30.
[159] *Id.* at 4.3-31.
[160] *Id.* at 4.3-34.
[161] Dr. McGowan Comments, p. 5.
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10-39 con't

Notifying ship operators does not ensure compliance. Dr. McGowan states that that the DEIR must be revised to include mitigation measures that "require vessels to comply with the required laws and regulations *before* they can berth at the Avon Terminal."[162] Dr. McGowan notes that the DEIR's MM WQ-6 is an example of a mitigation measure that ensures vessels berthing at the Avon Terminal comply with applicable regulations. Per mitigation measure WQ-6, Tesoro must require all representatives of vessels berthing at the Avon Terminal provide documentation certifying that their vessel is in compliance with the 2001 International Maritime Organization Convention on the Control of Harmful Antifouling Systems on Ships and other applicable regulations. Accordingly, the CSLC is required to prepare a revised DEIR which includes an enforceable mitigation measure that ensures all vessels calling on the Avon Terminal certify compliance with the established performance standards for discharging segregated ballast water into the San Francisco Bay Estuary.

B. MM WQ-5 Is Unenforceable And Inadequate Under CEQA

10-40

While mitigation measure WQ-5 ensures that vessels comply with applicable regulations, the measure is unenforceable because it only requires the applicant to prepare and maintain current, a fact sheet of the Marine Invasive Species Act of 2003 (MISA), and to provide it to all vessels calling at the Avon Terminal.[163] Dr. McGowan again explains that informing vessel agents of applicable regulations and standards is inadequate under CEQA to mitigate the significant environmental impacts associated with biofueling.[164] Nothing in this mitigation measure ensures compliance with MISA. The DEIR must be revised to include a mitigation measure that requires vessels to comply with the required laws and regulations associated with biofueling before they can berth at the Avon Terminal.

VII. CONCLUSION

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The DEIR is inadequate and must be withdrawn. We urge the CSLC to prepare and circulate a revised DEIR which includes a complete Project description and an accurate environmental baseline upon which to measure the whole Project's reasonably foreseeable impacts. The revised DEIR must also identify *all* of the

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[162] *Id.* (emphasis added).
[163] DEIR, p. 4.5-33.
[164] Dr. McGowan Comments, p. 5.
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Project's potentially significant impacts, and incorporate all necessary and feasible mitigation measures into the Project to reduce and avoid the Project's significant impacts on the environment and on neighboring communities. Finally, the revised DEIR must analyze feasible mitigation to reduce impacts from the alternatives, in addition to the Project.

We thank you for the opportunity to provide these comments on the DEIR.

Sincerely,

Adam J. Regele

AJR:clv

Attachments

3187-006cv

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

ATTACHMENT A

Phyllis Fox, Ph.D., QEP, PE, DEE
745 White Pine Ave.
Rockledge, FL 32955
321-626-6885

November 10, 2014

Adam Regele
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Per your request, I have reviewed the Draft Environmental Impact Report (DEIR)[1] for the Tesoro Avon Marine Oil Terminal Lease Consideration (Project). The Avon Marine Terminal consists of Berths 1 and 5. The Project would decommission Berth 5, which is not currently operational, and replace Berth 1 with Berth 1A, which would be operationally equivalent. DEIR, pp. 2-16/17.

Emissions Were Underestimated And Are Significant

10-42

The DEIR estimated that VOC, NOx and PM10 emissions would decrease during the 30-year lease period compared to the baseline. DEIR, Table 4.4-3. The decrease was estimated as the difference between pre-project (baseline) and post-project (future) emissions, as follows:

Increase in Emissions = Post-Project Emissions – Pre-Project Emissions (1)

Emissions were first calculated for a single 114,000 dead weight ton (DWT) vessel. DEIR, Appx. D, pdf 43. This would likely be a Panamax ship with a typical capacity of about 140,000 bbl. The DEIR then multiplied these per ship emissions by the number of ship calls during the post-project and pre-project periods, converted the results to tons per day by assuming each ship call lasted about 24 hours, and subtracted post-project emissions from pre-project emissions per Equation (1). This resulted in a decrease in emissions of all pollutants. DEIR, Table 4.4-3.

However, the DEIR overestimated the number of ship calls in the pre-project period, underestimated the number of ship calls in post-project period, and underestimated the emissions from each ship call. These three errors resulted in a significant underestimate in the change in emissions due to the Project. Each of these issues is discussed below, and the emissions are revised to correct these errors.

[1] California State Lands Commission, Draft Environmental Impact Report (DEIR) for the Tesoro Avon Marine Oil Terminal Lease Consideration, September 2014, Available at: http://www.slc.ca.gov/division_pages/DEPM/Reports/Avon/Avon.html

The DEIR Underestimated Ship Calls In Post-Project Period

The post-project emissions should be the maximum emissions that can be released as a result of the project. If project emissions are limited by permit, the permit limits are used as the post-project emissions. In the absence of permit limits, the physical capacity of the subject equipment is used to estimate post-project emissions.

The DEIR underestimated the number of ship calls during the lease period and thus significantly underestimated the increase in emissions. Post-project emissions were estimated assuming 120 ship calls per year during the 30-year lease renewal period. This choice was based on what the DEIR describes as the "anticipated maximum" (DEIR, pp. 4.1-3, 4.4-10) or the "projected maximum number of vessel calls over the lease renewal period." DEIR, Appx. D, pdf 3. The DEIR does not otherwise explain how it arrived at 120 ship calls during the lease period and thus fails as an informational document under CEQA.

10-43

Post-project emissions are the maximum emissions that can be released as a result of a project and are typically based on permit limits when available. The throughput of Berth 1 (which will be replaced by functionally equivalent Berth 1A) is limited by Title V permit to 30,000,000 barrels per 12 consecutive months.[2] DEIR, p. 4.4-10. Each ship would carry about 140,000 bbl, the capacity of a typical 114,000 DWT Panamax ship. Thus, the Title V Permit would allow up to 214 ship calls per year.[3] Alternatively, the Avon Terminal throughput data in DEIR Table 2-5 indicates that the average ship that called on the Terminal in 2013 carried 156,700 bbls.[4] Using this value, the Title V Permit would allow up to 191 ship calls.[5]

If the lower of these two permit-limit-based, post-project, ship-call estimates (191, 214) is used to calculate post-project emissions, and the DEIR's emission calculations are otherwise used, the Project would increase emissions as summarized in Table 1. This table shows that annual emissions of all criteria pollutants increase. The increase in NOx emissions, 52 ton/yr, exceeds the DEIR's NOx CEQA significance threshold of 15 ton/yr (DEIR, p. 4.4-13) by over a factor of three. The increase would be even greater if the capacity of a typical Panamax ship, the most likely ship to call, were used. Thus, the increase in NOx emissions due to the Project is highly significant if evaluated using permitted Berth 1 throughput.

[2] BAAQMD, Final Major Facility Review Permit, Tesoro Refining and Marketing Company, Facility #B2758 & Facility #B2759, June 28, 2011. See pdf 1: Table II A1, S-#100, Berth 1: 30,000 Kbbl/yr and Berth 5: 15,000 Kbbl/yr.

[3] Ship calls per year allowed by Title V permit: 30,000,000 bbl/yr÷140,000 bbl/ship = **214 ships/yr.**

[4] DEIR Table 2-5 indicates that 12,848,785 bbl were imported at the Avon Terminal. Table 2-4 indicates there were 82 ship calls in 2013. Thus, the typical ship carried: 12,848,785 bbl/82 ships = **156,693 bbl/ship.**

[5] Ship calls per year allowed by Title V permit based on Avon Terminal throughput (DEIR, Table 2-5) and ship call (DEIR, Table 2-4) data: 30,000,000 bbl/yr÷156,700 bbl/ship = **191 ships/yr.**

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Table 1.
Revised Emissions for 191 Post-Project Ship Calls (ton/yr)

	CO	NOx	PM10	PM2.5	VOC	SOx
Pre-Project	11.5	96.4	3.4	3.3	4.9	31.3
Post-Project	17.8	148.6	5.3	5.1	7.6	48.2
Increase	**6.3**	**52.2**	**1.9**	**1.8**	**2.7**	**16.9**

10-44

The DEIR Overestimated Ship Calls In Pre-Project Period

The pre-project or baseline emissions are the "actual" emissions as they exist at the time environmental analysis is commenced, without the project. They are typically calculated as annual average emissions in the two years preceding the start of environmental review, unless there are unusual circumstances, such as a lull or spike that occurred during that period. In that case, a much longer period of record is examined and presented in the CEQA document to support the selection of a different baseline period or averaging convention, together with a discussion of the alternate choice.

The DEIR used the average number of ship calls from 2004 to 2013 at both Berths 1 and 5 as the Project baseline, or an average of 124 ship calls to estimate baseline emissions. DEIR, Table 2-4, pp. 2.4-9/10, and Appx. D. A 10-year baseline does not accurately portray the "actual" conditions at the start of CEQA review, as it includes a six year period when both berths were being used. Berth 5 has not been used since 2009. Thus, a 10-year period that includes Berth 5 operation does not accurately capture "actual" conditions at the time CEQA review was started. A more accurate representation of "actual" conditions is the two years immediately prior to CEQA review, or 2012 and 2013. The average number of ship calls during these years was 85. DEIR, Table 2-4. Thus, the Project could potentially increase ship calls from 85 per year to 140, assuming the DEIR's post-project ship-call estimate.

If 85 ship calls are used to estimate pre-project baseline emissions, and the DEIR's emission calculations are otherwise used, the Project would increase emissions as summarized in Table 2. This table shows that annual emissions of all criteria pollutants increase. The increase in NOx emissions, 27 ton/yr, exceeds the DEIR's CEQA significance threshold of 15 ton/yr (DEIR, p. 4.4-13) by about a factor of two. Thus, the increase in NOx emissions due to the Project are highly significant if estimated relative to "actual" conditions at the time that CEQA review commenced.

10-44 con't

Table 2.
Revised Emissions Based on
Revised Pre-Project (2012-2013 Baseline) Emissions (ton/yr)

	CO	NOx	PM10	PM2.5	VOC	SOx
Pre-Project	7.9	66.1	2.3	2.3	3.4	21.4
Post-Project	11.2	93.3	3.3	3.2	4.8	30.3
Increase	**3.3**	**27.2**	**1.0**	**0.9**	**1.4**	**8.9**

10-45

Revised Annual Emissions Based on Permit Limits and 2012-2013 Baseline

The DEIR underestimated the maximum potential increase in ship calls during the lease period (140 vs. 191+) and overestimated the number of ship calls during the "actual" baseline years (124 vs. 85). These two errors resulted in erroneously claiming the Project would reduce emissions (DEIR, Table 4.4-3) when it actually would significantly increase emissions. The revised emissions, correcting both of these errors, and otherwise using all of the DEIR's assumptions, are summarized in Table 3. This table shows that the Project would increase all criteria pollutants. The increase in NOx exceeds the DEIR's significance threshold of 15 ton/yr by a factor of four and is highly significant. This is a significant impact that was not disclosed and mitigated in the DEIR.

Table 3.
Revised Emissions Based on
Revised Pre- and Post-Project Ship Calls (ton/yr)

	CO	NOx	PM10	PM2.5	VOC	SOx
Pre-Project	7.9	66.1	2.3	2.3	3.4	21.4
Post-Project	17.8	148.6	5.3	5.1	7.6	48.2
Increase	**9.9**	**82.5**	**3.0**	**2.8**	**4.2**	**26.8**

10-46

The DEIR Underestimated Ship Emissions

The DEIR estimated emissions from a single ship call in Appendix D. These emissions were then multiplied by the number of ship-call days in the pre-project and post-project periods as discussed above to estimate the change in emissions. The ship-call emissions estimated in the DEIR are much lower than the ship-call emissions recently estimated for another similar Tesoro Project, the Initial Study and Draft Negative Declaration (Neg.Dec.) prepared by the South Coast Air Quality Management District (SCAQMD) for the Tesoro Storage Tank Replacement and Modification Project.[6] These two sets of ship-call emissions (for comparable Panamax ships) are compared in Table 4. I used the SCAQMD ship-call emissions to estimate the increase in

[6] South Coast Air Quality Management District (SCAQMD), Notice of Intent to Adopt a Draft Negative Declaration, Tesoro Storage Tank Replacement and Modification Project, April 23, 2014

emissions due to this Project, using the revised number of pre-project and post-project ship calls as discussed above. This analysis shows that annual VOC emissions are additionally significant (18 vs 15 ton/yr).

Table 4.
Revised Emissions Based on
Revised Ship Calls and Revised Per Ship Emissions

	CO	NOx	PM10	PM2.5	VOC	SOx
Tesoro Neg.Dec. (lb/day)	814	9,350	163	129	339	324
DEIR, Appx. D (lb/day)	186	1,555	55	53	80	504
Revised Emissions (ton/yr)	**43**	**496**	**9**	**7**	**18**	**17**

10-46 con't

The DEIR should revisit its per-ship emission calculations and resolve the significant discrepancy between these two sets of ship-call emissions.

Daily Emissions Are Significant

The DEIR established significance thresholds of 15 ton/yr and 88 lb/day for three pollutants – VOCs, NOx, and PM10. DEIR, p. 4.4-13. The DEIR concluded that "annual emissions from the baseline year would decrease and, therefore, no significance thresholds are expected to be exceeded." DEIR, Table 4.4-3 & p. 4.4-13. However, the DEIR only points to emissions in ton/yr and is silent on daily emissions.

The starting point for the DEIR's emission increase calculations is the emissions from a single ship call, calculated in Appendix D and summarized in Table 4. These emissions are:

10-47

- CO: 186 lbs
- NOx: 1,555 lbs
- PM10: 55 lbs
- PM2.5: 53 lbs
- VOC: 80 lbs
- SOx: 504 lbs

A ship call lasts about 24 hours. Thus, the ship emissions estimated in the DEIR are daily emissions. The significance of these daily emissions should have been assessed in the DEIR relative to pre-project daily emissions of zero.

While the emissions from a single ship call are the same in the pre- and post-project periods, there will be many more days in the post-project period with ship calls than during the pre-project baseline. In the baseline, there were no ships on 280 days (365-85 = 280) or 77% of the time. Thus, on average, there were no ships and pre-project ship-call emissions were zero. Thus, a fair daily emission increase analysis would be zero ship emissions in the baseline

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compared with emissions from one ship in the post-project period. Thus, the ship emissions summarized above from Appendix E (Table 4) are actually daily increases in emissions.

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The daily NOx emissions of 1,555 to 9,350 lb/day (Table 4) greatly exceed the daily significance threshold of 88 lb/day adopted by the DEIR. The revised daily VOC emissions of 339 lb/day (Table 4) exceed the DEIR's VOC significance threshold (339 vs. 85 lb/day). The DEIR's VOC emissions of 80 lb/day (Table 4) are very close to the DEIR's VOC significance threshold (80 vs. 85 lb/day) and would exceed it if indirect emissions discussed elsewhere in these comments were included.

Additional Significant Emission Impacts Are Overlooked Due To Improper Significance Thresholds

10-48

A lead agency has discretion to determine how to classify the significance of impacts. However, its judgment must be based on scientific information and other factual data. CEQA Guidelines §15064(b). Here, the California State Land Commission (CSLC) adopted the 1999 BAAQMD CEQA significance thresholds for NOx, VOCs, and PM10 without considering substantial evidence demonstrating that they are outdated and incomplete. DEIR, p. 4.4-8. These thresholds are too high to protect ambient air quality and omit important criteria pollutants, including PM2.5, CO, SOx, and lead.

10-49

Since the BAAQMD adopted the 1999 CEQA guidance, significant changes have occurred in the San Francisco Bay Area Air Basin (SFBAAB) that affect air quality. Ambient air quality standards have become more stringent and new pollutants, PM2.5 and lead, have been added to federal and state ambient air quality standards. The BAAQMD updated its CEQA significance thresholds in 2010 to address these changes,[7] but their formal adoption has been stayed due to an appeal to the California Supreme Court. However, the appeal deals with whether adoption of the thresholds was a project under CEQA, rather than the merits of the thresholds themselves. DEIR, p. 4.4-8, note 1. The updated 2010 thresholds are compared with those used in the DEIR in Table 5. This comparison shows lower and additional thresholds are applicable to the Project.

[7] Proposed Air Quality CEQA Thresholds of Significance, May 3, 2010, Available at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Summary_Table_Proposed_BAAQMD_CEQA_Thresholds_May_3_2010.ashx?la=en.

10-49 con't

Table 5.
Comparison of
BAAQMD CEQA Significance Thresholds
Adopted in 1999 and 2010

	ANNUAL (ton/yr)		DAILY (lb/day)	
	1999	2010	1999	2010
VOC	15	10	85	54
NOx	15	10	85	54
PM10	15	15	85	82
PM2.5	-	10	-	54

10-50

The BAAQMD's most recent 2012 CEQA guidance[8] directs lead agencies to its "CEQA Thresholds and Options Justification Report"[9] and supporting appendices[10] for substantial evidence supporting the more protective significance thresholds adopted in 2010, as summarized in Table 5. Other recent CEQA analyses within the SFBAAB, at neighboring refineries, have relied on the 2010 BAAQMD CEQA significance thresholds.[11] The Contra Costa County Department of Conservation and Development, in a DEIR on a project at an adjacent refinery, concluded thus:

> "This analysis uses the thresholds and methodologies from the BAAQMD's 2011 CEQA Air Quality Guidelines to evaluate the potential impacts of construction and operation of the Project. Although the BAAQMD's adoption of significance thresholds is the subject of recent judicial actions, the Contra Costa County Department of Conservation and Development has determined that Appendix D of the 2011 CEQA Air Quality Guidelines, in combination with BAAQMD's Revised Draft Options and Justification Report (BAAQMD, 2009b), provide substantial evidence to support the BAAQMD's

[8] BAAQMD, California Environmental Quality Act Air Quality Guidelines, Updated May 2012. Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en

[9] BAAQMD, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, October 2009, p. 2-5. Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20Options%20and%20Justification%20Report%20Oct%202009.ashx?la=en

[10] CEQA Thresholds Report Appendices, October 2009. Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Thresholds_Report_Revised_Appendices_082309.ashx?la=en

[11] See, for example,

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2011 significance thresholds and, therefore, has determined they are appropriate for use in this analysis."[12]

This DEIR was subsequently revised and is currently recirculating for review. This same language remains.[13] The Avon Marine Terminal DEIR contains no evidence that the CSLC considered the substantial evidence supporting lower significance thresholds for NOx, VOC and PM10 and new significance thresholds for PM2.5. Consideration of these revised thresholds (Table 5) coupled with a daily analysis, as summarized above, would have additionally found significant daily VOC, PM10, and PM2.5 impacts. Significant PM2.5 impacts are discussed below.

Emissions of PM2.5 Are Significant

The DEIR recognizes that "inhalable particulates [PM10, PM2.5] pose a serious health hazard alone or in combination with other pollutants." DEIR, p. 4.4-4. It further recognizes that "PM2.5 is considered even more dangerous to human health than PM10 due to its ability to lodge more deeply into lung tissue." DEIR, p. 4.4-4. However, the DEIR failed to evaluate the significance of increases in PM10 and PM2.5 as a result of an increase in ship calls over the lease period.

10-51

The DEIR summarized PM2.5 ambient air quality data in the vicinity of the Avon Terminal. This data shows that the federal PM2.5 standard was exceeded eight times in 2011, once in 2012, and seven times in 2013 near the Terminal. DEIR, Table 4.4-1 & p. 4.4-7. However, the DEIR failed to disclose that the SFBAAB has been classified as "nonattainment" for both California[14] and national[15] ambient air quality standards for PM2.5 as well as the California PM10 standards.[16] Thus, increases in PM2.5 emissions as a result of this Project could contribute to existing exceedances of ambient PM2.5 air quality standards in the vicinity of the Project, which is a per se significant impact.

The DEIR did not establish a significance threshold for PM2.5, even though the BAAQMD and other air districts have established such thresholds that the CSLC could have and should have relied on. However, the DEIR cites a general criterion that is applicable to PM2.5.

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[12] Contra Costa County Department of Conservation and Development. Phillips 66 Propane Recovery Project, Draft Environmental Impact Report. June 2013,p. 4.9-13, Available at: http://ca-contracostacounty2.civicplus.com/DocumentCenter/View/26612

[13] Contra Costa County Department of Conservation and Development. Phillips 66 Propane Recovery Project. Recirculated Draft Environmental Impact Report. October 2014, p. 4.1-14. Available at: http://www.cocounty.us/DocumentCenter/View/33804

[14] 2013 Area Designations for State Ambient Air Quality Standards PM2.5, Available at http://www.arb.ca.gov/desig/adm/2013/state_pm25.pdf

[15] Area Designations for National Ambient Air Quality Standards PM2.5, Available at http://www.arb.ca.gov/desig/adm/2013/fed_pm25.pdf

[16] 2013 Area Designations for State Ambient Air Quality Standards PM10, Available at http://www.arb.ca.gov/desig/adm/2013/state_pm10.pdf.

10-51
con't

The DEIR states at p. 4.4-15 that "[f]or purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following:…Result in a considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or State ambient air quality standard…" DEIR, p. 4.4-15. As violations of the federal PM2.5 standards have been recorded in the Project vicinity and the area is nonattainment for both federal and state PM2.5 standards, this criterion applies. My analyses indicate that the Project would increase PM2.5 emissions by 53 to 129 lb/day (Table 4) and 3 ton/yr (Table 3) to 9 ton/yr (Table 4). These are "considerable net increases" under the DEIR's criteria (DEIR, p. 4.4-15) that should have been found significant and mitigated.

Regardless, the absence of a 1999 BAAQMD significance criterion in lb/day or ton/yr should not prevent the assessment of the significance of PM2.5 emissions. First, the BAAQMD itself has provided substantial evidence supporting CEQA significance thresholds for PM2.5 of 54 lb/day and 10 ton/yr for exhaust emissions.[17] Ship emissions are exhaust emissions.

Other air districts have established PM2.5 significance thresholds that the lead agency could adopt that are not subject to legal challenges. The South Coast Air Quality Management District (SCAQMD) has established two PM2.5 significance thresholds -- a regional threshold of 55 lb/day and localized thresholds, reported in lookup tables as a function of location, receptor distance, and project size.[18] The localized thresholds range from 1 lb/day to 46 lb/day, based on the size of the source and its distance to the nearest receptor. The Mendocino County Air Quality Management District (MCAQMD) also has established a PM2.5 CEQA significance threshold of 54 lb/day.[19]

The Project's daily increase in PM2.5 emissions as estimated in the DEIR is slightly less than the MCAQMD, BAAQMD, and SCAQMD regional thresholds (53 lb/day v. 54 and 55 lb/day) and exceeds the upper end of the range of the SCAQMD's localized thresholds (53 lb/day > 46 lb/day). The Project's daily increase, as revised in Table 4, exceeds the daily regional PM2.5 thresholds established by all three air districts (129 lb/day >54-55 lb/day). Thus, PM2.5 emissions are likely additionally significant when evaluated against CEQA significance thresholds established based on substantial evidence. These elevated levels should at least trigger a re-evaluation of the emission calculations to assure that a worst-case has been calculated.

The methodology used by the SCAQMD could be used by the CLSC to calculate site-specific thresholds for PM2.5. Further, the SCAQMD regional significance threshold, 55 lb/day,

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[17] http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Summary_Table_Proposed_BAAQMD_CEQA_Thresholds_May_3_2010.ashx?la=en.

[18] SCAQMD, Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Threshold, October 2006, Available at: es. http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

[19] http://www.co.mendocino.ca.us/aqmd/pdf_files/MCAQMDCEQARecommendations.pdf.

10-51 con't

(and similar BAAQMD and MCAQCD PM2.5 thresholds) apply generally in any nonattainment area as they are based on the federal significant emission rate for PM2.5 of 10 ton/yr[20] (10 ton/yr x 2000 lb/ton÷365 day/yr).

The Project May Facilitate the Import of Bakken Crudes

The DEIR asserts that the majority of imports and all crude oil imports occur at Tesoro's Amoreo Marine Terminal. DEIR, p. 2-1, note 3. However, elsewhere, the DEIR suggests crude oil is also imported. DEIR, p. 4.4-11. Further, the DEIR asserts that the ratio of imports to exports – 90% export and 10% import -- will not change over the lease period. DEIR, pp. 2-22, 2-32. However, the DEIR does not propose any conditions of certification to assure that these assertions are achieved in practice. This is a serious omission as there is nothing to prevent Tesoro from using the Avon Terminal to import crude oil. This would significantly increase indirect VOC and toxic air contaminants or TAC emissions (e.g., benzene) from on-shore tanks.

10-52

The Bakken crude could be supplied via a recently permitted Global Partners rail-to-marine terminal in Oregon[21] and the proposed 360,000 bbl/day rail-to-marine terminal facility at the Port of Vancouver in Washington (Vancouver Terminal) that Tesoro is currently building with Savage Companies. This Terminal will import North American "cost-advantaged" crudes by rail and export them by ship to California and Alaska. This terminal is key to Tesoro's plans to import Bakken and other cost advantaged crudes to its west coast refineries.[22]

The relationship between Tesoro's Martinez Refinery and the Vancouver Terminal operations is graphically illustrated in Figure 1, from a Tesoro presentation. It shows crude moving from the Bakken region by rail to the Vancouver Terminal and then by ship to the Bay Area. There is nothing in the DEIR that would prevent Tesoro from importing Bakken crude at the Avon Terminal. Tesoro is currently refining small amount of Bakken crude at its Martinez refinery that it imports through the Kinder Morgan Terminal in Richmond.

The import of Bakken crude oils would lead to significant environmental impacts not disclosed in this DEIR. As Tesoro has reported it plans to export Bakken and other cost-advantaged crudes from its Vancouver Terminal to its refineries on the west coast, this DEIR should evaluate the full range of impacts resulting from a change in service or restrict the import of crude oils.

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[20] See: 40 C.F.R. 52.21(b)(23)(i) and summary at Final Rule on the Implementation of New Source Review Provisions for Particulate Matter Less than 2.5 microns (PM2.5) Fact Sheet, Available at: http://www.epa.gov/NSR/documents/20080508_fs.pdf.

[21] See, e.g., Global Wins, Tesoro Waits on Bringing Bakken Oil West, Bloomberg, August 20, 2014. Available at: http://www.bloomberg.com/news/2014-08-20/global-partners-rail-terminal-approved-as-tesoro-waits.html and Rory Carroll, Exclusive: California Getting More Bakken Crude by Barge than Rail, Reuters, October 23, 2014. Available at: http://www.reuters.com/article/2014/10/23/us-california-bakken-barge-idUSKCN0IC17L20141023.

[22] Q1 2014 Tesoro Corporation Earnings Conference Call, May 1, 2014, Goff response to Barclay questions at: 28:54 - 30:19 min. Webcast available at: http://edge.media-server.com/m/p/th8e4nzb/lan/en.

10-52 con't

Figure 1.
Cost-Advantaged Crude Transportation Options
1/9/14 Tesoro Presentation, p. 19[23]
(Legend)[24]

Omits Indirect Emissions

10-53 The DEIR excludes emissions from on-shore tanks that receive imported products and fugitive emissions from associated pumps, valves and connectors, as they are "permitted by the BAAQMD, are located onshore and are not part of the Project". DEIR, p. 4.4-11. However, a long line of CEQA cases establish that an EIR must include indirect impacts, such as those from on-shore tanks that receive imported products.

10-54 The DEIR then incorrectly states that emissions from these on-shore tanks "are primarily driven by diurnal temperature changes, as well as atmospheric pressure conditions, and are not expected to change over the life of the lease." DEIR, p. 4.4-11. The emissions from on-shore tanks (and supporting fugitive sources) are primarily driven by the vapor pressure of the material stored in the tanks and handled by the fugitive components.

10-55 Bakken crudes have unique chemical and physical characteristics that distinguish them from currently refined crudes and that would result in significant environmental impacts not analyzed in the DEIR, including significant risk of upset, air quality, and public health impacts. These unique characteristics include high volatility, flammability, and elevated concentrations of

[23] Tesoro, Deutsche Bank Energy Conference, January 9, 2014, p. 19 (1/9/14 Tesoro Presentation). Available at: http://phx.corporate-ir.net/phoenix.zhtml?c=79122&p=irol-presentations.
[24] Thomson Reuters Streetevents Edited Transcript, TSO - Tesoro Analyst and Investor Presentation, December 10, 2012, p. 13. "The blue arrows represent Tesoro's ability to move advantaged North American crude from the production fields to the Port of Vancouver... and then through the entire West Coast system. The red arrows represent our waterborne domestic and foreign capabilities." Available at: http://phx.corporate-ir.net/phoenix.zhtml?c=79122&p=irol-transcriptsarchive.

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10-55 con't

TACs and VOCs.[25] The Material Safety Data Sheets (MSDSs) submitted with Tesoro's Vancouver Terminal Application additionally disclose very high concentrations of benzene.[26] The more volatile the crude, the higher the VOCs, TACs, and greenhouse gas (GHG) emissions, the higher the flammability, and the greater the consequences in the event of an accident.

Thus, elevated VOC and TAC emissions in imported crude oils, relative to current imports, would result in increased VOC and TAC emissions when transporting, storing and moving crude oils into and out of tanks and associated equipment, such as pumps, connectors, and valves. The DEIR did not address these indirect emissions.

10-56

The CEO of Tesoro, Greg Goff, stated that Tesoro shipped 5,000 to 7,000 bbl/day of Bakken into California in the first quarter of 2014 and the Bakken supply is limited to 10,000 bbl/day due to logistic constraints.[27] These numbers are consistent with known rail imports of Bakken to Tesoro's Martinez refinery,[28] which is supplied by the Avon Terminal.

Thus, because: (1) this DEIR does not limit what can be imported at the Avon Terminal, (2) Tesoro has publicly stated that it intends to import Bakken and other cost-advantaged crudes from its Vancouver Terminal to its west coast terminals, and (3) Tesoro is currently importing Bakken crudes by rail and refining them at its Martinez Refinery, it is reasonable to assume that Bakken crude could be imported at the Avon Terminal. Thus, the DEIR should either expand its analysis to encompass this possibility, or condition its approval to prohibit the import of Bakken and other similar light crudes.

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[25] Transportation Safety Board of Canada, TSB Laboratory Report LP148/2013 (TSBC 2013), Available at: http://www.tsb.gc.ca/eng/enquetes-investigations/rail/2013/R13D0054/lab/20140806/LP1482013.asp; Classification and Hazard Communication Provisions for Crude Oil – Bakken Crude Oil Data, June 13, 2014, Available at: http://www.unece.org/fileadmin/DAM/trans/doc/2014/dgac10c3/UN-SCETDG-45-INF26e.pdf; Dangerous Goods Transport Consulting, Inc., A Survey of Bakken Crude Oil Characteristics Assembled for the U.S. Department of Transportation, Submitted by American Fuel & Petrochemical Manufacturers, May 14, 2014, pp. 5, 19, Available at: https://www.afpm.org/WorkArea/DownloadAsset.aspx?id=4229; North Dakota Petroleum Council, Bakken Crude Quality Assurance Study, Available at: http://www.ndoil.org/image/cache/Summary_2.pdf; Russell Gold, Analysis of Crude From North Dakota Raises Further Questions About Rail Transportation, Wall Street Journal, February 23, 2014.

[26] See Tesoro Savage, Application for Site Certification Agreement, vol. 2, Appendix G: Material Safety Data Sheets, August 29, 2013, Available at: http://www.efsec.wa.gov/Tesoro%20Savage/Application/EFSEC%202013-01%20Volume%20II%20-%20Appendices/EFSEC%202013-01%20Compiled%20Volume%20II.pdf

[27] Q1 2014 Tesoro Corporation Earnings Conference Call, May 1, 2014,Goff response to Barclay questions at 28:10 – 28:47 min. Webcast available at: http://edge.media-server.com/m/p/th8e4n/lr/larven and transcript attached as Exhibit D.

[28] Q3 2013 Tesoro Corporation Earnings Conference Call, November 7, 2013 Transcript, George Goff statements at p. 4 ("We also started taking up to 3 unit trains a month of Bakken crude oil into our Martinez refinery... we have the capacity to deliver nearly 350,000 barrels per month of Bakken crude oil into our Martinez, California refinery.") and 11 ("...what we said was we can deliver three unit trains per month into the Martinez or Golden Eagle refinery as well as some additional manifest cars that we do, which allows us to maximize the use of the facilities. As a result of that, it's 350,000 barrels per month at the present time.), Available at: http://phx.corporate-ir.net/phoenix.zhtml?c=79122&p=irol-transcriptsarchive.

10-57

In sum, the DEIR underestimated Project emissions by overestimating pre-project ship-calls, underestimating post-project ship calls, and underestimating emissions per ship call. Further, it used outdated CEQA significance thresholds and failed to consider the significance of PM2.5 emissions. When these errors and omissions are corrected, the Project results in significant NOx, VOC, PM10, and PM2.5 impacts. Further, the Project would facilitate the import of highly volatile Bakken crudes, which would increase indirect VOC and TAC emissions that were not considered in the DEIR. These errors and omissions should be cured and the DEIR recirculated.

Sincerely,

Phyllis Fox, Ph.D., P.E.

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J. Phyllis Fox, Ph.D., PE, DEE
Environmental Management
2580 Elsa Street
Berkeley, CA 94794
510-843-1126
510-843-0983 (fax)
Fox@AeroAquaTerra.Com

Practice (DEP #02-0100F)
Registered Professional Engineer: Arizona, California, Florida, Georgia, Washington
Diplomat Environmental Engineer, American Academy of Environmental Engineers
Certified in Air Pollution Control (DEE #01-2001441

PROFESSIONAL HISTORY

Environmental Management, Principal, 1981-present
Lawrence Berkeley Laboratory, Principal Investigator, 1977-1981
University of California, Berkeley, Program Manager, 1976-1977
Bechtel, Inc., Engineer, 1971-1976, 1964-1966

PROFESSIONAL AFFILIATIONS

American Industrial Hygiene Association
Air and Waste Management Association
American Chemical Society
American Society of Mechanical Engineers
Phi Beta Kappa
Sigma Pi Sigma

Who's Who Environmental Registry, PH Publishing: Fort Collins, CO, 1992.
Who's Who in the World, Marquis Who's Who, Inc.: Chicago, IL, 11th Ed., p. 171, 1993-present.
Who's Who of American Women, Marquis Who's Who, Inc.: Chicago, IL, 13th Ed., p. 264, 1984-present.
Who's Who in Science and Engineering, Marquis Who's Who, Inc.: New Providence, NJ, 3rd Ed., p. 414, 1999-present.
Who's Who in America, Marquis Who's Who, Inc., 50th Ed., 2005.
Guide to Specialists on Toxic Substances, World Environment Center: New York, NY; p. 80, 1980.
National Research Council Committee on Irrigation-Induced Water Quality Problems (Selenium), Subcommittee on Quality Control/Quality Assurance (1985-1990).
National Research Council Committee on Surface Mining and Reclamation, Subcommittee on OH Shale (1978-80)

REPRESENTATIVE EXPERIENCE

Performed environmental investigations, as outlined below, for a wide range of industrial and commercial facilities including refineries, intermodal rail terminals, petroleum distribution

Dr. Fox has over 30 years of experience in the field of environmental engineering, including air quality management, water quality and water supply investigations, hazardous waste investigations, environmental permitting, nuisance investigations, environmental impact reports, CEQA/NEPA documentation, risk assessments, and litigation support.

EDUCATION

Ph.D., Environmental/Civil Engineering, University of California, Berkeley, 1980
M.S., Environmental/Civil Engineering, University of California, Berkeley, 1975
B.S., Physics (with high honors), University of Florida, Gainesville, 1971

Post-Graduate:
S-Plus Data Analysis, MathSoft, 6/94.
Air Pollutant Emission Calculations, UC Berkeley Extension, 6/7/94
Assessment, Control and Remediation of LNAPL Contaminated Sites, API and USEPA, 9/94
Potassium in the TDE Process, SFCAC, 8/96
Sulfide Minerals: Geochemistry, Crystallography, and Environmental Significance, Mineralogical Society of America/Geochemical Society, 11/00.
Design of Gas Turbine Combined Cycle and Cogeneration Systems, Thermoflow, 1/2000
Air-Cooled Steam Condensers and Dry- and Hybrid-Cooling Towers, Power-Gen, 12/01
Combustion Turbine Power Augmentation with Inlet Cooling and Wet Compression, Power-Gen, 12/01
CEQA Update, UC Berkeley Extension, 3/07
The Health Effects of Chemicals, Drugs, and Pollutants, UC Berkeley Extension, 11-5/07
Noise Exposure Assessment: Sampling Strategy and Data Acquisition, AIHA PDC-203, 6/07.
Noise Exposure Measurement: Instruments and Techniques, AIHA PDC-202, 6/07
Noise Control Engineering, AIHA PDC-432, 6/07
Optimizing Generation and Air Emissions, Power-Gen, 12/07
Utility Industry Issues, Power-Gen, 12/07
Multipollutant Emission Control, Coal-Gen, 8/08
Community Noise, AIHA PDC-164, 5/04
Cutting-Edge Topics in Noise and Hearing Conservation, AIHA 5/04

REGISTRATION

Class I Registered Environmental Assessor, California (REA-04098)
Class II Registered Environmental Assessor, California (REA-20040)
Qualified Environmental Professional, Institute of Professional Environmental

terminals, conventional and thermally enhanced oil production, underground storage tanks, pipelines, gasoline stations, landfills, railyards, hazardous waste treatment facilities, power plants, transmission lines, airports, hydrogen plants, petroleum coke calcining plants, asphalt plants, cement plants, incinerators, flares, manufacturing facilities (e.g., semiconductor, electronic assembly, aerospace components, printed circuit boards, automotive park sites), lumber processing plants, ammonia plants, urea plants, food processing plants, wastewater treatment plants, marine terminals, paper processing plants, steel mills, battery manufacturing plants, petroleum manufacturing and reprocessing facilities, pulp and paper mills, redevelopment projects (e.g., Mission Bay, Southern Pacific Railyards, Moscone Center expansion, San Diego Padres Ballpark), residential developments, cemeteries, office parks, campuses, shopping centers, server farms, and a wide range of mines including sand and gravel, hard rock, limestone, caolinite, coal, molybdenum, gold, zinc, and oil shale.

EXPERT WITNESS/LITIGATION SUPPORT

- For a coalition of Nevada labor organizations, reviewed preliminary determination to issue a Class I Air Quality Operating Permit to Construct and supporting files for a 250-MW pulverized coal-fired boiler. Prepared about 100 pages of technical analyses and comments on BACT, MACT, emission calculations, and enforceability;
- For petitioners and plaintiffs, review and prepare comments on air quality and hazardous waste based on negative declaration for refinery ultra low sulfur diesel project located in SCAQMD. Review responses to comments and prepare responses. Prepare declaration and present oral testimony before SCAQMD Hearing Board on exotic sources (cooling towers) and calculation of potential to emit under NSR. (Los Angeles Superior Court);
- For assist seeking to amend a proposed Consent Decree to settle alleged NSR violations at Chevron refineries, reviewed proposed settlement, related files, subject modifications, and emission calculations. U.S. et al. v. Chevron U.S.A. (Northern District of California).
- For petitioners, prepare declaration on enforceability of periodic monitoring requirements in response to EPA's revised interpretation of 40 CFR 70.6(a)(3). This revision limited additional monitoring required in Title V permits. 69 FR 3203 (Jan. 22, 2004). Environmental Integrity Project et al. v. EPA (U.S. Court of Appeals for the District of Columbia).
- For intervenors in application for authority to construct a 500 MW supercritical coal-fired generating unit before the Wisconsin Public Service Commission, prepared 46-filed written direct and rebuttal testimony with oral cross examination and rebuttal on BACT and MACT.

Prepared written comments on BACT, MACT, and enforceability on draft air permit for same facility.

- For property owners in Nevada, evaluate the environmental impacts of a 1,450-MW coal-fired power plant proposed to a rural area adjacent to the Black Rock Desert and Granite Range, including emission calculations, air quality modeling, comments on proposed air permit to collect preconstruction monitoring data, and coordination with specialists and other interested parties.
- For environmental organizations, reviewed draft PSD permit for a 600-MW coal-fired power plant in West Virginia. Prepared comments on permit calculations, coal washing, BACT for SO_2 and PM10, Hg MACT, and BACT for HCl, HF, and non-Hg metallic HAPs. Assist plaintiffs draft petition appealing air permit. Retained as expert to develop testimony on MACT, BACT, offsets, enforceability. Participate in settlement discussions. Case settled July 2004.
- For petitioners, reviewed record produced in discovery and prepared affidavit on emissions of carbon monoxide and volatile organic compounds during startup of GE 7FA combustion turbines. Sierra Club et al. v. Georgia Power Company (Northern District of Georgia). Summary Judgment Order issued December 19, 2006 granting plaintiffs' motion as to opacity violations and ruling not decisive as to violations.
- For petitioners, reviewed record produced in discovery and prepared affidavit on emissions of carbon monoxide and volatile organic compounds during startup of GE 7FA combustion turbines. Sierra Club et al. v. Georgia Power Company (Northern District of Georgia). Summary Judgment Order issued December 19, 2006 granting plaintiffs' motion as to opacity violations and ruling not decisive as to violations.
- For building trades, reviewed air quality permitting action for 1,960-MW coal-fired power plant before the Kentucky Department for Environmental Protection.
- Expert witness for plaintiffs in Sierra Club et al. v. Natural Resources & Environmental Protection Cabinet, Division of Air Quality and Thoroughbred Generating Company et al. on administrative challenge of the Prestonsburg V permit issued to a 1,500-MW coal-fired power plant. Reviewed over 60,000 pages of produced documents, prepared discovery tasks, identified and assembled plaintiff exhibits. Deposed. Assisted counsel in drafting discovery requests with over 30 depositions, witness cross examinations, and brief drafting. Presented over 30 days of direct testimony, rebuttal, and surrebuttal, with cross examination on BACT for NO_x, SO_2, and PM/PM10; MACT for Hg and non-Hg metallic HAPs; emission estimates for purposes of Class I and II air modeling; risk assessment; and enforceability of permit limits. Evidentiary hearings from November 2003 to June 2004.
- For citizens group in Massachusetts, reviewed, commented on, and participated in permitting of pollution control retrofits of coal-fired power plant.
- Assisted citizens group and labor union challenge issuance of conditional use permit for a 317,000 ft² discount store in Honolulu without any environmental review. In support of a motion for preliminary injunction, prepared 7-page declaration addressing public health impacts of diesel exhaust from vehicles serving the Project. In preparation for trial, prepared 30-page preliminary expert report summarizing toxicity of diesel exhaust and noise measurements at two big box retail stores in Honolulu, estimated diesel PM10 concentrations

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- Assisted oil companies on the California Central Coast in defending class action citizen's lawsuit alleging health effects due to emissions from gas processing plant and leaking underground storage tanks. Reviewed regulatory and other files and advised counsel on merits of case. Case settled November 2001.
- Assisted oil company on the California Central Coast in defending property damage claims arising out of a pipeline oil spill. Reviewed site investigation reports, pump tests, feasibility studies, and health risk assessments, participated in design of additional site characterization studies to assess health impacts, and advised counsel on merits of case. Prepare health risk assessment.
- Assisted union in appeal of Initial Study/Negative Declaration ("IS/ND") for an MTBE phaseout project at a Bay Area refinery. Reviewed IS/ND and supporting agency permitting files and prepared technical comments on air quality, groundwater, and public health impacts. Reviewed responses to comments and final IS/ND and ATC permits and assisted counsel on draft petitions and briefs appealing decision to Air District Hearing Board. Presented sworn direct and rebuttal testimony with cross examination on groundwater impacts of ethanol spills on hydrocarbon contamination at refinery. Hearing Board ruled 5 to 0 in favor of appellants, remanding ATC to District to prepare an EIR.
- Assisted Florida cities in challenging use of diesel and proposed BACT determinations in prevention of significant deterioration (PSD) permits issued to two 510-MW simple cycle peaking electric generating facilities and one 1,000-MW simple cycle/combined cycle facility. Reviewed permit applications, draft permits, and FDEP engineering evaluations, assisted counsel in drafting petitions and responding to discovery. Participated in settlement discussions. Cases settled or applications withdrawn.
- Assisted large California city in federal lawsuit alleging power plant was violating new federal permit. Reviewed permit file and applicant's engineering and cost feasibility study to reduce emissions through retrofit controls. Advised counsel on feasible and cost-effective NOx, SOx, and PM10 controls for several 1960s diesel-fired Pratt and Whitney peaker turbines. Case settled.
- Assisted coalition of Georgia environmental groups in evaluating BACT determinations and permit conditions in PSD permits issued to several large natural gas-fired simple cycle and combined-cycle power plants. Prepare technical comments on draft PSD permits on BACT; enforceability of limits; and toxic emissions. Review responses to comments, advise counsel on merits of cases, participate in settlement discussions, prepare oral and written testimony in adjudatory hearings, and provide technical assistance as required. Cases settled or won at trial.
- Assisted commission witness in review of air quality permitting actions before the Indiana Department of Environmental Management ("IDEM") for several natural gas fired simple cycle peaker and combined cycle power plants.

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- for Project using ISCST, prepared a causes health risk assessment based on these analyses, and evaluated noise impacts. Case in progress.
- Assisted environmental organizations in challenge the DOE Finding of No Significant Impact (FONSI) for the Baja California Power and Sempra Energy Resources Cross-Border Transmissions Lines in the U.S. and then associated power plants located in Mexico (DOE EA-1391). Prepared 20-page declaration in support of motion for summary judgment addressing emissions, including CO_2 and NH_3, criteria, BACT, cumulative air quality impacts, alternative cooling systems, and water use and water quality impacts. Plaintiff's motion for summary judgment granted in part. U.S. District Court, Southern District decision concluded that the Environmental Assessment and FONSI violated NEPA and the APA due to three inadequate analyses of the permits controversy surrounding the project, water impacts, impacts from NH_3 and CO_2, alternatives, and cumulative impacts. Border Power Plant Working Group v. Department of Energy and Bureau of Land Management, Case No. 02-CV-513-IEG (POR) (May 2, 2002).
- For Sacramento school, reviewed draft air permit issued for diesel generator located across from playfield. Prepared comments on emission estimates, enforceability, BACT, and health impacts of diesel exhaust. Case settled. BUG trap installed on the diesel generator.
- Assisted unions in appeal of Title V permit issued by BAAQMD to carbon plant that manufactured coke. Reviewed District files and prepared technical comments on Title V permit. Reviewed responses to comments and assisted counsel draft appeal to BAAQMD hearing board, opening brief, motion to strike, and rebuttal brief. Case settled.
- Assisted California Central Coast city obtain consents on a proposed new city line would straddle the Ventura-Los Angeles County boundary. Reviewed several environmental impact reports, reviewed an air quality analyses, a diesel exhaust health risk assessment, and detailed noise comments. Governor intervened and State dedicated the land for conservation purposes April 2004.
- Assisted Central California city on citizen controls on large alluvial sand quarry and asphalt plant proposing a modernization. Prepared comments on Negative Declaration on air quality, public health, noise, and traffic. Evaluated process flow diagrams and engineering reports to determine whether proposed changes increased plant capacity or substantially modified plant operations. Prepared comments on application for categorical exemption from CEQA. Presented testimony to County Board of Supervisors. Developed controls to mitigate impacts. Assisted counsel draft Petition for Writ. Case settled June 2002.
- Substantial improvements in plant operations were obtained including cap on throughput, dust control measures, asphalt plant loadout enclosure, and restrictions on truck routes.

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- Assisted coalition of towns and environmental groups in challenging air permits issued to 525 MW natural fuel (mineral gas and distillate) combined-cycle power plant in Connecticut. Prepared technical comments on permit terms and 60 pages of written testimony addressing emission estimates, dispersion/simulation issues, BACT/LAER analyses, and toxic air emissions. Presented testimony in adjudicatory administrative hearings before the Connecticut Department of Environmental Protection in late 2001 and December 2001.
- Assisted various coalitions of unions, citizens groups, cities, public agencies, and developers in licensing and permitting of over 30 large combined cycle, simple cycle, and peaker power plants in California, Arizona, Georgia, Florida, Illinois, Missouri, Oklahoma, Oregon, and elsewhere. Prepared analyses of and comments on applications for certification, preliminary and final staff assessments, and permits issued by local agencies. Presented written and oral testimony before California Energy Commission and Arizona Power Plant and Transmission Line Siting Committee on hazards of ammonia use and transportation, health effects of air emissions, contaminated property issues, BACT/LAER issues related to SCR and SCONOX, criteria and toxic pollutant emission estimates, MACT analyses, air quality modeling, water supply and water quality issues, and methods to reduce water use, including dry cooling, air-cooled dry-wet cooling, hybrid cooling, and zero liquid discharge systems.
- Assisted unions, cities, and neighborhood associations in challenging an EIR issued for the proposed expansion of the Oakland Airport. Reviewed two draft EIRs and prepared a health risk assessment and extensive technical comments on air quality and public health impacts. The California Court of Appeals, First Appellate District, ruled in favor of appellants and plaintiffs, concluding that the EIR "(1) erred in using outdated information to calculate the emission of toxic air contaminants (TACs) from jet aircraft; (2) failed to support the decision not to evaluate the health risks associated with the emission of TACs with meaningful analysis;" thus accepting my technical arguments and requiring the Port to prepare a new EIR. *See Berkeley Keep Jets Over the Bay Committee, City of San Leandro, and City of Alameda et al. v. Board of Port Commissioners* (August 30, 2001) 111 Cal.Rptr.2d 598.
- Assisted lessee of former gas station with leaking underground storage tanks and TCE contamination from adjacent property. Leases held option to purchase, which was forfeited based on misrepresentation by remediation consultant as to nature and extent of contamination. Remediation consultant purchased property. Reviewed regulatory agency files and advised counsel on merits of case. Case not filed.
- Advised counsel on merits of several pending actions, including a Proposition 65 case involving groundwater contamination at an explosives manufacturing firm and two former gas stations with leaking underground storage tanks.
- Assisted defendant forestry in Oakland in a lawsuit brought by neighbors alleging property contamination, nuisance, trespass, asthma, and health effects from foundry operations. Inspected and sampled plaintiff's property. Advised counsel on merits of case. Case settled.

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- Assisted business owner facing eminent domain overture. Prepared technical comments on a negative declaration for soil contamination and public health risks from air emissions from a proposed redevelopment project in San Francisco in support of a CEQA lawsuit. Case settled.
- Assisted neighborhood association representing residents living downwind of a Berkeley asphalt plant in separate nuisance and CEQA lawsuits. Prepared technical comments on air quality, odor, and noise impacts, presented testimony at commission and council meetings, participated in community workshops, and participated in settlement discussions. Cases settled. Asphalt plant was upgraded to include air emission and noise controls, including vapor collection system at truck loading stations, enclosures for noisy equipment, and improved housekeeping.
- Assisted a Fortune 500 industrial home builder in claims alleging health effects from faulty installation of gas appliances. Conducted indoor air quality study, advised counsel on merits of case, and participated in discussions with plaintiffs. Case settled.
- Assisted property owners in Silicon Valley in lawsuit to recover remediation costs from insurer for large TCE plume originating from a manufacturing facility. Conducted investigations in apartments; sudden and accidental release of TCE, including groundwater modeling, developments of method to date spill; preparation of chemical inventory; investigation of historical waste disposal practices and methods, and on-site sewer and storm drainage inspections and sampling. Prepared declaration in opposition to motion for summary judgment. Case settled.
- Assisted residents in east Oakland downwind of a former battery plant in class action lawsuit alleging property contamination from lead emissions. Contacted historical research and dry deposition modeling that substantiated claim. Participated in mediation at JAMS. Case settled.
- Assisted property owners in West Oakland who purchased a former gas station that had leaking underground storage tanks and groundwater contamination. Reviewed agency files and advised counsel on merits of case. Prepared declaration in opposition to summary judgment. Prepared case estimate to remediate site. Participated in settlement discussions. Case settled.
- Consultant to counsel representing plaintiffs in two Clean Water Act lawsuits involving selenium discharges into San Francisco Bay from refineries. Reviewed files and advised counsel on merits of case. Prepared interrogatory and discovery questions, assisted in deposing opposing experts, and reviewed and interpreted treatability and other technical studies. Judge ruled in favor of plaintiffs.
- Assisted oil company in a nuisance suit filed by a resident of a small California beach community alleging that discharges of tank farm rinse water into the sanitary sewer system caused hydrogen sulfide gas to infiltrate residence, sending occupants to hospital. Improved

J. PHYLLIS FOX, PH.D., PAGE 9

accident site. Interviewed parties to the event, and reviewed extensive agency files related to incident. Used chemical analysis, field simulations, mass balance calculations, sewer hydraulic simulations with SWMM4, atmospheric dispersion modeling with SCREEN3, odor analyses, and risk assessment calculations to demonstrate that the incident was caused by a faulty drain trap and inadequate slope of sewer lateral on resident's property. Prepared a detailed technical report summarizing these studies. Case settled.

- Assisted large West Coast city in suit alleging that leaking underground storage tanks on city property had damaged the waterproofing on adjacent building, causing leaks in an underground parking structure. Reviewed submittee hydrogeologic investigations and evaluated studies conducted by others documenting leakage from underground diesel and gasoline tanks. Inspected, tested, and evaluated waterproofing on subsurface parking structure. Waterproofing was substandard. Case settled.
- Assisted residents downwind of gravel mine and asphalt plant in Stanislaus County, California, in suit to obtain CEQA review of air permitting action. Prepared two declarations analyzing air quality and public health impacts. Judge ruled in favor of plaintiffs, closing mine and asphalt plant.
- Assisted defendant oil company in class action lawsuit alleging health impacts from remediation of petroleum contaminated site on California Central Coast. Reviewed documents, designed and conducted monitoring program, and participated in settlement discussions. Case settled.
- Consultant to attorneys representing irrigation districts and municipal water districts to evaluate a potential challenge of USFWS actions under CVPIA section 3406(b)(2). Reviewed agency files and collected and analyzed hydrology, water quality, and fishery data. Advised counsel on merits of case. Case not filed.
- Assisted residents downwind of a Carson refinery in class action lawsuit involving soil and groundwater contamination, nuisance, property damage, and health effects from air emissions. Reviewed files and provided advice on contaminated soil and groundwater, toxic emissions, and health risks. Prepared declaration on refinery fugitive emissions. Prepared deposition questions and reviewed deposition transcripts on air quality, soil contamination, odors, and health impacts. Case settled.
- Assisted residents downwind of a Contra Costa refinery who were affected by an accidental release of naphtha. Characterized spread of plume, estimated emissions, and modeled ambient concentrations of hydrocarbons and sulfur compounds. Deposed. Presented testimony in binding arbitration at JAMS. Judge found in favor of plaintiffs.

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- Assisted residents downwind of Contra Costa County refinery in class action lawsuit alleging property damage, nuisance, and health effects from several large accidents as well as routine operations. Reviewed files and prepared analyses of environmental impacts. Prepared declarations. Deposed, and presented testimony before jury in one trial and judge in second. Case pending.
- Assisted business owner claiming damage from dust, noise, and vibration during a sewer construction project in San Francisco. Reviewed agency files and PM10 monitoring data and advised counsel on merits of case. Case settled.
- Assisted residents downwind of Contra Costa County refinery in class action lawsuits alleging property damage, nuisance, and health effects. Prepared declaration in opposition to summary judgment, deposed, and presented expert testimony on accidental releases, odor, and nuisance before jury. Case thrown out by judge, but reversed on appeal and to be retried.
- Presented testimony in small claims court on behalf of residents claiming health effects from hydrogen sulfide from flaring emissions triggered by a power outage at a Contra Costa County refinery. Analyzed meteorological and air quality data and evaluated potential health risks of exposure to low concentrations of hydrogen sulfide. Judge awarded damages to plaintiffs.
- Assisted construction unions in challenging PSD permit for an Indiana steel mill. Prepared technical comments on draft PSD permit, drafted 70 page appeal of agency permit action to the Environmental Appeals Board challenging permit based on faulty BACT analysis for electric arc furnace and reheat furnace and faulty permit conditions, among others, and drafted briefs responding to four parties. EPA Region V and the EPA General Counsel intervened as amici, supporting petitioners. EAB ruled in favor of petitioners, remanding permit to IDEM on three key issues, including BACT for the reheat furnace and lead emissions from the EAF. Drafted motion to reconsider three issues. Prepared 60 pages of technical comments on revised draft PSD permit. Drafted second EAB appeal addressing lead emissions from the EAF and BACT for reheat furnace based on European experience with SCR/SNCR. Case settled. Permit was substantially improved. *See In re: Steel Dynamics, Inc.*, PSD Appeal Nos. 99-4 & 99-5 (EAB June 22, 2000).
- Assisted defendant auto manufacturer in Alaska in negotiations with USEPA to seek relief from penalties for alleged violations of the Clean Air Act. Reviewed and evaluated regulatory files and monitoring data, prepared technical analysis demonstrating that permit limits were not violated, and participated in negotiations with EPA to obtain relief. Fines were substantially reduced and case closed.
- Assisted construction unions in challenging PSD permitting action for an Indiana grain mill. Prepared technical comments on draft PSD permit and assisted counsel draft appeal of agency permit action to the Environmental Appeals Board challenging permit based on faulty

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BACT analyses for heaters and boilers and facility permit conditions, among others. Case settled.

- As part of a consent decree settling a CEQA lawsuit assisted neighbors of a large waste coal port in negotiations with port authority to secure mitigation for air quality impacts. Prepared technical comments on mobile source air quality impacts and mitigation and negotiated a $9 million CEQA mitigation package. Currently representing neighbors on technical advisory committee established by port to implement the air quality mitigation program.
- Assisted construction unions in challenging permitting action for a California hazardous waste incinerator. Prepared technical comments on draft permit; assisted counsel prepare appeal of EPA permit to the Environmental Appeals Board. Participated in settlement discussions on technical issues with applicant and EPA Region 9. Case settled.
- Assisted environmental group in challenging DTSC Negative Declaration on a hazardous waste treatment facility. Prepared technical comments on risk of upset, water, and health risks. Writ of mandamus issued.
- Assisted several neighborhood associations and cities impacted by quarries, asphalt plants, and cement plants in Alameda, Solano, Sonoma, and Mendocino counties in obtaining mitigations for dust, air quality, public health, traffic, and noise impacts from facility operations and proposed expansions.
- For over 100 industrial facilities, commercial developments, and retail development projects, developed the record in preparation for CEQA and NEPA lawsuits. Prepared technical comments on hazardous materials, solid wastes, public utilities, noise, worker safety, air quality, public health, water resources, water quality, traffic, and risk of upset sections of EIRs. EISs, mitial studies, and negative declarations. Assisted counsel in drafting petitions and briefs and prepared declarations.
- For several large commercial development projects and airports, assisted applicant and counsel prepare defensible CEQA documents, respond to comments, and identify and evaluate "all feasible" mitigation to avoid CEQA challenges. This work included developing mitigation programs to reduce traffic-related air quality impacts based on energy conservation programs, solar, low-emissions vehicles, alternative fuels, exhaust treatments, and transportation management associations.

SITE INVESTIGATION/REMEDIATION/CLOSURE

- Technical manager and principal engineer for characterization, remediation, and closure of waste management areas at former Colorado oil shale plant. Constituents of concern included BTEX, As, 1,4,1-TCA, and TPH. Completed groundwater monitoring programs, site assessments, work plans, and closure plans for seven process water holding ponds; a refinery sewer system; and processed shale disposal area. Managed design and construction of groundwater treatment system and removal actions and obtained close closure.
- Principal engineer for characterization, remediation, and closure of process water ponds at a former fertilizer processing plant in Colorado. Designed and implemented groundwater monitoring program and site assessments and prepared closure plan.
- Advised the city of Sacramento on redevelopment of two former railyards. Reviewed work plans, site investigations, risk assessment, RAPS, RIRPS, and CEQA documents. Participated in the development of mitigation measures to protect construction and utility workers and the public during remediation, redevelopment, and use of the site, including buffer zones, worker training, soil berm containment structure, and an environmental oversight plan.
- Provided technical support for the investigation of a former sanitary landfill that was redeveloped as single family homes. Reviewed public portions of numerous documents, including health risk assessments, preliminary endangerment assessments, site investigation reports, work plans, and RIRPS. Historical research to identify historic waste disposal practices to prepare a preliminary endangerment assessment. Acquired, reviewed, and analyzed the files of 19 federal, state, and local agencies; three sets of comparison field notes; analyzed 21 aerial photographs and interviewed 14 individuals associated with operation of former landfill. Assisted counsel in defending lawsuit brought by residents alleging health impacts and diminution of property value due to residual contamination. Prepared summary report.
- Technical oversight of characterization and remediation of a solvent plume at an explosives manufacturing facility in Lincoln, CA. Provided interface between owners and consultants. Reviewed site assessments, work plans, closure plans, and RIRPs.
- Consultant to owner of large western molybdenum mine proposed for NPL listing. Participated in negotiations to scope site erosion order and develop scope of work. Participated in studies to determine governing groundwater background to evaluate applicability of water quality standards. Served on technical committees to develop alternatives to mitigate impacts and close the facility, including recycling and grading, vertical thickness and types of covers, and reclamation. This work included developing and evaluating methods to control surface runoff and erosion, mitigate impacts of acid rock drainage on surface and ground waters, and stabilize nine waste rock piles containing 323 million tons of pyrite-rich, mixed volcanic waste rock (andesites, rhyolite, tuff). Evaluated stability of waste rock piles. Represented client in hearings and meetings with state and federal oversight agencies.

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REGULATORY PERMITTING/NEGOTIATIONS

- Prepared comments on Lakeville Air Pollution Control District proposed Strategic Toxic Air Reduction regulations.
- Prepared comments and analysis of BAAQMD Regulation 8, Rule 18, Flare Monitoring at Petroleum Refineries.
- Prepare comments on Proposed National Emission Standards for Hazardous Air Pollutants and, in the Alternative, Proposed Standards of Performance for New and Existing Stationary Sources: Electricity Utility Steam Generating Units (MACT standards for coal-fired power plants)
- Prepared Authority to Construct Permit for remediation of a large petroleum-contaminated site on the Central Coast. Negotiated conditions with agencies and secured permits.
- Prepared Authority to Construct Permit for remediation of a former oil fieldon the Central Coast. Participated in negotiations with agencies and secured permits.
- Prepared and/or reviewed hundreds of environmental permits, including NPDES, UIC, Stormwater, Authority to Construct, Prevention of Significant Deterioration, New Source Review, and RCRA, among others.
- Participated in the development of the CARB document, *Guidance for Power Plant Siting and Best Available Control Technology*, including attending public workshops and filing technical comments.
- Performed data analyses in support of adoption of emergency power restoration standards by the Public Utilities Commission for "major" power outages, where major is an outage that simultaneously affects 10% of the customer base.
- Drafted portions of the Good Neighbor Ordinance to guide Contra Costa County grease antibody over safety of local industry, particularly chemical plants and refineries.
- Participated in drafting BAAQMD Regulation 8, Rule 28, Pressure Relief Devices, including participation in public workshops, review of staff reports, draft rules and other technical materials, preparation of technical comments on staff proposals, research on availability and costs of methods to control PRV releases, and negotiations with staff.
- Participated in amending BAAQMD Regulation 8, Rule 18, Valves and Connectors, including participation in public workshops, review of staff reports, proposed rules and other supporting technical material, preparation of technical comments on staff proposals, research on availability and cost of low-leak technology, and negotiations with staff.
- Participated in amending BAAQMD Regulation 8, Rule 23, Pumps and Compressors, including participation in public workshops, review of staff reports, proposed rules, and other supporting technical materials, preparation of technical comments on staff proposals, research on availability and costs of low-leak and seal-less technology, and negotiations with staff.

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- Participated in amending BAAQMD Regulation 8, Rule 5, Storage of Organic Liquids, including participation in public workshops, review of staff reports, proposed rules, and other supporting technical material, preparation of technical comments on staff proposals, research on availability and costs of controlling tank emissions, and presentation of testimony before the Board.
- Participated in amending BAAQMD Regulation 8, Rule 18, Valves and Connectors at Petroleum Refinery Complexes, including participation in public workshops, review of staff reports, proposed rules and other supporting technical material, preparation of technical comments on staff proposals, research on availability and costs of low-leak technology, and presentation of testimony before the Board.
- Participated in amending BAAQMD Regulation 8, Rule 23, Pumps and Compressor Seals, including participation in public workshops, review of staff reports, proposed rules, and other supporting technical material, preparation of technical comments on staff proposals, research on availability and costs of low-leak technology, and presentation of testimony before the Board.
- Participated in amending BAAQMD Regulation 8, Rule 22, Valves and Flanges at Chemical Plants, etc, including participation in public workshops, review of staff reports, proposed rules, and other supporting technical material, preparation of technical comments on staff proposals, research on availability and costs of low-leak technology, and presentation of testimony before the Board.
- Participated in the development of the Statewide Water Quality Control Plans for Inland Surface Waters and Enclosed Bays and Estuaries, including participation in workshops, review of draft plans, preparation of technical comments on draft plans, and presentation of testimony before the SWRCB.
- Participated in developing Se permit effluent limitations for the five Bay Area refineries, including review of staff proposals, statistical analyses of Se effluent data, review of

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literature on aquatic toxicity of Se, preparation of technical comments on several staff proposals, and presentation of testimony before the Bay Area RWQCB.

- Represented the California Department of Water Resources in the 1991 Bay-Delta Hearings before the State Water Resources Control Board, presenting sworn expert testimony with cross examination and rebuttal on a striped bass model developed by the California Department of Fish and Game.
- Represented the State Water Contractors in the 1987 Bay-Delta Hearings before the State Water Resources Control Board, presenting sworn expert testimony with cross examination and rebuttal on mineral flows, historical salinity trends in San Francisco Bay, Delta outflow, and hydrodynamics of the South Bay.
- Represented intervenors in the licensing of over 20 natural-gas-fired power plants and one coal gasification plant in the California Energy Commission and elsewhere. Reviewed and prepared technical comments on applications for certification, preliminary staff assessments, final staff assessments, preliminary determinations of compliance, final determinations of compliance, and prevention of significant deterioration permits in the areas of air quality, water supply, water quality, biology, public health, worker safety, transportation, site contamination, cooling systems, and hazardous materials. Presented written and oral testimony in evidentiary hearings with cross examination and rebuttal. Participated in technical workshops.
- Represented several parties in the proposed merger of San Diego Gas & Electric and Southern California Edison. Prepared independent technical analyses on health risks, air quality, and water quality. Presented written and oral testimony before the Public Utilities Commission administrative law judge with cross examination and rebuttal.
- Represented a PRP in negotiations with local health and other agencies to establish impact of subsurface contamination on riverbank residential properties. Reviewed health studies prepared by agency consultants and worked with agencies and their consultants to evaluate health risks.

WATER QUALITY/RESOURCES

- Directed and participated in research on environmental impacts of energy development in the Colorado River Basin, including contamination of surface and subsurface waters and modeling of flow and chemical transport through fractured aquifers.
- Played a major role in Southern California water resource planning studies since the early 1970s. Prepared portions of the Basin Plans for the Sacramento, San Joaquin, and Delta basins including sections on water supply, water quality, beneficial uses, waste load allocation, and agricultural drainage. Developed water quality models for the Sacramento and San Joaquin Rivers.

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- Conducted hundreds of studies over the past 30 years on Delta water supplies and the impacts of exports from the Delta on water quality and biological resources of the Central Valley, Sacramento-San Joaquin Delta, and San Francisco Bay. Typical examples include:
  1. Evaluate historical trends in salinity, temperature, and flow in San Francisco Bay and upstream rivers to determine impacts of water exports on the estuary;
  2. Evaluate the role of exports and natural factors on the food web by exploring the relationship between salinity and primary productivity in San Francisco Bay, upstream rivers, and delta;
  3. Evaluate the effects of exports, other in-Delta, and upstream factors on the abundance of salmon and striped bass;
  4. Review and critique agency fishery models that link water exports with the abundance of striped bass and salmon;
  5. Develop a model based on GLMs to estimate the relative impact of exports, water facility operating variables, tidal phase, salinity, temperature, and other variables on the survival of salmon smolts as they migrate through the Delta;
  6. Reconstruct the natural hydrology of the Central Valley using water balance, vegetation mapping, reservoir operation models to simulate flood flows, precipitation records, tree ring analysis, and historical records;
  7. Evaluate the relationship between biological indicators of estuary health and delta-estuary position of a salinity surrogate (X2);
  8. Use real-time fisheries monitoring data to quantify impact of exports on fish migration;
  9. Refine/develop statistical theory of autocorrelation and use to assess strength of relationships between biological and flow variables;
  10. Collect, compile, and analyze water quality and salinity data for surface waters in the Central Valley to assess the role of water quality in fishery declines;
  11. Assess mitigation measures, including habitat restoration and changes in water project operation, to minimize fishery impacts;
  12. Evaluate the impact of unscreened agricultural water diversions on abundance of larval fish;
  13. Prepare and present testimony on the impacts of water resources development on Bay hydrodynamics, salinity, and temperature in water rights hearings;
  14. Evaluate the impact of tidal wetlands on shallow water habitat, including interpretation of historical aerial photographs.

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15) Evaluate the hydrodynamic and water quality impacts of converting Delta islands into reservoirs.

16) Use a hydrodynamic model to simulate the distribution of larval fish in a salinity influenced estuary.

17) Identify and evaluate non-aspirin factors that may have contributed to salmon declines, including pesticides, shifts in oceanic conditions, aquatic toxicity from pesticides and mining wastes, salinity intrusion from channel dredging, loss of riparian and marsh habitat, sedimentation from upstream land alterations, and changes in dissolved oxygen, flow, and temperature below dams.

- Developed, directed, and participated in a broad-based research program on environmental issues and control technology for energy industries including petroleum, oil shale, coal mining, and coal slurry transport. Research included evaluation of air and water pollution, development of novel, low-cost technology to treat and dispose of wastes, and development and application of geohydrologic models to evaluate subsurface contamination from in-situ retorting. The program consisted of government and industry contracts and employed 45 technical and administrative personnel.
- Coordinated an industry task force established to investigate the occurrence, causes, and solutions for corrosion/erosion and mechanical/engineering failures in the waterside systems (e.g., condensers, steam generator equipment) of power plants. Corrosion/erosion failures caused by water and steam contaminants that were investigated included waterside corrosion caused by poor microbiological treatment of cooling water, steam-side corrosion caused by ammonia-oxygen attack of copper alloys, stress-corrosion cracking of copper alloys in the air cooling sections of condensers, tube sheet leaks, oxygen in-leakage through condensers, volatilization of silica in boilers and carry over and deposition on turbine blades, and iron corrosion on boiler tube walls. Mechanical/engineering failures investigated included: steam impingement attack on the steam side of condenser tubes, tube-to-tube-sheet joint leakage, flow-induced vibration, structural design problems, and mechanical failures due to stresses induced by shutdown, startup and cycling duty, among others. Worked with electric utility plant owners/operators, condenser and boiler vendors, and architect/engineers to collect data to document the occurrence of and causes for these problems, prepared reports summarizing the investigations, and presented the results and participated on a committee of industry experts tasked with identifying solutions to prevent condenser failures.
- Evaluated the cost effectiveness and technical feasibility of using dry cooling and parallel dry-wet cooling to reduce water demands of several large municipal gas fired power plants in California and Arizona.
- Designed and prepared cost estimates for several dry cooling systems (e.g., for hot heat exchangers) used in chemical plants and refineries.

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- Designed, evaluated, and costed several zero liquid discharge systems for power plants.
- Evaluated the impact of agricultural and mining practices on surface water quality of Central Valley streams. Represented municipal water agencies on several federal and state advisory committees tasked with gathering and assessing technical information, developing work plans, and providing oversight of technical work to investigate toxicity issues in the watershed.

AIR QUALITY/PUBLIC HEALTH

- Prepared or reviewed the air quality and public health sections of hundreds of EIRs and EISs on a wide range of industrial, commercial and residential projects.
- Prepared or reviewed hundreds of NSR and PSD permits for a wide range of industrial facilities.
- Designed, implemented, and directed a 5-year long source, industrial hygiene, and ambient monitoring program to characterize air emissions, employee exposure, and downwind environmental impacts of a fire-generation shale oil plant. The program included stack monitoring of heaters, boilers, incinerators, sulfur recovery units, rock crushers, API separator vents, and wastewater pond fugitives for arsenic, cadmium, chlorides, chromium, mercury, 15 organic pollutants (e.g., quinolines, pyrene, benzo(a)pyrene, thiophene), hexavalent sulfur gases, hydrogen cyanide, and ammonia. In many cases, new methods had to be developed or existing methods modified to accommodate the complex matrices of shale plant gases.
- Conducted investigations on the impact of diesel exhaust from truck traffic from a wide range of facilities including cities, large retail centers, light industrial uses, and sports facilities. Conducted traffic surveys, continuously monitored diesel exhaust using an aethalometer, and prepared health risk assessments using resulting data.
- Conducted indoor air quality investigations to assess exposure to natural gas leaks, pesticides, molds and fungi, soil gas from subsurface contamination, and outgassing of carpets, drapes, furniture and construction materials. Prepared health risk assessments using collected data.
- Prepared health risk assessments, emission inventories, air quality analyses, and assisted in the permitting of over 70 1 to 2 MW emergency diesel generators.

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- Prepare over 100 health risk assessments, endangerment assessments, and other health-based studies for a wide range of industrial facilities.
- Developed methods to monitor trace elements in gas streams, including a continuous real-time monitor based on the Zeeman atomic absorption spectrometer, to continuously measure mercury and other elements.
- Performed nuisance investigations (odor, noise, dust, smoke, unique air-quality, soil contamination) for businesses, industrial facilities, and residences located proximate to and downwind of pollution sources.

PUBLICATIONS AND PRESENTATIONS (Partial List - Representative Publications)

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J. Phyllis Fox, *Well Interference Effects of HDPE's Proposed Wellfield in the Mojave Valley, Water Districts*. Prepared for the California Unions for Reliable Energy (CURE), October 12, 1998.

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J. Phyllis Fox and Robert Sears, *Health Risk Assessment for the Metropolitan Oakland International Airport Proposed Airport Development Program*, Prepared for Plumbers & Steamfitters U.A. Local 342, December 15, 1997.

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Phyllis Fox, *Trip 2 Report, Environmental Monitoring Plan, Pinedale Creek Shale Oil Program*, Unocal Report, 1991.

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J. P. Fox and others, "Reply to Discussion by D.R. Helsel and L.D. Arnow on Trends in Freshwater Inflow to San Francisco Bay from the Sacramento-San Joaquin Delta," *Water Resources Bulletin*, v. 27, no. 3, 1991.

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COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

ATTACHMENT B

Adam J. Regele
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd., Suite 1000
South San Francisco, CA 94080

November 10, 2014

Subject: Comments on the Draft Environmental Impact Report Prepared for the Tesoro Avon Marine Terminal Project

Dear Mr. Regele:

Here is my review of the Draft Environmental Impact Report (DEIR) dated September 2014 for the Tesoro Avon Marine Oil Terminal (Avon Terminal) Lease Consideration prepared by the California State Lands Commission (CSLC). I am a marine ecologist and environmental scientist with more than 25 years' experience conducting, managing, and reviewing studies of biology, and water quality, including review of environmental impacts of construction, demolition, and dredging in the San Francisco Bay Estuary region. My educational background includes a Master's Degree in Marine Biology from San Francisco State University and a Doctorate in Marine Biology and Fisheries from the University of Miami as well as professional development studies such as NEPA/CEQA EIRs and Land Use Planning, Natural Resources Regulations and Permitting, Environmental Monitoring and Data Quality, Ecological Risk Assessment, and California Fair Political Practice Commission Ethics Training. My review began with a focus on three issues: ballast water (DEIR 2.4.1), other possible impacts to biology in addition to that of nonindigenous organisms in ballast water (DEIR 4.2), and water quality (DEIR 4.3). I also reviewed the DEIR's analysis of the risk of an oil spill from ships traveling to and from the Avon Terminal and the adequacy of the proposed mitigation measures.

10-58

Section 2.4.1 Ballast Water, pp. 2.22 and following. The DEIR presents current regulations and state and federal regulatory agency responsibilities for preventing accidental discharge of ballast water containing nonindigenous organisms. These accidental introductions of species have occurred to the detriment of biological communities in San Francisco Bay and beyond. The San Francisco Bay and Estuary have been recognized as the most invaded aquatic ecosystem in North America (Cohen and Carlton 1995). Many invasions are thought to have been through accidental introduction in ship ballast water.

To mitigate the impacts of introduced species in ballast water, Tesoro should do more than simply notify the ship operators of the regulations. There will be no "mitigation" of the impacts unless the mitigation measures are confirmed to have been carried out. Tesoro should require the ship operators to certify that the required actions were carried out appropriately, and consider having an independent observer to monitor compliance.

Section 4.1 Operational Safety/Risk of Accidents, pp. 4.1-1 and following. The presentation of the risks of an oil spill understates the possible impacts of oil spills for several reasons that are described here.

10-59 First, the agency's use of the mean (arithmetic average) to summarize the frequency of spills minimizes the predicted numbers of spills and their frequency.. Table 4.1-9 on page 4.1-47 presents the expected mean time between spills inside and outside San Francisco Bay for three sizes of spills: 238 barrels, 1,000 barrels, and 10,000 barrels. The agency's use of the statistic "mean" understates the frequency of the Project's oil spills because in calculating the mean time between spills the agency skewed the "middle" value towards the long time between spills. A better measure of frequency of spills would be the median.The median would give a more representative expected time estimate between spills and better predict the frequency of future oil spills. than presented in Table 4.1-9. Environmental impacts from frequent small oil spills can be worse than a few large oil spills. For example, American motoristsspill 180 million gallons of used motor oil into our waterways each year. This is 16 times the amount spilled by the Exxon Valdez in Alaska (http://www.mass.gov/eea/agencies/massdep/water/watersheds/nonpoint-source-pollution-education-motor-oil.html). Therefore, Table 4.1-9 in the DEIR should use the median in Table 4.1-9 to better represent the risk of spills.

10-60 The DEIR's use of barrels as the unit of measurement for the volume of oil spilled, while accepted in the oil industry, is not a unit easily translated by a member of the public. Accordingly, a reported spill in barrels does not disclose the potential impact of a spill in a meaningful way to the ordinary person. The standard barrel of crude oil contains 42 gallons according to a variety of sources (American Oil and Gas Historical Society website). Although this conversion is found in the DEIR on page 4.3-39, the DEIR should provide the conversion at the first instance where the barrel unit of measurement is used. According to the Clean Water Education Partnership (CWEP), one gallon of oil can contaminate one million gallons of clean water and one quart of oil can create an oil slick two acres in size (http://www.nccleanwater.org/help/did_you_know.php). The smallest volume listed in Table 4.1-9 (p. 4.1-47) is 238 barrels. At 42 gallons per barrel this is equal to approximately 10,000 gallons. Based on the estimate from the Clean Water Education Partnership above, this can create an oil slick 80,000 acres in size. The use of barrels as the unit in Table 4.1-9 does not meet CEQA's purpose of informing the public to the severity of small spills. The conversion of barrels to gallons should be provided in section 4.1 of the DEIR, as well as in the List of Abbreviations and Acronyms.

10-61 Second, the DEIR's oil spill risk assessment is inadequate because it relies upon a report by Chambers Group Inc. (1994) that is more than 20 years old. All oil spills in U.S. waters must be reported to the U.S. Coast Guard and these data are available online from at least 1990-2014 (http://www.nrc.uscg.mil/). Accordingly, the data the agency relied upon in the Chambers Group Inc. report is now more than 20 years old and is not substantial evidence supporting the agency's environmental conclusions. A revised DEIR must be prepared for public review and comment that includes more relevant data.

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10-62 Third, the DEIR in Table 4.1-9 underreports the frequency of spills by arbitrarily choosing to measure oil spills of 238 barrels (10,000 gallon) or larger. No substantial evidence is presented to support this selection. All oil spills are required to be reported to the U.S. Coast Guard. Many of these spills are likely to be smaller than 238 barrels (10,000 gallons). . Therefore, the expected time between spills based on smaller spills (less than 10,000 gallons) will be shorter than the DEIR's 36 year interval in Table 4.1-9. Put another way, spills will occur more frequently and the environmental impact will be more serious than Table 4.1-9 in the DEIR presents. The DEIR must be revised to discuss the chronic impact of frequent smaller oil spills that can have a substantial environmental impact to the San Francisco Bay and Estuary.

10-63 Finally, the DEIR used distance traveled by Avon-related shipping compared to all shipping in the San Francisco Bay (p. 4.1-47) to estimate the risk of Avon-related accidents. The relative distance traveled will underestimate the true risk of a spill because it does not include information about actual accidents specific to Avon-related shipping. The actual frequency of Avon-related shipping accidents should be compared to the total frequency of accidents, scaled by distances traveled, because based on actual accident frequency Avon Terminal shipping may need more (or less) stringent risk reduction and mitigation measures than customary based on its relative performance. The DEIR must be revised to disclose the actual frequencies and sizes of Avon-related spills and accidents during the previous 30 year lease as compared to overall mean and median frequencies and sizes for other ships during that time period.

10-64 **Section 4.2 Biological Resources, pp. 4.2-3 and following.** The sources of information for biological species and biological communities and habitats are not current, especially for species in San Francisco Bay. Because of this, the resulting baseline for describing possible impacts of the project is so deficient that the severity of the impacts cannot be estimated. Therefore, for the reasons explained below, a revised DEIR must be prepared.

10-65 First, the Biotic communities Table 4.2-1 gives two sources of information: Smith (1959) and NOAA (2007). Both references are out of date or incomplete with regard to current species present for both native and nonindigenous species. Accordingly, the data for which the agency relies upon is not substantial evidence.

10-66 Next, NOAA (2007) states that it is questionable whether there are or ever were beds of blue mud shrimp (*Upogebia pugettensis*) in San Francisco Bay. However, in 2010 blue mud shrimp were the second most abundant organism collected in San Pablo Bay during a monitoring study (McGowan 2010; McGowan et al. 2012). The same species (no specimens retained for identification) were frequently collected and abundant in a similar study in 2011. This mud shrimp is an important element of the benthic community that has been called an ecosystem engineer because of its burrowing behavior and the use of its burrows by other benthic organisms. In addition, this particular species appears to be a recent nonindigenous invader of San Francisco Bay that carries a parasite that is driving the native species extinct in several West Coast estuaries (OSU 2009). By omitting any mention of the mud shrimp species and relying on

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a report that was unaware and skeptical of its presence in the bay, the DEIR paints a faulty portrait of existing conditions with regard to species present. The potential impacts to the blue mud shrimp must be disclosed and fully analyzed in a revised CEQA document available for public review before the Project is approved.

10-67

In addition, the DEIR is incomplete and inconsistent in its use of the references that it cites. On page 4.2-5 line 14 the DEIR states "Native oyster beds are found in the same general areas as eel grass habitats." However, the reference NOAA (2007) previously cited by the DEIR states on p. 53 that "...no live subtidal Olympia oyster beds have been documented in San Francisco Bay." Based on my own research on native Olympia oysters in San Francisco Bay, they do not form "oyster beds" on the bottom but are limited to rocks and other hard structures in the intertidal and shallow subtidal areas. Native oysters are important subjects for citizen volunteer-based ecosystem restoration around the bay and are an ecologically important species that filters the water and provides habitat for other species. The DEIR does not discuss native oysters adequately enough to determine possible impacts to them and should be revised to review and discuss native oysters using recent information.

10-68

Finally, the generally older references cited in the DEIR do not discuss an important recent change in the benthic and suspended sediment in the northern part of the San Francisco Bay Estuary. Increased water clarity in the North Bay has emerged due to the passage of hydraulic mining sediment out of the bay (USGS 2014; Barnard et al. 2013). The planktonic ecosystem is changing from one that is light limited to one that may be more nutrient limited with consequences for the aquatic food web endangered fishes that depend on it such as Delta smelt and some runs of chinook salmon. The DEIR must be revised to include discussions of sediments and dredging that consider this recently documented change in volume of suspended sediment and its movement through the North Bay (Barnard et al. 2013; USGS 2014).

10-69

Section 4.2 Biological Resources, p. 4.2-19, Sensitive Mammals. This section fails to include California sea lions (*Zalophus californianus*) and humpback whales (*Megaptera novaeangliae*) among the marine mammals that may migrate through the estuary near the Avon Terminal. A humpback whale swam upriver to Rio Vista in 1985 (Rio Vista 2014). In May of 2007 two humpback whales, a mother and calf named Delta and Dawn, swam approximately 90 nautical miles upstream to the Sacramento Deep Water Ship Channel where they lingered for several days (Wikipedia 2014). The humpback whale is classified as endangered by the National Marine Fisheries Service (NOAA 2014). California sea lions are periodically reported from the Delta and farther upstream of the project site, where they prey on salmon and other species of fish (Weiser 2009) including nonindigenous large-mouth bass (*Micropterus salmoides*) (Examiner.com 2013). Although whales and sea lions are more typically found in the central bay or outside the bay, individuals must have been near the project site when they swam upstream. As marine mammal populations increase outside the bay, it is reasonable to assume that the strays that wander upstream will also increase in number. The feeding areas of whales overlap with shipping lanes near San Francisco (Zielinski 2014). The possibility of a tanker striking a whale while traveling to or from the Avon Terminal, within the bay and in coastal waters should

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be evaluated, especially for endangered species of whales. These species should be included in a comprehensive list of species present and the potential impacts of project construction and operation on humpback whales and California sea lions, as well as harbor seals (*Phoca vitulina*) and gray whales (*Eschrichtius robustus*) in a revised EIR.

10-70

Section 4.2 Biological Resources – Invasive nonindigenous species. The DEIR neglects to mention the invasive non-native species of cordgrass (*Spartina* spp.) that have invaded the baylands surrounding the San Francisco Bay (ISP website; and, e.g., Zaremba and McGowan 2004). Although the shoreline east of the Benicia-Martinez Bridge where the Avon Terminal project would occur is not considered a problem site for invasive *Spartina* hybrids because high freshwater flows tend to exclude it from this area, it has not been surveyed since 2011 (personal communication email November 3, 2014 to Michael McGowan from Tobias Rohmer, Olofson Environmental and the Invasive Spartina Project). Invasive cordgrass can modify mudflat habitat in San Francisco Bay and dense stands of cordgrass can be habitat for endangered birds such as clapper rails and the other rails. The DEIR should be revised to describe the biology and distribution of cordgrass as a possible component of the regional Bay and Estuary plant community, any impacts the proposed project might have on it, and include surveys for *Spartina* spp. as part of mitigation monitoring.

10-71

Sea-level Rise, p. 4.3-10. Sea-level rise projections described in the DEIR state that the Avon Terminal does and will continue to consider effects of sea level rise on operations. However, absent from the DEIR is any analysis about the the possible impacts and severity from interactions of sea level rise with structural and operational elements of the Avon Terminal during the proposed 30 year lease. The DEIR should be revised to include this analysis and recirculated for public comment.

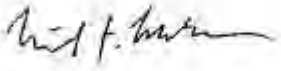
10-72

Section 8 Mitigation Monitoring Program. The mitigation measures presented in the DEIR that state Tesoro will only notify or advise ship operators of their required paperwork (DEIR pp. 4.3-32; 4.3-34; 4.3-36) are inadequate mitigation measures to avoid significant environmental impacts to the San Francisco Bay and Estuary. The DEIR must be revised to include mitigation measures that actually require vessels to comply with the required laws and regulation before they can berth at the Avon Terminal. These mitigation measures are feasible, enforceable and similar to the mitigation measure WQ-5 which *requires* all vessels that visit the Avon Terminal to comply with the 2001 International Maritime Organization Convention on the Control of Harmful Anti-fouling Systems. This comment also applies to biological impacts from ballast water and water quality impacts of oil discharge, biofouling, and antifouling paint.

CONCLUSION

10-73 As a result of the issues identified in this letter, it is my professional opinion that the Project would have a significant impact on several sensitive biological and water resources either not adequately analyzed or completely omitted from the DEIR. For the reasons stated above, the DEIR that was prepared for the Project has not provided the necessary analysis and mitigation necessary to reduce those impacts to a less-than-significant level.

Sincerely,



Michael F. McGowan, Ph.D.
Marine Ecologist
1442-A Walnut Street, Suite 188
Berkeley, CA 94709

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Michael F. McGowan, Ph.D.
1442-A Walnut Street, Suite 386
Berkeley, CA 94709

510 595-6345
marine@comcast.net

Objective: Challenging environmental projects that put my knowledge and experience to work

Profile:
- More than 25 years managing biological research, monitoring, compliance, and environmental projects.
- Ability to conceptualize, implement, direct, and complete complex projects involving collaboration among diverse stakeholders.
- Knowledgeable and experienced in preparing and assessing biological programs, budgets, schedules, permits, reports, and quality assurance documents.
- Prepare, review, and contribute to NEPA and CEQA documents as well as endangered species ESA and CESA permit and habitat assessments.
- Proven ability to work on behalf of clients in interface with staff, agency regulators, other technical experts and consultant teams.

Education (see additional certificates below):
Postdoctoral Associate, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service
Ph.D., Biological Oceanography, University of Rhode Island, School of Marine and Atmospheric Science
M.A., Marine Biology, San Francisco State University
B.A., Biology, San Francisco State University

Relevant Experience

Conducting and Documenting Biological Studies
- Author or coauthor of 20 peer-review articles and book chapters and more than 40 project technical reports.
- Collected the first record in San Francisco Bay of a nonindigenous mud isopod which now ranks as the most abundant invertebrate in the bay (with a state listed species of fish).
- Conducted the most comprehensive site-specific account of San Francisco Bay fishes ever completed for CEQA Environmental Impact Report (EIR) preparation study for San Francisco Airport Runway Project (EIR/EIS).
- Managed $600,000 project on stranded bird research study of beaches and water quality for an EIS.
- Managed $650,000 maintenance field study of intertidal fish fauna for U.S. Army Corps and EPA.
- Directed field studies and QA/QC for many marine plant, animal, water, survey, and habitat

Permitting and NEPA/CEQA
- Developed a handbook of examples of the different environmental permits including CESA/ESA, RCRA, Section 404 Wetlands, Section 7 and 10 consultations, Clean Water Act, Clean Air Act, oversight of hazardous waste management and water quality permits, Coastal and navigation permits.
- Prepared Environmental Assessments (EAs) and Findings of No Significant Impact (FONSI) for NASA that facilitated visionary transfer from agency to city.
- Wrote Biological Resources and Hazardous Materials sections of EIR for a utility linear development and also for the redevelopment of a former military base.
- Reviewed and commented on EIRs for development projects on behalf of affected community residents, including Environmental Justice communities.
- Have personally held permits including California Endangered Species take, U.S. Dept. of Fish and Game Scientific Collecting, National Marine Sanctuary Research, and SF Bay Conservation and Development Commission research permit.
- Managed wetlands delineation, predator removal, and bird-deterring contracts.

Project Management/Supervision/Technical Resource
- Provided expert witness testimony and technical report for impacts of wastewater and stormwater on the ecology of San Francisco Bay and its tributaries.
- Senior Project Manager for quality review and monitoring field crew for capture and field survey.
- Have directed work of up to 10 other biologists and field and lab techs.
- Supervised and directed graduate student PhD, dissertations and MA, MS theses.
- Organized many fields of biology courses, workshops, & presented species and habitat ecology.
- Reviewed proposals for Bay Delta Conservation Program and book chapters on biological monitoring.
- Economic expert/subject performance typically results in report failures.

Michael F. McGowan, Ph.D. Page 2

Honors & Awards

Certificate of Recognition from the San Francisco Public Utilities Commission for "exemplary dedication to finding a common ground and producing the project report" for the Southeast Lagoon Task Force, June 2, 2010, San Francisco Wastewater Enterprise

National Champion US Masters Platform Diving, 2010

Conservationist of the Year 1986, San Francisco Zoo, Lulu Salmon Fishing Conservation

Outstanding Performance Awards, National Marine Fisheries Service, 1985, 1984

PROFESSIONAL DEVELOPMENT COURSES AND CERTIFICATIONS:

Stakeholder and Expert of the San Francisco Bay Area Japonica Herbarium 2015
HAZWOPER, 8-Hour and 4-hour recertification, 2012, 2013, 2014
Habitat Conservation Planning (HCP), 2012
Department of Defense Environmental Monitoring and Data Quality Workshop, 2011
American Fisheries Society Pacific Salmonid Habitat Restoration Course, 2012
Qualified Member of Developer Inquiry to Data sonde Endangered Fish Species (ESA), 2012
California Public Service Ethics Education, 2012, 2014
Delivering Polytene Performance with Logic Models, University of Wisconsin Extension, 2011
Grant Management for Non-Profits, Environmental Protection Agency, 2011
Project Management, 2010
Environmental 101, Seven-Related to Marine Bar-Geology, US Navy, 2007
Wetlands Determination & Delineation & for Confederation, RTC-SPILL, 2007
NEPA Policy and Implementation, TetraTech, S.F., 2005
Natural Resources Regulations and Permitting, TetraTech, SF, 2005
Coastal Management for Practitioners, Designing and Conducting a Collaborative Project, National Oceanic and Atmospheric Administration, 2007
Ecological Risk Assessment, U.C. Berkeley Extension, 1994
Intertidal Plant Interrelated Methodology, USGS, Back Bay Division, 1993
Ecosystem Planning, New Academy for Ecological Restoration, 1987
Improving Wildlife Habitat through Restaurants, New Academy for Ecological Restoration, 1987
Expert Witness Services, Aquarius Fisheries Society, 1986
Guidelines for Ecotoxicological Risk Assessment, CalEPA, U.C. Davis, 1997
CEQA, NEPA, EIR's and Land Use Planning, Merritt College (1994
Marriage and Communications, College of Marin, 1993
How to get things done through difficult employees, College of Marin 1990
Professional Writing Workshop, University of Marin, 1988
Investment Ecology, Marine Biological Laboratory, Woods Hole, 1978

Professional Memberships:
The Wildlife Society
The American Fisheries Society
American Institute of Fishery Research Biologists, past Northern California Director

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Richard F. McGowan, Ph.D.

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

ATTACHMENT C

ADAMS BROADWELL JOSEPH & CARDOZO

ATTORNEYS AT LAW

October 10, 2014

Via Email and U.S. Mail

Cy Oggins
Chief Environmental Planning & Management
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento CA 95825-8202
Email: Cy.Oggins@slc.ca.gov

Sarah Mongano, Project Manager
Division of Environmental Planning & Management
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202
Email: sarah.mongano@slc.ca.gov

Re: Requests for *Immediate* Access to Documents Referenced in Draft Environmental Impact Report – Tesoro Avon Marine Oil Terminal Lease Consideration Project (CSLC EIR No. 703)

Dear Mr. Oggins and Ms Mongano:

We are writing on behalf of Safe Fuel and Energy Resources California ("SAFER California") to request *immediate* access to any and all documents referenced or relied upon in the Draft Environmental Impact Report ("DEIR") prepared for the Tesoro Avon Marine Oil Terminal Lease Consideration Project, CSLC EIR No. 703, ("Project"). Our request for all documents referenced or relied upon in the DEIR is made pursuant to the California Environmental Quality Act ("CEQA"), which requires that all documents referenced in an environmental review document be made available to the public for the entire comment period.[1]

[1] See Pub. Resources Code § 21092, subd. (b)(1); 14 Cal. Code Regs. § 15087(c)(5).

October 13, 2014
Page 2

Pursuant to Government Code section 6253.9, if the requested documents are in electronic format and are 10 MB or less (or can be easily broken into chunks of 10 MB or less), please email them me as attachments at the email address below. If the documents are available on-line, we request that the CSLC direct us to the appropriate link(s) for downloading the relevant documents.

My contact information is:

Janet Laurain
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94044

Email: jlaurain@adamsbroadwell.com

I will be calling you to arrange for transmittal/duplication of the requested documents. If you have any questions, please call me at (650) 589-1660. Thank you for your assistance with this matter.

Sincerely,

Janet Laurain
Paralegal

JML:clv

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

ADAMS BROADWELL JOSEPH & CARDOZO

ATTORNEYS AT LAW

October 16, 2014

Via Email and U.S. Mail

Public Records Act Coordinator
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825
Email: PRARequest@slc.ca.gov

Re: Public Records Act Request – Tesoro Avon Marine Oil Terminal Lease Consideration Project (CSLC EIR No. 761)

Dear Public Records Act Coordinator:

We are writing on behalf of Safe Fuel and Energy Resources California ("SAFER California") to request a copy of any and all public records and file materials related to Tesoro Avon Marine Oil Terminal Lease Consideration Project (CSLC EIR No. 761, ("Project") located at 150 Solano Way, Martinez, CA. This request excludes *the Draft Environmental Impact Report for this Project released by the California State Lands Commission on September 26, 2014.*

This request is made pursuant to the California Public Records Act (Government Code §§ 6250, et seq.) This request is also made pursuant to Article I, section 3(b) of the California Constitution, which provides a Constitutional right of access to information concerning the conduct of government. Article I, section 3(b) provides that any statutory right to information shall be broadly construed to provide the greatest access to government information and further requires that any statute that limits the right of access to information shall be narrowly construed.

We will pay for any direct costs of duplication associated with filling this request up to $500. However, please contact me at (650) 589-1660 with a cost estimate before copying/scanning the materials.

ATTACHMENT B

October 13, 2014
Page 2

Pursuant to Government Code Section 8254.6, if the requested documents are
in electronic format and are 10 MB or less (or can be easily broken into sections of
10 MB or less), please email them to me as attachments.

My contact information is:

U.S. Mail

Janet Laurain
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080-7037

Email

jlaurain@adamsbroadwell.com

Please call me if you have any questions. Thank you for your assistance with
this matter.

Sincerely,

Janet Laurain
Paralegal

JML:ydy

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

THOMSON REUTERS STREETEVENTS

EDITED TRANSCRIPT

TSO - Q1 2014 Tesoro Corporation Earnings Conference Call

EVENT DATE/TIME: MAY 01, 2014 / 12:30PM GMT

OVERVIEW:

THOMSON REUTERS

ATTACHMENT E

MAY 01, 2014 / 12:30PM, TSO - Q1 2014 Tesoro Corporation Earnings Conference Call

CORPORATE PARTICIPANTS

Brian Pandelidar - Tesoro Corporation - Senior Director of IR

Scott Spendlove - Tesoro Corporation - SVP & CFO

Greg Goff - Tesoro Corporation - President & CEO

CONFERENCE CALL PARTICIPANTS

Jeff Dietert - Simmons & Company International - Analyst

Paul Sankey - Wolfe Research - Analyst

Evan Calio - Morgan Stanley - Analyst

Roger Read - Wells Fargo Securities, LLC - Analyst

Paul Cheng - Barclays Capital - Analyst

Doug Terreson - ISI - Analyst

Chi Chow - Macquarie Research - Analyst

Edward Westlake - Credit Suisse - Analyst

Doug Leggate - Bank of America Merrill Lynch - Analyst

PRESENTATION

Operator

Good day, ladies and gentlemen, and welcome to the first quarter 2014 Tesoro Corporation earnings conference call. My name is Amanda and I will be your operator for today.

(Operator Instructions)

As a reminder, this conference is being recorded for replay purposes. I would now like to turn the conference over to Mr. Brian Pandelidar, Senior Director, Investor Relations. Please proceed.

Brian Pandelidar - Tesoro Corporation - Senior Director of IR

Good morning, everyone, and welcome to Tesoro's conference call to discuss our first-quarter 2014 earnings. Joining me today are Greg Goff, President and CEO and Scott Spendlove, Senior Vice President and CFO.

We have posted our forthcoming slides during the call as well as the SEC filings. These slides, along with other financial and statistical information, should help you in analyzing our results and can be found on our website at Tesoro.com.

I want to refer to the forward-looking statements on the earnings slides which we may make during this call that relate to management's expectations and its future predictions in the Forward-looking Statement Protection Act. In these and many of the slides which could cause results to differ from our expectations, Now I'll turn the call over to Scott.

MAY 01, 2014 / 12:30PM, TSO - Q1 2014 Tesoro Corporation Earnings Conference Call

Scott Spendlove - Tesoro Corporation - SVP & CFO

Thanks, Brian. Good morning, everyone, and thanks for joining us on the call today. I will review the earnings release and some highlights of our results and then I'll provide guidance before handing the call over to Greg.

Yesterday we reported first-quarter gold results from continuing operations of $36 million or $0.35 per diluted share, compared to a loss from continuing operations of $11 million or $0.10 per diluted share in the first quarter of 2013. Results include a one-time after-tax expense of $0.14 per diluted share related to the redemption of Tesoro's 9.75% senior notes due in 2019.

Results also include a one-time gain of $0.07 per diluted share from the sale of the Tesoro Logistics Blaine, Idaho terminal. Excluding these special items, the Company reported net income from continuing operations of $95 million or $0.71 per diluted share, compared to net income from continuing operations of $18 million or $0.17 per diluted share in the first quarter of 2013.

We are pleased with our first-quarter results. Despite challenging margin environment, we are making solid progress on delivering the refining improvements we have targeted for this year. That progress is reflected in Tesoro's solid first-quarter results.

The Tesoro Index was $8.89 per barrel for the first quarter, with a realized gross margin of $10.80 per barrel, or 122% capture of the Tesoro Index. A year ago the Tesoro Index was $12.28 per barrel for the quarter, with a realized gross margin of $14.14 per barrel or 115% capture of the Tesoro Index.

Total refining throughput was 893,000 barrels per day, or 94% utilization. Higher natural gas prices increased manufacturing costs to $3.61 per barrel, an increase of $0.25 per barrel from the last quarter.

Retail fuel sales volumes were higher by about 1.98% year over year, while retail marketing margin were down relative to the same period last year, reflecting the addition of the higher-volume, lower-margin ARCO retail stations as part of the Los Angeles acquisition. Same-store fuel sales were higher by almost 0.5% versus the first quarter of last year. Retail fuel margins during the quarter were $0.09 per gallon, flat relative to the fourth quarter of last year.

Capital spending was $77 million for Tesoro and $26 million for Tesoro Logistics. We still anticipate full-year 2014 capital spending of about $360 million, excluding Tesoro Logistics' capital spending of $280 million.

Turnaround spending was $50 million in the first quarter. The Company continues to estimate full-year 2014 turnaround expenditures of $205 million.

We repurchased $100 million worth of Tesoro shares during the quarter. Through the end of April we repurchased an additional $35 million worth of shares.

This brings total purchases under the $1.0 billion authorization to $335 million. Scott will begin discussing shares at the beginning of 2015, with a total of $665 million shares left to be repurchased under the $1.0 billion authorization. This is the first outstanding share in 2015.

Our corporate and unallocated costs on a reported basis were $97 million, excluding $3 million in corporate depreciation and a benefit of $1 million from mark-to-market MTBE receivables. Corporate depreciation is expected to be $3 million per quarter. Net interest expense was $37 million, which is net of $2 million of capitalized interest. Net interest expense is expected to be $37 million per quarter.

We ended the quarter with a cash balance of about $800 million. Sources of cash included adjusted EBITDA of about $370 million. Uses of cash include changes in working capital and other of about $450 million, capital and turnaround spending of about $360 million, dividends of about $40 million, and net repayments of about $10 million on the revolver and $275 million on the Tesoro Logistics LP revolver. Total debt outstanding was $2.8 billion.

MAY 01, 2014 / 03:30PM, TSO - Q1 2014 Tesoro Corporation Earnings Conference Call

Jeff Dietert - Simmons & Company International - Analyst

Could you talk about where the rapidly increasing crude oil on the Gulf coast? It appears that some of the crudes that have historically served the Gulf Coast market are price set after Cushing is move to the West Coast.

Could you talk about your ability to take incremental crude that typically serves the Gulf Coast into California? How relevant is rapidity of doing that? And your ability to transport those lines?

Greg Goff - Tesoro Corporation - President & CEO

For us, the way our waterborne system is working now, Jeff, it is very limited to be able to do that, because of where we locate our crude from. It is something that, in the short term, does not fit into our supply pattern.

We have historically sought to be able to do that. At this point in time we haven't decided to do that.

Jeff Dietert - Simmons & Company International - Analyst

But you're refining capability if there to use alternative crudes, it's more the transportation decision?

Greg Goff - Tesoro Corporation - President & CEO

Yes, I think in the past we've actually used we could handle probably around 200,000 barrels per day of the Mid-Continent likely crudes into our system on the West Coast, if everything worked perfectly.

Jeff Dietert - Simmons & Company International - Analyst

Got you. Secondly, in the Bakken you are seeing Bakken benefits on the Gulf Coast and transportation advantage relative to other regions. It also appears that the Gulf Coast is not a price taker on the Bakken barrels, is it?

It appears to me that the marginal Bakken barrel goes to the region of the Bakken to rail. Perhaps the Gulf Coast is pricing more than the typical $2.00 a barrel below Clearbrook, Ariz Clearbrook is the indicator that we can see, Are you seeing Bakken field price pricing trading substantially below Clearbrook?

Greg Goff - Tesoro Corporation - President & CEO

Jeff, we do not typically disclose those type of commercial deals because it can impact the way we supply our system. You are right, Bakken is pricing very attractively to the Gulf Coast, which has been a driver in the crude oil by rail movements.

Jeff Dietert - Simmons & Company International - Analyst

Thanks for your comments.

Greg Goff - Tesoro Corporation - President & CEO

Thanks, Jeff.

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Operator

Paul Sankey, Wolfe Research.

Paul Sankey - Wolfe Research - Analyst

Greg, could you -- we've got this pocket to discuss it mean quite a weak US/GDP number yesterday. But it seems to be pretty strong. Could you give us some comparison update on where you see the sales of gasoline and distillate for the year versus last? So what can you tell us about the market? Thanks.

Greg Goff - Tesoro Corporation - President & CEO

Yes, for the first part of the year to be our same-store sales in January and February, we saw a little bit less than 0.5%. They've increased to be pretty reasonably strong over the last several weeks here. So they look pretty good. Paul

Paul Sankey - Wolfe Research - Analyst

Sorry, it's a 0.5% growth? Isn't that kind of weak?

Greg Goff - Tesoro Corporation - President & CEO

Not really. If we stay in that section from Feb to Jan, that's not bad. I think there are probably some severe timing issues and bad weather in the mid-continent -- could it be better? Yes. But it's okay, Paul.

Paul Sankey - Wolfe Research - Analyst

Yes, sure. Ok. And do you want to break anything to add there?

Greg Goff - Tesoro Corporation - President & CEO

The distillate, I think the distillate demand has been about average, nothing unusual there from a distillate standpoint. I think the other thing we are seeing pretty strong exports off of the West Coast so far for the first four months of this year, that continue to grow.

Paul Sankey - Wolfe Research - Analyst

Are you doing that?

Greg Goff - Tesoro Corporation - President & CEO

We are a significant part that we play into the West Coast export market, both gasoline and diesel.

Paul Sankey - Wolfe Research - Analyst

So you're saying that you are exporting?

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Greg Goff - Tesoro Corporation - President & CEO
Yes absolutely.

Paul Sankey - Wolfe Research - Analyst
Greg you. One of the refining guys just said that as you bought Mexico Bakken crude and in other Inland crudes, that becomes discount on the Alaska market is that valuable thing?

The Alaska ANS market is what I'm talking about. We are seeing shifts, those of the kind that you've talked. Both in terms of price and whether is not the volumes might start having its own to. Any of those.

Greg Goff - Tesoro Corporation - President & CEO
Regarding the point on volumes to. As as I don't think, that's happened yet and I think that has been more deeply in the West Coast. The ANS differential to Brent has been priced attractively for a longer now going into the marketing year season, which the mix of crude located from this [illegible] it's going to be a fairly heavy maintenance season in Alaska.

So the differentials, as you can see, did firmed up a little bit here for that period of time. We expect directionally that we move additional supplies of crude oil to the West Coast, that the ANS differential will post a more attractively to Brent.

Paul Sankey - Wolfe Research - Analyst
Last one for me, Greg. We had PBF recently they may have some interest in buying California refineries. Any observations on the asset market for us? Thanks.

Greg Goff - Tesoro Corporation - President & CEO
Paul, I do not really have any comments on that. I have not really heard anything or proceedings on any dialogue in the media, so I do not know.

Paul Sankey - Wolfe Research - Analyst
Okay thanks a lot.

Greg Goff - Tesoro Corporation - President & CEO
Thank you.

Operator
Evan Calio, Morgan Stanley.

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Evan Calio - Morgan Stanley - Analyst
Hi, good morning, guys. Hi, Greg, thanks for the update on the State of Washington permit process. Was there any additional color on what the delays there? Or what the key gating item might be on that process?

Greg Goff - Tesoro Corporation - President & CEO
Let me, I think, we assess the way we think when the State will come out with their requirements for the EIS and that we will comply with that. So that is what we are waiting for. The primary delay is waiting for the State to come with their EIS requirements.

That has put us somewhat behind on the eight weeks behind schedule. We are actually in a good position to respond fairly quickly when that comes out. That's part of the process, this the only delay that we've experienced so far.

Evan Calio - Morgan Stanley - Analyst
Got it. As you mentioned, you can receive negative during that construction period, when is more a little tail later. How should we consider the ramp-up of volumes? What can you move through the facility during that construction period?

Greg Goff - Tesoro Corporation - President & CEO
It's a little too premature to do that. I mentioned that we had completed about 80% of the design and engineering work.

Give us a little bit more time, Evan, so we get a better idea of how we'll be able to manage that as time goes on. I would suspect that sometime after the summer we'll have a really good indication of how we will do that.

Evan Calio - Morgan Stanley - Analyst
Great. Thanks. And secondarily for me, on the synergy capture, would it be fair to assume to $30 million to $40 million to be guidance went back? Would you consider the $40 million end to be a fairly conservative? How would you classify the overall progress and realization of that synergy target?

Greg Goff - Tesoro Corporation - President & CEO
It's an excellent question. I think long, the opportunities that we identified and we talked about in those broad buckets, are being implemented and we're seeing actually synergies that exceed during that. I think at the end of last year, we'd be in a position after the second quarter of this year to start sharing the contribution from synergies. And we still intend to do that.

There is no change to the number that we laid out in our plans, but for 2014 and as I said earlier, for the Tesoro Alaska we implement the steps we will see more of the benefit to later in the year. But we're making very good progress and we will be glad to share that in our second quarter earnings call.

Evan Calio - Morgan Stanley - Analyst
Great. Look forward to that. One last one for me. TLLP, best price contribution in this quarter.

As you consider your retail assets, and given Exxon's announcement this week, do you see any MLP consolidation? Will Alon, Delek, Andeavor, will there still be room for a standalone retail system? Anything that could be characterized as an update?

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Greg Goff - Tesoro Corporation - President & CEO

Evan, we continue to look at our retail business. Our focus, as we've previously said, has been to strengthen our integration and relative to the marketplace.

You would see my comments, we made a small little acquisition in Utah that continues to build out our brand presence in the markets where we are. It's something that we continue to look at but have not entered at any size or scope at this point in time.

Evan Calio - Morgan Stanley - Analyst

Great, thanks for your comments.

Greg Goff - Tesoro Corporation - President & CEO

Thanks, Evan.

Operator

Roger Read-Wells Fargo.

Roger Read - Wells Fargo Securities, LLC - Analyst

Good morning. If we could, a little bit more about the Q2 California volume throughput as a little lower, the consideration of planned and unplanned?

Just wondering, because we had been some reports on Bloomers of, I guess it was, the California version of CBNR putting some restrictions on you. Can you give us an idea of how that's going through?

In the back half of 2014 it was really the month of April that hit you and then most of the quarter should be okay?

Greg Goff - Tesoro Corporation - President & CEO

For the first quarter, our California throughputs from a crude standpoint were strong, including the maintenance that we did on our Los Angeles refinery. During the month of April, we have experienced a couple of problems with the two CAT crackers at our Los Angeles refinery, and lost a little bit of gasoline production. Maybe somewhere between 6 to 10k of production just for the month.

Both issues have been corrected and we are back running full. We've also had a little bit of downtime in our trade district at Martinez that we'll work through in the quarter. So we see that fairly torn out to be. You've given you the guidance for the second quarter California and you can see the crude rates are still strong.

Roger Read - Wells Fargo Securities, LLC - Analyst

Yes, thanks, but the clarity on that. And then as we look at the Share Action Plan and you guys have set a couple of quarters here, it has been fairly consistent at $150 million. I guess ideally should say no, maybe four quarters.

Is that the right way to think about it? Or are we where you are through the pipe-plans not trying to put you in a position of your Board, but would the easier bet on be that we would see a further expansion of the program? Or that where you want to go with it?

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Greg Goff - Tesoro Corporation - President & CEO

First, we continue to evaluate each quarter how we want to repurchase shares. And as you've seen in the last couple of quarters, about $150 million per quarter.

That assists being a good one, as we evaluate going forward, like we may change it or maintain or even to change.

Second, we've been very clear that our capital program is focused on projects that we can invest in the business, which they provide high returns, and that has a priority to maintain our balance sheet. And then finally, I think Scott did make the point in his comments that we, still looking at a number of bolt-on plays that we put in place to enhance the acquisition last year in Southern California. And as I've mentioned several times, our intention for today is that we'll start with the cash flow, free cash flow.

Roger Read - Wells Fargo Securities, LLC - Analyst

Okay, thank you.

Greg Goff - Tesoro Corporation - President & CEO

Thank you.

Operator

Paul Cheng, Barclays.

Paul Cheng - Barclays Capital - Analyst

Hey, good morning. Good morning. Paul, how are you? Very good. Two quick questions. Just from time to time, the Permian has come in just before. Greg, have you guys ever looked at whether your economic or the better economic to sell from Permian up into the pipeline itself coming from Midland, what the yield may change if you're using a different grade?

Greg Goff - Tesoro Corporation - President & CEO

We have in the past, last year, on occasion we did move some Permian to Los Angeles in interface tank farm. We've done a little bit of that in the past. But we continue to look at that all the time.

You just don't want to go all the way to Anacortes with the crude. It's just not as efficient as can be and at that. Paul, we do continue to evaluate every possibility to move advantage high-quality crudes from the mid-basin part of the country to the West Coast.

Paul Cheng - Barclays Capital - Analyst

I think in the fourth quarter, that you guys are shipping maybe 140,000 barrels per day to Clearview. About 110,000. What is the warning in the first quarter and what do you expect that the number to be for this year?

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Greg Goff - Tesoro Corporation - President & CEO

In the first quarter, we moved a little bit around 5,000 barrels a day into California. We are projecting that we will continue to try to do more than that amount of crude there. Our logistical system is somewhat constrained and limits how much we can move from time to time.

Paul Cheng - Barclays Capital - Analyst

Right. So we assume that it would be not more than 10,000 barrels per day for the remainder of the year?

Greg Goff - Tesoro Corporation - President & CEO

Yes that is correct.

Paul Cheng - Barclays Capital - Analyst

Okay. In California, I think before during acquisition by you guys that they were running largely economic RINS, maybe 100,000 barrels per day. Any more update about the role of the RINS policies in the crude side? Or that is essentially resolved by the time you guys closed on the past?

Greg Goff - Tesoro Corporation - President & CEO

Basically the same. We are running somewhat different models there, but not materially different on the permit terms. It is more likely than not that we will be able to run RINS, but we will see how that plays out over time. It is more likely than not that we will be able to run RINS, but we will see how that plays out over time. It is more likely than not that we will be able to run RINS, but we will see how that plays out over time.

Paul Cheng - Barclays Capital - Analyst

Right. Okay. Now quickly that you think, you may start to be able to change the model stated to buy oil?

Greg Goff - Tesoro Corporation - President & CEO

That's nothing, our initiatives at the Port of Vancouver is one area to do that.

Paul Cheng - Barclays Capital - Analyst

You have to wait until the terminal up and running before you can actually do that?

Greg Goff - Tesoro Corporation - President & CEO

That would allow us to move the most significant volume right now if we do that. We are looking at other things on an ongoing basis to be able to move crude there. But we have a number of things that we're looking at, but that is the primary way that we want to do able to improve crude supply cost at the Los Angeles facility.

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Paul Cheng - Barclays Capital - Analyst

When the Savage Pier 4 we assume that you will get the permit and it's actually become a reality sometime in 2015. Given you have ran in your system, if you run smoothly your can process up to 250,000 barrels per day at the light end, is there any reason that you will not take 100% of the Savage water into your own system?

Seems like you can acquire into 250,000 barrels per day, including heavy oil and light oil, you will have more than 60% of capacity, refining capacity, to absorb it. Is there any kind of entanglement with your pipeline that will stop you from taking the entire disposition of supply?

Greg Goff - Tesoro Corporation - President & CEO

There's no restrictions on how much we choose to move to Vancouver. Washington kind of then largely ran West Coast system, like we balance it with the financial commitments and our overall supply strategy with control sources of crude oil how much we ultimately decide to take.

We have said so far we have commitments to take the first 50,000 barrels a day. And the partnerships work through the rest of the supply for that facility, we will be engaged in doing that.

But I think at the same time, Paul, we have to look at the dynamics of the pricing of other types of crude, as we do that. I think that gives back to Jeff's question earlier that I think maybe somewhat smaller crude. But we'll see how that impacts and determines how much crude we take out from our West Coast systems.

Paul Cheng - Barclays Capital - Analyst

Very good, thank you.

Operator

Doug Terreson, ISI.

Doug Terreson - ISI - Analyst

Good morning, everybody.

Greg Goff - Tesoro Corporation - President & CEO

Hi, Doug.

Doug Terreson - ISI - Analyst

Greg, on penalty value and capture pace that you talked about a few minutes ago, my question is whether there are any significant differences in how the Hawaii refineries versus the mainland refineries. Meaning is the team exceeding expectations in some areas but not others? I have been a meaningful surprise either way in that area?

Greg Goff - Tesoro Corporation - President & CEO

As of today, Doug, there have not been really any surprises. We have such a focused effort on with very good groups in leadership. And our system and the refineries working at us that there have not been any surprises.

THOMSON REUTERS

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I think the other key thing to point out is, as we go through the gating process of the project work on the project that one of the outcomes will be to shut down our cat cracker at the Wilmington part of the facility. That work is all progressing well on that. So we feel very, very good about the opportunity that we are pursuing and delivery of the people that are tied in with it.

Doug Terreson - *ISI - Analyst*

Okay, great. Second, the capture right in the MidContinent was pretty strong this quarter. The question there is, what are some factors that may or may not be occurring that will affect that capture rate in the future? If so, what were they?

Greg Goff - *Tesoro Corporation - President & CEO*

I don't think there is anything significant. I think the crude are down a little bit so far in April versus the first quarter. There is nothing that fundamentally we going to change that would impact the capture rate.

Doug Terreson - *ISI - Analyst*

Okay, thanks a lot.

Operator

Chi Chow, Macquarie Capital.

Chi Chow - *Macquarie Research - Analyst*

Thank you, good morning. I know you've got the logistics call still upcoming, but I was wondering if I could ask on a couple of the details on the 1Q results, and how that might trend going forward?

In particular, in the terminaling and transportation section, I see three things that stick out this quarter versus sequential fourth-quarter results. One is the terminaling fee, up meaningfully per barrel. Second is the pipeline transportation volumes well up.

And then third is operating expenses actually coming down sequentially, despite the addition of the assets. Can you comment on those three items? The impact in 1Q and how that's going to trend going forward here?

Greg Goff - *Tesoro Corporation - President & CEO*

There are three points to make that would answer your questions, Chi. First, as a result of the drop-down that we did in the fourth quarter, of the last part of the Los Angeles assets, that is working as we planned and that's had an impact on the first-quarter results.

Across the system, volumes for Tesoro Logistics in all areas for the first quarter, relative to what we would expect, performed extremely well. The thing that our logistics team is working on are progressing well on that. So everything is looking very, very positive right now.

And the outlook is for that to continue to go. You've seen our announcements on the open season, the success that we have had with that. On cost, there was a timing issue on some costs in the terminaling system primarily some work that we moved out of the first quarter, from a work load standpoint, that will come back later in the year. That is the only real impact.

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Chi Chow - *Macquarie Research - Analyst*

Okay. Really the terminaling fees and the volumes, then we can expect that as a recurring type then?

Greg Goff - *Tesoro Corporation - President & CEO*

Yes, they reflect business with the changes in the portfolio for Tesoro Logistics after the fourth quarter.

Chi Chow - *Macquarie Research - Analyst*

Okay, good, very good. Also on logistics, looks like the coverage ratio for TLLP was over 2 times in the quarter. Can expect that trend – how do we expect that trend to go forward here? And you have a target coverage ratio?

Greg Goff - *Tesoro Corporation - President & CEO*

Scott, do you mind commenting on that?

Scott Spendlove - *Tesoro Corporation - SVP & CFO*

Sure, I will take that, Greg. The coverage ratio is 1.7 times during the first quarter, Chi. Part of it is it includes $9.7 million in proceeds from the sale of the Boise terminal.

If you back that out, you will see it's still a very robust coverage ratio, but lower than the 1.7 times. We target a 1.1 times coverage ratio on a forward basis.

Chi Chow - *Macquarie Research - Analyst*

Any target on when you will achieve that 1.1 times, Scott?

Scott Spendlove - *Tesoro Corporation - SVP & CFO*

Well, over the longer term is when we expect to achieve that. We have been growing the distributions at about 4% a quarter at this point. I think we are in good shape relative to that target coverage ratio.

Chi Chow - *Macquarie Research - Analyst*

Okay, thanks. Then final question, Greg. Can you give us an update on the two pipeline projects, the Uinta Basin and Cook Inlet, and where those stand?

Greg Goff - *Tesoro Corporation - President & CEO*

First, on Cook Inlet, the work on Cook Inlet, the design and engineering work and working with the crude suppliers and all that, is progressing well. I think we said in our analyst meeting we expected that pipeline to come on line in 2015.

Everything so far is on schedule and looking very, very encouraging. So we'll probably have further updates on Cook Inlet here in the probably summertime.

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Regarding the Uinta Express pipeline, somewhat similar story only not quite as advanced. We are actively engaged in a pretty big outreach program with the community where the pipeline will go through, informing them of the routing of the pipeline and that. We have had numerous meetings with the authorities out in the state.

The work on the pipeline is also progressing, in that our plans to bring that on in 2016, as we previously stated, are also on track, to do that right now. We've done a lot of work on the design of the pipeline and getting very comfortable with the type of crude that we'll be moving, and how we will handle that. Both projects looking very good.

Chi Chow - *Macquarie Research - Analyst*

Okay. Are you running into any opposition when you were meeting with the communities on the Uinta project?

Greg Goff - *Tesoro Corporation - President & CEO*

Not a lot of opposition. As you would expect, in some cases there are some concerns. When the pipeline goes through certain areas and that. But nothing that we can't do to continue to help people understand what we are doing and all of the safety precautions and everything that are put in place when the pipeline is installed.

Chi Chow - *Macquarie Research - Analyst*

Okay, great. Thanks, Greg, appreciate it.

Operator

Edward Westlake, Credit Suisse.

Edward Westlake - *Credit Suisse - Analyst*

Thanks for the question this morning. A follow-up, you mentioned there was an extra six to eight-week approval process for the Port of Vancouver. I did not quite catch what that was called?

Greg Goff - *Tesoro Corporation - President & CEO*

Let me take one step back. The EFSEC process in the State of Washington, the way it is laid out is about a one-year process that we've previously stated. We started that process in August of 2013. You work your way through that process.

We are at a stage in the process where the State needs to provide us the requirements for the EIS environmental impact studies. They have not gotten that out to us yet. That is what we are waiting for. That is the primary slowdown in our permitting process.

Edward Westlake - *Credit Suisse - Analyst*

Right. Different states, but in California these EIS studies have sometimes come with problems in the sense that they ask lots of open-ended questions, which have been difficult to nail down. Can you give us some thoughts around the risks of the EIS requirements causing a further delay from what you've outlined this morning?

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Greg Goff - *Tesoro Corporation - President & CEO*

At this stage we do not have any indication that that would be the case. I can tell you that our team, in conjunction with Savage, have done extensive work on this.

We are in a very good position to respond to the requirements of the State of Washington. It is too premature to address that question.

Edward Westlake - *Credit Suisse - Analyst*

This may also be premature, but what do you think would be the most problematic elements with an EIS, in terms of the work that your team has done?

Greg Goff - *Tesoro Corporation - President & CEO*

We really do not know at this stage, Ed. I would only be guessing and it would not provide any benefit to do that.

Edward Westlake - *Credit Suisse - Analyst*

Okay. Obviously you flagged some of the unplanned downtime in the second quarter. Obviously as people think about the strong earnings you've had in the first quarter and trying to think about the second quarter, an opportunity cost, if you had it, would be very helpful for people to handicap what you do in Q2?

I know you've given good throughput guidance. Have you done any work on what the opportunity cost is so far?

Greg Goff - *Tesoro Corporation - President & CEO*

No, not at this stage. We have got the issues corrected and they're back up and running. In some cases it will depend how much make-up we can do, as we continue to run in the second quarter. Our maintenance activity is relatively low during Q2.

Edward Westlake - *Credit Suisse - Analyst*

Right, okay. So early enough that there could be some catch up. Okay.

Greg Goff - *Tesoro Corporation - President & CEO*

Yes, too early to comment on that yet.

Edward Westlake - *Credit Suisse - Analyst*

Thank you very much, Greg.

Greg Goff - *Tesoro Corporation - President & CEO*

Thanks, Ed.

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Operator

[Operator instructions]

Doug Leggate, Bank of America.

Doug Leggate - Bank of America Merrill Lynch - Analyst

Thanks, good morning, Greg. Good morning, everybody. A couple of things, hopefully if I could jump by the cash balance question for a second, Greg.

It looks like obviously there's a fairly punchy working capital move this quarter. Is that something that we should think about as being reversed in the second quarter? How would you [thinking about that]?

Obviously the activity down on how a whole lot bigger than where we are today. So if you could just walk us through that [cosmetic] quickly?

Greg Goff - Tesoro Corporation - President & CEO

There's no question, if you looked at your working capital, it is unusually small as a % as we typically primary to Southern California system will trade at. We continue to work to that. That is how we supply the Southern California system.

That could change a little bit, but it does have a little bit of an impact in our regulatory program, as we look at the total [working] capital. And you want to maintain a cash balance that we've said historically around $75 million plus or minus a little bit on either side of that.

It does have a minor impact. But we are pretty comfortable with the program we have in place and how we do our business right now, as we manage the cash position of the Company.

Doug Leggate - Bank of America Merrill Lynch - Analyst

Thanks for that. A related question to the cash flow. The capital expenditure was pretty light in the first quarter relative to your guidance. Is it a timing issue? Or can you help us with how that ramps quarterly over the year through the year?

Greg Goff - Tesoro Corporation - President & CEO

Yes, it is primarily a timing issue as well as we go through the year. As Scott stated in his guidance, we did our project slate right now. Those projects are mostly staying on target with our capital plans for 2014.

Doug Leggate - Bank of America Merrill Lynch - Analyst

Great. Final one for me is Bakken differentials obviously tightened up pretty significantly in the first quarter. I guess it stayed fairly tight.

What do you think is in your economics and Alaska for? Do you continue to see—I guess I'm thinking about the [guidance] we've been operating with. Do you continue to see that as a structural change in the [cost] environment?

Greg Goff - Tesoro Corporation - President & CEO

Yes. Absolutely. We see the differentials that you had with the market [dislocation] as the right supply source for the refinery.

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Doug Leggate - Bank of America Merrill Lynch - Analyst

Alright. I'll have it there. Thanks, everybody.

Greg Goff - Tesoro Corporation - President & CEO

Thanks, Ed.

Operator

At this time we have no further questions. I will now like to turn the call back over to Mr. Brian Ranzenberger for any closing remarks.

Brian Randecker - Tesoro Corporation - Senior Director of IR

Thank you, everybody, and we'll talk to you next quarter. Good day.

Operator

Ladies and gentlemen, that concludes today's conference. Thank you for your participation. You may now disconnect. Have a great day.

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

THOMSON REUTERS STREETEVENTS

EDITED TRANSCRIPT

TLLP - Q3 2013 Tesoro Logistics LP Earnings Conference Call

EVENT DATE/TIME: NOVEMBER 11, 2013 / 1:30PM GMT

THOMSON REUTERS

ATTACHMENT F

NOVEMBER 11, 2013 / 1:30PM, TLLP - Q3 2013 Tesoro Logistics LP Earnings Conference Call

CORPORATE PARTICIPANTS

Chris Cutro *Tesoro Logistics LP - IR Manager*

Greg Goff *Tesoro Logistics LP - Chairman & CEO*

Scott Spendlove *Tesoro Logistics LP - VP & CFO*

Phil Anderson *Tesoro Logistics LP - President*

CONFERENCE CALL PARTICIPANTS

Brian Zarahn *Barclays Capital - Analyst*

TJ Schultz *RBC Capital Markets - Analyst*

Sharon Lui *Wells Fargo Securities - Analyst*

Jeremy Tonet *JPMorgan - Analyst*

PRESENTATION

Operator

Good day, ladies and gentlemen, and welcome to the Q3 2013 Tesoro Logistics LP earnings conference call. My name is Tracy and I will be your operator today. At this time all participants are in listen-only mode. We will conduct a question-and-answer session toward the end of this conference. (Operator Instructions) As a reminder, this call is being recorded for replay purposes. I would like to turn the call over to Chris Cutro, Investor Relations Manager. Please proceed, sir.

Chris Cutro - *Tesoro Logistics LP - IR Manager*

Good morning, everyone, and welcome to today's conference call to discuss our third-quarter 2013 earnings. Joining me today are Greg Goff, Chairman and CEO; Phil Anderson, President; Scott Spendlove, Vice President and CFO; and Rich Walsh, Vice President of Operations.

Oh Friday we issued a press release announcing our third quarter results. That release, along with additional financial and operational information and reconciliations for non-GAAP financial measures, is available on our website at TesoroLogistics.com.

Please refer to the forward-looking statement in the earnings press release and in our filings with the SEC that may relate to management's expectations with respect to future performance. Statements made during this call that relate to projections of the Securities Act. All other statements of historical fact made during this call are forward-looking statements. With that I will turn the call over to Greg.

Greg Goff - *Tesoro Logistics LP - Chairman & CEO*

Thank you, Chris. Good morning and thanks for joining us on the call today. You have our earnings release. Scott and I will begin with some of the details of the results in a moment, but first I would like to address the High Plains pipeline crude oil release that occurred North of Tioga, North Dakota.

On November 1, we reported that the pipeline segment had been replaced and restarted following authorization from the Pipeline Hazardous Materials Safety Administration, or PHMSA. To ensure the integrity of the system before it returned to service, the new segment and portion of the line that had installed additional assembly monitoring equipment along the entire 34-mile section of pipeline from the Watford City area to the Tioga area.

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We continue to work with the lead central, PHMSA, the North Dakota Department of Health and other public safety and regulatory authorities and remain focused on remediation and investigating the root cause of the spill. We plan to learn from this incident and take all necessary measures to ensure that this type of event does not occur again. Scott will touch on expectations around the estimated environmental financial impacts in the notes to unaudited financial statements of this call.

Turning to Slide 4 for key highlights. On August 1, we closed on an eight-year $350 million debt offering with a coupon of 4.125% which was used primarily to repay the outstanding balance on our revolving credit facility leaving the full amount of the $350 million revolver available as of today.

On October 24 we announced a cash distribution for the third quarter of $0.545 per limited partner unit, or $2.18 per unit on an annualized basis. This represents a 7% increase over the quarterly distribution paid in August of this year and a 29% increase over the distribution paid in the third quarter of 2012. The increase was primarily the result of a full quarter's contribution from the recently acquired Camas Logistics assets and the Mandan Products System, as well as the delivery of organic growth projects in the Logistics business.

As we move forward we believe that our current suite of assets provides a great foundation from which to further optimize and expand our asset base. We continue to advance additional organic growth projects and remain focused on pursuing opportunities that complement and leverage our existing footprint. We also continue to work on completing the acquisition of additional Carson logistics assets from Tesoro, included within the suite of assets are pipelines, a products terminal, a crude handling and storage facility and marine terminal and storage facilities.

Upon further due diligence, subsequent to Tesoro's acquisition of those assets we project the pipelines and terminals can generate in the range of $60 million to $70 million versus our initial estimate of $45 million to $50 million. And with that I will turn the call over to Scott to discuss our third-quarter financials and our capital outlook for the fourth quarter.

Scott Spendlove - *Tesoro Logistics LP - VP & CFO*

Thanks, Greg. For the third quarter we have distributable cash flow of $33.9 million, which includes a deduction for $8.5 million associated with the impacts from the Tioga crude oil release. The charges reflect the expected remediation costs and the cessation of volumetric. The quarter also saw excellent reliability, including multiple pipeline segments in the 21 million barrels per day and a $25 million crude tank. We exhibited the excellent results of the investment and have since received confirmation of coverage.

Distributable cash flow increased $9 million or 36% over second quarter results. We reported adjusted EBITDA of $46.5 million, which excludes $1.9 million of the benefit provided by pipeline inspection costs that were incurred and written off from the purchase price reduction.

Initially, during the quarter we spent $4 million of the $12 million that we expected to incur as a result of the regulatory and management changes implemented by the safety Hazard protocols at the Secondary Act. All these expenditures are forward-looking statements that may be reviewed by the safe Hazard protocols at the Secondary Act. All these expenditures are forward-looking statements. With that I will turn the call over to Greg.

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Phil Anderson - Tesoro Logistics LP - President

We have included in our third-quarter results all of our identified and estimated costs at this point and we do not expect any material adjustments to those numbers.

Brian Zarahn - Barclays Capital - Analyst

And then on -- on the Anacortes area, in terms of integrity spending on High Plains, any additional costs beyond what you have already budgeted?

Phil Anderson - Tesoro Logistics LP - President

No.

Brian Zarahn - Barclays Capital - Analyst

Okay, thanks, Phil.

Operator

TJ Schultz, RBC Capital Markets.

TJ Schultz - RBC Capital Markets - Analyst

Just beyond the Lewiston barge, for the other eight of the other nine that I assume, is there a range of cash flow from these assets that you can provide? And then also any progress on any other projects at Tesoro that exist on the terminal or the rail PDH that can eventually be included in the MLP?

Phil Anderson - Tesoro Logistics LP - President

Good morning, TJ. We do continue to assess on the unregulated assets. Much like the Anacortes assets, those are part of Tesoro's integrated refining and marketing business and are not broken out at this point. So we don't have a pro forma EBITDA estimate for the remaining PDH assets.

Tesoro does continue to make progress on the Vancouver rail facility, which is expected to be done either late in 2014 or early 2015, as well as several other projects that we would expect Tesoro to make available to TLLP upon their completion. There will be more discussion about that in the release due out this morning from all the rail and dirt projects with Tesoro.

TJ Schultz - RBC Capital Markets - Analyst

Okay. Oh! High Plains, can you provide us the reconciliation for the debt for this quarter, both the $100 million drawn as well as the distribution that's coming out just around timing there? And then as we look into 2014, I think the goal is to get to 1.5 times debt to EBITDA, just help us understand what's driving the mechanics of growth -- as between funding on some of the projects, leverage volumes there.

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Phil Anderson - Tesoro Logistics LP - President

Sure. As far as the fourth quarter goes, we were behind on the pipeline we've driven -- well really October -- from northern segment which crosses the Columbus rail facility that restricted track on November 1. That has since about 10,000 barrels per day and they're back up and running now.

Thirdly we think of volume growth over the next few quarters on the High Plains is really additional volumes coming in at Johnson's Corner from their regional gathering systems as well as several existing sessions additional wells early in 2014 on the system. And really those volumes over to Bowman mill to the regional pipeline systems. We anticipate with the diversion rail facilities that we've converted to on the system. So that is going to be the key driver through 2014.

TJ Schultz - RBC Capital Markets - Analyst

Okay, thanks.

Operator

Sharon Lui, Wells Fargo.

Sharon Lui - Wells Fargo Securities - Analyst

I'm just wondering if I could ask you whether you've talked to the state of Alaska?

Phil Anderson - Tesoro Logistics LP - President

At this point we are working with PAMSA and we're not aware of any ESPOs, although that investigation process is ongoing.

Sharon Lui - Wells Fargo Securities - Analyst

And then in your comments in the outlook in the Bakken you've given the shift in basic differentials?

Phil Anderson - Tesoro Logistics LP - President

We have not seen any differential at this point. I mean I believe most producers and most refiners continue to take a long view of what those differentials look like. And we certainly believe that the ability to move those barrels to the Eastern and West Coast is going to be the key driver of where the crude needs to go for the -- at the end of the day. So at this time nothing for our customers is to get production to the rail facilities and the rail facilities continue to operate. We have not seen anybody back away.

Sharon Lui - Wells Fargo Securities - Analyst

Okay, that's helpful. And then I guess for the EBITDA contribution from the Canyon assets, is the current expectation is that the contribution would be north of the $110 million that was previously identified?

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Phil Anderson - Tesoro Logistics LP - President

Hi Erika! Hello everyone!

Sharon Lui - Wells Fargo Securities - Analyst

Okay, all right. Thank you.

Operator

Jeremy Tonet - JPMorgan - Analyst

I just wanted to follow up on High Plains briefly if I could. And wanted to get a sense for the pipeline of being off to the first month of the quarter. If you guys had a sense for what that would look like as it relates to run rate EBITDA going into the quarter there?

Greg Goff - Tesoro Logistics LP - Chairman & CEO

Well, Jeremy, let me just be clear, that just one segment of the system that we're ramping up. We will be running 90,000 barrels per day. So I'd say on average kind of roughly just daddy'd it you can do the math on that. It is not a very -- it is not a quite material dollar amount.

Jeremy Tonet - JPMorgan - Analyst

Okay, that's great. Just wanted to see if there was kind of a material impact on the quarter-by-quarter dynamics or anything that could portray in the future. It sounds like it would be very minimal at this point.

Phil Anderson - Tesoro Logistics LP - President

That is correct.

Jeremy Tonet - JPMorgan - Analyst

Okay, that's it for me. Thank you.

Phil Anderson - Tesoro Logistics LP - President

Thank, you!

Operator

Thank, you for your participation in today's conference. This concludes the presentation. You may now disconnect. Good day!

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

ATTACHMENT G

Bloomberg

Global Wins, Tesoro Waits on Bringing Bakken Oil West

By Lynn Doan - Aug 20, 2014

Just as Global Partners LP (GLP) gained approval to unload more oil from rail cars at a marine terminal in Oregon, Tesoro Corp. (TSO) learned its plans for a similar project in neighboring Washington will have to wait.

The projects are among several oil-by-rail proposals facing rising opposition after a series of derailments added to questions about the safety of carrying crude by train. Terminals are being developed across the western U.S. as refiners, lacking pipeline access, turn to rail to move crude from shale formations where output is booming.

"California has arguably the highest crude prices in North America, and there are all these barrels in the middle of North America yearning to be free to go to the coast," David Hackett, president of energy consulting company Stillwater Associates, said by telephone yesterday from Irvine, California. "How will crude costs come down without these rail projects?"

Oil from North Dakota's Bakken shale formation was up $1.47 a barrel at $97.95 while crude from Alaska's North Slope, which meets about 12 percent of California's demand, gained $1.97 to $103.30, data compiled by Bloomberg at 9:34 a.m. New York time show.

Air Permit

Global Partners received an air permit yesterday from Oregon regulators allowing it to take 120,000 barrels of oil a day off trains at a terminal on the coast. From there it will go to refineries via the Columbia River. In Washington, a state energy siting council extended its deadline to March to consider a 360,000-barrel-a-day terminal proposed by Tesoro and Savage Companies.

A decision on Tesoro's project probably won't meet the March deadline, Andrew Hayes, a member of the Washington siting council, said yesterday during a meeting of the panel in Olympia, the capital. He cited the complexity of the plan.

Tesoro is committed to the state regulatory process and expects to start service at the terminal next year, Jennifer Mintz, a spokeswoman at the company's headquarters in San Antonio, said by e-mail.

yesterday.

Global Partners' terminal in Clatskanie has been unloading rail cars since 2012. The Waltham, Massachusetts-based fuel distributor was ordered by the state Department of Environmental Quality to apply for a new air permit after the agency discovered the complex was handling more than the roughly 3,000 barrels a day that its permit allowed.

Shale Formations

Tesoro and Global Partners are setting up rail operations as hydraulic fracturing and horizontal drilling unleash a flood of oil from shale formations across the U.S. that the West has little pipeline access to. The shale boom has boosted the nation's crude production to the highest level in 27 years and helped cut U.S. imports of oil to the lowest seasonal level since 1993.

The rail-to-marine terminal proposed by Tesoro and Savage at the Port of Vancouver, Washington, would become the biggest of its kind to operate in the Pacific Northwest.

Mark Smith, Tesoro's vice president of development, supply and logistics, said at a conference in February that the Vancouver site would establish the "cheapest route" for oil from North Dakota's Bakken and Colorado's Niobrara shale formations as West Coast refiners seek to displace crude from Alaska's North Slope. Tesoro applied for the project in August 2013 and expected to start operations this year.

Regulatory Delays

Other oil-by-rail projects facing regulatory delays in the West include a complex at Valero Energy Corp. (VLO)'s Benicia refinery in Northern California and a terminal that Alon USA Energy Inc. (ALJ) has been planning at its refinery in Bakersfield, California, since 2012. Benicia's planning commission voted to extend a public comment period on Valero's proposal by three months to Sept. 15. Alon is waiting on county permits.

Plains All American Pipeline LP (PAA) plans to start unloading crude from rail cars at a terminal in Bakersfield by the end of October, the company said in a conference call with analysts Aug. 7. The oil will travel by pipeline to refineries in the San Francisco and Los Angeles areas.

The West Coast is bringing in about 100,000 barrels of oil by rail a day, less than 5 percent of the region's refining demand, Hackett said.

"That's not anywhere near enough to help make the refineries here more competitive," Hackett said. "It's not even going to move the needle on their crude costs."

To contact the reporter on this story: Lynn Doan in San Francisco at ldoan2@bloomberg.net

To contact the editors responsible for this story: David Marino at dmarino@bloomberg.net Stephen Cunningham

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

Exclusive: California getting more Bakken crude by barge than rail

By Ronn Carroll

SAN FRANCISCO (Reuters) - Shipments of Bakken crude oil from North Dakota to California by barge have quietly overtaken those by train for the first time, showing how the state's isolated refiners are using any means necessary to tap into the nation's shale oil boom.

While tough permitting rules and growing resistance by environmentalists have stalled efforts to build more rail terminals within California itself, a little-known barge port in Oregon has been steadily ramping up shipments to the state, a trend expected to accelerate next year.

From January through June, California received 940,500 barrels of the North Dakota crude oil from barge-loaded at terminals in the Pacific Northwest, the highest rate ever, Gordon Schremp, senior fuels analyst for the California Energy Commission, told Reuters.

Bakken crude transported by California oil refiners, which has gained widespread attention in North America, accounted for just 702,138 barrels over the same time period, according to published figures.

"We're seeing marine transport of Bakken crude outpace rail for the first time," Schremp said. In 2013, rail shipments of 1.33 million barrels exceeded barge shipments of 1.13 million barrels. The year before, almost no crude arrived by barge.

Bakken shipments by barge and rail may only comprise a tiny portion of the crude California imports, at about 5,200,000 barrels a day, or 1 percent, with Alaska supplying over 30 times as much crude.

But companies including refiner Tesoro Corp and logistics company Kinder Morgan LP have plans to significantly expand that volume with new terminals along the Pacific Northwest that would unload crude from North Dakota and pump the oil into tankers.

They would help ease California's main destination for Bakken oil, a trend that has drawn objections from environmental groups who have been seeking to stem the tide, often by blocking local permits to build oil-train offloading terminals.

"Bringing it in by barge gets you around cumbersome permitting and the growing citizen opposition to crude-by-rail," said Jaime Stoyanoff, research scientist at Oil Change International, a research and advocacy organization working on energy, climate and environmental issues.

To be sure, that objections may differ. The principle concern over transporting Bakken by rail is the risk that a derailment could cause a deadly explosion similar to the one in Lac Megantic, Quebec, that killed 47 people.

There is no suggestion that the relative risk of transportation poses similar explosive risks, although the environmental impact of a barge spill could be much greater.

"The dangers are designed to carry the grade of oil that the Bakken is," said Ted Mar, prevention bureau chief for the state's Office of Spill Prevention and Response and a former member of the Coast Guard.

That is small comfort to environmentalists, who oppose all forms of oil production, in addition shale oil projects like Bakken, extracted through hydraulic fracking that raise complaints to global warming and present potential risks to water supplies.

"Gas and oil is oil. There more dangerous, unconventional fuels on the ground," said Jesse Dorris-Achemann, conservation manager for the San Francisco Bay Chapter of the Sierra Club.

SMALLER BUT CLOSER

With each production outstrip since the mid-90s, California refiners have increasingly relied on deliveries of crude by barge and tanker. Carrying 500,000 barrels or more from places like Alaska, Ecuador and Peru, which dwarf the limits of their rail-based rivals.

The refiners have been scrambling for several years to get easier access to cheaper supplies, while still the environmentalists, maintaining coastal imports. But with the big shale fields to the east of the Rocky Mountains and a lack of major pipelines, it has not been easy.

The only dedicated rail barges (a fifth one entering service this year by Genesis) to the tankers, carrying 80,000-90,000 barrels. But environmentalist more than managing Bakken exactly by California refiners, but many may also envision part and terminal

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infrastructure -- investing the rules for new permitting that can take years.

While many are working to build out their own rail facilities, a handful of major rail-to-barge terminals along the Pacific Northwest coast that would ship over 600,000 bpd of Bakken crude have been in the works for several years. But most are incomplete, and several face delays.

One of the few exceptions is an oil-by-rail terminal and processing plant in Clatskanie, Oregon, run by Global Partners LP. The facility, on a small channel that feeds into the Columbia River, began quietly transshipping oil from trains to barges in 2013 and is now receiving so-called "unit trains" - mile-long trains that only carry crude oil.

Until it ramps up its Clatskanie terminal is up, and interest in the facility from prospective customers is at an all-time high," Global Partners Chief Executive Eric Slifka said in August.

Global Partners did not respond to a request for comment.

Later that month, the firm received a new air permit from the Oregon Department of Environmental Quality that will allow it to ship as much as 1.64 billion gallons of volatile liquids, or some 120,000 bpd. It did not specify crude or ethanol.

Much of those shipments moved north to refineries in Washington, including BP's Cherry Point in Puget Sound and Phillips 66's Ferndale facility. But both those plants are expanding their own facilities to bring more Bakken in by rail, likely curbing some demand for barges.

Top oil barge operator Kirby Corp. which runs vessels out of Clatskanie, is currently building two larger 185,000-barrel barges to debut on the coast next autumn.

Environmentalists say they are monitoring the rise in Bakken-by-barge deliveries.

"Time won't put our focus away from crude by rail, but rather expand the lens with which we look at dangers of Bakken entering our communities," said the Sierra Club's Devin Ackerman.

(Reporting by Roy Carroll; editing by Jonathan Leff and Marguerita Choy)

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

ATTACHMENT 1

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ATTACHMENT J

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds

October 2006

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Final PM2.5 Calculation Methodology and PM2.5 Significance Thresholds

Introduction

In the last few years, both California and the federal governments have established ambient air quality standards for fine particulate matter (PM) less than or equal to 2.5 microns in diameter (PM2.5). As a result, there is a need to establish a methodology for calculating PM2.5 and appropriate PM2.5 significance thresholds for the purpose of analyzing local and regional PM2.5 air quality impacts in California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) air quality analyses. This document provides a methodology for calculating PM2.5 and recommendations for localized and regional PM2.5 significance thresholds.

Background

PM larger than 2.5 microns and less than 10 microns, often referred to as the coarse PM fraction (or PM10), is mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and resuspension of particles from the ground or road surfaces by wind and human activities such as construction or agriculture. In contrast, PM less than or equal to PM2.5 is mostly derived from combustion sources such as automobiles, trucks, and other vehicle exhaust, as well as from stationary combustion sources. The particles are either directly emitted or are formed in the atmosphere from the combustion of gases, such as NOx and SOx, combining with ammonia. PM2.5 components from material in the earth's crust, such as dust, are also present, with the amount varying in different locations. Staff's recommendation for calculating PM2.5 focuses only on directly emitted PM2.5.

In 1997, U.S. EPA established an annual and a 24-hour standard for the fine fraction of particulates, PM2.5, to complement the existing PM10 standards. However, U.S. EPA recently modified the 24-hr PM2.5 standard and revoked the annual PM10 standard. (Table 1). The annual component of the standard was established to provide protection against typical day-to-day exposures as well as longer-term exposures, while the daily component protects against more extreme short-term events.

TABLE 1

Federal Standards for Particulate Matter

Federal Standards	PM 10	PM 2.5
Annual	Revoked[1]	15 μg/m³
24-Hour	150 μg/m³	35 μg/m³[2]

In June 2002, the California Air Resources Board (CARB) adopted new, stricter standards for particulate matter that would affect both the coarse as well as fine particulate fraction (Table 2). CARB delayed actions on the proposed 24-hour PM2.5 standard in light of the

[1] U.S. EPA implementing 50 CFR 50.13(a) National Primary and Secondary Ambient Air Quality Standards for PM, effective on December 18, 2006 (71 FR 61144).
[2] U.S. EPA final rulemaking for CFR at Part 50.13 National Primary and Secondary Ambient Air Quality Standards for PM, effective December 21, 2006 (71 FR 61144).

findings related to statewide issues in advance July short-term exposure health effects studies.

TABLE 2

California Standards for Particulate Matter

California Standards	PM 10	PM 2.5
Annual	20 μg/m³	12 μg/m³
24-Hour	50 μg/m³	n/a

Methodology to Calculate PM 2.5

Because there are currently few or no PM2.5 emission factors for stockpiles or combustion processes, staff is recommending an indirect approach to calculating PM2.5 emissions until such time as PM2.5 factors are developed. Since PM2.5 is a subset of PM10, the current methodology for calculating PM10 from fugitive dust sources (grading, demolition, unpaved roads, open storage piles, etc.) and combustion sources (stationary combustion sources, vehicle exhaust) will continue to be used to calculate PM10 and can also be used to calculate PM2.5. Total suspended PM (TSP) emissions (typically contain specific fractions of PM10 and PM2.5 that can be measured. In general, PM from fugitive dust generating sources is primarily composed of PM10 with a relatively small fraction of the fugitive PM consisting of PM2.5. Alternatively, PM from combustion sources is primarily composed of PM2.5 with a small fraction consisting of PM10.

To calculate both PM10 and PM2.5, existing PM10 calculation methodologies for both fugitive dust PM10 and combustion PM10 can be used. To determine the PM2.5 fractions of the PM10 emission results, staff is recommending that the PM10 emissions be calculated using standard PM10 calculation methodologies. The PM10 emission results for each emission source or operation would then be multiplied by the applicable PM2.5 fraction, derived by emissions source, using PM profiles in the California Emission Inventory Data and Reporting System (CEIDARS) developed by the California Air Resources Board (CARB). The CEIDARS PM profiles are used to develop emission inventories for a variety of sources and operations in the Air Quality Management Plan (AQMP). The CEIDARS PM profiles have been streamlined to be used for most types of processes that would be encountered in a CEQA or NEPA document. In addition, SCAQMD staff has identified the PM2.5 fraction of PM10. The streamlined CEIDARS PM profiles can be found in Appendix A. The CEIDARS PM profiles may be updated as necessary to reflect updates reviewed by CARB.

If the project being evaluated is not listed among the categories in Appendix A, then the closest related type of operation/process should be used. For example in analyzing construction activities, e.g., grading, earth moving, etc., if the specific activity is not located in the tables the CEQA practitioner can use the following default factors derived from the 2003 AQMP annual inventories (see Tables 3 and 4 below under the "Localized Significance Thresholds for PM2.5 Emissions" discussion). For mechanical dust generating sources, e.g., construction, the PM2.5 fraction of PM10 is 21 percent and for combustion sources the PM2.5 fraction of PM10 is 99 percent. For off-road emissions

Final PAR 1 Calculation Methodology and PAR 5 Significance Thresholds

sources, the PM2.5 fraction default would be 89 percent (Table 5). Other publicly available and peer-reviewed sources of PM10 and PM2.5 emission factors can also be used if they more closely match the type of emission source than the sources identified in Appendix A. In addition, site-specific or project-specific information can be used.

Once the PM10 fractions from all emissions sources are calculated, these are summed and compared to the appropriate PM10 significance thresholds to determine whether or not a project is significant. Similarly, once the PM2.5 fractions from all emissions sources have been calculated, these are also summed (separate from the PM10 fractions) and compared to the appropriate PM2.5 significance threshold (see following discussion) to determine project significance.

The PM2.5 fraction of PM10 can be easily calculated as follows:

Step 1: Calculate PM10 emissions for each emissions source category

Step 2: Look up the PM2.5 fraction of PM10 for the applicable source category (by year that construction will occur or operation of the project will begin) (Appendix A, column 6 of the appropriate table)

Step 3: Multiply the PM2.5 fraction by the PM10 emissions for each source category (PM2.5 emissions = PM10 emissions x [PM2.5 fraction])

Step 4: Sum the PM2.5 emissions from each emissions source

Step 5: Compare PM2.5 emissions to the appropriate significance threshold.

Example:

> A project is estimated to generate 8 pounds per day of PM10 from one piece of construction equipment. The PM2.5 emissions are as follows:
> PM2.5 emissions = 8 pounds of PM10 per day x 0.89 = 7.12 pounds of PM2.5 per day.

In conjunction with establishing a methodology for calculating PM2.5, staff has developed the following recommended PM2.5 significance thresholds for both localized and regional significance for both construction and operation.

Localized Significance Thresholds for PM 2.5 Emissions

Localized significance thresholds (LSTs) were developed in response to the SCAQMD Governing Board's environmental justice (EJ) initiatives (EJ initiative I-4) to recognize the fact that criteria pollutants, carbon monoxide (CO), oxides of nitrogen (NOx), and PM10 in particular, can have local impacts as well as regional impacts. The LST proposal went through extensive public outreach and was adopted by the Governing Board in October 2003. At the time the LST was adopted by the Governing Board, staff had not yet developed proposed LSTs for PM2.5.

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Determining localized air quality impacts requires dispersion modeling. Because local lead agencies may not have the expertise or resources to perform dispersion modeling, SCAQMD created a series of look-up tables for CO, NOx, and PM10 in which staff back-calculated the mass emissions necessary to equal or exceed the concentration of operation LST. The look-up tables were created for projects one to five acres in size and take into consideration location (source receptor area) and distance to the sensitive receptor. To use the look-up tables, the lead agency calculates daily emissions as it normally would and then compares the results to the emissions in the applicable look-up table.

In general, the LSTs will apply primarily to construction because emissions from construction equipment occur at a fixed location compared to operation, which, for most land use projects, consists of emissions from vehicles traveling over the roadways which, therefore, do not create impacts to a single location. To further assist lead agencies with calculating construction emissions, the SCAQMD conducted construction site surveys for each phase of construction to develop "standard" construction scenarios relative to construction equipment and hours of operation. Spreadsheets were developed to calculate emissions for the construction scenarios in an effort to create scenarios that would not exceed any applicable LSTs. When preparing a CEQA analysis, lead agencies could use the sample construction projects for their construction analyses, use the spreadsheets to tailor the analysis to their individual projects, or use a combination of the two.

The following subsections describe the proposed PM2.5 LSTs for both operation and construction.

Establishing LSTs

To determine the effects of PM2.5 on local (nearby) receptors, such as residents, hospitals, schools, etc., a PM2.5 localized significance threshold (LST) needs to be established. Since the Basin exceeds one or more of the state or federal ambient air quality standards for PM2.5, the process used to determine significance for criteria pollutants, i.e., NO2 and CO, developed for the LST program cannot be used[1]. Under the LST program, since PM10 is a nonattainment pollutant, the LST methodology uses a different process for determining whether localized PM10 air quality impacts are significant. To determine localized PM10 air quality impacts during operation, the LST methodology uses as a significance threshold the allowable change in concentration threshold for PM10 listed in Rule 1303, Table A-2, which is 2.5 micrograms per cubic meter (µg/m³). The allowable change in concentration threshold is a modeled concentration that cannot be exceeded at the sensitive receptor, and determines whether or not a permit applicant will receive a permit from the SCAQMD. For the LST program staff used a dispersion model (ISCST3) to convert the 2.5 µg/m³ concentration into mass daily PM10 emission numbers based on the size of the project, location of the project, and distance to the sensitive receptor. The

[1] Under the LST program, to determine significance for ambient concentrations, the emissions contributed from the project proposed as a construction activity is added to the highest local ambient concentrations from the last three years where data are available. If the sum (equals or greater than any applicable state or federal ambient air quality standard, the impact is considered to have significant localized air quality impacts for that pollutant. More information on the LST program can be found at the following link: http://www.aqmd.gov/ceqa/handbook/LST/LST.html

results were then incorporated into an LST look-up table. If the mass emissions from a project exceed the applicable LST look-up tables' mass emission numbers (which are based on the 2.5 $\mu g/m^3$ concentration), then localized PM10 air quality impacts are considered to be significant.

Operational Localized Significance Thresholds

To establish operational PM2.5 localized significance thresholds, staff first reviewed the PM inventories in Appendix III of the 2003 AQMP. In particular, staff evaluated the composition of PM10 and PM2.5 from combustion processes in the 2003 AQMP to establish a general ratio of PM2.5 to PM10. Combustion processes were evaluated because, for most land use projects, mobile source combustion emissions comprise the majority of emissions. Table 3 shows the total PM10 and PM2.5 inventories for total fuel combustion process for the years 2005 through 2010. As can be seen in Table 3, over the five-year timeframe considered, the fraction of combustion PM10 that consists of PM2.5 is consistently 90 percent. Since combustion PM10 and PM2.5 fractions are essentially equivalent, staff is recommending that the operational localized significance threshold for PM2.5 be the same as the current operational localized significance threshold for PM10, i.e., 2.5 $\mu g/m^3$.

TABLE 3

Total Stationary Source Fuel Combustion Inventory (Tons/Day)

Year	PM 10	PM 2.5	Percent of PM 10 which is PM 2.5
2005	9.43	8.01	90
2006	9.21	8.10	90
2007	9.30	8.18	90
2008	9.38	8.26	90
2010	9.54	8.42	90

Source: Appendix III, 2003 AQMP, Annual Average Emissions Inventory

Construction Localized Significance Thresholds

Similarly, to develop a PM2.5 construction significance threshold for localized impacts, staff considered the PM2.5 contribution from fugitive sources and the PM2.5 contribution from combustion sources (construction equipment). As discussed in more detail in the following paragraphs, combustion emissions from the construction equipment contribute a larger portion of the total PM2.5 emissions from construction operations than fugitive sources.

Staff then reviewed the 2003 AQMP, Appendix III fugitive PM inventory for construction and demolition to obtain the PM10 and PM2.5 compositions. Table 4 shows the total PM10 and PM2.5 inventories for construction activities for the years 2005 through 2010. As can be seen in Table 4, over the five-year timeframe, the fraction of PM10 that consists of PM2.5 is consistently 21 percent. Multiplying the fugitive PM2.5 percent fraction of

PM10 by the existing construction PM10 LST, 10.4 $\mu g/m^3$, produces a result of approximately 2.2 $\mu g/m^3$.

TABLE 4

Total Fugitive PM Inventory (Tons/Day)

Year	PM 10	PM 2.5	Percent of PM 10 which is PM 2.5
2005	42.7	8.91	21
2006	43.65	9.11	21
2007	44.6	9.3	21
2008	45.54	9.5	21
2010	47.44	9.9	21

Source: Appendix III, 2003 AQMP, Annual Average Emissions Inventory

Off-road construction equipment, however, also contributes combustion PM as well as fugitive PM. To determine the contribution of PM2.5 from construction equipment combustion emissions, staff performed dispersion modeling using the ISCST3 dispersion model for one-, two- and five-acre construction scenarios. The construction scenarios were developed from construction site surveys conducted in connection with staff's original LST proposal. Combustion sources were modeled as adjacent five-meter volume sources and fugitive sources were modeled as adjacent one-meter area sources. Worst-case meteorological data from the West Los Angeles source receptor area were used, and receptors were placed at 25, 50, 100, 200, and 500 meter distances from the construction site. Using CARB speciation data, it was assumed that 21 percent of fugitive dust PM10 is comprised of PM2.5 and 89 percent of off-road equipment combustion PM10 emissions are comprised of PM2.5 (based 2003 AQMP inventories, see Table 5).

TABLE 5

Combustion PM Inventory from Off-Road Equipment (Tons/Day)

Year	PM 10	PM 2.5	Percent of PM 10 which is PM 2.5
2005	11.05	10.04	89
2006	11.03	10.53	89
2007	11.12	9.97	89
2008	10.93	9.71	89
2010	10.58	9.09	89

Source: Appendix III, 2003 AQMP, Annual Average Emissions Inventory

The modeling results showed that combustion PM2.5 from off-road equipment comprise approximately 75 to 100 percent of the total PM2.5 emissions from construction activities. Further, the PM2.5 contribution from fugitive sources is dependant on the construction phase. For example, the modeling showed that the demolition and site preparation phases have the highest fugitive PM2.5 contribution to the overall results, whereas, the building and asphalt paving phases contribute the most combustion PM2.5 to the overall results.

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The modeling results indicate that the contribution of off-road combustion PM2.5 emissions can be three to four times higher than the contribution of PM2.5 from fugitive sources. Based on this result, staff recommends that the PM2.5 fugitive dust component be adjusted upward by approximately four times to account for the PM2.5 emissions from the construction equipment. As a result, staff is recommending a PM2.5 construction LST of 10.4 ug/m³, the same as the construction LST for PM10. Finally, in accordance of either the PM10 construction LST or the PM2.5 construction LST as a significant adverse localized air quality impact.

Regional Emission Threshold of Significance for PM 2.5

Emissions that exceed the regional significance thresholds are mass daily emissions that may have significant adverse regional effects and are the air quality significance thresholds with which most CEQA practitioners are familiar.

Table 6
Regional Air Quality Significance Thresholds

	Mass Daily Thresholds*	
Pollutant	Construction[b]	Operation[c]
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

The following subsection describes the proposed PM2.5 regional significance thresholds for both operation and construction.

Establishing Regional Significance Thresholds

PM emissions also affect air quality on a regional basis. When fugitive dust enters the atmosphere, the larger particles of dust typically fall quickly to the ground, but smaller particles less than 10 microns in diameter may remain suspended for longer periods, giving the particles time to travel across a regional area and affecting receptors at some distance from the original emissions source. Fine PM2.5 particles have even longer atmospheric residency times. Staff is recommending a PM2.5 regional significance threshold based on a recent EPA proposal, as explained in the following paragraphs.

On September 8, 2005, EPA published in the Federal Register "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards," which proposed a significant emission rate for PM2.5 of 10 tons per year. Staff is proposing to use EPA's

Final PAR 3 Calculation Methodology and PAR 3 Significance Thresholds

significant emission rate for PM2.5 to develop the daily mass emission regional significance threshold for PM2.5. Converting the annual rate, 10 tons, into a daily rate produces a daily rate of approximately 55 pounds per day. A similar approach was used to derive the operational regional significance thresholds for NOx and VOC. NOx and VOC operational regional significance thresholds were derived by using the NOx/VOC emission rate that defined a major source in the South Coast Air Basin, 10 tons per year. Converting the annual emissions rate into a daily rate resulted in a regional operational significance threshold for PM10 of 150 pounds per day, the proposed PM2.5 regional significance threshold of 55 pounds per day would apply to both construction and operation.

Conclusion

In this document staff identified a methodology to universally calculate PM2.5 emissions for a CEQA or NEPA air quality analysis. At the same time as PM2.5 emission factors are available, which will allow the CEQA practitioner to calculate PM2.5 emissions directly. In addition, PM2.5 construction and operation LSTs have been identified to address localized impacts. The PM2.5 LSTs will be used to develop look-up tables for projects five acres in size or smaller, similar to those prepared for PM10, nitrogen dioxide (NO2), and carbon monoxide (CO). As with the other pollutants, the PM2.5 look-up tables can be used as a screening procedure to determine whether or not small projects (less than or equal to five acres) will generate significant adverse localized air quality impacts. Screening procedures are by design conservative, that is, the predicted impacts tend to overestimate the actual impacts. If the predicted impacts are acceptable using the LST look-up tables, then a more detailed evaluation is not necessary. However, if the predicted impacts are significant, then the project proponent may wish to perform a more detailed emission and/or modeling analysis before concluding that the impacts are significant. Project proponents are not required to use the LST procedure, and may complete site specific modeling instead. Site-specific modeling is required for projects larger than five acres.

Appendix A – Updated CEIDARS List with PM2.5 Fractions

Table A – Updated CEIDARS Table with PM2.5 Fractions

SCC MAIN CATEGORY	SCC SUBCATEGORY	PM2.5 FRACTION OF TOTAL PM	PM10 FRACTION OF TOTAL PM	PM2.5 FRACTION OF PM10
ASPHALT PAVING - ROOFING	ASPHALT PAVING - ROOFING	0.000	0.000	0.000
	ASPHALT ROOFING	0.000	0.000	0.000
	ASPHALT ROOFING: WORKER ENTRAINMENT	0.000	0.000	0.000
	FOREST MANAGEMENT: BURNING AND PILE FIRE	0.000	0.000	0.000
	FOREST MANAGEMENT: WASTE BURNING	0.000	0.000	0.000
	RANGE MANAGEMENT: WASTE BURNING	0.000	0.000	0.000
	UNPAVED ROADS: NATURAL FIBER	0.000	0.000	0.000
CEMENT MANUFACTURING		0.000	0.000	0.000
CHEMICAL MANUFACTURING	FERTILIZER PLANTS	0.000	0.000	0.000
	MIXING AND BLENDING OF CHEMICALS	0.000	0.000	0.000
COATING & SOLVENT USES (EXCEPT PAINT)	SOLVENT BASED	0.000	0.000	0.000
	WATER BASED (COATING)	0.000	0.000	0.000
CONSUMER PRODUCTS		0.000	0.000	0.000
COOKING	CHARBROILER: CHARBROILER TYPE (EXCEPT CATALYTIC)	0.000	0.000	0.000
CRUSHING/GRINDING		0.000	0.000	0.000
DRY CLEANING		0.000	0.000	0.000
ELECTRONICS	HEXAVALENT CHROMIUM PLATING	0.000	0.000	0.000
	ZINC ALLOY PLATING	0.000	0.000	0.000
EVAPORATION	FUGITIVE EMISSIONS (EXCEPT PETROLEUM INDUSTRY)	0.000	0.000	0.000
	TANK WORKING LOSS (EXCEPT PETROLEUM INDUSTRY)	0.000	0.000	0.000
	TANK BREATHING LOSS (EXCEPT PETROLEUM AND INDUSTRIAL PROCESS)	0.000	0.000	0.000
	LIQUID STORAGE (EXCEPT PETROLEUM)	0.000	0.000	0.000
	RESIDENTIAL OIL-FIRED (EXCEPT UTILITY BOILERS)	0.000	0.000	0.000
	RESIDENTIAL OIL-FIRED UTILITY BOILERS ONLY	0.000	0.000	0.000
	STEEL FOUNDRY	0.000	0.000	0.000
	WOOD FURNACE: WASTE	0.000	0.000	0.000
FABRICATED METALS	ABRASIVE BLASTING	0.000	0.000	0.000
	ARC WELDING: CARBON STEEL, COMBINED, DESCRIPTION	0.000	0.000	0.000
FOOD AND AGRICULTURE	COOKING: CHARBROILING	0.000	0.000	0.000
	FERMENTATION: BEER/BREAD/FISH AND MEAT PROCESSING	0.000	0.000	0.000
	GRAIN ELEVATORS	0.000	0.000	0.000
	GRAIN MILLING: FACTORY	0.000	0.000	0.000
	LIVESTOCK WASTE	0.000	0.000	0.000
INCINERATION	AIRCRAFT/TURBINE: TURBINE/JET	0.000	0.000	0.000
	CONSTRUCTION AND DEMOLITION	0.000	0.000	0.000
	LANDFILL: DEPT	0.000	0.000	0.000
	LIVESTOCK: DEPT	0.000	0.000	0.000
	PAVED ROAD: DEPT	0.000	0.000	0.000
	UNPAVED ROAD: DEPT	0.000	0.000	0.000
MISCELLANEOUS - (MANUFACTURING AND INDUSTRIAL)	LIQUID FUEL (EXCEPT GASOLINE AND DIESEL): LIQUID PROPANE	0.000	0.000	0.000
	LIQUID FUEL: OTHER (EXCEPT GASOLINE, DIESEL, OR PROPANE)	0.000	0.000	0.000
	PAVED ROAD: DEPT	0.000	0.000	0.000
	PROCESSING	0.000	0.000	0.000
	SEED - PELLETS, BRIQUETTES, ALFALFA, AND SEALS	0.000	0.000	0.000

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APPENDIX A

Updated CEIDARS Table with PM2.5 Fractions

Appendix A – Updated CEIDARS List with PM2.5 Fractions

Table A – Updated CEIDARS Table with PM2.5 Fractions (Continued)

SCC MAIN CATEGORY	SCC SUBCATEGORY	PM2.5 Fraction of Total PM	PM10 Fraction of Total PM	PM2.5 Fraction of PM10
HEATING CHEMICALS	ETHYLENE OXIDE	0.820	0.700	0.800
INCINERATOR ACCIDENTAL FIRES	GASEOUS FUEL	1.000	1.000	1.000
	LIQUID FUEL	0.960	0.970	0.961
	SOLID FUEL	0.260	0.300	0.867
PETROLEUM TRANSPORT	DISTILLATE AND RESIDUAL ELECTRIC GENERATION	0.917	0.961	0.976
	DISTILLATE AND RESIDUAL EXCEPT ELECTRIC GENERATION	0.967	0.979	0.947
	DISTILLATE FUEL	0.951	0.981	0.969
	GASOLINE	0.992	0.994	0.998
	JET FUEL	0.967	0.976	0.991
	RESIDUAL FUEL	0.825	0.895	0.930
MINERAL PRODUCTS	BRICK, CERAMIC AND REFRACTORY (GLASS MFG)	0.186	0.263	0.707
	COAL CLEANING (THERMAL DRYER; SCRUBBER/CYCLONE; BOILER)	0.146	0.280	0.521
	CRUSHED STONE (PRIMARY; SECONDARY; TERTIARY)	0.186	0.910	0.205
	LOADING AND UNLOADING BULK MATERIALS	0.446	0.490	0.910
	CLAY AND RELATED PRODUCTS HANDLING OPERATIONS	0.513	0.861	0.596
	CRUSHING, GRINDING OR BLASTING (LIMESTONE AND OTHER)	0.681	0.930	0.732
	THERMAL ASH MANUFACTURING	0.972	0.994	0.978
	GLASS MFG. PROCESSING	0.963	0.988	0.974
	OPEN DUST MAJOR ACTIVITIES	0.450	0.850	0.529
	UNPAVED MAINTENANCE	0.810	0.900	0.900
UNPAVED ROADS	DUSTY	0.920	0.980	0.939
	GASOLINE CONSUMPT	0.975	0.975	1.000
	GASOLINE CONSUMPT	1.000	1.000	1.000
	HEAVY VEHICLES (HEAVY DUTY DIESEL VEHICLES)	0.927	0.981	0.944
	LIGHT VEHICLES (LIGHT DUTY GASOLINE VEHICLES)	0.975	0.981	0.994
	TRUCKS	0.950	1.000	0.950
PETROLEUM INDUSTRY	ASPHALT CONCRETE	0.951	0.961	0.989
PRODUCT STORAGE (FLOATING ROOF)	ELEVATED (LEGS OR TRUSS); FLOATING; FLOATING SHIELD WITH PONTOONS)	0.961	0.970	0.991
	FLOATING; FLOATING; HEAT TREATING	0.961	0.961	0.996
	FIXED; FLOATING	0.961	0.970	0.991
TRANSPORTATION EQUIPMENT MANUFACTURING		0.961	0.961	0.991
WATER TRANSPORT	DIESEL	0.961	0.961	0.991
	LIQUID FUEL	0.951	0.961	0.989
WAREHOUSING	HANDLING (GENERAL)	0.824	0.900	0.920
WASTEWATER TREATMENT		0.924	0.961	0.961
WOOD PRODUCTS	SANDING	0.484	0.824	0.961
	PAINTING	0.581	0.899	0.976

APPENDIX B

PM2.5 Localized Significance Threshold Look-up Tables

Appendix H – PM2.5 Localized Significance Threshold Look-up Tables

Table H-1. PM2.5 Emission Thresholds for Construction

SRA No.	Source Receptor Area	Significance Threshold of 10.4 ug/m³ Allowable emissions (lbs/day) as a function of receptor distance (meters) from boundary of site									
		1 Acre					2 Acre				
		25	50	100	200	500	25	50	100	200	500
1	Central LA	3	3	10	24	102	5	7	12	38	110
2	Northwest Coastal LA County	3	4	8	18	77	5	9	10	21	82
3	Southwest Coastal LA County	7	5	9	21	75	9	7	12	25	81
4	South Coastal LA County	3	5	10	26	93	5	7	13	30	101
5	Southeast LA County	3	4	8	19	81	4	6	10	22	92
6	West San Fernando Valley	3	4	7	18	70	4	5	9	21	84
7	East San Fernando Valley	3	4	8	19	68	4	6	10	21	73
8	West San Gabriel Valley	3	4	7	18	77	4	5	9	21	82
9	East San Gabriel Valley	3	5	9	22	84	5	7	12	26	110
10	Pomona/Walnut Valley	4	4	7	19	75	4	6	10	21	80
11	South San Gabriel Valley	4	5	9	20	83	5	6	12	24	88
12	South Central LA County	3	4	7	17	70	4	6	9	19	74
13	Santa Clarita Valley	3	4	7	18	74	4	5	9	21	80
14	San Gabriel Mountains	3	4	7	18	74	4	5	9	20	80
15	South Orange County	4	4	9	21	74	4	6	11	24	79
16	Central Orange County	3	4	9	22	84	5	6	11	25	92
17	North Coastal Orange County	3	5	9	22	89	5	6	12	26	84
18	Saddleback Valley	3	4	8	19	68	4	5	10	22	74
19	Central Orange County Coastal	3	5	9	22	76	5	7	12	25	83
20	Capistrano Valley	3	4	8	19	68	4	6	10	22	74
21	Norco/Corona	3	5	9	22	92	5	7	12	25	68
22	Metropolitan Riverside County	3	4	8	20	86	4	6	10	23	93
23	Perris Valley	3	4	8	20	86	4	6	10	23	93
24	Lake Elsinore	3	4	8	20	86	4	6	10	23	93
25	Temecula Valley	3	4	8	20	87	4	6	10	23	93
26	Anza Area	3	4	8	20	86	4	6	10	23	93
27	Hemet/San Jacinto Valley	3	4	8	20	86	4	6	10	23	93
28	Banning Airport	4	7	14	36	150	6	9	17	41	166
29	Coachella Valley	4	5	10	24	103	5	7	12	28	113
30	East Riverside County	3	5	10	24	103	5	7	12	28	113
31	Northwest San Bernardino Valley	4	6	13	32	141	5	8	14	36	150
32	Southwest San Bernardino Valley	4	6	12	32	141	5	8	14	36	150
33	Central San Bernardino Valley	4	6	9	23	98	5	8	12	26	104
34	East San Bernardino Valley	4	5	10	26	112	5	7	13	30	120
35	Central San Bernardino Mountains	4	6	12	32	141	5	8	14	36	150
36	West San Bernardino Valley	3	5	9	23	98	4	6	12	26	104
37	East San Bernardino Mountains	4	5	10	26	112	5	7	13	30	120

Appendix H – PM2.5 Localized Significance Threshold Look-up Tables

Table H-1. PM2.5 Emission Thresholds for Construction (Continued)

SRA No.	Source Receptor Area	Significance Threshold of 10.4 ug/m³ Allowable emissions (lbs/day) as a function of receptor distance (meters) from boundary of site									
		5 Acre									
		25	50	100	200	500					
1	Central LA	8	11	18	36	126					
2	Northwest Coastal LA County	6	8	14	28	95					
3	Southwest Coastal LA County	8	11	19	39	135					
4	South Coastal LA County	8	10	18	34	116					
5	Southeast LA County	7	10	15	30	103					
6	West San Fernando Valley	6	8	13	28	96					
7	East San Fernando Valley	6	10	15	33	96					
8	West San Gabriel Valley	7	9	14	27	93					
9	East San Gabriel Valley	8	11	17	35	116					
10	Pomona/Walnut Valley	7	9	15	33	93					
11	South San Gabriel Valley	9	12	19	34	104					
12	South Central LA County	7	10	15	27	86					
13	Santa Clarita Valley	6	8	13	25	93					
14	San Gabriel Mountains	6	8	13	26	93					
15	South Orange County	6	8	15	34	101					
16	Central Orange County	6	9	15	34	101					
17	North Coastal Orange County	7	9	15	32	109					
18	Saddleback Valley	6	9	15	33	101					
19	Central Orange County Coastal	8	11	16	30	98					
20	Capistrano Valley	9	11	18	35	111					
21	Norco/Corona	8	11	16	30	86					
22	Metropolitan Riverside County	8	11	18	34	115					
23	Perris Valley	8	10	16	31	105					
24	Lake Elsinore	8	10	16	31	105					
25	Temecula Valley	8	10	16	31	105					
26	Anza Area	8	10	16	31	105					
27	Hemet/San Jacinto Valley	8	10	16	31	105					
28	Banning Airport	11	14	23	44	144					
29	Coachella Valley	8	11	19	37	128					
30	East Riverside County	8	11	19	37	128					
31	Northwest San Bernardino Valley	9	12	21	43	150					
32	Southwest San Bernardino Valley	9	12	21	43	150					
33	Central San Bernardino Valley	8	12	19	37	130					
34	East San Bernardino Valley	8	10	17	35	120					
35	Central San Bernardino Mountains	9	12	20	40	140					
36	West San Bernardino Valley	8	11	17	35	120					
37	East San Bernardino Mountains	9	12	20	40	140					

Appendix H PM2.5 Localized Significance Threshold Look-up Tables

Table B-2. PM2.5 Emission Thresholds for Operation

SRA No	Source Receptor Area	Significance Threshold of 2.5 ug/m³ Allowable emissions (lbs/day) as a function of receptor distance (meters) from boundary of site									
		1 Acre				2 Acre					
		25	50	100	200	500	25	50	100	200	500
1	Central LA	1	2	3	6	25	2	3	5	7	27
2	Northwest Coastal LA County	1	1	3	5	19	1	3	5	10	20
3	Southwest Coastal LA County	1	2	4	8	18	2	4	6	9	20
4	South Coastal LA County	1	2	3	7	23	2	4	8	15	25
5	Southeast LA County	1	1	3	6	21	2	3	6	9	22
6	West San Fernando Valley	1	1	2	5	19	1	2	5	8	21
7	East San Fernando Valley	1	1	2	6	17	1	3	5	9	18
8	West San Gabriel Valley	1	1	2	6	19	1	3	5	9	20
9	East San Gabriel Valley	1	1	3	6	23	2	3	7	13	25
10	Pomona/Walnut Valley	1	1	2	5	18	1	3	5	9	20
11	South San Gabriel Valley	1	1	2	5	20	2	3	6	9	22
12	South Central LA County	1	1	2	4	17	1	3	5	8	18
13	Santa Clarita Valley	1	1	2	6	18	1	2	5	9	20
15	San Gabriel Mountains	1	1	2	5	18	1	2	5	9	20
16	North Orange County	1	1	3	5	18	1	3	6	9	19
17	Central Orange County	1	1	2	6	21	1	3	6	9	22
18	North Coastal Orange County	1	1	2	6	19	1	3	6	9	20
19	Saddleback Valley	1	1	2	5	17	1	3	6	8	18
20	Central Orange County Coastal	1	1	3	6	19	1	3	7	9	20
21	Capistrano Valley	1	1	2	5	17	1	3	6	8	18
22	Noth Coastal	1	2	3	6	23	2	3	6	9	24
23	Metropolitan Riverside County	1	1	2	5	21	1	3	6	8	22
24	Perris Valley	1	1	2	5	21	1	3	6	8	22
25	Lake Elsinore	1	1	2	5	21	1	3	6	8	21
26	Temecula Valley	1	1	2	5	21	1	3	6	8	22
27	Anza Area	1	1	2	5	21	1	3	6	8	23
28	Hemet/San Jacinto Valley	1	1	2	5	21	1	3	6	8	23
29	Banning Airport	1	1	4	9	39	2	5	10	18	40
30	Coachella Valley	1	1	3	6	26	2	3	7	9	27
31	East Riverside County	1	1	3	6	26	2	3	7	9	27
32	Northwest San Bernardino Valley	1	1	4	8	34	2	4	8	14	36
33	Southwest San Bernardino Valley	1	1	3	8	34	2	4	8	14	36
34	Central San Bernardino Valley	1	1	3	6	24	2	3	7	9	25
35	East San Bernardino Valley	1	1	3	7	27	2	3	7	10	29
36	Central San Bernardino Mountains	1	2	5	8	34	2	4	8	16	36
37	West San Bernardino Valley	1	1	3	6	24	1	3	7	9	25
38	East San Bernardino Mountains	1	1	3	7	27	2	4	8	16	29

Appendix H PM2.5 Localized Significance Threshold Look-up Tables

Table B-2. PM2.5 Emission Thresholds for Operation (Continued)

SRA No	Source Receptor Area	Significance Threshold of 2.5 ug/m3 Allowable emissions (lbs/day) as a function of receptor distance (meters) from boundary of site					
		5 Acre					
		25	50	100	200	500	
1	Central LA	7	9	5	9	31	
2	Northwest Coastal LA County	3	2	4	7	24	
3	Southwest Coastal LA County	3	3	5	9	25	
4	South Coastal LA County	3	3	5	10	29	
5	Southeast LA County	3	3	4	8	28	
6	West San Fernando Valley	3	2	3	7	25	
7	East San Fernando Valley	3	3	4	7	23	
8	West San Gabriel Valley	3	3	4	7	25	
9	East San Gabriel Valley	3	3	5	9	28	
10	Pomona/Walnut Valley	3	3	4	7	25	
11	South San Gabriel Valley	3	3	4	8	28	
12	South Central LA County	3	3	4	7	24	
13	Santa Clarita Valley	3	3	4	7	25	
15	San Gabriel Mountains	3	3	4	7	25	
16	North Orange County	3	3	4	7	25	
17	Central Orange County	3	3	4	8	27	
18	North Coastal Orange County	3	3	4	8	27	
19	Saddleback Valley	3	3	4	7	25	
20	Central Orange County Coastal	3	3	4	8	27	
21	Capistrano Valley	3	3	4	8	27	
22	Noth Coastal	3	3	4	8	28	
23	Metropolitan Riverside County	3	3	4	8	28	
24	Perris Valley	3	3	4	8	28	
25	Lake Elsinore	3	3	4	8	28	
26	Temecula Valley	3	3	4	8	28	
27	Anza Area	3	3	4	8	28	
28	Hemet/San Jacinto Valley	3	3	4	8	28	
29	Banning Airport	3	3	4	8	28	
30	Coachella Valley	3	3	4	8	28	
31	East Riverside County	3	3	4	8	28	
32	Northwest San Bernardino Valley	3	3	5	11	41	
33	Southwest San Bernardino Valley	3	3	5	11	41	
34	Central San Bernardino Valley	3	3	4	8	29	
35	East San Bernardino Valley	3	3	5	11	41	
36	Central San Bernardino Mountains	3	3	5	10	34	
37	West San Bernardino Valley	3	3	4	8	29	
38	East San Bernardino Mountains	3	3	5	10	34	

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

Adopted Air Quality CEQA thresholds of Significance – June 2, 2010

POLLUTANT	CONSTRUCTION-RELATED	OPERATIONAL-RELATED		
	Average Daily Emissions (lbs/day)	Indirect Average Daily Emissions (lbs/day)	Stationary Maximum Annual Emissions (tpy)
Criteria Pollutants and Precursors (Regional)			
ROG	54	180	40
NOx	54	42	40
PM_{10}	82	82	15
$PM_{2.5}$	54	54	10
Fugitive Dust - PM_{10}/$PM_{2.5}$	Best Management Practices	Same as Above	
Local CO	None	126 tpy	
GHGs	None	1,100 Metric Tons of CO_2e/yr OR 4.6 Metric Tons CO_2e/SP/yr (residents + employees)	
GHGs Stationary Sources	None	10,000 MT/yr	
Risk & Hazards	Same as Operational Thresholds	Increased cancer risk >10 in a million Increased non-cancer risk >1.0 Hazard Index Ambient $PM_{2.5}$ increase >2.0 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor	
Risk & Hazards (Individual Project)	Same as Operational Thresholds	Increased cancer risk >10 in a million Increased non-cancer risk >1.0 Hazard Index Ambient $PM_{2.5}$ increase >3.0 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor	

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Adopted Air Quality CEQA thresholds of Significance – June 2, 2010

POLLUTANT	CONSTRUCTION-RELATED	OPERATIONAL RELATED
Risk & Hazards – (Cumulative Thresholds)	Same as Operational Thresholds	Cancer > 100 in million, Non-Cancer > 10.0 Hazard Index, PM2.5 >0.8 µg/m³ annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor
Risk & Hazards – (Cumulative Thresholds)	Same as Operational Thresholds	Cancer > 100 in million, Non-Cancer > 10.0 Hazard Index, PM2.5 >0.8 µg/m³ annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous materials located near receptors or receptors located near stored or used acutely hazardous materials considered significant
Odors	None	District determination
Plan Level		
Criteria Pollutants & precursors	None	1. Consistency with Clean Air Quality Plan control measures 2. Projected VMT or vehicle trips increase less than projected increase
GHGs	None	Consistent with Qualified Greenhouse Gas Reduction Strategy (or similar criteria detailed in General Plan) OR § 15183 (a) Project consistent with general plan
Risks & Hazards	None	Overlay zones around existing and planned sources of TACs
Odors	None	Identify locations of odor sources in general plan
Accidental Release of Acutely Hazardous Air Pollutants	None	None
Ship/Wharf, Fleets, Transportation & Air Quality Plans		
GHG's, Criteria Air Pollutants and Precursors, and Toxic Air Contaminants	None	No net increase in emissions

COMMENT SET 10: ADAMS BROADWELL JOSEPH & CARDOZO ON BEHALF OF SAFER CALIFORNIA

4.2 WATER QUALITY

This section presents the environmental setting and impacts analysis of water quality issues associated with the granting of a new lease for Chevron USA, Inc. to operate its Long Wharf in San Pablo Bay. Information is provided on existing water and sediment quality in the San Francisco Bay Estuary and. In more detail for the project area. The regulatory setting on a Federal, State, and local level is also presented. Impacts and mitigation measures are then presented for the proposed Project, alternatives and cumulative environment. Water quality issues associated with renewing Long Wharf lease include the chronic water quality impacts of continuing operations and those related to a crude oil or product spill. Operational impacts to water quality could come from the release of segregated ballast water, runoff of contaminants on the pier, the leaching of contaminants from antifouling paints or sacrificial anodes from ships visiting the Long Wharf, the resuspension of sediments by ship propellers and bow thrusters or by maintenance dredging, and the disposal of dredged sediments. A spill of crude oil or product could have wide ranging effects on water quality in San Francisco Bay.

4.2.1 Environmental Setting

San Francisco Bay/Estuary Regional Setting

Introduction

San Francisco Bay/Estuary is the largest estuary on the West Coast of the contiguous United States and covers an area of 1,166 square kilometers (450 square miles). The majority of San Francisco Bay is roughly parallel to the coastline in a north to south orientation (Figure 4.2-1), about 5 miles inland from the coastline. Several bridges span the Bay connecting the urban areas along the edges of the Bay. These bridges also serve as dividing lines for subregions of San Francisco Bay. South San Francisco Bay is the large area south of the Bay Bridge, while the Central Bay is a relatively smaller area between the Bay Bridge and Richmond-San Rafael Bridge. San Francisco Bay's connection to the Pacific Ocean is a small opening in the landmass at the Golden Gate Bridge. San Pablo Bay is a large area north of the Richmond-San Rafael Bridge. From San Pablo Bay, the San Francisco Bay/Estuary extends eastward through the Carquinez Strait, past Suisun Bay, to the Delta of the Sacramento and San Joaquin Rivers.

Water quality of San Francisco Bay and Estuary Bay is affected by many factors, including:

- geographic configuration of the Bay;
- tidal exchange with the ocean;
- freshwater inflows;
- industrial and municipal wastewater discharges;

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4.2 Water Quality

Figure 4.2-1 – Depth Contours for San Francisco and San Pablo Bays.

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- dredging and dredge material disposal;
- runoff from highly urbanized areas adjacent to the Bay;
- agricultural and pasture land drainage from much of central California;
- marine vessel discharges;
- historic mining activities;
- leaks and spills; and
- atmospheric deposition.

Bathymetry

Depth contours for San Francisco Bay are shown on Figure 4.2-1. Water depths in San Francisco Bay range from zero to greater than 100 meters (m) at the entrance to the Bay at the Golden Gate Bridge. The deeper portions of the Bay are along the west side of Central Bay. The strong tidal currents in Central Bay result in significant sand waves along the bottom that have heights of 2 to 3 m.

Much of the Bay is relatively shallow. Approximately half the surface area of the Bay has water depths less than 2 m below MLLW when intertidal mudflats are included in the definition of the surface area (Conomos et al. 1985). The 10-m-depth contour extends about a third of the way into South San Francisco Bay. Dredging of a narrow channel has extended this contour through South San Francisco Bay. The 10-m-depth contour extends northward to Carquinez Strait in a fairly narrow shipping channel. Depth contours in San Francisco Bay/Estuary are very important because they direct the strong tidal flow in the Bay.

Tidal Exchange with the Ocean

Water quality of San Francisco Bay/Estuary is greatly affected by tidal exchange with the Pacific Ocean through the Golden Gate. The average tide range for the San Francisco Bay Area is about 5 feet of elevation change. With the large surface area of San Francisco Bay, this results in extremely large volumes (50x10^6 cubic feet, or 1 million acre feet) of water flowing into and out of the Bay every 6 hours with the change of tides. The bottom contours of the Bay direct the flow of the flooding tide into North and South San Francisco Bay. Large eddies are created in Central San Francisco Bay by the tidal exchange. Waters from the Pacific Ocean are generally saltier and cooler than the waters in San Francisco Bay, and thus the tidal exchange is generally in the deeper waters of the Bay.

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Freshwater Inflow

San Francisco Bay/Estuary is where fresh water from rivers that drain much of central California meets seawater. The Sacramento and San Joaquin Rivers are the largest sources of fresh water, contributing on average 19.3 and 3.4 million acre feet per year (MAF), respectively. The confluence of these two rivers and several other smaller rivers forms the extensive river Delta area of the San Francisco Bay/Estuary. These rivers' watersheds cover 155,400 square kilometers (60,000 square miles) (40 percent of the State) and convey 47 percent of the State's runoff (San Francisco Estuary Institute 1997). The volume and timing of these freshwater inflows vary dramatically from year to year depending on the amount of rain and snowfall. From 1980 through 2003, freshwater inflows to the San Francisco Bay/Estuary ranged from 6 MAF in 1980 to 65 MAF in 1983. Drought conditions occurred in 1988 through 1992 and 1994 (Brown et al. 2004). The wet season of 1993 marked the end of a 7 year drought and annual mean inflows also increased in 1995-1999. Normal or above normal rainfall has meant improved Delta inflows in recent years. Inflows to the Delta and Estuary were 15.4 MAF in water-year 2002 and 21 MAF in water-year 2003 (San Francisco Estuary Project 2004). The fresh water is generally warmer than the ocean water, and with its low salinity, is less dense than seawater. The surface waters of San Francisco Bay are strongly influenced by this freshwater inflow.

Circulation and Dispersion Capacity

Circulation and mixing are relatively complicated in San Francisco Bay because of the complex geometry and variable amount of freshwater flow during the year. Maintaining a sufficient Delta flow of fresh water is important for dispersing and flushing wastes from the Bay. The circulation of water in the Bay is driven primarily by tides, and to some extent, by wind-induced currents and estuarine circulation.

Tides are responsible for most of the water motion in the Bay. They are the dominant force for mixing and contribute greatly to the dispersion of material. Nevertheless, tidal motion is oscillatory and consequently contributes proportionally little to the net transport of material out of the Bay (Dawe 1982). Net transport out of the Bay is equivalent to freshwater flows into the Bay (including publicly owned treatment works [POTW] and industrial discharges) and the amount of new ocean water introduced by tides. Freshwater flows into the Bay from the Delta result in estuarine circulation that is driven by the density difference between fresh and saline ocean water. These flows vary greatly with location in the Bay and the amount of freshwater input. Vertical stratification of water quality parameters in the Bay varies greatly with the location and the amount of the freshwater flows.

During the winter, the water residence time is approximately 2 weeks for the northern reaches of the Bay, while in southern portions of the Bay, residence times are approximately 2 months. During the summer, water residence time is 2 months for the northern reaches of the Bay, while in the southern portions of the Bay, residence times are 5 months (Conomos 1979).

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Wind mixing, like tidal mixing, contributes greatly to local mixing, but contributes very little to net flow of fluids, sediments, and pollutants out of the Bay.

Industrial and Municipal Wastewater Discharges

San Francisco Bay/Estuary receives inputs from industrial and municipal discharges. Table 4.2-1 shows the permitted dischargers in the Bay. Many of the industrial discharges are in San Pablo Bay and the upper reaches of the Bay. There are six refineries in this area and several chemical companies. Chevron's Refinery has a flow of 6 to 8 million gallons per day (mgd). Chevron's permitted discharge consists of biologically treated process water followed by granular activated carbon (GAC) filtration. The source of this process water is from plant operations, cooling water tower blowdown, groundwater extraction, miscellaneous sources, and potentially stormwater during the wet season. Figure 4.2-2 shows the location of major point source dischargers in San Francisco Bay. The Bay receives treated wastewater from several municipal dischargers that serve the large metropolitan areas surrounding the Bay. Municipal discharges are the largest point source discharges to San Francisco Bay. Permitted dry weather flow is 665 mgd for municipal discharges to San Francisco Bay (RWQCB 1995). The average dry weather flow is less than this maximum permitted amount. Effluent discharges are considered to currently be a significant pathway for two high priority contaminants, selenium and organic/hospitable pesticides (Davis et al. 2000).

Table 4.2-1
List of Major Effluent Discharges to San Francisco Bay and Their Average Daily Discharge Volumes for 1998

Facility	Flow (MGD)	Treatment
San Jose/Santa Clara WPCP	133	Advanced
East Bay MUD	97	Secondary
City & Co. of San Francisco Southeast	87	Secondary
Union Sanitary District – Alvarado	31	Secondary
Central Contra Costa S.D.	52	Secondary
City of Palo Alto	29	Advanced
City of Sunnyvale	18	Advanced
South Bayside System Authority	21	Secondary
Fairfield-Suisun Sew District	17	Secondary
Vallejo Sanitation & Flood Cont.	14	Secondary
LAVWMA, Livermore-Amador Valley WMA	NA	Secondary
South San Francisco/San Bruno WQCP	11	Secondary
C&H Sugar	1	Activated sludge
Tosco Corp. at Avon	5	Pond/RBC/carbon
Tosco Corp. at Rodeo	3	Pond/RBC/carbon
Shell Oil Company	8	Activated sludge/carbon
EXXON	3	Activated sludge/carbon
Chevron USA	8	Activated sludge/wetland
Source: Davis et al. 2000		

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Figure 4.2-2 – Location of Major Industrial Municipal Discharges in San Francisco Bay

4.2 Water Quality

Marine Vessel Discharges

Marine vessels are also sources of various pollutants to the estuary. The discharge of untreated sewage and gray water from commercial and recreational vessels has caused concern in various parts of the estuary. Vessel discharges, including release of bilge waters, are prohibited within the Bay. However, an unknown amount of wastes is believed to be illegally discharged directly into estuarine waters. This type of effluent contributes coliform bacteria, biochemical oxygen-demanding substances, nutrients, oil and grease, and suspended solids. In addition, the discharge of ballast water from large commercial vessels has introduced exotic species of aquatic organisms into the estuary. The introduction of exotic species via ship's ballast water has severely disturbed the aquatic communities of San Francisco Bay. The problems of exotic species introductions are discussed in detail in Section 4.3, Biological Resources. Accidental spills of petroleum products from ships are generally small and result from operator errors, handling accidents at terminals, and damage to ships but add to chronic pollution. Tanker accidents have resulted in major oil spills in San Francisco Bay.

Dredging

Every year, an average of 6 million cubic yards (mcy) of sediments must be dredged from shipping channels and related navigation facilities throughout San Francisco Bay. In the past, the majority (80 percent) of dredged material was disposed at designated sites in the Bay. Today there are three in-Bay disposal sites designated for multiple users: the Carquinez Strait, San Pablo Bay, and Alcatraz Island disposal sites. The Alcatraz site is the most heavily used of the in-Bay sites, receiving up to 4 mcy of sediment per year from Central and South Bay dredging projects. Another 1 to 2 mcy of dredged material per year is disposed at the Carquinez Strait site, and up to 0.5 mcy at the San Pablo Bay site. Two additional aquatic disposal sites, the Suisun Bay site and the San Francisco Bar Channel site just outside the Golden Gate, are restricted to disposal of clean sand from Corps maintenance dredging projects. The LTMS for Placement of Dredged Material in the San Francisco Bay Region calls for a balanced upland/wetland reuse and ocean disposal (Corps et al. 1998). This preferred alternative includes low in-Bay disposal (approximately 20 percent compared to the present 80 percent), medium ocean disposal (approximately 40 percent), and medium upland/wetland reuse (approximately 40 percent). The transition from in-Bay disposal to beneficial use of dredged material will be achieved gradually over a 12-year transition period (USACE, USEPA, BCDC, and SWRCB 2001). The 12-year transition begins with an overall in-Bay disposal volume of 2.8 mcy plus a contingency volume (for unforeseen events) of up to 250,000 cubic yards. During this period, the volume of material allowed for in-Bay disposal will decrease by 387,500 cubic yards every 3 years. Dredged material disposal is considered to be a minor pathway for the loading of contaminants to San Francisco Bay (Davis et al. 2000). Copper is the only contaminant where this pathway may be significant.

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Urban Runoff

Urban runoff is the water from urban areas that flows into the Estuary in streams and storm drains. It includes rainwater, excess irrigation flows, and water used for washing down sidewalks and parking lots.

Sources of pollutants in urban runoff are extremely varied and include commercial, industrial, and residential land uses, as well as pollutants from managed open space areas such as parks, cemeteries, planted road dividers, and construction sites. Human activities in these areas, such as the application of pesticides and fertilizers to gardens and landscaping, operation of motor vehicles, and construction of roads and buildings, all contribute pollutants to urban runoff.

A recent study of contaminant loads from stormwater to the San Francisco Bay region indicated that residential areas appeared to be a large contributor to all of the metals (Davis et al. 2000). Commercial and industrial areas generate substantial loads of phosphate, cadmium, lead, zinc, and other contaminants.

Nonurban Runoff

Nonurban runoff refers to runoff from agricultural lands, forests, pasture, and natural range. It includes rainfall runoff, excess irrigation return flows, and subsurface agricultural drainage. Pollutants of concern in nonurban runoff include trace elements, synthetic organic pollutants (particularly pesticides), and solvents used for pesticide application.

Atmospheric Deposition

Contaminants in the atmosphere deposit on both land and water surfaces. Deposition to the land results in transfer to the Bay in stormwater runoff. Available information suggests that direct atmospheric deposition may be a significant pathway for loading of dioxins, PAHs, PCBs, and mercury (Davis et al. 2000).

Project Area (San Pablo Bay)

The Long Wharf is located in Central San Francisco Bay on the east side of the Bay, just south of the Richmond-San Rafael Bridge. The area examined herein surrounds the Long Wharf and extends from the Bay Bridge in the south to the Carquinez Straits in the north, and westward to the Golden Gate Bridge. Particular emphasis is placed on information on water and sediment quality in the vicinity of the Long Wharf.

Circulation

Water circulation in the project area is greatly affected by and related to tides. Tides in the area are of a mixed semi-diurnal type with two highs and lows of unequal portions each 24-hour period and 50-minute tide cycle. Tides at the Long Wharf have a mean high water of 5.3 feet, mean sea level of 3.2 feet, and a mean lower low tide of 0.0 feet.

4.2 Water Quality

Flood tidal currents occur between a low tide and a subsequent high tide. The maximum tidal current occurs approximately 1.5 hours after the peak rate of change in tide height. Magnitude of the flooding tide is proportional to the rate of change in tide height. For example, a 1.8 knot (93 centimeters per second [cm/sec]) peak flood current occurs when the tide increases from -0.9 to 5.5 feet in 7 hours. At Red Rock, approximately 2 km (1.3 miles) from the Long Wharf, peak flooding tidal currents flow toward 317 degrees true, while peak ebbing tides flow toward 174 degrees true. Ebb tidal currents at Red Rock can exceed 2.2 knots (113 cm/sec) when tide height decreases from 6.67 feet to -0.91 feet in 6.5 hours. These two examples are relatively large changes in tide, and slower tidal currents occur with smaller changes in tide height.

Water Column Characteristics

The amount of Delta runoff greatly affects water column characteristics in the project area and results in a great variance in water quality conditions from year to year. The amount of Delta outflow determines water mass characteristics for much of the project area. During periods of high Delta outflow, the waters in the project area are estuarian with low salinity (5 to 10 ppt). During low Delta outflows (summer/fall and dry years), the waters in the project area are more oceanic (with salinity of 25 to 33 ppt).

During periods of high Delta outflow, the dissolved oxygen concentrations of surface waters were between 80 and 90 percent saturation (Cloern 1987). This is due to the higher loads of suspended solids when the Delta has high outflow. During 1984, when Delta outflow was low, dissolved oxygen throughout the Bay was generally 100 to 110 percent saturation.

Water Quality

The San Francisco Bay Basin Plan designates beneficial uses for waterbodies covered by the plan (RWQCB 1995). Designated beneficial uses for waters in the project area (San Francisco Bay Central) include ocean commercial and sport fishing, estuarine habitat, industrial service supply, fish migration, navigation, industrial process supply, preservation of rare and endangered species, water contact recreation, noncontact water recreation, shellfish harvesting, fish spawning, and wildlife habitat.

The project area, including both Central Bay and San Pablo Bay is on the California 303(d) list of impaired waterbodies for a variety of pollutants (Table 4.2-2). Central Bay is on the 303(d) list for chlordane, DDT, diazinon, dieldrin, exotic species, furan compounds, mercury, PCBs, and selenium (SWRCB 2003). San Pablo Bay is on the 303(d) list for all of the pollutants listed for Central Bay and for nickel.

4.2 Water Quality

Table 4.2-2
Waterbodies of the San Francisco Bay Area on California 303(d) List of Impaired Waterbodies and TMDL Priority Schedule

Waterbody	Pollutants/Stressors	Priority	Source
San Francisco Bay, Central	Chlordane (this listing was made by USEPA)	Low	Nonpoint Source
	DDT (this listing was made by USEPA)	Low	Nonpoint Source
	Dieldrin (this listing was made by USEPA)	Low	Nonpoint Source
	Dioxin (dioxin-like) (this listing was made by USEPA)	Low	Unknown Nonpoint Source
	Exotic Species (disrupt natural food web; change pollutant availability in food chain; endanger food availability to native species)	Medium	Ballast Water
	Furan Compounds (this listing was made by USEPA)	Low	Atmospheric Deposition
	Mercury (current data indicate fish consumption and wildlife consumption impacted uses; health consumption advisory in effect for multiple fish species and bivalves; major source is historic gold mining sediments and tidal marsh conversion; mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources)	High	Industrial Point Sources Municipal Point Sources Resource Extraction Atmospheric Deposition Natural Sources Nonpoint Source
	PCBs (non dioxin-like) (interim health advisory for fish; uncertainty regarding water column concentration data)	High	Unknown Nonpoint Source
	PCBs (dioxin-like) (this listing was made by USEPA)	Low	Unknown Nonpoint Source
	Selenium (affected use is one branch of the food chain; most sensitive indicator is hatchability in nesting diving birds; significant contributions from oil refineries (control program in place) and agriculture (carried downstream by rivers); exotic species have made food chain more susceptible to accumulation of selenium; health consumption advisory in effect for scaup and scoter (diving ducks); low TMDL priority because individual Control Strategy in place)	Low	Industrial Point Sources Agriculture Natural Sources Exotic Species

4.2 Water Quality

Table 4.2-2 (Continued)
Waterbodies of the San Francisco Bay Area on California 303(d) List of Impaired Waterbodies and TMDL Priority Schedule

Waterbody	Pollutants/Stressors	Priority	Source
San Pablo Bay	Chlordane (this listing was made by USEPA)	Low	Nonpoint Source
	DDT (this listing was made by USEPA)	Low	Nonpoint Source
	Dieldrin (Dieldrin levels cause water column toxicity. Two patterns: pulses through marina systems linked to agriculture application in late winter and pulse from residential land use areas linked to homeowners pesticide use in late spring, early summer. Chlorpyrifos may also be the cause of toxicity; more data needed, however.)	Low	Nonpoint Source
	Dioxin (this listing was made by USEPA)	Low	Nonpoint Source
	Furan Compounds (this listing was made by USEPA)	Low	Atmospheric Deposition
	Exotic Species (disrupt natural food web; change pollutant availability in food chain; disrupt food availability to native species)	Medium	Ballast Water
	Mercury (current data indicate fish consumption and wildlife consumption impacted uses; health consumption advisory in effect for multiple fish species including striped bass and shark. Major source is historic gold mining sediments and tidal marsh conversion; mercury mining; most significant ongoing source is erosion and drainage from abandoned mines; moderate to low level inputs from point sources)	High	Municipal Point Source Resource Extraction Atmospheric Deposition Natural Sources Nonpoint Source
	Nickel (This listing was made by USEPA)	Low	Unknown Source
	PCBs (non dioxin-like) (interim health advisory for fish; uncertainty regarding water column concentration data)	High	Unknown Nonpoint Source
	PCBs (dioxin-like) (this listing was made by USEPA)	Low	Unknown Nonpoint Source
	Selenium (affected use is one branch of the food chain; most sensitive indicator is hatchability in nesting diving birds; significant contributions from oil refineries (control program in place) and agriculture (carried downstream by rivers); exotic species have made food chain more susceptible to accumulation of selenium; health consumption advisory in effect for scaup and scoter (diving ducks); low TMDL priority because individual Control Strategy in place)	Low	Industrial Point Sources Agriculture Natural Sources Exotic Species

Source: SWRCB 2003

Since 1993, the San Francisco Estuary Institute has conducted a Regional Monitoring Program (RMP) for monitoring trace substances in water, sediment, and bivalves (San Francisco Estuary Institute 1998, 2000, 2001, 2005). A total of 24 stations for RMP water and sediment sampling are located between the rivers in the northeast Bay and the

Table 4.2-3
Ranges of Contaminant Concentrations (µg/L) in Four Seasonal Sets of Water Samples Taken at Red Rock (BC 60) Near the Long Wharf for 1997-2001
(All Data Shown in Dissolved Concentrations)

Trace Elements	1997	1998	1999	2000*	2001*
Ag	0.001	0.002 - 0.009	0.0035 - 0.0042	NA	0.0024 - 0.0031
As	1.22 - 2.02	1.37 - 1.66	1.30 - 1.72	1.51 - 1.63	1.54 - 1.85
Cd	0.02 - 0.08	0.01 - 0.05	NA	NA	0.048 - 0.072
Cr	0.11 - 0.27	0.18 - 0.38	NA	NA	NA
Cu	1.1 - 1.6	1.2 - 1.6	0.7 - 0.8	NA	0.58 - 0.88
Ni	1.3 - 1.8	1.2 - 2.1	0.9 - 1.0	NA	0.72 - 0.96
Pb	0.008 - 0.036	0.004 - 0.034	0.008 - 0.012	NA	0.010 - 0.012
Zn	0.3 - 0.7	0.1 - 1.1	0.5 - 0.7	NA	0.50 - 0.65
Hg	0.0002 - 0.0012	0.0005 - 0.0012	0.0008	0.00016 - 0.00037	0.0006
Se	0.06 - 0.17	0.08 - 0.17	0.08 - 0.11	ND - 0.199	ND - 0.09
Organic Contaminants					
Sum of PAHs	0.00439 - 0.007909	0.0038	0.0025 - 0.0089	0.0024	0.0032
Sum of PCBs	0.000076 - 0.000117	0.00004 - 0.00012	0.00005 - 0.000107	0.000078	0.000108
Chlorpyrifos	0.000072 - 0.0002	0.000074 - 0.00031	0.0000031 - 0.000071	0.000032	0.0000057
Diazinon	0.00049 - 0.0053	0.00039 - 0.004	0.0019 - 0.0044	0.00026	ND
p,p'-DDD	0.000004 - 0.000180	0.000057	0.000027 - 0.000037	0.000084	0.000031
p,p'-DDE	0.000031 - 0.000091	0.000024 - 0.00006	0.000012 - 0.000035	0.000012	0.000011
p,p'-DDT	0.000017	0.0000048	0.0000012 - 0.000004	ND	NA
Sum of Chlordanes	0.000059 - 0.000113	0.000037 - 0.000056	0.000039 - 0.000044	0.000068	0.000019

* = Two sampling events for trace elements (winter and summer); one sampling set for organic contaminants (summer).
NA = Data were Not Available.
ND = Not Detected.
Source: SFEI 2000, 2002.

sloughs in the South Bay. Stations have been grouped into major regions including: Southern Sloughs, South Bay, Central Bay, Northern Estuary, Estuary Interface, and Rivers. The Rivers Region has stations at the Sacramento and San Joaquin Rivers. Chevron's Long Wharf is located in Central Bay between Station BC41 at Point Isabel and Station BC60 at Red Rock. Central Bay includes the waters between the Golden Gate, Bay, and Richmond-San Rafael Bridges. In 2002 the RMP switched from the 24 designated stations to a stratified random sampling scheme (San Francisco Estuary Institute 2005). Water and sediment samples are randomly allocated into five hydrogeographic regions of the estuary. These regions are Suisun Bay, San Pablo Bay, Central Bay, South Bay, and Lower South Bay. Surface water samples are collected at a depth of 1 meter at each station and are subsequently analyzed for dissolved organic carbon, suspended solids, dissolved and total heavy metal concentrations, PAH, PCB, DDT, pesticides, and HCH. In general the RMP has found that the Central Bay region has the lowest amounts of dissolved metals in water.

In 2002 and 2003 concentrations of most metals and organic contaminants in the water column were highest in the southern regions of San Francisco Estuary (San Francisco Estuary Institute 2005). Much of the South Bay and Lower South Bay lie adjacent to watersheds with regions of urbanization, agriculture, and historic mercury mining. The southern reach also receives treated wastewater effluent from three municipal treatment facilities. Dissolved silver was highest at a station in the Central Bay. In 2003, maximum total concentrations of copper, mercury, nickel, lead and zinc were measured in San Pablo Bay and were associated with high suspended sediment concentrations. Concentrations of dissolved and total PAHs were highest in the San Pablo and Central Bay regions in 2003.

With the exception of copper in the South Bay, all regions of the Bay were below California Toxic Rule thresholds for dissolved metals and PAHs in 2003 (San Francisco Estuary Institute 2005). On the other hand, in 2003 all regions of the Bay were above the California Toxics Rule threshold for protection of human health for total PCBs.

No data on concentrations of chemicals in the water column are available for the immediate vicinity of the Long Wharf. RMP station BC60 at Red Rock approximately 2 kilometers (1.3 miles) from the Long Wharf is the closest available site with water column data. Table 4.2-3 shows the range of contaminant concentrations recorded at this station each year between 1998 and 2001. After 2001, the RMP stopped sampling set stations and switched to a stratified random sampling scheme. All contaminant concentrations measured in the water at Red Rock through 2001 were well below criteria in the California Toxics Rule.

Sediments

The RMP sampled sediments at 47 stations throughout San Francisco Bay in 2000 (San Francisco Estuary Institute 2005). Stations were selected according to a stratified random sampling design

In 2003 the highest sediment contaminant concentrations were measured at stations in San Pablo Bay, Central Bay, and lower South Bay. The highest concentrations of arsenic, mercury, and nickel were measured in San Pablo Bay, while the highest concentrations of cadmium, methylmercury and PAHs were documented at sampling locations in Central Bay. Central Bay sediments were significantly higher in PAHs than all other regions. Table 4.2-4 shows the number of contaminants that exceeded various sediment quality guidelines in 2003 as well as the results of toxicity tests with amphipods and bivalves. The highest number of ER-L exceedances was observed in the Central Bay. However, most of the sediments at stations in the project area (Central Bay and San Pablo Bay) were not toxic to amphipods and bivalves.

Site-specific data on contaminant levels at the Long Wharf are available from sediment sampling done by Chevron to support permit applications for maintenance dredging at the Long Wharf. Table 4.2-5 shows the concentration of contaminants in sediment near the Long Wharf for sets of samples taken between 1991 and 2001. Arsenic, chromium, copper, and mercury exceeded the ER-L level in some of the samples, but the concentrations of these metals in sediments at the Long Wharf generally were below the Ambient Sediment Concentration thresholds for San Francisco Bay (arsenic at the Long Wharf exceeded the threshold in 1991 only, and chromium exceeded the threshold in 1998). Acenaphthene in Long Wharf sediments exceeded the ER-L in some samples in some years, and also was above the San Francisco Bay Ambient Sediment Concentration threshold in some samples. Fluorene and fluoranthene exceeded the ER-L and Ambient Sediment Concentration threshold in one sample in 1993. Fluorene also exceeded the ER-L in one sample in 2001. DDT exceeded the ER-L in Long Wharf sediment in 1998 and 2001 and one sample exceeded the Ambient Sediment Concentration threshold in 2001. PCBs at the Long Wharf exceeded the ER-L and the Ambient Sediment Concentration threshold in some samples in 2001. Nickel in Long Wharf sediments exceeded the ER-M in most years, but nickel concentrations at the Long Wharf generally were below the Ambient Sediment Concentration threshold for San Francisco Bay. Nickel appears to be naturally high within the San Francisco Bay watershed (San Francisco Estuary Institute 2002). Toxicity tests indicated relatively low toxicity for Long Wharf sediments. In summary these data indicate that sediments in the vicinity of the Long Wharf contain concentrations of contaminants that may have some adverse effects on benthic organisms, but that sediment concentrations were generally typical of the less contaminated portions of San Francisco Bay.

Table 4.2-6 shows the most recent (2005) data on contaminants in sediments at the Long Wharf. A PAH compound, acenaphthene, exceeded the ER-L and the Ambient Sediment Concentration thresholds in two samples. A second PAH compound, fluorine, exceeded the ER-L in the same two samples and Ambient Sediment Concentration threshold in one of those samples. In addition, one sample had a very high concentration of tributyltin.

Table 4.2-4
Summary of Sediment Quality for the RMP in 2003

Station Code	Site Name	Date	% Fines	No. of ASC Above Guidelines	No. of ERL Above Guidelines	No. of ERM Above Guidelines	Toxic to Amphipods	Toxic to Bivalves
BG20	Sacramento River	8/18/03	16	0*	1	1	No	Yes
BG30	San Joaquin River	8/18/03	73	0	3	1	No	Yes
SF21	Grizzly Bay	8/18/03	99	0	4	1	Yes	Yes
SU001S	Suisun Bay	8/18/03	72	1*	1	1	No	No
SU002S	Suisun Bay	8/18/03	18	1*	1	1	-	-
SU006S	Suisun Bay	8/18/03	95	0	3	1	No	Yes
SU010S	Suisun Bay	8/18/03	9	0*	NA	NA	-	-
SU011S	Suisun Bay	8/18/03	100	1	3	1	No	Yes
SU012S	Suisun Bay	8/18/03	93	0	4	1	-	-
SU013S	Suisun Bay	8/18/03	50	0	2	1	No	Yes
SU014S	Suisun Bay	8/18/03	57	0	2	1	-	-
SD01	Pinole Point	8/20/03	91	0	3	1	No	No
SPB001S	San Pablo Bay	8/19/03	98	0	4	1	Yes	No
SPB002S	San Pablo Bay	8/20/03	96	0	3	1	-	-
SPB005S	San Pablo Bay	8/20/03	96	0	3	1	No	No
SPB010S	San Pablo Bay	8/20/03	84	0	4	1	-	-
SPB011S	San Pablo Bay	8/19/03	99	0	3	1	No	No
SPB012S	San Pablo Bay	8/19/03	100	0	4	1	-	-
SPB013S	San Pablo Bay	8/19/03	97	0	4	1	No	No
SPB0735	San Pablo Bay	8/20/03	97	0	4	1	-	-
BC11	Yerba Buena Island	8/20/03	70	1	3	1	No	Yes
CB001S	Central Bay	8/21/03	71	1	5	1	No	No
CB002S	Central Bay	8/22/03	57	5	4	1	-	-
CB010S	Central Bay	8/21/03	88	2	5	1	-	-
CB011S	Central Bay	8/20/03	99	0	3	1	No	No
CB012S	Central Bay	8/21/03	58	25	16	1	-	-
CB013S	Central Bay	8/21/03	78	1	6	1	No	No
CB014S	Central Bay	8/21/03	72	5	7	1	-	-
CB074S	Central Bay	8/21/03	49	0	2	1	No	No
BA41	Redwood Creek	8/22/03	71	0	3	1	Yes	No
SB001S	South Bay	8/22/03	47	0	1	0	Yes	No
SB002S	South Bay	8/25/03	93	0	3	1	-	-
SB009S	South Bay	8/21/03	84	0	3	0	No	No
SB010S	South Bay	8/22/03	82	0	2	1	-	-
SB011S	South Bay	8/22/03	97	2	4	1	No	No
SB012S	South Bay	8/22/03	68	0	2	1	-	-
SB013S	South Bay	8/22/03	77	0	3	1	Yes	No
SB014S	South Bay	8/25/03	>99	0	3	1	-	-

4.2 Water Quality

Table 4.2-4 (Continued)
Summary of Sediment Quality for the RMP in 2003

Station Code	Site Name	Date	% Fines	No. of ASC Above Guidelines	No. of ERL Above Guidelines	No. of ERM Above Guidelines	Toxic to Amphipods	Toxic to Bivalves
LSB0018	Lower South Bay	8/28/03	101	3	2	1	No	Yes
LSB0025	Lower South Bay	8/28/03	100	0	1	1	-	-
LSB0085	Lower South Bay	8/28/03	100	0	3	1	Yes	No
LSB0108	Lower South Bay	8/28/03	96	3	4	1	-	-
LSB0139	Lower South Bay	8/28/03	40	2*	2	1	No	No
LSB0125	Lower South Bay	8/28/03	98	0	3	1	-	-
LSB0135	Lower South Bay	8/28/03	99	0	3	1	No	No
LSB0145	Lower South Bay	8/28/03	100	0	3	1	-	-
BA10	Corvin Creek	8/28/03	50	0	2	0	Yes	No

Source: San Francisco Estuary Institute 2003
NA = not available, - = not tested, * = indicates number of exceedances driven ABE guidelines for sandy samples.

4.2 Water Quality

Table 4.2-5
Physical and Chemical Test Results from Sediment Samples Taken at the Long Wharf During 1991-2001

Analyte	1991	1993	1995	1998	2001
Grain Size (percent)					
Gravel	0.0	0.0 - 0.3	0.0	0.0 - 0.1	0 - 4.6
Sand	5.5 - 12.5	7.2 - 15.8	4.0 - 11.9	2.1 - 6.9	2 - 39.5
Silt	39.8 - 45.2	42.7 - 57.2	38.6 - 49.4	33.8 - 37.9	3.6 - 37.6
Clay	45.8 - 54.5	37.6 - 44.1	46.3 - 59.4	56.0 - 64.4	0 - 60.3
Total Organic Carbon (%)	0.8	0.8	0.8 - 1.6	1.3 - 1.45	0.12 - 1.37
Metals (mg/kg)					
Antimony	<2.1 - <2.3	NA	NA	NA	NA
Arsenic	**20.1* - 29.8***	4.8 - 7.5	**9.0*** - 10.1*	**9.8* - 12.2***	4.3 - 9.9*
Cadmium	0.2 - 0.3	<0.1 - 0.2	0.1 - 0.2	0.3 - 0.32	0.08 - 0.31
Chromium	**56.2 - 82.8***	**76.3 - 96.4**	**77.5 - 92.2***	**126* - 134***	**26.1 - 81.4***
Copper	**38.3 - 55.1***	**19.5 - 76.8***	**47.8* - 67.5***	**51.0* - 95.2***	6.1 - 44.3*
Lead	17.6 - 25.1	8.6 - 13.8	33.3 - 36.6	15.9 - 19.7	5.8 - 25.8
Mercury	**0.2* - <0.23**	**<0.10 - 0.2***	**0.2* - 0.3***	0.109 - 0.1	**0.0* - 0.3***
Nickel	**58.6*** - 69.5***	**42.8* - 46.3***	**77.5*** - 94.4***	**103*** - 113***	**26.6* - 83.2***
Selenium	0.3	<0.1 - 0.2	0.4 - **0.7**	<0.1 - **0.88**	<0.06 - 0.3
Silver	0.2 - 0.4	0.2 - 0.3	<0.084 - <0.134	0.4 - 0.46	0.023 - 0.263
Zinc	<107 - 114	54.0 - 67.4	100 - 123	104 - 121	20.8 - 96.7
Butyltins (µg/kg)					
Monobutyltin	<2.1 - <3.3	<0.5 - 1.0	<2.2 - <3.1	<1	0.38 - 1.6
Dibutyltin	<2.1 - <2.3	<0.5	<2.2 - <3.1	<1	0.9 - 6.3
Tributyltin	14 - 37	<2.4 - <17	<2.2 - <3.1	<1	1.8 - 190
Tetrabutyltin	<2.1 - <2.3	<0.5	<2.2 - <3.1	<1	<0.49 - <0.62
Polycyclic Aromatic Hydrocarbons (µg/kg)					
Naphthalene	NA	**<20 - 50**	<20	2* - 31	<2.3 - 22
Acenaphthylene	NA	<20	<20	<20	<1.7 - 13
Acenaphthene	NA	**<20 - 85***	<20	**<20 - 33***	**<1.6 - 29***
Fluorene	NA	**<20 - 49***	<20	<20	**<1.4 - 24***
Phenanthrene	NA	**<20 - 190**	<20	59 - 102	4 - 150
Anthracene	NA	<20 - 40	<20	37 - 46	**<1.6 - 53**
Fluoranthene	NA	**90 - 330***	<20 - 34	116 - 202	8 - 270
Pyrene	NA	**86 - 280**	**<20 - 162**	162 - 221	8 - 260
Chrysene	NA	42 - 120	<20	68 - 84	3 - 130
Benzo(a)anthracene	NA	**26 - 110**	<20	34 - 63	2 - 110
Benzo(k)fluoranthene	NA	23 - 66	<20	49 - 75	3 - 110
Benzo(b)fluoranthene	NA	**36 - 170**	<20	49 - 75	2 - 110
Benzo(a)pyrene	NA	**48 - 210**	<20	70 - 105	4 - 150
Indeno(1,2,3-cd)pyrene	NA	**39 - 130**	<20	33 - 57	4 - 150
Dibenz(a,h)anthracene	NA	<20	<20	<20	<2.1 - 18
Benzo(g,h,i)perylene	NA	**36 - 120**	<20	26 - 74	3 - 140
2-Methylnaphthalene	NA	NA	NA	NA	<3.1 - 11
Dibenzofuran	NA	NA	NA	NA	<1.4 - 13
Total PAHs	NA	**749 - 1699**	**<20 - 296***	**764 - 1086**	55 - 1771

Table 4.2-6
Summary of Composite Testing Results at Berths 1, 2, 3, 4, 5 and Bargeway
Long Wharf 2005, Richmond, California

Analyte[1]	Alkatraz Environs Database[1]	SAMPLE LOCATION 5-COMP	2/3-COMP	4-COMP	5-COMP	SD567755[4]	B-5-COMP	B-B-COMP
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/kg)								
Naphthalene	NA	17	51	3.6 J	17	12	16	14
2-Methylnaphthalene	NA	3.7 J	18	2.1 J	18	4.6 J	6.6	5.8
Acenaphthylene	NA	6.3	18	8.6	7.7	7.3	13	14
Acenaphthene	NA	5.5	110*	5.6	34*	7.0	9.8	7.9
Fluorene	NA	6.3	89*	7.4	39*	9.5	13	9.6
Dibenzothiophene	NA	2.8 J	43	2.0 J	11	4.3 J	5.7	3.6 J
Phenanthrene	NA	52	220	60	82	78	110	110
Anthracene	NA	18	81	24	23	36	39	31
Fluoranthene	NA	110	430	170	150	230	290	230
Pyrene	NA	130	400	210	220	210	330	240
Benzo(b)fluoranthene	NA	46	120	78	80	77	130	99
Benzo(k)fluoranthene	NA	44	120	71	53	66	100	56
Benzo(a)anthracene	NA	93	190	71	80	94	110	86
Chrysene	NA	99	210	87	85	120	140	120
Benzo(a)pyrene	NA	71	220	130	110	94	160	110
Indeno(1,2,3-cd)pyrene	NA	61	160	120	100	87	160	110
Dibenzo(a,h)anthracene	NA	7.1	23	12	9.6	11	21	18
Benzo(g,h,i)perylene	NA	99	140	120	100	83	150	110
Total PAHs[2]	642	742	2,557	1,202	1,164	1,183	1,851	1,399
Organotins (µg/kg)								
Tributyltin	NA	<2.1	5.70 J	<2.1	<2.1	<2.0	<2.0	<2.0
Triphenyltin	1.05	2.7	130	1.8 J	1.8 J	1.7 J	1.4 J	2.8
Dibutyltin	0.6	0.96 J	4.6	2.4	1.3 J	1.3 J	1.3 J	2.0 J
Monobutyltin	NA	0.86 J	11 J	0.46 J	0.86 J	0.57 J	0.35 J	0.71 J
Solids (percent – wet weight)								
Total Solids	NA	48.5	48.7	48.9	48.3	49.9	51.7	51.2
Grain Size (percent)								
Gravel	3.8	7.8	0.2	0.0	0.0	0.2	2.0	0.0
Sand	92.2	5.6	7.5	7.7	3.6	3.1	6.3	5.8
Silt	1.2	46.6	31.0	47.5	52.2	49.2	48.7	52.4
Clay	1.8	42.9	36.1	45.0	44.8	47.5	36.8	39.8

* = exceeds ER-L (Effects Range-Low)
Bold = exceeds Ambient Sediment Concentration for San Francisco Bay
Source: Chevron

Table 4.2-5 (Continued)
Physical and Chemical Test Results from Sediment Samples Taken at the Long Wharf During 1991-2001

Analyte	1991	1993	1995	1998	2001
Physical and Chemical Test Results from Sediment Samples Taken at the Long Wharf during 1991-2001 (Cont.)					
Pesticides (µg/kg)					
4,4'-DDD	NA	<35	<2	<1 - 2	0 - 3
4,4'-DDE	NA	<10	<2	1 - 2	1 - 2
4,4'-DDT	NA	<35	<2	<2	<0.35 - 7*
Aldrin	NA	<12	<2	<2	<0.36 - <0.82
alpha-BHC	NA	<6.2	<2	<2	<0.21 - <2.2
beta-BHC	NA	<12	<2	NA	<0.19 - <0.32
Chlordane	NA	<120	<35	<2 - 3	NA
Chlordane-alpha	NA	NA	NA	<2	<0.22 - <1.1
Chlordane-gamma	NA	NA	NA	<2	<0.19 - <2.2
delta-BHC	NA	<12	<2	<2	<0.47 - <0.79
Dieldrin	NA	<12	<2	<2	<0.39 - <0.66
Endosulfan I	NA	<12	<2	<2	<0.16 - <0.81
Endosulfan II	NA	<25	<2	<2	<1.1 - <4.3
Endosulfan Sulfate	NA	<25	<25	<2	<0.23 - <0.39
Endrin	NA	<12	<2	<2	<0.27 - <1.1
Endrin Aldehyde	NA	<31	<10	<2	<0.45 - <0.76
Heptachlor	NA	<12	<2	<2	<0.10 - <0.29
Heptachlor Epoxide	NA	<12	<10	<2	<0.18 - <0.29
gamma-BHC (Lindane)	NA	<6.2	<2	<2 - 4	<0.31 - <0.52
Toxaphene	NA	<500	<25	<2	<7.1 - <12
Endrin Ketone	NA	NA	NA	NA	<0.20 - <0.34
Methoxychlor	NA	NA	NA	NA	<0.21 - <0.34
Total DDTs	NA	NA	NA	NA	1 - 5
Polychlorinated biphenyls (µg/kg)					
Aroclor 1016	NA	<250	<20	<10	<3 - <5.1
Aroclor 1221	NA	<250	<20	<10	<3 - <5.1
Aroclor 1232	NA	<250	<20	<10	<3 - <5.1
Aroclor 1242	NA	<250	<20	<10	<3 - <5.1
Aroclor 1248	NA	<250	<20	<10	<3 - <5.1
Aroclor 1254	NA	<250	<20	<10	6 - 48*
Aroclor 1260	NA	<250	<20	<10	<3 - 8
Total PCBs	NA	<250	<20	<10	6 - 48*

* = exceeds ER-L (Effects Range - Low)
† = exceeds ER-M (Effects Range - Median).
bold = exceeds Ambient Sediment Concentration for San Francisco Bay.
Source: Chevron 2002

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Tissues

The RMP conducts bivalve monitoring in San Francisco Estuary to measure contaminant accumulation during the dry season as a measure of potential bioavailability of contaminants of concern. Bivalves bioaccumulate chemical contaminants through their food by ingesting sediment and assimilating contaminants that are sorted to particles, and by filtering dissolved contaminants directly from the water column (San Francisco Estuary Institute 2008). Bivalves are transplanted to various stations to measure bioaccumulation. Mussels are transplanted in cages and left for 90 to 100 days. Chemical analyses of tissue burden are performed prior to deployment and after deployment to determine the accumulation factor (accumulation factor =AF= after deployment/prior to deployment). In 2003, transplanted individuals of the California mussel (*Mytilus californianus*) were used at all stations. The 2003 bivalve monitoring stations included a station at Red Rock near the Long Wharf.

The mussels deployed at the Red Rock station in August of 2003 had a survival of 88 percent. The highest accumulation factor was 24 for total PCBs. The Red Rock mussels had accumulation factors of 1.2 for dieldrin, 2 for total DDTs and 14.5 for PBDEs. An accumulation factor greater than 1 means that the contaminant was higher in the mussel tissue after the deployment period compared to before. None of the contaminants in the Red Rock mussel tissues exceeded the screening values calculated according to USEPA guidelines for the protection of human health.

A 1994 pilot study of contaminant levels in San Francisco Bay fishes commonly caught by anglers indicated that PCBs, mercury, dieldrin, chlordanes, DDTs, and dioxins were at levels that posed human health concerns (RWQCB, SWRCB, and CDFG 1995). High levels of the pesticides dieldrin, DDT, and chlordane were most often found in fishes from the North Bay. Levels of PCBs, mercury and dioxins were found at elevated levels throughout San Francisco Bay. In 2000, the RMP analyzed mercury, selenium, and trace organic contaminant concentrations in seven sport fish species from San Francisco Bay (Greenfield et al. 2003). As in previous sampling, fish samples exceeded human health screening values for most monitored contaminants. With the exception of chlordanes, every contaminant sampled in finfish in 2000 exhibited some screening value exceedances. Screening values were exceeded for PCBs, dioxin toxic equivalents, mercury, dieldrin, selenium and DDTs. Many fish samples also contained detectable residues of the flame retardant compounds, PBDEs. PCB concentrations exceeded the screening value in almost every fish sampled. In general, Oakland and South Bay Bridges were relatively high in contaminant concentrations while Berkeley and San Pablo Bay were relatively low.

Clam and crab samples also were analyzed in the 2000 study. For most contaminants clam tissue and crab muscle tissue had lower concentrations than monitored sport fish, indicating that consumption of these shellfish is not as significant an exposure route to humans as are monitored sport fish.

Outer Coast

The project area includes the coast of California, Oregon, and Washington, because tankers using Long Wharf transit the west coast of the United States as well as travel to foreign ports. The California Current establishes water quality along the west coast of the United States. In sharp contrast to the fast, narrow Hiroshima Current on the other side of the Pacific Ocean, the California Current is a broad, slow-moving current that transports cold, low-salinity water from the Pacific Northwest southward. As compared to the east coast of the United States, the west coast water is much cooler, of lower salinity, and has more nutrients and plankton.

During the spring, strong northwest winds blow down the west coast. This results in upwelling of cool, clear bottom water with many nutrients and relatively low dissolved oxygen concentrations. North of the San Francisco Bay Area, the coastline is not heavily populated and the water quality is deemed to be good (Winzler and Kelly 1977, Rasmussen 1995). North coast waterbodies on the State 303(d) list of impaired waterbodies consist of rivers and bays and contaminants are primarily sedimentation and nutrients from pasture land and forestry (SWRCB 2003). Watersheds that drain directly into marina waters can locally influence the temperature, salinity, dissolved oxygen, and turbidity characteristics of coastal waters, as well as contribute to the sediment and contaminant loadings of the waters. Many streams and rivers in the north coast area carry substantial sediment loads during the winter rainy season. Currently, most of the reported water quality problems within the North Coast Basin are intermittent or transitory; hence, in general, the present water quality meets or exceeds the water quality objectives set forth in the Water Quality Control Plan for the North Coast Region (RWQCB 1993).

Water quality in northern coastal California is also affected by municipal and industrial discharges (primarily timber industry and power), nonurban runoff, harbors, and vessel traffic. Water quality in this area is described in detail in Chambers Group, 1994. The central coast of California is somewhat populated and water quality is affected by municipal and industrial discharges (cooling water), nonurban runoff, harbors, and vessel traffic. Principal urban areas between San Francisco and Point Conception are the Santa Cruz/Monterey area, San Luis Obispo, and the Pismo Beach area.

At Point Conception, the orientation of California's coastline changes from north/south north of Point Conception to east/west in the Santa Barbara Channel. Point Conception is the northern boundary of the Southern California Bight, which extends to the U.S./Mexico Border. A section of the slow, southerly flowing California Current turns left in the Southern California Bight and forms the Southern California Counter Current, which flows close to the continental shelf break in a northwest direction. These currents intercept each other at the western end of Santa Barbara Channel and result in a counter clockwise gyre in Santa Barbara Channel (Brown and Caldwell 1991). Southern California is an extensive urban area with numerous municipal and industrial discharges. The Santa Monica Bay and Palos Verdes coastal areas off Los Angeles County are on the State 303(d) list of impaired waterbodies for a wide variety of

contaminants related to historic sewage discharges and urban runoff (SWRCB 2003). A detailed description of water quality in southern California is presented in Aspen Environmental Group 1992.

4.2.2 Regulatory Setting

The regulatory setting includes laws, regulations, plans, policies, and programs at the Federal, State, local, and regional levels. Specific laws and regulations are referenced later in the text, and provide the underlying basis for plans, policies, and programs.

Federal Policies

The Federal Clean Water Act (CWA) (33 U.S.C. 1251 et. seq.) delegates certain responsibilities in water quality control and water quality planning to the states. In California, the California Environmental Protection Agency (Cal EPA) and the State Water Resources Control Board (SWRCB) agreed to such delegation and regional boards implement portions of the CWA, such as the issuance of National Pollution Discharge Elimination System (NPDES) permits. The aim of the CWA of 1977 (33 U.S.C. 1251 et. seq.) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Specific sections control the discharge of wastes into marine and aquatic environments. CWA Section 402 states that discharge of pollutants to waters of the United States is unlawful unless the discharge is in compliance with an NPDES permit. CWA Section 404 establishes a permit program to regulate the filling of jurisdictional waters including the discharge of dredged material into waters of the United States. The U.S. Army Corps of Engineers (Corps) has jurisdictional authority pursuant to CWA Section 404. The EPA assists the Corps in evaluating environmental impacts of dredging and filling, including water quality and historic and biological values. CWA Section 401 requires that activities permitted under Section 404 must not cause concentrations of chemicals in the water column to exceed State standards. CWA Section 303(d) requires that states develop a list of waterbodies that need additional work beyond existing controls to achieve or maintain water quality standards. The additional work includes the establishment of total maximum daily loads (TMDLs) of pollutants that have impaired the waterbody.

The National Estuary Program was established in 1987 by amendments to the CWA to identify, restore, and protect nationally significant estuaries of the United States. The San Francisco Estuary Project is one of over 20 Estuary Projects established by the National Estuary Program. The San Francisco Estuary Project is a cooperative Federal, State, and local program to promote effective management of the San Francisco Bay-Delta Estuary.

The Coastal Zone Management Act of 1972 (16 U.S.C. 1455 et. seq.) regulates development and use of the nation's coastal zone by encouraging states to develop and implement coastal zone management programs. Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) (16 U.S.C. 1455b) required the coastal states with Federally approved coastal zone management plans to develop and submit coastal nonpoint source pollution control programs for approval by the National Oceanic

and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). Long-range planning and management of California's coastal zone were conferred to the State with implementation of the California Coastal Act of 1976.

State Plans and Policies

The quality of California's coastal environment is protected under the California Coastal Act, which established the California Coastal Commission (CCC). Several provisions of the California Coastal Act serve to protect coastal water quality from point and nonpoint source pollution. The McAteer-Petris Act governs planning and management of the San Francisco Bay portion of the California Coastal Management Program. The McAteer-Petris Act established the San Francisco Bay Conservation and Development Commission (BCDC) as the agency responsible for protection of San Francisco Bay that includes critical and sensitive Bay areas. Sensitive areas near the proposed Project are identified in Section 4.2.1, Environmental Setting.

The California Porter-Cologne Water Quality Control Act of 1969 established the SWRCB and nine Regional Water Quality Control Boards (RWQCB) as the principal State agencies with primary responsibility for the coordination and control of water quality. The SWRCB is generally responsible for setting statewide water quality policy. Each RWQCB makes water quality and regulatory decisions for its region. In 1991, the SWRCB and RWQCBs were brought together with five other State environmental protection agencies under the newly crafted California Environmental Protection Agency. Measures to protect and restore the quality of California's coastal water also are addressed in the State's Plan for California's Nonpoint Source Pollution Control Program, which the State prepared pursuant to both the CWA and the CZARA.

The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) (RWQCB 1995) is the primary policy document that guides the RWQCB, San Francisco Bay Region. Established under the requirements of the 1969 Porter-Cologne Water Quality Control Act, the Basin Plan was originally adopted in April 1975, and the most recent revisions were adopted in 1995 and approved by the EPA in 2000. In January of 2004 amendments to the Basin Plan were adopted that included application of California Toxic Rule water quality criteria and definitions in lieu of Basin Plan water quality objectives, update of Basin Plan provisions relating to implementation of water quality standards, and several non-regulatory updates. The Basin Plan applies to point and nonpoint sources of waste discharge to the Bay, but not to vessel wastes or the control of dredge material disposal or discharge. The Basin Plan assigns beneficial uses to all waters in the basin. These beneficial uses include municipal, industrial, and agricultural water supply; freshwater replenishment and groundwater recharge; water contact and noncontact recreation; navigation; commercial and sport fishing; shellfish harvesting; marine, estuary, wildlife, and warm and cold freshwater habitat; preservation and enhancement of Areas of Biological Significance; and rare and endangered species; wildlife, fish migration, and fish spawning. The Basin Plan also sets water quality objectives, subject to approval by the EPA, intended to protect designated beneficial uses. The water quality objectives in the Basin Plan are written to apply to specific

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parameters (numeric objectives) and general characteristics of the water body (narrative objectives). The water quality objectives are achieved primarily through effluent limitations embodied in the NPDES program.

The San Francisco Bay Region RWQCB has NPDES permit authority on any facility or activity that discharges waste into the Bay. Effluent limits are contained within the NPDES permit; the discharge of process wastewater containing constituents in excess of the limits stated within the NPDES permit is prohibited.

The California Marine Invasive Species Act (MISA) of 2003 (Public Resources Code sections 71200 through 71271), which became effective January 1, 2004, revised and expanded the Ballast Water Management for Control of Nonindigenous Species Act of 1999. (See Appendix E for key components of the Act.) The MISA specifies mandatory mid-ocean exchange or retention of all ballast water for vessels carrying ballast water into California waters after operating outside the US EEZ. For vessels coming from other west coast ports, the act requires minimization of ballast water discharges in state. However, beginning March 22, 2008, all vessels operating within the Pacific Coast Region will be required to manage ballast water. Management options include retention of all ballast water, exchange of ballast water in near-coastal waters, before entering the waters of the state, if that ballast water has been taken on in a port or place or within the Pacific Coast region. All vessels are required to complete and submit a ballast water reporting form, maintain a vessel-specific ballast water management plan and ballast tank log book, remit the necessary fee to the Board of Equalization, and submit to compliance verification inspections.

The California Clean Coast Act (SB 771) went into effect January 1, 2006, and has several requirements to reduce pollution of California waters from large vessels. The California Clean Coast Act prohibits the operation of shipboard incinerators within 3 miles of the California coast, prohibits the discharge of hazardous wastes, other wastes, or oily bilgewater into California waters or a marine sanctuary, prohibits the discharge of graywater and sewage into California waters from vessels with sufficient holding tank capacity or vessels capable of discharging graywater and/or sewage to available shoreside reception facilities, requires reports of prohibited discharges to the California State Water Resources Board, and submission of an information report to the California State Lands Commission (CSLC).

The CSLC issues dredging permits for projects that propose to dredge in State-owned submerged lands, tidelands, and marshes. In addition, any project sponsor seeking to use State-owned lands for right-of-way uses must obtain a land use lease from the CSLC. For each of these discretionary decisions, the CSLC bases its decision on information presented in environmental documentation prepared pursuant to the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

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Local and Regional Plans and Water Quality Policies and Programs

The BCDC's San Francisco Bay Plan, adopted in 1968, provides policies to guide future uses of the Bay and shoreline. BCDC regulates all Bay dredging and filling to protect marshes, wetlands, and other resources of the Bay. Its jurisdiction includes all areas of the Bay, below the line of highest tidal action as well as 100 feet inland from the line of highest tidal action. Policies within the Plan indicate that "pipeline terminal and distribution facilities near the Bay should generally be located in industrial areas" and that "marine terminals should also be shared as much as possible among industries and port users."

The Long-Term Management Strategy (LTMS) for Placement of Dredged Materials in the San Francisco Bay region is a cooperative effort of the EPA, the Corps, SWRCB, the RWQCB, and the BCDC to develop a new approach to dredging and dredged material disposal in the San Francisco Bay area. The major goals of the LTMS are to:

1. maintain, in an economically and environmentally sound manner, those channels necessary for navigation in the San Francisco Bay and Estuary while eliminating unnecessary dredging activities;
2. conduct dredged material disposal in the most environmentally sound manner;
3. maximize the re-use of dredged material as a resource; and
4. establish a cooperative permitting framework for dredging and disposal of dredged materials.

The LTMS agencies completed a Final Policy Environmental Impact Statement (EIS)/Programmatic Environmental Impact Report (EIR) (October 1998), proposing the new long-term plan for achieving these goals. The new approach calls for reducing disposal within San Francisco Bay over time, and increasing recycling of dredged material for "beneficial uses," including habitat restoration, levee maintenance, and construction fill. The LTMS agencies have also established an interagency Dredged Material Management Office (DMMO), which serves as a "one stop shop" for Bay Area dredging permit applications. In July of 2001 the LTMS agencies issued the Long-term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region Management Plan 2001 (USACE, USEPA, BCDC, and SWBRWQCB 2001). The Management Plan presents specific mechanisms to implement the long-term dredging, disposal and beneficial reuse strategy.

The CALFED Bay-Delta Program was formed to resolve conflicts over freshwater uses in the Bay Delta. The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta System. State-Federal cooperation

was formalized in June 1994 with the signing of a Framework Agreement by the State and Federal agencies with management and regulatory responsibility in the Bay-Delta Estuary. The CALFED agencies are:

- State: Resources Agency, Department of Water Resources, California Department of Fish and Game (CDFG), Cal EPA, SWRCB, and CSLC; and
- Federal: Bureau of Reclamation, U.S. Fish and Wildlife Service (USFWS), EPA, Department of Commerce, NOAA Fisheries, the Corps, Department of Agriculture, and Natural Resources Conservation Service.

These agencies provide policy direction and oversight for the process.

The Framework Agreement pledged that the State and Federal agencies would work together in three aspects of Bay-Delta management: (1) water quality standards formulation, (2) coordination of State Water Project and Central Valley Project operations with regulatory requirements, and (3) long-term solutions to problems in the Bay-Delta Estuary.

Objectives and Criteria

To protect beneficial uses, the RWQCB has established objectives for waters covered by the San Francisco Basin Plan. Table 4.2-7 lists the narrative objectives for San Francisco Bay waters.

For ocean waters, the State Water Resources Control Board has established objectives for the protection of aquatic life. These objectives are specified in the California Ocean Plan (SWRCB 2001). These objectives are listed in Table 4.2-8. Water quality criteria for priority toxic pollutants for California inland surface waters, enclosed bays, and estuaries were established by the California Toxics Rule (USEPA 2000). Table 4.2-9 shows the California Toxic Rule criteria.

At this time, no standards for the protection of aquatic organisms for chemical levels in sediments have been set. NOAA has published effects-based sediment quality values for evaluating the potential for contaminants in sediment to cause adverse biological effects (Long and Morgan 1990, Long et al. 1995). These values are commonly used as guidelines to evaluate sediment contaminant concentrations. These values are referred to as Effects Range-Low (ER-L) and Effects Range-Medium (ER-M) (Long and Morgan 1990, Long et al. 1995). This tool for comparing sediment quality was developed for NOAA based on tests of toxicity of sediments to benthic organisms. In these tests, effects were rarely seen below the ER-L. Therefore, at chemical concentrations below the ER-L, effects are unlikely. Effects were usually seen above the ER-M. Thus, the ER-M is the concentration at which effects are probable. Table 4.2-10 shows these sediment criteria.

Table 4.2-7
Select Water Quality Objectives from the San Francisco Bay Basin Plan

Parameter	Objective
Bioaccumulation	Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life.
Biostimulatory Substances	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses.
Color	Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.
Dissolved Oxygen (Do)	For all tidal waters, the following objectives shall apply: in the bay, downstream of Carquinez bridge 5.0 mg/l minimum, upstream of Carquinez bridge 7.0 mg/l minimum.
Floating Material	Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.
Oil And Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.
Population And Community Ecology	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce significant alteration in population, community ecology or receiving water biota.
PH	The pH shall not be depressed below 6.5 nor raised above 8.5.
Salinity	Controllable water quality factors shall not increase the total dissolved solids or salinity of waters of the State so as to adversely affect beneficial uses, particularly fish migration and estuarine habitat.
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses. Controllable water quality factors shall not cause a detrimental increase in the concentrations of toxic pollutants in sediments or aquatic life.
Settleable Materials	Waters shall not contain substances in concentrations that result in the deposition of material that cause nuisance or adversely affect beneficial uses.
Sulfide	All water shall be free from dissolved sulfide concentrations above natural background levels.
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
Taste And Odor	Waters shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance, or that adversely affect beneficial uses.
Temperature	Temperature objectives for enclosed bays and estuaries are as specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California." any aquatic habitat shall not be increased by more than 5° F above natural temperatures.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relative to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 mu.
Un-Ionized Ammonia	The discharge of wastes shall not cause receiving waters to contain concentrations of un-ionized ammonia in excess of the following limits, annual median 0.025 mg/l, maximum (central bay and upstream) 0.16 mg/l.

Source: RWQCB (1995). Water Quality Control Plan San Francisco Bay Basin (Region 2).

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Table 4.2-8
California Ocean Plan Toxic Materials Limitations

Constituent	Units of Measurement	Limiting Concentrations		
		6-Month Median	Daily Maximum	Instantaneous Maximum
Arsenic	ppb	8	32	80
Cadmium	ppb	1	4	10
Chromium (hexavalent)	ppb	2	8	20
Copper	ppb	3	12	30
Lead	ppb	2	8	20
Mercury	ppb	0.04	0.16	0.4
Nickel	ppb	5	20	50
Selenium	ppb	15	60	150
Silver	ppb	0.7	2.8	7
Zinc	ppb	20	80	200
Cyanide	ppb	1	4	10
Total Chlorine Residual	ppb	2	8	60
Ammonia (expressed as nitrogen)	ppb	600	2400	6000
Chronic Toxicity	Tuc	1		
Phenolic Compounds (non-chlorinated)	ppb	30	120	300
Chlorinated Phenolics	ppb	1	4	10
Endosulfan	ng/L	9	18	27
Endrin	ng/L	2	4	6
HCH	ng/L	4	8	12

Radioactivity: Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group II, Article 3, Section 30269 of the California Code of Regulations.

Source: SWRCB 2001. California Ocean Plan.

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Table 4.2-9
California Toxics Rule Toxic Materials Concentrations for Saltwater

Constituent	Criterion Maximum Concentration (µg/L)	Criterion Continuous Concentration (µg/L)
Arsenic	69	36
Cadmium	42	9.3
Chromium (VI)	1100	50
Copper	4.8	3.1
Lead	210	8.1
Mercury*	2.1	0.025
Nickel	74	8.2
Selenium	290	71
Silver	1.9	
Zinc	90	81
Cyanide	1	1
Pentachlorophenol	13	7.9
Aldrin	1.3	
gamma BHC	0.16	
Chlordane	0.09	0.004
4,4' DDT	0.13	0.001
Dieldrin	0.71	0.0019
alpha-Endosulfan	0.034	0.0087
beta-Endosulfan	0.034	0.0087
Endrin	0.037	0.0023
Heptachlor	0.053	0.0036
Heptachlor Epoxide	0.053	0.0036
PCB-1242		0.03
PCB-1254		0.03
PCB-1221		0.03
PCB-1232		0.03
PCB-1248		0.03
PCB-1260		0.03
PCB-1016		0.03
Toxaphene	0.21	0.0002

ng/L = nanograms per liter.
* = National Toxics Rule 1997, not yet established by California Toxics Rule
Source: USEPA 2010

Table 4.2-10
Sediment Effects Guideline Values

Parameter	Effects Range-Low (ER-L)	Effects Range-Median (ER-M)
Metals (mg/Kg)		
Antimony	2.0	25
Arsenic	8.2	70
Cadmium	1.2	9.6
Chromium	81	370
Copper	34	270
Lead	46.7	218
Mercury	0.15	0.71
Nickel	20.9	51.6
Silver	1	3.7
Zinc	150	410
Organics (ug/Kg)		
Acenaphthene	16	500
Acenaphthylene	44	640
Anthracene	85.3	1100
Fluorene	19	540
2-Methyl naphthalene	70	670
Naphthalene	160	2100
Phenanthrene	240	1500
Low-molecular weight PAH	552	3160
Benz(a)anthracene	261	1600
Benzo(a)pyrene	430	1600
Chrysene	384	2800
Dibenzo(a,h)anthracene	63.4	260
Fluoranthene	600	5100
Pyrene	665	2600
High molecular weight PAH	1700	9600
Total PAH	4022	44792
p,p'-DDE	2.2	27
Total DDT	1.58	46.1
Total PCBs	22.7	180

ER-L = Concentration at lower tenth percentile at which adverse biological effects were observed or predicted.
ER-M = Concentration at which adverse biological effects were observed or predicted in 50% of test organisms.
mg/Kg – milligrams per kilogram
ug/Kg – micrograms per kilogram
Source: Long et al. 1995.

Finally, as a way of evaluating sediment contamination within San Francisco Bay, the San Francisco Estuary Institute has compiled thresholds of ambient sediment concentrations based on the cleanest portions of San Francisco Bay (Gandesbery et al. 1998). These thresholds, shown in Table 4.2-11, recognize that no part of San Francisco Bay is free of anthropogenic inputs of contaminants, but these thresholds provide a relative measure of comparing sediment contaminant concentrations within the Bay. As shown in Table 4.2-11 even ambient metal concentrations in different size particles of sediment in San Francisco Bay exceed the ER-L concentration for arsenic, chromium, mercury, and total DDT. Sediments with greater than 40 percent fines content exceed the ER-L for copper, acenaphthylene, anthracene, fluorene, and high molecular weight PAHs. Both fine and coarser sediments exceed the ER-M for nickel.

4.2.3 Impact Significance Criteria

The significance of impacts was considered in the context of whether the Long Wharf's operations would likely result in pollutant levels above ambient water quality and sediment levels and whether increased levels would exceed water quality objectives of the RWQCB or the SWRCB. The significance of impacts was considered in the context of contaminant levels for San Francisco Bay in general and the project area in particular. For example, operations that would result in changes from background that are not discernible in the local area, or region were considered less than significant impacts.

Impacts to marine water quality were considered significant if any of the following apply:

- The water quality objectives contained in the Water Quality Control Plan for San Francisco Basin (RWQCB 1995) (Table 4.2-7) are exceeded;
- The WQC in the California Toxics Rule (EPA 2000) (Table 4.2-8) are exceeded; and/or
- Project operations or discharges that change background levels of chemical and physical constituents or elevate turbidity would produce long-term changes in the receiving environment of the site, area, or region that would impair the beneficial uses of the receiving water.

Impacts are considered adverse, but less than significant (Class III) if the project could result in elevation of contaminants, but the levels remain below WQC, or if elevation of contaminant concentrations above criteria occurs only within a couple of hundred feet or less of the point of discharge for a few hours or less.

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Table 4.2-11
Sediment Thresholds for San Francisco Bay

Analysis	SF Estuary Sediment Ambient Concentration (dry wt.) [p=.85]		ERL[1] (dry wt.)	ERM[1] (dry wt.)
	<60 % fines	60-100 % fines		
Metals (ppm) (HNO3/HCl Digestion)				
Arsenic	13.5	15.3	8.2[1]	70[1]
Cadmium	0.22	0.133	1.2	9.60
Chromium	91.4	112	81	370
Copper	31.7	68.1	34	270
Lead	20.3	43.2	46.7	218
Mercury	0.29	0.43	0.15	0.71
Nickel	72.9	112	20.9	51.6
Selenium	0.59	0.64		
Silver	0.31	0.58	1	3.7
Zinc	97.8	158	150	410
Organic Compounds (ppb)				
Chlordanes, total	0.42	1.1		
Dieldrin	0.6	0.44		
HCH, total	0.31	0.78		
HCB, total	0.19	0.48		
DDTs, total 6 isomers	2.8	7	1.58	46.1
PCBs, total	5.9	14.8	22.7	180
PCBs, total (SFEI, All Cpd)	8.6	21.6		
1-Methylnaphthalene	6.8	12.1		
1-Methylphenanthrene	4.5	31.7		
2,3,5-Trimethylnaphthalene	3.3	9.8		
2,6-Dimethylnaphthalene	5	12.1		
2-Methylnaphthalene	9.4	19.4	70	670
Acenaphthene	11.3	26.6	16	500
Acenaphthylene	2.2	31.7	44	640
Anthracene	9.5	88	85.3	1,100
Benzo(a)anthracene	15.9	244	261	1,600
Benzo(a)pyrene	19.1	412	430	1,600
Benzo(b)fluoranthene	30.1	371		
Benzo(e)pyrene	17.3	264		
Benzo(g,h,i)perylene	22.8	310		
Benzo(k)fluoranthene	29.2	258		
Organic Compounds (ppb)				
Biphenyl	8.5	12.9		
Chrysene	19.4	269	384	2,800
Dibenzo(a,h)anthracene	3	32.1	63.4	260
Fluoranthene	18.7	514	600	5,100
Fluorene	4	25.3	19	540
Indeno(1,2,3-c,d)pyrene	16	382	160	2,100
Naphthalene	6.8	58.8		
Perylene	24	145		
Phenanthrene	17.8	237	240	1,500
Pyrene	64.6	665	665	2,600
High molecular weight PAHs, total	256	3,960	1,700	9,600

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Table 4.2-11 (continued)
Sediment Thresholds for San Francisco Bay

Analysis	SF Estuary Sediment Ambient Concentration (dry wt.) [p=.85]		ERL[1] (dry wt.)	ERM[1] (dry wt.)
	<60 % fines	60-100 % fines		
Low molecular weight PAHs, total	37.9	434	552	3,160
PAHs, total	261	3,840	4,022	44,792

Source: Sternberg et al. 1999.
[1] ERL = Effects Range Low
ERM = Effects Range Median

4.2.4 Impacts Analysis and Mitigation Measures

4.2.4.1 Long Wharf Routine Operations and Potential for Accident Conditions

The Long Wharf connects the Refinery and ships transporting crude oil and processed products. The Long Wharf typically receives about 98 million bbls of crude oil, diesel fuel oil, gasoline components, plant feed stocks, diesel blend stock, and dirty diesel/slush stock annually. Of this amount, approximately 80 million bbls per year are crude oil of both domestic and foreign origin. The Long Wharf typically ships approximately 15 million bbls annually of gasoline, gasoline components, aviation fuel, jet fuel, diesel fuel, and lubricating oils. Numerous pipelines supported by the pipeline trestle are used to transport fluids between the vessels and the Refinery as described in Section 2.0, Project Description. In addition, other utility pipelines handle potable water, firewater, nitrogen, natural gas, steam, sanitary waste, and electricity.

Impact WQ-1: Sediment Disturbance to Water Quality from Vessel Maneuvers

Disturbed sediments could cause a brief, localized increase in turbidity and depression in dissolved oxygen concentrations, but would disperse rapidly with the strong tidal currents in the area, and be rapidly mitigated by tidal mixing with Bay waters of high dissolved oxygen concentration. Such events would occur for an hour or less during a 24-hour period and be limited to the immediate vicinity of the Long Wharf, thus increased turbidity due to vessel traffic would be adverse, but less than significant (Class III).

On average, 75 vessels (35 tankers and 40 barges) per month call on the Long Wharf. For the year 2004, actual vessel calls averaged 30.5 ships (all tankers) and 33.1 barges. These vessels and barges are assisted by tugs in berthing and unberthing operations. The number of tugs used in docking or maneuvering of vessels is dependent on the size of the vessel and environmental conditions. The number can vary from one to as many as four. Berthing operations can affect water quality by propeller wash from tankers and tugs eroding bottom sediments in the immediate vicinity of the Long Wharf. Strong tidal currents occur in the vicinity of the Long Wharf. The ship's propulsion system is used to counteract for the tidal current and head winds. The large propellers on tankers of large

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drafts are close to the bottom of the Bay and the turbulence from these propellers can erode bottom sediments. The transit of deep-draft vessels through San Francisco Bay to the Long Wharf can also resuspend sediments and benthic biota in the water column where bottom depths are near that of the vessel draft. The propeller wash from tugs is nearer the surface and has less of an erosion affect on bottom sediments.

Berth depths at the Long Wharf range between 15 and 50 feet MLLW (see Table 2.3-1). The deepest berth (50 feet) is Berth 4. The maximum draft of vessels using the Long Wharf is 44 feet. These largest tankers use Berth 4.

Sediment grain size analyses at the Long Wharf were conducted prior to dredging in 1991, 1993, 1995, 1998, 2001 and 2005 (see Table 4.2-5 and 4.2-6). The sediments were primarily silts and clay. Velocities in excess of 125 centimeters per second (cm/sec) are required to scour silts and clays compared to 25 cm/sec for fine grain sand (Hjulstrom 1939). Therefore, bottom scouring at the Long Wharf during berthing would be lower than would occur in areas of fine sand due to the nature of the sediments.

The resuspension of bottom material from propeller wash and bow thrusters can affect turbidity in the immediate vicinity of vessel operations. The San Francisco Bay Basin Plan contains a water quality objective that specifies that waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses (RWQCB 1995). The Basin Plan objective for dissolved oxygen states that for tidal waters downstream of Carquinez Bridge, dissolved oxygen shall not be depressed below 5 mg/l.

A turbid plume of water is often evident in turbulent propeller wash of large deep-draft vessels in relatively shallow harbors and bays. This turbid plume would be short-lived. Observations of turbidity caused by boat wakes indicate that the plume generally persists less than 10 minutes. Depending on the depth of propeller wash scour, sediments might be anaerobic and could cause a brief, localized depression in dissolved oxygen concentrations. This resuspended sediment material would disperse rapidly with the strong tidal currents in the area and any depression in dissolved oxygen would be rapidly mitigated by tidal mixing with Bay waters of high dissolved oxygen concentration.

Bottom scour conditions are likely to occur when deep-draft vessels are using their propulsion systems while berthing at the Long Wharf. On average, 35 tankers and 40 barges, along with their associated tugboats, per month call at the Long Wharf and it takes about 1 hour to secure the vessel on barge to the dock. Therefore, these conditions would occur approximately 20 percent of the time on average ([1 hour for vessel arriving + 1 hour for vessel departing] x [75 vessels per month] / [732 hours per month] = 20.5 percent of the time). Because these events would occur for an hour or less, impacts would be limited to the immediate vicinity of the Long Wharf, and would be adverse, but less than significant (Class III).

WQ-1: No mitigation is required.

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Impact WQ-2: Segregated Ballast Water

Discharge of ballast water that contains harmful microorganisms could impair several of the project area's beneficial uses, including commercial and sport fishing, estuarine habitat, fish migration, preservation of rare and endangered species, water contact recreation, non-contact water recreation, fish spawning, and wildlife habitat. Therefore discharge of segregated ballast water is determined to have a potentially significant impact to water quality (Class I).

Ballast water is used to provide stability to tankers and barges. Ballast water is taken to compensate for the lightening of vessels bringing crude oil or feed products to the Refinery. Segregated ballast water is kept in tanks that are segregated from oily cargo. Sometimes, however, ballast may be taken into cargo holds where it will come in contact with oil. Nonsegregated ballast water is considered a hazardous waste in California and cannot be discharged to Bay or coastal waters.

The only discharges from vessels associated with the Long Wharf to the receiving waters of the Bay are cooling water flow from ship systems and segregated ballast water. All other liquid wastes, including nonsegregated ballast water, cargo tank washwater, bilge water, and sanitary wastewater, are sent to the Refinery via numerous pipelines for treatment and ultimate discharge through the deep-water outfall to San Pablo Bay. The treatment and disposal of these wastewaters are discussed in the following section. Cooling water flow from ship systems includes flow from the main engines and auxiliary equipment operating during the time the ships are berthed at the Long Wharf. The volume of these cooling water flows is relatively small compared to the tidal flow past the Long Wharf. Therefore, the increase in water temperature of the Bay would be negligible and would not exceed limitations set forth in the California Thermal Plan.

Ballast water from segregated ballast tanks may be discharged from vessels to San Francisco Bay as vessels take on product from the Refinery or during transfer of product from a larger vessel to a smaller vessel or barge at Anchorage No. 9. Organisms in ballast water may have significant adverse impacts to biological resources and water quality. Impacts to biological resources are discussed in Section 4.3, Biological Resources. Release of segregated ballast water could have a significant adverse impact to water quality if viruses, toxic algae or other harmful microorganisms were released. Release of harmful microorganisms would violate the water quality objective for toxicity in the San Francisco Bay Basin Plan (RWQCB 1995). This objective states that waters be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms. Harmful algal blooms have been associated with such adverse effects as mass mortalities of pelicans and sea lions (attributed to the toxin domoic acid produced by the diatom *Pseudo-nitzschia australis*) off coastal California (Committee on Environment and Natural Resources 2006). Ballast water discharges have been implicated as one mechanism for the spread of harmful algae. In addition, ballast water may contain pathogens causing public health concerns (Falkner 2003).

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California's Marine Invasive Species Act prohibits vessels entering California waters after operating outside the United States Exclusive Economic Zone (EEZ) from discharging ballast water into State waters unless the vessel has carried out a mid-ocean ballast water exchange procedure, or is using an environmentally sound alternative shipboard treatment technology approved by the CSLC. Beginning March 22, 2006, vessels operating within the Pacific Coast Region will be required to manage ballast water taken on within the Pacific Coast Region, by exchanging ballast water in mid-coastal water before entering state waters, retaining all ballast water on board, using an approved, environmentally-sound treatment method, or discharging to an approved reception facility. Qualifying vessels must report the time and place ballast water was taken on and released during the voyage. Vessels docking at the Long Wharf comply with these requirements. (D. Kinkela, Chevron, pers. comm. 2005). Every ship entering State waters is required to submit a ballast exchange plan, including the co-ordinates of the location where ballast exchange takes place.

Mid-ocean exchange of ballast water is considered an interim measure to reduce the introduction of exotic species until effective treatment technologies are developed (Falkner 2003). Mid-ocean exchange reduces the introduction of exotic organisms but is not completely effective. One study of the ballast water of ships that had conducted mid-ocean exchange showed that ships that exchanged ballast water had 5 percent of the number of organisms and half the number of species compared to ships that did not exchange (Cohen 1998). Another study showed that 14 of 32 ships that conducted mid-ocean ballast exchange retained significant amounts of sediment and dinoflagellate cysts. Therefore, because mid-ocean exchange of ballast water is not completely effective, discharge of segregated ballast water is determined to have a potentially significant impact to water quality (Class I).

Mitigation Measures for WQ-2:

WQ-2 Chevron will advise agents representing vessels that have called at the Long Wharf as of the date of adoption of the cited Mitigation Monitoring Program, and Chevron will advise representatives of shipping companies having control over vessels that would be likely to call at the Long Wharf in the future about the California Marine Invasive Species Control Act. Chevron will ensure that a Questionnaire containing the following questions is provided to the Vessel Operator, and inform the Vessel Operator that the Questionnaire should be completed on behalf of the vessel by its Captain or authorized representative, and provided to the California State Lands Commission's Marine Facilities Division's Northern California Field and Sacramento Offices, either electronically or by facsimile, prior to the vessel's entry into San Francisco Bay or in the alternative, at least 24 hours prior to the vessel's arrival at the Long Wharf.

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Questionnaire shall solicit the following information:

1. Does the vessel intend to discharge ballast water in San Francisco Bay, the Carquinez Strait or any other location(s) in a Bay waterway on its transit to the Chevron Richmond Long Wharf?

2. Does the vessel intend to discharge ballast water at the Chevron Richmond Long Wharf?

3. Which of the following means specified in the California Marine Invasive Species Act (MISA) or Title 2, Division 3, Chapter 1, Article 4.6, has the vessel operator used or intend to use on the current voyage to manage the vessel's ballast water: a mid-ocean exchange (as defined in Section 71200(g)); a near-coastal exchange (as defined in Section 71201(b)); retain all ballast on board; or discharge the ballast water at the same location (as defined in Section 71204.2(c)(2)) where ballast originated, provided ballast water was not mixed with ballast taken on in an area other than mid-ocean waters?

Rationale for Mitigation: Chevron has indicated that it is not feasible to treat segregated ballast water in the Refinery's effluent treatment system and that it would not be economically feasible to construct a system for treating ballast water to remove exotic species. Furthermore, effective systems for the treatment of ballast water to remove all associated organisms have not yet been developed. The measure provides an interim masking mechanism until a feasible system to kill organisms in ballast water is developed. Until an effective treatment system is developed, the discharge of ballast water to San Francisco Bay will remain a significant adverse impact. Mid-ocean exchange reduces the introduction of exotic species but is not completely effective.

Residual Impacts: Until a feasible system to kill organisms in ballast water is developed, the discharge of ballast water to San Francisco Bay will remain a significant adverse impact (Class I).

Impact WQ-3: Cargo Tank Washwater, Bilge Water, and Sanitary Wastewater

Vessel wastes are treated and discharged in accordance with an NPDES permit and because the discharge is monitored and Chevron generally has been within permit requirements for the last five years, the impacts of chemical contaminants in treated terminal wastes on water quality are considered to be adverse, but less than significant (Class III).

Liquid wastes from vessels, including nonsegregated ballast water, cargo tank washwater, bilge water, and sanitary wastewater are sent to the Refinery's effluent treatment system. The California Clean Coast Act (SB 771) prohibits the discharge of hazardous wastes, other wastes or oily bilgewater into California waters and also prohibits the discharge of graywater and sewage from vessels with sufficient holding tank capacity or from vessels capable of transforming wastewater to shoreside reception facilities. The California Clean Coast Act requires that all vessels visiting California in

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2006 submit a report describing their capability to store graywater and sewage, and providing information on their marine sanitation devices to the CSLC. Wastewater treatment consists of biological treatment followed by granular activated carbon (GAC) filtration. Wastewater from the Refinery is ultimately discharged to San Pablo Bay through a deepwater outfall under NPDES Permit Number CA 0006314 issued by the SF-RWQCB. Mixing-ingested ballast water on rare occasions may be received at the Long Wharf and transported to the Refinery for treatment. Non-segregated ballast water is discussed below under WQ-8. Table 4.2-12 shows the concentration and mass loading of contaminants from the Refinery discharge for each month in 1999. Copper sometimes exceeded criteria in the California Toxics Rule (EPA 2000) and nickel frequently exceeded criteria. Zinc exceeded California Toxics Rule criteria in September 1999. Although some contaminants exceeded criteria in the discharge, they would be rapidly diluted to concentrations below criteria in the receiving water. Organic contaminants are also monitored but less frequently. Dioxins, tributyltin, volatile compounds, organochlorine pesticides and PCBs were all below practical quantification levels when sampled in November 1999. PAHs (sampled quarterly) were below practical quantification levels on all but one sampling date. In April of 1999, the PAH concentration was 0.074 ug/l, well below Chevron's permit limit of 0.31 ug/l.

Chevron has had only 4 violations of their NPDES permit requirements for the wastewater outfall within the last 5 years (D. Kinkela, Chevron, Personal Communication, 2005). These included one exceedance of hexane extractable material (oil and grease), two exceedances of mercury and one of heptachlor epoxide. The exceedance for heptachlor epoxide was at the detection limit. The mercury exceedances were slight and represented exceedances of extra low detection limits that would have been undetectable using conventional mercury testing methods (D. Kinkela, Chevron, personal communication 2006). The RWQCB took no action in any of these instances. The Refinery does contribute various pollutants to the Bay including copper, mercury, selenium and nickel. Central San Francisco Bay is on the 303(d) list of impaired waterbodies for mercury, and selenium (SWRCB 2003). San Pablo Bay is on the 303(d) list for mercury, nickel, and selenium. Therefore, the Refinery does discharge measurable amounts of contaminants that are considered a problem for the area. However, the mass loadings of these contaminants from the Refinery outfall is very small compared to other sources. For example, the Refinery contributes about 197 kilograms (kg) of nickel per year to the Bay, approximately 0.4 percent of the estimated 49,000 kg contributed by stormwater runoff and 4 percent of the estimated emissions of 4,800 kg of nickel from the Bay Area point source dischargers (Davis et al. 2000). It is not known how much of the pollutants discharged from the Refinery come from wastes received from the Long Wharf. However, because wastes from the Long Wharf generally comprise less than 2 percent of the wastes treated at the Refinery and discharged to the ocean, the contribution of Long Wharf wastes to the mass loading of contaminants in San Francisco Bay would be very small (for example: about 4 kg per year of nickel). In addition, the Refinery accepts only Long Wharf wastes at intermittent intervals. Therefore, any elevations in contaminants related to Long Wharf wastes would occur for a brief period at the point of discharge. Furthermore, because these wastes are treated and discharged in accordance with an NPDES permit and because

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the discharge is monitored and, with occasional exceptions, Chevron has been within permit requirements for the last five years, the impacts of chemical contaminants in treated Long Wharf wastes on water quality are considered to be adverse, but less than significant (Class III).

Trash associated with terminal operations at the Long Wharf is collected by a contracted garbage disposal firm. Therefore, trash would not be discharged to Bay waters and would have no impact on water quality.

WQ-3: No mitigation is required.

Impact WQ-4: Discharges of Firefighting Water

Firewater has been treated at the Refinery and because contaminants in firewater would be diluted below thresholds within a matter of minutes, the impacts of firewater discharge on marine water quality are considered to be adverse, but less than significant (Class III).

Water for firefighting on the Long Wharf is treated wastewater from the Refinery that has undergone secondary (biological) treatment. This water may be discharged from the Long Wharf during tests of, or maintenance on, the fire protection system. Chevron estimates between 6,000 and 12,000 gallons a week are discharged during testing. These permitted discharges are conducted after monthly sampling to insure compliance with permit limits. Tests of this firewater at the Chevron Richmond Refinery showed that total suspended solids were 26 milligrams per liter (mg/l) with a Biochemical Oxygen Demand (BOD) of 4.5 mg/l and a Total Organic Constituents (TOC) of 116 mg/l. The only metals detected above the practical quantification level were arsenic, copper, nickel and selenium. Copper and nickel in the discharge were above the criteria in the California Toxics rule (EPA, 2000). However, these metals would be rapidly diluted to below criteria in the receiving water. The estimated mass loadings of nickel were a maximum daily level of .0000039 kilograms. Therefore the average loading of nickel to the Bay would be about 0.01 kg per year. For copper and selenium, the total emissions per year would be 0.01 kg per year and 0.02 kg per year respectively. All organic contaminants with the exception of methyl chloride (21 ug/l) and bis(2-ethylhexyl)phthalate (20.8 ug/l) were below practical quantification levels. Because firewater has been treated at the Refinery and because contaminants in firewater would be diluted below thresholds within a matter of minutes, the impacts of firewater discharge on marine water quality are considered to be adverse, but less than significant (Class III). Testing of firewater systems is a necessary safety precaution at the Long Wharf.

WQ-4: No mitigation is required.

Impact WQ-5: Non-Segregated Ballast Water

Non-segregated ballast water that is sent to the treatment facility may include nonindigenous organisms. Treatment at the facility does not include any specific procedures to prevent organisms that may be in ballast water from being discharged to Bay waters. Discharge of harmful microorganisms would be a significant adverse impact (Class II).

From January 1998 through August 1999, the Refinery received a total of about 200,000 gallons of nonsegregated ballast water for treatment on 9 different days (ranging from 7,900 to 55,300 gallons). The effluent treatment system has a daily average discharge of 7,500,000 gallons per day. Ballast water ranges from 0.12 to 1.68 percent of the daily flow during this 9-day period, which is within a 31-month period of ballast water receipt for which records are available. Therefore, the volume of ballast water from vessels is relatively small and infrequent and receives treatment at the Refinery whose discharge is subject to a NPDES permit. Since December 1999, the Refinery has received no nonsegregated ballast water (D. Kinkela, Chevron, pers. comm. 2000). Chevron discourages the receipt of ballast water at its facility because the salt water is hinders operation of the effluent system. Starting in about 1997, the use of segregated ballast tanks on tankers became widespread, minimizing the need for on-shore treatment.

Non-segregated ballast water that is sent to the treatment facility may include nonindigenous organisms. Treatment at the facility does not include any specific procedures to prevent organisms that may be in ballast water from being discharged to Bay waters. Furthermore, the NPDES permit for the discharge does not include limitations on the discharge of organisms or requirements for monitoring of organisms. Filtration of process water at the Chevron facility would prevent the introduction of larger organisms. However, the potential exists for harmful microorganisms such as viruses, bacteria, and toxic algae to be discharged. Chevron indicates that it has not received non-segregated ballast water at its treatment facilities for several years (D. Kinkela, Chevron, pers. comm. 2005). Discharge of harmful microorganisms would be a significant adverse impact (Class II).

Mitigation Measures for WQ-5:

WQ-5. Chevron shall not discharge any non-segregated ballast water received at the Long Wharf to San Francisco Bay. If Chevron needs to unload unsegregated ballast water, it shall be unloaded into a tanker truck or other suitable wastehandling vehicle and disposed of at an appropriate facility.

Table 4.2-12
Monthly Loading Summary for the Chevron Refinery Outfall for 1999

	Arsenic			Cadmium			Chromium			Total Cyanide			Lead			Mercury			Silver		
	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d
January	0.013	0.99	0.37	<PQL	0.03	0.009	<PQL	0.18	0.08	<PQL	0.49	0.01	0.0042	0.386	0.09	<PQL	0.01	0.002	<PQL	0.008	0.0031
February	0.005	0.83	0.29	<PQL	0.02	0.008	<PQL	0.14	0.06	<PQL	0.45	0.01	<PQL	0.18	0.05	<PQL	0.01	0.002	<PQL	0.01	0.0037
March	0.013	1.27	0.46	<PQL	0.03	0.014	0.00	0.00	0.00	<PQL	0.76	0.35	<PQL	0.24	0.11	<PQL	0.01	0.004	<PQL	0.02	0.008
April	0.013	1.79	0.54	<PQL	0.02	0.011	<PQL	0.22	0.10	<PQL	0.72	0.33	<PQL	0.22	0.10	<PQL	0.01	0.004	<PQL	0.01	0.005
May	0.014	0.639	0.275	<PQL	0.01	0.013	0.0015	0.069	0.031	<PQL	0.41	0.185	0.006	0.268	0.084	<PQL	0.01	0.002	<PQL	0.04	0.019
June	0.012	0.991	0.108	<PQL	0.01	0.008	0.0007	0.058	0.133	<PQL	0.32	0.14	<PQL	0.085	0.043	<PQL	0.004	0.002	<PQL	0.03	0.014
July	0.012	0.991	0.164	<PQL	0.01	0.008	<PQL	0.094	0.042	<PQL	0.31	0.14	<PQL	0.084	0.042	<PQL	0.004	0.002	<PQL	0.03	0.014
August	0.011	0.85	0.276	<PQL	0.01	0.010	<PQL	0.160	0.076	<PQL	0.53	0.25	<PQL	0.185	0.079	<PQL	0.005	0.003	<PQL	0.03	0.015
September	0.011	2.35	0.158	<PQL	0.01	0.005	<PQL	0.099	0.045	<PQL	1.05	0.15	<PQL	0.197	0.045	<PQL	0.004	0.002	<PQL	0.03	0.015
October	0.012	0.521	0.235	<PQL	0.02	0.009	0.0004	0.034	0.14	<PQL	0.63	0.19	<PQL	0.129	0.058	<PQL	0.004	0.002	<PQL	0.04	0.019
November	0.010	0.639	0.290	<PQL	0.02	0.010	0.0009	0.078	0.317	<PQL	0.81	0.28	<PQL	0.183	0.083	<PQL	0.007	0.003	<PQL	0.05	0.025
December	0.012	0.908	0.411	<PQL	0.03	0.011	0.0009	0.109	0.183	<PQL	0.73	0.33	<PQL	0.280	0.100	<PQL	0.009	0.004	<PQL	0.07	0.030
Average	0.012	2.67	0.29	<PQL	0.221	0.010	0.0007	0.19	0.09	<PQL	0.61	0.23	0.006	0.17	0.08	<PQL	0.006	0.0028	<PQL	0.04	0.023

* Exceeds criterion in California Toxics Rule

Table 4.2-12 (Continued)
Monthly Loading Summary for the Chevron Refinery Outfall for 1999

	NOx			TOC			Selenium			Total Chlorpyrifos			Hexavalent Chromium			Nickel			Zinc		
	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d	mg/l	lb/d	kg/d
January	9.6	253.4	114.5	15.8	455.1	206.3	0.0281	7.04	3.412	<PQL	0.09	0.04	<PQL	0.45	0.20	0.0047	1.1	0.49	0.0947	1.196	0.91
February	7.9	308.0	151.3	15.8	426.6	193.5	0.0171	1.66	0.479	<PQL	0.05	0.02	<PQL	0.46	0.20	<PQL	0.18	0.08	0.087	5.00	1.37
March	13.9	1498.5	370.1	11.9	367.3	454.7	0.0102	1.70	0.484	<PQL	0.08	0.04	<PQL	0.79	0.39	0.017*	1.45	0.66	<PQL	3.15	1.43
April	<PQL	839.72	196.9	12.2	493.4	410.6	0.0121	1.12	0.466	<PQL	0.07	0.03	<PQL	0.73	0.33	0.016*	1.50	1.00	0.057	1.95	0.99
May	29.46	3013.1	341.7	16.4	715.4	324.5	0.0173	1.11	0.503	0.001	0.057	0.026	<PQL	2.84	2.19	0.0307*	1.851	0.843	0.095	1.06	0.70
June	4.60	1455.9	660.2	11.2	523.3	499.2	0.0240	1.16	0.466	0.001	0.033	0.015	<PQL	2.22	2.19	0.0340*	1.078	0.489	0.024	1.21	0.55
July	6.40	2266.8	1028.0	9.0	778.6	526.9	0.0201	1.72	0.498	0.0012	0.037	0.017	<PQL	2.31	2.14	0.0196*	2.642	2.007	0.052	1.35	0.61
August	3.81	1691.1	851.3	17.6	827.8	275.7	0.0184	1.37	0.305	0.001	0.024	0.009	<PQL	1.51	0.35	0.0389*	2.125	5.964	<PQL	0.52	0.51
September	1.40	1002.2	87.3	6.3	191.6	73.4	0.0201	1.73	0.513	0.0013	0.043	0.019	<PQL	1.03	0.73	0.0535*	0.748	0.343	0.0347	0.36	4.20
October	3.60	1310.6	88.8	6.7	188.9	20.6	0.0169	1.15	0.318	<PQL	0.049	0.019	<PQL	0.42	0.18	<PQL	0.112	0.05	<PQL	0.26	1.83
November	8.30	3833.3	173.5	7.1	484.5	224.3	0.0103	1.08	0.490	0.001	0.063	0.026	<PQL	1.30	0.14	0.0558*	1.272	0.712	<PQL	0.68	2.08
December	14.30	7384.4	491.9	12.1	910.1	499.5	0.0100	0.95	0.432	0.001477	0.104	0.047	<PQL	0.72	0.03	0.0657*	1.224	0.556	0.041	3.28	1.49
Average	8.96	4610.9	272.9	10.8	1443.3	241.2	0.018	1.08	0.491	0.001	0.09	0.03	<PQL	0.48	0.22	0.0277*	1.73	0.56	0.078	3.81	1.48

* Exceeds criterion in California Toxics Rule

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Rationale for Mitigation: Handling of non-segregated ballast water at the Chevron Refinery apparently is a relatively rare event. Chevron indicated that it has not received any unsegregated ballast water at its facilities in the last several years. Therefore, transport of non-segregated ballast water to an appropriate disposal facility during the rare occasions when it is necessary to receive such water at the Long Wharf should be feasible.

Disposal of non-segregated ballast water at an approved facility will eliminate the potential introduction of harmful microorganisms that may be in this water. Impacts would be reduced to less than significant.

Impact WQ-6: Cathodic Protection

The slow leaching of zinc anodes may increase metal concentrations, but due to the slow rate of exchange of the anodes to seawater, the impact of cathodic protection on water quality is adverse, but less than significant (Class III).

Tankers and barges calling at the Long Wharf are made of steel and need cathodic protection. Many of these vessels have a coaltar-epoxy coating on their hull that insulates them from the saltwater. Tankers often use an impressed current system for cathodic protection. Barges typically use sacrificial zinc anodes for cathodic protection. The slow leaching of zinc anodes increases metal concentrations in the waters at the Long Wharf, but due to the slow rate of exchange of the anodes to seawater, it is thought to be negligible in comparison to ambient zinc in the marine environment. The impact of cathodic protection on water quality is adverse, but less than significant (Class III).

WQ-6: No mitigation is required.

Impact WQ-7: Anti-Fouling Paints

Marine anti-fouling paints are highly toxic containing copper, sodium, zinc, and tributyltin (TBT) and their use on vessels associated with the Long Wharf is considered to be a significant adverse impact to water quality that cannot be mitigated to less than significant (Class I).

Marine anti-fouling paints are used to reduce nuisance algal and marine growth on ships. These marine growths can significantly affect the drag of the vessel through the water and thus its fuel economy. Anti-fouling paints are biocides that contain copper, sodium, zinc, and TBT as the active ingredients. All of these are meant to be toxic to marine life that would settle on or attach to the hull of ships. At a November 1987 session of the IMO Assembly in London, a resolution was approved that calls for the elimination of organotin biocides after 2003. The resolution language bans the application of tin bacides as anti-fouling agents on ships by January 1, 2003, and prohibits the presence of tin biocides after January 1, 2008. The Marine Environment Protection Committee of the IMO is developing a legal instrument to enforce the ban of TBT on vessels

(Lewis 2001). Much concern has been raised about TBT effects on non-target marine species. New types of bottom paints that do not contain metal-based biocides are being developed and tested. Some of these coatings, such as self-polishing coatings, are now in use. Because of the high toxicity of organotins to marine organisms, the use of these substances on vessels associated with the Long Wharf is considered to be a significant adverse impact to water quality that cannot be mitigated to less than significant (Class I).

Mitigation Measures for WQ-7:

WQ-7. Chevron will advise representatives of vessels that have called at the Long Wharf as of the date of adoption of the cited Mitigation Monitoring Program, and vessel representatives that would be likely to call at the Long Wharf in the future about the requirements of the 2003 International Maritime Organization (IMO) prohibition of TBT applications to vessel hulls. Following the effective date of the IMO prohibition, Chevron will ensure that the Master (Captain) or authorized representative of vessels intending to call at the Long Wharf certify that their vessel is in compliance and provide a copy of such certification to the California State Lands Commission's Marine Facilities Division's Northern California Field and Sacramento Offices, either electronically or by facsimile, prior to the vessel's entry into San Francisco Bay or in the alternative, at least 24 hours prior to the vessel's arrival at the Long Wharf.

Rationale for Mitigation: Until all TBT is phased out by 2008, vessels with old applications of TBT on their hulls will visit the Long Wharf. Although it is reasonable for Chevron to require vessels to document no new TBT applications (per IMO mandate), Chevron cannot feasibly require vessels to remove TBT from their hulls until the IMO mandate prohibiting the presence of TBT on ship hulls comes into effect in 2008. Therefore, until all TBT is gone from vessels using the Long Wharf, impacts of organotins will remain significant. Prior to the effective date of the IMO mandate, the mitigation measure has Chevron advise agents of shipping companies about the future requirements; after the effective date of the IMO mandate, Chevron will certify that visiting vessels are in compliance and submit copies to CSLC. This will help to reduce impact to water quality by eliminating organotins, and also eliminate toxicity to marine organisms.

Residual Impact: Until all TBT is gone from vessels using the Long Wharf, impacts of organotins will remain significant (Class I).

Impact WQ-8: Tanker Maintenance

Routine vessel maintenance would have the potential to degrade water quality due to chronic spills during transfers of lubricating oils, resulting in adverse significant (Class II) impacts.

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Minor repair and routine maintenance of vessels occur at the Long Wharf. Most of these repairs have little effect on water quality. Vessels may take on lubricating oils from trucks at the Long Wharf, which have a potential to spill into the water. All transfer areas (i.e., work areas around risers, loading arms, hydraulic systems etc.) are protected by berms and drain to sumps that operate on level control and transfer their liquid to the Refinery waste handling systems for treatment. The impact of chronic spills is adverse and significant (Class II).

Mitigation Measures for WQ-8:

WQ-8. MM WQ-9 applies which addresses preparation of Best Management Practices (BMPs) in a SWPPP for the Long Wharf

Rationale for Mitigation: Aggressive implementation of BMPs to reduce the input of chemicals to the Bay from operations on the Long Wharf would reduce Chevron's input of these chemicals to adverse but less than significant.

Impact WQ-9: Stormwater Runoff from the Wharf

Stormwater runoff from the Long Wharf may contribute pollutants to the Bay in concentrations that may adversely affect some benthic species within the local area, resulting in a significant adverse impact (Class II) to water quality

Stormwater runoff is the largest contributor of pollutants to San Francisco Bay (Davis et. al. 2000). Hydrocarbons and other contaminants that accumulate on surfaces of the Long Wharf will runoff to the ocean during storms. As described in Section 2.3.3, Operational Procedures, Chevron has several Best Management Practices (BMPs) in place to prevent the spill of oily liquids during transfer operations. The transfer area of each berth is impounded by a raised berm. Drip pans are located under all piping manifolds at the berth areas and are designed to collect drips from bolted flanges, fittings and expansion joints. Collected oil and water are drained to sumps along the inside face of the Long Wharf and pumped to oil tanks at the Refinery. Chevron employs vacuum trucks to empty drip pans that do not drain to sumps. However, there is the potential for contaminants to accumulate on the Long Wharf surface from routine vehicle use, maintenance activities and other operations. For example oil spills reported by Chevron include a couple of small spills of hydraulic fluid during maintenance or testing of hydraulic hoses. Most of the spilled hydraulic oil was contained on the dock. However, some oily residue may have remained on the dock and been washed off during the next storm. Oily residue is the contaminant most likely to be present in runoff from the Long Wharf. Although Chevron has a number of BMPs in place at the Long Wharf, it has no formal stormwater management plan for the Long Wharf.

Concentrations of a number of contaminants under the Long Wharf are at levels that exceed the ER-L indicating that there may be some adverse biological effects on species sensitive to contaminants (Tables 4.2-3 and 4.2-4). With a few exceptions,

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contaminant concentrations under the Long Wharf were within the Ambient Sediment Concentration thresholds for relatively unpolluted areas of San Francisco Bay (Gandesbery et al. 1999). Therefore, contamination from the Long Wharf does not appear to be creating a toxic "hot spot" with highly elevated sediment contaminant concentrations compared to other areas of the Bay. Some PAH compounds and some metals episodically exceed Ambient Sediment Concentration thresholds, perhaps indicating occasional small leaks or spills. Because contaminant levels in the vicinity of the Long Wharf exceed criteria, inputs from runoff from the Long Wharf are considered to have a significant adverse impact to water quality that may be mitigated to less than significant (Class II).

Mitigation Measures for WQ-9:

WQ-9. Implement BMPs to reduce the input of chemicals to the Bay from the marine terminal, including (at a minimum) (1) conducting all vehicle maintenance on land not over water or marshland, (2) berming all areas on the pier where maintenance activities are being conducted and cleaning up all spilled contaminants before berms are removed, (3) washing the surface of the pier to the extent practical and directing wastewater into sumps, (4) maintenance of sumps, and (5) posting signs to educate all workers to the importance of keeping contaminants from entering the Bay. These BMPs shall be detailed in a Stormwater Pollution Prevention Plan that Chevron shall prepare specifically for the Long Wharf.

Rationale for Mitigation: No Stormwater Pollution Prevention Plan (SWPPP) presently exists for the Long Wharf. The requirement to include measures specific to Long Wharf Operations in the Chevron SWPPP and the implementation of those measures will help reduce the input of contaminants into the Bay from operations on the Long Wharf. Aggressive implementation of BMPs to reduce the input of chemicals to the Bay from stormwater runoff would reduce Chevron's input of these chemicals to adverse but less than significant.

Impact WQ-10: Maintenance Dredging

The effects of dredging and dredged material disposal on water quality are regulated and subject to acquisition of a dredging permit prior to dredging, thus impacts on water quality are adverse, but less than significant (Class III).

With the proposed Project, Chevron would continue maintenance dredging to maintain water depths necessary for safe approach and berthing of vessels at the Long Wharf. The estimated maintenance dredging moves up to approximately 350,000 cubic yards per year. In the past, the dredged sediments were disposed of at the Alcatraz disposal site (SF-11). Future dredged sediment disposal would be in accordance with the Long Term Management Strategy for Placement of Dredged Material in the San Francisco Bay Region (USACE, USEPA, BCDC, SFBRWQCB 2001).

Sediments at the Long Wharf are sampled and analyzed approximately every 2 to 3 years to provide information to support application for Chevron's maintenance dredging permit. Sediments at the Long Wharf are composed primarily of silt and clay sized particles (Table 4.2-5 and 4.2-6). As discussed above, the concentrations of several contaminants exceeded the ER-L concentration in some samples, but only nickel exceeded the ER-M concentration. In general, contaminant concentrations were below the Ambient Sediment Concentration thresholds for San Francisco Bay. Although nickel was above the ER-M in the majority of the Long Wharf sediment samples, it exceeded the Ambient Sediment Concentration threshold on only one occasion. Nickel is naturally high in soils and rock in the San Francisco Bay area (San Francisco Estuary Institute 2002). Toxicity tests have indicated that sediments from the Long Wharf have relatively low toxicity to marine organisms.

Dredging and disposal of sediments from the Long Wharf may have an adverse effect on water clarity. Because of the fine grain size of the material, it requires more time to settle to the bottom than larger grain-size sands. If there are swift currents at the disposal site (such as at the Alcatraz site), the turbid plume of material suspended in the water column may extend to a large area of San Francisco Bay. Sediments dredged will be anisotropic and may have an effect on dissolved oxygen concentrations of the water column in the disposal area. These effects generally occur for a brief period of time (Chambers Group 1986). Resuspension of dredged sediments is not expected to expose marine organisms to toxic concentrations of contaminants, because of the low toxicity of Long Wharf sediments. Monitoring of water column chemicals during dredging projects in San Francisco Bay indicated that contaminant concentrations did not exceed water quality objectives (Corps and Contra Costa County 1987).

Dredged material disposal in San Francisco Bay are regulated by the interagency Dredged Materials Management Office (DMMO). This interagency group evaluates the physical and chemical characteristics of the dredged sediments to make sure that they are compatible for in-water disposal in the Bay. Because the effects of dredging and dredged material disposal on water quality are transitory and because sediment composition is evaluated by the DMMO before a dredging permit is issued, the impacts of maintenance dredging at the Long Wharf on water quality are determined to be adverse but less than significant (Class III). The impacts to water quality of expansion of Berth No 4 would be similar to the impacts of maintenance dredging. Impacts would result in temporary suspension of sediment and would be adverse, but less than significant (Class III).

WQ-10: No mitigation is required.

Impact WQ-11: Oil and Product Leaks and Spills at the Long Wharf

Potential impacts on water quality can result from leaks or spills. Small leaks or spills (less than 50 bbl) related to Long Wharf operations could result in significant (Class II) impacts, while large spills (greater than 50 bbl) could result in significant adverse impacts (Class I).

Fate and Behavior of Petroleum Hydrocarbons Spilled in the Marine Environment

To accurately assess the impacts of petroleum spills and chronic discharges to the marine environment, it is necessary to know the make up of the crude oil or product spilled and the physical, chemical, and biological processes that transform petroleum hydrocarbons spilled in the in the marine environment. Several comprehensive reviews describe the fate and behavior of petroleum introduced into the marine environment (NRC 1985, 2003; Jordan and Payne 1985; Hayes, Michel, and Morreal 1983; Rytkonen, Hirvi, and Hakala 1991).

A wide range of crude oil, feed stocks, additives, and processed petroleum products are transferred through the Long Wharf between the Refinery and ships. The Long Wharf typically receives about 98 million bbls of crude oil, diesel fuel oil, gasoline components, diesel blend stock, and dirty diesel/fuel stock annually. Of this amount, approximately 80 million bbls per year are crude oil of both domestic and foreign origin. The Long Wharf typically ships approximately 35 million bbls annually of gasoline, gasoline components, aviation fuel, jet fuel, diesel fuel, and lubricating oils.

Crude oils vary widely in appearance and viscosity from field to field. Within the same field, the properties of crude oil vary greatly depending on the season and other environmental factors when the oil was extracted (Chambers Group 1994, NRC 2003). Crude oil and petroleum products are complex substances. Crude oil typically is a mixture of several hundred distinct compounds, most of them hydrocarbons, containing hydrogen and carbon in various proportions. Of the hydrocarbon compounds common in petroleum, polycyclic aromatic hydrocarbons (PAH) appear to pose the greatest toxicity to the environment (NRC 2003). When crude oil is distilled into petroleum products, it is essentially sorted into fractions by the boiling temperatures of these hundreds of compounds. Boiling temperature is strongly correlated with the number of carbon atoms in each molecule. Therefore, some petroleum products have low boiling temperatures and relatively simple molecules with few carbon atoms, while others have higher boiling temperatures, larger molecules, and more carbon atoms per molecule. The higher the boiling temperature, the greater the density of the resulting product.

Refiners control the mix of hydrocarbon types in particular products in order to give petroleum products desired properties. Hydrocarbons in the C2-C4 range are all natural gas liquids; hydrocarbons in the C5-C10 range predominate in naphtha and gasoline; and C12-C20 comprises middle distillates, which are used to make diesel fuel, kerosene, and jet fuel. Larger molecules generally wind up as lubricants, waxes, and residual fuel oil. Each of the hydrocarbons has distinctive characteristics and differs in density, vapor pressure, and solubility. Therefore, the fate of spilled oil in water varies significantly depending on the make up of the oil spilled.

The fate of spilled oil in the marine environment is determined by a variety of complex and interrelated physical, chemical, and biological transformations. The physical and chemical processes involved in the "weathering" process of spilled oil include evaporation, dissolution and vertical mixing, photochemical oxidation, emulsification,

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and sedimentation (NRC 2003). The rate of these weathering processes is influenced by a variety of abiotic factors (e.g., water temperature, suspended particulates, water clarity), physical-chemical properties inherent to the oil itself (e.g., vapor pressure, solubility, aromatic, asphaltene, and wax content), and the relative composition of the hydrocarbon source matrix (e.g., crude oil or refined products). The mass fraction of aromatic present in a crude oil is an important indicator of potential toxicity of a spill, because aromatics are considered the most toxic hydrocarbons in oil (Galt et al. 1991). The asphaltene and wax content determines water-in-oil emulsion formation and is an indicator of how well crude oil will form a stable emulsion or mousse in seawater.

The biological processes involved in the weathering of spilled oil include microbial degradation and uptake of hydrocarbons by larger organisms and its subsequent metabolism. The biodegradation of petroleum by microorganisms is one of the principal mechanisms for removal of petroleum from the marine environment. Enhancement of natural biodegradation processes by microbes may be one of the least ecologically damaging ways of removing oil from the marine environment. Uptake of hydrocarbons by large organisms usually has adverse impacts in the biota because of the toxicity of petroleum hydrocarbons.

Several competing forces occur simultaneously once oil has been released into the marine environment. The processes affecting the fate of spilled oil include (1) advection (drift) and spreading, (2) evaporation, (3) dissolution, (4) dispersion, (5) emulsification, (6) photooxidation/autooxidation, and (7) sedimentation. Advection or drift is measured by the movement of the center of mass of an oil slick and is primarily controlled by wind, waves, and surface currents. Spreading of oil on water is probably the most significant process for the first 6 to 10 hours following a spill. Gravitational, inertial, and frictional forces are responsible for spreading oil. As spreading occurs, the volatile fractions of the oil are lost to evaporation or dissolution, leading to an increase in the viscosity and specific gravity of the remaining oil. Depending on the product spilled, the rate of evaporation can be important in determining if impacts occur. Spills of refined products, such as kerosene, gasoline, aviation fuel, and jet fuel, may completely evaporate within 24 hours of the spill. Evaporation can account for up to 50 percent of a crude oil spill being lost during the first 24 to 48 hours. Evaporation depends on the physical properties of the spilled oil and on sea state, intensity of solar radiation, wind velocity, and air and sea temperatures.

Because of the low aqueous solubility of most hydrocarbon components of crude oil, dissolution is less important than evaporation. Salinity, temperature, and turbulence of seawater affect the dissolution rate of each hydrocarbon component. The more soluble petroleum hydrocarbons are those with the greatest aromatic and olefin characteristics. For example, the toxic polynuclear aromatics are more soluble in seawater than the relatively nontoxic, longer chain paraffins.

The movement of small particles or globules of oil into the water column (dispersion) is believed to be caused by propulsion of surface turbulence (wind, waves, and ship traffic). Such oil-in-water emulsions are unstable and can be stabilized only by natural

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or added emulsifiers, detergents, dispersants, or suspended particulates. Generally, an oil spill will begin to disperse immediately, and, after 100 hours, dispersion will overtake spreading as the principal mechanism for distributing spilled oil (SAIC 1984).

Emulsification arises from the dispersion of spilled oil and represents a change of state from an oil-in-water dispersion to a water-in-oil emulsion. Crude oils with high asphaltene content or high viscosity, form mousse emulsions more than paraffin crude oils (Bocar and Gaseiller 1984, cited in NRC 1985). Lighter petroleum destillates, such as gasoline, kerosene, aviation fuel, jet fuel, and diesel fuel oils, do not form mousse (NRC 1985).

Photooxidation (the action of sunlight in the presence of oxygen) is a long-term weathering process, which can degrade toxic components in petroleum. For example, potential carcinogens such as benzo[a]pyrene have been shown to be photooxidized by sunlight. Oil that evaporates is photochemically oxidized in the atmosphere. In surface water, photooxidation may be important on a time scale of minutes to days.

Sedimentation and sinking of spilled oil is caused by sorption on particulates and ingestion of hydrocarbons by zooplankton. Weathering processes increase the density of oil, which leads to incorporation of particulates and the agglomeration of oil-particulate mixtures that eventually sink. In general, extensive weathering is required before the oil residual has a specific gravity greater than that of seawater. Some weathering and fractionation of oil appears to be necessary before incorporation into suspended material. Test tank studies have show that fractionation of oil is common before it is incorporated into suspended particulate material.

Impacts of Spilled Oil in the Water

A significant impact to marine water quality (Class I or II impact) would result from changes in water chemistry from an accidental spill of crude oil or oil product in either San Francisco Bay (at the Long Wharf or along tanker routes) or outer coast waters. Spill probabilities are presented in Section 4.1, Operational Safety/Risk of Accidents. Long Wharf operations have the greatest potential for small spills (less than 50 bbl), while the larger spills would more typically result from ships in transit. The containment and cleanup capability at the Long Wharf is detailed in Section 4.1, Operational Safety/Risk of Accidents, Impact OS-3.

Physical properties affected by an oil spill include reduced wind stress and thus reduced water surface mixing which limits the exchange of dissolve oxygen between the water and the atmosphere, reduced light transmissivity, and reduced solar warming of the sea surface. The total sea surface area affected by a spill depends on the volume of oil released and the prevailing meteorological conditions, particularly winds.

Most small leaks or spills (less than 50 bbl) related to operation of the Long Wharf could result in significant, adverse (Class II) impacts that can be mitigated to less than significant; because they could be easily contained. However, the severity of impact

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from larger leaks or spills (greater than 50 bbl) at the Long Wharf depends on (1) spill size, (2) oil composition, (3) spill characteristics (instantaneous vs. prolonged discharge), (4) the effect of environmental conditions on spill properties due to weathering, and (5) the effectiveness of cleanup operations. In the event of an oil spill, the initial impacts would be to the quality of surface waters and the water column, followed by potential impacts to sedimentary and shoreline environments. Following an oil spill, hydrocarbon fractions would be partitioned into different regimes and each fraction would have a potential impact on water quality. Large spills (greater than 50 bbl) at the Long Wharf could result in significant, adverse (Class I) impacts on water quality.

Most tanker spills/accidents and larger spills that cannot be quickly contained either in the Bay or along the outer coast would result in significant, adverse (Class I) impacts.

The duration of potential impacts to water quality is variable and depends on the type of oil spilled. The most toxic period for crude oil spilled is the first few days due to volatile, low molecular weight hydrocarbons (BLM 1979). Product spills of gasoline and fuels may evaporate faster than crude oil, but are generally more toxic and more soluble. Toxicity tests performed on oil by the EPA have shown that aromatic constituents are the most toxic, naphthenes and olefins are intermediate in toxicity, and straight chain paraffins are the least toxic (Chambers Group 1989).

Mitigation Measures for WQ-11:

WQ-11. MM OS-3a through MM OS-3d (Operational Safety/Risk of Upset) and MM OS-4 shall be implemented.

Rationale for Mitigation: These measures provide greater safety in preventing spills and improving response capability and help to reduce impacts to water quality to the maximum extent feasible. Small leaks or spills resulting from Long Wharf operations that can be easily contained would result in adverse but less than significant impacts.

Residual Impacts: Large spills at the Long Wharf (greater than 50 bbls) may result in significant adverse impacts (Class I) on water quality.

4.2.4.2 Oil Spills from Vessels in Transit in Bay or along Outer Coast

Impact WQ-12: Water Quality Impacts from Accidental Spills

A significant impact to water quality (Class I or II) could result from leaks or an accidental spill of crude oil or oil product from a vessel spill along tanker routes either in San Francisco Bay or outer coast waters.

The fate and water quality impacts of oil from a spill associated with vessels servicing the Long Wharf would be similar to the impacts described above for a spill at the Long Wharf. A significant impact to water quality (Class I or II) would result from an accidental spill of crude oil or oil product from a vessel transiting San Francisco Bay or outer coast waters. A larger oil spill is more likely from accidents associated with vessels in transit than a spill at the Long Wharf. Most tanker spills/accidents and larger spills that cannot be quickly contained either in the Bay or along the outer coast would result in significant, adverse impacts (Class I).

Mitigation Measures for WQ-12:

WQ-12. The Long Wharf shall implement MM OS-7a and OS-7b of Section 4.1, Operational Safety/Risk of Upset Section, addressing potential participation in VTS upgrade evaluations, and Chevron responses actions for spills at or near the Long Wharf.

Rationale for Mitigation: A spill from a tanker is the responsibility of the vessel owner/operator. Each vessel is required to have an oil spill contingency plan that identifies response measures for containment, recovery, and protection of sensitive resources. The Long Wharf operator is much more suited to provide immediate response to a spill using equipment and resources located at or near the Long Wharf. In addition, the Long Wharf staff is fully trained to take immediate actions in response to spills at or near the Long Wharf. The vessel would have to contact its response organization, which may take some time to mobilize. Therefore, Chevron shall agree to respond to the spill as if it were its own until such time as the vessel's response organization can take over management of the response actions in a coordinated manner.

Residual Impacts: Even with these measures, the residual impacts to water quality may remain significant (Class I).

4.2.5 Impacts of Alternatives

WQ-13: No Project Alternative

The alternative would eliminate the water quality impacts associated with operations at the Long Wharf resulting in a beneficial (Class IV) impact. Water quality impacts from spills (Class I, II and III) would be transferred to other marine terminals and would be similar to the proposed Project. Chevron has no responsibility for these other terminals. Decommissioning and removal of the Long Wharf might result in temporary, adverse, but less than significant impacts on water quality (Class III).

Under the No Project Alternative, Chevron's lease would not be renewed and the existing Long Wharf would be subsequently decommissioned with its components abandoned in place, removed, or a combination thereof. The decommissioning of the Long Wharf would follow an Abandonment and Restoration Plan as described in Section 3.3.1, No Project Alternative.

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Under the No Project Alternative, alternative means of crude oil/product transportation would need to be in place prior to decommissioning of the Long Wharf, or the operation of the Chevron Refinery would cease production, at least temporarily. It is more likely, however, that under the No Project Alternative, Chevron would pursue alternative means of traditional crude oil transportation, such as a pipeline transportation, or use of a different marine terminal. Accordingly, this EIR describes and analyzes the potential environmental impacts of these alternatives. For the purposes of this EIR, it has been assumed that the No Project Alternative would result in a decommissioning schedule that would consider implementation of one of the described transportation alternatives. Any future crude oil or product transportation alternative would be the subject of a subsequent application to the CSLC and other agencies having jurisdiction, depending on the proposed alternative.

During decommissioning, impacts would be similar to the proposed Project with the potential for small spills associated with pipeline drainage, pipeline and pier removal. Also, removal of the Long Wharf pier could result in temporary impacts to water quality from sediment disturbance. These impacts would be short lived and are considered adverse but less than significant (Class III).

Following decommissioning, no impacts would be associated with the Long Wharf because there would be no operations. The potential impacts of spills on water quality would remain similar to the proposed Project, but would be transferred to another marine terminal. The transfer of tanker traffic from the Long Wharf to another marine terminal would eliminate inputs of contaminants from runoff from the Long Wharf as well as some of the small leaks and spills that enter the water directly from Long Wharf operations. This alternative also would eliminate the discharge of treated freshwater from the Long Wharf. Because the additional tanker traffic at another marine terminal would not be expected to increase significantly the quantity of contaminants in stormwater runoff or freshwater discharge from the other terminal, this alternative would have fewer impacts to water quality than continued terminal operations at the Long Wharf.

The No Project Alternative would eliminate the temporary water quality impacts associated with maintenance dredging to maintain adequate depth at the berth. Because the additional tanker traffic at another marine terminal would not be expected to increase significantly maintenance dredging, this alternative would have fewer impacts to water quality than continued terminal operations at the Long Wharf.

Water quality impacts associated with vessels would be transferred to another marine terminal and would be similar to the proposed Project. These impacts include turbidity generated by boat propellers and bow thrusters, introduction of exotic organisms in ballast water discharges, discharge of heated cooling water, introduction of toxins used as anti-fouling agents on tankers, and introduction of metals from cathodic protection on vessels. These potential impacts of spills on water quality would remain similar to the proposed Project, but would be transferred to another marine terminal.

WQ-13: No mitigation is required.

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WQ-14: Full Throughput via Pipeline Alternative

Reduced quantities of crude and product would be handled at another terminal in the Bay Area, and transferred to the Refinery via pipeline. In the event of a pipeline break and spill, there is the potential that water quality could be compromised if the spill would reach a creek, stream, lake, or other water body. This could result in a significant, adverse (Class I or II) impact depending on whether the spill could be contained easily and whether other resources such as habitats may be affected.

With this alternative, reduced quantities of crude and product would be handled at another terminal in the Bay Area, and transferred to the Refinery via pipeline. The remainder of crude and product from other sources would also be transferred via pipeline. The impacts to water quality associated with Long Wharf operations, vessels in transit, and spills would be similar to that presented for the proposed Project but could increase risk at another terminal. In the event of a pipeline break and spill, there is the potential that water quality could be compromised if the spill would reach a creek, stream, lake, or other water body. This could result in a significant, adverse (Class I or II) impact depending on whether the spill could be contained easily and whether other resources such as habitats may be affected. Spills from these other terminals could result in a significant, adverse impacts depending on whether the spill could be contained easily and whether a water body is affected.

Although a significant impact to water quality can occur from a pipeline leak or spill, it is less likely to have significant water quality impacts than a spill associated with tanker operations. In many cases, pipeline leaks or spills may be contained and cleaned up before Bay waters were contaminated. Although the consequences of a spill at another marine terminal would likely be similar to those of a spill at the Long Wharf, the fact that the total number of tankers would be reduced would also reduce the overall probability of a spill related to tanker traffic.

Mitigation Measures for WQ-14:

WQ-14 Implement MM GEO-6 for mitigation for land-based spills. Mitigation shall include adherence to spill prevention and response planning for the geographical area, and pipeline engineering and design based on detailed analysis conducted for the selected alignment(s).

Rationale for Mitigation: The measures are standard practice for on-land spill cleanup and may have specific provisions that vary by geographical area to respond to specific resources. If Chevron could not use the Long Wharf and was required to construct additional pipelines or other facilities, they would have to follow the CEQA process, which would most likely require the mitigation measures to reduce system safety impacts.

Residual Impact: Significant adverse impacts to water quality could still occur if significant amounts of oil reached a waterbody.

4.2 Water Quality

Impact WQ-15: Conceptual Consolidation Terminal Alternative

The Consolidation Terminal would share tankering operations, in addition to requiring new pipelines for transfer of crude and product to the Refinery. Construction and operation of new pipelines have potential for impacts on water quality that may be Class I or Class II.

The transfer of some of the tanker traffic from the Long Wharf to another terminal would be unlikely to reduce the input of contaminants from routine operations at the Long Wharf. Treated firewater would still be discharged periodically. Contaminants would accumulate on the surface of the Long Wharf to be washed into the Bay during storms. Maintenance dredging would still be required to maintain adequate depth for tankers. Transfer of Long Wharf tanker traffic to another terminal would not be expected to increase significantly contaminant input from stormwater runoff or firewater discharge from the other terminal. Therefore, this alternative would have similar impacts to marine water quality as the proposed Project.

With this alternative, the potential impacts of spills on water quality would remain similar to the proposed Project, but would be shared with another marine terminal (Class I and II). Because pipelines would connect the Consolidation Terminal with the Chevron Refinery, there would also be the potential consequences associated with a pipeline spill as discussed above. Pipeline spills are less likely to have significant water quality impacts than spills associated with tankers because they are more likely to be contained before they reach the water.

Mitigation Measures for WQ-15:

WQ-15. Implementation of MM WQ-14, include MM OS-3a-d, MM OS-4, and MM GEO-8 apply for mitigation for land-based spills shall include adherence to spill prevention and response planning for the geographical area, and pipeline engineering and design.

Rationale for Mitigation: MM WQ-14, MM OS-3a-d and MM OS-4 all provide for protection against spills. MM GEO-8 measures are standard practice for on-land spill cleanup and may have specific provisions that vary by geographical area to respond to specific resources. If Chevron could not use the Long Wharf and was required to construct additional pipelines or other facilities, they would have to follow the CEQA process, which would most likely require the mitigation measures to reduce system safety impacts.

Residual Impacts: Significant adverse water quality impacts (Class I) could occur if significant amounts of oil reached a waterbody.

4.2 Water Quality

4.2.6 Cumulative Projects Impacts Analysis

Impact CUM-WQ-1: Contaminants Impacts on Bay and Outer Coast Water Quality

The water quality of the San Francisco Bay estuary has been degraded by inputs of pollutants from a variety of sources, as such, any contribution of a contaminant already at significantly high levels to the waters of San Francisco Bay would have a significant adverse impact at the cumulative level (Class I). Chevron would not contribute significantly to Outer Coast impacts to water quality (Class III).

The water quality of the San Francisco Bay estuary has been degraded by inputs of pollutants from a variety of sources. Major sources of contaminants include municipal wastewater and industrial discharges and a variety of nonpoint sources such as urban and agricultural run-off, riverine inputs, dredging and dredge material disposal, marine vessel inputs, and inputs from air pollutants, spills, and accidents. In general, storm water run-off is responsible for the greatest mass loadings of most contaminants (Davis et al 2000). The sources of contaminants to the San Francisco Bay estuary and the levels of contaminants throughout the estuary are discussed in detail in Section 4.2.1, Environmental Setting. That section describes levels of many contaminants in the water column, in the sediments, and in the biota in the estuary that either exceed water quality objectives in the San Francisco Bay Basin Plan or are at levels known to have harmful effects on aquatic organisms. Table 4.2-13 lists contaminants of particular concern in the San Francisco estuary.

Any contribution of a contaminant already at significantly high levels to the waters of San Francisco Bay would have a significant impact at the cumulative level (Class I). Of the contaminants listed as significantly elevated in Table 4.2-13, operations at the Long Wharf would not contribute to pesticides. Chevron tankers may have contributed to TBT contamination in the past, but the application of TBT on tankers is being phased out. Because organotins are so toxic to marine organisms, any continued use of organotins by vessels in San Francisco Bay is a significant adverse cumulative impact.

The mass emissions of several pollutants from Chevron's discharges were compared to other sources in Section 4.2.1, Environmental Setting, above. The contribution of Chevron's Refinery to the mass emissions of nickel (a 303 [d] list pollutant in San Pablo Bay) in San Francisco Bay was approximately 0.4 percent the estimated mass loading of nickel to the Bay from stormwater and approximately 4 percent that of major permitted discharges. If the Long Wharf contributes 1 to 2 percent of the nickel in the Refinery discharge, mass loading of nickel from the Refinery would contribute approximately 2 to 3.8 kg of nickel per year or less than .01 percent of the nickel loading from stormwater and less than 0.1 percent of the loading from permitted dischargers. Mass emissions of nickel, copper and selenium from firewater discharges used for hydrostatic testing and other purposes at the Long Wharf were all estimated to contribute less than .02 kg per year of these metals of concern.

Table 4.2-13
Pollutants of Particular Concern in the Bay/Delta Estuary

TRACE ELEMENTS	
Cadmium	Selenium
Copper	Silver
Mercury	Tin (Tributyl)
Nickel	
ORGANOCHLORINES AND OTHER PESTICIDES	
Chlordane and its metabolites	Polychlorinated biphenyls
DDT and its metabolites	Toxaphene
PETROLEUM HYDROCARBONS	
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)	
Acenaphthene	2, 6-Dimethylnaphthalene
Acenaphthylene	Fluoranthene
Anthracene	Fluorene
Benzo(a)fluoranthene	1-Methylphenanthrene
Benzo(b)fluoranthene	2-Methylnaphthalene
Benzo(g,h,i)perylene	1-Methylphenanthrene
Benzo(a)pyrene	2-(4-morpholinyl)benzothiazole
Benzo(e)pyrene	Naphthalene
Benzo(g,h,i)fluoranthene	Phenanthrene
Benzothiazole	Pyrene
Chrysene	2,3,5-Trimethylphenylurethane
Dibenzo(a,h)anthracene	Retene(1,7-Dimethyl-4-isopropylphenanthrene)

Source: Mearns and Kelly 1982.

Of the other contaminants, operations at the Long Wharf would contribute small quantities of metals and PAHs. Inputs from the Long Wharf include segregated ballast waters, small leaks and spills of oil and product, some contaminants in vessel paint or sacrificial anodes, and a portion (about 1 percent) of the discharge from the Refinery. Of those sources, only the Refinery discharge is quantified. The Refinery's discharge of 7 to 8 mgd is approximately 1.5 percent of major permitted discharges in the San Francisco estuary (Table 4.2-1). Based on an average contribution to the Refinery of about 1 percent of the total Refinery discharge, the percentage of permitted discharges to the Bay contributed by the Long Wharf would be about 0.002 percent. Table 4.2-1 shows that the Bay's largest municipal discharger, the San Jose/Santa Clara Water Treatment Plant (WTP) located in the South Bay, discharges 133 mgd of treated municipal sewage. Furthermore, inputs from nonpoint sources, including the San Joaquin and Sacramento Rivers and urban runoff, far exceed the permitted point source discharges, especially in wet years. Therefore, this contribution to total contaminant loads in the San Francisco estuary from treated wastewater from the Long Wharf is very small.

Emissions of contaminants from stormwater runoff from the Long Wharf are unknown. Because of the small size of the Long Wharf compared to the watersheds that contribute runoff to the Bay, the total stormwater emissions from the Long Wharf would be expected to be relatively small compared to the total emissions in all stormwater runoff to the Bay. However, the Long Wharf is a paved surface on which industrial activities occur and therefore storm runoff may contribute fairly high concentrations of contaminants even though the volume of runoff would be expected to be relatively low.

Similarly, the amount of material released from chronic releases at the Long Wharf is generally small. Table 4.1-1 lists the history of spills at the Long Wharf since 1992. During this period, Chevron had 41 releases of oil ranging in size from a teaspoon to 42 gallons. In summary, operation of the Long Wharf would contribute to the significant cumulative levels of certain contaminants in the San Francisco Bay estuary. However, this contribution is extremely small compared to other sources, particularly runoff and municipal discharges.

Finally, the discharge of segregated ballast water from vessels using the Long Wharf would contribute to the significant cumulative adverse impacts to water quality and biological resources from the introduction of toxic microorganisms and invasive macroorganisms to San Francisco Bay. Because many of those organisms are so invasive even a small volume of discharge can have devastating effects that are not proportional to relative discharge volumes. The biological impacts of invasive species are discussed in detail in Section 4.3, Biological Resources.

Because Central San Francisco Bay and San Pablo Bay have been designated as impaired waterbodies for exotic organisms as well as for several chemicals (see Table 4.2-2), any contribution of contaminants of concern or exotic organisms from operations at the Long Wharf would be a significant adverse cumulative impact that cannot be mitigated to less than significant (Class I).

Contaminant levels on the outer coast generally do not exceed water quality objectives. Chevron tankering would not have a significant impact on water quality on the outer coast, except in the event of a major oil spill.

Section 4.1, Operational Safety/Risk of Accidents, presents a discussion of cumulative oil spill risk. A major oil spill would have a significant (Class I) cumulative effect on water quality.

Mitigation Measure for CUM-WQ-1:

CUM-WQ-1. Chevron shall implement the mitigation measures described for the proposed Project MM WQ-7 through MM WQ-9 and MM WQ-11 and MM WQ-12 to reduce project specific impacts to water quality.

Rationale for Mitigation: Chevron's implementation of measures to decrease spill risk and increase response capability, combined with preparation of measures specific to the Long Wharf in its SWPPP would help the Long Wharf reduce its contribution of contaminants into the water. In the long-term, documentation of vessels using TBT or other metal-based anti-fouling paints would help to reduce water quality impacts. Although Chevron may reduce its contribution of pollutants to San Francisco Bay, the

cumulative impact of degraded water quality, especially from urban runoff, is expected to remain significant. The development of Total Maximum Daily Loads for priority pollutants by the RWQCB and the implementation of Bay-wide measures to meet those loads will help to reduce cumulative significant water quality impacts.

Residual Impact: Impacts to water quality may remain significant.

Impact CUM-WQ-2: Introduction of Non-indigenous Organisms by Discharge of Segregated or Treated Unsegregated Ballast Water

Contribution of contaminants or exotic organisms from operations at the Long Wharf would be a significant adverse cumulative impact that cannot be mitigated to less than significant (Class I).

The discharge of segregated ballast water from vessels visiting the Long Wharf or unsegregated ballast water treated at Chevron's wastewater facility would contribute to the significant cumulative adverse impacts to water quality and biological resources from the introduction of toxic microorganisms and invasive macroorganisms to San Francisco Bay. No information is available on the volume of segregated ballast water discharged annually to San Francisco Bay by vessels associated with the Long Wharf. Table 4.2-14 shows the amounts of ballast water discharged by tank vessels operating in San Francisco Bay per year.

Table 4.2-14
Amounts of Ballast Water Discharged by Tank Vessels Operating in San Francisco Bay Per Year

Year	Amount Reported (metric tons)
2000	577,627
2001	958,646
2002	965,173
2003	518,058
2004	1,521,812
2005*	2,114,790

* amounts through 12/13/05 Note: Between 2000 and 2003 the law exempted TAPS trade tankers (US Flagged, US Crewed tank vessels, carrying petroleum from one US port to another US port) and only required reporting on ballast water discharges at first port of call.

Source: M. Falkner, California State Lands Commission, personal communication 2005.

Because many of the non-indigenous organisms in ballast water are so invasive, even a small volume of discharge can have devastating effects that are disproportional to relative discharge volumes. Moreover, non-indigenous organisms may remain in ballast water

that has been exchanged in the mid-ocean. Unsegregated ballast water treated at the Chevron facility and discharged may still contain organisms. The biological impacts of invasive species are discussed in detail in Section 4.3, Biological Resources.

Mitigation Measures for CUM-WQ-2:

CUM-WQ-2. Implement proposed Project MM WQ-2 and MM WQ-5.

Rationale for mitigation: Adherence to this measure addresses procedures for ballast water management Chevron must follow for tracking the compliance of the vessels visiting the Long Wharf. The measure is a tracking measure only, and does not reduce the level of impact, as the problem is a regional/Bay-wide problem. Chevron shall not treat and discharge any unsegregated ballast water at its wastewater treatment facility because treatment methods may not remove all marine organisms.

Residual Impacts: Until a feasible system is developed kill organisms in ballast water, the discharge of ballast water to the Bay will remain significant (Class I).

Impact CUM-WQ-3: Oil Spills along Outer Coast

A major oil spill along the outer coast would have a significant adverse (Class I) cumulative impact on water quality. A spill along the outer coast would not be within Chevron's responsibility.

Contaminant levels on the outer coast generally do not exceed water quality objectives. Chevron's Long Wharf tankering would not have a significant adverse impact on water quality on the outer coast, except in the event of a major oil spill. Section 4.3.1, Environmental Setting, above presents a discussion of cumulative oil spill risk. A major oil spill would have a significant adverse (Class I), cumulative effect on water quality.

Mitigation Measures for CUM-WQ-3:

CUM-WQ-3. Implement MM OS-7a and MM OS-7b.

Rationale for mitigation: Measure OS-7a calls for Chevron to participate in VTS upgrade evaluations as opportunities arise. Such participation may help to evaluate and guide improvements in the VTS system. Measure OS-7b requires Chevron to respond to a spill from a tanker as if it were its own until the vessel's response organization can take over management of the oil spill response. This measure will insure that a spill will be responded to as rapidly as possible.

Residual Impacts: Impacts of large spills would remain significant (Class I).

Table 4.2-15 summarizes Water Quality impacts and mitigation measures.

4.2 Water Quality

Table 4.2-15
Summary of Water Quality Impacts and Mitigation Measures

Impact		Mitigation Measures	
WQ-1:	Sediment Disturbance to Water Quality from Vessel Maneuvers	WQ-1:	No mitigation required.
WQ-2:	Segregated Ballast Water	WQ-2:	Adhere to California Marine Invasive Species Control Act; advise and ensure that vessel operators know of Act and its requirements.
WQ-3:	Cargo Tank Washwater, Bilge Water, and Sanitary Wastewater	WQ-3:	No mitigation required.
WQ-4:	Discharges of Firefighting Water	WQ-4:	No mitigation required.
WQ-5:	Non-Segregated Ballast Water	WQ-5:	No discharge to San Francisco Bay; transport via tanker and collect waste handling vessels to appropriate facility.
WQ-6:	Cathodic Protection	WQ-6:	No mitigation required.
WQ-7:	Anti-Fouling Paints	WQ-7:	Vessel operators to document no new applications of TBT after Jan. 1, 2003. In 2008, Chevron to deny moorage to vessels without proof of IMO interlink
WQ-8:	Tanker Maintenance	WQ-8:	Apply WQ-3 for operation of SWPPP.
WQ-9:	Stormwater Runoff from Long Wharf	WQ-9:	Implement additional BMPs to reduce chemical inputs to Bay.
WQ-10:	Maintenance Dredging	WQ-10:	No mitigation required.
WQ-11:	Oil and Product Leaks and Spills	WQ-11:	Implement MM OS-3a through OS-3d and MM OS-4.
WQ-12:	Water Quality from Accidental Spills	WQ-12:	Implement MM OS-7a and MM OS-7b.
WQ-13:	No Project Alternative	WQ-13:	No mitigation is required.
WQ-14:	Full Throughput via Pipeline Alternative	WQ-14:	Implement MM GEO-8.
WQ-15:	Conventional Consolidation Terminal Alternative	WQ-15:	Implement MM OS-3a-d, MM OS-4, and MM GEO-8.
CUM-WQ-1:	Contaminants on Bay and Outer Coast	CUM-WQ-1:	Implement MM WQ-7 through MM WQ-9 and WQ-11 and 12.
CUM-WQ-2:	Non-Indigenous Organisms by Segregated and Unsegregated Ballast Water Discharge	CUM-WQ-2:	Implement MM WQ-2 and WQ-5.
CUM-WQ-3:	Oil Spills along Outer Coast	CUM-WQ-3:	Implement MM OS-7a and MM OS-7b.

RESPONSES TO COMMENT SET 10: SAFER CALIFORNIA

10-1 Comment acknowledged.

10-2 The proposed Project is described in Section 2.0, Project Description, of the Environmental Impact Report (EIR). The commenter's concern with the adequacy of the description provided, and therefore, subsequent accuracy of associated impact analyses, is addressed in responses to specific comments.

10-3 See Master Responses MR-1 and MR-2.

10-4 EIR Sections 4.3, Water Quality, and 4.4, Air Quality, describe impacts and associated mitigation measures (MMs) related to water and air quality, respectively. The California State Lands Commission (CSLC) interprets this comment as a summary of specific concerns expressed by Safe Fuel and Energy Resources (SAFER) California within its comment letter regarding potential impacts on water and air quality. See specific responses to comments that address these concerns. Concerns with the identification and analyses surrounding potential impacts on water and air quality are addressed in responses to specific comments.

10-5 Resource-specific Sections 4.1 through 4.11 of the EIR include a thorough description of potential impacts on sensitive resources resulting from the Project. For the significant impacts identified, feasible MMs have been included to eliminate or reduce the severity of impacts and focus on the protection of sensitive resources. The MMs recommended in the EIR are identified in the impact sections and presented in a Mitigation Monitoring Program provided in EIR Section 8.0, Mitigation Monitoring Program. The CSLC interprets this comment as a summary of specific concerns later identified by SAFER California in its comment letter. Concerns with the feasibility, effectiveness, and/or general lack of sufficient MMs are addressed in responses to specific comments.

10-6 Comment acknowledged.

10-7 Comment acknowledged. Responses to technical comments (comments #10-42 through #10-73) provided in Attachments A and B are provided herein.

10-8 See Master Response MR-1.

10-9 See response to comment #10-64.

10-10 See responses to comments #10-64, #10-65, and #10-66.

10-11 See responses to comments #10-64, #10-65, and #10-66.

10-12 See Master Response MR-5.

10-13 See Master Response MR-5.

10-14 See Master Response MR-5.

10-15 See Master Response MR-5.

10-16 The CSLC provided the references used in the EIR to the commenter in response to the October 13, 2014 request. Public Resources Code section 21092 and California Code of Regulations, title 14, section 15087 of the State California Environmental Quality Act (CEQA) Guidelines require that all documents referenced within a Draft EIR be available for review in the offices of the CEQA lead agency, but does not require the lead agency to transmit copies of the references to commenters. All references were available for inspection at the CSLC Sacramento office starting September 26, 2014, when the Notice of Availability was released. As a courtesy to the commenter and at their request, in lieu of traveling to our offices for inspection of the references, CSLC staff created a DVD with electronic copies of the references and mailed it to the commenter. This request was processed and fulfilled pursuant to the California Public Records Act (PRA) (Gov. Code § 6250 et seq.). Two references (Chambers Group, Inc. 1994 and Smith 1959) were not included in the PRA package sent to the commenter as a result of a clerical error. More than 260 references were used to produce the EIR, of which, all but two were provided upon request. In the spirit of CEQA, CSLC staff made a reasonable effort to provide all of the references in a manner that was convenient for the commenter. Because the CSLC staff was not notified that these two references were erroneously omitted from the DVD, the CSLC was unaware of the oversight. However, all references used in the EIR were available for review at the CSLC offices as required by CEQA for the entire public comment period. Therefore, there is no need to recirculate the Draft EIR for further public review.

See Master Response MR-4 regarding the comment that the Chambers Group, Inc. (1994) report is outdated. See response to comment #10-64 regarding the assertion that the data from the Smith (1959) report are obsolete.

10-17 See Master Response MR-4.

10-18 See Master Response MR-4.

10-19 See Master Response MR-4.

10-20 See Master Response MR-3.

10-21 Emissions from storage tanks depend upon several factors, including vapor pressure of the stored liquid, temperature, atmospheric pressure, and tank design (e.g., seals, roofs, venting, paint color, etc.). Dr. Fox is correct in her statement that Bakken crude oils typically have a higher vapor pressure than other types of crude oil, and therefore, would result in greater volatile organic compound emissions during storage. However, as discussed in Master Response MR-4, Tesoro Refining and Marketing Company, LLC (Tesoro) does not anticipate that any hydrocarbon feedstocks, tar sands, Bakken crude, or other products that might be classified as Group V, other than small amounts of decant oil, would be handled at the Tesoro Avon Marine Oil Terminal (Avon Terminal) during the life of the lease. See Master Response MR-4 regarding concerns related to the type and amount of crude oil to be imported to the Avon Terminal. See Master Response MR-3 regarding concerns related to the Project scope as it relates to onshore tankage.

In addition, text has been revised in Section 4.4.3.1, Baseline Condition Annual Operating Emissions, as follows:

> For imported products, ~~crude oil~~ feedstocks to be blended with crude oil are transferred from tanker vessels through pipelines to upland storage tanks.

10-22 In response to concerns regarding the Project scope, specifically as it relates to onshore tankage and the Golden Eagle Refinery (Refinery) facilities, see Master Response MR-3. In response to concerns surrounding the driving factors of emissions and the associated conclusions, see response to comment #10-21. In response to concerns surrounding the types of crude oil imports that the Avon Terminal can receive, see Master Response MR-4.

10-23 General concerns surrounding the Project baseline and associated impact analyses for air quality, water quality, and biological resources are acknowledged. See Master Responses MR-1 and MR-2 for concerns regarding baseline conditions for vessel traffic and oil spill assumptions, respectively.

CSLC staff has determined that modifications to the Project described in the EIR do not constitute significant new information pursuant to CEQA, specifically within the meaning of State CEQA Guidelines section 15088.5; therefore, recirculation of the EIR is not necessary to meet the requirements of CEQA.

10-24 See Master Response MR-1.

10-25 The 1999 Bay Area Air Quality Management District (BAAQMD) CEQA

Guidelines do not specify whether the air pollutant threshold is a maximum daily threshold or average daily threshold. This is a significant distinction when evaluating the significance of a Project's impacts on air quality. In the 2009 and later versions of the BAAQMD CEQA Guidelines, it was clarified that the air pollutant daily thresholds are average daily thresholds. Therefore, to correctly compare daily Project emissions to the threshold, the total annual emissions should be divided by 365 days.

Dr. Fox's conclusion that a single ship call is equal to daily emissions is misleading because ships would not call every day. To make a correct comparison to the BAAQMD daily significance threshold, the average daily emissions for the entire year should be calculated. Also, to make a correct comparison to the baseline pre-Project daily emissions, an average daily figure should be used to maintain consistency.

Dr. Fox states the pre-Project daily emissions should be zero because *"while the emissions from a single ship call are the same in the pre- and post-Project periods, there will be many more days where ships are called in the post-Project period than during the pre-Project baseline period."* Even if ships call on more days in the post-Project period, it does not mean that there are zero daily emissions during the baseline period. If this logic is maintained, one could argue that the emissions in the post-Project period are also zero because there will be many days when no ships call. This is not a pragmatic approach for this analysis.

Dr. Fox's approach does not quantify emissions in a manner that can be used for comparison with the baseline or the BAAQMD significance thresholds. The appropriate assessment of daily activity would be the use of an average daily emissions quantity for both the baseline and post-Project.

See Master Response MR-1 regarding concerns related to the Project's baseline of ship calls.

See Master Response MR-3 regarding concerns related to the Project scope as it pertains to onshore storage tanks.

10-26 See Master Response MR-1.

10-27 Impact AQ-2 in Section 4.4.5, Impact Analysis and Mitigation, of the EIR discloses that the San Francisco Bay Area Air Basin (SFBAAB) is classified as "non-attainment" for ozone, $PM_{2.5}$ and PM_{10}. In addition, supplemental text has been added to Section 4.4.1.4, Air Monitoring Data near the Avon Terminal, as follows:

The San Francisco Bay Air Basin (SFBAAB) is currently non-attainment for the following CAAQS: 1-hour and 8-hour ozone, annual and 24-hour $PM_{2.5}$, and annual PM_{10}. Additionally, the SFBAAB is currently non-attainment for the following NAAQS: 8-hour ozone and 24-hour $PM_{2.5}$.

The EIR states that there will be anticipated decreases in PM_{10} and $PM_{2.5}$ emissions relative to the project baseline. See Master Response MR-1 regarding concerns related to the Project baseline.

10-28 Significance thresholds are developed by the individual air districts with consideration for specific conditions within their respective districts. Therefore, the most appropriate significance threshold to evaluate impacts from projects in the BAAQMD are based on the BAAQMD's recommendations. The most updated CEQA guidance on the significance thresholds is posted on the BAAQMD website, dated December 6, 2013, as follows:

On June 2, 2010, the Bay Area Air Quality Management District's Board of Directors unanimously adopted thresholds of significance to assist in the review of projects under the California Environmental Quality Act. These Thresholds are designed to establish the level at which the District believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on the Air District's website and included in the Air District's updated CEQA Guidelines (updated May 2012).

On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the Thresholds. The court did not determine whether the Thresholds were valid on the merits, but found that the adoption of the Thresholds was a project under CEQA. The court issued a writ of mandate ordering the District to set aside the Thresholds and cease dissemination of them until the Air District had complied with CEQA. The Air District has appealed the Alameda County Superior Court's decision. The Court of Appeal of the State of California, First Appellate District, reversed the trial court's decision. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review, and the matter is currently pending there.

In view of the trial court's order which remains in place pending final resolution of the case, the Air District is no longer recommending that the Thresholds be used as a generally applicable measure of a project's significant air quality impacts. Lead agencies will need to determine appropriate air quality thresholds of significance based on substantial evidence in the record. Although lead agencies may rely on the Air District's

> *updated CEQA Guidelines (updated May 2012) for assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, the Air District has been ordered to set aside the Thresholds and is no longer recommending that these Thresholds be used as a general measure of project's significant air quality impacts. Lead agencies may continue to rely on the Air District's 1999 Thresholds of Significance and they may continue to make determinations regarding the significance of an individual project's air quality impacts based on the substantial evidence in the record for that project.*

The EIR maintains the recommendations of the BAAQMD, in whose jurisdiction the Project is located.

10-29 See Master Response MR-1.

10-30 The CSLC understands that the SFBAAB is currently non-attainment for both federal and state $PM_{2.5}$ standards. Dr. Fox's analyses presented in Table 3 and 4, which indicate that considerable net increases in $PM_{2.5}$ would occur as a result of the Project, result only under the assumption that the baseline ship calls for the Project are overestimated and the post-Project ship calls for the Project are underestimated. These underlying assumptions are addressed in Master Response MR-1.

10-31 The CSLC understands that significant increases of $PM_{2.5}$ in the region can result in adverse public health impacts to the communities around the Avon Terminal. No significant increases in Project-related $PM_{2.5}$ emissions would occur. As stated in response to comment #10-30, Dr. Fox's analyses indicating that considerable net increases in $PM_{2.5}$ would occur as a result of the Project rely on an incorrect assumption.

10-32 Comment acknowledged. See Master Response MR-2.

10-33 See Master Response MR-2.

10-34 See Master Response MR-2.

10-35 See Master Response MR-2.

10-36 See Master Response MR-2.

10-37 Marine Oil Terminal Engineering Maintenance Standards (MOTEMS, Cal. Code Regs., tit. 24, § 3101F et seq.) require that each marine oil terminal consider the predicted sea-level rise over the remaining life of a terminal. Sea-level rise

over the 50-year life of the facility has been evaluated and incorporated into the design. As required by the MOTEMS, Tesoro has and will continue to consider sea-level rise in Avon Terminal assessments. Tesoro conducts hydrographic surveys at the Avon Terminal on a quarterly basis, and conducts underwater and above-water structural MOTEMS inspections. These surveys and inspections would, over time, detect increased water depth and potential corrosion at higher-elevation splash zones. The Avon Terminal Operating Limits (TOL) diagrams will be re-evaluated when subsequent MOTEMS audits deem the sea-level rise to be significant enough to impact operations.

10-38 In response to this comment, the text of EIR Section 4.3.4, Impact Analysis and Mitigation, has been revised to include Impact WQ-12, which analyzes the environmental impacts associated with firewater testing. The impacts in Section 4.3.4 have been renumbered to include the new impact analysis. Supplemental text has been added to Section 4.3.4, Impact Analysis and Mitigation, as follows:

Impact WQ-12: Degrade water quality as a result of discharges of firewater during fire system testing. (Less than significant.)

As part of the fire protection program at the Avon Terminal, Tesoro would have to periodically discharge water during testing or maintenance of the fire protection system. Firewater runoff has the potential to contain a variety of harmful substances, including fire suppressant foams, fire retardant chemicals, and other chemicals. Firewater runoff can also carry with it numerous contaminants and solids that may enter groundwater or a waterbody and potentially pose a health risk or cause ecological harm. At the Avon Terminal, the source of water flow for testing is Suisun Bay water in the immediate vicinity of the Avon Terminal. The firewater pump (vertical deep-well pump) takes suction on bay water, which is then discharged back into the bay via a hydrant located at the Avon Terminal. The water flow is measured at the hydrant, which takes a few minutes. The amount of bay water used during the duration of the test period is approximately 5,000 gallons. The firewater distribution system is equipped with a flow test loop, with indication and block valves that route back to the source and a discharge block valve preventing opportunities for contamination to occur while flow testing is occurring. Once fire system testing is completed, the water is discharged directly back into the bay.

At the Avon Terminal, Aqueous Film-Forming Foam (AFFF) is utilized at either 1 percent or 3 percent foam concentrate. All modern AFFF agents (except for some produced in China) contain telomer-based fluorosurfactants. (Fire Fighting Foam Coalition [FFFC] 2014). Telomer-

based AFFF agents are considered the most effective foams currently available to fight flammable liquid fires. Telomer-based foams are not made with any chemicals that are currently considered by environmental authorities to be persistent, bioaccumulative, or toxic (FFFC 2014). The foam suppression system at the Avon Terminal is static and available for use in the case of a fire; flow testing is not required. The metal tanks that store the AFFF are compatible with the foam contained within and no flushing or purging is required. The intentional release of AFFF would only occur in the event of a fire.

The impacts of firewater discharge due to testing are considered to be less than significant because the firewater is contained within a flow test loop, preventing exposure to contaminants. Additionally, the foam suppression system does not require the release of AFFF during testing. Testing of fire suppression systems is a necessary safety precaution at the Avon Terminal. The potential for fire during continued operations and the Avon Terminal's response capability are discussed in Section 4.1, Operational Safety/Risk of Accidents, Impact OS-3.

Mitigation Measure: No mitigation required.

10-39 See response to comment #9-27.

10-40 See response to comment #9-27.

10-41 General concerns about the Project description, related Project baseline, and associated impact analyses and MMs are acknowledged. The CSLC interprets this comment as a summary of specific concerns expressed by SAFER California within its comment letter. See specific responses to comments that address these concerns.

CSLC staff has determined that modifications to the Project described in the EIR do not constitute significant new information pursuant to CEQA, specifically within the meaning of section 15088.5; therefore, recirculation of the EIR is not necessary to meet the requirements of CEQA.

10-42 The comment addresses concerns that emissions were underestimated for three reasons: (1) the EIR overestimated the number of ship calls in the pre-Project period, (2) the EIR underestimated the number of ship calls in the post-Project period, and (3) the EIR underestimated the emissions from each ship call. These three issues are addressed in responses to comments #10-43, #10-44, and #10-45, respectively.

10-43 For stationary sources with BAAQMD permit emissions limitations, the

BAAQMD 2012 CEQA Guidelines state:

> *When stationary sources will be subject to BAAQMD regulations, the regulation emission limits should be used as emission factors.*

However, the application of this guideline to ocean-going vessel (OGV) emissions estimation in the post-Project period is incorrect, as OGV are not stationary sources with BAAQMD emissions limitations.

In the absence of permit limits, the BAAQMD 2012 CEQA Guidelines do not make specific recommendations as to how to estimate future mobile emission sources, such as those emissions resulting from OGV activities at the Avon Terminal. Therefore, a rational approach has been implemented whereby a range of 70 to 120 anticipated annual vessel calls was estimated based upon review of past records, and in the absence of any modifications to Refinery operations or marketing conditions that might cause significant changes. The maximum of this range was conservatively chosen and used for the determination of significance in the post-Project period.

Concerns about the lack of explanation with regard to the range of projected annual ship calls during the lease period are acknowledged.

10-44 See Master Response MR-1.

10-45 See Master Response MR-1 regarding concerns related to the overestimation of ship calls during the baseline years. See response to comment #10-43 for concerns regarding the number of ship calls during the lease period. Any emissions increases outlined in the Table 3 of the commenter's letter only occur as result of the commenter's concerns regarding the overestimation of ship calls in the baseline years and the underestimation of ship calls during the lease period.

10-46 The Negative Declaration prepared by the South Coast Air Quality Management District for the Tesoro Storage Tank Replacement and Modification Project included ship travel outside of the BAAQMD. This was the cause for the discrepancy regarding ship emissions in the EIR.

10-47 See response to comment #10-25.

10-48 See response to comment #10-28.

10-49 See response to comment #10-28.

10-50 See response to comment #10-28.

10-51 Impact AQ-2 in Section 4.4.5, Impact Analysis and Mitigation, of the EIR discloses that the SFBAAB is classified as "non-attainment" for California and national ambient air quality standards for both $PM_{2.5}$ and PM_{10}. In addition, supplemental text has been added to Section 4.4.1.4, Air Monitoring Data near the Avon Terminal, as described in response to comment #10-27.

The EIR states that there will be decreases in PM_{10} and $PM_{2.5}$ emissions using the current baseline and post-Project projections, as discussed in Master Response MR-1 and response to comment #10-43, respectively.

10-52 See Master Response MR-4.

10-53 See Master Response MR-3.

10-54 See response to comment #10-21.

10-55 See Master Response MR-4.

10-56 See Master Response MR-4.

10-57 See Master Responses MR-1 and MR-4.

10-58 See response to comment #9-27.

10-59 See Master Response MR-2.

10-60 In response to this comment, the text in the Avon Terminal subsection of Section 4.1.1.3, Bay Area and Avon Oil Spill Response Capability, has been revised as follows:

> The USCG requires that marine terminals must be able to respond to a small (50 barrels<u>; 1 barrel equals 42 gallons</u>) spill with the following equipment:

Conversions are not included in the EIR List of Abbreviations and Acronyms. However, the EIR included the barrels to gallons conversions in the text of Sections 4.1, Operational Safety/Risk of Accidents, and 4.3, Water Quality. See Master Response MR-2 regarding a discussion of the severity of small spills.

10-61 See Master Response MR-2.

10-62 See Master Response MR-2.

10-63 See Master Response MR-2.

10-64 The comment states that the sources of information for biological species and biological communities and habitat are not current. The CSLC respectfully disagrees. The descriptions of biological resources in EIR Section 4.2, Biological Resources, were based on existing literature, relevant public documents, and the Project's 2014 Biological Assessment, which included an Essential Fish Habitat Assessment. Approximately 40 references were reviewed while preparing the baseline conditions for Section 4.2, Biological Resources. References are included within the text and provided in Section 9.2, References, of the EIR.

Databases consulted included:

- 2014 California Natural Diversity Database, California Department of Fish and Wildlife
- 2014 Inventory of Rare and Endangered Plants online edition, California Native Plant Society
- 2014 eBird: An online database of bird distribution and abundance, Audubon and Cornell Ornithological Laboratory
- 2014 Essential Fish Habitat Mapper, National Marine Fisheries Service
- 2014 Bay Area River Otter Sightings Map, The River Otter Ecology Project

Recent reports reviewed included:

- 2014 Biological Assessment, Avon Marine Oil Terminal MOTEMS Compliance Project, LSA Associates
- 2013 Clean Water Act Jurisdictional Delineation, Avon Marine Terminal MOTEMS Compliance Project, Martinez, Contra Costa County, California, LSA Associates
- 2013 Biennial Report on the California Marine Invasive Species Program, California State Lands Commission
- 2010 Pelagic Organism Decline Work Plan and Synthesis of Results, Interagency Ecological Program
- 2011 Triennial Report on the California Department of Fish and Game's Marine Invasive Species Program, Office of Spill Prevention and Response
- The State of the Birds, San Francisco Bay, PRBO Conservation Science and the San Francisco Bay Joint Venture
- The State of San Francisco Bay 2011, San Francisco Estuary Partnership

The Project's potential impacts on biological resources are discussed in Section 4.2.4, Impact Analysis and Mitigation, of the EIR. The analysis first considers

impacts from lease renewal and continued operations, and then considers potential impacts from MOTEMS renovation.

State CEQA Guidelines section 15125, subdivision (a), states that "… the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed Project and its alternatives." Potential significant adverse impacts on the San Francisco Bay Estuary (SFBE) from normal operation of the Avon Terminal include a major oil spill and introduction of nonnative aquatic species from vessel traffic. While adverse impacts from these chance events could be widespread and long term, the habitat and species that would be impacted and the extent of the impact would depend on where and when the event occurred. The diversity of habitat and species in the SFBE is extensive. Nearly half of Pacific Coast waterfowl and shorebirds visit the SFBE during migration, and a recent survey identified 497 aquatic species in the SFBE. Therefore, the CSLC undertook a qualitative review of recent reports that discuss biotic resources, habitat distribution, and broad population trends in the SFBE.

State CEQA Guidelines section 15125, subdivision (c), states that "Knowledge of the regional setting is critical to the assessment of environmental impacts." In preparing the EIR, every effort was made to compile the best available information to provide knowledge of the regional setting in which to evaluate the impacts of the Project. Section 4.2.1.1, San Francisco Bay Estuary, provides a description of the geography, hydrology, habitats, and biological characteristics in the SFBE. Figure 4.2-1: Bayland Habitat depicts the general distribution of habitat in the SFBE and identifies geographic locations mentioned in the text. State CEQA Guidelines section 15125, subdivision (c), further states that "Special emphasis should be placed on environmental resources that are rare or unique to the region and would be affected by the project." Information on rare, threatened, and endangered species throughout the SFBE is provided in EIR Section 4.2.1.1, San Francisco Bay Estuary. Figure 4.2-3: Regional Biological Resources depicts California Natural Diversity Database occurrences and Areas of Concern within a 10-mile buffer of the Avon Terminal.

Potential adverse impacts from MOTEMS renovation activities could occur in the vicinity of the Avon Terminal as a result of construction activities. These potential impacts are predictable and quantifiable. Therefore, the CSLC provided a quantitative review of resources within the Project study area based on the results of the Project's Biological Assessment and Preliminary Wetland Delineation; review of the California Natural Diversity Database, California Native Plant Society Inventory, and existing literature; and a site visit. The results of this review are provided in EIR Section 4.2.1.2, Project Study Area,

which provides detailed descriptions of the habitat and rare, threatened, or unique habitats and species in the lower Suisun Bay and upper Carquinez Strait. Figure 4.2-4: Vegetation and Habitat depicts vegetation and habitat within 1 mile of the Avon Terminal; Figure 4.2-7: Wetland Delineation depicts the results of the Project's Preliminary Wetland Delineation. Additional detail regarding rare, threatened, and endangered species is provided in Appendix C: Biological Resources in the Project Study Area.

State CEQA Guidelines section 15125, subdivision (c), further states that the "…EIR must demonstrate that the significant environmental impacts of the proposed Project were adequately investigated and discussed and it must permit the significant effects of the Project to be considered in the full environmental context." For the reasons provided previously, CSLC staff believes that the information supplied in Section 4.2.1, Environmental Setting, of the EIR provides such relevant evidence as a reasonable person would accept as adequate to support the conclusions of the impact analysis.

10-65 The commenter states that the data that the CSLC relies upon are not substantial evidence and misunderstands Table 4.2-1: Biotic Communities of the San Francisco Bay Estuary to be the sole source of data upon which the analysis was founded.

Table 4.2-1 presents general characteristics of the biotic communities associated with habitats in the SFBE, example locations, and representative species. The table was intended to provide a quick overview of the SFBE ecosystem for readers not familiar with the topic; detailed baseline conditions for biological resources is provided in the text in Appendix C, Biological Resources in the Project Study Area, and EIR Section 4.2, Biological Resources, Biological Characteristics of the SFBE; Nonindigenous Aquatic Species; Rare, Threatened, and Endangered Species.

Examples of the references consulted to establish the Project baseline for native and nonnative species are provided in response to comment #10-64; additional references are included in the text of Section 4.2, Biological Resources.

10-66 The commenter states that the presence of blue mud shrimp (*Upogebia pugettensis*) should have been disclosed and Project impacts on the species analyzed. In support of this argument, the commenter cites two sources—the abstract of a talk presented at the 2012 Bay-Delta Science Conference in Sacramento, California, and a 2010 report prepared for the U.S. Army Corps of Engineers (USACE).

The 2012 abstract documents that abundant blue mud shrimp (*Upogebia* sp.) were collected in San Pablo Bay while monitoring for entrainment of longfin smelt (*Spirinchus thaleichthys*) during channel dredging by the USACE. Dredge entrainment monitoring involves screening the dredge's output at the point of discharge to assess the number of fish and species being taken directly by dredging. The number of *Upogebia* sp. individuals entrained is not provided in the abstract, nor is the total area over which they were collected. During entrainment monitoring, two shrimp voucher specimens were collected that were later identified as *U. major*, an Asian species that had not previously been known from West Coast estuaries. The abstract speculates that entrained shrimp previously identified as *U. pugettensis* might have actually been *U. major.* This would be of concern because it would suggest that a biological invasion by *U. major* is currently underway. *U. major* is known as a natural host of *Orthione griffenis*, a parasitic isopod that infests species of estuary mud shrimp and interferes with mud shrimp reproduction. A 2011 study reported that all previously known abundant native *Upogebia* populations in California estuaries were either absent or greatly reduced, and that the declines were associated with invasion by *O. griffensis* (Chapman et al. 2012). While neither of the voucher specimens was infected with *O. griffenis,* and *U. major* itself has low prevalence rates of the parasite, the abstract suggests that it has potential to act as a vector or reservoir for the parasite.

The CSLC understands comment #10-66 to refer to two species of blue mud shrimp, the native species (*Upogebia pugettensis*) and the Asian species (*Upogebia major*). As described in the referenced abstract, only two 2010 mud shrimp voucher specimens have been identified and, as described in comment #10-66, specimens were not retained in 2011 for identification. Therefore, CSLC staff understands this to mean that there is scientific uncertainty as to which of the two *Upogebia* species was caught in abundance in San Pablo Bay in 2010 and 2011; however, CEQA is not the appropriate forum in which to resolve areas of scientific uncertainty.

It is incorrect to state, as the comment does, that the National Oceanic and Atmospheric Administration (NOAA) 2007 report was unaware of or skeptical of the presence of *Upogebia* species in the SFBE. The NOAA report states that blue mud shrimp (*Upogebia pugettensis*) are mentioned in passing by some of the studies reviewed, and that the species is used for fish bait (page 50). The NOAA report is unaware of the presence of *U. major* in the SFBE, but this is to be expected as the collection and subsequent identification of *U. major* occurred several years following its publication.

The NOAA report expresses doubt about the presence of blue mud shrimp

beds, but does not conclude that they did not exist. The report defines a "shellfish bed" as a location "several square meters in size where living species of the nominal bivalve cover at least 50 percent of the surface and, in concentration, provide a distinct, three-dimensional substrate." Detailed information about the dredging substrate is not typically gathered during or prior to dredging events; although comment #10-66 states that blue mud shrimp were collected in abundance in 2010 and 2011, the shrimp may have been collected from many patchy locations along the dredged channel. Likewise, while the relative abundance of *Upogebia* sp. is stated to be high, the number of shrimp collected actually collected is not presented in the abstract. Therefore, the information provided by the commenter does not repudiate the NOAA statement that "it's not clear that there are or ever were beds of blue mud shrimp in San Francisco Bay."

Comment #10-66 concludes that because blue mud shrimp are not specifically discussed in the EIR, the EIR paints a faulty portrait of existing conditions with regard to species present, and the EIR must, therefore, be revised and recirculated. CSLC staff disagrees with this conclusion. State CEQA Guidelines section 15204, subdivision (a), states, in part, "CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters."

In analyzing the impacts of the Project, the EIR determined that any and all benthic invertebrates would be significantly and unavoidably impacted as a result of major fuel, lubricant, and/or boat-related spills (Impact BIO-8 and Table 4.2-2: Biological Impacts of a 100,000-gallon Spill from a Martinez Terminal). See response to comment #10-64 for further discussion regarding the adequacy of EIR Section 4.2.1, Environmental Setting.

10-67 The CSLC respectfully disagrees with the assertion that the EIR is incomplete and inconsistent in its use of the references that it cites. The statement that native oyster (*Ostrea lurida*) beds are found in the same general areas as eel grass habitat is based on a qualitative comparison of Figure 7-1: Distribution of Shellfish Habitat in San Francisco Bay, which depicts native oyster shellfish beds, and Figure 8-1: Distribution of Submerged Aquatic Vegetation Habitat, which depicts eel grass beds, which are found in the 2011 San Francisco Bay Subtidal Habitat Goals Report (SFEP 2011). The EIR does not state that native oyster beds are found within eel grass habitats, but, as noted by the comment, that they are found in the same general locale.

See response to comment #10-64 for further discussion regarding the adequacy of EIR Section 4.2.1, Environmental Setting.

10-68 As discussed in EIR Section 4.2.4, Impact Analysis and Mitigation, Impact BIO-3, which addresses sediment resuspension by calling vessels, and Impact BIO-5, which discusses maintenance dredging, the Project is expected to have a less-than-significant impact on sediment movement in the SFBE.

10-69 The comment incorrectly states that EIR Section 4.2, Biological Resources fails to include California sea lions (*Zalophus californianus*) and humpback whales (*Megaptera noveangliaw*) among the marine mammals that may migrate near the Avon Terminal, that harbor seals (*Phoca vitulina*) and gray whales (*Eschritchtius robustus*) should likewise be included in a comprehensive list of species present, and that the potential impacts of Project construction and operation on these species be considered. The section on sensitive mammals in Section 4.2.1.1, San Francisco Bay Estuary, discusses the seven marine mammal species known to migrate, forage, and rest in the SFBE, including humpback whale, gray whale, harbor seal, and California sea lion.

A comprehensive list of species considered in the analysis, including the four marine mammal species listed previously, and an analysis of the likelihood that these species would be impacted by the Project was provided in Appendix C: Biological Resources in the Project Study Area, as referred to in the EIR in Section 4.2, Biological Resources, Rare, Threatened, and Endangered Species.

The commenter states that it is reasonable to assume that as marine mammal populations increase outside of the bay, that strays that wander upstream will also increase in number. The CSLC respectfully disagrees with this assumption. Although populations of marine mammals have increased outside of the bay since the National Marine Fisheries Service began ship surveys in the late 1970s, the number of incidents of whales and other large marine mammals wandering upstream into Suisun Bay via the deep water ship channels remains low.

The commenter states that the EIR failed to evaluate the possibility of a tanker striking marine mammals while travelling to or from the Avon Terminal during routine terminal operations. This question is addressed in the response to comment #9-35.

10-70 Invasive *spartina* is a salt marsh grass that spreads by seed that floats on the tide. As noted by the commenter, it is not found in the vicinity of the Avon Terminal. The commenter provides no evidence that the Project would have an impact on invasive s*partina* populations, and thus, no further response is required.

10-71 Sea-level rise impacts upon the structural and operational elements of the Avon Terminal during the proposed 30-year lease are addressed in EIR Section 2.0, Project Description, as follows:

> MOTEMS (Cal. Code Regs., tit. 24, § 3103F.5.3.4) requires that each terminal consider the predicted sea-level rise over the remaining life of a terminal. Sea-level rise over the 50-year life of the facility has been evaluated and incorporated into the design. Tesoro has and will continue to consider sea-level rise in Avon Terminal assessments. Tesoro conducts hydrographic surveys at the Avon Terminal on a quarterly basis and conducts underwater and above-water structural MOTEMS inspections. These surveys and inspections would over time detect increased water depth and potential corrosion at higher-elevation splash zones. The Avon TOL diagrams will be re-evaluated when subsequent MOTEMS audits deem the sea-level rise to be significant enough to impact operations.

10-72 See response to comment #9-27.

10-73 General concerns for impact determinations and adequacy of impact analyses of Project-related impacts on biological resources and water quality are acknowledged. The CSLC interprets this comment as a summary of the previous concerns expressed in earlier comments. See specific responses to comments that address these concerns.