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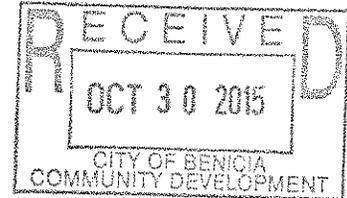
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October 30, 2015



**BY EMAIL AND OVERNIGHT MAIL**

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Re: **Comments on the Revised Draft Environmental Impact Report  
for the Valero Benicia Crude by Rail Project (SCH# 2013052074)**

Dear Ms. Million:

We are writing on behalf of Safe Fuel and Energy Resources California ("SAFER California") and individuals who reside and work in the City of Benicia, to provide preliminary comments on the Valero Benicia Crude by Rail Project ("Project") Revised Draft Environmental Impact Report ("RDEIR") prepared by the City of Benicia ("City"), pursuant to the California Environmental Quality Act ("CEQA").<sup>1</sup> SAFER CA provided comments on the original DEIR on September 15, 2014, identifying many fatal defects in the document. The City then revised and recirculated portions of the document with (1) new analyses of potential impacts that could occur uprail of Roseville (i.e., between a crude oil train's point of origin and the California border, and from the border to Roseville), and (2) supplemental analysis of the potential accidents involving crude trains based on new information that became available after the original DEIR was published. Although the RDEIR addresses some of the errors we identified in our previous comments, most of the issues remain and there are issues in the RDEIR's new analyses that must be addressed. These comments address only the revised and recirculated portions of the DEIR. Our September 15, 2014 comments are, by and large, still applicable to the City's CEQA analysis of the Project and we incorporate them herein by reference.

<sup>1</sup> Pub. Resources Code, §§ 21000 et seq.

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October 30, 2015

Page 2

The Project includes the construction of facilities to allow the Valero Refining Company ("Applicant") to receive up to 70,000 barrels per day of North American crude oil by rail (two 50-car trains per day). The facilities include 8,880 feet of new track, a new tank car unloading rack capable of unloading two parallel rows of tank cars simultaneously, and 4,000 feet of 16-inch diameter crude oil pipeline and associated fugitive components connecting the offloading rack with an existing crude supply pipeline.

Based upon our review of the RDEIR, appendices and other relevant records, we conclude that, like the original DEIR, the RDEIR fails to meet the requirements of CEQA. The RDEIR fails to adequately disclose, analyze and mitigate the Project's potentially significant impacts related to air quality, public health and hazards. These defects render the RDEIR inadequate as an informational document. The numerous defects in the City's analyses, set forth in greater detail in these comments, are fatal errors. The City must withdraw the RDEIR and prepare a revised EIR which fully complies with CEQA.

We prepared these comments with the assistance of experts Petra Pless, Ph.D. and Phyllis Fox, Ph.D. Dr. Pless' and Dr. Fox's technical comments are attached hereto and are incorporated by reference. Dr. Pless and Dr. Fox's comments are submitted in addition to the comments in this letter. Accordingly, the City must address and respond to the comments of Dr. Pless and Dr. Fox separately.

## I. INTEREST OF COMMENTORS

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. Failure to adequately address the environmental impacts of crude oil transport and refining processes poses a substantial threat to the environment, worker health, surrounding communities, and the local economy.

Refineries are uniquely dangerous and capable of generating significant fires and the emission of hazardous and toxic substances that adversely impact air

October 30, 2015

Page 3

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. Additionally, rail transport of crude oil has been involved in major explosions, causing vast economic damage, significant emissions of air contaminants and carcinogens and, in some cases, severe injuries and fatalities.

Poorly planned refinery projects also adversely impact the economic wellbeing of people who perform construction and maintenance work in the refinery 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 Solano County, including the City of Benicia. 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.

These comments are also submitted on behalf of individuals who reside and work in the Project area, including, for example, Mark Sloan, who lives in the City of Benicia.

**II. THE CITY LACKS SUBSTANTIAL EVIDENCE TO SUPPORT ITS CONCLUSIONS IN THE RDEIR REGARDING THE PROJECT'S SIGNIFICANT IMPACTS AND FAILS TO INCORPORATE ALL FEASIBLE MITIGATION MEASURES NECESSARY TO REDUCE SUCH IMPACTS TO A LESS THAN SIGNIFICANT LEVEL**

CEQA has two basic purposes, neither of which the RDEIR satisfies. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental impacts of a Project before harm is done to the environment.<sup>2</sup> The EIR is the “heart” of this requirement.<sup>3</sup> 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.”<sup>4</sup>

To fulfill this function, the discussion of impacts in an EIR must be detailed, complete, and “reflect a good faith effort at full disclosure.”<sup>5</sup> An adequate EIR must contain facts and analysis, not just an agency’s conclusions.<sup>6</sup> CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project.<sup>7</sup>

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring imposition of mitigation measures and by requiring the consideration of environmentally superior alternatives.<sup>8</sup> If an EIR identifies potentially significant impacts, it must then propose and evaluate mitigation measures to minimize these impacts.<sup>9</sup> CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures.<sup>10</sup> Without an adequate analysis and

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<sup>2</sup> CEQA Guidelines § 15002(a)(1); *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm’rs.* (2001) 91 Cal.App.4th 1344, 1354 (“*Berkeley Jets*”); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

<sup>3</sup> *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 84.

<sup>4</sup> *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

<sup>5</sup> CEQA Guidelines § 15151; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 721-722.

<sup>6</sup> See *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 568.

<sup>7</sup> Pub. Resources Code § 21100(b)(1); CEQA Guidelines § 15126.2(a).

<sup>8</sup> CEQA Guidelines § 15002(a)(2) and (3); *Berkeley Jets*, 91 Cal.App.4th at 1354; *Laurel Heights Improvement Ass’n v. Regents of the University of Cal.* (1998) 47 Cal.3d 376, 400.

<sup>9</sup> Pub. Resources Code §§ 21002.1(a), 21100(b)(3).

<sup>10</sup> *Id.*, §§ 21002-21002.1.

description of feasible mitigation measures, it would be impossible for agencies relying upon the EIR to meet this obligation.

Under CEQA, an EIR must not only discuss measures to avoid or minimize adverse impacts, but must ensure that mitigation conditions are fully enforceable through permit conditions, agreements or other legally binding instruments.<sup>11</sup> A CEQA lead agency is precluded from making the required CEQA findings unless the record shows that all uncertainties regarding the mitigation of impacts have been resolved; an agency may not rely on mitigation measures of uncertain efficacy or feasibility.<sup>12</sup> This approach helps “insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug.”<sup>13</sup>

In this case, the RDEIR fails to satisfy the basic purposes of CEQA. The RDEIR’s conclusions regarding air quality, public health and hazards impacts are not supported by substantial evidence. In preparing the RDEIR, the City: (1) failed to provide sufficient information to inform the public and decision-makers about potential environmental impacts; (2) failed to accurately identify and adequately analyze all potentially significant environmental impacts; and (3) failed to incorporate feasible measures to mitigate environmental impacts to a less than significant level; and (4) failed to analyze all feasible alternatives to reduce impacts to a less than significant level. The City must correct these shortcomings and recirculate a revised EIR for public review and comment.

**A. The RDEIR Fails To Identify, Analyze And Mitigate Potentially Significant Air Quality, Public Health And Hazards Impacts From The Southern Crude Import Route**

The RDEIR describes four routes that may be used to import crude oil for the Project -- three northern routes ((1) Oregon to Roseville, (2) Nevada to Roseville (northern) and (3) Nevada to Roseville (southern)), and one southern route through Sacramento.<sup>14</sup> However, the RDEIR only analyzes impacts along the three

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<sup>11</sup> CEQA Guidelines, § 15126.4(a)(2).

<sup>12</sup> *Kings County Farm Bur. v. County of Hanford* (1990) 221 Cal.App.3d 692, 727-28 (a groundwater purchase agreement found to be inadequate mitigation because there was no record evidence that replacement water was available).

<sup>13</sup> *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3d 929, 935.

<sup>14</sup> RDEIR, pp. 1-2 - 1-4.

northern routes; the RDEIR fails to analyze impacts along the southern route. Rather, the RDEIR claims that “it is less likely that Project trains would use the southern route because they first would have to travel through Sacramento to Roseville, and then back through Sacramento to reach the refinery.”<sup>15</sup> The RDEIR’s statement is unsupported for two reasons.

First, the southern route would add only 13 miles round trip to the route.<sup>16</sup> There is no evidence that adding 13 miles to a 1,500-mile route would be cost or time prohibitive.<sup>17</sup> On the contrary, refinery engineer expert Dr. Fox explains that “an additional 26 miles is much less than the increase in mileage that would result from routing trains carrying crude from Texas, Oklahoma or New Mexico via the northern route.”<sup>18</sup>

Second, Union Pacific Railroad (“UPRR”) can choose any route at its sole discretion.<sup>19</sup> The RDEIR itself admits that “UPRR retains unfettered flexibility in selecting the routes that trains could travel from the crude oil origination sites to Roseville...it is theoretically possible, due to track sharing agreements for Project-related crude to be provided to the Refinery via any of the North American freight railroad tracks...”<sup>20</sup> Dr. Fox explains that for crudes sourced from Texas, Oklahoma or New Mexico, for example, the southern route would be the shortest and most economic route.<sup>21</sup>

There is simply no evidence that Project crude trains would not travel the southern route. Thus, CEQA requires the City to analyze the Project’s potentially significant impacts associated with the southern route.

Oddly, the RDEIR claims (without any analysis whatsoever) that, even if trains carried Project crude along the southern route, “potential direct, indirect, and

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<sup>15</sup> *Id.*, p. 1-5.

<sup>16</sup> Attachment A: Letter from Phyllis Fox to Rachael Koss re Review of Revised Draft Environmental Impact Report for Valero Benicia Crude by Rail Project, October 30, 2015, p. 2 (“Fox Comments”).

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> RDEIR, p. 1-5 (“...on the basis of federal preemption, neither the Refinery nor the City has any authority to dictate or limit routes selected by UPRR...”).

<sup>20</sup> *Id.*, pp. 2-23 – 24 (internal citations omitted).

<sup>21</sup> Fox Comments, p. 2.

cumulative impacts of crude oil transport by rail approaching the Refinery from the south are expected to be substantially similar to the type and severity of impacts that could result between the Refinery and the State border via any of the northern routes.”<sup>22</sup> The RDEIR’s conclusion is unsupported.

Dr. Fox shows in her comments that some Project impacts would be *more* severe via the southern route.<sup>23</sup> The distance travelled within California on the southern route, from Arizona to Roseville, is approximately 700 miles. The in-California distance on the longest northern route is 297 miles. Therefore, the southern route would be approximately 2.3 times longer than the longest northern route.<sup>24</sup> Dr. Fox explains that the probability of accidents increases as routes get longer.<sup>25</sup> In addition, the longer the route, the greater the emissions from locomotives and, consequently, the greater the air quality and public health impacts.<sup>26</sup> According to Dr. Fox, the southern route would result in “highly significant increases in both ROG and NOx, ozone precursors, compared to the shorter northern routes.”<sup>27</sup> Importantly, more than 90 percent of the southern route passes through areas with extreme to severe ozone nonattainment issues. In fact, the majority of the southern route passes through the heart of the San Joaquin Valley Air Basin, which is in extreme nonattainment with the federal 8-hour ozone standard and has the distinction, along with the South Coast Air Basin, of having the worst ozone nonattainment problem in the United States. The ozone concentrations in “extreme” areas are more than double the current 8-hour standard (75 ppb) and three times EPA’s proposed update to that standard (65 ppb). While the entire southern route passes through areas that are in nonattainment with both federal and state ozone standards, the northern routes pass through areas with much better air quality.<sup>28</sup> Thus, there is no support for the RDEIR’s statement that impacts of crude oil transport by rail from the south are substantially similar to the impacts from travel on the northern routes.<sup>29</sup>

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<sup>22</sup> RDEIR, p. 1-5.

<sup>23</sup> Fox Comments, pp. 2-4.

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> RDEIR, p. 1-5.

## B. The RDEIR Underestimates Fugitive Volatile Organic Compound Emissions From Railcars

The original DEIR did not include any reactive organic gas (“ROG”) or toxic air contaminant (“TAC”) emissions from rail cars from their point of origin through unloading. In her comments on the original DEIR, Dr. Fox estimated that these emissions would be approximately 53 ton/day along the 1,500 mile route from the shipping point to the Terminal.<sup>30</sup> The RDEIR revised the emission inventory to include ROG emissions from rail cars in transit everywhere but in the Bay Area Air Quality Management District (“BAAQMD”).<sup>31</sup> However, Dr. Fox determined that the RDEIR grossly underestimates the emissions.

First, the RDEIR relies on the Applicant’s unsupported emission calculation.<sup>32</sup> The RDEIR provides no citations or supporting calculations for the emission calculation.

Second, the RDEIR’s emissions estimate is incorrectly based on emission factors for “average marketing terminals” in kilograms per hour per source (where a source is a valve or connector). Dr. Fox explains that rail car fittings are different from fittings on the loading rack of stationary marketing terminals.<sup>33</sup> This is because a unit train is not stationary; it travels at a speed of up to 50 miles per hour.<sup>34</sup> Also, a unit train passes through areas with high winds, such as the area between Roseville and Benicia.<sup>35</sup> Dr. Fox explains that “the winds coupled with the speed of the train create suction across the face of fugitive components, which sucks volatile organic compounds (“VOC”) emissions out of the tanks. Thus, the substitution of ‘average marketing terminal’ factors for actual measurements of transit losses grossly underestimates VOC emissions from in-transit rail cars.”<sup>36</sup>

Dr. Fox calculated VOC emissions using the lower end of the range of actual measurements of product loss enroute. She found that this results in total VOC emissions of 53 ton/day of ROG (assuming a loss of 0.5 percent, 50 cars per train

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<sup>30</sup> Fox DEIR Comments, Comment II.E.

<sup>31</sup> RDEIR, Appx. A.

<sup>32</sup> *Id.*, Appx. A, p. A-11.

<sup>33</sup> Fox Comments, p. 5.

<sup>34</sup> RDEIR, pp. 2-80, 81, 92, 98.

<sup>35</sup> Fox Comments, p. 5.

<sup>36</sup> *Id.*

and two unit trains per day).<sup>37</sup> Using the RDEIR's reported miles travelled for the longest route among the three options evaluated and ROG significance thresholds for each air district, Dr. Fox found that the increase in ROG emissions within all air districts except Sacramento Metropolitan Air Quality Management District are "highly significant, thousands of times higher than significance thresholds."<sup>38</sup> The results for each air district are as follows:

- BAAQMD: 336 lb/day (threshold = 54 lb/day)
- Siskiyou: 6,289 lb/day (threshold = 25 lb/day)
- Shasta: 5,512 lb/day (threshold = 25 lb/day)
- Tehama: 2,827 lb/day (threshold = 25 lb/day)
- Butte: 3,745 lb/day (threshold = 25 lb/day)
- Feather River: 1,837 lb/day (threshold = 25 lb/day)
- Placer: 6,572 lb/day (threshold = 24 lb/day)
- Sacramento: 21 lb/day (threshold = 65 lb/day).<sup>39</sup>

These are significant impacts that the RDEIR fails to disclose or mitigate.

### C. The RDEIR's Health Risk Assessments Are Substantially Flawed

The RDEIR includes revised health risk assessments for maximum cancer, acute and chronic non-cancer risks, and PM<sub>2.5</sub> concentrations for Project impacts for the San Francisco Bay Area and Sacramento Valley air basins based on modeling of TAC emissions with AERMOD and OEHHA's 2015 Guidance Manual. The RDEIR finds that all results are below the applicable significance thresholds and, therefore, are less than significant. Air quality expert Dr. Petra Pless explains in her comments that the RDEIR's conclusions are unsupported for several reasons.

#### 1. *The RDEIR's Dispersion Modeling is Flawed*

Pursuant to modeling guidance by the U.S. Environmental Protection Agency ("EPA"), if more than 50 percent of an area within a three-kilometer radius of the emission source is classified as rural, then rural dispersion coefficients should be

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<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*, p. 6.

used in the dispersion modeling analysis. If more than 50 percent of the area is urban, urban dispersion coefficients should be used for modeling.<sup>40</sup> Here, Dr. Pless explains that urban dispersion coefficients should be used because more than 60 percent of the surfaces around the refinery are impervious.<sup>41</sup> However, the RDEIR relies on two AERMOD files to determine revised health risks near the refinery, including one that incorrectly uses a rural dispersion coefficient. According to Dr. Pless, to achieve correct results, the model should be rerun using an urban dispersion coefficient.<sup>42</sup>

2. *The RDEIR Fails to Provide Adequate Information for Health Risks*

The RDEIR's health risk assessments for impacts near the refinery and uprill quantify chronic and acute health risks for the maximum exposed individual receptor ("MEIR"), the maximum exposed individual worker ("MEIW") and the maximum sensitive receptors ("MSR").<sup>43</sup> However, the RDEIR fails to provide isopleth maps which show the spatial extent of health risks and which support identification of the maximum exposed receptors by placing them within areas between isopleths (*i.e.*, lines drawn on a map through all points of equal value of some measurable quantity).<sup>44</sup>

3. *The RDEIR Underestimates Health Risks Near the Refinery*

The RDEIR fails to accurately portray the Project's health risks near the refinery. The RDEIR's health risk assessment concludes that the Project poses cancer risks of 2.2 in one million at the MEIR, 7.4 in one million at the MEIW and 0.25 in one million at the MSR.<sup>45</sup> Dr. Pless reviewed the modeling files and spreadsheets used for the health risk assessments and found that the RDEIR's

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<sup>40</sup> EPA, Permit Modeling Guidance, Appendix W, Section 7.2.3; [http://www.epa.gov/ttn/scram/guidance/guide/appw\\_05.pdf](http://www.epa.gov/ttn/scram/guidance/guide/appw_05.pdf).

<sup>41</sup> Attachment B: Letter from Petra Pless to Rachael Koss re Review of Revised Draft Environmental Impact Report for Valero Benicia Crude by Rail Project, October 30, 2015, p. 32 ("Pless Comments").

<sup>42</sup> *Id.*

<sup>43</sup> RDEIR, Appx. B, Table 4 and Figure 1.

<sup>44</sup> Pless Comments, p. 32.

<sup>45</sup> RDEIR, Appx. B, Tables 1 and 4.

analysis does not match the modeling files and spreadsheets and, as a result, the RDEIR underestimates health risks near the refinery from the Project.

For example, the RDEIR's health risk assessment for the MEIW identifies a dispersion factor for diesel particulate matter emissions from idling locomotives. However the dispersion factor does not match the AERMOD data.<sup>46</sup> Dr. Pless corrected this value in the RDEIR's health risk assessment and recalculated the health risks near the refinery. She found a total cancer risk of 11 in one million, which is greater than the 7.4 in one million identified in the RDEIR and exceeds the significance threshold of ten in a million.<sup>47</sup> Thus, the RDEIR fails to identify significant cancer risks.

The RDEIR also fails to identify residential receptors with the highest health risk. Dr. Pless identified several residential receptors with higher cancer risks closer to the refinery than identified in the RDEIR.<sup>48</sup> Dr. Pless corrected calculated chronic cancer risks for these receptors and found a risk of 2.8 in one million, which exceeds the significance threshold of one in a million.<sup>49</sup> Thus, the RDEIR fails to identify significant cancer risks.

#### 4. *The RDEIR's Cumulative Health Risk Assessments Are Flawed*

The RDEIR contains new cumulative health risk assessments for uprail toxic air contaminant emissions.<sup>50</sup> In her comments, Dr. Pless provides substantial evidence that the cumulative health risk assessments are flawed. In short, the cumulative health risk assessments are flawed because they: (1) fail to adequately address cumulative health risks from construction DPM emissions; (2) fail to address chronic health hazards; (3) fail to include all cumulative projects; and (4) fails to follow the BAAQMD's guidance on how to conduct a cumulative health risk assessment.<sup>51</sup>

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<sup>46</sup> Pless Comments, pp. 33-34

<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

<sup>49</sup> *Id.*

<sup>50</sup> RDEIR, p. 2-40.

<sup>51</sup> See Pless Comments, pp. 36-39 for an extensive discussion of these flaws.

#### **D. The RDEIR Fails To Include All Feasible Mitigation Measures**

CEQA requires agencies to impose all feasible mitigation measures to “substantially lessen or avoid” significant adverse environmental impacts.<sup>52</sup> When an agency rejects mitigation measures as infeasible, the findings must reveal the agency’s reasons for reaching that conclusion. The agency’s findings must be supported by substantial evidence. Conclusory statements are inadequate.<sup>53</sup>

The RDEIR concludes that the following impacts are significant and unavoidable:

- Impact 4.1-1: Conflict with implementation of applicable air quality plans;
- Impact 4.1-5: Contribute to an existing or project air quality violation uprail from the Roseville Yard;
- Impact 4.1-7: Result in cumulatively considerable net increases in ozone precursor emissions in uprail air districts; and
- Impact 4.7-2: Pose significant hazard to public or the environment via upset and accident conditions involving release of hazardous materials.

The RDEIR states that there are no feasible mitigation measures to reduce these impacts to a less than significant level. The RDEIR provides zero support for this conclusion. Substantial evidence shows that there are feasible measures to reduce these impacts to less than significant levels.

#### *1. The RDEIR Fails to Include Feasible Mitigation Measures for the Project’s Significant Air Quality Impacts 4.1-1, 4.1-5 and 4.1-7*

The RDEIR expands the air quality analysis in the original DEIR to include locomotive emissions in air districts outside of the BAAQMD through which the trains would travel, including:

- Yolo-Solano AQMD;

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<sup>52</sup> Pub. Resources Code § 21002.

<sup>53</sup> *Village Laguna of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal.App.3d 1022, 1034-1035.

- Sacramento Metropolitan AQMD;
- Placer County APCD;
- Tehama County APCD;
- Butte County APCD;
- Feather River AQMD;
- Siskiyou County APCD;
- Shasta County AQMD;
- Lassen County APCD; and
- Northern Sierra AQMD.

The RDEIR concludes that Project operation would result in a significant air quality impact because “[p]roject-related increases in locomotive exhaust emissions and fugitive emissions from tank cars would result in a net increase of air pollutant emissions within the air districts along the three [rail] routes.”<sup>54</sup> However, the RDEIR concludes that the significant impact is not mitigable because the City:

cannot regulate UPRR’s rail operations either directly, by dictating routing or choice of locomotives, or indirectly, by requiring Valero to pay a mitigation fee or purchase emission offsets. Any such attempt would be preempted by federal law, which proscribes any mitigation measures that would have the effect of managing or governing rail operations.<sup>55</sup>

Thus, according to the RDEIR, “mitigation measures requiring the use of ultra low-emitting switch locomotives, use of new Tier 4 interstate line haul locomotives, or compensation to reduce the significance of Project-related locomotive emissions in specific air districts are infeasible.”<sup>56</sup> The City’s argument is incorrect for two reasons.

First, once locomotives release emissions, the emissions are part of the ambient air and thus are part of the “commons” that are subject to regulation and control by local agencies.<sup>57</sup> Further, Project emissions are released as a result of Valero’s goal to change the source of its crude oil, which pollutes the commons.

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<sup>54</sup> RDEIR, p. 2-30.

<sup>55</sup> *Id.*, p. 2-39.

<sup>56</sup> *Id.*

<sup>57</sup> Fox Comments, pp. 7-8.

October 30, 2015

Page 14

Thus, it is the City's obligation to require *Valero* – not UPRR – to mitigate the resulting impacts. Further, Dr. Fox explains that the majority of ROG emissions are released from the rail cars, which are either owned or leased by Valero. In other words, the rail cars and their emissions are under *Valero's* control.<sup>58</sup>

Second, existing law does not preempt the City from requiring Valero to mitigate the impacts from its Project pursuant to CEQA. The RDEIR refers to the Interstate Commerce Commission Termination Act of 1995 (“ICCTA”) as the source of preemption. The ICCTA grants the Surface Transportation Board (“STB”) exclusive jurisdiction over interstate transportation by rail carrier and facilities that are an integral part of the railroad's interstate operations.<sup>59</sup> The STB lacks jurisdiction over activities proposed on non-railroad owned land and railroad activities that are not integral to a railroad's interstate operations, such as manufacturing facilities and truck transfer facilities.<sup>60</sup>

Even where the STB has jurisdiction, state and local regulation is not preempted where the regulation carries the force of federal law, such as a state regulation promulgated pursuant to the Clean Air Act or the Clean Water Act and which was approved by the EPA.<sup>61</sup> State and local regulations are also not preempted where the regulation is one of general application, having a remote or incidental effect on rail transportation, and does not unreasonably burden rail transportation.<sup>62</sup> Whether a state or local regulation unreasonably burdens interstate commerce is a question of fact.<sup>63</sup> “The ICCTA preempts all state laws that may reasonably be said to have the effect of managing or governing rail transportation, while permitting the continued application of laws having a more remote or incidental effect on rail transportation. What matters is the degree to which the challenged regulation burdens rail transportation . . . .”<sup>64</sup>

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<sup>58</sup> *Id.*

<sup>59</sup> See 49 U.S.C. § 10501(b); *Kawasaki Kisen Kaisha Ltd. v. Regal-Beloit Corp.* (2010) 561 U.S. 89; *Flynn v. Burlington Northern Santa Fe Corp.*, (2000) 98 F.Supp.2d 1186, 1189.

<sup>60</sup> See *Nicholson v. I.C.C.* 711 F.2d 364, 367-68 (D.C. Cir. 1983).

<sup>61</sup> *Association of American Railroads v. South Coast Air Quality Management District* (9th Cir. 2010) 622 F.3d 1094, 1098; *Flynn*, *supra*, 98 F.Supp.2d at 1189.

<sup>62</sup> *Association of American Railroads*, *supra*, 622 F.3d 1094 at 1097.

<sup>63</sup> See *id.*

<sup>64</sup> *Id.* at 1097 (internal quotations omitted).

ICCTA's preemption of CEQA was recently visited in the First Circuit appellate court in *Friends of the Eel River v. North Coast Railroad Authority*. In *Friends of the Eel River*, the court found a condition on a contract between the North Coast Railroad Authority ("NCRA"), a public agency, and Northwestern Pacific Railroad Company ("NWPRC"), requiring the agency's completion of CEQA before a rail project could be funded was preempted by ICCTA. The court found that requiring the NCRA to complete a CEQA review "may reasonably be said to have the effect of managing or governing rail transportation."<sup>65</sup> However, the project in that case involved the reopening of a new line, including upgrades and repairs, solely to benefit rail travel with NWPRC intended as the line operator.

Here, the Project is intended solely to benefit Valero's business and refinery operations. The Project entails the installation, operation and maintenance of new equipment, pipelines and associated infrastructure, and new and realigned segments of existing railroad track within the refinery boundary to allow the Applicant to receive crude oil by tank car.<sup>66</sup> These Project activities are neither undertaken by UPRR, nor are they integral to UPRR's interstate operations. In addition, these activities are not subject to STB jurisdiction because they are proposed on land not owned by UPRR.

The City's authority to implement certain mitigation measures intended to reduce emissions both inside and outside of the refinery is not federally preempted in this case. The STB does not have jurisdiction over the Project. Moreover, a permit condition requiring Valero to source feedstock via Tier 4 locomotives does not regulate UPRR's interstate operations. State regulation of in-state actors, which may impact contractual arrangements in interstate commerce, does not burden interstate commerce.<sup>67</sup> Likewise, a condition requiring *Valero* to contribute to off-site mitigation fee programs in uprail communities in no way regulates UPRR's operations. Indeed, there is no evidence that it does.

For argument sake, even if certain mitigation for impacts along the rail route are preempted (which they are not), CEQA requires the City to endeavor to find alternative mitigation that would not fall within the zone of preemption. CEQA undoubtedly requires the City to incorporate all feasible mitigation measures into

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<sup>65</sup> *Friends of the Eel River v. North Coast Railroad Authority* (2014), 230 Cal.App.4th 85.

<sup>66</sup> RDEIR, p. 2-3.

<sup>67</sup> *Rocky Mountain Farmers Union v. Corey* (2013 9th Cir.)730 F.3d 1070,1103.

the Project.<sup>68</sup> In her comments, Dr. Fox describes in detail three categories (with examples of each) of feasible mitigation measures that could be used to reduce the Project's significant NOx and ROG emissions to a less than significant level: (1) banked emission reduction credits ("ERCs"); (2) actual contemporaneous reductions at facilities under Valero's control; and (3) emission reduction agreements. In Dr. Fox's opinion, these feasible measures would fully mitigate the Project's significant impacts from NOx and ROG emissions.<sup>69</sup>

2. *The RDEIR Fails to Include Feasible Mitigation Measures for the Project's Significant Hazard Impact 4.7-2*

The RDEIR's Quantitative Risk Analysis compares the accident risks for various tank cars. The RDEIR concludes that the risk is significant for all of the tank car scenarios analyzed, but risks are highest for the non-jacketed CPC-1232s that Valero proposes to use, lower for DOT-117R (retrofitted CPC-1232s) and lower still for DOT-117 new builds. Despite this, according to the RDEIR, Valero will use non-jacketed CPC-1232s tank cars. Knowing that there are railcars that significantly reduce the risk of impacts from accidents, the City must require their use. The City does not. Instead, the RDEIR concludes that the Project's accident risks are significant and unavoidable because:

No reasonable, feasible mitigation measures have been identified that would, if implemented, reduce below established thresholds the potential significant hazard to the public or the environment that may result through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Further, as discussed in DEIR Section 3.7, DEIR Appendix L, and Revised DEIR Appendix G, the City cannot regulate UPRR's rail operations either directly or indirectly. Any such attempt would be preempted by federal law, which proscribes any mitigation measure that would have the effect of managing or governing rail operations. While the City can identify and disclose the risks posed by rail transport of crude oil, it must rely on the federal authorities to ensure that

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<sup>68</sup> See Pub. Resources Code, § 21081(a)(1)-(3); CEQA Guidelines, §§ 15002(a)(3), 15021(a)(2), 15091(a)(1).

<sup>69</sup> Fox Comments, pp. 8-14.

any such risks are mitigated as appropriate. Therefore, Impact 4.7-2 is considered significant and unavoidable.<sup>70</sup>

The RDEIR is wrong for two reasons.

First, Valero has discretion to choose which tank cars it will own or lease to transport crude.<sup>71</sup> Thus, the City would not be regulating UPRR's rail operations if it required Valero to choose the less dangerous tank cars.

Second, since the original DEIR was published, the United States Department of Transportation adopted its final rule on Enhanced Tank Car Standards. The rule requires legacy DOT-111 tank cars to be upgraded or phased out of unit train crude service. Non-jacketed CPC-1232 tank cars also must be upgraded or phased out of unit train crude service.<sup>72</sup> Under the rule, new tank cars built after October 1, 2015 must meet the DOT-117 standard. Existing tank cars must be upgraded to meet the DOT-117R standard or phased out of unit train crude service. However, the date by which existing tank cars must be upgraded varies depending on the type of car and crude being transported. Unjacketed legacy DOT-111 tank cars transporting higher danger crudes must meet the DOT-117R standard by January 1, 2018. Non-Jacketed CPC-1232 tank cars transporting higher danger crudes (the tank cars proposed for use by Valero) are required to meet the DOT-117R standard by April 1, 2020.<sup>73</sup> To reduce accident risk, the City should require Valero to use DOT-117R tank cars now.

### III. THE RDEIR FAILS TO ANALYZE ALL FEASIBLE ALTERNATIVES

A primary purpose of CEQA is to identify, through the evaluation of alternatives to the proposed project, ways in which the environmental effects of a project can be avoided or minimized. CEQA mandates that, "... it 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

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<sup>70</sup> RDEIR, pp. 2-105-2-106.

<sup>71</sup> Fox Comments, p. 15.

<sup>72</sup> USDOT Final Rule: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains, adopted May 1, 2015, see discussion in RDEIR, pp. 2-79-2-81.

<sup>73</sup> Fox Comments, pp. 15-16.

substantially lessen the significant environmental effects of such projects...”<sup>74</sup>  
Pursuant to CEQA’s implementing regulations,

[a]n EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.<sup>75</sup>

An EIR must evaluate the comparative merits of alternatives, including the “no project” alternative.<sup>76</sup> The reasoning behind the requirement to analyze the “no project” alternative is to allow the public and the decision-makers to assess the effects of approving the project versus the effects of not approving the project.<sup>77</sup> Alternatives that do not meet the project objectives and alternatives that are not reasonable or feasible may be eliminated from further consideration. Specifically, an alternative may be eliminated if: (1) the alternative fails to meet most of the basic project objectives; (2) the alternative is infeasible; (3) the alternative fails to avoid significant environmental impacts; or (4) an alternative for which the implementation is remote and speculative and for which the effects cannot be reasonably ascertained. With respect to feasibility, the CEQA Guidelines provide:

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the

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<sup>74</sup> Pub. Resources Code § 21002.

<sup>75</sup> CEQA Guidelines, §15126.69(a)

<sup>76</sup> *Id.*, § 15126.6(d).

<sup>77</sup> *Id.* § 15126.6(e)(1).

alternative site (or the site is already owned by the proponent)...<sup>78</sup>

Here, the RDEIR evaluated four alternatives to the Project:

- (1) Limiting Project to one 50-car train delivery per day;
- (2) Two 50-car trains delivered during nighttime;
- (3) Offsite unloading terminal; and
- (4) No project alternative.

The original DEIR considered (but dismissed from further consideration) four additional alternatives, including locating unloading racks at the Port of Benicia, at the AMPORTS property near the Benicia Marine Terminal, receiving crude from the proposed WesPac Energy Pittsburg Terminal, and an on-site Wye rail spur.<sup>79</sup> The City has not evaluated all feasible alternatives to the Project. In her comments, Dr. Fox describes two alternatives that were not identified in either the RDEIR or DEIR, but would reduce many of the Project's impacts to less than significant levels.

#### **A. The RDEIR Fails To Consider The Bakersfield Crude Terminals As A Project Alternative**

The RDEIR identifies two new crude terminals in the Bakersfield area: (1) the Alon Bakersfield Refinery Crude Flexibility Project ("Alon Terminal") that can accept up to two, 104-unit trains per day (168,000 bbl/day) and (2) the Plains All American Pipeline Bakersfield Crude Terminal ("Plains Terminal").<sup>80</sup> Plains Terminal is currently upgrading its pipeline system to deliver up to two unit trains per day of crude oil to the Los Angeles and San Francisco refining market.<sup>81</sup>

Both of these terminals underwent CEQA review. The Plains Terminal is operating and the Alon Terminal is under construction.<sup>82</sup> While the RDEIR

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<sup>78</sup> *Id.*, §15126.6(f)(1).

<sup>79</sup> DEIR, Section 6.3.

<sup>80</sup> RDEIR, p. 2-144.

<sup>81</sup> Fox Comments, p. 19.

<sup>82</sup> *Id.*, p. 20.

included these terminals in its cumulative impacts analysis, the RDEIR fails to evaluate these terminals as Project alternatives.

Dr. Fox explains that these terminals, individually or in combination, could supply Valero with 70,000 bbl/day of crude oil from the same sources that the Valero crude terminal would import.<sup>83</sup> According to Dr. Fox, the use of these terminals, rather than a new terminal at the Valero refinery, “would significantly reduce cumulative hazard, air quality, greenhouse gas, and all other cumulative impacts by reducing the number of trains using the same rail lines.”<sup>84</sup> Thus, CEQA requires the City to consider the Bakersfield crude terminals as Project alternatives.

#### **B. The RDEIR Fails To Consider Increased Imports From The San Joaquin Valley As A Project Alternative**

Historically, the Valero refinery has refined crudes imported by pipeline from the San Joaquin Valley and by marine vessel from the Alaska North Slope and various foreign sources.<sup>85</sup> The purpose of this Project is to replace declining Alaska North Slope crudes with crudes imported by rail from North American sources. The RDEIR completely overlooked the evidence showing that San Joaquin Valley oil production is projected to increase and is a viable alternative to the Project.

Dr. Fox explains in her comments that the United States Geological Survey recently estimated that 4 to 15.6 billion barrels of additional oil could be recovered from the San Joaquin and Los Angeles basins with current technology.<sup>86</sup> Indeed, the oil and gas industry intends to increase production from these reserves.<sup>87</sup> In 2012, representatives of the oil and gas industry (California Independent Petroleum Association, Independent Oil Producers Agency and Western States Petroleum Association) requested that Kern County modify its Zoning Ordinance to facilitate well permitting so that production could be increased.<sup>88</sup> In response, Kern County prepared a programmatic EIR to modify its Zoning Ordinance to allow up to 3,647 new wells to be permitted every year for the next 20 years, for a total of **84,503 new**

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<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*, p. 19.

<sup>86</sup> *Id.*, p. 20.

<sup>87</sup> *Id.*

<sup>88</sup> *Id.*

October 30, 2015

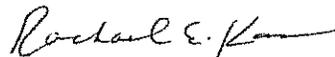
Page 21

*wells*.<sup>89</sup> This would allow oil and gas production in Kern County to double. In 2012, Kern County produced 141.690 million barrels of oil.<sup>90</sup> Moreover, the oil fields in Kern County are connected to refineries in the Bay Area, including Valero, by pipeline.<sup>91</sup> Thus, it is feasible for Valero to import up to 70,000 bbl/yr (the Project's goal) from local sources, rather than importing it by rail from sites up to 1,500 miles away. Crude imports from Kern County by pipeline would eliminate all significant impacts associated with rail delivery. Thus, CEQA requires the City to consider imports from the San Joaquin Valley as a Project alternative.

#### IV. CONCLUSION

We thank the City for this opportunity to provide preliminary comments on the RDEIR. We continue to evaluate the data provided by the City and we look forward to receiving the outstanding information outlined in these comments. We reserve the right to file supplemental comments. We also urge the City to prepare and circulate a revised EIR which identifies the Project's potentially significant impacts, requires all feasible mitigation measures and analyzes all feasible alternatives to reduce impacts to a less than significant level.

Sincerely,



Rachael E. Koss

REK:ric  
Attachments

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<sup>89</sup> *Id.*, p. 21.

<sup>90</sup> *Id.*

<sup>91</sup> *Id.*, p. 20.

# ATTACHMENT A

**Phyllis Fox**  
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October 30, 2015

*Via Email*

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

*Re: Review of Revised Draft Environmental Impact Report for Valero Benicia Crude by Rail Project*

Dear Ms. Koss:

Per your request, I have reviewed the Revised Draft Environmental Impact Report ("RDEIR") for the Valero Benicia Crude by Rail Project ("Project") published by the City of Benicia ("City") for review under the California Environmental Quality Act ("CEQA").<sup>1</sup> I have focused my comments on revisions that address my comments on the Draft Environmental Impact Report (DEIR).<sup>2</sup> Most of my comments on the DEIR are not responded to in the RDEIR. I therefore reincorporate them by reference.

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<sup>1</sup> City of Benicia, Valero Benicia Crude by Rail Project, Revised Draft Environmental Impact Report, SCH # 2013052074, Use Permit Application 12PLN-00063, August 2015;  
[http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Valero\\_Benicia\\_Crude\\_by\\_Rail\\_RDEIR\\_Complete\\_Version.pdf](http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Valero_Benicia_Crude_by_Rail_RDEIR_Complete_Version.pdf).

<sup>2</sup> Phyllis Fox, Comments on the Draft Environmental Impact Report (DEIR) for the Valero Benicia Crude by Rail Project, Benicia, California, September 15, 2014 (Fox DEIR Comments).

## I. ALL IMPACTS WERE NOT IDENTIFIED

### A. Southern Route Was Not Analyzed

For the first time, the RDEIR disclosed four routes that may be used to import crude oil. The RDEIR analyzed impacts along the three northern routes from the California border to the Roseville Yard: (1) Oregon to Roseville; (2) Nevada to Roseville (northern); and (3) Nevada to Roseville (southern).<sup>3</sup> Further, the RDEIR notes that any of the North American freight railroad tracks shown in Figure 1-1 could be used due to track-sharing agreements.<sup>4</sup> However, the RDEIR did not analyze impacts along any of these other routes.

The RDEIR concedes the southern route, through southern California, is an option but fails to evaluate any of the impacts along this route because “potential direct, indirect, and cumulative impacts of crude oil transport by rail approaching the Refinery from the south are expected to be substantially similar to the type and severity of impacts that could result between the Refinery and the State border via any of the northern routes.”<sup>5</sup> This is wrong.

*First*, based on the EIR’s pre-emption argument, UPRR can use any of these routes at its sole discretion.<sup>6</sup> The RDEIR, for example, asserts: “... UPRR retains unfettered flexibility in selecting the routes that trains could travel from the crude oil origination sites to Roseville... it is theoretically possible, due to track sharing agreements () for Project-related crude to be provided to the Refinery via any of the North American freight railroad tracks, which are shown in Figure 1-1...”<sup>7</sup> If crudes were sourced from Texas, Oklahoma or New Mexico<sup>8</sup>, for example, the southern route would be the shortest and thus the most economic. As the RDEIR chooses to leave all of its options open, as to both crudes and routes, the EIR must evaluate the worst case, which would be importing crude via the southern route.

*Second*, contrary to the RDEIR’s assertions, some impacts would be much more significant via the southern route. The distance travelled within California on the southern route, from Arizona to Roseville, is about 700 miles. In comparison, the in-California distance on the longest northern route is 297 miles. Thus, the southern

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<sup>3</sup> RDEIR, pp. 2-24, footnote 6 and 2-30. See also Figure 1-2.

<sup>4</sup> RDIIR, p. 2-24.

<sup>5</sup> RDEIR, p. 1-5.

<sup>6</sup> RDEIR, p. 1-5 (“...on the basis of federal preemption, neither the Refinery nor the City has any authority to dictate or limit routes selected by UPRR...”).

<sup>7</sup> RDEIR, pp. 2-23/24.

<sup>8</sup> RDEIR, Figure 1-2 and p. 2-21 .

route would be about 2.3 times longer than the longest northern route. As most impacts (e.g., air quality, greenhouse gases, and hazards) increase as the miles travelled in California increase, the longer southern route has the largest impacts.

### 1. *Rail Accidents*

The longer the route, the greater the probability of accidents. Typically accidents are determined based on the number of accidents per million miles traveled.<sup>9</sup> Further, as explained in the RDEIR, accident risk is heavily driven by mileage in HTUA (high urban threat areas). The southern route would pass through many more, much more densely populated areas than the northern routes, including the Sacramento area, cities in the southern Central Valley, and the Inland Empire/San Bernardino area. This would further increase the probability of accidents.

### 2. *Air Quality and Greenhouse Gas Emissions*

Second, the longer the route, the higher the locomotive and rail car fugitive emissions (NO<sub>x</sub>, ROG, diesel particulate matter) and thus the greater the air quality and public health impacts. The southern route would result in highly significant increases in both ROG and NO<sub>x</sub>, ozone precursors, compared to the shorter northern routes. The majority (>90% of miles) of the southern route pass through areas with extreme to severe ozone nonattainment issues.

Nonattainment areas are divided into six classes from “marginal” to “extreme”, depending on the extent to which the ozone design value<sup>10</sup> exceeds the standard. The majority of the southern route passes through the heart of the San Joaquin Valley Air Basin, which is in extreme nonattainment with the federal 8-hour ozone standard<sup>11</sup> and has the distinction, along with the South Coast Air Basin, of having the worst ozone nonattainment problem in the United States. Most of the rest of the route passes through areas classified as “severe”. The ozone concentrations in “extreme” areas are more than double the current state and federal 8-hour standards (70 ppb). Further, the entire southern route would pass through areas that are in nonattainment with both

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<sup>9</sup> RDEIR, pp. 2-95, 2-98 (“Train accident rates typically are determined based on the number of accidents per million miles traveled. As the miles a train travels increase, the probability of an accident also increases. Therefore, the additional miles Project-related trains would travel from the source locations to the California border would increase the overall probability of an accident resulting in injuries and fatalities [...].”)

<sup>10</sup> The design value is the three-year rolling average of the fourth highest 8-hour ozone concentration. The designation of attainment status is determined by comparing the design value to the National Ambient Air Quality Standard (NAAQS).

<sup>11</sup> Current Nonattainment Counties for All Criteria Pollutants;  
<http://www3.epa.gov/airquality/greenbk/ancl.html>.

federal and state ozone standards, while the northern routes pass through areas with much better air quality.<sup>12</sup>

The RDEIR asserts that 50-car unit trains would be dispatched from Roseville<sup>13</sup> and thus that “it is less likely that Project trains would use the southern route because they first would have to travel through Sacramento to Roseville, and then back through Sacramento to reach the refinery.”<sup>14</sup> In other words, it would add a 13 mile trip to the route.

This is not a creditable argument. First, 26 miles is a tiny fraction of the 1,500 mile route and would add very little to either the cost or transit time and would thus have little to no influence on routing. Second, an additional 26 miles is much less than the increase in mileage that would result from routing trains carrying crude from Texas, Oklahoma or New Mexico via the northern route. Finally, trains could be staged at a railyard in the southern part of the state,<sup>15</sup> though this would be unlikely as it would cost more to send two 50-car trains over the much longer distance. In sum, Roseville makes the most sense for staging, regardless of the origin of the trains. Staging through Roseville, regardless of the route, would be the most economic and efficient choice.

The EIR must analyze the worst case, which is the southern route, or impose a condition prohibiting it.

## **B. Fugitive VOC Emissions from Railcars Were Underestimated and Are Significant**

The DEIR did not include any reactive organic gas (ROG) or toxic air contaminant (TAC) emissions from rail cars from their point of origin through unloading. I estimated that these emissions would be about 53 ton/day along the 1500 mile route from the shipping point to the Terminal.<sup>16</sup> The RDEIR revised the emission inventory to include ROG emissions from rail cars in transit everywhere but in

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<sup>12</sup> 2013 Area Designations for State Ambient Air Quality Standards, Ozone and Area Designations for National Ambient Air Quality Standards, 8-hour Ozone; <http://www.arb.ca.gov/desig/adm/adm.htm>.

<sup>13</sup> Longer trains are generally cheaper to operate. Thus, trains likely travel from the crude source to Roseville as 100-car unit trains. As the rail lines between Sacramento and Benicia are busy with numerous passenger trains requiring tight scheduling, the 100-car unit trains are broken up into two 50-car unit trains at Roseville and separately dispatched to the Refinery during off-peak periods.

<sup>14</sup> RDEIR, p. 1-5.

<sup>15</sup> See list at: <http://www.arb.ca.gov/railyard/community/community.htm>.

<sup>16</sup> Fox DEIR Comments, Comment II.E.

the BAAQMD.<sup>17</sup> However, it used a method that underestimates the emissions by huge amounts.

The RDEIR relies on Valero's emission calculation in Appendix A, captioned: "A.6 Valero's Fugitive ROG Railcar Emissions."<sup>18</sup> This calculation is unsupported. Citations and supporting calculations are missing. The formula is referenced to cell coordinates in an Excel spreadsheet (C6\*F6\*G6\*H6(1-I6)/1000/1.10231) that was not produced, so it is gibberish. The formula used to estimate emissions is based on the number of fugitive components on each rail car and emission factors based on "average marketing terminals" in kilograms per hour per source (where a source is a valve or connector).

The types of fittings on rail cars are distinguishable from those on the loading rack of marketing terminals that transfer refinery products to tanker trucks while stationary. The RDEIR's revised calculations, for example, do not include any vents or safety valve releases. A unit train, on the other hand, is not stationary, but rather is travelling at up to 50 miles per hour.<sup>19</sup> Further, a unit train passes through areas with high winds. The area between Roseville and Benicia, for example, is known for its high winds, supporting a cluster of wind farms east of Benicia.<sup>20</sup> Further, between the crude source and Roseville, the trains will pass through narrow mountain passes that serve as wind tunnels. The winds coupled with the speed of the train create suction across the face of fugitive components, which sucks VOC emissions out of the tanks. Thus, the substitution of "average marketing terminal" factors for actual measurements of transit losses grossly underestimates VOC emissions from in-transit rail cars.

I estimated these emissions using the lower end of the range of actual measurements of product loss en route.<sup>21</sup> This results in total VOC emissions of 53 ton/day<sup>22</sup> of ROG for the 1,500 mile trip from source to destination, assuming a loss of 0.5%, 50 cars/train and two unit trains per day. Using the newly reported miles travelled and the longest route in each District from among the three options

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<sup>17</sup> RDEIR, Appx. A

<sup>18</sup> RDEIR, Appx. A, p. A-11.

<sup>19</sup> RDEIR, pp. 2-80, 81, 92, 98, 3-21. This speed is reduced in some cases, including to 40 mi/hr in urban areas for unit trains including tank cars not meeting enhanced standards and to 30 mi/hr for unit trains that do not have enhanced braking systems, required starting in 2021.

<sup>20</sup> [https://en.wikipedia.org/wiki/Montezuma\\_Hills](https://en.wikipedia.org/wiki/Montezuma_Hills);  
[https://www.solanocounty.com/depts/rm/planning/wind\\_turbine\\_projects.asp](https://www.solanocounty.com/depts/rm/planning/wind_turbine_projects.asp);  
[http://www.co.solano.ca.us/depts/rm/documents/eir/montezuma\\_ii\\_wind\\_project.asp](http://www.co.solano.ca.us/depts/rm/documents/eir/montezuma_ii_wind_project.asp).

<sup>21</sup> Fox DEIR Comments, Comment II.E, p. 31.

<sup>22</sup> ROG emissions from train transit = (106 ton/car)(50 car/train)(2 train/day)(0.005) = **53 ton/day**.

evaluated<sup>23</sup> and ROG significance thresholds for each air district,<sup>24</sup> the increase in ROG emissions within all air districts are highly significant, thousands of times higher than significance thresholds:

- BAAQMD: 336 lb/day vs. 54 lb/day
- Siskiyou: 6,289 lb/day<sup>25</sup> vs. 25 lb/day
- Shasta: 5,512 lb/day vs. 25 lb/day
- Tehama: 2,827 lb/day vs. 25 lb/day
- Butte: 3,745 lb/day vs. 25 lb/day
- Feather River: 1,837 lb/day vs. 25 lb/day
- Placer: 6,572 lb/day vs. 24 lb/day
- Sacramento: 1,131 lb/day vs. 65 lb/day
- Lassen: 2,544 lb/day vs. 25 lb/day
- Northern Sierra: 6,713 lb/day vs. 65 lb/day

The exceedance in the Sacramento MAQMD is particularly egregious because this District is classified as severe nonattainment for the federal 8-hour ozone standard. These are new significant impacts that the RDEIR did not disclose. They can and must be mitigated, as discussed in Comment II.A.

These ROG emissions contain the same chemicals found in the crude oil, including benzene, toluene, xylene, hexane, and ethylbenzene. As documented in my comments on the DEIR, some crudes can contain up to 7% benzene by weight. Thus, greater than 1,301 lb/day of benzene could be emitted in California and greater than 336 lb/day of benzene within the BAAQMD from rail car leakage. This rail car leakage is much greater than the amount of benzene (and other TACs) included in the revised Health Risk Assessment (HRA). For example, the HRA included only 0.06 lb/day of benzene<sup>26</sup> from fugitive components or a tiny fraction of the 336 lb/day of benzene that could be emitted within the BAAQMD from the rail cars themselves.

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<sup>23</sup> RDEIR, Table 4.1-11.

<sup>24</sup> RDEIR, Tables 4.1-12 and 4.1-13.

<sup>25</sup> Sample calculation for Siskiyou:  $(89 \text{ mi}/1500 \text{ mi})(53 \text{ ton}/\text{day})(2,000 \text{ lb}/\text{ton}) = 6,289 \text{ lb}/\text{day}$  using distances within each air district from Table 4.1-11.

<sup>26</sup> DEIR, Appx. E.4, pdf 1160, and from Excel spreadsheet "Refinery Health Calculation June 2015 for Attachment.xlsx":  $3.24\text{E-}04 \text{ g}/\text{s}$  benzene;  $(3.24\text{E-}04 \text{ g}/\text{s} \text{ benzene})/(453.6 \text{ lb}/\text{g})(3600 \text{ s}/\text{hr})(24 \text{ hr}/\text{day}) = 0.062 \text{ lb}/\text{day}$  benzene.

## II. ALL FEASIBLE MITIGATION WAS NOT REQUIRED

The RDEIR concluded that the following impacts are “significant and unavoidable”:<sup>27</sup>

- Impact 4.1-1: conflict with implementation of applicable air quality plans;
- Impact 4.1-5: contribute to an existing or project air quality violation uprail from the Roseville Yard;
- Impact 4.1-7: result in cumulatively considerable net increases in ozone precursor emissions in uprail air districts;
- Impact 4.2-10: result in adverse impacts on biological resources from collisions with trains due to increased frequency of railcars;
- Impact 4.6-1: generate direct and indirect GHG emissions;
- Impact 4.6-2: conflict with Executive Order S-3-05;
- Impact 4.7-2: pose significant hazard to public or the environment via upset and accident conditions involving release of hazardous materials;
- Impact 4.7-6: hazardous materials spills, fires, explosions; and
- Impact 4.7-9: Expose people or structures to significant risk, injury, or loss from wildland fires.

Thus, all feasible mitigation is required<sup>28</sup>. The RDEIR simply asserts that there is no feasible mitigation that could be used to reduce these impacts without conducting any analysis whatsoever. As set out below, there is feasible mitigation.

### A. All Feasible Mitigation Was Not Required for Significant Air Quality Impacts 4.1-1, 4.1-4 and 4.1-7

The RDEIR expanded the air quality analysis to include locomotive emissions in air districts outside of the BAAQMD through which the trains would travel, including:

- Yolo-Solano AQMD
- Sacramento Metropolitan AQMD
- Placer County APCD;
- Tehama County APCD;
- Butte County APCD;
- Feather River AQMD;

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<sup>27</sup> RDEIR, Table ES-2.

<sup>28</sup> Pub. Res. Code § 21081, 21002.

- Siskiyou County APCD;
- Shasta County AQMD;
- Lassen County APCD;
- Northern Sierra AQMD;

This analysis found that the increase in NO<sub>x</sub> emissions from locomotives in all of these air districts is significant. However, rather than imposing any mitigation, the RDEIR argues locomotive emissions are preempted from mitigation under CEQA.<sup>29</sup> This is an absurd argument because emissions, once released from a locomotive, are part of the ambient air and thus are part of the “commons” that are subject to regulation and control by local agencies.

Further, NO<sub>x</sub> and ROG are twice removed from their source. The significance criteria for NO<sub>x</sub> and ROG are generally based on the fact that they are ozone precursors. Ozone is the pollutant of concern. Ozone is not emitted by locomotives or railcars, but rather, it is formed in the atmosphere from precursor compounds, primarily NO<sub>x</sub> and ROG. The amount of ozone that forms depends on the level of other pollutants present in the air where it is emitted. For example, in areas with low ambient NO<sub>x</sub> levels, such as many of the northern air districts, NO<sub>x</sub> emissions contribute to an increase in ambient ozone levels, beyond what would be predicted from a 1:1 relationship.<sup>30</sup> Thus, reductions in ROG could be used to offset increases in NO<sub>x</sub> and vice versa.

Project NO<sub>x</sub> and ROG emissions are released to meet Valero’s goal to change the source of its crude oil, which pollutes the commons. Thus, it is Valero’s obligation under CEQA to mitigate the resulting impacts. Valero can’t get off the hook for mitigating its impacts just because it chooses to import its crude by rail rather than another common carrier, such as ship or pipeline.

Further, the majority of the ROG emissions that must be mitigated are released from the rail cars, which are either owned by or leased by Valero and thus under Valero’s control. The City, as the lead agency, can require mitigation, or, in the alternative, deny the Project. The impacts here are so substantial that, absent mitigation, they warrant Project denial.

There are three types of mitigation measures that could be used to reduce the significant NO<sub>x</sub> and ROG emissions to a less than significant level: (1) banked emission reduction credits (ERCs); (2) actual contemporaneous reductions at facilities under Valero’s control; or (3) emission reduction agreements. These are discussed below.

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<sup>29</sup> RDEIR, p. 2-39 and Appx. G, H.

<sup>30</sup> D.J. Rasmussen, J. Hu and others, *The Ozone-Climate Penalty: Past, Present, and Future*, *Environmental Science & Technology*, v. 47, no. 24, 2013, pp. 14258-14266.

1. *Emission Reduction Credits*

Banked emission reduction credits (ERCs) in the affected air districts could be purchased and retired by Valero.

2. *Actual Reductions*

The City could require that Valero make emission reductions, in an amount equal to the increase in emissions, at sources under its control in affected air basins. The significant increases in ROG and NO<sub>x</sub> in the BAAQMD<sup>31</sup>, for example, could be offset by equivalent reductions at emission sources at the Valero Refinery by retrofitting existing boilers and heaters with more effective NO<sub>x</sub> and ROG controls. These might include, for example, replacing low NO<sub>x</sub> burners with SCR or retrofitting combustion sources with oxidation catalysts to reduce ROG.

The emission increases in other air districts could be offset by requiring that Valero make emission reductions at facilities that it controls in other affected air districts. These would include reductions at its wholesale terminals<sup>32</sup> and to its tanker truck fleet, used to transport products from its Benicia Refinery to end users in affected northern air districts. Some example controls include:

*Marketing Terminals*

- Retrofitting storage tanks with geodesic domes;
- Installing NO<sub>x</sub> and ROG exhaust controls on diesel fired engines, such as emergency generators;
- Controlling loading/unloading emissions using carbon canisters rather than flares or thermal oxidizers, which would eliminate NO<sub>x</sub> emissions;
- On-site renewable energy generation; and
- Employee transit and alternative transportation.

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<sup>31</sup> The RDEIR continues to assert that the reduction in ship traffic offsets the increase in Project emissions. However, my comments on the DEIR explain why this is incorrect. The ROG and NO<sub>x</sub> emission increases within the BAAQMD are significant and unmitigated.

<sup>32</sup> Valero Wholesale Terminals; <http://www.valero.com/ourbusiness/ourlocations/Pages/Home.aspx>.

### *Tanker Truck Fleet*

- Use alternative diesel fuels, such as, Clean Fuels Technology (water emulsified diesel fuel), or O2 diesel ethanol-diesel fuel (O2 Diesel) in existing engines;<sup>33</sup>
- Use idle reduction technology, defined as a device that is installed on the vehicle that automatically reduces main engine idling and/or is designed to provide services, e.g., heat, air conditioning, and/or electricity to the vehicle or equipment that would otherwise require the operation of the main drive engine while the vehicle or equipment is temporarily parked or is stationary;<sup>34</sup>
- Minimize idling time either by shutting off equipment when not in use or limit idling time to 3 minutes. Signs shall be posted in the designated queuing areas at terminals to advise operators of the 3 minute idling limit.
- Implement a program to eliminate leaks during tanker truck loading and unloading<sup>35</sup>

Among these, storage tank retrofits are among the most effective. Many storage tanks are present at Valero Marketing Terminals. They are also widely distributed in agricultural areas to store diesel fuel for farm equipment. Reductions of VOCs from installing tank domes would offset increases in NO<sub>x</sub>, as both are ozone precursors.

### *Storage Tanks*

The significant ozone impacts, reflected by significant increases in NO<sub>x</sub> and ROG, could be fully offset by retrofitting product storage tanks at Valero marketing terminals with geodesic domes. These domes are feasible and are widely used to satisfy best available control technology. Over 10,000 aluminum domes have been installed on petrochemical storage tanks in the United States.<sup>36</sup> The ExxonMobil Torrance Refinery: “completed the process of covering all floating roof tanks with geodesic domes to reduce volatile organic compound (VOCs) emissions from facility storage tanks in 2008. By installing domes on our storage tanks, we’ve reduced our VOC emissions from these

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<sup>33</sup> SCAQMD, Mitigation Measure Resources, Construction Emissions Mitigation Measures, <https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=scaqmd%20ceqa%20construction%20mitigation>.

<sup>34</sup> <http://www3.epa.gov/smartway/forpartners/technology.htm#tabs-3>.

<sup>35</sup> See, e.g., U.S. EPA, Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals, Report EPA-450/2-77-026, October 1977.

<sup>36</sup> M. Doxey and M. Trinidad, Aluminum Geodesic Dome Roof for Both New and Tank Retrofit Projects, Materials Forum, v. 30, 2006, Available at: [http://www.materialsaustralia.com.au/lib/pdf/Mats.%20Forum%20page%20164\\_169.pdf](http://www.materialsaustralia.com.au/lib/pdf/Mats.%20Forum%20page%20164_169.pdf).

tanks by 80 percent. These domes, installed on tanks that are used to store gasoline and other similar petroleum-derived materials, help reduce VOC emissions by blocking much of the wind that constantly flows across the tank roofs, thus decreasing evaporation from these tanks.”<sup>37</sup>

A project recently proposed at the Phillips 66 Los Angeles Carson Refinery required external floating roof tanks with geodesic domes to store crude oil with an RVP of 11.<sup>38</sup> The Negative Declaration for this project assumed these tanks would store crude oil with a true vapor pressure (TVP) <11 psi. The ConocoPhillips Wilmington Refinery added a geodesic dome to an existing oil storage tank to satisfy BACT.<sup>39</sup> Similarly, Chevron proposes<sup>40</sup> to use domes on several existing tanks to mitigate VOC emission increases at its Richmond Refinery.<sup>41</sup> The U.S. Department of Justice CITGO Consent Decree required a geodesic dome on a gasoline storage tank at the Lamont, Texas refinery.<sup>42</sup> Further, numerous vendors have provided geodesic domes for refinery tanks.<sup>43</sup>

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<sup>37</sup> Torrance Refinery: An Overview of our Environmental and Social Programs, 2010, Available at: [http://www.exxonmobil.com/NA-English/Files/About\\_Where\\_Ref\\_TorranceReport.pdf](http://www.exxonmobil.com/NA-English/Files/About_Where_Ref_TorranceReport.pdf).

<sup>38</sup> See, e.g., Phillips 66 Los Angeles Refinery Carson Plant – Crude Oil Storage Capacity Project, September 6, 2013, Table 1-1, Draft Negative Declaration, Available at: [https://www.aqmd.gov/CEQA/documents/2013/nonaqmd/Draft\\_ND\\_Phillips\\_66\\_Crude\\_Storage.pdf](https://www.aqmd.gov/CEQA/documents/2013/nonaqmd/Draft_ND_Phillips_66_Crude_Storage.pdf)

<sup>39</sup> SCAQMD Letter to G. Rios, December 4, 2009, Available at: [http://yosemite.epa.gov/r9/air/epss.nsf/e0c49a10c792e06f8825657e007654a3/e97e6a905737c9bd882576cd0064b56a/\\$FILE/ATTTOA6X.pdf/ID%20800363%20ConocoPhillips%20Wilmington%20-%20EPA%20Cover%20Letter%20-%20AN%20501727%20501735%20457557.pdf](http://yosemite.epa.gov/r9/air/epss.nsf/e0c49a10c792e06f8825657e007654a3/e97e6a905737c9bd882576cd0064b56a/$FILE/ATTTOA6X.pdf/ID%20800363%20ConocoPhillips%20Wilmington%20-%20EPA%20Cover%20Letter%20-%20AN%20501727%20501735%20457557.pdf).

<sup>40</sup> City of Richmond, Chevron Refinery Modernization Project, Environmental Impact Report, Volume 1: Draft EIR, March 2014 (Chevron DEIR), Available at: <http://chevronmodernization.com/project-documents/>.

<sup>41</sup> Chevron EIR, Chapter 4.3; [http://chevronmodernization.com/wp-content/uploads/2014/03/4.3\\_Air-Quality.pdf](http://chevronmodernization.com/wp-content/uploads/2014/03/4.3_Air-Quality.pdf).

<sup>42</sup> CITGO Petroleum Corp. Clean Air Act Settlement, Available at: <http://www2.epa.gov/enforcement/citgo-petroleum-corporation-clean-air-act-settlement>.

<sup>43</sup> See, e.g., Aluminum Geodesic Dome, Available at: <http://tankaluminumcover.com/Aluminum-Geodesic-Dome>; Larco Storage Tank Equipment, Available at: [http://www.larco.fr/aluminum\\_domes.html](http://www.larco.fr/aluminum_domes.html); Vacono Dome, Available at: [http://www.easyfairs.com/uploads/tx\\_ef/VACONODOME\\_2014.pdf](http://www.easyfairs.com/uploads/tx_ef/VACONODOME_2014.pdf); Peksay Ltd., Available at: <http://www.thomasnet.com/productsearch/item/10039789-13068-1008-1008/united-industries-group-inc/geodesic-aluminum-dome-roofs/>; United Industries Group, Inc., Available at: <http://www.thomasnet.com/productsearch/item/10039789-13068-1008-1008/united-industries-group-inc/geodesic-aluminum-dome-roofs/>.

### 3. *Voluntary Emission Reduction Agreements*

The significant increase in ROG and NO<sub>x</sub> emissions in air districts that the rail lines pass through could be fully mitigated using voluntary emission reduction agreements or VERAs. The RDEIR identifies mitigation fee program in up-rail districts, but improperly argues they are pre-empted.<sup>44</sup> Various agencies already use them as CEQA mitigation as discussed below. A *Voluntary Emission Reduction Agreement* would require Valero to make a one-time payment for its ROG and NO<sub>x</sub> emissions in excess of significance thresholds to each affected air district.

Kern County has used Development Mitigation Contracts (DMCs) to mitigate CEQA impacts since 2008. They are mandated by enforceable mitigation measures under CEQA and thus are called DMCs.<sup>45</sup>

The SJVAPCD uses Voluntary Emission Reduction Agreements or VERAs to implement its Rule 9510 and to address mitigation requirements under CEQA. The applicant provides funds to the District. The District then identifies emission reduction projects and uses the funds to implement emission reductions on behalf of the project applicant. These agreements are incorporated into the SJVUAPCD's CEQA Guidelines, which explain:

“Design elements, mitigation measures, and compliance with District rules and regulations may not be sufficient to reduce project-related impacts on air quality to a less than significant level. In such situations, project proponents may enter into a Voluntary Emission Reduction Agreement (VERA) with the District to reduce the project related impact on air quality to a less than significant level. A VERA is a mitigation measure by which the project proponent provides pound-for-pound mitigation of air emissions increases through a process that funds and implements emission reduction projects. A VERA can be implemented to address impacts from both construction and operational phases of a project.

To implement a VERA, the project proponent and the District enter into a contractual agreement in which the project proponent agrees to mitigate project specific emissions by providing funds to the District. The District's role is to administer the implementation of the VERA consisting of identifying emissions reductions projects, funding those projects and verifying that emission reductions have been successfully achieved. The

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<sup>44</sup> RDEIR, p. 2-39.

<sup>45</sup> Kern County, Final Environmental Impact Report for Revisions to the Kern County Zoning Ordinance – 2015, 2015, p. 4.3-49, 4.3-102/103; <http://pcd.kerndsa.com/planning/environmental-documents/421-oil-gas-deir>.

VERA implementation process also provides opportunity for the project proponent to identify specific emission reduction projects to be administered by the District. The funds are disbursed by the District in the form of grants. Types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors.

The District verifies the actual emission reductions that have been achieved as a result of completed grant contracts, monitors the emission reduction projects, and ensures the enforceability of achieved reductions. The initial agreement is generally based on the projected maximum emissions increases as calculated by a District approved air quality impact assessment, and contains the corresponding maximum fiscal obligation. However, the District has designed flexibility into the VERA such that the final mitigation can be based on actual emissions related to the project as determined by actual equipment used, hours of operation, etc. After the project is mitigated, the District certifies to the Lead Agency that the mitigation is completed, providing the Lead Agency with an enforceable mitigation measure demonstrating that project specific emissions have been mitigated to less than significant.

To ensure all feasible mitigation measures are incorporated into the project to reduce project air quality impact to less than significant, the District recommends the project proponent (and/or Lead Agency) engage in discussion with the District to have the VERA adopted by the District prior to the finalization of the environmental document. This process will allow the environmental document to appropriately characterize the project emissions and demonstrate that the project impact on air quality will be mitigated to less than significant under CEQA as a result of the implementation of the adopted VERA. The District has been developing and implementing VERA contracts with project proponents to mitigate project specific emissions since 2005. It is the District's experience that implementation of a VERA is a feasible mitigation measure, which effectively achieves the emission reductions required by a Lead Agency, including mitigation of project-related impacts on air quality by supplying real and contemporaneous emissions reductions. Therefore, Lead Agencies should require the project proponent to negotiate a VERA with the District prior to the Lead Agency's final approval of the CEQA document. This allows the Lead Agency to disclose to the public the certainty that the VERA is assuring full mitigation of air quality impacts as

specified in the environmental review document or equivalent documentation certified by the Lead Agency.”<sup>46</sup>

Through 2014, the SJVUAPCD had entered into over 20 VERAs. VERAs have been identified as mitigation measures within environmental documents that underwent public review under CEQA.<sup>47</sup> Types of projects that have been funded include electrification of stationary internal combustion engines (such as agricultural irrigation pumps, present throughout the subject air districts), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacing old farm tractors. The District has repeatedly concluded VERA “is a feasible mitigation measure under CEQA, effectively achieving emission reductions necessary to reduce impacts to a less than significant level.”<sup>48</sup>

This approach, for example, was recently proposed by Kern County to mitigate impacts from oil and gas drilling and was vigorously upheld in the response to comments, concluding that it is “...an enforceable mitigation measure that will effectively “zero out” new project emissions of NO<sub>x</sub>, PM<sub>10</sub> and ROG<sub>s</sub> by generating equivalent emissions reduction through equipment replacements and other measures funded by the mitigation fees.”<sup>49</sup> Other air districts also use this approach, including Placer County APCD and Sacramento Metropolitan AQMD.<sup>50</sup>

This approach has been found legally sufficient by court rulings in the following cases: *California Building Industry Assn. v. San Joaquin Valley APCD*, Fresno County Case No. 06 CECG 02100 DS13; *National Association of Home Builders v. San Joaquin Valley Unified Air Pollution Control District*; Federal District Court, Eastern District of California, Case No. 1:07-CV-00820-LJO-DLB; and *Center for Biological Diversity et al v Kern County*, Fifth Appellate District, Case No. F061908.

The City could use a DMC or VERA to reduce the Project’s significant and unavoidable air quality impacts. Under such an agreement, Valero would pay an air emission mitigation fee pursuant to an agreement between the City and the air districts

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<sup>46</sup> SJVAPCD, Guidance for Assessing and Mitigating Air Quality Impact, March 19, 2015, pp. 116-117; [http://www.valleyair.org/transportation/GAMAQI\\_3-19-15.pdf](http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf).

<sup>47</sup> SJVAPCD, Summary of Comments and Responses to Proposed Revisions to the GAMAQI-2012, May 31, 2012, p. 3; <https://www.valleyair.org/transportation/GAMAQIDRAFT-2012/GAMAQIResponsetoComments5-10-12%20.pdf>.

<sup>48</sup> SJVAPCD, 2014 Annual Report, Indirect Source Review Program, Reporting Period: July 1, 2013 to June 30, 2014, pp. 5, 9; <http://www.valleyair.org/ISR/Documents/2014-AnnualISRReport.pdf>.

<sup>49</sup> Kern County Oil & Gas FEIR, 2015, pp. 7-184/185; [http://psbweb.co.kern.ca.us/UtilityPages/Planning/EIRS/oil\\_gas/RTC/Oil\\_Gas\\_FEIR\\_Vol3\\_Chapter\\_7.2.1.pdf](http://psbweb.co.kern.ca.us/UtilityPages/Planning/EIRS/oil_gas/RTC/Oil_Gas_FEIR_Vol3_Chapter_7.2.1.pdf).

<sup>50</sup> RDEIR, p. 2-38.

where the impacts occur to fully offset new emission increases. The air districts would then use the fees to reduce emissions within the district. The SJVUAPCD, who has more experience with this approach than other agencies, has found that the cost for these reductions is \$6,974 per ton.<sup>51</sup>

The voluntary mitigation program would have to be designed to assure that impacts are reduced at the place and time that they actually occur, *i.e.*, continuously in areas in the vicinity of the rail lines. For example, the rail lines pass through large areas of national forest and irrigated farm lands. Emissions from trains that pass through these areas could be mitigated under VERAs by replacing diesel-fuel equipment used by the Forest Service or by electrifying irrigation pumps. The rail lines also pass through HTUAs. The emissions in these areas also could be offset by installing solar panels on homes and commercial buildings in the vicinity of the rail tracks, or replace fireplaces and wood burning stoves with more efficient heating method.

#### **B. All Feasible Mitigation Was Not Required for Significant Hazard Impact 4.7-2**

The RDEIR includes a new hazard analysis that concludes the consequences of an accident are significant and unavoidable. However, even though the RDEIR identifies alternatives that would significantly reduce this risk, it fails to require them as mitigation, even though they are discretionary to Valero.

Valero will own or lease the railcars used to import crude. Valero is committing to use non-jacketed CPC-1232s instead of legacy DOT-111s,<sup>52</sup> which will only provide mitigation/improvement over the allowable minimum standards until DOT-111s must be retrofitted/phased out (by January 1, 2018 for Packing Group 1 unit train crude service).

The RDEIR Quantitative Risk Analysis (QRA) concludes that the accident risk is significant for any of the tank car scenarios analyzed, but risks are highest for the non-jacketed CPC-1232s that Valero proposes to use, lower for DOT-117R (retrofitted CPC-1232s), and lower still for DOT-117 new builds. In spite of these findings, namely that there are feasible railcars that significantly reduce the risk of impacts from accidents, the EIR fails to require their use, even though their selection is at the discretion of Valero.

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<sup>51</sup> SJVUAPCD 2014, p. 2.

<sup>52</sup> RDEIR p. 2-8. See DEIR Section 3.4.1.3, Tank Cars, for more information.

Valero's proposal in the RDEIR provides no significant mitigation, but simply compliance with the law for a limited time.<sup>53</sup> At the time the DEIR was published, legacy DOT-111s were permissible and CPC-1232s were more protective. However, under the USDOT Final Rule: Enhanced Tank Car Standards adopted in 2015, legacy DOT-111s have to be upgraded or phased out of unit train crude service, and non-jacketed CPC-1232 will shortly afterwards also need to be upgraded or phased out of unit train crude service.<sup>54</sup> Thus, to mitigate significant hazard impacts, safer tank cars should be required, at least new DOT-117s.

Under the Final Rule, new and existing tank cars are both subject to enhanced standards, but the standards for existing tank cars are less stringent and protective. New tank cars built after October 1, 2015 must meet the DOT-117 standard. Existing tank cars have to be upgraded to meet the DOT-117R standard or phased out of unit train crude service.

The date by which existing tank cars have to be upgraded varies depending upon the type of car and crude being transported. Unjacketed legacy DOT-111s transporting higher danger crudes (classified as Packing Group I) in unit train service have to meet the DOT-117R standard by January 1, 2018.<sup>55</sup> Non-jacketed CPC-1232 tank cars in Packing Group I unit train service (the tank cars proposed for use by Valero) have to meet the DOT-117R standard by April 1, 2020.<sup>56</sup>

As further explained below, the RDEIR used a Quantitative Risk Analysis (QRA) to determine the significance of an accident associated with the Project. Based on the QRA results, the RDEIR concludes that maximum risks from proposed transport of Project-related crude oil are above the significant risk threshold and that impacts would be considered significant. The RDEIR provides QRA results for various operational scenarios and for crude transport in three types of tank cars:

- Non-jacketed CPC-1232 (the tank cars proposed for use by Valero);

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<sup>53</sup> DEIR pp. 3-19-3-20 ("Valero would comply with all legal requirements applicable to the transport of crude oil by rail, including all tank specification requirements. In one respect, however, Valero would exceed legal requirements. Valero has committed that, when the PHMSA regulations call for use of a DOT-111 car, Valero would use 1232 Tank cars rather than legacy DOT-111 cars.").

<sup>54</sup> USDOT Final Rule: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains, adopted May 1, 2015, see discussion in RDEIR, pp. 2-79-2-81; [http://www.phmsa.dot.gov/pv\\_obj\\_cache/pv\\_obj\\_id\\_C93438A3750672CC19C218658253009CC0511900/filename/HHFT\\_Final\\_Rule.pdf](http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_C93438A3750672CC19C218658253009CC0511900/filename/HHFT_Final_Rule.pdf).

<sup>55</sup> Unjacketed legacy DOT-111s transporting medium and lower danger crudes (classified as Packing Groups I and II) in unit train service have to meet the DOT-117R standard by May 1, 2023, and May 1, 2025, respectively.

<sup>56</sup> Non-Jacketed CPC-1232 tank cars in Packing Group II and III unit train service have to meet the DOT-117R standard by July 1, 2023, and May 1, 2025, respectively.

- DOT-117R (retrofitted CPC-1232 cars); and
- DOT-117 (new tank cars built to the standard in effect starting October 1, 2015 for new builds).

The RDEIR Sections 2.12.6 and 2.17.4.3.7 conclude, based on the QRA in Appendix F, as to Project and cumulative impacts, as follows:

- Maximum risks from proposed transport of Project-related crude oil are above the significant risk threshold and that impacts would be considered significant, with Non-Jacketed CPC-1232 (the tank cars proposed for use by Valero);
- Risks would be lower, but still significant, with tank cars meeting the DOT-117R standard (retrofitted CPC-1232);
- Risks would be even lower, but still significant with tank cars meeting the DOT-177 standard (new cars built to the standard in effect starting October 1, 2015 for new builds).

In addition to the Project, the following crude by rail projects were included in the QRA for cumulative impacts:<sup>57</sup>

- Alon Bakersfield Refinery Crude Flexibility Project: New (currently under construction) unloading facility at existing refinery that could accept up to two, 104-tank car unit trains per day.
- Plains All American Pipeline Bakersfield Crude Terminal: New (now operating) unloading facility in which crude oil delivered in tank cars is transferred to outbound pipelines.
- Kinder Morgan (City of Richmond): Repurposed (now operating) ethanol transloading facility in which crude oil is loaded onto trucks for delivery to refineries.
- Tesoro Refinery (Contra Costa County): Existing (now operating) refinery accepting crude oil from third-party operated unloading facility.
- Phillips 66 Santa Maria Refinery Rail Spur Project (San Luis Obispo County): New unloading facility at existing refinery that could accept up to five, 80-tank car unit trains per week.
- InterState Oil Co. (Sacramento County): Existing (currently not operating due to court imposed shutdown) transloading facility in which crude oil delivered in tank cars is transloaded onto trucks for delivery to Bay Area refineries.

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<sup>57</sup> RDEIR, p. 2-144, 2-146, Appendix F, pp. 67-68.

- Targa Stockton: Proposed marine oil terminal to receive CBR and load onto barges; up to 70,000 bpd; allow CBR to be transferred to barges or tankers as well as to be delivered to Bay area refineries via Kinder Morgan Partners (KMP) pipeline.

The California crude by rail projects included in the QRA for cumulative impacts have a combined capacity that is substantially larger than the capacity for just the Benicia Project. Likewise, overall rail traffic for these California projects is substantially larger than rail traffic for just the Benicia Project. Between the California border and Sacramento, overall rail traffic for these California projects is about 4.4 times the rail traffic for just the Benicia Project.<sup>58</sup> Between Benicia and Sacramento, overall rail traffic for these California projects is about 1.4 times the rail traffic for just the Benicia Project.<sup>59</sup>

And with more trains carrying more crude, there is more accident risk. The QRA results show that the California crude by rail projects have a cumulative risk that is substantially larger than the risk for just the Benicia Project.<sup>60</sup> Likewise, while the QRA results show that the cumulative accident risk is significant for any of the tank car scenarios analyzed, risks are significantly reduced with DOT-117R (retrofitted CPC-1232s), and lower still for DOT-117 new builds.

The accident risk (from the Benicia Project individually and in combination with other California crude by rail projects) is large and significant. In spite of these findings, namely that there are feasible railcars that significantly reduce the risk of both Project and cumulative impacts from accidents, the EIR fails to require their use, even though their selection is at the discretion of Valero.

Thus, in spite of demonstrating that risks could be significantly reduced by selecting safer cars, a choice that is solely at the discretion of Valero, the RDEIR then concludes that there is no mitigation available in regard to accident risk for the Project:

**Mitigation:** None available.

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<sup>58</sup> Between the California border and Sacramento, the QRA estimates 730 unit trains per year for the Project and 2,502 unit trains per year for other crude by rail projects, for a total of 3,232 unit trains per year. RDEIR, Appendix F, p. 68.

<sup>59</sup> Between Benicia and Sacramento, the QRA estimates 730 unit trains per year for the Project and 312 unit trains per year for other crude by rail projects, for a total of 1,042 unit trains per year. RDEIR, Appendix F, p. 68.

<sup>60</sup> The QRA results for the California crude by rail projects, for each type of tank car (RDEIR, pp. 2-160 to 2-163) can be compared with the QRA results for just the Benicia Project, for each type of tank car (RDEIR, pp. 2-96-2-97; 2-99-2-102).

No reasonable, feasible mitigation measures have been identified that would, if implemented, reduce below established thresholds the potential significant hazard to the public or the environment that may result through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Further, as discussed in DEIR Section 3.7, DEIR Appendix L, and Revised DEIR Appendix G, the City cannot regulate UPRR's rail operations either directly or indirectly. Any such attempt would be preempted by federal law, which proscribes any mitigation measure that would have the effect of managing or governing rail operations. While the City can identify and disclose the risks posed by rail transport of crude oil, it must rely on the federal authorities to ensure that any such risks are mitigated as appropriate. Therefore, Impact 4.7-2 is considered significant and unavoidable.<sup>61</sup>

The failure of the RDEIR to consider mitigation of accident risk is even more problematic given that the cumulative accident risk is even higher due to a projected increase in rail traffic from other similar projects.

### **III. ALL FEASIBLE ALTERNATIVES WERE NOT EVALUATED**

Historically, the Valero Benicia Refinery has refined crudes imported by pipeline from the San Joaquin Valley and by marine vessel from the Alaska North Slope and various foreign sources.<sup>62</sup> The purpose of this Project is to replace declining Alaska North Slope crudes with crudes imported by rail from North American sources. The Refinery is currently limited to an annual average throughput of 165,000 barrels per day (bbl/day) by BAAQMD permit.

The RDEIR evaluated four alternatives to the Project:

- (1) Limiting Project to one 50-car train delivery per day,
- (2) Two 50-car trains delivered during nighttime,
- (3) Offsite unloading terminal, and
- (4) No project alternative.

The Draft Environmental Impact Report (DEIR) considered but dismissed from further consideration four additional alternatives, including locating unloading racks at the Port of Benicia, at the AMPORTS property near the Benicia Marine Terminal,

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<sup>61</sup> RDEIR, pp. 2-105-2-106.

<sup>62</sup> IS/MND, p. 4.

receiving crude from the proposed WesPac Energy Pittsburg Terminal, and an on-site Wye rail spur.<sup>63</sup>

Since the Project was initially proposed in 2013, two additional alternatives have appeared that would reduce many of the Project's impacts that were not identified in either the RDEIR or DEIR. They are discussed below.

#### **A. Bakersfield Crude Terminals**

The RDEIR identified two new crude terminals in the Bakersfield area: (1) the Alon Bakersfield Refinery Crude Flexibility Project ("Alon Terminal") that can accept up to two, 104-unit trains per day (168,000 bbl/day<sup>64</sup>) and (2) the Plains All American Pipeline Bakersfield Crude Terminal ("Plains Terminal").<sup>65</sup> Plains is currently upgrading its pipeline system to deliver up to two unit trains per day of crude oil to the Los Angeles and San Francisco refining market.<sup>66,67</sup>

Both of these terminals have been through CEQA review. The Plains Terminal has been permitted and is operating and the Alon Terminal is under construction. These terminals were evaluated in the RDEIR as to cumulative impacts<sup>68</sup> as they could increase railcar traffic along the same rail segment used by Project trains.<sup>69</sup> However, they were not evaluated as Project alternatives.

Either of these terminals individually or in combination could supply Valero with 70,000 bbl/day of crude oil from the same sources that the Valero crude terminal would import. The use of these terminals, rather than a new terminal at the Valero Benicia Refinery, would significantly reduce cumulative hazard, air quality, greenhouse gas, and all other cumulative impacts by reducing the number of trains using the same rail lines.

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<sup>63</sup> DEIR, Section 6.3.

<sup>64</sup> SJVAPCD, Authority to Construct Permit Nos.: (1) S-8165-1-0 (150,000 bbl internal floating roof tank); (2) S-8165-2-0 (150,000 bbl internal floating roof tank); (3) S-8165-3-0 (liquid transfer operation with railcar unloading rack and associated offloading, transfer and booster pumps), July 31, 2012.

<sup>65</sup> RDEIR, p. 2-144.

<sup>66</sup> Plains to Link California Crude Pipelines with Rail Facility: CEO, Platts, November 5, 2013; <http://www.platts.com/latest-news/oil/houston/plains-to-link-california-crude-pipelines-with-21782846>.

<sup>67</sup> Form 10-K for Plains All American Pipeline LP, Annual Report, February 25, 2015. See Line 63; <http://biz.yahoo.com/e/150225/paa10-k.html>.

<sup>68</sup> RDEIR, Table 5-1.

<sup>69</sup> RDEIR, p. 2-157, 166.

## **B. Increased Imports from the San Joaquin Valley**

California's oil production ranks third in the nation, behind Texas and North Dakota. California's oil production reached an all-time high of almost 400 million barrels in 1985 and has generally declined since then. In 1960, almost as much oil was produced in California as was consumed, but by 2012, California only produced 32% of the oil it used or 198 million barrels out of a total use of 621 million barrels consumed. The shortfall has been mainly met with oil delivered by tanker from Alaska, Saudi Arabia, Ecuador, Iraq, Colombia, and other countries. Over the years, water flooding, gas injection, thermal recovery, hydraulic fracturing, and other techniques have been used to enhance oil and gas production as California fields mature.

The USGS recently estimated that from 4 to 15.6 billion barrels of additional oil could be recovered from the San Joaquin and Los Angeles basins with current technology. The oil and gas industry intends to reverse this downward trend by using these methods to increase production from these reserves.<sup>70</sup> The oil fields in Kern County in the San Joaquin Basin are connected to refineries in the Bay Area, including Valero, by pipeline.

In 2012, representatives of the oil and gas industry – the California Independent Petroleum Association, the Independent Oil Producers Agency, and the Western States Petroleum Association – requested that Kern County modify its Zoning Ordinance to expedite well permitting so that production could be increased.<sup>71</sup> In response, Kern County published a programmatic EIR to modify its Zoning Ordinance to eliminate the need for CEQA review of new wells and well fields.<sup>72</sup>

A consultant working for the oil and gas industry projected an increase in the number of wells to be drilled in Kern County from 43,028 in 2012 to 82,136 in 2035.<sup>73</sup> Kern County produced 141.690 million barrels of oil in 2012,<sup>74</sup> or about 3,291 barrels per well. Thus, the industry is planning to roughly double oil and gas production in Kern County. Kern County has finalized the subject programmatic EIR, which will allow up

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<sup>70</sup> California Council on Science and Technology and Lawrence Berkeley National Laboratory, An Independent Scientific Assessment of Well Stimulation in California, Volume I, 2015; <https://ccst.us/publications/2015/2015SB4-v1.pdf>.

<sup>71</sup>Kern County, Final Environmental Impact Report for Revisions to the Kern County Zoning Ordinance – 2015C, Focused on Oil and Gas Local Permitting, p. 3-1, 2015 (Kern EIR); <http://pcd.kerndsa.com/planning/oil-gas-zoning-amendment>.

<sup>72</sup> *Ibid.*

<sup>73</sup> Kern EIR, p. 4.3-71.

<sup>74</sup> Kern EIR, p. 4.11-2.

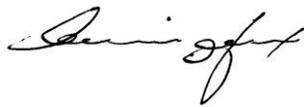
to 3,647 new wells to be permitted every year for the next 20 years, up to a total of 84,503 new wells.<sup>75</sup>

Thus, given that Kern County oil production is projected to increase, Valero should evaluate importing up to 70,000 bbl/yr of this increase from local sources, rather than importing it by rail from sites up to 1,500 miles away. Kern County oil could be delivered to the Valero Refinery by either pipeline, eliminating all rail related impacts, by rail, or by a combination, depending upon pipeline capacity. The pipeline option would eliminate all significant impacts associated with rail delivery. Rail delivery of crude oil from local San Joaquin Valley oil fields would eliminate greenhouse gas emissions from the source to the California state line and significantly reduce all cumulative impacts.

#### IV. SUMMARY

In sum, based on my review of the RDEIR, it fails to address the comments that I previously submitted on the DEIR, which are incorporated here by reference. Further, the new analyses in the RDEIR are fundamentally flawed, as explained above. They fail to identify all significant impacts, fail to impose feasible mitigation for significant and unavoidable impacts, and fail to evaluate all viable alternatives to the Project that would significantly reduce impacts. I have further reviewed the comments submitted by Dr. Millar and agree with them.

Sincerely,

A handwritten signature in cursive script, appearing to read "Phyllis Fox".

Phyllis Fox

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<sup>75</sup> Kern EIR, Table 4.3-32.

**J. Phyllis Fox, Ph.D, PE, DEE  
Environmental Management**

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Berkeley, CA 94704  
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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

Pesticides in the TIE Process, SETAC, 6/96

Sulfate Minerals: Geochemistry, Crystallography, and Environmental Significance,  
Mineralogical Society of America/Geochemical Society, 11/00.

Design of Gas Turbine Combined Cycle and Cogeneration Systems, ThermoFlow, 12/00

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, 3/02

The Health Effects of Chemicals, Drugs, and Pollutants, UC Berkeley Extension, 4-5/02

Noise Exposure Assessment: Sampling Strategy and Data Acquisition, AIHA PDC 205, 6/02

Noise Exposure Measurement Instruments and Techniques, AIHA PDC 302, 6/02

Noise Control Engineering, AIHA PDC 432, 6/02

Optimizing Generation and Air Emissions, Power-Gen, 12/02

Utility Industry Issues, Power-Gen, 12/02

Multipollutant Emission Control, Coal-Gen, 8/03

Community Noise, AIHA PDC 104, 5/04

Cutting-Edge Topics in Noise and Hearing Conservation, AIHA 5/04

**REGISTRATION**

Class I Registered Environmental Assessor, California (REA-00704)

Class II Registered Environmental Assessor, California (REA-20040)

Qualified Environmental Professional, Institute of Professional Environmental

Practice (QEP #02-010007)

Registered Professional Engineer: Arizona, California, Florida, Georgia, Washington  
Diplomat Environmental Engineer, American Academy of Environmental Engineers,  
Certified in Air Pollution Control (DEE #01-20014)

## 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. 371, 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, 5<sup>th</sup> Ed., p. 414, 1999-present.

*Who's Who in America*, Marquis Who's Who, Inc., 59<sup>th</sup> 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 Oil Shale (1978-80)

## REPRESENTATIVE EXPERIENCE

Performed environmental investigations, as outlined below, for a wide range of industrial and commercial facilities including refineries, reformulated fuels projects, petroleum distribution

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., semiconductors, electronic assembly, aerospace components, printed circuit boards, amusement park rides), lanthanide processing plants, ammonia plants, urea plants, food processing plants, grain processing facilities, ethanol production facilities, paint formulation plants, wastewater treatment plants, marine terminals, ports, gas processing plants, steel mills, battery manufacturing plants, pesticide manufacturing and repackaging facilities, pulp and paper mills, redevelopment projects (e.g., Mission Bay, Southern Pacific Railyards, Moscone Center expansion, San Diego Padres Ballpark), residential developments, commercial office parks, campuses, shopping centers, server farms, and a wide range of mines including sand and gravel, hard rock, limestone, nacholite, 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 response. Prepare declaration and present oral testimony before SCAQMD Hearing Board on exempt sources (cooling towers) and calculation of potential to emit under NSR. (Los Angeles Superior Court).
- For amici 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(c)(1). 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 interveners in application for authority to construct a 500 MW supercritical coal-fired generating unit before the Wisconsin Public Service Commission, prepared pre-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 in a rural area adjacent to the Black Rock Desert and Granite Range, including emission calculations, air quality modeling, comments on proposed use permit to collect preconstruction monitoring data, and coordination with agencies 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 enforceability; coal washing; BACT for SO<sub>2</sub> and PM<sub>10</sub>; Hg MACT; and MACT 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 14, 2004 granting plaintiffs' motion as to opacity violations and startup not defense to violations.
- For building trades, reviewed air quality permitting action for 1500-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*, an administrative challenge of the PSD/Title V permit issued to a 1500-MW coal-fired power plant. Reviewed over 60,000 pages of produced documents, prepared discovery index, identified and assembled plaintiff exhibits. Deposed. Assisted counsel in drafting discovery requests, with over 30 depositions, witness cross examination, and brief drafting. Presented over 20 days of direct testimony, rebuttal and sur-rebuttal, with cross examination on BACT for NO<sub>x</sub>, SO<sub>2</sub>, and PM/PM<sub>10</sub>; 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 ft<sup>2</sup> 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 20-page preliminary expert report summarizing results of diesel exhaust and noise measurements at two big box retail stores in Honolulu, estimated diesel PM<sub>10</sub> concentrations

for Project using ISCST, prepared a cancer health risk assessment based on these analyses, and evaluated noise impacts. Case in progress.

- Assisted environmental organizations to 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 four associated power plants located in Mexico (DOE EA-1391). Prepared 20-page declaration in support of motion for summary judgment addressing emissions, including CO<sub>2</sub> and NH<sub>3</sub>, offsets, 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 their inadequate analysis of the potential controversy surrounding the project, water impacts, impacts from NH<sub>3</sub> and CO<sub>2</sub>, 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, 2003).
- 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 controls on a proposed new city that would straddle the Ventura-Los Angeles County boundary. Reviewed several environmental impact reports, prepared an air quality analyses, a diesel exhaust health risk assessment, and detailed review comments. Governor intervened and State dedicated the land for conservation purposes April 2004.
- Assisted Central California city to obtain 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.

- 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 historic oil spill. Reviewed site investigation reports, pump tests, leachability 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 unions 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 to 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 the 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 1,080-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 peaker power plant was violating its 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 NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub> 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, present oral and written testimony in adjudicatory hearings, and provide technical assistance as required. Cases settled or won at trial.
- Assisted construction unions 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.

- Assisted coalition of towns and environmental groups in challenging air permits issued to 523 MW dual fuel (natural gas and distillate) combined-cycle power plant in Connecticut. Prepared technical comments on draft permits and 60 pages of written testimony addressing emission estimates, startup/shutdown issues, BACT/LAER analyses, and toxic air emissions. Presented testimony in adjudicatory administrative hearings before the Connecticut Department of Environmental Protection in June 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. Prepare analyses of and comments on applications for certification, preliminary and final staff assessments, and permits issued by local agencies. Present 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, parallel 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 "2) erred in using outdated information in assessing the emission of toxic air contaminants (TACs) from jet aircraft; 3) failed to support its 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 lessor of former gas station with leaking underground storage tanks and TCE contamination from adjacent property. Lessor held option to purchase, which was forfeited based on misrepresentation by remediation contractor as to nature and extent of contamination. Remediation contractor 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 foundry in Oakland in a lawsuit brought by neighbors alleging property contamination, nuisance, trespass, smoke, and health effects from foundry operation. Inspected and sampled plaintiff's property. Advised counsel on merits of case. Case settled.

- Assisted business owner facing eminent domain eviction. 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 station, enclosures for noisy equipment, and improved housekeeping.
- Assisted a Fortune 500 residential 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 to demonstrate sudden and accidental release of TCE, including groundwater modeling, development of method to date spill, preparation of chemical inventory, investigation of historical waste disposal practices and standards, 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. Conducted 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 cost 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 complaint 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. Inspected

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 SWMM44, 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 downgradient building, causing leaks in an underground parking structure. Reviewed subsurface 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 Siskiyou 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 on the California Central Coast in class action lawsuit alleging property damage and health effects from subsurface petroleum contamination. Reviewed documents, prepared risk calculations, and advised counsel on merits of case. Participated in settlement discussions. Case settled.
- 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 advise 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 spilled naphtha, 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.

- 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 damages 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 lawsuit 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 69 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 urea 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 dismiss action. 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

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

- As part of a consent decree settling a CEQA lawsuit, assisted neighbors of a large west coast 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, Shasta, 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/campus, and redevelopment 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, initial 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-emission vehicles, alternative fuels, exhaust treatments, and transportation management associations.

#### ***SITE INVESTIGATION/REMEDATION/CLOSURE***

- Technical manager and principal engineer for characterization, remediation, and closure of waste management units at former Colorado oil shale plant. Constituents of concern included BTEX, As, 1,1,1-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 clean closure.

- Principal engineer for characterization, remediation, and closure of process water ponds at a former lanthanide 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, RI/FSs, and CEQA documents. Participated in the development of mitigation strategies to protect construction and utility workers and the public during remediation, redevelopment, and use of the site, including buffer zones, subslab venting, rail 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 and/or prepared portions of numerous documents, including health risk assessments, preliminary endangerment assessments, site investigation reports, work plans, and RI/FSs. Historical research to identify historic waste disposal practices to prepare a preliminary endangerment assessment. Acquired, reviewed, and analyzed the files of 18 federal, state, and local agencies, three sets of construction 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 reports.
- Technical oversight of characterization and remediation of a nitrate plume at an explosives manufacturing facility in Lincoln, CA. Provided interface between owners and consultants. Reviewed site assessments, work plans, closure plans, and RI/FSs.
- Consultant to owner of large western molybdenum mine proposed for NPL listing. Participated in negotiations to scope out consent order and develop scope of work. Participated in studies to determine premining groundwater background to evaluate applicability of water quality standards. Served on technical committees to develop alternatives to mitigate impacts and close the facility, including resloping and grading, various 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 328 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.

**REGULATORY PERMITTING/NEGOTIATIONS**

- Prepared comments on Louisville Air Pollution Control District proposed Strategic Toxic Air Reduction regulations.
- Prepared comments and analysis of BAAQMD Regulation, Rule 11, 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 field on 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 grant Contra Costa County greater authority 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 25, Pumps and Compressors, 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 and seal-less technology, and negotiations with staff.

- 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 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 amending BAAQMD Regulation 8, Rule 25, Pump 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 of low-leak technology, and presentation of testimony before the Board.
- Participated in the development of the BAAQMD Regulation 2, Rule 5, Toxics, including participation in public workshops, review of staff proposals, and preparation of technical comments.
- Participated in the development of SCAQMD Rule 1402, Control of Toxic Air Contaminants from Existing Sources, and proposed amendments to Rule 1401, New Source Review of Toxic Air Contaminants, in 1993, including review of staff proposals and preparation of technical comments on same.
- Participated in the development of the Sunnyvale Ordinance to Regulate the Storage, Use and Handling of Toxic Gas, which was designed to provide engineering controls for gases that are not otherwise regulated by the Uniform Fire Code.
- Participated in the drafting 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

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 natural flows, historical salinity trends in San Francisco Bay, Delta outflow, and hydrodynamics of the South Bay.
- Represented interveners in the licensing of over 20 natural-gas-fired power plants and one coal gasification plant at 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 overlying 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 Northern 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.

- **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 ocean;**
  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 balances, vegetation mapping, reservoir operation models to simulate flood basins, precipitation records, tree ring research, and historical research;**
  7. **Evaluate the relationship between biological indicators of estuary health and down-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 toxicity 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 boat wakes on shallow water habitat, including interpretation of historical aerial photographs;**

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 tidally influenced estuary;
  17. Identify and evaluate non-export factors that may have contributed to fishery declines, including predation, 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 generation equipment) of power plants. Corrosion/erosion failures caused by water and steam contamination 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 natural-gas fired power plants in California and Arizona.
  - Designed and prepared cost estimates for several dry cooling systems (e.g., fin fan heat exchangers) used in chemical plants and refineries.

- 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 relevant 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 2-year-long community air quality monitoring program to assure that residents downwind of a petroleum-contaminated site were not impacted during remediation of petroleum-contaminated soils. The program included real-time monitoring of particulates, diesel exhaust, and BTEX and time integrated monitoring for over 100 chemicals.
- 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 first-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, chlorine, chromium, mercury, 15 organic indicators (e.g., quinoline, pyrrole, benzo(a)pyrene, thiophene, benzene), 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 mines, 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.

- 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, indoor air quality, soil contamination) for businesses, industrial facilities, and residences located proximate to and downwind of pollution sources.

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C.E. Lambert, E.D. Winegar, and Phyllis Fox, Ambient and Human Sources of Hydrogen Sulfide: An Explosive Topic, Air & Waste Management Association, June 2000, Salt Lake City, UT.

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

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J. P. Fox and others, "Long-Term Annual and Seasonal Trends in Surface Salinity of San Francisco Bay," *Journal of Hydrology*, v. 122, p. 93-117, 1991.

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# ATTACHMENT B

**Pless Environmental, Inc.**

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October 30, 2015

*Via Email*

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*Re: Review of Revised Draft Environmental Impact Report for Valero Benicia Crude  
by Rail Project*

Dear Ms. Koss,

Per your request, I have reviewed the Draft Environmental Impact Report ("RDEIR") for the Valero Benicia Crude by Rail Project ("Rail Project" or "Project") published by the City of Benicia ("City") for review under the California Environmental Quality Act ("CEQA")<sup>1</sup> as well as studies referenced in the RDEIR, the Draft EIR for the Project,<sup>2</sup> and permit files for the Valero Benicia Refinery ("Refinery") obtained from the Bay Area Air Quality Management District ("BAAQMD").

My comments focus on air quality, odor, health risks, and terrorism and earthquake risks to rail transport of crude oils and revise my prior comments on the Draft EIR<sup>3</sup> that were not adequately addressed by the RDEIR. My comments refer to the RDEIR and Draft EIR collectively as "the EIR." My comments rely and expand upon Dr. Phyllis Fox's July 1, 2013 comments on the Initial Study/Mitigated Negative

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<sup>1</sup> City of Benicia, Valero Benicia Crude by Rail Project, Revised Draft Environmental Impact Report, SCH # 2013052074, Use Permit Application 12PLN-00063, August 2015;  
[http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Valero\\_Benicia\\_Crude\\_by\\_Rail\\_RDEIR\\_Complete\\_Version.pdf](http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Valero_Benicia_Crude_by_Rail_RDEIR_Complete_Version.pdf).

<sup>2</sup> City of Benicia, Valero Benicia Crude by Rail Project, Draft Environmental Impact Report, SCH # 2013052074, Use Permit Application 12PLN-00063, June 2014;  
<http://www.ci.benicia.ca.us/index.asp?SEC={FDE9A332-542E-44C1-BBD0-A94C288675FD}>.

<sup>3</sup> Petra Pless, Pless Environmental, Inc., Letter to Rachael Koss, Adams Broadwell Joseph & Cardozo, Re: Review of Draft Environmental Impact Report for Valero Benicia Crude by Rail Project, September 15, 2014 (hereafter "2014 Pless Draft EIR Comments");  
[http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Attachment\\_C\(2\).pdf](http://www.ci.benicia.ca.us/vertical/Sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Attachment_C(2).pdf).

Declaration for the Project (“Fox IS/MND Comments”),<sup>4</sup> her September 15, 2014 comments on the Draft EIR (“Fox Draft EIR Comments”),<sup>5</sup> as well as the July 1, 2013 comments submitted by the Goodman Group on the IS/MND (“Goodman IS/MND Comments”).<sup>6</sup>

My qualifications as an environmental expert include a doctorate in Environmental Science and Engineering from the University of California Los Angeles. I am a court-recognized expert<sup>7</sup> with more with more than fifteen years of experience. I have provided expert comments on air quality in the permitting/licensing proceedings of a number of refineries and associated facilities under the federal and state Clean Air Acts and in the environmental review process under CEQA. I provided my résumé with my comments on the Draft EIR.

## Table of Contents

<b>I. Background .....</b>	<b>3</b>
<b>II. The Project Description Is Inadequate and the EIR’s Analyses Are Not Adequately Supported ...</b>	<b>4</b>
<b>III. The EIR Underestimates Project Construction Emissions, Fails to Identify and Adequately Mitigate Significant Impacts on Air Quality .....</b>	<b>5</b>
A. The EIR’s Methodology to Estimate Emissions from Project Construction Is Incorrect .....	6
B. The EIR Substantially Underestimates Construction Emissions.....	9
1. Construction Worker Commuter Vehicles .....	9
2. Off-site Vehicles .....	11
3. Construction Equipment Emissions.....	12
4. Summary .....	13
C. Feasible Mitigation Measures for Project Construction.....	14
D. The EIR’s Conclusions Regarding Cumulative Impacts from Construction Emissions Are Incorrect .....	15

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<sup>4</sup> Phyllis Fox, Comments on Initial Study/Mitigated Negative Declaration for the Valero Crude by Rail Project, Benicia, California, Use Permit Application 12PLN-00063, July 1, 2013; [http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Report\\_by\\_Dr.\\_Phyllis\\_Fox.pdf](http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Report_by_Dr._Phyllis_Fox.pdf).

<sup>5</sup> Phyllis Fox, Comments on the Draft Environmental Impact Report (DEIR) for the Valero Benicia Crude by Rail Project, Benicia, California, September 15, 2014.

<sup>6</sup> Ian Goodman and Brigid Rowan, The Goodman Group, Ltd., Comments on Initial Study/Mitigated Negative Declaration (IS/MND), Valero Crude by Rail Project, Benicia, California, Use Permit Application 12PLN-00063; [http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Report\\_by\\_the\\_Goodman\\_Group.pdf](http://www.ci.benicia.ca.us/vertical/sites/%7B3436CBED-6A58-4FEF-BFDF-5F9331215932%7D/uploads/Report_by_the_Goodman_Group.pdf).

<sup>7</sup> *California Unions for Reliable Energy et al. v. Mojave Desert Air Quality Management District et al.*, 178 Cal.App.4th 1225 (Cal. App. 2009); [http://resources.ca.gov/ceqa/cases/2009/California\\_Unions\\_for\\_Reliable\\_Energy\\_v\\_Mojave\\_Desert\\_Air\\_Quality\\_Management\\_District.pdf](http://resources.ca.gov/ceqa/cases/2009/California_Unions_for_Reliable_Energy_v_Mojave_Desert_Air_Quality_Management_District.pdf). (Exhibit 1)

<b>IV. The EIR’s Approach to Determine Significance of Operational Emissions Is Flawed, Its Conclusions Regarding Impacts on Air Quality Are Unsubstantiated, and It Fails to Require All Feasible Mitigation for Impacts It Finds Unavoidable .....</b>	<b>16</b>
A. Reliance on Marine Vessel Displacement for Determining Net Project Emissions within BAAQMD’s Jurisdictional Boundaries Is Neither Enforceable Nor Supported .....	17
1. Valero Improvement Project Substantially Increased the Refinery’s Crude Processing Capacity.....	17
2. Baseline Crude Oil Deliveries Demonstrate that Refinery Does Not Operate at Capacity ...	18
3. Marine Terminal Operations.....	19
B. The EIR’s Exclusive Reliance on the BAAQMD’s Annual Significance Threshold Is Inadequate and Fails to Identify Significant Air Quality Impacts .....	25
C. The EIR Fails to Require Mitigation to Reduce Significant Operational Impacts on Air Quality .....	26
1. The Unmitigated Project Should Be Denied .....	27
2. ROG and NOx Emission Increases Can Be Mitigated By Reducing Emissions from the Valero Refinery .....	29
3. ROG and NOx Emissions Can Be Reduced by Requiring Valero to Enter into Voluntary Emission Reduction Agreements with the Air Districts .....	31
<b>V. The RDEIR’s Health Risk Assessments Are Substantially Flawed .....</b>	<b>31</b>
A. The RDEIR’s Dispersion Modeling Is Flawed .....	32
B. The RDEIR Fails to Provide Adequate Information for Health Risks .....	32
C. The RDEIR Fails to Identify Highest Health Risks near Refinery .....	33
D. The RDEIR Underestimates Health Risks Due to Fugitive Component Emissions of Toxic Air Contaminant Emissions at the Refinery.....	35
E. The EIR’s Cumulative Health Risk Assessments Are Flawed.....	36
<b>VI. The EIR’s Odor Analysis Is Inadequate .....</b>	<b>39</b>
<b>VII. The EIR Fails to Address Risks Associated with Vandalism and Terrorism Attacks and Fails to Adequately Mitigate Significant and Unavoidable Impacts due to Earthquakes .....</b>	<b>42</b>
1. Vandalism and Terrorism Attacks .....	42
2. Earthquakes .....	43
<b>VIII. Recommendation .....</b>	<b>45</b>

## **I. Background**

Valero (“Applicant”) proposes to install facilities to allow the Valero Benicia Refinery (“Refinery”) to receive up to 70,000 barrels per day (“bbl/day”) of North American crude oil by rail. The facilities that would be installed include about 8,880 feet of new track; a new tank car unloading rack capable of unloading two parallel rows of tanks cars simultaneously; and 4,000 feet of 16-inch diameter crude oil pipeline and

associated fugitive components (valves, flanges, pumps) connecting the offloading rack and an existing crude supply pipeline.<sup>8</sup>

The Rail Project would affect air quality in the San Francisco Bay Area Air Basin (“SFBAAB”), which is under the jurisdiction of the BAAQMD, the Sacramento Valley Air Basin (“SVAB”) which is under the jurisdiction of the Sacramento Metropolitan Air Quality Management District (“SMAQMD”), and air basins under the jurisdiction of the Yolo Solano Air Quality Management District (“YSAQMD”), the Placer County Air Pollution Control District, the Tehama County Air Pollution Control District, the Butte County Air Pollution Control District, the Feather River Air Quality Management District, the Siskiyou County Air Pollution Control District, the Shasta County Air Quality Management District, the Lassen County Air Pollution Control District, and the Northern Sierra Air Quality Management District.<sup>9</sup> The EIR analyzes the Project’s effects separately for the BAAQMD, where the new crude-by-rail terminal and associated facilities, would be located, and the other air districts whose air quality would be affected by emissions from the trains’ diesel locomotives delivering crude oil.

In addition to the analyses provided by the Draft EIR, the RDEIR analyzes potential impacts that could occur uprail of Roseville, California (*i.e.*, between a crude oil train’s point of origin and the California State border, and from the border to Roseville) and to supplement the Draft EIR’s evaluation of the potential consequences of upsets or accidents involving crude oil trains based on new information that has become available since the Draft EIR was published.<sup>10</sup> Because these revisions are limited to a few portions of the Draft EIR, the RDEIR provides only the affected portions of the analysis.<sup>11</sup>

## **II. The Project Description Is Inadequate and the EIR’s Analyses Are Not Adequately Supported**

Neither the Draft EIR nor the RDEIR provide all information for public review necessary to adequately describe the Project and support its conclusions regarding the Project’s impacts. Missing information includes, for example:

- A construction schedule specifying the duration and potential overlap of each construction phase (*e.g.*, clearing, grading, terminal construction, paving), the number of equipment on site for each construction phase and their hours of

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<sup>8</sup> Draft EIR, pp. ES-1 to ES-4.

<sup>9</sup> RDEIR, p. 2-27.

<sup>10</sup> RDEIR, p. 1-1.

<sup>11</sup> RDEIR, p. 2-26.

- operation of equipment and load factors, the number of construction workers for each phase, etc.;
- A disclosure of baseline crude oil receipts by pipeline, barges, and tanker trucks;
  - A disclosure of the currently imported crude oil slate at the Refinery and an adequate description of the Project’s potential for changing this crude oil slate (as discussed in detail in the Fox Draft EIR Comments); and
  - Modeling files and spreadsheets supporting the results of the health risk assessment presented in the RDEIR, Tables 4.19, 4.1-10 and 4.1-11. (Your firm obtained these files from the City upon request but they were not made available publicly.)

Without this information, the EIR fails to fulfill its mandate as an informational document under CEQA.

### **III. The EIR Underestimates Project Construction Emissions, Fails to Identify and Adequately Mitigate Significant Impacts on Air Quality**

Project construction would result in engine exhaust emissions generated by on-site construction equipment, haul trucks, and construction worker commuter vehicles. The EIR finds that impacts associated with Project construction-related engine exhaust emissions would be less than significant.<sup>12</sup> To arrive at this conclusion, the EIR compares estimates of average daily exhaust emissions during construction in pounds per day (“lbs/day”) to the BAAQMD’s quantitative daily significance thresholds recommended in the air district’s 2009 *Revised Draft Options and Justification Report*, and, finding that emission estimates for all criteria pollutants would be less than the respective significance thresholds, determines that Project construction emissions are less than significant.<sup>13</sup> When analyzing the underlying analyses, it quickly becomes apparent that the EIR relies on an inappropriate methodology to arrive at the daily emission estimates it compares to the BAAQMD’s significance thresholds and substantially underestimates emissions.

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<sup>12</sup> Draft EIR, p. 4.1-15.

<sup>13</sup> *Ibid.*

### **A. The EIR's Methodology to Estimate Emissions from Project Construction Is Incorrect**

For quantification of project construction emissions, the BAAQMD's 2012 CEQA Guidelines,<sup>14</sup> upon which the EIR relies,<sup>15</sup> recommend using the URBEMIS model.<sup>16</sup> Since publication of the BAAQMD's 2012 CEQA Guidelines has been superseded by the California Emissions Estimator Model ("CalEEMod"), which the BAAQMD now recommends.<sup>17</sup>

The EIR prepared separate emission calculations for each of the various emission sources vehicle and construction equipment exhaust of reactive organic gases ("ROG"), carbon monoxide ("CO"), nitrogen oxides ("NOx"), sulfur dioxide ("SOx"), particulate matter equal to or smaller than 10 micrometers ("PM10") and equal to or smaller than 2.5 micrometers ("PM2.5") and fugitive ROG emissions from architectural coatings and asphalt paving<sup>18</sup> based on equations developed by the U.S. Environmental Protection Agency in Compilation of Air Pollutant Emission Factors ("AP-42"), which are incorporated into CalEEMod, and relying on factors from CalEEMod<sup>19</sup> and the URBEMIS model.<sup>20</sup> Specifically, in order to compute construction emissions, the EIR calculates total Project emissions for each criteria pollutant and precursor that would occur over the 25-week construction period and then divided these emissions by the

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<sup>14</sup> BAAQMD, California Environmental Quality Act Air Quality Guidelines, updated May 2012 (hereafter "BAAQMD 2012 CEQA Guidelines");

[http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines\\_Final\\_May%202012.ashx?la=en](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en). (Exhibit 2)

<sup>15</sup> Draft EIR, p. 4.1-12.

<sup>16</sup> BAAQMD 2012 CEQA Guidelines, p. 8-1. ("BAAQMD recommends using URBEMIS to quantify construction emissions for proposed land use development projects and the Roadway Construction Emissions Model (RoadMod) for proposed linear projects such as, new roadway, roadway widening, or pipeline installation.")

<sup>17</sup> BAAQMD, CalEEMod Release, Update August 5, 2013, website updated January 16, 2014. ("On July 31, 2013, the California Air Pollution Control Officers Association (CAPCOA) released CalEEMod 2013.2. This land use model can be downloaded from [www.caleemod.com](http://www.caleemod.com). From this point forward, the BAAQMD will no longer support the use of Urbemis. Please perform all future analyses using CalEEMod.") (Exhibit 3)

<sup>18</sup> See Draft EIR, Appendix E.1 "Construction Emissions."

<sup>19</sup> See Draft EIR, Appx. E.1, "Soil Density," "Mean Wind Speed," and "Moisture," and "Truck Capacity" for fugitive particulate matter emissions; "Coating Coverage," and "Fugitive VOC Emission Factor" for emissions from architectural coatings; and "Fugitive VOC Emission Factor" for emissions from asphalt paving.

<sup>20</sup> Draft EIR, Appx. E.1, "URBEMIS Material Delivery Truck Default Trip Length."

number of days construction would occur (175 days<sup>21</sup>) to arrive at “average daily” emissions in pounds per day (“lbs/day”). This methodology is inconsistent with the methodology incorporated into CalEEMod and, therefore, contrary to the BAAQMD’s CEQA Guidelines, which clearly intend that environmental review documents compare daily construction emissions as determined with the current agency-recommended model to the respective quantitative daily thresholds of significance for construction.

By default, CalEEMod assumes seven construction phases including site preparation, demolition, grading, building construction, architectural coating, and paving; the user can add or delete phases and specify schedules.<sup>22</sup> Emission sources during these phases include off-road construction equipment exhaust; fugitive dust from material movement, demolition, and off-site paved roads; on-road exhaust emissions from worker trips, vendor trips, and haul trucks; and emissions from architectural coatings and asphalt paving.<sup>23</sup> For each of these phases, CalEEMod provides maximum daily emissions as follows:

Since construction phases may or may not overlap in time, the maximum daily construction emissions will not necessarily be the sum of all possible daily emissions. CalEEMod therefore calculates the *maximum daily emissions for each construction phase*. The program will then add together the maximum daily emissions for each construction phase that overlaps in time. Finally *the program will report the highest of these combined overlapping phases as a daily maximum*. For fugitive dust calculations during grading, the maximum amount of acres graded in a day is determined by the number of grading equipment which is assumed to operate for 8 hours.<sup>24</sup>

Thus, the EIR’s approach to determine average daily construction emissions over the entire construction period is therefore inconsistent with the BAAQMD’s guidance to use CalEEMod which determines maximum daily construction emissions. Consequently, the EIR substantially underestimates emissions on a daily basis because it ignores the fact that emissions during the various, potentially overlapping, construction phases vary considerably.

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<sup>21</sup> (25 weeks) × (7 days/week) = 175 days.

<sup>22</sup> CAPCOA, California Emissions Estimator Model, User’s Guide, Version 2013.2, July 2013, (hereafter “CalEEMod User’s Guide”), p. 25; <http://www.aqmd.gov/docs/default-source/caleemod/usersguide.pdf?sfvrsn=2>. (Exhibit 6)

<sup>23</sup> *Ibid*, pp. 25-27.

<sup>24</sup> CalEEMod User’s Guide, Appendix A, Calculation Details for CalEEMod, revised July 2013, CalEEMod v.2013.2, *emphasis* added; <http://www.aqmd.gov/caleemod/doc/AppendixA.pdf>. (Exhibit 7)

This improper averaging approach is of particular concern for ROG and NO<sub>x</sub> emissions, which are precursors to ground-level ozone formation through a complex series of chemical reactions between these pollutants in the presence of sunlight and particulate matter emissions and are mostly a concern during the daylight hours of summer days. Both the national and state ambient air quality standards (“NAAQS” and “CAAQS”) for ozone are therefore set on a short-term basis; the NAAQS is set as an 8-hour average at 0.070 parts per million (“ppm”); the state ozone ambient air quality standards are set as 1-hour average at 0.09 ppm and an 8-hour average at 0.070 ppm.<sup>25</sup> (I note that the RDEIR fails to acknowledge the newly promulgated 8-hour ozone NAAQS which reduced permissible ozone levels from 0.075 to 0.070 ppm.) Thus, contributions to ozone formation from ozone precursors that occur on a short-term basis are important to consider. Averaging ozone precursor emissions over an entire construction period therefore severely underestimates the Project’s contribution to short-term ozone formation.

The most substantial ozone precursor emissions would be generated by operation of heavy-duty equipment, *e.g.*, scrapers, crawler cranes, track hoes, off-road trucks, track-production tampers, excavators, loaders, etc. For example, assuming operation of 2 track hoes and 3 off-road trucks for 10 hours per day would result in NO<sub>x</sub> emissions of **65.85 lbs/day**;<sup>26</sup> operation of 1 track hoe, 1 excavators and 3 loaders would result in NO<sub>x</sub> emissions of **56.83 lbs/day**.<sup>27</sup> Assuming only 10 hours of construction per day for these equipment combinations is conservative for the earthmoving/grading phase of the Project since the construction would occur in two 10-hour shifts per day;<sup>28</sup> both would exceed the BAAQMD’s significance threshold for NO<sub>x</sub> of **54 lbs/day**. These emissions would contribute substantially to ozone formation in the BAAQMD, which during summer days often exceed health-based ambient air quality standards.

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<sup>25</sup> California Air Resources Board, Ambient Air Quality Standards, October 1, 2015; <http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>. (Exhibit 9)

<sup>26</sup>  $2 \times [( \text{emission factor for track hoes: } 1.49875 \text{ lbs NO}_x/\text{hour} ) \times (10 \text{ hours/day}) = 14.99 \text{ lbs NO}_x/\text{day}] + 3 \times [( \text{emission factor for off-road trucks: } 1.19594 \text{ lbs NO}_x/\text{hour} ) \times (10 \text{ hours/day}) = 11.96 \text{ lbs NO}_x/\text{day}] = 65.85 \text{ lbs NO}_x/\text{day}$ . (All emission factors from Draft EIR, Appx. E.1, Table ‘Equipment and Vehicle Emission Factors (2013)’.)

<sup>27</sup>  $1 \times [( \text{emission factor for track hoe: } 1.49875 \text{ lbs NO}_x/\text{hour} ) \times (10 \text{ hours/day}) = 14.99 \text{ lbs NO}_x/\text{day}] + 1 \times [( \text{emission factor for excavator 345BL/C: } 0.98828 \text{ lbs NO}_x/\text{hour} ) = 9.88 \text{ lbs NO}_x/\text{day}] + 1 \times [( \text{emission factor for excavator 320CL: } 0.76051 \text{ lbs NO}_x/\text{hr} ) \times (10 \text{ hours/day}) = 7.61 \text{ lbs NO}_x/\text{day}] + 3 \times [( \text{emission factor for loaders 966G/H and 950G/H and front end loader 644: } 0.81170 \text{ lbs NO}_x/\text{hr} ) \times (10 \text{ hours/day}) = 8.12 \text{ lbs NO}_x/\text{day}] = 56.83 \text{ lbs NO}_x/\text{day}$ . (All emission factors from Draft EIR, Appx. E.1, Table ‘Equipment and Vehicle Emission Factors (2013)’.)

<sup>28</sup> Draft EIR, p. 3-25.

In sum, the EIR's "averaging" approach is improper to assess potential impacts from construction activities on compliance with short-term ambient air quality standards. Consequently, the EIR cannot demonstrate that Project construction emissions would not "[r]esult in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including emissions which exceed quantitative threshold for ozone precursors)" or "[v]iolate any air quality standard or contribute substantially to an existing or projected air quality violation." The EIR should be revised to evaluate maximum daily construction emissions based on an actual construction schedule in compliance with BAAQMD guidance.

## **B. The EIR Substantially Underestimates Construction Emissions**

In addition to the above methodological error in determining daily construction emissions, the EIR also substantially underestimates emissions from several sources due to incorrect assumptions.

### *1. Construction Worker Commuter Vehicles*

The EIR calculates emissions from construction worker commuter vehicles based on an average worker commute trip distance, the total number of trips required, and emission factors from the EMFAC2011 model developed by the California Air Resources Board ("CARB"). The EIR's assumptions for each of these variables is incorrect.

*First*, the EIR assumes a one-way trip distance of 12.4 miles for construction worker commuter vehicles. These numbers are based on CalEEMod default values for home-to-work ("H-W") trip lengths in the San Francisco Bay Area.<sup>29</sup> These average default trip lengths most likely substantially underestimate actual trip lengths for Project construction, given that a large number of highly skilled construction workers would be required to operate the various specialized equipment such as the cranes, track low railer, track production tamper, or track regulator. It appears unlikely that a sufficiently skilled construction labor force would be available within an average 12.4-mile radius of the Project site. More likely, the construction work force does not live close by but instead may commute long distances to the Project site. Based on a

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<sup>29</sup> CalEEMod User's Guide, Appendix D, Default Data Tables, Table 4.2 'Mobile Trip Characteristics Dependent on Location,' <http://www.aqmd.gov/docs/default-source/caleemod/caleemod-appendixd.pdf?sfvrsn=2>.

report by the Electric Power Research Institute (“EPRI”), construction workers commute as much as 60 miles daily to construction sites from their homes.<sup>30</sup>

*Second*, the EIR calculates the total number of trips required based on the total number of man-hours required for Project construction (111,380 man-hours<sup>31</sup>) divided by 10 hours per shift for a total of 11,380 one-way trips.<sup>32</sup> This calculation does not account for off-site lunch trips. Further, the EIR estimates the construction workforce to include 121 construction workers per day over the construction period;<sup>33</sup> yet, the EIR’s calculation of construction worker commuter vehicles assumes an average construction workforce of only 81 construction workers per day.<sup>34</sup> Assuming a total of 121 construction workers per day results in total of 17,000 one-way trips per day.<sup>35</sup>

*Third*, the EIR assumes that all construction workers would drive gasoline-powered passenger vehicles (EMFAC2011 vehicle class LDA-GAS). However, construction workers often drive large pickup trucks including light-duty to light-heavy-duty trucks. According to the EMFAC2011 model developed by CARB and relied upon by the EIR to determine emission factors, these vehicles have considerably higher fleet-average emission factors, as summarized in Table 1 below for four pollutants in pounds per 1,000 miles traveled (“lbs/1,000 miles). The top row shows emission factors for gasoline-powered passenger cars (LDA-GAS).

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<sup>30</sup> EPRI, Assessing and Managing Socioeconomic Impacts of Power Plants, August 1, 1984; <http://www.arlis.org/docs/vol1/Susitna-temp/APA/23/APA2356.pdf>. (Exhibit 10)

<sup>31</sup> Draft EIR, Appx. E.1 “Equipment and Vehicle Activity Rate Data:” (37,500 man-hours OSBL) + (76,300 man-hours ISBL) = 111,380 man-hours total.

<sup>32</sup> Draft EIR, Appx. E.1 “Equipment and Vehicle Activity Rate Data.”

<sup>33</sup> Draft EIR, p. 3-25.

<sup>34</sup> Draft EIR, Appx. E.1 “Equipment and Vehicle Activity Rate Data:” (282,224 miles/day) / (12.4 miles/trip) / (2 trips/construction worker/day) = 81 construction workers.

<sup>35</sup> (11,380 one-way trips/day) / (81 construction workers) = 17,000 one-way trips/day.

**Table 1: Emission factors for passenger cars and light-duty to light-heavy duty trucks  
(lbs/1,000 miles)<sup>1</sup>**

EMFAC2011 Vehicle Class <sup>2</sup>	Description	Examples	ROG	NOx	PM10	PM2.5
LDA - GAS	Passenger Cars	Prius (GAS)	0.54	0.45	0.11	0.05
LDA - DSL		VW Passat (DSL)	0.13	1.59	0.19	0.13
LDT1 - GAS	Light-Duty Trucks (0-3,750 lbs)	Ford Ranger	1.26	1.05	0.11	0.05
LDT1 - DSL		Toyota Tacoma	0.22	1.98	0.29	0.21
LDT2 - GAS	Light-Duty Trucks (3,751-5,750 lbs)	Dodge Dakota	0.62	0.79	0.10	0.04
LDT2 - DSL		GMC Canyon	0.17	1.93	0.24	0.17
LHD1 - GAS	Light-Heavy-Duty Trucks (8,501-10,000 lbs)	Dodge Ram 2500	1.87	2.86	0.11	0.05
LHD1 - DSL		Ford F-250	0.57	10.71	0.33	0.20
LHD2 - GAS	Light-Heavy-Duty Trucks (10,001-14,000 lbs)	Dodge Ram 3500	2.06	2.87	0.11	0.05
LHD2 - DSL		Ford F-350	0.51	9.71	0.34	0.20

1 Emission factors based on EMFAC2011 model run for BAAQMD, Year: 2013, Season: Annual, Vehicle Classification: EMFAC2007 Categories; calculated as: (total pollutant emissions in tons/day) / (vehicle miles traveled/day) × (2000 lbs/ton) × (1000)

2 GAS = gasoline; DSL = diesel

As shown in Table 1, emission factors for passenger cars and light-duty and light-heavy-duty vehicles differ substantially, with diesel-powered vehicles having substantially higher NOx, PM10 and PM2.5 emissions but lower ROG emissions than gasoline-powered vehicles and trucks having considerably higher emissions than passenger cars. Clearly, the unsubstantiated assumption that all construction workers would commute in gasoline-powered passenger vehicles may lead to a substantial underestimate of commuter vehicle emissions.

## 2. Off-site Vehicles

*Fourth*, the EIR assumes a one-way trip length of only 7.3 miles for material delivery trucks.<sup>36</sup> These numbers are based on URBEMIS default values for Solano County assuming urban *commercial-nonwork* (“C-NW”) trip lengths for delivery trucks during the *operational* phase of a land use project. These county-average default trip lengths for *commercial* trips during a project’s *operational* phase substantially underestimate actual trip lengths for delivery of materials required for Project *construction*, especially considering that large amounts of specialized materials are required – e.g., rail terminal components, rail tracks, pumps, etc. – that may have to be trucked in over long distances, potentially directly from California ports. For example, the one-way distance from the Port of Oakland to Benicia is 30 miles.<sup>37</sup>

<sup>36</sup> Draft EIR, Appx. A-2, footnotes to Table ‘Equipment and Vehicle Activity Rate Data.’

<sup>37</sup> Determined with Google Maps: <https://www.google.com/search?q=oakland+port+to+benicia&ie=utf-8&oe=utf-8>.

*Fifth*, the EIR’s calculations do not account for emissions associated with delivery of the numerous pieces construction equipment to the site, most of which will be delivered on heavy-duty flatbed diesel trucks.

### 3. Construction Equipment Emissions

*Sixth*, the EIR assumes state-wide fleet average emission factors obtained from the CARB’s OFFROAD2007 model for estimating emissions from construction equipment<sup>38</sup> without requiring that the construction equipment used at the Project site would comply with these assumed emission factors. In fact, it is unlikely that it would.

Studies of the average useful life of construction fleet equipment demonstrate that that some engines in the construction equipment fleet would likely be very old. Table 2 shows a summary of the useful life of construction equipment in years and their corresponding percentage emissions of the entire construction fleet as estimated by the Union of Concerned Scientists.<sup>39</sup>

**Table 2: Useful life of construction equipment in years**

	Percent of Total PM from Construction Equipment	Percent of Total NOx from Construction Equipment	Useful Life (in years)
Excavators	17%	18%	17
Tractors/Loaders/Backhoes	16%	12%	18
Crawler Tractors (Tracked Bulldozers)	13%	13%	29
Rubber-Tired Loaders	12%	12%	21
Skid-Steer Loaders	7%	4%	13
Off-Highway Trucks	5%	9%	17
Rough-Terrain Forklifts	5%	3%	16
Graders	5%	5%	23
Off-Highway Tractors	4%	5%	31
Rollers	3%	3%	20
Trenchers	3%	2%	28
Scrapers	3%	4%	26
Cranes	3%	4%	19
Rubber-Tired Dozers	2%	2%	32
Pavers	2%	1%	26
Bore/Drill Rigs	1%	1%	10
Other Construction Equipment	0.4%	1%	16
Paving Equipment	0.3%	0.2%	24
Surfacing Equipment	0.04%	0.1%	22

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<sup>38</sup> Draft EIR, Appx. E.2, Footnote 1 to “Equipment and Vehicle Emission Factors.”

<sup>39</sup> Union of Concerned Scientists, Digging up Trouble, The Health Risk of Construction Pollution in California, November 2006, p. 4; [http://www.ucsusa.org/assets/documents/clean\\_vehicles/digging-up-trouble.pdf](http://www.ucsusa.org/assets/documents/clean_vehicles/digging-up-trouble.pdf). (Exhibit 11)

As the above table shows, the useful life of construction equipment, which is defined as the age at which half of the equipment of a given model year has been retired, varies from 10 to 32 years. In other words, the other half of equipment of a given model year continues to be operated considerably longer than 10 to 32 years. Especially heavy-duty equipment can be very old. For example, the average useful life for crawler tractors is 29 years, for cranes 19 years, for scrapers 26 years, and for graders 23 years. Thus, there is a good chance that some of the equipment, especially the heavy-duty equipment used at the site may be very old and have very high emissions and is currently not covered by federal and state regulations because it is too old.

The programs and regulations developed by CARB and EPA to reduce emissions from construction equipment, targeted specifically to address carcinogenic diesel particulate matter emissions, are not yet implemented or fully implemented and many provisions do not apply to existing equipment. For example, CARB's restrictions on *adding* older vehicles to an existing fleet only became effective in January 1, 2014.<sup>40</sup> This restriction does not affect *existing* vehicles in the fleet, whose emissions are addressed under fleet-wide performance requirements which began on July 1, 2014 for large fleets, January 1, 2017 for medium fleets, and January 1, 2019, for small fleets.<sup>41</sup> Thus, some of the construction equipment on the Project site may be very old, in which case the EIR substantially underestimated emissions from these sources.

I recommend that the EIR be revised to assume more conservative emission factors or that the City require a mitigation measure that requires that the construction equipment complies with the assumed emission factors. Calculators for this purpose are available from CARB for medium and large fleets<sup>42</sup> and from the Sacramento Metropolitan Air Quality Management District ("SMAQMD").<sup>43</sup>

#### 4. Summary

The above discussion demonstrates that the EIR underestimates construction emissions, likely substantially, and, consequently, fails to identify and mitigate significant impacts on air quality due to emissions of NO<sub>x</sub>, which is an ozone precursor, and, likely, other pollutants. The EIR's emission estimates must be corrected and adequate mitigation must be required for all identified significant impacts.

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<sup>40</sup> CARB, In-Use Off-Road Diesel Vehicle Regulation Overview, Revised February 2014; [http://www.arb.ca.gov/msprog/ordiesel/faq/overview\\_fact\\_sheet\\_dec\\_2010-final.pdf](http://www.arb.ca.gov/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf). (Exhibit 12)

<sup>41</sup> Ibid.

<sup>42</sup> CARB, In-Use Off-Road Diesel Vehicle Regulation; <http://www.arb.ca.gov/msprog/ordiesel/documents/documents.htm>. (Exhibit 13)

<sup>43</sup> SMAQMD, Construction Mitigation Calculator, January 2012; [http://www.airquality.org/ceqa/ConstructionEmissionsMitigationCalculator\\_v6\\_2012Jan.xls](http://www.airquality.org/ceqa/ConstructionEmissionsMitigationCalculator_v6_2012Jan.xls).

### **C. Feasible Mitigation Measures for Project Construction**

Mitigation measures recommended by the BAAQMD for projects with significant construction emissions include these additional mitigation measures:

1. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
2. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
3. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
4. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.
5. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
6. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
7. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.
8. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
9. Minimizing the idling time of diesel powered construction equipment to two minutes.
10. The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.
11. Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., Regulation 8, Rule 3: Architectural Coatings).
12. Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.

13. Requiring all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines.<sup>44</sup>

Further, the BAAQMD recently recommended the following additional mitigation measures to reduce NO<sub>x</sub> emissions during construction of the proposed WesPac Pittsburg Energy Infrastructure project:

- Prohibit diesel generators where access to the electrical grid is available.
- Require electrification of motors, pumps, and other power tools whenever feasible.
- Require the use of biodiesel or other alternative fuels in generators, construction equipment, and/or off-road vehicles.<sup>45</sup>

All of the above measures are feasible and must be required for the Rail Project to mitigate its significant impacts on air quality during construction due to NO<sub>x</sub> and any other potentially significant emissions. I recommend that the City revise the EIR's air quality section a) relying upon a detailed construction schedule and b) following the BAAQMD's recommended 6-step methodology for estimating construction emissions described in the agency's 2012 CEQA Guidelines<sup>46</sup> using appropriate assumptions for the Project and c) requiring adequate mitigation.

#### **D. The EIR's Conclusions Regarding Cumulative Impacts from Construction Emissions Are Incorrect**

The EIR provides cumulative impact analyses in Section 5.4.3.1. The EIR dismisses the cumulative impacts of construction activities because "Project construction exhaust emissions would not exceed the BAAQMD regional mass emissions thresholds and Mitigation Measure 4.1-1 would be implemented to ensure that impacts associated with fugitive dust emissions would be reduced to a less-than-significant level." "Consequently," the EIR concludes, "construction of the Project facilities would not be considered to make a cumulatively considerable contribution to regional air quality impacts. The cumulative impact would be reduced to a level that would be less than significant."<sup>47</sup> This conclusion is not supported. *First*, as explained in

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<sup>44</sup> BAAQMD 2012 CEQA Guidelines, *op. cit.*, p. 8-4.

<sup>45</sup> Jean Roggenkamp, BAAQMD, Letter to Kristin Vahl Pollot, City of Pittsburg, Re: WesPac Pittsburg Energy Infrastructure Project Recirculated DEIR, September 13, 2013; <http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA%20Letters/WesPac%20Pittsburg%20Energy%20Infrastructure%20Project%20DEIR.ashx>. (Exhibit 14)

<sup>46</sup> BAAQMD CEQA Guidelines, *op. cit.*, pp. 8-1 and 8-2.

<sup>47</sup> Draft EIR, p. 5-5.

Comment III above, the EIR substantially underestimated Project construction emissions and construction emissions and would likely exceed BAAQMD significance thresholds; therefore, the Project would also be cumulatively significant. *Second*, the Project cannot be considered in a vacuum; rather a cumulative impact analysis must consider the effects of past, present, and future projects, in this case, *e.g.*, concurrent construction of other Projects in the area. The EIR's cumulative impact analysis must be revised accordingly.

#### **IV. The EIR's Approach to Determine Significance of Operational Emissions Is Flawed, Its Conclusions Regarding Impacts on Air Quality Are Unsubstantiated, and It Fails to Require All Feasible Mitigation for Impacts It Finds Unavoidable**

For operational emissions, the EIR assesses impacts on air quality separately for each of the air districts with jurisdiction over the affected air basins:

- For the BAAQMD, in addition to the line haul locomotive emissions within the air district's jurisdictional boundary, the EIR quantifies indirect emissions from switching locomotives at the refinery site; direct emissions of fugitive equipment leaks from the new unloading rack and associated piping at the site; and subtracts the indirect emissions from marine vessels as the baseline which allegedly would be displaced by rail transport to determine total net emissions on an annual basis. Because the total net emissions of criteria pollutant on an annual basis are all negative, the EIR finds that the Project would result in a beneficial impact to air quality in the BAAQMD as compared to the baseline and, therefore, the potential impact for the Project to contribute to an existing or projected air quality violation in the SFBAAB under the BAAQMD's jurisdiction would be less than significant.<sup>48</sup>
- The EIR quantifies indirect emissions from locomotives hauling crude oil within the jurisdictional boundaries of each of the "uprail" affected air districts on a daily basis and compares them to the air districts' respective significance thresholds, finding that the Rail Project would result in significant unavoidable impacts on air quality due to NO<sub>x</sub> emissions for all affected air districts. Consequently, the Rail Project would interfere with each of these air districts' applicable air quality plans.<sup>49</sup>

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<sup>48</sup> Draft EIR, pp. 4.1-17 - 4.1-22.

<sup>49</sup> RDEIR, pp. 2-27 and 2-30 through 2-38.

The EIR's approach and conclusions to assessing impacts on air quality and determining associated health risks are substantially flawed and fail to identify and/or mitigate significant impacts.

**A. Reliance on Marine Vessel Displacement for Determining Net Project Emissions within BAAQMD's Jurisdictional Boundaries Is Neither Enforceable Nor Supported**

The Refinery currently receives crude oil shipments via pipeline and marine vessels.<sup>50</sup> The Rail Project would add crude oil deliveries of up to 70,000 bbl/day by rail.<sup>51</sup> The EIR states that "[b]ased on Valero's plans, the crude oil delivered by rail would displace up to 70,000 barrels per day of the crude oil that is presently delivered by marine vessels" but "would not displace crude oil delivered to the Refinery by pipeline."<sup>52</sup> Beyond this reference to Valero's "plans," the EIR provides no enforceable commitments to guarantee that these plans and the assumed emission reductions from displaced marine vessels would, in fact, materialize. There are several indications that future operations of the Refinery will change substantially, invalidating the EIR's assumption that marine vessel movements will indeed be displaced by the Rail Project.

*1. Valero Improvement Project Substantially Increased the Refinery's Crude Processing Capacity*

Between 2004 and 2010, Valero made significant modifications to the Refinery's process unit and other equipment, collectively known as the "Valero Improvement Project ("VIP"). The VIP substantially increased the crude processing capacity at the Refinery and enabled Valero to process lower grade (heavier and more sour) crude oils. The City certified the VIP EIR in 2003 and certified an addendum to the VIP EIR in 2008. All elements of the VIP, except for the hydrogen plant, were operational as of 2011.<sup>53</sup>

The first unit in which incoming crude oil is processed at the Refinery is the pipestill or crude unit (S-1007). In the atmospheric fractionation column of the crude unit, the crude oil is heated and distilled or separated into six output streams called fractions.<sup>54</sup> Pre-VIP, the BAAQMD's permit for the crude unit limited processing to a maximum crude oil feed rate of 135,000 barrels per day ("bbl/day"). The VIP increased the maximum annual average daily crude oil throughput at the crude unit to

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<sup>50</sup> Draft EIR, p. 3-1.

<sup>51</sup> *Ibid.*

<sup>52</sup> *Ibid.*

<sup>53</sup> Draft EIR, pp. 3-12 and 5-6.

<sup>54</sup> VIP Draft EIR, p. 3-12.

165,000 bbl/day, a nominal capacity increase of 25 percent, with a maximum daily crude oil throughput of 180,000 bbl/day.<sup>55</sup> In addition, the Refinery installed two new external floating roof storage tanks for crude oil storage (S-1047 and S-1048)<sup>56</sup> with a combined capacity of 130,000 barrels.<sup>57</sup> These tanks share a combined permitted throughput of 62.6 million barrels per year<sup>58</sup> (“bbl/year”) with tanks S-57 through S-62 at the contiguous Nustar Energy facility (BAAQMD Facility ID# B5574), which was spun off as an independent terminal, storage, and product transportation facility from the Valero Refinery in 2006<sup>59</sup> and is operated pursuant to a service agreement between NuStar Energy and Valero.<sup>60</sup>

2. *Baseline Crude Oil Deliveries Demonstrate that Refinery Does Not Operate at Capacity*

Over the 3-year period assumed as the baseline for the EIR (2010–2012), the Refinery’s operations as a percentage of its total refining capacity can be approximated as shown in Table 3 below, assuming that 80 percent of the crude oil is currently delivered via the Refinery’s marine terminal and 20 percent via pipeline.<sup>61</sup>

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<sup>55</sup> BAAQMD, Major Facility Review Permit, Final, Rev. 5, Valero Refining Co., Facility #B2626, April 30, 2013, (hereafter “BAAQMD Title V Permit Facility #B2626, April 30, 2013”), p. 28; [http://www.baaqmd.gov/~/\\_media/Files/Engineering/Title%20V%20Permits/B2626/B2626-2013-4\\_MR-Final-Permit\\_02.ashx?la=en](http://www.baaqmd.gov/~/_media/Files/Engineering/Title%20V%20Permits/B2626/B2626-2013-4_MR-Final-Permit_02.ashx?la=en). (Exhibit 15)

<sup>56</sup> *Ibid*, p. 31.

<sup>57</sup>  $(27,300,000 \text{ gal/tank})(2 \text{ tanks}) / (42 \text{ gal/bbl}) = 130,000 \text{ bbl}$ .

<sup>58</sup> BAAQMD Title V Permit Facility #B2626, April 30, 2013, p. 31.

<sup>59</sup> Wikipedia, Valero Energy Corporation, [http://en.wikipedia.org/wiki/Valero\\_Energy\\_Corporation](http://en.wikipedia.org/wiki/Valero_Energy_Corporation). (Exhibit 16)

<sup>60</sup> Draft EIR, Appx. A1 to Appx. A, p. 10.

<sup>61</sup> Draft EIR, Appx. K, p. K-10.

**Table 3: Comparison of Refinery-wide baseline crude import, permitted throughput at Project storage tanks, and approximate capacity utilization at crude unit**

<b>Baseline (2010-2012) total crude import</b>			
<b>A</b>	3-year total crude import by marine vessel	93,361,985	bbl/3 years
<b>B</b>	Average annual crude import by marine vessel	31,120,662	bbl/year
<b>C</b>	Average daily crude import by marine vessel (80% of total import)	85,262	bbl/day
<b>D</b>	Average daily crude import by pipeline (20% of total import)	21,316	bbl/day
<b>E</b>	Average total daily crude import by marine vessel and pipeline	106,578	bbl/day
<b>Crude throughput permit limits for storage tanks S-57 through S-62 (Valero) and S-1047 and S-1048 (Nustar)</b>			
<b>F</b>	Average annual combined throughput limit	62,600,000	bbl/year
<b>G</b>	Annual average daily combined throughput limit	171,500	bbl/day
<b>Crude throughput at crude unit S-1006</b>			
<b>H</b>	Annual average daily throughput limit	165,000	bbl/day
<b>I</b>	Baseline (2010-2012) throughput at crude unit	65%	of capacity

A Draft EIR, Appx. E.2, p. 2.

B (Row A) / (3 years)

C (Row B) / (365 days/year)

D (Row C) / (0.8) × (0.2)

E (Row C) + (Row D)

F BAAQMD Title V Permit Facility #B2626, April 30, 2013, p. 31, and Condition #32, p. 529

G *Ibid*

H BAAQMD Title V Permit Facility #B2626, April 30, 2013, Condition #50

I (Row E) / (Row H)

As shown, the three-year average capacity use at the crude unit can be approximated at 65 percent. Thus, the Refinery has substantial remaining capacity for crude oil processing, about 35 percent. Thus, provided a reliable crude oil supply – in other words, adequate pipeline and marine terminal capacity to accommodate increased raw material deliveries – the Refinery will be able to substantially increase crude oil processing in the future. However, the ability of the current infrastructure to support such an increase in production capacity is questionable, as discussed in the following comments.

### 3. Marine Terminal Operations

To accommodate VIP capacity increases and production, the VIP EIR anticipated an additional 12 ships per year delivering crude and gas oil and an additional 12 ships per year for coke exports at its marine terminal for a total of 24 additional ships per year.<sup>62</sup> While this estimate of 24 additional ships per year at the time represented “Valero’s best estimate of the VIP’s increase in ship traffic,” the 2008 Addendum to the VIP EIR discloses that “it remains possible, whether due to unforeseen effects of the VIP or to other unforeseen circumstances, that Valero may need to increase ship traffic

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<sup>62</sup> VIP Draft EIR, pp. 3-52 and 4-24.

by up to approximately 36 more ships per year, in addition to the VIP increase of 24 ships, to obtain sufficient crude feedstocks.”<sup>63</sup>

However, in addition to costs considerations for foreign and domestic crude imports, as explained in the Fox Comments on the IS/MND and Draft EIR, there are several other constraints to increasing marine imports of crude oil to the Refinery to satisfy the VIP’s increased demand, which indicate that the rail terminal is likely required in addition to, rather than to replace, vessel movements at its marine terminal.

*First*, the Addendum to the VIP EIR states:

The “BAAQMD proposes to impose approval conditions that place new limits on VIP ship and barge emissions and require monitoring and reporting throughput at the Main Benicia Crude Dock and at the Valero Coke Dock. These new limits on ship and barge emissions are at the emission levels that would occur with the VIP ship movements described ... above. *In the future, the new emission limits could constrain Valero’s current ability to choose between shipping and pipeline transport.*”<sup>64,65</sup>

Based on the crude oil receipts at the Refinery over the past years, summarized in Table 5 above, it appears that Valero’s concerns may have been validated as the company has not been able to realize the additional crude oil imports via ships it anticipated in the VIP EIR.

*Second*, it is well known, that the Bay Area refineries’ marine terminals are near capacity and that production of California crude oils, which are delivered via pipeline, has been declining.<sup>66</sup> The proposed WesPac Pittsburg Energy Infrastructure Project (“WesPac Project”) was specifically conceived to improve the energy infrastructure of crude oil deliveries to Bay Area refineries:

The project is needed to provide energy infrastructure for local refineries to receive crude oil from sources outside of California to make up for declining oil production in California. *Bay Area marine oil terminals and storage facilities are near*

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<sup>63</sup> VIP EIR Addendum, p. A-41.

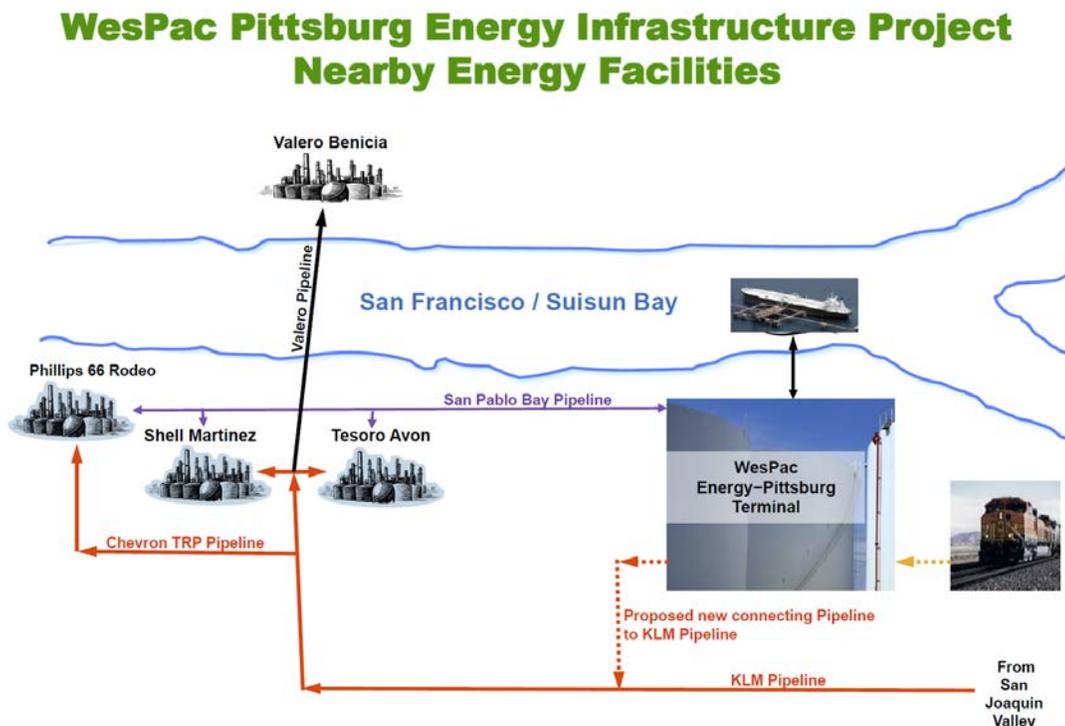
<sup>64</sup> VIP EIR Addendum, p. A-41, *emphasis added*.

<sup>65</sup> BAAQMD Title V Permit Facility #B2626, April 30, 2013, contains combined emission limits for crude and gas oil receipts and petcoke exports for the Valero Refinery’s cargo carrier and dock. An additional grandfathered throughput limit exists for gasoline exports from the Crude/Product Dock (S-129) of 9.39 million bbl/year over a consecutive 12-month period.

<sup>66</sup> WesPac Pittsburg Energy Infrastructure Project, October 2013; <http://www.pittsburgterminalproject.com/WesPac%20Pittsburg%20Terminal%20Project%20for%20Pittsburg%20Citizen%20Advisory%20Committee%2010-21-2013%20rev%206.pdf> (Exhibit 17)

capacity and many times ships need to wait in the Bay for a place to berth, adding to local air pollution and congestion in shipping lanes. This project will relieve some of that congestion, help reduce local air pollution and help stabilize the supply base of crude oil. Crude oil brought into the rail facility will reduce the amount of crude oil brought into the area by marine vessels and further reduce ship traffic.<sup>67</sup>

Along with rail connections, the WesPac Project would be tied into two existing pipelines connecting with four East San Francisco Bay refineries (Valero Benicia, Shell Martinez, Tesoro Avon, and Phillips 66 Rodeo)<sup>68</sup> and the WesPac Project Draft EIR specifically named the Valero Benicia Refinery as one of the four refineries that would potentially receive crude oil from the new facility.<sup>69</sup> Figure 1 below shows how the WesPac Project would tie into existing pipelines to the Bay Area refineries.



**Figure 1: WesPac Project connections to East San Francisco Bay refineries**  
(from: WesPac Pittsburg Energy Infrastructure Project, October 2013; see Exhibit 17)

<sup>67</sup> The Pittsburg Energy Infrastructure Project;  
<http://www.pittsburgterminalproject.com/projectoverview.htm>. (Exhibit 18)

<sup>68</sup> Richard Nemeč, NGI's Shale Daily, California Continues to Gear Up for More Oil-by-Rail, June 30, 2014; <http://www.naturalgasintel.com/articles/98872-california-continues-to-gear-up-for-more-oil-by-rail>. (Exhibit 19)

<sup>69</sup> City of Pittsburg, WesPac Pittsburg Energy Infrastructure Project, Recirculated Draft EIR, p. 2.0-43;  
<http://www.ci.pittsburg.ca.us/Modules/ShowDocument.aspx?documentid=5674>. (Exhibit 20)

Figure 2 below summarizes currently proposed oil projects around the San Francisco Bay.



**Figure 2: Oil projects currently proposed in the Bay Area**

(from: <http://safebenicia.org/wp-content/uploads/2014/07/Oil-Projects-Proposed.CBE-MAP.11.6.13.jpg>.  
(Exhibit 21)

The WesPac Project, an oil transfer facility with combined 50,000 barrel/day rail and 192,000 barrel/day marine terminal capacity, would have relieved some of the maxed out marine terminals at the Bay Area refineries, limiting crude oil deliveries. However, the WesPac Project has been substantially delayed as the City of Pittsburg determined that additional information will be required for a revision in a Second Recirculated Draft EIR<sup>70</sup> (expected to be released in late 2015) and it is unclear whether the facility will be built, at least in the foreseeable future. This leaves Bay Area refineries to find alternative cost-advantaged crude oil delivery options, at least in the short-term.

Further, it appears that the Refinery's marine terminal is at capacity and cannot receive more crude oil without compromising the Refinery's capacity to export finished products (gasoline) from the terminal. Specifically, according to the EIR, the Refinery's marine terminal received 264 ships over the three-year period 2010 through 2012, or an

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<sup>70</sup> City of Pittsburg, WesPac Pittsburg Energy Infrastructure Project; <http://www.ci.pittsburg.ca.us/index.aspx?page=700>. (Exhibit 22)

annual average of 88 ships per year delivering about 85,000 bbl/day of crude oil on a three-year annual average<sup>71</sup>, an average of about 353,600 barrels per ship.<sup>72</sup> Thus, at a typical discharge capacity of 22,707 bbl/hour<sup>73</sup>, a ship spends on average about 16 hours to discharge its load.<sup>74</sup> In addition, the ship spends about 6 hours per trip hotelling at the terminal without discharging and half an hour for maneuvering, mooring, and unmooring.<sup>75</sup> Thus, the total time a ship delivering crude oil spends on average at the Refinery's marine terminal is about 22 hours or almost a full day.<sup>76</sup> Thus, the terminal is in service for receiving crude oil from marine vessels at about a quarter of the year.<sup>77</sup>

Given that Valero's marine terminal also receives crude oil by barge and functions as an export terminal for finished products, specifically for gasoline, it becomes clear that the terminal cannot accommodate much of an increase in crude oil imports and at the same time accommodate the company's stated plans to increase export of gasoline via marine vessels in step with other West Coast refineries.<sup>78</sup> (Valero, like Chevron, apparently cited lower-carbon fuel policies as drivers for increased product exports outside of U.S. borders.<sup>79</sup>) Refined-petroleum exports out of the West Coast, largely California and Alaska, have increased by 126 percent reaching 465,000 barrels per day in July 2013.<sup>80</sup> Thus, the Refinery's marine terminal may have to yield some of the import capacity to enable Valero's plans to increase exports of gasoline, which, while reducing marine vessel emissions from importing crude oil would not reduce total marine vessel movements or emissions.

*Third*, Valero's plan to for substantial marine exports of finished products (gasoline) may severely restrict its ability to receive crude oil deliveries via ship. To facilitate these increased exports, specifically to non-domestic markets (South

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<sup>71</sup>  $(93,361,985 \text{ barrels}/3 \text{ years})/(365 \text{ days}/\text{year}) = 85,263 \text{ barrels per day.}$

<sup>72</sup>  $(93,361,985 \text{ barrels}/3 \text{ years})/(264 \text{ ships}/3 \text{ years}) = 353,644 \text{ barrels}/\text{ship.}$

<sup>73</sup> Draft EIR, Appx. E.2, p. 3.

<sup>74</sup>  $(353,644/\text{ship})/(22,707 \text{ bbl}/\text{hour}) = 15.6 \text{ hours.}$

<sup>75</sup> Draft EIR, Appx. E.2, "Ocean Going Vessels Activity Data."

<sup>76</sup>  $(15.6 \text{ hours discharge}) + (0.5 \text{ hours maneuvering}/\text{mooring}/\text{unmooring}) + (6 \text{ hours hotelling without discharge}) = 22.1 \text{ hours.}$

<sup>77</sup>  $(88 \text{ ships}/\text{year})(22.1 \text{ hours}/\text{ship}) = 81 \text{ days}; (81 \text{ days}/365 \text{ days}) = 0.22.$

<sup>78</sup> Amy Harder, National Journal, Amid Oil Boom, Petroleum Exports Surge, October 17, 2013; <http://www.nationaljournal.com/new-energy-paradigm/amid-oil-boom-petroleum-exports-surge-20131017>.

<sup>79</sup> *Ibid.*

<sup>80</sup> *Ibid.*

America), Valero submitted a bid to create a Foreign Trade Zone (“FTZ”) at the Benicia marine terminal. A Valero spokesman explained the motive for establishing a Foreign Trade Zone:

“It is something that would help the refinery be more competitive,” Valero Energy Corp. spokesman Bill Day said. Day added that he is prohibited from releasing detailed information about the company’s business plans. But he said the move could “assist with exporting of finished fuels” to other countries, where demand is rising.<sup>81</sup>

Valero’s bid to establish a Foreign Trade Zone was approved by the San Francisco Port Commission in December 2010<sup>82</sup> and the company’s subsequent bid to the U.S. Department of Commerce in January 2011<sup>83</sup> was approved in November 2011.<sup>84</sup>

Thus, in addition to gaining better access to cost-advantaged crude oils, as explained in detail in the Fox IS/MND and Draft EIR Comments, additional drivers behind Valero’s plans to import crude oil via rail to take advantage of the Refinery’s currently underutilized refining capacity are likely the above-described lack of adequate marine terminal capacity for imports and exports; the restriction on crude oil imports due to the BAAQMD permit limits for the marine terminal; the postponement of the WesPac Project; and Valero’s plans to substantially increase its gasoline exports. Thus it is likely that the delivery of crude oil via the Rail Project would not displace or reduce marine vessel movements to and from the Refinery but instead would allow the Refinery to increase production and at the same time permit more exports from the marine terminal. Thus, the EIR’s assumption of a reduction in marine vessels as “displaced baseline” is not supported.

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<sup>81</sup> Tony Burchyns, Inside Bay Area News, Benicia’s Valero Refinery Seeks Free Trade Status, December 22, 2010; [http://www.insidebayarea.com/news/ci\\_16923738](http://www.insidebayarea.com/news/ci_16923738)[http://www.insidebayarea.com/news/ci\\_16923738](http://www.insidebayarea.com/news/ci_16923738). (Exhibit 24)

<sup>82</sup> Tony Burchyns, Vallejo Times-Herald, S.F. Port Commission Approves Valero’s Bid to Create a Trade Zone at its Benicia Refinery, December 24, 2010; [http://www.timesheraldonline.com/news/ci\\_16935911](http://www.timesheraldonline.com/news/ci_16935911). (Exhibit 25)

<sup>83</sup> U.S. Department of Commerce, Foreign-Trade Zones Board, Foreign Trade Zone 3-San Francisco, California; Application for Subzone; Valero Refining Company-California (Oil Refinery), Benicia, California, 76 FR 10329, February 24, 2011; <http://www.gpo.gov/fdsys/pkg/FR-2011-02-24/pdf/2011-4208.pdf>. (Exhibit 26)

<sup>84</sup> U.S. Department of Commerce, Foreign-Trade Zones Board, Order No. 1797, Grant of Authority for Subzone Status, Valero Refining Company – California (Oil Refinery), Benicia, California, 76 FR 72675, November 25, 2011; <https://federalregister.gov/a/2011-30315>. (Exhibit 27)

## **B. The EIR's Exclusive Reliance on the BAAQMD's Annual Significance Threshold Is Inadequate and Fails to Identify Significant Air Quality Impacts**

The BAAQMD established two sets of thresholds for assessing the significance of a project's operational emissions: on a daily basis (in lbs/day) and on an annual basis (in tons/year).<sup>85</sup> The step-by-step guidance provided by the BAAQMD's CEQA Guidelines clearly illustrate the agency's intent that both daily and annual thresholds be used to determine the significance of a project's operational emissions:

### **Step 2: Comparison of Unmitigated Emissions with Thresholds of Significance**

*Sum the estimated emissions for area, mobile, and stationary sources (if any) for each pollutant as explained above and compare the total average daily and annual emissions of each criteria pollutant and their precursors with the thresholds of significance determined by the lead agency...*

### **Step 4: Comparison of Mitigated Emissions with Thresholds of Significance**

*Compare the total average daily and annual amounts of mitigated criteria air pollutants and precursors with the project thresholds.*<sup>86</sup>

Yet, despite this explicit guidance, the EIR provides emission estimates only on an annual basis, ignoring significant impacts the Project may have on a short-term basis. The Project's significant increase of NO<sub>x</sub> and ROG emissions of emissions, which are ozone precursors, are the most critical to evaluate on a daily basis. The state and federal ozone ambient air quality standards for ozone are based on 1-hour and 8-hour averages. Thus, short-term emission increases of these pollutants are much more important than long-term, annual averages.

As discussed in Comment IV.A.3, the Valero marine terminal currently receives about 88 crude oil deliveries via marine vessel per year. Based on information provided by the EIR, the total roundtrip time for marine vessels (from and to the Pilot Sea Buoy to the marine terminal, maneuvering/mooring/unmooring, hotelling without discharge, and hotelling with discharge at the marine terminal) can be calculated at about thirty hours.<sup>87</sup> Thus, crude oil ship movements from and out to the Pilot Sea Buoy occur on about 2,612 hours of the year or about 109 days of the year and there are 256 days of the year when no marine vessel deliveries of crude oil occur within the SFBAAB. On those

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<sup>85</sup> BAAQMD, Proposed Air Quality CEQA Thresholds of Significance, May 3, 2010; [http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Summary\\_Table\\_Proposed\\_BAAQMD\\_CEQA\\_Thresholds\\_May\\_3\\_2010.ashx?la=en](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Summary_Table_Proposed_BAAQMD_CEQA_Thresholds_May_3_2010.ashx?la=en). (Exhibit 28)

<sup>86</sup> BAAQMD 2012 CEQA Guidelines, p. 4-3, *emphasis added*.

<sup>87</sup> From Draft EIR, Appx. E.1: (Maneuvering/Mooring/Unmooring + hotelling without discharge + hotelling with discharge = 22.1 hours) + (Slow Cruise/Maneuvering: 0.56 hours) + (Slow Cruise 2: 2.60 hours) + (Slow Cruise 1: 4.42 hours) = 29.86 hours.

days, marine vessel emissions would be zero. (While there may be overlap of vessels moving through the Bay, this would only further increase the number of days when no emissions occur.) On these days, increases in emissions from other operational sources, such as fugitives and tanks, would not be offset, resulting in significant impacts.

Table 4 below summarizes Project daily operational emissions for those days when no marine vessel emissions would occur within the San Francisco Bay Area Air Basin. Table 4 incorporates increases in fugitive ROG emissions from storage tanks and rail cars from the Fox Draft EIR Comments; all other emission estimates are based on the EIR’s annual emission estimates

**Table 4: Significance of daily net operational emissions within the SFBAAB on days without crude oil deliveries via marine vessels**

Source	ROG (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Unloading rack and pipeline fugitive components <sup>a</sup>	10.3	-	-	-
Tank fugitive emissions <sup>b</sup>	64.6	-	-	-
Locomotives <sup>a</sup>	9.3	181.0	4.5	4.4
Marine vessels <sup>a</sup>	-	-	-	-
<b>Total net emissions</b>	<b>84.2</b>	<b>181.0</b>	<b>4.5</b>	<b>4.4</b>
BAAQMD significance thresholds	54	54	82	82
Significant?	<b>YES</b>	<b>YES</b>	no	no

a (annual emissions from Draft EIR, Table 4.1-19) / (365 days/year) × (2000 lbs/ton)

b From Fox Draft EIR Comments.

Table 4 demonstrates that total ROG and NOx emissions on days without marine crude oil deliveries would by far exceed the BAAQMD’s daily significance thresholds and would substantially worsen the air quality in the BAAQMD and in other air basins affected by pollutant transport, as discussed in Comment IV.C.1. This is of particular concern during the ozone season as the SFBAAB and several downwind air basins are in nonattainment of ambient air quality standards. The increase in ROG and NOx, ozone precursors, would therefore contribute to existing violations of federal and state ozone ambient air quality standards. This a new significant impact that the EIR fails to identify and fails to mitigate.

**C. The EIR Fails to Require Mitigation to Reduce Significant Operational Impacts on Air Quality**

As discussed in Comment IV.B, ROG and NOx emissions in the San Francisco Bay Area Air Basin would be significant. Further, the EIR concludes that the increase in NOx emissions from locomotives passing through all uprail air districts are

significant.<sup>88</sup> Here, the EIR declines to mitigate these significant impacts, arguing that the City has no jurisdiction to impose emission controls on locomotives or require the Applicant to pay a mitigation fee or purchase emission offsets. Instead, the EIR concludes that these impacts are “significant and unavoidable.”<sup>89</sup>

Setting aside the legal issue of jurisdiction over locomotive emissions, the City has at least three non-jurisdictional options to address the significant NO<sub>x</sub> emissions: a) it can deny the Project, b) it can require Valero to reduce emissions on site, and c) it can require Valero to enter into Voluntary Emission Reduction Agreements (“VERAs”) with all affected air districts.

### 1. The Unmitigated Project Should Be Denied

Most of the affected airsheds currently violate California’s 8-hour ozone ambient air quality standard as shown in Figure 3 (nonattainment areas are crosshatched).

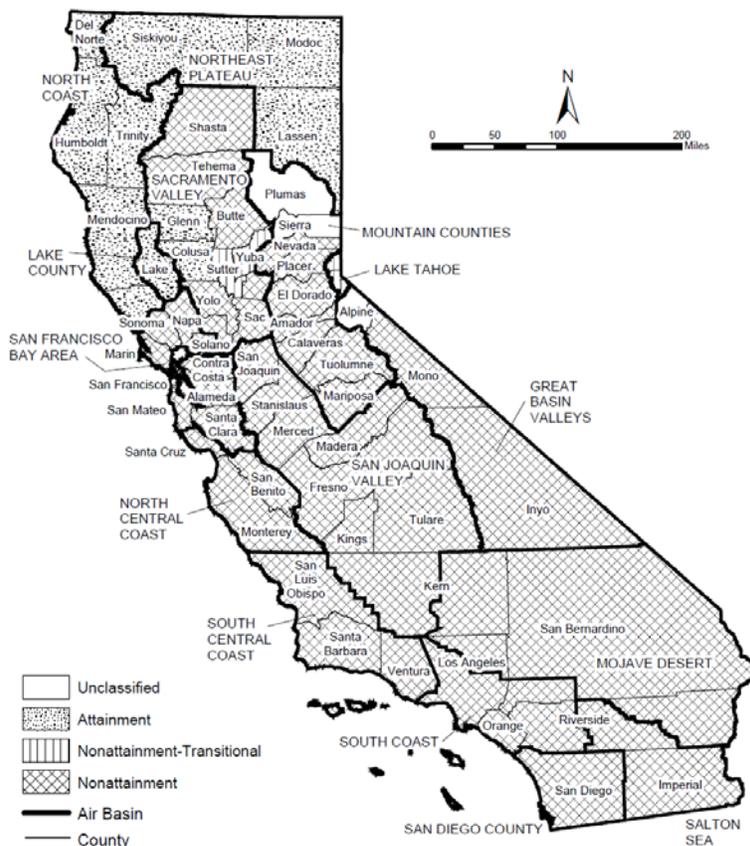


Figure 3: 2013 area designations for State ambient air quality standards for ozone (from: [http://www.arb.ca.gov/desig/adm/2013/state\\_o3.pdf](http://www.arb.ca.gov/desig/adm/2013/state_o3.pdf) (Exhibit 31))

<sup>88</sup> RDEIR, Table 4.1-12, 4.1-13, 4.1-14.

<sup>89</sup> Draft EIR, p. 4.1-20, and RDEIR, pp. 2-38 and 2-39.

Most of the population in the affected airsheds currently live in areas that also violate the federal 8-hour ozone ambient air quality standard, as shown in Figure 4.



Figure 4: 2013 area designations for federal 8-hour ambient air quality standard for ozone (from: [http://www.arb.ca.gov/deg/adm/2013/fed\\_o3.pdf](http://www.arb.ca.gov/deg/adm/2013/fed_o3.pdf) (Exhibit 32))

Emissions of ROG and NO<sub>x</sub> contribute to atmospheric ozone formation. Thus, the increase in exhaust and fugitive emissions from locomotives and Refinery sources (fugitive emissions from tanks, components, rail cars and increased operational emissions due to processing increase) will increase ozone concentrations, aggravating existing exceedances of ozone standards, set to protect public health. The short-term emissions increases in the BAAQMD are very large: one and a half times the daily ROG significance threshold and more than three times higher than the daily NO<sub>x</sub> significance threshold even without accounting for increased Refinery throughput. These short-term increases are highly significant as the State and Federal ozone standards are based on 8-hour averages, set to protect public health. Exceedances translate directly into adverse health impacts in the affected population. Further, these unmitigated increases will interfere with the affected air basins' ability to comply with State Implementation Plans, designed to bring the basins into compliance with standards.

These are serious impacts with serious consequences that should result in denial of the Project if these impacts are not mitigated.

2. *ROG and NOx Emission Increases Can Be Mitigated By Reducing Emissions from the Valero Refinery*

The control of NOx (and ROG) at the Valero Refinery would not only reduce emissions of these pollutants in the SFBAAB but would also help mitigate significant impacts from locomotives in adjacent air districts as it is well known that ozone precursors generated in one air basin contribute to ozone formation in other adjacent basins. (See Figure 4.)

*NOx Emissions*

The Valero Refinery is a major source of NOx emissions. Emission inventory data provided by the BAAQMD indicates that it emitted 10,297 lbs/day of NOx in 2011, 5,642 lbs/day of NOx in 2012, and 6,504 lbs/day of NOx in 2013. Most of these emissions arise from burning refinery fuel gas in various heaters and boilers.<sup>90</sup> The increase in NOx emissions from locomotives could be reduced to less than daily and annual NOx significance thresholds by installing updated low or ultra-low NOx burners and/or selective catalytic reduction (“SCR”) on one or more combustion sources.

SCR has been widely used to control NOx emissions from refinery heaters and boilers and is frequently required in federal Consent Decrees settling New Source Review issues. The combination of low-NOx burner technology and SCR has been demonstrated to achieve very low emissions of NOx in refinery applications. In the South Coast Air Quality Management District (“SCAQMD”), a large refinery heater, operational since 1995, is equipped with low-NOx burners and an SCR<sup>91</sup> Source tests have verified NOx emissions of 7 ppm or less.<sup>92</sup> Large and small process heaters have also been demonstrated in the SCAQMD to achieve NOx emissions in the 5 to 9 ppm

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<sup>90</sup> Source: BAAQMD Emissions Inventory Data, downloaded from EmitLook, transmitted from BAAQMD to NRDC via Public Records Request on August 28, 2014 for years 2011 through 2013 and to the International Council on Clean Transportation on September 30th, 2011 for the year 2010. (Exhibit 33)

<sup>91</sup> SCAQMD, AQMD BACT Determinations, Equipment Category Heater - Refinery, Application No. 326118, TOSCO Refining Company; <http://www.aqmd.gov/docs/default-source/bact/laer-bact-determinations/aqmd-laer-bact/heater-refinery-an-326118-tosco.doc?sfvrsn=2>. (Exhibit 34)

<sup>92</sup> *Ibid.*

range using low-NO<sub>x</sub> burners and SCR.<sup>93,94</sup> Installation of SCR plus low NO<sub>x</sub> burners plus flue gas recirculation (“FGR”) or installation of ultra-low-NO<sub>x</sub> burners plus FGR has been determined to be a typical technology for control for NO<sub>x</sub> emissions from refinery boilers by the BAAQMD.<sup>95</sup>

### *ROG Emissions*

A substantial portion (42 percent<sup>96</sup>) of the increase in ROG emissions from the Project is due to sources at the Refinery itself and its adjacent tank farm, owned by Nustar – fugitive equipment leaks from the new loading rack and fugitive emissions from storage tanks. These emissions can be mitigated at the source. Fugitive emissions can be reduced by installing of state-of-the-art leakless or low-leak fugitive components such as valves, pumps, connectors, etc. throughout the Refinery. Storage tank fugitive emissions can be mitigated by installing geodesic domes on the currently uncovered external floating roof tanks that would store the imported crude oil. The additional increase in ROG emissions due to the Project can be mitigated by installing geodesic domes on additional, non-Project storage tanks, such as floating roof tanks used to store gasoline.

### *ROG and NO<sub>x</sub> Emissions*

In addition, Refinery emissions of ROG and NO<sub>x</sub> can be reduced by dock electrification of the marine terminal, as recently recommended by the BAAQMD in its comments on the Recirculated Draft EIR for proposed WesPac Pittsburg Energy Infrastructure Project:

Staff supports the inclusion of Mitigation Measure AQ-3 which requires NO<sub>x</sub> and ROG emissions from operational activities to be fully offset. However, staff recommends that the City require the project proponent to seek emission

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<sup>93</sup> CARB, Best Available Control Technology Determination Data Submitted to the California Air Pollution Control Officers Association BACT Clearinghouse, CENCO Refining Company, A/C # 352869, 50 MMBtu/hr Tulsa Heaters Inc. Process Heater, John Zink Low-NO<sub>x</sub> Burners with SCR, January 2001; <http://www.arb.ca.gov/bact/bact2to3.htm>. (Exhibit 35)

<sup>94</sup> SCAQMD, AQMD BACT Determinations, Equipment Category Heater - Refinery, Application No., 337979, Air Products and Chemicals, Inc., 764 MMBtu/hr Kinetics Technology International Process Heater, John Zink Low-NO<sub>x</sub> burners and SCR, June 1999; <http://www.aqmd.gov/docs/default-source/bact/laer-bact-determinations/aqmd-laer-bact/heater-refinery-an-337979-air-products.doc?sfvrsn=2>. (Exhibit 36)

<sup>95</sup> BAAQMD, Best Available Control Technology (BACT) Guideline, August 4, 2010; <http://www.baaqmd.gov/~media/Files/Engineering/BACT%20BACT%20Workshop/Combustion/94-3-1.ashx>. (Exhibit 37)

<sup>96</sup>  $(10.3 \text{ lbs/day} + 64.6 \text{ lbs/day}) / (178.5 \text{ lbs/day}) = 0.42$ .

reductions on-site prior to purchasing emission reduction credits. This could include dock electrification of the marine terminal to further reduce emissions from ships running auxiliary engines for power generation. This would also service to reduce PM2.5 concentrations and TAC [toxic air contaminant] exposure to nearby sensitive receptors.<sup>97</sup>

This mitigation measure is equally feasible for the Project.

3. *ROG and NOx Emissions Can Be Reduced by Requiring Valero to Enter into Voluntary Emission Reduction Agreements with the Air Districts*

The City can require Valero to enter into a so-called Voluntary Emission Reduction Agreement (“VERA”) with the affected air districts. This offsite measure has been required, for example, for the Hydrogen Energy California Project, a proposed power generation and fertilizer production facility in the San Joaquin Valley which has entered into a VERA with the San Joaquin Valley Air Pollution Control District (“SJVAPCD”) for about \$1.2 million to mitigate 16.7 tons/year of NOx emissions.<sup>98</sup> The funding provided under the VERA was required by the SJVAPCD to satisfy CEQA mitigation requirements and will support the air district’s Emission Reduction Incentive Program which, for example, provides assistance to replace older agricultural equipment. Similarly, the EIR for the Bay Delta Conservation Plan requires that the Department Water Resources enter into VERAs with several affected air districts.<sup>99</sup> A similar requirement could be developed with assistance from the affected air districts to address emission reductions from mobile and/or stationary pollution sources in the affected air basins.

## V. The RDEIR’s Health Risk Assessments Are Substantially Flawed

The RDEIR presents the results of revised health risk assessments for maximum cancer, acute and chronic non-cancer risks, and PM2.5 concentrations for Project

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<sup>97</sup> Letter Roggencamp to Pollot, *op. cit.* Exhibit 14.

<sup>98</sup> SJVAPCD, Hydrogen Energy California Power Plant Project, Mitigation Agreement 20130092 and Voluntary Emission Reduction Agreement 20130026; available at [http://www.energy.ca.gov/sitingcases/hydrogen\\_energy/documents/others/2013-04-26\\_SJVUAPCD\\_Mitigation\\_Agreement\\_TN-70496.pdf](http://www.energy.ca.gov/sitingcases/hydrogen_energy/documents/others/2013-04-26_SJVUAPCD_Mitigation_Agreement_TN-70496.pdf). (Exhibit 38)

<sup>99</sup> U.S. Department of the Interior, Bureau of Reclamation, U.S. Department of Fish and Wildlife Service, U.S. Department of Commerce, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, and California Department of Water Resources, Partially Recirculated Draft Environmental Impact Report/Supplemental Environmental Impact Statement, Bay Delta Conservation Plan/California Water Fix, August 19, 2015, Appx. 22, Chapter 22; [http://baydeltaconservationplan.com/2015PublicReview/PublicReviewRDEIRSDEIS/PublicReviewRD EIRSDEIS\\_Links.aspx](http://baydeltaconservationplan.com/2015PublicReview/PublicReviewRDEIRSDEIS/PublicReviewRD EIRSDEIS_Links.aspx).

impacts for the San Francisco Bay Area and Sacramento Valley air basins<sup>100</sup> based on modeling of toxic air contaminant emissions with AERMOD and based on OEHHA's 2015 Guidance Manual.<sup>101</sup> The RDEIR finds that all results are below the applicable significance thresholds and, therefore, are less than significant.<sup>102</sup>

### **A. The RDEIR's Dispersion Modeling Is Flawed**

According to modeling guidance by the U.S. Environmental Protection Agency ("EPA"), if more than 50 percent of an area within a three-kilometer radius of the emission source is classified as rural, then rural dispersion coefficients are to be used in the dispersion modeling analysis. Conversely, if more than 50 percent of the area is urban, urban dispersion coefficients are to be used for modeling.<sup>103</sup> The area within a three-kilometer radius around the Refinery and within of the rail tracks in Fairfield show more than 60 percent impervious surfaces and should therefore be classified as "urban."<sup>104</sup>

The RDEIR relies on two AERMOD files to determine revised health risks near the Refinery. One file (Valero ceqa chronic\_5yrs\_CAN\_RISK.LST) specifies the dispersion coefficient as "urban" the other (Valero ceqa switching.LST) as "rural." The latter should be rerun using an urban dispersion coefficient.

### **B. The RDEIR Fails to Provide Adequate Information for Health Risks**

The RDEIR's health risk assessments for impacts near the Refinery and uprail quantify chronic and acute health risks for the maximum exposed individual receptor ("MEIR"), the maximum exposed individual worker ("MEIW"), and the maximum sensitive receptors ("MSR").<sup>105</sup> The RDEIR fails to provide isopleth maps, as is customary to illustrate the spatial extent of health risks, and which support identification of the maximum exposed receptors by placing them within areas between isopleths (*i.e.*, lines drawn on a map through all points of equal value of some measurable quantity).

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<sup>100</sup> RDEIR, Table 4.1-19, 4.1-10,

<sup>101</sup> OEHHA, Air Toxics Hot Spots Program, Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments, February 2015;  
[http://oehha.ca.gov/air/hot\\_spots/2015/2015GuidanceManual.pdf](http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf).

<sup>102</sup> Draft EIR, p. 4.1-25.

<sup>103</sup> EPA, Permit Modeling Guidance, Appendix W, Section 7.2.3;  
[http://www.epa.gov/ttn/scram/guidance/guide/appw\\_05.pdf](http://www.epa.gov/ttn/scram/guidance/guide/appw_05.pdf).

<sup>104</sup> Phone conversation with Lindsey Sears, September 10, 2014.

<sup>105</sup> For example, for near-Refinery impacts: RDEIR, Appx. B, Table 4 and Figure 1.

### C. The RDEIR Fails to Identify Highest Health Risks near Refinery

The RDEIR’s main text does not present the results of an updated health risk assessment for health risks to residents near the Refinery but only states that there are “no residences in the immediate vicinity of the 4 miles of modeled train route, as residences in Benicia are located more than 1,000 feet away from the locomotive activity.”<sup>106</sup> The RDEIR’s health risk assessment determines cancer risks of 2.2 at the MEIR, 7.4 in one million at the MEIW and 0.25 in one million at the MSR (Day Care Center).<sup>107</sup> Review of the supporting modeling files and spreadsheets shows that these findings do not identify the highest health risks.

For example, the RDEIR’s health risk assessment for the MEIW identifies “dispersion factors,” which were determined for a unit emission rate of 1 grams per second (“g/s”), as shown in the screenshot from the provided Excel spreadsheet below. These dispersion factors, which have units of micrograms per cubic meter per g/s (“ $\mu\text{g}/\text{m}^3/\text{g}/\text{s}$ ”), are multiplied with the source-specific emission rates (in g/s) to determine concentrations (in  $\mu\text{g}/\text{m}^3$ ) for each of the sources and toxic air contaminants (chemicals).

Cancer Risk Calculation Details									
Population	UTM X (m)	UTM Y (m)	Source	Chemical	Emission Rate (g/s)	Dispersion Factor	Concentration	Cancer Potency Factor	Cancer Risk
Worker	576044	4214195	Line Haul	DPM	2.82E-03	1.70526	4.81E-03	1.1	4.73E-07
Worker	576044	4214195	Switching	DPM	5.18E-03	7.51489	3.89E-02	1.1	3.82E-06
Worker	576044	4214195	Idling	DPM	6.49E-04	48.3544	3.14E-02	1.1	3.08E-06
Worker	576044	4214195	Fugitive	Benzene	3.24E-04	7.52814	2.44E-03	0.1	2.18E-08
Worker	576044	4214195	Fugitive	Ethylbenzene	2.16E-04	7.52814	1.63E-03	0.0087	1.26E-09
<b>Worker</b>	<b>Overall Cancer Risk</b>								<b>7.4E-06</b>

From file ‘Refinery Health Calculation June 2015 for Attachment.xlsx’ (not all columns shown)

However, review of the AERMOD output files shows that these dispersion factors are not supported. Specifically, the dispersion factor for diesel particulate matter (“DPM”) emissions from idling locomotives at this receptor location (471 East Channel Road, Benicia) is  $100.02199 \mu\text{g}/\text{m}^3/\text{g}/\text{s}$ , not  $48.3544 \mu\text{g}/\text{m}^3/\text{g}/\text{s}$ , as shown in the excerpt from the AERMOD output file below. In fact, the  $48.3544 \mu\text{g}/\text{m}^3/\text{g}/\text{s}$  value used by the DEIR is nowhere to be found in the AERMOD output file.

<sup>106</sup> RDEIR, p. 2-28.

<sup>107</sup> RDEIR, Appx. B, Tables 1 and 4.

```

*** THE PERIOD ( 43824 HRS) AVERAGE
CONCENTRATION VALUES FOR SOURCE GROUP: LOCOIDL ***
INCLUDING SOURCE(S):
LOCO_IDL ,

*** DISCRETE
CARTESIAN RECEPTOR POINTS ***

MICROGRAMS/M**3 ** CONC OF CAN_RISK IN
**

X-COORD (M) Y-COORD (M) CONC
X-COORD (M) Y-COORD (M) CONC
-----
576093.60 4214144.50 34.34802
576143.60 4214144.50 36.76177
576193.60 4214144.50 32.16045
574393.60 4214194.50 0.05813
574443.60 4214194.50 0.05510
574493.60 4214194.50 0.05634
574543.60 4214194.50 0.06941
574593.60 4214194.50 0.07022
575043.60 4214194.50 0.24608
575993.60 4214194.50 76.41474
576043.60 4214194.50 100.02199
576093.60 4214194.50 68.39742
576143.60 4214194.50 46.00180
576193.60 4214194.50 32.57914

```

From AERMOD file 'Valero ceqa chronic\_5yrs\_CAN\_RISK.LST'

Correcting this value in the RDEIR's health risk assessment and otherwise accepting all of the RDEIR's assumptions results in a total cancer risk at the MEIR of 11 in one million, as shown in the screenshot from the revised Excel spreadsheet below. Thus, the RDEIR fails to identify significant cancer risks at the MEIR. I note that the other dispersion factors used by the RDEIR for this receptor are also incorrect.

Cancer Risk Calculation Details									
Population	UTM X (m)	UTM Y (m)	Source	Chemical	Emission Rate (g/s)	Dispersion Factor	Concentration	Cancer Potency Factor	Cancer Risk
Worker	576044	4214195	Line Haul	DPM	2.82E-03	1.70526	4.81E-03	1.1	4.73E-07
Worker	576044	4214195	Switching	DPM	5.18E-03	7.51489	3.89E-02	1.1	3.82E-06
Worker	576044	4214195	Idling	DPM	6.49E-04	100.02199	6.49E-02	1.1	6.38E-06
Worker	576044	4214195	Fugitive	Benzene	3.24E-04	7.52814	2.44E-03	0.1	2.18E-08
Worker	576044	4214195	Fugitive	Ethylbenzene	2.16E-04	7.52814	1.63E-03	0.0087	1.26E-09
Worker	Overall Cancer Risk								1.1E-05

Similarly, the RDEIR fails to identify residential receptors with the highest health risk. Review of the RDEIR's health risk assessment for near-Refinery impacts shows that not one of the dispersion factors used by the RDEIR's health risk assessment is supported by the AERMOD output files. Due to time constraints, I was unable to prepare a complete analysis showing cancer risks isopleths for near-Refinery impacts, I identified several residential receptors with higher cancer risks closer to the Refinery than identified by the RDEIR. These include a residence at 488 Smith Court in Benicia (575300, 4215600N). Revised cancer risk calculations using the dispersion factors for

these locations from the AERMOD modeling files and otherwise relying on the RDEIR’s assumptions results in incremental cancer risks of 2.8 in one million in one million, as shown in the screenshot below. Clearly, the RDEIR’s identification of the MEIR is incorrect.

**488 Smith Court, Benicia**

**Cancer Risk Calculation Details**

Population	UTM X (m)	UTM Y (m)	Source	Chemical	Emission Rate (g/s)	Dispersion Factor	Concentration (ug/m3)	Age bin	Cancer Risk
Resident	575300	4215600	Line Haul	DPM	2.82E-03	0.193000	5.44E-04	3rd trimester	7.40E-09
Resident	575300	4215600	Switching	DPM	5.18E-03	0.394080	2.04E-03	3rd trimester	2.77E-08
Resident	575300	4215600	Idling	DPM	6.49E-04	0.184230	1.20E-04	3rd trimester	1.63E-09
Resident	575300	4215600	Fugitive	Benzene	3.24E-04	0.304590	9.87E-05	3rd trimester	1.22E-10
Resident	575300	4215600	Fugitive	Ethylbenzene	2.16E-04	0.304590	6.58E-05	3rd trimester	7.08E-12
Resident	575300	4215600	Line Haul	DPM	2.82E-03	0.193000	5.44E-04	0-2	1.79E-07
Resident	575300	4215600	Switching	DPM	5.18E-03	0.394080	2.04E-03	0-2	6.70E-07
Resident	575300	4215600	Idling	DPM	6.49E-04	0.184230	1.20E-04	0-2	3.93E-08
Resident	575300	4215600	Fugitive	Benzene	3.24E-04	0.304590	9.87E-05	0-2	2.95E-09
Resident	575300	4215600	Fugitive	Ethylbenzene	2.16E-04	0.304590	6.58E-05	0-2	1.71E-10
Resident	575300	4215600	Line Haul	DPM	2.82E-03	0.193000	5.44E-04	2-16	2.57E-07
Resident	575300	4215600	Switching	DPM	5.18E-03	0.394080	2.04E-03	2-16	9.62E-07
Resident	575300	4215600	Idling	DPM	6.49E-04	0.184230	1.20E-04	2-16	5.63E-08
Resident	575300	4215600	Fugitive	Benzene	3.24E-04	0.304590	9.87E-05	2-16	4.23E-09
Resident	575300	4215600	Fugitive	Ethylbenzene	2.16E-04	0.304590	6.58E-05	2-16	2.45E-10
Resident	575300	4215600	Line Haul	DPM	2.82E-03	0.193000	5.44E-04	16-70	1.28E-07
Resident	575300	4215600	Switching	DPM	5.18E-03	0.394080	2.04E-03	16-70	4.81E-07
Resident	575300	4215600	Idling	DPM	6.49E-04	0.184230	1.20E-04	16-70	2.82E-08
Resident	575300	4215600	Fugitive	Benzene	3.24E-04	0.304590	9.87E-05	16-70	2.12E-09
Resident	575300	4215600	Fugitive	Ethylbenzene	2.16E-04	0.304590	6.58E-05	16-70	1.23E-10
<b>Resident</b>	<b>Overall Cancer Risk</b>								<b>2.8E-06</b>

I encourage the lead agency to revise the modeling to account for urban dispersion coefficient and provide an isopleth map for incremental cancer risks.

**D. The RDEIR Underestimates Health Risks Due to Fugitive Component Emissions of Toxic Air Contaminant Emissions at the Refinery**

This comment summarizes information discussed in more detail in the Fox IS/MND and Draft EIR Comments to provide a clear picture of the various shortcomings of the Draft EIR’s health risk assessments in one place.

According to Dr. Fox as well as the Goodman IS/MND Comments, the Project will likely receive, store and process cost-advantaged heavy sour Canadian tar sands (as Dilbits) and light sweet crudes likely originating from the Bakken oil fields. The EIR failed include any emissions from the change in physical and chemical properties of the crudes that would be stored in the Project’s six storage tanks. Dr. Fox, in her comments on the Draft EIR, estimated increase in tank breathing losses emissions to be at least

64.6 lbs/day and 11.79 tons/year of ROG.<sup>108</sup> Dr. Fox also identified several other sources of emissions from these tanks that she did not quantify. Because these fugitive emissions also contain toxic air contaminants (“TACs”), TAC emissions for the EIR’s health risk assessment were underestimated as the EIR only included TAC emissions from fugitive components, valves, pumps, flanges, which are a tiny fraction of the total potential ROG emissions.

Further, the Fox Draft EIR Comments criticized the Draft EIR’s failure to adequately quantify TAC emissions for fugitive emissions from these crude oils by relying on a “default speciation profile” for crude oil from the EPA’s TANKS 4.09d program. The Fox Draft EIR comments provide a comparison of the weight percentage of five TACs in the default crude oil relied upon by the Draft EIR and the maximum weight percentage for these TACs from a number of Material Safety Data Sheets (“MSDS”) recently submitted in the context of other applications to import cost-advantaged North American crudes. The values in Table 5 are excerpted from the Fox Draft EIR Comments.

**Table 5: Weight percentages of TAC components in crude oil relied upon by Draft EIR compared to reported maxima in MSDSs for Bakken crude oils**

TAC	Weight Percent		Difference (B/A)
	A Default Crude Draft EIR	B Maximum from MSDS	
Benzene	0.6	7	11.7
Ethyl Benzene	0.4	7	17.5
Hexane	0.4	11	27.5
Toluene	1.0	7	7.0
Xylenes	1.4	7	5.0

A Draft EIR, Appx. E.4, Table 3-5; B Fox Draft EIR Comments

As shown, the EIR’s emission estimates for TACs based on a default crude oil underestimate emissions by factors ranging from 5 to almost 28. Thus, the EIR’s TAC emissions are substantially underestimated.

### **E. The EIR’s Cumulative Health Risk Assessments Are Flawed**

The Draft EIR provides cumulative health risk assessments for toxic air contaminant emissions in Section 5.4.3.1, which the RDEIR amends for uprail impacts.<sup>109</sup>

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<sup>108</sup> Personal communication with Phyllis Fox, September 29, 2015.

<sup>109</sup> RDEIR, p. 2-40.

### *Cumulative Health Risk Assessment for Construction Emissions*

The EIR does not specifically address cumulative health risks due to diesel particulate matter emissions from construction activities. Instead, the Draft EIR summarily dismisses the cumulative impacts of construction activities because “Project construction exhaust emissions would not exceed the BAAQMD regional mass emissions thresholds.” “Consequently,” the EIR concludes, “construction of the Project facilities would not be considered to make a cumulatively considerable contribution to regional air quality impacts. The cumulative impact would be reduced to a level that would be less than significant.”<sup>110</sup>

*First*, as explained in Comment III above, construction emissions are substantially underestimated and, if revised, may exceed the BAAQMD’s significance thresholds.

*Second*, even if diesel particulate matter emissions do not exceed the BAAQMD’s quantitative mass significance threshold for PM<sub>2.5</sub> for exhaust emissions, health risks may still be significant. The BAAQMD’s emission thresholds for PM<sub>2.5</sub> were developed to bring the region into attainment with the ambient air quality standards, not to address health risks from diesel exhaust. The BAAQMD has developed separate thresholds for risks and hazards that apply to both construction and operation:

Compliance with qualified community risk reduction plan

OR

Common sources within 1,000 foot radius of the individual project modeled to the maximum likely exposed individual (resident) based on the individual source analysis:

Cancer Risk >100 in a million

Chronic Hazard Index >10.0

PM<sub>2.5</sub> concentration >0.8 µg/m<sup>3</sup><sup>111</sup>

*Third*, health risks due to construction emissions may be cumulatively considerable even if they are not significant on an individual project basis.

### *Cumulative Health Risk Assessment for Operational Emissions near Refinery*

The EIR finds that the cumulative health risk and cumulative concentrations of PM<sub>2.5</sub> near the Refinery would be below the BAAQMD’s respective cumulative

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<sup>110</sup> Draft EIR, p. 5-5.

<sup>111</sup> BAAQMD, Recommended Methods for Screening and Modeling Local Risks and Hazards, *op cit.*, p. 6.

significance thresholds and the Project would therefore not be cumulatively considerable.<sup>112</sup> The EIR's analysis is flawed and its conclusions are not supported.

*First*, the EIR's cumulative health risk assessment fails to address chronic health hazards.

*Second*, the EIR includes the following cumulative projects in the cumulative health risk assessment: the Rail Project; Interstate I-680 (misidentified in the Draft EIR as I-160<sup>113</sup>), which crosses the Benicia-Martinez Bridge; the Union Pacific Rail Road ("UPRR"); and the incremental health risks associated with the VIP. These are not the only projects that must be included:

- The EIR's analysis fails to include one of the cumulative projects it identifies in Table 5-1: diesel particulate matter emissions associated with the ongoing dredging at Valero's crude dock.
- The EIR's analysis also fails to include emissions from the Valero Cogeneration Project, which went online in 2002.<sup>114</sup> Incremental cancer risks from this project were estimated at 0.978 in a million, not adjusted for OEHHA's 2015 guidance, which results in higher cancer risks.<sup>115</sup>

*Third*, the Draft EIR does not follow the BAAQMD's guidance on how to conduct a cumulative health risk assessment:

For assessing community risks and hazards, the District recommends that a region around the proposed project be defined by a project radius for assessing potential impacts on new receptors and cumulative impacts of new sources. More specifically, *a 1,000 foot radius is generally recommended around the project property boundary to identify existing sources that may individually or cumulatively impact new receptors and to identify existing sources that may contribute to the cumulative impact of new sources.*<sup>116</sup>

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<sup>112</sup> Draft EIR, p. 5-13.

<sup>113</sup> Draft EIR, p. 5-13.

<sup>114</sup> California Energy Commission, Valero Cogeneration Power Plant Project; <http://www.energy.ca.gov/sitingcases/valero/>. (Exhibit 46)

<sup>115</sup> California Energy Commission, Commission Decision, Valero Cogeneration Project, Application for Certification (01-AFC-05), Benicia, California, October 2001, P800-01-026, p. 107; [http://www.energy.ca.gov/sitingcases/valero/documents/2001-11-07\\_COMMISN\\_DECISION.PDF](http://www.energy.ca.gov/sitingcases/valero/documents/2001-11-07_COMMISN_DECISION.PDF). (Exhibit 47)

<sup>116</sup> BAAQMD, Recommended Methods for Screening and Modeling Local Risks and Hazards, *op cit*.

Within a 1,000-foot radius, there are a number of sources the Draft EIR fails to include in its cumulative impact analysis:

- The most important source of TAC emissions are existing Refinery operations, where only those attributable to the incremental emissions associated with the implementation of the VIP were included in the cumulative health risk assessment. This omission fails to disclose cumulatively significant impacts.
- The Valero Asphalt plant immediately adjacent to the Valero Refinery. While owned by Valero, the facility operates under a separate Title V permit from the BAAQMD. The Valero asphalt plant, a small-scale petroleum refinery, primarily produces asphalt from crude oil. The by-products (naphtha, kerosene, and gas oil) are transferred to the adjacent Valero Refinery or sold to other companies for the production of other petroleum products.<sup>117</sup>
- The Nustar tank farm, formerly owned by Valero and operated under a common agreement between both firms, immediately adjacent to the Refinery.

TAC emissions from these sources must be included in the cumulative health risk assessment based on BAAQMD guidance.

## **VI. The EIR's Odor Analysis Is Inadequate**

The EIR's odor analysis consists of the following terse paragraph:

Project construction and operations would include diesel exhaust sources, such as off-road construction equipment and generators and train locomotives that could result in the creation of objectionable odors. However, these emissions would be temporary and/or intermittent in nature and the closest sensitive receptors to the Project site are residences that would be at distances of over 2,000 feet, thus odor impacts associated with diesel combustion during Project construction activities and operations would be less than significant. This impact would be less than significant.<sup>118</sup>

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<sup>117</sup> BAAQMD, Valero Benicia Asphalt Plant Facility #A0901, Facility Address: 3001 Park Road, Benicia, CA 94510, April 30, 2013;  
[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/A0901/A0901-2013-4\\_MR-Final-Permit\\_02.ashx?la=en](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/A0901/A0901-2013-4_MR-Final-Permit_02.ashx?la=en). (Exhibit 48)

<sup>118</sup> Draft EIR, p. 4.1-26.

This “analysis” is entirely inadequate and the EIR’s conclusion regarding the significance of odor impacts is entirely unsupported.

*First*, while the EIR dismissal of the potential odor impacts of diesel exhaust emissions from the locomotives due to the “intermittent nature” is not acceptable. The odor of diesel exhaust is considered by most people to be objectionable and EPA found that, at high intensities, diesel exhaust may produce sufficient physiological and psychological effects to warrant concern for public health.<sup>119</sup> Two trains with two locomotives each would deliver crude oil to the Refinery and then travel back empty to the Roseville switchyard. En route, these four locomotives per day would pass directly through numerous densely populated residential neighborhoods, in many areas traveling at low speed, within 50 feet of residences in Fairfield<sup>120</sup>, which could cause major odor nuisances for receptors located within these neighborhoods. Further, clouds of soot from the diesel-powered locomotives when idling at the Project site, can travel downwind for miles and drift into heavily populated areas.<sup>121</sup>

*Second*, diesel exhaust is not the only source of odiferous emissions associated with the Project. Other sources include fugitive emissions of odiferous hydrocarbons and hydrogen sulfide (“H<sub>2</sub>S”) from equipment leaks<sup>122</sup> (H<sub>2</sub>S emissions from this source alone are estimated at 37.55 lbs/year) and evaporating from the crude oil rail cars in transit to the Refinery, as discussed in detail in the Fox Draft EIR Comments. The Draft EIR for the Phillips 66 Santa Maria Rail Terminal in San Louis Obispo County provided a quantitative odor analysis estimating that fugitive crude oil vapor emissions from equipment leaks could produce H<sub>2</sub>S levels at the property line of up to 1.7 parts per billion (“ppb”) and less than 1 ppb at residences. Based on an H<sub>2</sub>S odor limit of 2 ppb with a significant impact being assigned to levels that could exceed the 50 percent odor threshold at 1 ppb, the Santa Maria Rail Terminal Draft EIR found that fugitive emissions could cause odor impacts offsite and odor emissions would be potentially significant.<sup>123</sup>

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<sup>119</sup> EPA, Health Assessment Document for Diesel Engine Exhaust, EPA/600/8-90/057F, May 2002; <http://www.epa.gov/ttn/atw/dieselfinal.pdf>. (Exhibit 49)

<sup>120</sup> Draft EIR, p. 4.1-24.

<sup>121</sup> Union of Concerned Scientists, *op. cit.* (Exhibit 11)

<sup>122</sup> Draft EIR, p. 4.1-24.

<sup>123</sup> Draft EIR for Santa Maria Rail Terminal Phillips 66, *op. cit.*, p. 4.3-51; [http://www.slocounty.ca.gov/Assets/PL/Santa+Maria+Refinery+Rail+Project/Draft+EIR-Phillips+66+Rail+Spur+Extension+Project+\(November+2013\)/Full+EIR+-+Large+File/p66.pdf](http://www.slocounty.ca.gov/Assets/PL/Santa+Maria+Refinery+Rail+Project/Draft+EIR-Phillips+66+Rail+Spur+Extension+Project+(November+2013)/Full+EIR+-+Large+File/p66.pdf). (Exhibit 50)

Crude oils also contain various amounts of other odiferous sulfur compounds, including mercaptans, which are known for their very strong and unpleasant odors. As discussed in the Fox Draft EIR Comments, mercaptans may be present at very high concentrations in the crude oils that would be delivered to the Project. Information available for Canadian crudes indicates that diluents can contain more than 100 ppm of volatile mercaptans.<sup>124</sup> The odor threshold for most mercaptans is considerably less than 0.5 ppb; some mercaptans can be detected at concentrations as low as 0.029 ppb.<sup>125</sup> In fact, mercaptans are added to natural gas in pipelines in very tiny amounts to facilitate detecting leaks.

The change of crude oils may also result in higher emissions of odiferous compounds from existing refinery operations, which have in the past included an odor release from a tank used for wastewater and “slop oil” which sent two Union Pacific workers to the hospital for a day in 2009<sup>126</sup> and a widespread “rotten egg” smell emanating from the refinery and being detected in Vallejo, Benicia, Crockett and Marin County in 2009;<sup>127</sup> and a release of hydrocarbons and H<sub>2</sub>S from the coker unit during which four refinery employees were injured in 2010;<sup>128</sup> an H<sub>2</sub>S release from the hydrocracker unit also in 2010.<sup>129</sup>

I recommend that the City revise the EIR to include modeling of all odorous compounds including diesel exhaust, hydrocarbons, and sulfurous compounds, including mercaptans, to adequately assess potential odor impacts associated with the Rail Project. The revised EIR should evaluate potential odor impacts for the full range of crude oils that could be delivered to the Refinery including heavy Canadian sour crude oil, DilBits, and Bakken crude oil and, if found significant, require adequate mitigation including, for example, the use of leakless components (*e.g.*, welded connectors, bellows valves, double mechanical seals with high pressure fluids on pumps, enclosed distance pieces on compressors with venting to a control device, etc.). Further, the revised EIR should investigate how to best reduce fugitive emissions from rail cars, whether it is

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<sup>124</sup> crudemonitor.ca, 2014; <http://www.crudemonitor.ca/home.php>.

<sup>125</sup> Syneco Systems, Inc., Odor Perception, 2009; <http://www.synecosystems.com/wp/PDF/151.pdf>. (Exhibit 51)

<sup>126</sup> Tony Burchyns, Vallejo Times-Herald, Valero Agrees to Pay \$130,500 for Air Violations at Benicia Refinery, November 17, 2011; [http://www.timesheraldonline.com/ci\\_19354929](http://www.timesheraldonline.com/ci_19354929). (Exhibit 52)

<sup>127</sup> Tony Burchyns, Vallejo Times-Herald, Report on Air Ties Refinery to Ozone Woes, May 8, 2009; [http://www.timesheraldonline.com/ci\\_12325742](http://www.timesheraldonline.com/ci_12325742). (Exhibit 53)

<sup>128</sup> BAAQMD, Incident Report Valero Refinery (Site #B2626), 3400 E 2nd Street, Benicia, California, June 17, 2010; [http://www.baaqmd.gov/~media/Files/Compliance%20and%20Enforcement/Incident%20Reports/i061710\\_valero\\_refinery\\_coker.ashx?la=en](http://www.baaqmd.gov/~media/Files/Compliance%20and%20Enforcement/Incident%20Reports/i061710_valero_refinery_coker.ashx?la=en). (Exhibit 54)

<sup>129</sup> Tony Burchyns, Vallejo Times-Herald, Pinhole leak reported at Valero hydrocracker in Benicia; [http://www.insidebayarea.com/ci\\_15913030](http://www.insidebayarea.com/ci_15913030). (Exhibit 55)

tank design and/or requiring Valero to only accept stabilized crude oils, which have a lower potential for fugitive emissions and, at the same time, would reduce risk of explosion after a potential derailment.

## **VII. The EIR Fails to Address Risks Associated with Vandalism and Terrorism Attacks and Fails to Adequately Mitigate Significant and Unavoidable Impacts due to Earthquakes**

The EIR's risk analysis, provided in Draft EIR Section 4.7 and updated with RDEIR Section 2.12.2, fails to adequately assess the risks associated with earthquakes, vandalism or terrorist attacks.

### *1. Vandalism and Terrorism Attacks*

The EIR fails entirely to address the potential for vandalism or terrorist attacks on trains in transit transporting crude oil through long stretches of sensitive habitat, along much of California's water supply and through densely populated areas which must be considered as a substantial risk factor. Freight trains are an easy target, as they are operated by a very small crew and are frequently left unattended. For example, the recent tragic crude oil rail accident in Lake Mégantic in Canada, which resulted in 47 fatalities in a town of 6,000, occurred while the train operator left the train unattended.<sup>130</sup> Given the worldwide awareness raised by the recent slate of catastrophic train derailments and accidents, it may be only a matter of time for trains in transit carrying crude oil to become the target for a terrorist attack or vandalism with disastrous consequences. In fact, the Federal Bureau of Investigation (FBI) concluded that "environmental extremists" could target oil-by-rail routes.<sup>131</sup> Rail companies appear more concerned about terrorist attacks from overseas. The Association of American Railroads and the American Short Line and Regional Railroad Association rightly pointed out:

[I]t is not just environmental extremists who pose a threat to the transportation of crude oil. Foreign terrorists are also a risk. Two publications by Al Qaeda in the Arabian Peninsula contain threats against crude oil trains. An August 2014 publication, *Palestine: betrayal of the guilty conscience*, discusses how to make bombs and specifically lists "oil tankers and trans" as targets. In March 2014,

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<sup>130</sup> See, for example, Wikipedia, Lac-Mégantic Derailment; [http://en.wikipedia.org/wiki/Lac-M%C3%A9gantic\\_derailment](http://en.wikipedia.org/wiki/Lac-M%C3%A9gantic_derailment). (Exhibit 57)

<sup>131</sup> FBI, Private Sector Advisory, (U//FOUO) Increased Use of Railways to Transport May Lead to Acts of Environmental Extremism, July 18, 2014; <http://www.desmogblog.com/sites/beta.desmogblog.com/files/FBI%20Oil%20by%20Rail%20Extremism%2C%20Terrorism.pdf>. (Exhibit R1.)

*Inspire* magazine specifically referred to “Train crude oil” in highlighting targets. Furthermore, information from Osama Bin Laden’s compound indicates that Al-Qaeda has contemplated attacks on trains.

It should come as no surprise, then, that the Transportation Security Administration (“TSA”) has released an Intelligence Note that “highlights plans to attack freight rail cars overseas with magnetic improvised explosive devices. TSA has also used attacks on tank cars transporting flammable liquids as one of its projected threat scenarios<sup>132</sup>

Similarly concerned, the Canadian Pacific Railway chief executive officer stated that his greatest fear in moving crude by rail is the prospect of a terrorist attack on the company’s trains.<sup>133</sup>

Earlier this year, the Department of Homeland Security, Office of Inspector General (“OIG”), reported the results of audits of Customs Border Patrol activities which revealed that the CBP did not effectively examine rail shipments entering the United States and may have failed to detect potential instruments of terrorism or dangerous materials.”<sup>134</sup>

## 2. Earthquakes

The likelihood of an earthquake derailing a train is probable and could have disastrous consequences in densely populated areas along the train routes. Benicia is located between two known earthquake faults, the West Napa Fault, which rattled the Bay Area in August of 2014<sup>135</sup>, and the Concord/Green Valley Fault, which is one of the six major slip-strike faults in the Bay Area<sup>136</sup>, and is characterized as a “very high risk area” for earthquakes, the most severe designation. The U.S. Geological database shows that there is a 98.5 percent chance of a major earthquake within 50 km of Benicia within the next 50 years.<sup>137</sup> Given two daily deliveries of crude oil and the increasing

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<sup>132</sup> *Ibid.*

<sup>133</sup> Scott Deveau, Bloomberg Business, CP Rail CEO Says Biggest Crude-by-Rail Fear Is Terrorism, March 2, 2015; <http://www.bloomberg.com/news/articles/2015-03-02/cp-rail-ceo-says-biggest-crude-by-rail-fear-is-terrorism>. (Exhibit R2.)

<sup>134</sup> OIG, U.S. Customs and Border Protection Did Not Effectively Target and Examine Rail Shipments from Canada and Mexico, March 3, 2015, OIG-15-39; [https://www.oig.dhs.gov/assets/Mgmt/2015/OIG\\_15-39\\_Mar15.pdf](https://www.oig.dhs.gov/assets/Mgmt/2015/OIG_15-39_Mar15.pdf). (Exhibit R3.)

<sup>135</sup> Wikipedia, West Napa Fault; [http://en.wikipedia.org/wiki/West\\_Napa\\_Fault](http://en.wikipedia.org/wiki/West_Napa_Fault). (Exhibit 58)

<sup>136</sup> Wikipedia, San Francisco Bay Area, [http://en.wikipedia.org/wiki/San\\_Francisco\\_Bay\\_Area#Earthquake\\_faults](http://en.wikipedia.org/wiki/San_Francisco_Bay_Area#Earthquake_faults). (Exhibit 59)

<sup>137</sup> Homefacts, Benicia, CA Earthquake Report; <http://www.homefacts.com/earthquakes/California/Solano-County/Benicia.html>. (Exhibit 60)

probability of a major earthquake in the greater Bay Area (a greater than 63% percent for one or more magnitude 6.7 or greater earthquakes from 2007 to 2036.<sup>138</sup>

The EIR's analysis of risks in Chapter 2.12 determines the probability of a derailment and associated crude oil spill solely based on past events.<sup>139</sup> This analysis does not capture the real threat and severe consequences that may occur during an earthquake. Elsewhere the EIR acknowledges that "a seismic event could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death" but concludes that "because no reasonable, feasible mitigation measures are available that would, if implemented, reduce the significance below established thresholds, this rail-transport related impact would be significant and unavoidable."<sup>140</sup> I disagree; several approaches are feasible to avoid or mitigate the risks associated with crude oil transport via rail.

*First*, as discussed by Dr. Fox in her comments on the RDEIR, the City should require Valero to analyze additional alternatives to the Project, including import of crude oil via pipeline from San Joaquin Valley or from the two new crude oil terminals in southern California, *i.e.*, the Alon Bakersfield Refinery Crude Flexibility Project.

*Second*, to address the hazards associated with train derailments due to earthquakes, Japan, an earthquake-prone region like California, has developed a sophisticated system to stop trains before the ground shakes using seismographs to pick up small seismic waves called P-waves, which reach the earth's surface before the main shock coming from the epicenter. The system immediately estimates the quake's intensity and risk areas. These two factors are used to determine risk levels where trains are running. If the risk is higher than a certain level, a signal is sent to transformers to stop the trains. The time lapse between P-wave detection and signal transmission is only two seconds.

No such system exists for freight trains in California, where trains carrying hazardous materials such as crude oils utilize the same tracks as passenger trains. To minimize risks from transporting crude oils and the potential for an accidental release of highly explosive crude oils in communities and through wetlands, Valero could be required to financially contribute to developing a system for stopping trains like the one implemented in Japan. Such an early warning system has been developed by the

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<sup>138</sup> U.S. Geological Service, 2008 Bay Area Earthquake Probabilities; <http://earthquake.usgs.gov/regional/nca/ucerf/>. (Exhibit 61)

<sup>139</sup> See, RDEIR, Appx. F, Chapter 5.2.1.

<sup>140</sup> RDEIR, p. 2-114.

University of California at Berkeley Seismological Laboratory for the Bay Area Rapid Transit ("BART") system.<sup>141</sup> In the alternative, the City could deny the Project.

### VIII. Recommendation

Based on the above discussion, I find that the RDEIR for Valero's Rail Project is substantially deficient as an informational document for purposes of compliance with CEQA and recommend that the City prepare and recirculate a second revised Draft EIR that addresses the issues outlined above.

Please note that all referenced exhibits except Exhibits R1 through R3 were submitted previously with my September 15, 2014 comments on the Draft EIR. Please call me at (415) 492-2131 or e-mail at [petra.pless@gmail.com](mailto:petra.pless@gmail.com) if you have any questions.

Best regards,

A handwritten signature in black ink, appearing to read 'Petra Pless', with a stylized flourish above the name.

Petra Pless, D.Env.

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<sup>141</sup> BART, BART Teams with UC Berkeley to Adopt Earthquake Early Warning System, September 27, 2012; <http://www.bart.gov/news/articles/2012/news20120927>. (Exhibit 62)

## **Petra Pless, D.Env.**

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petra.pless@gmail.com

Dr. Pless is a court-recognized expert with over 20 years of experience in environmental consulting conducting and managing interdisciplinary environmental research projects and preparing and reviewing environmental permits and other documents for U.S. and European stakeholder groups. Her broad-based experience includes air quality and air pollution control; water quality, water supply, and water pollution control; biological resources; public health and safety; noise studies; California Environmental Quality Act ("CEQA"), Clean Air Act ("CAA"), and National Environmental Policy Act ("NEPA") review; industrial ecology and risk assessment; and use of a wide range of environmental software.

### **EDUCATION**

Doctorate in Environmental Science and Engineering (D.Env.), University of California  
Los Angeles, 2001

Master of Science (equivalent) in Biology (focus on Limnology), Technical University of Munich,  
Germany, 1991

### **PROFESSIONAL HISTORY**

Pless Environmental, Inc., Principal, 2008–present

Environmental Consultant, Sole Proprietor, 2006–2008

Leson & Associates (previously Leson Environmental Consulting), Kensington, CA,  
Environmental Scientist/Project Manager, 1997–2005

University of California Los Angeles, Graduate Research Assistant/Teaching Assistant, 1994–1996

ECON Research and Development, Environmental Scientist, Ingelheim, Germany, 1992–1993

Biocontrol, Environmental Projects Manager, Ingelheim, Germany, 1991–1992

### **REPRESENTATIVE EXPERIENCE**

#### **Air Quality and Pollution Control**

Projects include CEQA/NEPA review; CAA attainment and non-attainment new source review; prevention of significant deterioration ("PSD") and Title V permitting; control technology analyses (BACT, LAER, RACT, BARCT, BART, MACT); technology evaluations and cost-effectiveness analyses; criteria and toxic pollutant and greenhouse gas emission inventories; emission offsets; ambient and source monitoring; analysis of emissions estimates and ambient air pollutant concentration modeling. Some typical projects include:

- Provided expert support for intervention in California Energy Commission (“CEC”) proceedings for numerous power plants including natural gas-fired, integrated gasification combined-cycle, geothermal (flash and binary) solar (thermal and photovoltaic) facilities with respect to air quality including emission reduction credits, hazards and hazardous materials, public health, noise, and biological resources.
- Critically reviewed and prepared technical comments on the air quality, biology, noise, water quality, and public health and safety sections of CEQA/NEPA documents for numerous commercial, residential, and industrial projects (e.g., power plants, airports, residential developments, retail developments, university expansions, hospitals, refineries, slaughterhouses, asphalt plants, food processing facilities, slaughterhouses, feedlots, printing facilities, mines, quarries, landfills, and recycling facilities) and provided litigation support in a number of cases filed under CEQA.
- Critically reviewed and prepared technical comments on the air quality and public health sections of the Los Angeles Airport Master Plan (Draft, Supplement, and Final Environmental Impact Statement/Environmental Impact Report) for the City of El Segundo. Provided technical comments on the Draft and Final General Conformity Determination for the preferred alternative submitted to the Federal Aviation Administration.
- Prepared comments on proposed PSD and Title V permit best available control technology (“BACT”) analysis for greenhouse gas emissions from a proposed direct reduced iron facility in Louisiana.
- Prepared technical comments on U.S. Environmental Protection Agency (“EPA”)’s *Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills* prepared for EPA’s proposed coal combustion waste landfill rule.
- Prepared technical comments on the potential air quality impacts of the California Air Resources Board’s *Proposed Actions to Further Reduce Particulate Matter at High Priority California Railyards*.
- For several California refineries, evaluated compliance of fired sources with Bay Area Air Quality Management District Rule 9-10. This required evaluation and review of hundreds of source tests to determine if refinery-wide emission caps and compliance monitoring provisions were being met.
- Critically reviewed and prepared technical comments on draft Title V permits for several refineries and other industrial facilities in California.
- Evaluated the public health impacts of locating big-box retail developments in densely populated areas in California and Hawaii. Monitored and evaluated impacts of diesel exhaust emissions and noise on surrounding residential communities.
- In conjunction with the permitting of several residential and commercial developments, conducted studies to determine baseline concentrations of diesel exhaust particulate matter using an aethalometer.
- For an Indiana steel mill, evaluated technology to control NO<sub>x</sub> and CO emissions from fired sources, including electric arc furnaces and reheat furnaces, to establish BACT. This required a comprehensive review of U.S. and European operating experience. The lowest emission levels were being achieved by steel mills using selective catalytic reduction (“SCR”) and selective non-catalytic reduction (“SNCR”) in Sweden and The Netherlands.

- For a California petroleum coke calciner, evaluated technology to control NO<sub>x</sub>, CO, VOCs, and PM<sub>10</sub> emissions from the kiln and pyroscrubbers to establish BACT and LAER. This required a review of state and federal clearinghouses, working with regulatory agencies and pollution control vendors, and obtaining and reviewing permits and emissions data from other similar facilities. The best-controlled facilities were located in the South Coast Air Quality Management District.
- For a Kentucky coal-fired power plant, identified the lowest NO<sub>x</sub> levels that had been permitted and demonstrated in practice to establish BACT. Reviewed operating experience of European, Japanese, and U.S. facilities and evaluated continuous emission monitoring data. The lowest NO<sub>x</sub> levels had been permitted and achieved in Denmark and in the U.S. in Texas and New York.
- In support of efforts to lower the CO BACT level for power plant emissions, evaluated the contribution of CO emissions to tropospheric ozone formation and co-authored report on same.
- Critically reviewed and prepared technical comments on applications for certification (“AFCs”) for numerous natural-gas fired, solar, biomass, and geothermal power plants in California permitted by the California Energy Commission. The comments addressed construction and operational emissions inventories and dispersion modeling, BACT determinations for combustion turbine generators, fluidized bed combustors, diesel emergency generators, etc.
- Critically reviewed and prepared technical comments on draft PSD permits for several natural gas-fired power plants in California, Indiana, and Oregon. The comments addressed emission inventories, greenhouse gas emissions, BACT, case-by-case MACT, compliance monitoring, cost-effectiveness analyses, and enforceability of permit limits.
- For a California refinery, evaluated technology to control NO<sub>x</sub> and CO emissions from CO Boilers to establish RACT/BARCT to comply with BAAQMD Rule 9-10. This required a review of BACT/RACT/LAER clearinghouses, working with regulatory agencies across the U.S., and reviewing federal and state regulations and State Implementation Plans (“SIPs”). The lowest levels were required in a South Coast Air Quality Management District rule and in the Texas SIP.
- In support of several federal lawsuits filed under the federal Clean Air Act, prepared cost-effectiveness analyses for SCR and oxidation catalysts for simple cycle gas turbines and evaluated opacity data.
- Provided litigation support for a CEQA lawsuit addressing the adequacy of pollution control equipment at a biomass cogeneration plant.
- Prepared comments and provided litigation support on several proposed regulations including the Mojave Desert Air Quality Management District Rule 1406 (fugitive dust emission reduction credits for road paving); South Coast Air Quality Management District Rule 1316, San Joaquin Valley Air Pollution Control District Rule 2201, Antelope Valley Air Quality Management District Regulation XIII, and Mojave Desert Air Quality Management District Regulation XIII (implementation of December 2002 amendments to the federal Clean Air Act).
- Critically reviewed draft permits for several ethanol plants in California, Indiana, Ohio, and Illinois and prepared technical comments.

- Reviewed state-wide average emissions, state-of-the-art control devices, and emissions standards for construction equipment and developed recommendations for mitigation measures for numerous large construction projects.
- Researched sustainable building concepts and alternative energy and determined their feasibility for residential and commercial developments, *e.g.*, regional shopping malls and hospitals.
- Provided comprehensive environmental and regulatory services for an industrial laundry chain. Facilitated permit process with the South Coast Air Quality Management District. Developed test protocol for VOC emissions, conducted field tests, and used mass balance methods to estimate emissions. Reduced disposal costs for solvent-containing waste streams by identifying alternative disposal options. Performed health risk screening for air toxics emissions. Provided permitting support. Renegotiated sewer surcharges with wastewater treatment plant. Identified new customers for shop-towel recycling services.
- Designed computer model to predict performance of biological air pollution control (biofilters) as part of a collaborative technology assessment project, co-funded by several major chemical manufacturers.
- Experience using a wide range of environmental software, including air dispersion models, air emission modeling software, database programs, and geographic information systems.

### **Water Quality and Pollution Control**

Experience in water quality and pollution control, including surface water and ground water quality and supply studies, evaluating water and wastewater treatment technologies, and identifying, evaluating and implementing pollution controls. Some typical projects include:

- Evaluated impacts of on-shore oil drilling activities on large-scale coastal erosion in Nigeria.
- For a 500-MW combined-cycle power plant, prepared a study to evaluate the impact of proposed groundwater pumping on local water quality and supply, including a nearby stream, springs, and a spring-fed waterfall. The study was docketed with the California Energy Commission.
- For a 500-MW combined-cycle power plant, identified and evaluated methods to reduce water use and water quality impacts. These included the use of zero-liquid-discharge systems and alternative cooling technologies, including dry and parallel wet-dry cooling. Prepared cost analyses and evaluated impact of options on water resources. This work led to a settlement in which parallel wet dry cooling and a crystallizer were selected, replacing 100 percent groundwater pumping and wastewater disposal to evaporation ponds.
- For a homeowner's association, reviewed a California Coastal Commission staff report on the replacement of 12,000 linear feet of wooden bulkhead with PVC sheet pile armor. Researched and evaluated impact of proposed project on lagoon water quality, including sediment resuspension, potential leaching of additives and sealants, and long-term stability. Summarized results in technical report.

### **Applied Ecology, Industrial Ecology and Risk Assessment**

Experience in applied ecology, industrial ecology and risk assessment, including human and ecological risk assessments, life cycle assessment, evaluation and licensing of new chemicals, and fate and transport studies of contaminants. Experienced in botanical, phytoplankton, and intertidal species identification and water chemistry analyses. Some typical projects include:

- Conducted technical, ecological, and economic assessments of product lines from agricultural fiber crops for European equipment manufacturer; co-authored proprietary client reports.
- Developed life cycle assessment methodology for industrial products, including agricultural fiber crops and mineral fibers; analyzed technical feasibility and markets for thermal insulation materials from natural plant fibers and conducted comparative life cycle assessments.
- For the California Coastal Conservancy, San Francisco Estuary Institute, Invasive Spartina Project, evaluated the potential use of a new aquatic pesticide for eradication of non-native, invasive cordgrass (*Spartina spp.*) species in the San Francisco Estuary with respect to water quality, biological resources, and human health and safety. Assisted staff in preparing an amendment to the Final EIR.
- Evaluated likelihood that organochlorine pesticide concentrations detected at a U.S. naval air station are residuals from past applications of these pesticides consistent with manufacturers' recommendations. Retained as expert witness in federal court case.
- Prepared human health risk assessments of air pollutant emissions from several industrial and commercial establishments, including power plants, refineries, and commercial laundries.
- Managed and conducted laboratory studies to license pesticides. This work included the evaluation of the adequacy and identification of deficiencies in existing physical/chemical and health effects data sets, initiating and supervising studies to fill data gaps, conducting environmental fate and transport studies, and QA/QC compliance at subcontractor laboratories. Prepared licensing applications and coordinated the registration process with German environmental protection agencies. This work led to regulatory approval of several pesticide applications in less than six months.
- Designed and implemented database on physical/chemical properties, environmental fate, and health impacts of pesticides for a major multi-national pesticide manufacturer.
- Designed and managed experimental toxicological study on potential interference of delta-9-tetrahydrocannabinol in food products with U.S. employee drug testing; co-authored peer-reviewed publication.
- Critically reviewed and prepared technical comments on applications for certification for several natural-gas fired, solar, and geothermal power plants and transmission lines in California permitted by the California Energy Commission. The comments addressed avian collisions and electrocution, construction and operational noise impacts on wildlife, risks from brine ponds, and impacts on endangered species.
- For a 180-MW geothermal power plant, evaluated the impacts of plant construction and operation on the fragile desert ecosystem in the Salton Sea area. This work included baseline noise monitoring and assessing the impact of noise, brine handling and disposal, and air emissions on local biota, public health, and welfare.

Petra Pless, D.Env.

- Designed research protocols for a coastal ecological inventory in Southern California; developed sampling methodologies, coordinated field sampling, determined species abundance and distribution in intertidal zone, and conducted statistical data analyses.
- Designed and conducted limnological study on effects of physical/chemical parameters on phytoplankton succession; performed water chemistry analyses and identified phytoplankton species; co-authored two journal articles on results.

### **PRO BONO ACTIVITIES**

Founding member of "SecondAid," a non-profit organization providing tsunami relief for the recovery of small family businesses in Sri Lanka. ([www.secondaid.org](http://www.secondaid.org).)

### **PUBLICATIONS & RECOMMENDATIONS**

Available upon request.

**CONFIDENTIAL**

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BEFORE THE  
FEDERAL RAILROAD ADMINISTRATION

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DOCKET NO. FRA 2014--0011--N--13:  
PROPOSED AGENCY INFORMATION COLLECTION ACTIVITIES;  
COMMENT REQUEST

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COMMENTS OF THE  
ASSOCIATION OF AMERICAN RAILROADS  
AND THE AMERICAN SHORT LINE AND  
REGIONAL RAILROAD ASSOCIATION

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The Association of American Railroads (AAR) and the American Short Line and Regional Railroad Association (ASLRRA),<sup>1</sup> on behalf of themselves and their member railroads, submit the following comments in opposition to FRA's request for OMB approval of the information collection activities associated with Emergency Order Docket No. DOT-OST-2014-0067.<sup>2</sup> AAR and ASLRRA suggest that the Emergency Order (EO) be withdrawn because it has resulted in information confidential from security, safety, and business perspectives being made public and because the objective of the emergency order, informing government officials of the transportation of Bakken crude oil through their jurisdictions, was already being met, and would continue to be met, if the EO is withdrawn. AAR and ASLRRA also request confidential treatment of this submission due to the discussion of the enclosures from the Federal Bureau of

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<sup>1</sup> AAR is a trade association whose membership includes freight railroads that operate 83 percent of the line-haul mileage, employ 95 percent of the workers, and account for 97 percent of the freight revenues of all railroads in the United States; and passenger railroads that operate intercity passenger trains and provide commuter rail service. ASLRRA is a trade association whose membership includes 450 short line and regional railroads.

<sup>2</sup> See 79 Fed. Reg. 36,860 (June 30, 2014).

Investigation (FBI) and the Transportation Security Administration (TSA), both of which have been classified by the agencies as “For Official Use Only.”

The EO requires that railroads make crude oil routing information available to State Emergency Response Commissions (SERCs). Specifically, the EO requires that a railroad provide to the SERC in each state in which it operates trains transporting 1,000,000 gallons or more of Bakken crude oil information on the number of such trains traveling per week through each county and the routes over which the trains operate.

While AAR and ASLRRRA do not believe it was DOT’s intention, the EO resulted in the information required to be disclosed by the EO to be made publicly available. Such a result is hardly a necessary consequence of informing government officials of the transportation of Bakken crude oil through their jurisdictions. Railroads were already informing government officials of the hazardous materials transported through their communities pursuant to AAR’s circular governing operating practices for the transportation of hazardous materials, OT-55.<sup>3</sup>

### **I. Security Interests Require that Crude Oil Route Information be Confidential**

There is no doubt that crude oil routing information is sensitive information from a security perspective. On July 18, 2014, the Federal Bureau of Investigation issued a Private Sector Advisory (Attachment A) warning of the possibility of environmental extremists taking action against the transportation of crude oil by rail. The Advisory states: “Extremists may use publically available information to identify potential transportation routes.”

It is not just environmental extremists who pose a threat to the transportation of crude oil by rail. Foreign terrorists are also a risk. Two publications reportedly by Al Qaeda in the Arabian Peninsula contain threats against crude oil trains. An August 2014 publication, *Palestine: betrayal of the guilty conscience*, discusses how to make bombs and specifically lists “oil tankers and trains” as targets.<sup>4</sup> In March 2014, *Inspire* magazine specifically referred to “Train crude oil” in

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<sup>3</sup> AAR, “Circular OT-55-N: Recommended Railroad Operating Practices For Transportation of Hazardous Materials,” p. 3 (Aug. 5, 2013).

<sup>4</sup> See [http://sitemultimedia.org/docs/SITE\\_AQAP\\_Palestine\\_Betrayal\\_Conscience.pdf](http://sitemultimedia.org/docs/SITE_AQAP_Palestine_Betrayal_Conscience.pdf), p. 37.

highlighting targets.<sup>5</sup> Furthermore, information from Osama Bin Laden's compound indicates that Al-Qaeda has contemplated attacks on trains.<sup>6</sup>

It should come as no surprise, then, that the Transportation Security Administration (TSA) has released an Intelligence Note that "highlights plans to attack freight rail tank cars overseas with magnetic improvised explosive devices" (Attachment B). TSA has also used attacks on tank cars transporting flammable liquids as one of its projected threat scenarios.

Making crude oil routing information publicly available is completely inconsistent with the assessment of the FBI and TSA that crude oil trains might be targets. The public availability of this information elevates security risks by making it easier for someone intent on causing harm to target trains transporting crude oil. A person aspiring to commit harm needs an opportunity to execute. Providing more specific information than the person would otherwise have on crude oil routes would help provide that opportunity.

## **II. The EO Results in the Public Disclosure of Sensitive Information**

Disclosure of crude oil routes to SERCs as required by the EO has proven antithetical to the security concerns expressed by the FBI and TSA. SERCs are established under the Emergency Planning and Community Right-to-Know Act of 1986.<sup>7</sup> A number of states contend that under their laws, SERCs must disclose submitted information to the public.

In mandating the disclosure of information to the SERCs, DOT stated that the information

is intended for those persons with a need-to-know; that is first responders at the State and local level, as well [as] other appropriate emergency response planners. DOT expects the SERCs to treat the data as confidential, providing it only to those with a need-to-know,

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<sup>5</sup> See <https://azelin.files.wordpress.com/2014/04/inspire-magazine-issue-12.pdf>.

<sup>6</sup> See <http://www.cbc.ca/news/world/bin-laden-raid-info-shows-interest-in-u-s-trains-1.1062600>.

<sup>7</sup> 42 U.S.C. §§ 11001 et seq.

and with the understanding that recipients of the data will continue to treat it as confidential.<sup>8</sup>

Unfortunately, insofar as confidentiality is concerned, the result of the EO has proven inconsistent with DOT's intent. Since SERCs in many states have contended they have no choice but to make the routing information public because of the laws governing SERCs, the SERCs have refused to keep crude oil routing information confidential.

### **III. The EO Is Not Serving a Useful Purpose**

The EO is not needed to provide emergency responders with notice that crude oil shipments are being transported through their communities because railroads have been providing that information for many years. OT-55 provides that railroads will give emergency response agencies and planning groups information on the hazardous materials transported through their communities. Class I railroads and short lines have notified communities as provided by OT-55.

For emergency response planning purposes, there is no need to disclose the actual route taken by a crude oil train. Notifying an emergency responder of the hazardous materials transported through the community, including crude oil, is sufficient.

### **IV. The Routing Information is Also Confidential Commercial Information**

Railroading is a highly competitive business. A railroad's traffic is susceptible to shifting to competing railroads and competing modes. As is the case with any company engaged in a competitive business, railroads keep their customers confidential to the extent possible. Forced disclosure of routing information provides a means for competitors to ascertain a railroad's customers and constitutes the disclosure of confidential commercial information.

### **V. OMB Should Reject the Information Collection Request**

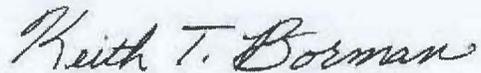
AAR and ASLRRRA emphasize they support providing government officials with information on the hazardous materials being transported through their communities, including, of course, Bakken crude oil. However, the EO is not needed to accomplish that objective, as demonstrated by longstanding railroad

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<sup>8</sup> FRA, "Frequently Asked Questions on DOT's May 7, 2014, Emergency Order (EO) Regarding Notification to Communities of Bakken Crude Oil Shipments," [www.regulations.gov](http://www.regulations.gov), Document No. DOT-OST-2014-0067-0003.

practice. Since the objective of the EO is already being met, OMB should refuse approval of the information collection request on the grounds that it is antithetical to the nation's safety and security interests and compromises the railroads' legitimate commercial interests.

Respectfully submitted,



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August 29, 2014

***Private Sector Advisory***

18 July 2014

***(U//FOUO) Increased Use of Railways to Transport Crude Oil May Lead to Acts of Environmental Extremism***

(U//FOUO) The use of railways to transport crude oil will likely increase as shale oil production in the United States and tar sands oil production in Canada increases. Environmental extremists believe the use of fossil fuels contributes to the destruction of our environment and may believe that rail transport of crude oil creates the potential for environmental hazardous train derailments and oil spills.

(U//FOUO) Currently there is no specific information to indicate environmental extremists are planning or will target railways used to transport crude or shale oil. Criminal acts, however, may occur and violate federal law if extremists perceive low-level criminal actions are ineffective in gaining public support against the use of railways or if regulatory or legislative measures are perceived as too slow or ineffective. Should criminal acts occur, it is more likely environmental extremists would attempt to delay or disrupt rail traffic to cause economic losses from the interruption or garner media attention rather than to directly sabotage a rail line that could cause a fuel spill and more environmental harm. Extremists may use publically available information to identify potential transportation routes or to target new or existing terminals, facilities, businesses, or funding entities associated with the oil industry through actions intended to cause economic losses.

(U) Environmental extremists assert criminal actions are necessary to end perceived destruction or exploitation of our natural resources and ecosystems. Possible indicators of potential criminal activity by environmental extremists include:

- (U) Graffiti opposed to the use of trains to transport crude or shale oil near railways or oil terminals;
- (U) Low-level criminal activity, minor acts of vandalism, or tactics to obstruct, disrupt, or interrupt rail traffic to delay crude oil transportation;
- (U) Threatening telephone calls or e-mails to businesses or contractors associated with the oil industry referencing oil by rail or other environmental concerns;
- (U) The use of social media platforms like Twitter or Facebook to track routes or share targeted rails or facilities;
- (U) Cyber attacks or attempted cyber attacks against businesses associated with the oil industry;
- (U) Signs of trespassing near oil terminals or railways used to transport crude oil suggesting pre-incident surveillance; and
- (U) Discovery of materials which could be used to construct improvised incendiary or explosive devices near railways used to transport shale or crude oil.

(U) FBI Joint Terrorism Task Forces (JTTFs) operate in most major cities. Individuals who obtain information or have identified leads regarding domestic terrorism-related activity are requested to contact the JTTF located in their area.

(U) This product has been prepared by the FBI Counterterrorism Division, Counterterrorism Analysis Section in coordination with the FBI Criminal Investigative Division, Criminal Intelligence Section. Comments and queries may be addressed to the Section Chief at 202-324-3000 or via e-mail at [FBI\\_CTAS@ic.fbi.gov](mailto:FBI_CTAS@ic.fbi.gov).



31 March 2014

**(U) Situational Awareness: Potential Threat to Freight Rail**

*(U//FOUO) This Transportation Security Administration's Office of Intelligence and Analysis (TSA-OIA) Note highlights plans to attack freight rail tank cars overseas with magnetic improvised explosive devices (IEDs).*

(U) According to January 2014 press reports, the currently detained Indian Mujahideen (IM) co-founder Yasin Bhatkal revealed IM intended to use "magnetic explosive devices" against freight rail tank cars, hoping to turn freight trains to giant firestorms.<sup>1</sup>

(U) A police raid conducted after Bhatkal's August 2013 capture led to the discovery of IM members preparing magnetic IEDs (also known as "sticky bombs") and more than 50 magnets.<sup>2,3</sup>

**(U) Past "Sticky Bomb" Attacks on Transportation**

(U) From 2008 to 2014, mass transit busses were successfully targeted 30 times using magnetic IEDs.<sup>4</sup> In an effort to avoid detection, the devices are sometimes painted to match the surface to which they are attached.<sup>5</sup>

TSA-OIA is not aware of a past attempt to place a magnetic IED on a train tank car.



**(U) Translations**

الحشوات اللاصقة (U)	Title – "Adhesive Charge"
صاعق كهربائي	(U) Line 1 – "Electric detonator"
بطارية 9 فولت	Line 2 – "9 Volt battery"
ساعة توقيت	Line 3 – "Stopwatch"
مغناطيس قوي	Line 4 – <unclear>
عازل من الورق	Line 5 – "Powerful magnet"
	Line 6 – "Paper insulation"



## (U) Outlook

(U) Although extremist media outlets provide an extensive amount of information on producing magnetic IEDs inexpensively, TSA-OIA is not aware of any plots involving the use of these devices within the Homeland.<sup>6</sup>

*(U//FOUO) Prepared by the TSA Office of Intelligence and Analysis. For dissemination questions, contact the TSA-OIA Production Support Branch, [TSA.OIA.Production@tsa.dhs.gov](mailto:TSA.OIA.Production@tsa.dhs.gov).*

**(U) TSA Office of Security Policy and Industry Engagement (TSA-OSPIE) recommends the following mitigation measures:**

- (U//FOUO) Look for anything that seems out of place or out of the ordinary
- (U//FOUO) Report signs of tampering, suspicious objects, and suspicious human activity
- (U//FOUO) DO NOT touch a suspicious object or approach a threatening person
- (U//FOUO) DO NOT use an electronic, cell or radio equipment within 300 feet of the object

**(U) Tracked by: HSEC-8.6; HSEC-8.8; HSEC-8.10**

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<sup>1</sup> (U) Hindustantimes.com; "(U) IM plans to convert oil carrying goods train into sticky bombs;" 16 Jan 2014; (U)

<sup>2</sup> (U) Hindustantimes.com; "(U) IM plans to convert oil carrying goods train into sticky bombs;" 16 Jan 2014; (U)

<sup>3</sup> (U) reddiff.com; "(U) Indian Mujahideen likely to strike in May;" 24 Jan 2014; (U)

<sup>4</sup> (U) start.umd.edu/gtd; National Consortium for the Study of Terrorism and Responses to Terrorism (START); Global Terrorism Database; 2012; (U)

<sup>5</sup> (U) NYtimes.com; "(U) Militants turn to small bombs in Iraq attacks;" 13 Nov 2008; (U)

<sup>6</sup> (U) SITEIntelligence; "(U) JSM ISI Sticky Bomb Manual;" 18 Feb 2011; (U)

**Bloomberg**Business

# CP Rail CEO Says Biggest Crude-by-Rail Fear Is Terrorism

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Scott Deveau

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Hunter Harrison, Canadian Pacific Railway Ltd.'s chief executive officer, said his greatest fear in moving crude by rail is the prospect of a terrorist attack on the company's trains.

"That's what concerns me more because it can be planned to do the worst possible damage," Harrison told reporters after a speech in Toronto.

Canadian and U.S. transportation regulators are drafting tougher standards for oil tank cars as record volumes of the commodity are moving across the continent from oil fields in Western Canada and the U.S. New regulation was prompted by the explosion in Lac Megantic, Quebec, in 2013 that killed 47 people.

There have been recent incidents too. Last month, a CSX Corp. train carrying crude derailed and exploded in West Virginia shortly after a derailed Canadian National Railway Co. train caught fire near Gogama, Ontario.

CP has taken "quantum leaps" to reduce spills by improving the quality of the rail cars it runs and the routes they take to ensure they run through less populated areas, Harrison said. The company has tried to move crude shipments out of major centers, like Chicago, as much as possible.

Harrison said if a third party or a terrorist decided to target the trains though it would be hard to protect against.

"It's a serious situation that we need to address," he said, adding that it is difficult to get those changes done in a timely fashion in Ottawa and Washington.

## Greatest Fear

CP staff is being trained in the meantime how best to react as first responders and to work with local authorities.

The Canadian government is overhauling its safety rules for crude oil shipments, creating a [disaster fund](#) and requiring railways to carry as much as C\$1 billion (\$800 million) in insurance, depending on the volume and type of dangerous goods being carried, among other safety measures.

Harrison said he agreed with the federal Transportation Safety Board conclusion last month that the latest rail car standard implemented after the Lac Megantic disaster may [not go far enough](#). The board noted during its investigation into the CN derailment near Gogama on Feb. 14 that the derailed cars involved in the blaze



**OFFICE OF INSPECTOR GENERAL**

**U.S. Customs and Border  
Protection Did Not  
Effectively Target and  
Examine Rail Shipments  
From Canada and Mexico**



**Homeland  
Security**

**March 3, 2015  
OIG-15-39**



# HIGHLIGHTS

## ***U.S. Customs and Border Protection Did Not Effectively Target and Examine Rail Shipments From Canada and Mexico***

**March 3, 2015**

### **Why We Did This**

U.S. Customs and Border Protection (CBP) is the frontline border security agency within Department of Homeland Security (DHS) charged with the priority mission of preventing terrorists and terrorist weapons from entering the United States, as well as facilitating the flow of legitimate trade and travel. We conducted this audit to determine whether CBP effectively targets and examines high-risk rail shipments from Mexico and Canada.

### **What We Recommend**

We made six recommendations which, when implemented, should improve CBP's processing of rail cargo from Mexico and Canada.

#### **For Further Information:**

Contact our Office of Public Affairs at (202) 254-4100, or email us at [DHS-OIG.OfficePublicAffairs@oig.dhs.gov](mailto:DHS-OIG.OfficePublicAffairs@oig.dhs.gov)

### **What We Found**

CBP did not effectively target and examine rail shipments entering the United States from Mexico and Canada. Specifically, U.S. Customs and Border Protection Officers (CBPO) did not always target shipments using the mandatory Automated Targeting System (ATS) targeting criteria. CBPOs also did not always use the required radiation detection equipment to examine high-risk shipments. Finally, CBPOs did not always record the results of their rail cargo examinations in the Cargo Enforcement Reporting and Tracking System (CERTS).

CBPOs were unaware of the correct targeting criteria or inadvertently used inappropriate criteria. In addition, one port did not have the required radiation detection equipment for its rail team, and CBPOs at two other ports used Personal Radiation Detectors to examine shipments. Rail CBPOs also received insufficient training on the use of ATS and CERTS. Finally, Supervisory CBPOs did not provide sufficient oversight to ensure CBPOs followed CBP policy. As a result, CBP may have failed to target or properly examine rail shipments that were at an increased risk to contain contraband or dangerous materials. In addition, CBP has no assurance that decisions to release these high-risk shipments into U.S. commerce were appropriate.

### **CBP Response**

CBP concurred with all of our recommendations.



# OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

## Table of Contents

Background.....	1
Results of Audit.....	3
CBPOs Did Not Always Effectively Target Rail Shipments.....	4
CBPOs Did Not Always Effectively Examine Rail Shipments.....	5
CBPOs Did Not Consistently Record Examination Results In CERTS.....	6
Recommendations.....	8

## Appendixes

Appendix A: Transmittal to Action Official .....	12
Appendix B: Scope and Methodology .....	13
Appendix C: CBP Comments to the Draft Report.....	15
Appendix D: Office of Audits Major Contributors to This Report ..	18
Appendix E: Report Distribution.....	19

## Abbreviations

ATS	Automated Targeting System
CBP	U.S. Customs and Border Protection
CBPO	Customs and Border Protection Officer
CERTS	Cargo Enforcement Reporting and Tracking System
DHS	U.S. Department of Homeland Security
FY	fiscal year
GAO	Government Accountability Office
NII	non-intrusive inspection
NTC	National Targeting Center
OFO	Office of Field Operations (CBP)
OIG	Office of Inspector General
OIIL	Office of Intelligence and Investigative Liaison
OIT	Office of Information Technology
RIID	Radiation Isotope Identifier Device
RTU	Rail Targeting Unit
RVACIS	Rail Vehicle and Cargo Inspection System



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Department of Homeland Security

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### Background

U.S. Customs and Border Protection (CBP) is the frontline border security agency within the U.S. Department of Homeland Security (DHS) charged with the priority mission of preventing terrorists and terrorist weapons from entering the United States, as well as facilitating the flow of legitimate trade and travel. CBP prevents narcotics, agricultural pests, and smuggled goods from entering the country; and also identifies and arrests individuals with outstanding criminal warrants.

DHS Office of Inspector General (OIG) is required by Section 809 (g) of the *Coast Guard and Maritime Transportation Act of 2004* (Public Law 108-293) to conduct an annual audit of the CBP's Automated Targeting System (ATS). This year, we focused our efforts on determining whether CBP effectively targets and examines high-risk rail shipments from Mexico and Canada.

U.S. trade with Mexico by rail more than tripled from \$20 billion in fiscal year (FY) 1999 to \$69 billion in FY 2013. During that same time period, U.S. trade with Canada by rail increased from \$57 billion in FY 1999 to \$105 billion in FY 2013. According to CBP-provided data, during FYs 2012 and 2013, ports of entry with rail crossings processed nearly 6 million cargo shipments.

CBP operates the ATS, a decision support tool that compares traveler, cargo, and conveyance information against law enforcement, intelligence, and other enforcement data using risk-based targeting scenarios and assessments. Within ATS is ATS-N, a subsystem module that evaluates all cargo to identify high-risk inbound cargo for examinations. ATS-N uses numerous rule and targeting criteria to analyze information from manifest, importer security filing and entry data, and individuals, to prioritize shipments for review, and to generate recommended targets by scoring each shipment.

CBP policy requires ports to use large-scale non-intrusive inspection (NII) equipment when examining shipments ATS scores as high risk. Inbound trains pass through a Rail Vehicle and Cargo Inspection System, or RVACIS, (NII equipment) at most rail cargo ports of entry.<sup>1</sup> The RVACIS uses gamma rays to produce images of railcars for detection of contraband such as drugs, undeclared merchandise, and weapons. The gamma ray source and detectors are stationary as the train moves through the system. There is a designated personnel exclusion zone for personnel safety.

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<sup>1</sup> For ports without large-scale NII technology, or if the technology is not operational, a physical examination of the container and cargo is required in addition to scanning by radiation detection equipment.



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**Figure 1: RVACIS equipment at Detroit, MI, Port of Entry, Windsor, Ontario, Canada**

*Source: OIG photo.*

CBP policy also requires that ports use radiation detection equipment when examining high-risk rail shipments. Specifically, ports must use a Radiation Isotope Identifier Device (RIID) to satisfy the radiation scanning requirement. A RIID is a handheld device used for locating a radiation source and determining the specific isotope encountered. It is capable of transferring the isotope information to off-site technical experts via computerized data transfer.

The ATS-N module also includes the Cargo Enforcement Reporting and Tracking System (CERTS) sub-module. Customs and Border Protection Officers (CBPO) are required to use CERTS to record accurate examination results, including the examination tools used. CERTS establishes a historical database linking targeting reasons, risks, issues, actions, decisions, events, and past and present findings with commodities, shipping parties, and manifest information.

CBP's National Targeting Center is one of the operational units that use the ATS to support CBPOs at ports of entry. A part of the CBP's Office of Field Operations, the National Targeting Center is a significant consumer of intelligence information, which, in conjunction with other available information, it uses to conduct analysis and base recommendations for additional inspection by CBP.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

The Office of Intelligence and Investigative Liaison (OIIL) serves as a coordinating facilitator that integrates CBP's diverse intelligence capabilities into a single cohesive intelligence enterprise. OIIL supports CBP's mission through a multi-layered approach that includes collecting and analyzing advance traveler and cargo information, using enhanced law enforcement technical collection capabilities, providing timely analysis of intelligence and information, and establishing intelligence-sharing relationships with Federal, state, local, and tribal agencies and intelligence agencies. OIIL monitors and analyzes ATS-generated shipment scores to ensure CBP rail targeting focuses on cargo identified as high risk for terrorism.

CBP established the Rail Targeting Unit (RTU) in 2011. CBP and the rail industry collaborate to help enhance the ATS systems to identify rail shipments of interest. The goal of RTU is to target and identify high-risk shipments in the rail environment by using the rail industry's proprietary data systems. These data systems enable RTU to obtain real-time access to industry's logistics data and rail car imagery, which enhances data in the ATS. RTU is staffed with personnel from CBP and the rail industry and makes examination referrals to ports of entry via the RTU mailbox and telephonically.<sup>2</sup>

### Results of Audit

CBP did not effectively target and examine rail shipments entering the United States from Mexico and Canada. Specifically, CBPOs did not always target shipments using the mandatory ATS weight sets (targeting criteria). CBPOs also did not always use the required radiation detection equipment to examine high-risk shipments. Finally, CBPOs did not always record the results of their rail cargo examinations in the CERTS.

These issues occurred because CBPOs were unaware of the correct targeting criteria or inadvertently used inapplicable criteria. In addition, one port did not have the required radiation detection equipment for its rail team, and CBPOs at two other ports used Personal Radiation Detectors to examine shipments. Rail CBPOs also received insufficient training on the use of ATS and CERTS. Finally, Supervisory CBPOs did not provide sufficient oversight to ensure CBPOs followed CBP policy.

As a result of these deficiencies, CBPOs may have failed to require examinations of rail shipments that were at a higher risk to contain contraband, dangerous goods, or weapons of mass destruction. CBP may also have failed to detect potential instruments of terrorism or dangerous materials from entering the United States. We were unable to determine

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<sup>2</sup> RTU targeting is distinct from the targeting (shipment scoring) that ports of entry perform.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

whether all high-risk shipments were examined in accordance with CBP policies. Accordingly, CBP has no assurance that decisions to release these high-risk shipments into U.S. commerce were appropriate. Finally, because CERTS data is used to support the ongoing evaluation and improvement of targeting and examination methodologies, inaccurate or incomplete data limits CBP's ability to operate and improve its ATS targeting capabilities effectively.

### CBPOs Did Not Always Effectively Target Rail Shipments

CBPOs did not always effectively target rail shipments for examination. Specifically, CBPOs did not always use the mandatory ATS targeting criteria to score rail shipments. During FYs 2012 and 2013, rail ports processed more than 5.9 million shipments. We randomly selected a sample of 254 high-risk rail shipments from six ports that processed a high volume of the overall FY 2012 and 2013 shipments. CBPOs used incorrect targeting criteria on 59 of 254 (23 percent) shipments we reviewed.

**Table 1. Rail Shipments Targeted Using Incorrect Criteria**

Port of Entry	Number of Shipments Reviewed	Number of Shipments CBPOs Used Incorrect Targeting Criteria	Percentage of Shipments CBPOs Used Incorrect Targeting Criteria
Port 1	30	13	43%
Port 2	60	9	15%
Port 3	25	0	0%
Port 4	40	1	3%
Port 5	43	0	0%
Port 6	<u>56</u>	<u>36</u>	<u>64%</u>
Total	<u>254</u>	<u>59</u>	<u>23%</u>

Source: OIG Analysis.

Effective August 26, 2009, ports of entry with rail crossings were required to use specific ATS targeting criteria for threshold targeting. If the shipment meets or exceeds a specific ATS threshold or score after applying this rail criteria, the shipment is determined to be "high risk" and subject to an examination. CBP's Office of Intelligence Operations and Coordination developed the rail targeting criteria in conjunction with the field offices.<sup>3</sup>

<sup>3</sup> On June 29, 2011, due to a reorganization, the Office of Intelligence Operations and Coordination was renamed the Office of Intelligence and Investigative Liaison.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

CBPOs said they were either unaware of the correct criteria, insufficiently trained in using ATS, or inadvertently used inapplicable criteria. Supervisory CBPOs also did not ensure CBPOs were using the correct targeting criteria. As a result, CBPOs may have failed to require examinations of rail shipments that were at a higher risk to contain contraband, dangerous goods, or weapons of mass destruction.

### CBPOs Did Not Always Effectively Examine Rail Shipments

CBPOs did not always use the required radiation detection equipment to examine high-risk shipments. Specifically CBPOs did not use a RIID on 160 of the 222 shipments (72 percent).

**Table 2. Rail Shipments Not Examined Using a RIID**

Port of Entry	Number of Shipments Requiring Examination by NII and RIID	Number of Shipments Not Examined by RIID	Percentage of Shipments Not Examined by RIID
Port 1	30	23	77%
Port 2	44	34	77%
Port 3	25	2	8%
Port 4	33	33	100%
Port 5	38	16	42%
Port 6	<u>52</u>	<u>52</u>	<u>100%</u>
Total	<u>222</u> <sup>4</sup>	<u>160</u>	<u>72%</u>

Source: OIG Analysis.

Even though there is no specific national rail examination policy, Customs Directive 3340-036A, dated May 2012, requires that CBPOs conduct all mandated ATS targeted examinations using available large-scale NII technology. The directive also requires the use of a RIID to fulfill the radiation screening requirement. A Personal Radiation Detector does not fulfill the radiation detection requirement.<sup>5</sup>

<sup>4</sup> Not all shipments in our sample of 254 were subject to an examination. Fourteen shipments did not enter the United States. For 18 shipments, the ATS score fell below the targeting threshold before the shipment crossed. Accordingly, only 222 of the shipments were subject to a radiation scan using a RIID.

<sup>5</sup> A Personal Radiation Detector is a small, self-contained safety device used for detecting gamma radiation.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

CBP officials at one port said the rail unit did not have a dedicated RIID. Additionally, CBPOs at two other ports said they only used a RIID when their Personal Radiation Detector alerted them to higher levels of radiation, or believed Personal Radiation Detectors were an acceptable way to examine high-risk shipments. As a result, CBP may have failed to detect potential instruments of terrorism or dangerous materials from entering the United States during examinations of high-risk rail shipments.

### **CBPOs Did Not Consistently Record Examination Results In CERTS**

CBP officers did not always record the results of their rail shipment examinations in CERTS. Specifically, CBPOs did not create CERTS records for either the NII or physical examinations the port conducted on high-risk rail shipments. This issue occurred because some CBPOs were not sufficiently trained to use CERTS. In addition, Supervisory CBPOs were not ensuring CBPOs completed CERTS records. As a result, we were unable to determine whether CBPOs examined all high-risk shipments in accordance with CBP policies. Accordingly, CBP does not have assurance that decisions to release these high-risk shipments into U.S. commerce were appropriate.

CERTS is a sub-module within ATS that allows CBPOs to record all examinations and any applicable findings of cargo and cargo conveyances. Rail ports were mandated to use CERTS for recording examination results and findings effective April 13, 2011. CERTS guidance requires that CBPOs create CERTS records to document the results of both NII and physical examinations. CBP Supervisors are responsible for ensuring that CBPOs input all cargo examinations and findings data into CERTS within 4 hours after completion of the examination.

CBPOs did not create the NII examination records for 153 of the 222 (69 percent) shipments that required CERTS records. We also identified at least 36 of the 222 shipments (16 percent) in which CBPOs conducted physical examinations but did not create a record of the examinations in CERTS.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

**Table 3. Rail Shipments CBPOs Did not Create NII or Physical Examination Records**

Port of Entry	Number Shipments in Sample that required CERTS record	Number of Shipments for which CBPO did not create required NII record	Number of Shipments for which CBPO did not create required Physical Examination record
Port 1	30	23	7
Port 2	44	44	12
Port 3	25	1	1
Port 4	33	31	3
Port 5	38	25	12
Port 6	<u>52</u>	<u>29</u>	<u>1</u>
Total	<u>222<sup>6</sup></u>	<u>153</u>	<u>36</u>

Source: OIG Analysis.

CBPOs should have created NII examination records in CERTS for the 222 high-risk rail shipments that entered the United States. At most rail ports, including the six we visited, rail cars pass through an RVACIS machine either immediately before or after entering the United States. Therefore, unless the RVACIS was not operational at the time the train entered the United States, all rail cars, including the ones containing the high-risk shipments, will undergo the NII examination.

We could not determine the actual number of physical examinations that CBPOs should have recorded in CERTS because there was insufficient evidence available. We determined that CBPOs should have created physical examination records in CERTS for at least 36 of the 222 shipments. For each of these shipments, we reviewed other available information, such as NII Equipment Utilization Reports, ATS or Automated Commercial System Cargo Selectivity records, and internal port records to determine whether CBPOs performed physical examinations.

For example, at one port, we determined that CBPOs conducted a physical examination on at least 7 of the 30 shipments. For 4 of these 7 shipments, ATS notes indicated that CBPOs conducted a visual, physical, or 7-point examination. For 3 of these 7 shipments, the NII CERTS record indicated that CBPOs conducted a physical examination. Thus, although we determined from other available information that the CBPOs conducted a physical examination

<sup>6</sup> Only 222 of the 254 shipments we sampled were subject to CBP's minimum examination requirements. Accordingly, these 222 shipments required CBPOs to create CERTS records.



## OFFICE OF INSPECTOR GENERAL

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of these 7 shipments, they did not create the required physical examination CERTS record.

Some CBPOs received insufficient training on CERTS, and therefore had to rely on the CERTS user's guide and various supplemental training presentations for proper guidance. Supervisory CBPOs did not routinely ensure that CBPOs recorded examination results in CERTS. As identified in CBP's January 30, 2012, *Weekly Muster*, CBP Headquarters was unable to provide hands-on instruction at affected rail ports due to budgetary constraints.

Because CBPOs did not always record examination results in CERTS, we were unable to determine whether all high-risk shipments were examined in accordance with CBP policies. Specifically, we were unable to determine whether CBPOs examined all 222 shipments with NII technology. For 104 of these shipments, our only assurance that the NII examination occurred was to obtain logs showing the equipment was operational on days the shipments crossed into the United States. As a result, CBP has no assurance that decisions to release these high-risk shipments into U.S. commerce were appropriate. In addition, because CERTS data is used to support the ongoing evaluation and improvement of targeting and examination methodologies, inaccurate or incomplete data limits CBP's ability to operate and improve its ATS targeting capabilities effectively.

### Recommendations

We recommend that the Assistant Commissioner, Office of Field Operations:

**Recommendation 1.** Ensure that CBPOs are using the mandatory Automated Targeting System criteria for scoring rail shipments.

**Recommendation 2.** Ensure that Supervisory CBPOs are confirming that rail unit CBPOs are using the correct targeting criteria.

**Recommendation 3.** Ensure that Required Radiation Isotope Identifier Devices are available to rail units and that CBPOs are using them during examinations of high-risk rail shipments.

**Recommendation 4.** Reiterate to Supervisory CBPOs their responsibility for ensuring CBPOs document examination results and findings accurately in the Cargo Enforcement Reporting and Tracking System.

**Recommendation 5.** Provide additional guidance and training to rail unit CBPOs on using the Automated Targeting System criteria for rail shipments



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

and for recording examination results in the Cargo Enforcement Reporting and Tracking System.

**Recommendation 6.** Perform periodic monitoring reviews to ensure ports are complying with CBP policy for targeting and examining rail shipments, and for documenting examination results in Cargo Enforcement Reporting and Tracking System.

### CBP Comments

CBP provided comments on the draft of this report. A copy of the response in its entirety is included in appendix C. CBP also provided technical comments and suggested revisions to our report in a separate document. We reviewed CBP's technical comments and made changes throughout our report where appropriate.

### OIG Analysis of CBP Comments

#### Management Comments to Recommendation #1

**Concur.** CBP's Office of Field Operations (OFO), National Targeting Center (NTC) is drafting an updated, comprehensive National Cargo Targeting Policy which includes mandatory criteria for rail targeting. OFO/NTC anticipates completing and distributing the policy by April 1, 2015.

#### OIG Analysis

We consider CBP's ongoing action responsive to the recommendation; the recommendation is now resolved. The recommendation will remain open until we receive and review the updated National Cargo Targeting Policy.

#### Management Comments to Recommendation #2

**Concur.** The OFO/NTC is drafting an updated, comprehensive National Cargo Targeting Policy which reiterates that supervisory CBPOs are responsible for confirming the use of mandatory rail targeting criteria. Additionally, in accordance with the comprehensive policy, the Port Director or his/her designee will be responsible for ensuring compliance with the policy and for taking corrective actions in response to instances of identified noncompliance. The estimated completion date for this recommendation is April 1, 2015.

#### OIG Analysis

We consider CBP's ongoing action responsive to the recommendation; the recommendation is now resolved. The recommendation will remain open until we receive and review the updated National Cargo Targeting Policy.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

### **Management Comments to Recommendation #3**

**Concur.** CBP said it sent a Radiation Isotope Identifier Device to the port identified in the report as not having one on October 28, 2014. CBP/OFO Non-Intrusive Inspections Division will disseminate a memorandum to all Directors, Field Operations, reminding them that all rail units must have Radiation Isotope Identifier Devices available for use in examining high-risk rail shipments, including rail cars. In addition, the memorandum will remind field personnel that Radiation Isotope Identifier Devices must be used in accordance with established CBP policy. The estimated completion date for this recommendation is March 1, 2015.

### **OIG Analysis**

We consider CBP's ongoing action responsive to the recommendation; the recommendation is now resolved. The recommendation will remain open until we receive and review the memorandum.

### **Management Comments to Recommendation #4**

**Concur.** The OFO/NTC is drafting an updated, comprehensive National Cargo Targeting Policy which reiterates that supervisory CBPOs are responsible for ensuring examination results are properly entered into CERTS. The estimated completion date for this recommendation is April 1, 2015.

### **OIG Analysis**

We consider CBP's ongoing action responsive to the recommendation; the recommendation is now resolved. The recommendation will remain open until we receive and review the updated National Cargo Targeting Policy.

### **Management Comments to Recommendation #5**

**Concur.** The OFO/NTC will develop additional job aids, emphasize existing training material, and disseminate the information to rail unit CBPOs. The OFO/NTC is also drafting an updated, comprehensive National Cargo Targeting Policy, which includes mandatory criteria for rail targeting and the requirement to record examination results into CERTS. The OFO/NTC anticipates completing and disseminating the updated policy by April 1, 2015.

### **OIG Analysis**

We consider CBP's ongoing action responsive to the recommendation; the recommendation is now resolved. The recommendation will remain open until we receive and review the additional job aids and the updated National Cargo Targeting Policy.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

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### **Management Comments to Recommendation #6**

**Concur.** The OFO/NTC, in conjunction with the Office of Information and Technology (OIT) will develop system enhancements to CERTS that will enable CERTS to generate reports to identify high-risk shipments not in compliance with policy. Additionally, the new National Cargo Targeting Policy will reflect that the Port Director or his/her designee will be accountable for intermittently reviewing the CERTS reports to identify noncompliance and taking corrective actions in response to instances of identified noncompliance. The estimated completion date for corrective action is June 30, 2015.

### **OIG Analysis**

We consider CBP's ongoing action responsive to the recommendation; the recommendation is now resolved. The recommendation will remain open until we verify the OIT completes the CERTS system enhancements and we receive and review the updated National Cargo Targeting Policy.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

### Appendix A Transmittal to Action Official



#### OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

Washington, DC 20528 / [www.oig.dhs.gov](http://www.oig.dhs.gov)

March 3, 2015

MEMORANDUM FOR: The Honorable R. Gil Kerlikowske  
Commissioner  
U.S. Customs and Border Protection

FROM: John Roth *John Roth*  
Inspector General

SUBJECT: *U.S. Customs and Border Protection Did Not Effectively  
Target and Examine Rail Shipments From Canada and  
Mexico*

Attached for your action is our final report, *U.S. Customs and Border Protection Did Not Effectively Target and Examine Rail Shipments From Canada and Mexico*. We incorporated the formal comments from the U.S. Customs and Border Protection's Assistant Commissioner, Office of Administration, in the final report.

The report contains six recommendations aimed at improving CBP's processing of rail cargo from Mexico and Canada. Your office concurred with all six recommendations. Based on information provided in your response to the draft report, we consider the recommendations resolved and open. Once your office has fully implemented the recommendations, please submit a formal closeout letter to us within 30 days so that we may close the recommendations. The memorandum should be accompanied by evidence of completion of agreed-upon corrective actions and of the disposition of any monetary amounts.

Consistent with our responsibility under the *Inspector General Act*, we will provide copies of our report to appropriate congressional committees with oversight and appropriation responsibility over the Department of Homeland Security. We will post the report on our website for public dissemination.

Please email your responses and closeout requests to [OIGAuditsFollowup@oig.dhs.gov](mailto:OIGAuditsFollowup@oig.dhs.gov).

Please call me with any questions, or your staff may contact Mark Bell, Assistant Inspector General of Audits, at (202) 254-4100.

Attachment



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### **Appendix B**

### **Scope and Methodology**

DHS OIG was established by the *Homeland Security Act of 2002* (Public Law 107-296) by amendment to the *Inspector General Act of 1978*. This is one of a series of audit, inspection, and special reports prepared as part of our oversight responsibilities to promote economy, efficiency, and effectiveness within the Department.

This report provides the results of our work to determine whether CBP effectively targets and examines high-risk rail shipments from Mexico and Canada. Specifically, we determined whether CBP targeted and examined high-risk rail shipments in accordance with CBP policy. We also determined whether CBPOs recorded the results of those examinations in CERTS. In instances which ports waived examinations of high-risk shipments, we verified they followed CBP procedures for approving such waivers.

We obtained and reviewed CBP's national and local policies and procedures for targeting and examining rail shipments, and for documenting the results of cargo examinations in CERTS. We reviewed prior OIG and Government Accountability Office (GAO) reports. We conducted interviews with officials from CBP's Office of Field Operations and Office of Intelligence and Investigative Liaison at Headquarters, and at the National Targeting Center and the Rail Targeting Unit locations in the field.

We visited six ports of entry. We interviewed port management officials and CBPOs assigned to conduct rail targeting and rail cargo examinations. We observed rail unit CBPOs processing inbound rail shipments through ATS. This included observing trains passing through large-scale NII (RVACIS) technology and CBPOs reviewing RVACIS images as the trains entered the United States. We observed CBPOs conducting physical examinations of targeted shipments.

CBP provided rail cargo data from the ATS data warehouse for shipments that ATS scored as high-risk during FYs 2010–13.<sup>7</sup> The data showed that during FYs 2012 and 2013, rail ports processed more than 5.9 million shipments. We conducted limited analysis of this data and concluded it was reliable for the purpose of selecting a sample to accomplish our audit objective. We randomly selected a sample of 254 high-risk rail shipments from the six ports that

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<sup>7</sup> CBP did not mandate the use of CERTS for documenting examination results until April 13, 2011. Accordingly, we eliminated FYs 2010 and 2011 data from our sample selection.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

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processed a high volume of the overall FY 2012 and 2013 shipments. We developed findings and recommendations based on the results of our review. To determine whether CBPOs targeted rail shipments in accordance with CBP policy, we reviewed ATS records for evidence that CBPOs used the mandated ATS targeting criteria to score shipments. To determine whether CBPOs examined rail shipments ATS targeted as high risk in accordance with CBP policy, we reviewed ATS and CERTS records for evidence that CBPOs used both large-scale NII technology (RVACIS equipment) and radiation detection (RIID) equipment. If evidence was not available in ATS and CERTS, we also reviewed other available information such as the Automated Commercial System Cargo Selectivity module, and internal port records such as manual logs, spreadsheets, and NII utilization reports. To determine whether CBPOs recorded examination results in CERTS, we requested and reviewed available CERTS records for the shipments we sampled. Finally, to determine if ports waived examinations of high-risk shipments in accordance with CBP policy, we reviewed documentation to support decisions to waive those examinations.

We conducted this performance audit between February and October 2014 pursuant to the *Inspector General Act of 1978*, as amended, and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based upon our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based upon our audit objectives.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

### Appendix C CBP Comments to the Draft Report

1300 Pennsylvania Avenue NW  
Washington, DC 20229

JAN 12 2015



U.S. Customs and  
Border Protection

MEMORANDUM FOR: Mark Bell  
Assistant Inspector General  
Office of Audits

FROM: Eugene H. Schied   
Assistant Commissioner  
Office of Administration

SUBJECT: CBP Response to OIG Draft Report - Rail Shipments from Canada  
and Mexico

Thank you for the opportunity to review and comment on the Department of Homeland Security (DHS), Office of the Inspector General (OIG) draft report entitled, *U.S. Customs and Border Protection Did Not Effectively Target and Examine Rail Shipments from Canada and Mexico* (14-015-AUD-CBP). The OIG conducted this audit to determine whether U.S. Customs and Border Protection (CBP) effectively targets and examines high-risk rail shipments from Mexico and Canada.

In the draft report the OIG recognizes CBP as the frontline border security agency within the U.S. Department of Homeland Security (DHS) charged with the priority mission of preventing terrorists and terrorist weapons from entering the United States, as well as facilitating the flow of legitimate trade and travel. CBP is committed to this mission and concurs with the OIG's recommendations.

As a result of their findings, the OIG made six recommendations designed to enhance programmatic effectiveness. Please see the following for specific OIG recommendations, as well as, CBP's response and corrective action plan to implement each assigned recommendation.

**Recommendation 1:** Ensure that U.S. Customs and Border Protection officers (CBPOs) are using the mandatory Automated Targeting System (ATS) criteria for scoring rail shipments.

**Response:** Concur. CBP's Office of Field Operations (OFO), National Targeting Center (NTC), is drafting an updated, comprehensive National Cargo Targeting Policy which includes mandatory criteria for rail targeting. OFO/NTC anticipates completing and distributing the Policy by April 1, 2015.

**Estimated Completion Date:** April 1, 2015

**Recommendation 2:** Ensure that Supervisory CBPOs are confirming that rail unit CBPOs are using the correct targeting criteria.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

CBP Response to OIG Draft Report- Rail Shipments From Canada and Mexico

Page 2

**Response:** Concur. The OFO/NTC is drafting an updated, comprehensive National Cargo Targeting Policy which reiterates that supervisory CBPOs are responsible for confirming the use of mandatory rail targeting criteria. Additionally, in accordance with the comprehensive Policy, the Port Director or his/her designee will be responsible for ensuring compliance with the Policy and for taking corrective actions in response to instances of identified non-compliance.

**Estimated Completion Date:** April 1, 2015

**Recommendation 3:** Ensure that Required Radiation Isotope Identifier Devices (RIIDs) are available to rail units and that CBPOs are using them during examinations of high-risk rail shipments.

**Response:** Concur. On October 28, 2014, CBP/OFO Non-Intrusive Inspections Division (NIID) sent one RIID to the location identified by OIG. Additionally, OFO/NIID conducted a nationwide analysis to determine if there were any other ports in need of RIIDs and furnished ports in need with dedicated RIIDs for their rail operations.

By March 1, 2015, OFO/NIID will disseminate a memorandum from the Executive Director, Cargo and Conveyance Security (CCS), to all Directors, Field Operations, reminding them that all rail units within their respective areas of responsibility must have RIIDs available for use in examining high-risk shipments to include rail cars. In addition, the memorandum will remind field personnel that RIIDs must be utilized in accordance with established CBP policy.

**Estimate Completion Date:** March 1, 2015

**Recommendation 4:** Reiterate to Supervisory CBPOs their responsibility for ensuring CBPOs document examination results and findings accurately in the Cargo Enforcement Reporting and Tracking System (CERTS).

**Response:** Concur. The OFO/NTC is drafting an updated, comprehensive National Cargo Targeting Policy which reiterates that supervisory CBPOs are responsible for ensuring examination results are entered properly into CERTS.

**Estimated Completion Date:** April 1, 2015

**Recommendation 5:** Provide additional guidance and training to rail unit CBPOs on using the ATS criteria for rail shipments and for recording examination results in CERTS.

**Response:** By March 1, 2015, the OFO/NTC will develop additional job aids, emphasize existing training material, and disseminate the information to rail unit CBPOs. The OFO/NTC is also drafting an updated, comprehensive National Cargo Targeting Policy, which includes mandatory criteria for rail targeting and the requirement to record examination results into CERTS. The OFO/NTC anticipates completing and disseminating the updated Policy by April 1, 2015.

**Estimated Completion Date:** April 1, 2015



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

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CBP Response to OIG Draft Report- Rail Shipments From Canada and Mexico

Page 3

**Recommendation 6:** Perform periodic monitoring reviews to ensure ports are complying with CBP policy for targeting and examining rail shipments, and for documenting examination results in the CERTS.

**Response:** Concur. The OFO/NTC, in conjunction, with the Office of Information and Technology (OIT) will develop system enhancements to CERTS that will enable CERTS to generate reports to identify high risk shipments not in compliance with policy. The CERTS system enhancements are scheduled to be deployed by the end of June 2015.

Additionally, the OFO/NTC is drafting a current comprehensive National Cargo Targeting Policy that will reflect that the Port Director or his/her designee will be accountable for intermittently reviewing the CERTS reports to identify non-compliance and taking corrective actions in response to instances of identified non-compliance.

**Estimated Completion Date:** June 30, 2015

CBP remains committed to improving its program effectiveness and looks forward to working with you on future homeland security matters. Technical comments have been provided under separate cover.

If you have any questions or would like additional information, please contact me at (202) 344-2300, or have a member of your staff contact Ms. Kathy Dapkins, CBP Audit Liaison, Management Inspections Division at (202) 325-7732.



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### **Appendix D**

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