The physician and health advocate voice for a world free from nuclear threats and a safe, healthy environment for all communities.



December 14, 2017

Physicians for Social Responsibility Los Angeles

SSFL CEQA Comments California Department of Toxic Substances Control 8800 Cal Center Drive Sacramento, CA 95826

Re: Comments on DTSC's Draft DEIR for the Santa Susana Field Laboratory Cleanup and Draft Program Management Plan

Physicians for Social Responsibility-Los Angeles (PSR-LA) is a physician and health professional organization dedicated to protecting public health from nuclear and environmental threats. We have been involved in efforts to clean up the Santa Susana Field Laboratory (SSFL) for over thirty years to ensure that radiological and chemical contamination is remediated in a manner that is fully protective of public health.

Decades of nuclear and aerospace activities, accidents, spills and releases have left SSFL highly contaminated with dangerous radionuclides including cesium-137, strontium-90, plutonium-239/240 and tritium and numerous hazardous chemicals including trichloroethylene, perchlorate, hydrazine, dioxin, heavy metals, and volatile and semi-volatile organic compounds. These toxic materials can cause cancers and leukemias, developmental disorders, genetic disorders, neurological disorders, immune system disorders, and more.

An extensive, multi-year epidemiological study by the UCLA School of Public Health found significant increases in death rates among SSFL workers from cancers of the lung, lymph, and blood systems associated with their exposures. In a study for the U.S. Agency for Toxic Substances and Disease Registry (ATSDR), Professor Hal Morgenstern found rates for key cancers in members of the nearby public associated with proximity to SSFL. In another study for ATSDR, Professor Yoram Cohen and his team from UCLA found evidence of toxic exposures to the offsite population in excess of EPA standards.

In addition, studies by cancer registries found elevated rates of bladder cancer associated with proximity to SSFL. A cluster of retinoblastoma cases, a rare eye cancer affecting young children, was identified within an area in the community that was downwind of the site. And the Public Health Institute's 2012 California Breast Cancer Mapping Project found that the rate of breast cancer is higher in Thousand Oaks, Simi Valley, Oak Park and Moorpark than in almost any other place in the state.

Most recently, families who live near SSFL have identified rare pediatric cancers in the area. This gives PSR-LA tremendous concern, as we know that children are far more vulnerable to health impacts from SSFL contaminants than adults. We find it incredibly distressing to consider that if SSFL was cleaned up long ago as it should have been, these children and their families may not be suffering and wondering if their heartache could have been prevented by responsible correction actions by agencies meant to protect them such as DTSC.

SSFL contamination migrates offsite. There have been over a hundred exceedances of LA Regional Water Quality Control Board pollution standards in runoff from the site reported in recent years, resulting in numerous fines. A TCE plume extends offsite. Perchlorate has been found in numerous wells in Simi Valley and in Dayton Canyon. Strontium-90, arsenic and vanadium was found in Runkle Canyon. Other contamination has been found at Brandeis-Bardin and at Sage Ranch, where hundreds of cubic yards of toxic soil contaminated with antimony and asbestos were removed and where more remediation still needs to be done.

Boeing's 2015 Draft RCRA Facility Investigation Data Summary and Findings Reports included risk assessments for 9 contaminated areas at SSFL that reveal extremely high human health and ecological risks. DTSC failed to include a public health and ecological risk assessment in the PEIR, so we have conducted an independent review of Boeing's assessments and have attached our analysis and recommendations. See "Analysis of Boeing's Risk Assessments for the Santa Susana Field Laboratory" (Attachment A.)

DTSC's PEIR violates the AOCs for DOE and NASA's operational areas and for Boeing's property rejects DTSC's own policy of requiring that cleanups be commensurate with local zoning

Given the harmful health impacts of SSFL contamination and multiple pathways for offsite exposure, PSR-LA strongly supports the Administrative Orders on Consent (AOC) that DTSC signed with the Department of Energy (DOE) and NASA in 2010 to clean up SSFL to background levels of contamination. The community strongly supports the AOCs as well, with 3,700 comments submitted in favor of the agreements and only a handful opposed. The City of Simi Valley made it clear to DTSC that it supports the AOCs (Attachment B.) Thousands sent comments to DOE and NASA demanding that their Environmental Impact Statements (EIS) uphold the AOCs. Congresswoman Julia Brownley, the City of Los Angeles, LA County, and Ventura County all submitted comments on DOE's EIS demanding that it be compliant with the AOCs (Attachment C.) More recently over 67,000 people have signed a petition urging the AOCs to be upheld, with most of them adding personal comments (see http://bit.ly/parentsvssfl.) The reason for such broad support for the AOCs is that people understand that the only way to be confident that they will be protected from SSFL contamination is if it is fully cleaned up, as DTSC has long promised.

Yet DTSC's PEIR violates the AOCs for DOE and NASA's operational areas. The AOCs clearly state in section 1.8.22, "*Cleanup to Background Levels*" *does not include 'leave in place' alternatives*." However, DTSC's PEIR proposes to exempt from cleanup potentially huge amounts of soil contaminated with dangerous radiological and chemical contamination, claiming the contamination may be allowed to naturally attenuate (left in place) or could be exempt through broad biological and cultural exemptions that do not meet the narrow definition allowed for in the AOCs.

Though Boeing refused to sign the AOC agreements, PSR-LA was pleased that DTSC affirmed, in its 2010 response to comments on the Agreements in Principle, that its normal procedures would require cleanup according to what land use requirements allow:

DTSC and U.S.EPA, in implementing the Superfund process, defer to local governments' land use plans and zoning decisions, and base their cleanup level calculations on the assumption that the land will be used as the land use requirements would allow, irrespective of its current use.

DTSC made it clear that it would defer to Ventura County's zoning for the SSFL cleanup.

Even absent SB 990, DTSC, in implementing its cleanup authorities, would defer to local governments' land use plans and zoning decisions. In this instance, the Ventura County zoning maps specify that the site and much of the surrounding area are currently zoned as rural agricultural.

The zoning for SSFL allows for a wide range of residential and agricultural uses, which the Ventura County Planning Commission made clear in its July 20, 2015 letter to DTSC and will be affirming again to DTSC per the Board of Supervisors November 7 2017 meeting. Cleaning up to current zoning is of key importance to PSR-LA, because a cleanup of SSFL to rural residential/agricultural uses would be sufficiently protective of public health for neighboring communities who are subject to exposure to SSFL's highly toxic contamination through offsite migration. DTSC has also heard from elected officials, public health advocates, and thousands of community members urging it to uphold its commitment and not allow Boeing to use weaker cleanup standards. Yet DTSC's PEIR states that the most protective cleanup that it would require is one that turns out to be 30-60 times weaker than its own official ("SRAM-based") suburban residential standard. This poses serious risks to public health.

PSR-LA urges DTSC to revise the EIR to be fully compliant with the AOC cleanup agreements and to be consistent with its own policy to cleanup according to allowable uses in the Ventura County General plan and zoning, which include a wide range of residential and agricultural uses.

DTSC's PEIR fails to provide the public with critical information that it needs to evaluate the cleanup, including health and ecological impacts of the contaminants at SSFL currently and under proposed cleanups options, as well as information about what DTSC is actually proposing be cleaned up.

A glaring deficiency of DTSC's PEIR is that it does not analyze the risk to human health or ecological receptions from SSFL contamination and from the various options that would leave much of the contamination not cleaned up. This is the most critical information that the public needs in order to make fully informed comments on DTSC's cleanup proposals. An analysis of health risks is of tremendous concern to PSR-LA because the information we do have (from Boeing's 2015 risk assessment reports) clearly indicates that the health and ecological risks from SSFL contamination on site now and under Boeing's cleanup proposal are exceedingly high. Please see the attached December 15, 2015 letter to DTSC from LA County Supervisor Sheila Kuehl, LA City Councilmember Mitch Englander, and then State Senator Fran Pavley (Attachment D) and our detailed comments on this PEIR matter found in our report, "Analysis of Boeing's Risk Assessments for the Santa Susana Field Laboratory." (Attachment A)

Our report includes data culled from Boeing's own risk assessments that show extreme levels of contamination and associated unacceptable risks to public health and to ecological receptors.

Boeing's own analyses show that these risks to the public and to biological features would continue at unacceptable levels after the proposed minimal cleanup contemplated, in breach of the full cleanup long promised. Furthermore, the PEIR suggests vast but unspecified exceptions to cleanup, again with no analysis of the ecological or public health impacts of so doing. The data discussed in the report, however, indicate that to exempt contaminated areas from cleanup could result in concentrations remaining at levels that create risks to public health and the environment far beyond what is acceptable.

For example, Boeing estimates extraordinarily high excess lifetime cancer risks (the risk of getting a cancer from the contaminated sites, beyond one's regular cancer risk) if people were to live on the site, such as an astonishing 96 people out of a 100 exposed, at the Systems Test Lab IV, would get a cancer from the contamination on site. Further, every third person exposed at the Environmental Effects Lab, every fifth person exposed at Happy Valley North and every tenth person exposed at Compound A site would get a cancer from the contamination on site. These are figures that are far above the U.S. Environmental Protection Agency's (USEPA) acceptable risk range of aiming for a one in a million risk and no higher than one in ten thousand, and far above DTSC's target risk of one in a million.

Another flagrant omission from the PEIR is specific information about what exactly DTSC is proposing to cleanup. It is outrageous for DTSC to hide this information from the public. Without it, the PEIR focuses only on potential negative impacts from the cleanup, thereby misrepresenting health risks to the public from contamination that could be left on site. Taken in the context of DTSC's other attempts to undermine the cleanup over the past 7 years, it appears that by omitting health risk information and hyping potential negative impacts from cleanup, DTSC intends the PEIR to instigate opposition to the cleanup in order to justify reneging on its cleanup commitments in the final EIR and decision document.

DTSC was made fully aware of our concerns prior to releasing the draft PEIR. PSR-LA and community members met with Mohsen Nazemi and Grant Cope on June 30 to address in detail these concerns in detail. We sent a follow up email on July 26 (Attachment E), which outlined concerns expressed during the meeting and new concerns based of information we learned during the meeting. DTSC never responded.

We now ask that DTSC's response to our PEIR comments address concerns and questions from our July 26 email (Attachment E),, specifically the questions in bold and highlighted and yellow. Of primary concern are the following:

We asked how can DTSC issue an EIR when the risk assessments for the Boeing portion of the property do not exist. We expressed concern that the EIR will be one-sided, exaggerating the impacts from cleaning up the contamination and ignoring the risks from the contamination not being cleaned up. We were told by Mohsen that the risk assessments could still be done — by DTSC staff — for inclusion in the draft EIR. We don't understand this. If DTSC has told Boeing it cannot produce risk assessments at this time because of changes that are to occur to the SRAM assumptions, how can DTSC staff do the risk assessments themselves? And it took Boeing a year to do risk assessments for just two subareas, based on the old inputs. DTSC stated on May 18, 2017 in a monthly update that "Based on DTSC review comments and changes in risk assessment input parameters by the USEPA, the risk assessment process will need to undergo

some changes. The changes to the process are to be submitted for DTSC review and approval though an addendum to the Standardized Risk Assessment Methodology (SRAM-2). It is anticipated this process will take some time to work through." (emphasis added) A month later, DTSC said that Boeing had submitted a draft SRAM-3 in late May for DTSC review, a few weeks before our meeting. We are of course troubled that these matters are being left in the hands of the Responsible Party to prepare, with DTSC's role that of sign-off; and that such important matters are also done in secret, with no opportunity for public review and comment. We ask: If DTSC has rescinded the few risk assessments Boeing has performed for a few portions of its site, and directed it not to prepare new ones pending finalization of a revised SRAM which will change risk inputs, and that hasn't occurred and is anticipated to "take some time to work through," how can DTSC, as Mohsen suggested, be preparing its own risk assessments? Have DTSC personnel in fact performed detailed risk assessments for all the Boeing sub-areas? If so, when were they completed? If they haven't been done, because the inputs have not been revised in the SRAM, how can there be an EIR? Will it not automatically be skewed, by detailing purported impacts from cleanup while not being able to assess impacts from the contamination and from not cleaning it up?

- Grant said that there will be three separate sets of documents yet to come, in this order -DTSC's EIR; Boeing's Corrective Measures Studies (in which, among other things, Boeing will
 propose what areas to be cleaned up and to what levels, which must be based on the risk
 assessments that have been suspended), and a proposed Decision document -- ALL of which will
 have a public comment period. We are troubled by this, which suggests the cleanup decision,
 already many, many years late, will be delayed more years. We are also troubled that Boeing is
 allowed to identify the proposed cleanup levels and areas that will and won't be cleaned up. We
 ask: How can there be an EIR to evaluate cleanup if the proposals for what is and is not be
 cleaned up, and to what levels, will occur after the release of the EIR? An EIR is to evaluate
 the proposed project; DTSC appears to be shifting the proposed cleanup levels to after the EIR,
 which would appear at variance with CEQA and which makes no logical sense. And critically,
 with the EIR itself years late, and now DTSC indicating an extensive process thereafter before
 any decision, when does DTSC now anticipate a cleanup decision and cleanup actually
 beginning?
- We also pointed out once again that the entire EIR is based on soil measurements that were predicated on Soil Characterization Levels (SCLs) that didn't include the garden, that are also therefore 1000 times off. DTSC had repeatedly promised over the years that this would be fixed, Boeing could be ordered to go back and redo the measurements using SCLs that were correct; but that hasn't happened. How can there be an EIR if it is based on soil characterization levels that are a thousand times too high?

DTSC's PEIR does not consider offsite migration of SSFL contamination

Another topic discussed at our June 30 meeting and in the July 26 follow up is DTSC's risk assumptions and off-site migration of SSFL contamination. DTSC's white paper on contamination at the Brandeis-Bardin campus denied that any SSFL contamination can migrate offsite at levels harmful to public health. We pointed out the many ways in which this statement was false, including DTSC's use of incorrect risk assumptions and its wildly inaccurate claim that airborne contamination from SSFL could only travel a few hundred feet. Our July 26 email stated:

DTSC appears to have accepted Boeing's assumptions that airborne contamination could only have traveled a few feet or at most a few hundred yards. Yet the Cohen ATSDR study for the potential for offsite exposures had a team of people whose modeling showed the contamination could travel for miles. In addition, site historical data - including photos and oral testimony from workers - indicate huge plumes of smoke from rocket engine tests and the burning of radioactive and toxic materials at the burn pit that engulfed the site and traveled into the valleys. We provided you with a couple of those photos. We pointed out the lack of credibility of that dispersion model, which the white paper refers to as DTSC-approved dispersion assessments but are in fact merely Boeing self-serving claims that DTSC in secret approved with no public notice, review or comment opportunity. And the Boeing claim, that for most of the worst airborne release locations (rocket test stands, open-air burn pits for toxic chemicals), the wind wouldn't carry contaminants more than a few feet and in no case for an individual source, more than 100 feet, is simply absurd. Grant indicated he hadn't seen the dispersion analysis documentation and asked that we send it. A copy is attached. You will note that the language in the DTSC white paper is lifted directly from this Boeing document. Also note that Boeing's claim was that for almost all of its open-air burning/incineration/detonation activities and rocket testing, contaminants did not travel more than a few feet, and in one case, STL-IV, no more than 100 feet. This is unbelievable. We note that DTSC has just announced it will clean up contamination from the Exide facility that was carried by air dispersion at leas 1.7 miles from the site. But for Boeing, it is adopting the polluter's claim that the wind at SSFL (which after all is atop a hill with people below) can't go further than a few hundred yards. We told you that one way Boeing manipulated these results was by using, once again, and contrary to DTSC's directives from last year, residential risk based screening levels without the garden. As we have said repeatedly, these are about 1000 times less protective than the correct figure for the garden, and results in their claim that magically no contamination is transported more than a few feet. Please note, as we told you at the meeting, that the basis for the absurd claim is largely tied to Boeing's assertion that deposition didn't exceed Soil Characterization Levels (SCLs) beyond 100 feet for any airborne source like a rocket test or burnpit. As has been repeatedly discussed, those SCLs are based on suburban residential exposure without a garden, which DTSC has ordered Boeing to not do but instead to include the garden. When the garden is included, the value drops by roughly a factor of one thousand. Were the correct value, as DTSC supposed has ordered, used, the claim of a magic wall stopping any contamination going beyond a hundred feet or so would crumble. We note that DOE and DTSC are claiming that almost all of Area IV (which didn't have the intensive rocket tests of the Boeing areas) is contaminated, it is clear how absurd to claim that the contamination comes right up to and magically ends at the SSFL boundary. These absurd claims by DTSC, simply adopting the self-serving assertions by the Responsible Party of a magical glass wall around SSFL preventing offsite migration, accepted without even any public review or input, and apparently none by you in senior management, can cripple any chance of a cleanup if not fixed.

We ask that DTSC's PEIR accurately assess the risk to offsite population using correct risks assumptions and credible independent studies such as Dr. Yoram Cohen's 2006 study on the potential for offsite exposure. The failure to consider the negative impacts of the contamination and of leaving large portions of it in place is a fundamental failure of the PEIR which needs to be remedied and the PEIR then re-circulated for public comment. Including only hyped-up claims about impacts from cleanup but no analysis of impacts from the radioactive and toxic chemical contamination that wouldn't be cleaned up makes the PEIR a hollow shell, a piece of advocacy

on behalf of breaking DTSC's cleanup commitments rather than a CEQA-compliant and honest evaluation of impacts from the contamination and the environmental and health benefits of cleaning it up.

DTSC's should not consider Boeing's open space easement in its cleanup decision, as the end use of the SSFL site is irrelevant to protecting public health from offsite migration.

Boeing claims that its open space easement means SSFL will be preserved as open space, so it should be able to use recreational cleanup standards that would leave almost all of the contamination on site, not cleaned up, and ignore the fact that people who live near SSFL do not live in open space. They live in residential areas and the cleanup needs to ensure that they are protected. SSFL contamination does not recognize property lines – but it is on top of a hill and does respond to gravity, to wind and rain events, and to fires, all of which can cause nearby communities to be exposed.

Further, the easement does not preclude future development on the property, or transferring the property to another entity such as a Native American Tribe that could claim sovereign immunity from the terms of the easement. In fact, the easement allows the Trust to give approval for that and for construction of buildings at the site for purposes such as recreation, which may include casinos. Furthermore, the easement generally can't be enforced by any entity except for the land trust, which is not required to do so.

Again, Boeing's cancer risk assessment reports from 2015 illustrate how terribly contaminated the SSFL property is, and it is absolutely unacceptable from a public health perspective to leave such high amounts of contamination on site as would be the case with a recreational standard.

DTSC should reject comments on its EIR that were generated by the polluter or that misrepresent the communities they claim to speak for.

DTSC is aware that Boeing launched an unscrupulous campaign to "Protect Santa Susana" that includes a website and advertising on Google, YouTube, and Facebook encouraging people to send an electronic comment to DTSC, that is copied to local elected officials, a letter recommending that "the Environmental Impact Report should evaluate the right project: a cleanup based on the future recreational use of the Santa Susana site as undeveloped open space habitat." Boeing's website and the message it is pushing contain considerable misinformation and misinform the public by declaring SSFL poses no health risks and that the cleanup is "excessive." What is inappropriate is the lengths that Boeing will go to in order to get out of having to pay for the cleanup.

It is inappropriate for a polluter, a regulated entity under DTSC's regulation, to be transmitting to its regulator through its website generated comment letters that will appear to DTSC to be coming from individuals but are in fact generated by the polluter, particularly when those generated comments are drafted by the polluter to push for the polluter to be allowed to walk away from almost of the contamination for which it is responsible.

In a September 22 email to Mark Malinowski, PSR-LA addressed the issue of Boeing's website and comment form. A September 29 response (Attachment F) from Mr. Malinowski said,

In response to your statement that "Boeing is directing comments on its propaganda website http://takeaction.protectsantasusana.com/ to Mark Malinowski and Matt Rodriquez," this is not the case. Instead, the Boeing website appears be directing the comments to the http://ssfl.dtsc.commentinput.com/ link and not to me or Secretary Rodriquez's email addresses.

PSR-LA replied that indeed comments were being directed to Mr. Malinowski and Mr. Rodriquez, attaching a screenshot listed both names among a select group of elected officials, and very clearly stated, "your communication will be emailed to the appropriate decisionmaker". PSR-LA asked again if Mr. Malinowski and Secretary Rodriquez were receiving emailed copies of comments submitted this way but Mr. Malinowski did not respond.

Non-profit public interest groups like PSR-LA commonly encourage members and the public to submit comments on environmental issues using a webform. Our members expect us to keep them informed of important developments on issues they care about and to help them to take action. We have no financial incentive to do so, and are sure to provide members with links to the documents being evaluated and supporting materials. That is a far cry from what Boeing is doing. The polluter doesn't have the right to try to generate comment letters seemingly coming from the public but in fact generated through the polluter's website to try to influence the regulator to let them evade their cleanup obligations.

Boeing has also managed to infiltrate several neighborhood councils with its surrogates, who have in turn misinformed their communities about the health impacts of SSFL contamination and risks from cleanup. The moving forces behind these efforts are people with ties to the Responsible Parties. A letter of complaint (Attachment G) sent to the LA City Attorney's office regarding the Woodland Hills Warner Center and West Hills neighborhood councils objects to factual inaccuracies in the Woodland Hills' comment letter and the characterization that the councils are the elected representatives of their areas and "represent 210,000 residences and businesses" who "stand united" against full cleanup. As pointed out in the complaint:

The Woodland Hills Warner Center, Canoga Park, and West Hills neighborhood councils are not "elected to represent their communities" and do not "represent 210,000 residences and business" and those communities do not "stand united as community" in asking for risk-based alternatives. Neighborhood councils (there are 97 of them) are merely advisory bodies to the City Council of Los Angeles, which are the elected representatives. (See City Ethics Commission statement <u>here</u>. and Neighborhood Council training manual <u>here</u>.) The advice of these few neighborhood councils on the SSFL matter has been consistently rejected by the elected representatives of the City. Indeed, the City of Los Angeles (City Council, Mayor, and City Attorney) have consistently supported the 2010 SSFL cleanup commitments and rejected any advice against full cleanup. Further, thousands of people in West Hills, Woodland Hills, and Canoga Park support full cleanup. A <u>petition</u> launched by a West Hills resident urging DTSC to keep its cleanup commitments has over 67,000 signatures. It is grossly inaccurate to claim these areas are "united as a community" on SSFL.

DTSC should not validate these inaccurate claims and use them to mischaracterize support for the cleanup in its response to comments on the PEIR. In addition, DTSC should not treat comments

from the SSFL CAG as being representative of the community, as it is well aware that the CAG has become a front group with CAG leadership having ties to the responsible parties and receiving a secret grant from the Dept. of Energy, one of the Responsible Parties, to push for the RPs to be allowed to walk away from most of their contamination, in violation of the AOCs and associated cleanup commitments. It is wrong for DTSC to break its cleanup commitments and to allow the RPs to employ front groups to provide cover for doing so.

The draft Program Management Plan (PMP) is grossly deficient in that it (and the PEIR) provide virtually no information about what is actually proposed in terms of what would be cleaned up and what not. The PEIR and PMP simply avoid during the CEQA PEIR process all disclosure of what is actually proposed about what would be cleaned up and what won't, evading public scrutiny, comment opportunity, and analysis of the environmental impacts of leaving much of the pollution not cleaned up. These are all clear CEQA violations. We note also that DTSC has refused to make public virtually any of the referenced documents upon which the conclusory statements in the PEIR are based, violating the transparency and disclosure requirements of CEQA. One cannot meaningfully comment when there is a game of "hide the embarrassing information" undertaken.

In sum, DTSC must revise its PEIR to be compliant with the AOCs and its own policy to defer to allowable uses in the Ventura County general plan and zoning. It must include a full analysis of health and ecological risks from contamination and for any contamination it may propose to leave behind. The PEIR must accurately reflect risks from offsite migration based on correct risk assumptions and modeling done by the 2006 Cohen report. DTSC's PEIR must disregard Boeing's open space easement, for the end use has no relevance for the health of surrounding communities, and a polluter does not get to get out of clean up obligations by declaring the land too contaminated to be used for anything allowed under the County land use designations. DTSC's PEIR should also disregard comments that the polluter Boeing has created though its dishonest greenwashing campaign, as well claims from neighborhood councils that misrepresent their role and the views of their communities. Finally, the PEIR and PMP must both be revised to include specific information about the cleanup being proposed. The draft PEIR and draft PMP must be repaired and then re-circulated for comment.

DTSC has admitted that the Santa Susana Field Laboratory is one of the most contaminated sites in California. It must carry out its obligation to protect the public from exposure to SSFL's nuclear and chemical contamination by upholding the AOC cleanup agreements and its related 2010 commitments and ensuring that no contamination remains on site. Current and future generations' lives and wellbeing are at stake. Breaking solemn cleanup commitments is not acceptable.

Sincerely,

Delfule

Denise Duffield Associate Director Physicians for Social Responsibility-Los Angeles

Attachments:

- A. Analysis of Boeing's Risk Assessments for the Santa Susana Field Laboratory.
- B. Letter from the City of Simi Valley to DTSC, expressing its support for the AOC cleanup agreements, March 4, 2013
- C. Letters from the LA City Council, LA County, Ventura County, and Congresswoman Julia Brownley to the Dept. of Energy urging that its draft EIS uphold the AOC cleanup agreement, April 2017
- D. Letter from Supervisor Sheila Kuehl, LA City Councilmember Mitch Englander, and then State Senator Fran Pavley expressing concern over the high risks in Boeing's 2015 RFI reports and its desire to walk away from cleaning up 98% of the site, December 2015
- E. Email from Denise Duffield to Mohsen Nazemi and Grant Cope following up on June 30th meeting on cleanup and EIR concerns, July 26, 2017
- F. Email exchange between Denise Duffield and Mark Malinowski regarding Boeing's "Protect Santa Susana" webform and attached screenshot from Boeing's website, September 29, 2017
- G. Complaint regarding the Woodland Hills Warner Center and West Hills neighborhood councils, December 14, 2017

Attachment A

Analysis of Boeing's Risk Assessments for the Santa Susana Field Laboratory

by Physicians for Social Responsibility – Los Angeles

Prepared by

Michael Rincon

With contributions by Janie Flores Liora Huebner Joseph Rodgers

December 2017

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Executive Summary

The Draft Program Environmental Impact Report (PEIR) for cleanup of the contaminated Santa Susana Field Laboratory (SSFL) is grossly deficient in that it contains hundreds of pages of material presenting exaggerated claims of purportedly negative impacts of cleaning up the radioactive and toxic chemical contamination, but essentially not a word about the negative impacts from the contamination itself and what would ensue if some or all of it were not cleaned up as promised. The PEIR contains no analysis whatsoever of the risks to public health and the environment from the contamination and from DTSC proposals to breach its longstanding commitments to a full cleanup thereof.

Because of this fundamental flaw in the PEIR, we here put forward data culled from Boeing's own risk assessments that show extreme levels of contamination and associated unacceptable risks to public health and to ecological receptors. It is important to note that Boeing's own analyses show that these risks to the public and to biological features would continue at unacceptable levels *after* the proposed minimal cleanup contemplated, in breach of the full cleanup long promised. Furthermore, the PEIR suggests vast but unspecified exceptions to cleanup, again with no analysis of the ecological or public health impacts of so doing. The data discussed in this report below, however, indicate that to exempt contaminated areas from cleanup could result in concentrations remaining at levels that create risks to public health and the environment far beyond what is acceptable.

In June and July of 2015, the Boeing Company¹ submitted to the Department of Toxic Substances Control (DTSC) 14 Draft² RCRA Facility Investigation Data Summary and Findings Reports (RFI)³ for approval. These reports provided Boeing' own risk assessments for nine contaminated sites at SSFL in Subareas 1A Central and 5/9 South, as well as requests for approval to declare the great majority of the areas for No Further Action (NFA). NFA, in other words, means relief of any cleanup requirement.

Each report varied in length, from sixty to thousands of pages, consisting mostly of graphs, tables, and repetitive methodologies and information. The most important information, however, resided in appendices⁴ in the far rear of each report and in tables with tiny print that you must zoom in very closely in order to read. In both cases, the

¹ The Boeing Company owns much of SSFL, and has been named by DTSC as a Responsible Party for the contamination, along with NASA and the Department of Energy.

² Boeing released final versions of these reports in early 2017, but none of them include a Human Health or Ecological Risk Assessments. Instead, in a brief sentence, stated that the Human Health and Ecological Risk Assessments would be published at a later date as separate documents from the RFI reports.

³ Suspiciously, after public disclosure of the extremely high-risk estimates in these reports, DTSC ordered removal of all risk estimates from RCRA Facility Investigation Reports. See Dec. 9, 2016 DTSC letter to Boeing.

⁴The appendices from each report to which we are referring are:

Appendix E1: Human Health Risk Assessment (HHRA)

Appendix E2: Ecological Risk Assessment (ERA)

Appendix E3: Identification of CMS and NFA Areas Based on Risk Assessments

information was hidden where the general public wouldn't find it easily.⁵ We have undertaken an independent analysis of these risk assessment reports, and have reached several astonishing conclusions, summarized below.

Boeing estimates extraordinarily high excess lifetime cancer risks (the risk of getting a cancer from the contaminated sites, beyond one's regular cancer risk) if people were to live on the site. Below are some of Boeing's own risk estimates from their Human Health Risk Assessments $(HHRA)^{6}$:

- An astonishing **96 people out of a 100** exposed, at the Systems Test Lab IV, would get a cancer from the contamination on site.
- Every third person exposed at the Environmental Effects Lab would get a cancer from the contamination on site.
- **Every fifth person** exposed at Happy Valley North would get a cancer from the contamination on site.
- Every tenth person exposed at Compound A site would get a cancer from the contamination on site.

These are remarkable figures that are far, far above the U.S. Environmental Protection Agency's (USEPA) acceptable risk range⁷ of aiming for a one in a million risk and going no higher than one in ten thousand, and far above DTSC's target risk⁸ of one in a million. Other high-risk figures found in these reports are presented in a table below (Table ES-1). These values, provided in the HHRA of each report, are current risk values if one were to be exposed at the site. Boeing's own estimates of the risk on their sites are thus orders of magnitude far beyond what would be generally allowable by the federal and state standards.

These reports, however, include requests for approval to designate something on the order of 98% of the soil as NFA, or to not be cleaned up. This is extremely concerning because these reports also provide risk estimates for what the contamination levels would be after the supposed "cleanup," which are still far above the allowable USEPA and DTSC levels if these requests were approved. Furthermore, Boeing proposes to not clean up Happy Valley North at all. The HHRA risk estimate and the post-clean up risk estimate are the exact same number, thus reiterating that Boeing's intention is to not provide the quality cleanup that was promised. Other post-cleanup values can be found in Table ES-2, below.

Additionally, a number of assumptions in the risk assessments underestimate the risks. For example, the reports separately calculate the risk from a suite of PCBs⁹, converting the risk into a "Toxicity Equivalent Quotient" (TEQ) tied to the risk of a

⁵ DTSC, in September 2016 reviews of the 2015 Boeing risk assessments, directed Boeing to combine the suburban residential garden and direct contact risk estimates and move them to the beginning of the risk assessments, and expressed clearly there, but that has not been done as of this writing.

⁶ Three elected officials, concerned about these extremely high risks, raised the matter in a letter to DTSC Director Barbara Lee on December 15, 2015, attached.

⁷ U.S. EPA Target Risk Range: 1E-06 to 1E-04 (1 x 10^{-6} to 1 x 10^{-4})

⁸ Also known as DTSC's "Point of Departure" 1E-06 (1 x 10⁻⁶)

⁹ PCB: Polychlorinated Biphenyl

standard dioxin congener.¹⁰ However, the PCB TEQs are not included in the estimate of total risk, and because of this intentional separate calculation for PCB TEQs, it gives the illusion of a lower total risk, when in fact the risk is much higher than what it is being claimed, as the total risk should include all PCBs. In some cases, the risks from the estimated PCB-TEQs alone were far above allowable levels for cancer risk or hazard index, and at times with a cancer risk of greater than one in ten.

Similarly, despite USEPA guidance to the contrary, the reports average contaminant concentrations over significant areas, so that an area that is high would not get cleaned up because it has been averaged with soil samples taken in areas where contamination levels are far lower.¹¹ Furthermore, large areas are declared NFA based on not exceeding soil characterization levels (SCLs), but these SCLs are based neither on the required agricultural exposure scenario, nor the suburban residential scenario supposedly employed, but a far weaker standard, so measurements on which these judgments are based are incapable of detecting and reporting contamination at the levels of concern. The reports divide the suburban residential scenario into exposures from two sources: direct soil contact with contaminated soil and consumption of fruits and vegetables from a backyard garden. The latter is generally two or three orders of magnitude more restrictive than the former, and for proper risk estimates both are to be added together. However, after calculating the backyard garden scenario, the reports do not use it for cleanup decisions or for the establishment of SCLs, resulting in very large estimated risks after cleanup and large areas declared NFA based on SCLs that are orders of magnitude higher than the suburban residential garden risk-based screening level.

Under normal DTSC and USEPA procedures, cleanup is based on the future land use permitted by County zoning and General Plan designations that would produce the greatest exposure. In 2010 DTSC stated:

"The local government General Plan land designations and local zoning designations are the most reliable expressions of prospective land use...DTSC and USEPA defer to local governments' land use plans and zoning decisions, and base their cleanup level calculations on the assumption that the land will be used as the land use requirements would allow, irrespective of its current use."¹²

In early 2015, Ventura County reaffirmed, in a letter to DTSC, that its General Plan allowed a wide range of agricultural and residential uses. DTSC subsequently said it would adhere to the Ventura County letter and require cleanup sufficient so that any of the land uses allowed by the County could be safely conducted after the cleanup. Thus,

¹⁰ Congeners are related chemical substances "related to each other by origin, structure, or by function"; IUPAC, *Compendium of Chemical Terminology*, 2nd ed. (the "Gold Book") (1997). http://goldbook.iupac.org/html/C/CT06819.html

¹¹ See EPA "Radiation Risk Assessment at CERCLA Sites: Q&A," OSWER 9285.6-20, June 13, 2014, p. 8-9. The Boeing risk assessments also frequently report risk in terms of incremental risk (i.e., the risk above background), which also is contrary to EPA and DTSC policy, requiring total risk to be estimated and compared to risk-based standards. While one doesn't clean up below background, when there is contamination (i.e., total contaminant concentration exceeds background), it is to total concentration that is to be compared to cleanup levels and risk goals.

¹² Page 12; <u>http://www.dtsc-</u>

ssfl.com/files/lib correspond/agreements/64765 AIP Response to Comments Volume I.pdf

the most protective cleanup standard is agricultural, then residential (with garden), and lastly recreational, which is orders of magnitude less protective than required by DTSC policy.

The Boeing risk assessments, however, are not based on agricultural exposure scenarios. Instead, Boeing has said it would clean up to a suburban residential standard so that, even if no one were to ever live on the site, people living nearby would be protected. Boeing has also said the sites would be cleaned up so that if people could live on the site, have a backyard garden, and drink from a well. Yet, deep within its own reports, are estimates that demonstrate risks far above the safe threshold levels that the DTSC and USEPA consider acceptable.

Each RFI report also includes hypothetical post-remediation risk values, or "residual" risk values. We've included in each chapter Boeing's own residual risk values to show how much contamination is getting cleaned up and what the risk will be after the supposed cleanup. We've summarized residual risk values for the garden use pathway for each site that was listed in Table ES-2.

Additionally, cleanup should meet the most protective Ecological Risk Based Screening Levels (Low TRV EcoRBSLs and EcoRBSLs for invertebrates and terrestrial plants based on true No Adverse Effects Levels.) It is clear, however, that what is proposed would leave contamination at concentrations far above the levels deemed to pose risk to ecological receptors.

To summarize, Boeing's own Human Health Risk and Ecological Risk Assessments have shown risk estimates that are far beyond what is deemed acceptable by USEPA and DTSC standards. Not only that, but it adds insult to injury that Boeing's own calculated post-cleanup risk values are still far above USEPA and DTSC standards, and Boeing had the audacity to request DTSC let them move forward with those risk values.

Furthermore, Boeing released new draft versions of RFI reports in early 2017, none of which included a Human Health Risk Assessment or Ecological Risk Assessment. We can understand the desire to suppress its own damning estimates of risk, but removing them and eventually coming forward with new "massaged" numbers that presumably would claim far lower risks than its own risk estimates from the reports examined here is not appropriate.

The draft PEIR is completely silent on the risk from the contamination and from not cleaning it up. Deferring such estimates to a time after the close of the comment period on the PEIR is an unseemly form of "hiding the ball," contrary to the disclosure and transparency requirements of CEQA and its mandate to thoroughly consider environmental impacts. Were DTSC to include such risk analyses in the final PEIR, after failing to do so in the draft, would be an end-run around the public's right to review and comment. Given the errors in the PEIR and the cloud that hangs over DTSC's conduct at SSFL and statewide, subsequently changing input parameters so as to drive risk estimates down would lack any credibility.

The lack of any analysis about impacts from the contamination and proposals to not clean it up is a major concern because the whole purpose of the cleanup is to protect the health of the residents in the area and the environment, yet there is no analysis in the PEIR about what the health or ecological impacts are if the contamination is left behind in DTSC's document. Boeing's own documents, as we have summarized in this report, show the health and ecological risks of leaving the contamination behind, and it is beyond unacceptable by USEPA and DTSC standards.

DTSC had promised that it would ensure that Boeing cleans up its portions of SSFL to levels that are safe enough for agriculture and for residences with backyard gardens on site, because the county's then and updated General Plan include agriculture and such residential use for the zoning at SSFL—and in the nearby areas. Whatever the use of site ends up, it needs to be safe for all uses permitted. But more importantly, whatever the end use, people live nearby in residences with gardens and there is agriculture nearby as well. Even assuming some level of dispersion for migrating contaminants, risks as high as these reports estimate if one lived on the site suggests unacceptable risks for people living nearby if the source contamination is not cleaned up. For example, take a site that Boeing estimates would still, after its proposed minimal cleanup, have a cancer risk of 2×10^{-1} (i.e., 2 out of every 10 people exposed would get an excess cancer), as shown in Table ES-2 below. Even if the contamination were to be diluted by a factor of, say, ten or one hundred as it migrates offsite, the resulting risk offsite would still be 2×10^{-3} , about two thousand times higher than the target risk of one in a million.¹³

ES-1: Boeing Risk Estimates in Ranking Order for Current Suburban Residential Garden			
Pathway*			
Site	Risk Value Provided		
Systems Test Lab IV	9.6E-01		
Environmental Effects Lab	3.0E-01		
Happy Valley North	2.0E-01		
Compound A	1.0E-01		
Advanced Propulsion Test Facility	2.0E-02		
Sewage Treatment Plant	1.0E-02		
Building 1359	2.0E-03		
Unaffiliated Area 5/9 South	3.0E-04		
Unaffiliated Area 1A Central	-		
"*" Risk Figures taken from Boeing's DSFR's Appendix E1			

"-" no value provided

DTSC Point of Departure is 1E-06

USEPA Threshold is 1E-04 to 1E-06

¹³ Furthermore, dilution may not always be the case. Over time, concentrations at the source diminish as material migrates, and it can concentrate in the locations to which it migrates, e.g., low-lying areas. For example, the extraordinarily high perchlorate concentrations found in the Dayton Creek bed in Dayton Canyon, offsite, were higher than the remaining perchlorate concentrations in Happy Valley at SSFL, the headwaters of Dayton Creek, where perchlorate was used and soil was contaminated.

ES-2: Boeing Residual Risk Estimates in Ranking Order for Suburban			
Residentiall Garden Pathway*			
Site	Risk Value Provided		
Happy Valley North	2.0E-01		
Advanced Propulsion Test Facility	1.0E-02		
Environmental Effects Lab	2.0E-03		
Systems Test Lab IV	2.0E-03		
Building 1359	7.0E-04		
Sewage Treatment Plant	3.0E-04		
Unaffiliated Area 5/9 South	3.0E-04		
Compound A -			
Unaffiliated Area 1A Central -			

"*" Risk Figures taken from Boeing's DSFR's Appendix E3

"-" no value provided DTSC Standard: 1E-6 USEPA Threshold: 1E-4 to 1E-6 Residual=Post-cleanup values

[Note to the lay reader: The cancer risk figures are given as, for example, 2.0E-01, which mean 2 x 10 to the exponent -1, or 2 x 10^{-1} , or 0.2. In other words, 2 out of every 10 people exposed would get a cancer from the contamination (in addition to the number that would get a cancer otherwise). The risk goal is one in a million, so this risk level would be 200,000 times higher than the target risk.]

The way to protect people nearby is to assure that DTSC's promises (and those of Boeing) that SSFL would be cleaned up such that it would be safe to live on site, eat produce grown on it, and drink from wells are fully carried out. If the source is cleaned up to those safe levels, it is then safe for the people nearby. Failing to do so, however, could result in risks in perpetuity for the people in the area. Additionally, it is imperative that the site be safe enough for ecological resources at the low TRV EcoRBSLs to ensure no effects on animals and plants that reside in the area. The PEIR asserts that vast amounts of contamination should not be cleaned up, supposedly to protect biological receptors, but there is no analysis of the harm to those receptors from the pollution that wouldn't get cleaned up. Our review of the data from the Boeing risk assessments indicates that to breach the commitments to full cleanup and instead exempt large areas would have the opposite effect—exposing biological receptors to contaminants at levels far in excess of the concentrations deemed to pose harm for them.

The draft PEIR is deeply flawed, evidenced by the complete failure to disclose how much contamination, of what types and what concentrations and in what locations, is proposed not be cleaned. It is further entirely inadequate in that it extensively hypes purported impacts from the cleanup while being completely silent regarding the impacts on public health and the environment of radioactive and toxic chemical contamination that would not get cleaned up if the PEIR proposals proceed to breach the cleanup commitments and instead leave large amounts of contamination not cleaned up. Those flaws are so fundamental that there is no alternative but for the PEIR to be redone and reissued for public review and comment.

Santa Susana Field Laboratory Background

SSFL is a former nuclear reactor and rocket-testing facility located at the boundary between Los Angeles County and Ventura County, just thirty miles from downtown Los Angeles. Founded in the 1940s, it housed ten nuclear reactors, one of which suffered a partial nuclear meltdown in 1959, while three others suffered other accidents. None of the reactors, had containment structures to prevent the radioactivity from being released into the environment. Other facilities on site included a plutonium fuel fabrication facility and a hot lab that reprocessed irradiated nuclear fuel and experienced several radioactive fires. The site also conducted tens of thousands of rocket tests, involving an array of toxic rocket fuels, and two open-air burn pits where radioactive and toxic wastes were burned and that released radioactivity and toxic chemicals into the atmosphere, much of which fell back to earth some distance downwind. Lastly, millions of gallons of TCE were dumped into the ground and much of it percolated into groundwater.

Due to SSFL's history, the site is contaminated with radioactive materials such as cesium-137, strontium-90, and plutonium-239, as well as hazardous chemicals such as perchlorate, PCBs, dioxins, volatile organic compounds, semi-volatile organic compounds, and heavy metals. Federally funded studies found significantly increased rates of cancer among the SSFL workers associated with their exposures, and a more than 60% increase in incidence of key cancers to the public associated with proximity to the site.

The Resource Conservation and Recovery Act (RCRA) Corrective Action program at SSFL began with the RCRA Facility Assessment (RFA) in 1989. The RFA was completed in 1994 and was followed by the RCRA Facility Investigation (RFI), which commenced in 1996 under oversight of the California Environmental Protection Agency (CalEPA) and DTSC. In 2007, DTSC issued a Consent Order for Corrective Action that identified the RCRA Corrective Action requirements for the SSFL to be implemented by the Responsible Parties (RP): Boeing, the United States Department of Energy (DOE), and the National Aeronautics and Space Administration (NASA). In 2010, DOE and NASA signed Administrative Orders of Consent for Remedial Action (AOCs) in agreement with DTSC. The AOCs govern characterization and remedial action activities for soil in portions of SSFL in which those RPs' operations respectively occurred. The portions of land that are not subject to the DOE or NASA AOCs were reorganized in 2013 into nine Boeing subareas for RFI reporting to complete the RFI in accordance with the 2007 Consent Order and DTSC's 2010 commitments for a cleanup of the Boeing portion to agricultural standards associated with Ventura County land use designations.

This report is based on the Data Summary and Findings Reports (DSFRs) that were submitted to DTSC for RFI sites within Boeing's jurisdiction. Each DSFR summarizes the identified sources of contamination, characterization data, and applicable migration pathways for each site within the subareas. The DSFRs also summarize the findings of the human health and ecological risk assessments, and recommendations for corrective measure areas for each site based on the RFI characterization and risk assessment findings in accordance with Sections $3.4.2^{14}$ and $3.4.3^{15}$ of the 2007 Consent Order.

Risk Assessment Summaries

As a part of each RFI report, the Risk Assessment Summary sections are supposed to present the summary of the HHRA and Ecological Risk Assessment (ERA) findings for each RFI site, but that is not the case with these summaries. Most of these summaries leave out key data that shows high level of risk in the HHRA.

For example, the Exposure Assessment¹⁶ description in this summary states that the only "potential exposure scenarios considered" in these reports are:

- Hypothetical Suburban Resident-Soil Contact
- Hypothetical Suburban Resident-Indoor Air
- Future Recreator-Soil Contract
- Future Recreator-Surface Water Contact
- Garden Use

However, when we look at the "Estimated Risks and Hazards" section¹⁷ of the summary, no description, data, or conclusions were presented for the garden use scenario, when Appendix E1 clearly presents data, calculations, and a summary. The same can be said about the Groundwater Pathway. These summaries do not mention a Groundwater pathway, but there are data tables present in Appendix E. This gives the impression that Boeing is intending to leave out the garden risk estimates to lower the level of cleanup requirements, which is the case in several of these reports.

Human Health Risk Assessments

Each RFI contains within its appendices an HHRA unique to its sub-site. The objective of each HHRA is to determine whether exposure to the environmental media at the site could pose unacceptable risks to human health, thus requiring further evaluation of corrective action as part of a corrective measure study (CMS), or if potential risks to human receptors exposed to current concentrations of chemicals in environmental media at rea acceptable. If current concentrations of chemicals in environmental media at the site pose unacceptable human health risks and CMS areas are identified, the HHRA asserts that the areas of the site outside of identified CMS areas would be eligible for an NFA designation.

¹⁴ Section 3.4.2 of DTSC's 2007 Consent Order states that respondents shall submit to DTSC for approval RFI reports for the Surficial Media OU, including Large Home-Range Ecological Risk Assessment Report.

¹⁵ Section 3.4.3 of DTSC's 2007 Consent Order states that the comprehensive Surficial Media OU reports shall summarize the findings from all phases and areas of the SSFL, including all current and historical assessment data collected to date, for the vicinity of the unit being investigated in the RFI program.

¹⁶ Section 5.1.2 "Exposure Assessment", of each DSFR

¹⁷ Section 5.1.3, of each DSFR

Each Boeing RFI report contains an HHRA that is supposed to identify the types of toxic effects a chemical can exert to humans. We have reviewed all of the data tables that are provided in each HHRA, and have created our own tables (below), using the data provided by Boeing, which show only high-risk values that are above USEPA (1E-06 to 1E-04) and DTSC (1E-06) allowable levels. We have also summarized high-non-carcinogenic risk (Hazard Index; HI) values that are above USEPA and DTSC threshold of 1.¹⁸

The toxicity assessment component of the HHRAs identifies the types of toxic effects a chemical can exert. Chemicals of potential concern are divided into two broad groups based on their effects on human health: carcinogens and non-carcinogens. Health risks are calculated quite differently for carcinogenic and non-carcinogenic effect, and separate toxicity values have been developed for each. Carcinogens are those chemicals suspected of causing cancer following exposure, while non-carcinogenic effects cover a wide variety of systemic effects, such as liver toxicity or developmental effects.

Ecological Risk Assessments

In Boeing's Ecological Risk Assessment (ERA), risk figures were separated into different receptor categories due to the different exposure pathways¹⁹ as listed below.

- **"Terrestrial Plants**: Potential root uptake from soils (0-2 ft bgs²⁰).
- Soil Invertebrates: Potential ingestion and direct contact with soils (0-2 ft bgs).
- **Birds** (*Hermit Thrush*): Potential exposure to soil, which includes incidental ingestion of soil (0-2 ft bgs) and food chain uptake (ingestion of food sources that may have bio-accumulated chemicals. Also exposure to surface water by ingestion of surface water containing chemicals.
- Mammals (*Deer Mice*): Potential exposure to soil, which includes incidental ingestion of soil and food chain uptake (ingestion of food sources that may have bio-accumulated chemicals). The soil depth interval with the maximum potential risk is used and can include 0-2 ft bgs, 0-4 ft bgs, or 0-6ft bgs. Exposure from soil vapor through inhalation, and surface water from ingestion.
- Aquatic Organisms: Aquatic organisms (plants and water-column invertebrates) may be exposed to chemicals in surface water through root/foliar uptake, dermal/direct contact, or ingestion. Surface water onsite does not support fish."

Risk for some species may be greater as these organisms are more likely to have higher concentrations of chemicals due to greater bioaccumulation as one moves up the food chain. Unlike the HHRA, the ERA does not provide Hazard Indices, so we had to create our own HI calculation. The hazard index we provide for the ERA sections of each RFI report are calculated using only HI's that are above the DTSC and USEPA HI

¹⁸ Two kinds of health effects are considered, carcinogenic and non-carcinogenic. The first is estimated in terms of risk of excess cancer, with a goal of no more than one in a million from all of the contaminants combined. The non-carcinogenic effects (e.g., neurotoxic, impairment of reproduction) are measured in terms of Hazard Index (HI), where the any total HI greater than 1 is supposed to be cleaned up.

¹⁹ Taken from the "Exposure Scenarios" sections of the ERAs provided in each RFI report.

²⁰ Below ground surface

threshold value of 1. For plants and soil invertebrates, EcoRBSLs for them are "equivalent to their respective medium-specific benchmarks that represent effect levels, values adjusted to a "no effect" level, as well as reported "no effect." As a result, a single set of EcoRBSLs was developed for each group".²¹

For avian and mammal ecological risk, a Hazard Index (HI)/Quotient (HQ) of 1 is used to assess risk. Note, values provided in the "High-HQ" or "High EcoRBSL" columns are meant for further assessment of the site and do not pertain to the cleanup. *Low EcoRBSLs* on the other hand are risk levels where no adverse effects purportedly would occur to any organism, and should be used as cleanup goals. Unlike HHRA, estimated risks for an ERA are only provided as a Hazard Index/Quotient (HI/HQ).

CMS and NFA Areas

Each RFI report contains an "Appendix E3" which is referred to as "Identification of Corrective Measures Study and No Further Action Areas Based on Risk Assessments." The chemicals listed as Chemicals of Concern (COC) or Chemicals of Ecological Concern (COEC) area identified based on the results of the HHRA and Ecological Risk Assessment (ERA), which serve to focus the selection of those media and areas to be evaluated for corrective actions. Once a CMS area is identified, the remaining areas outside the CMS areas are also evaluated to confirm that residual concentrations of COCs result in incremental site risks or hazards below or near the CalEPA and DTSC's limits.

The primary drivers to unacceptable human health risk for the hypothetical suburban resident at an RFI site area identified as COCs, or COECs for ecological risk drivers. The overall objective for identification of CMS areas is to delineate the areas that, if remediated, would result in an acceptable residual risk and hazard. "Residual" in the context of CMS/NFA and Appendix E3, refers to post-remediation risk and hazard estimates.

Unfortunately, Boeing removed a large number of contaminants found in its part of SSFL from the Contaminants of Concern it considers in its analyses.

²¹ Section 2.2.3 "Ecological Risk Based Levels" of each ERA.

Subarea 5/9 South

Systems Test Lab-IV²²

Site Background

The Systems Test Laboratory-IV (STL-4) RFI site is located on the western portion of SSFL. The site is currently inactive, and all previous structures have been demolished. STL-4 was a test site area for small rocket and missile engine testing from the mid-1950s through the early 2000s. Various fuels and oxidizers, including monomethyl hydrazine²³ (MMH), nitrogen tetroxide (NTO), and inhibited red-fuming nitric acid (IRFNA) were used over time at different test stands. After performing an engine test, the engines were flushed and cleaned with trichloroethylene (TCE) and Freon until 1992. Half a million gallons of TCE percolated into the soil and groundwater. The STL-4 site impoundments were used for the collection of engine testing cooling water, aspiration water, area wash down water, and runoff, as well as emergency spill containment and treatment from 1958 through 1985. Other former facilities or former features include 24 buildings, 102 aboveground storage tanks, two underground storage tanks, 1 transformer, the leach field, 4 test stands, 1 pond, 2 explosive storage magazines, and an air stripping tower.

Appendix E1: Human Health Risk Assessment²⁴

Garden Use²⁵

For the homegrown produce consumption pathway, the total site Estimated Lifetime Cancer Risk (ELCR) is 9.6E-01, or 96 out of a 100 people, which is above the USEPA target risk range of 1E-4 to 1E-06 or 1 in 1000 to 1 in 1,000,000 and exceeds DTSC point of departure²⁶ of 1E-06. The main contributors to the site soil ELCR above USEPA and DTSC thresholds are listed in the Table STL-1. The main contributor, Monomethylhydrazine (MMH) is used as a high-energy fuel in military applications, as a rocket propellant and fuel for thrusters, and as a fuel for small electrical power generating units. Exposure to MMH can cause nasal and respiratory irritation, vomiting, Convulsions, kidney and liver impairment and failure, and can cause convulsions in animals.²⁷ The epidemiological study of the SSFL workers by the UCLA School of Public Health found significantly elevated cancer death rates among the workers most exposed to MMH.

²² http://www.dtsc-

ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/Draft%20RCRA%20Facility%20Investig ation%20Data%20Summary%20and%20Findings%20Report%20%E2%80%93%20Systems%20Test%20 Laboratory%20IV%20RFI%20Site.pdf

^{1:} https://www.ncbi.nlm.nih.gov/books/NBK222412/

^{2:} https://www.epa.gov/sites/production/files/2015-07/documents/niosh-3510.pdf

²⁴ PDF pages 2,851-2,899

²⁵ This pathway evaluates for the hypothetical future suburban resident the consumption of homegrown produce that has accumulated toxic chemicals from the soil. ²⁶ Point of Departure is another term for cleanup goal.

²⁷ https://pubchem.ncbi.nlm.nih.gov/compound/methylhydrazine#section=Top

The total site incremental risk²⁸ is 9E-01, which also exceeds USEPA and DTSC risk standards. The total site HI for this scenario is **727** and with an incremental HI of 453, which exceeds the USEPA and DTSC threshold HI value of 1. Primary contributors above USEPA and DTSC thresholds to the site soil HI are listed below in Table STL-2. The primary contributor, cadmium, is a highly toxic metal known to cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed²⁹

Table STL-1: Garden Use Cancer Values*				
Analyte	Carcinogenic RBSL (mg/kg)	Cancer Risk	% Contribution to Overall Total	
2,3,7,8-TCDD TEQ	7.5E-09	6.0E-04	0.1%	
Aroclor 1254	4.9E-04	2.6E-04	0.0%	
Aroclor 1260	4.9E-04	6.2E-05	0.0%	
Aroclor 1262	4.9E-04	1.2E-05	0.0%	
Aroclor 5460	4.9E-04	6.1E-05	0.0%	
Arsenic	9.9E-05	7.0E-02	7.3%	
Benzo(a)anthracene	8.1E-04	6.1E-04	0.1%	
Benzo(a)pyrene	8.1E-05	4.7E-03	0.5%	
Benzo(b)fluoranthene	8.1E-04	7.1E-04	0.1%	
Benzo(k)fluoranthene	8.1E-04	2.6E-04	0.0%	
Chrysene	8.1E-03	7.2E-05	0.0%	
Dibenzo(a,h)anthracene	2.4E-04	1.3E-04	0.0%	
Dieldrin	6.0E-05	1.0E-05	0.0%	
Hexavalent Chromium	1.9E-03	5.3E-04	0.1%	
Indeno(1,2,3-cd)pyrene	8.1E-04	1.1E-04	0.0%	
Mirex	5.4E-05	3.4E-05	0.0%	
Monomethylhydrazine	1.5E-08	8.8E-01	91.6%	
n-Nitrosodimethylamine	9.5E-07	1.9E-03	0.2%	
Trichloroethene	9.8E-03	2.0E-06	0.0%	
Total Risk		9.6E-01		
PCB TEQ ^a	7.5E-09	2.0E-02	-	

"*" data taken from Table E1-5 in Appendix E1

RBSL=Risk Based Screening Levels

USEPA Target Risk Range of 1E-06 to 1E-04

DTSC Point of Departure Risk Value of 1E-06

PCB-TEQ= Polychlorinated biphenyl-Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, the correct Risk would be 9.8E-1 or 98/100 people. The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

²⁸ Incremental Risk is defined as that portion of the site risk in excess of that resulting from background/ambient concentrations of chemicals found in soil at the STL-4 RFI Site. Note as previously indicated that risk is supposed to be based on total risk, not incremental.

²⁹ https://www.osha.gov/SLTC/cadmium/

Table STL-2: Garden Use Non-Cancer Values*				
Analyte	Non-Carcinogenic RBSL (mg/kg)	Hazard Quotient	% Contribution to Overall Total	
1,1-Dimethylhydrazine	0.000248	3.23	0.4%	
2,3,7,8-TCDD TEQ	0.00000252	17.7	2.4%	
Antimony	0.139	2.38	0.3%	
Arochlor 1254	0.00721	17.3	2.4%	
Aroclor 1260	0.00723	4.2	0.6%	
Aroclor 5460	0.00719	4.15	0.6%	
Arsenic	0.104	66.7	9.2%	
Butyl benzyl phthalate	68.7	0.000216	0.0%	
Cadmium	0.00165	547	75.2%	
Copper	11.1	1.76	0.2%	
Formaldehyde	3.7	1.67	0.2%	
МСРА	0.131	9.95	1.4%	
Mercury	0.0504	1.02	0.1%	
Monomethylhydrazine	0.00298	4.33	0.6%	
n-Nitrosodimethylamine	0.0000449	40.1	5.5%	
Zinc	53.8	1.68	0.2%	
Hazard Index		727		
PCB TEQ ^a Hazard Index	0.00000252	467	-	

"*" data taken from Table E1-5 of Appendix E1

MCPA= 2-methyl-4-chlorophenoxyacetic acid

RBSL=Risk Based Screening Levels.

USEPA and DTSC Threshold HI is a value of 1.

PCB-TEQ= Polychlorinated biphenyl-Toxicity Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total. If it was included, the correct HI would be 1194

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use³⁰

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which is above the USEPA target risk range and exceeds the DTSC point of exposure of 1E-01. The main risk drivers to the groundwater ELCR that are above USEPA and DTSC thresholds are listed in Table STL-3. The primary contributor, vinyl chloride, is used to make a variety of plastics and vinyl products. Acute exposure to vinyl chloride in air can result in central nervous system effects, and chronic exposure (via inhalation and oral) can result in liver damage and cancer.³¹

The HI for this scenario is **426**, which dramatically exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors to the pathway HI above USEPA and DTSC thresholds of 1 are listed below in Table STL-4. The primary contributor, Trichloroethene (TCE), is a nonflammable, colorless liquid, which is mainly used as a solvent to remove grease from metal parts. Exposure to TCE affects reproductive organs and impairs neurological function, as well as kidney cancer, and liver cancer.³²

Also note that although there are no data provided in the tables of Appendix E1, the RFI report does address lead in water:

The potential risk from exposure to lead in groundwater is evaluated separately from other carcinogens and noncarcinogens. For this HHRA, potential risk from lead is evaluated by comparing the maximum Exposure Point Concentration (EPC) for lead in Chatsworth Formation groundwater to the USEPA Action

³⁰ Potential routes of exposure to chemicals in Chatsworth Formation groundwater include ingestion, dermal contact, and inhalation of vapors during assumed hypothetical domestic use.

³¹ https://www.epa.gov/sites/production/files/2016-09/documents/vinyl-chloride.pdf

³² https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30

Level in water 15 ug/L. Only one of the well points in Boeing RFI Subarea 5/9
South had an EPC exceeding 15 ug/L, at well point RD-55A where the EPC was
40.5 ug/L." ³³

Table STL-3: Chatsworth Groundwater Cancer Values*				
Analyte	Carinogenic RBC (ug/L)	Cancer Risk	Percent Contribution	
1,1-Dichloropropene	2.19E-01	2.79E-05	0.1%	
Heptachlor	1.86E-03	2.37E-05	0.1%	
n-Nitrosodimethlyamine	1.51E-03	2.38E-03	7.8%	
Trichloroethene	4.24E-01	1.53E-03	5.0%	
Vinyl chloride	1.36E-02	2.65E-02	86.9%	
Total Risk		3.00E-02		

"*" data taken from Table E1-12 of Appendix E1

RBC= Risk-based concentration computed using the USEPA's Regional Screening Level online calculator.

ug/L=microgram per liter

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA. USEPA Target Risk Range of 1E-06 to 1E-04

DTSC Point of Departure Risk Value of 1E-06

Table STL-4: Chatsworth Groundwater Noncancer Value*				
Analyte	Noncarcinogenic RBC (ug/L)	Hazard Quotient	Percent Contribution	
cis-1,2-Dichloroethene	1.04E+01	163	38.30%	
n-Nitrosodimethylamine	1.60E-02	22.5	5.30%	
Trichloroethene	2.82E+00	230	54.10%	
Vinyl chloride	4.44E+01	8.11	1.90%	
Hazard Index		426		

"*" data taken from Table E1-12 from Appendix E1

RBC= Risk-based concentration computed using the USEPA's Regional Screening Level online calculator.

ug/L=microgram per liter

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA. USEPA and DTSC Threshold HI is a value of 1.

Direct Contact With Soil³⁴

For the direct soil contact pathway, the total site ELCR is **1E-04**, which exceeds DTSC's point of departure of 1E-06. Primary contributors above USEPA and DTSC thresholds are listed in Table STL-5 below. The primary contributor, arsenic, is a natural component of the earth's crust, but is highly toxic in its inorganic form, and can be exposed through drinking water, inhalation, and consumption of food that has been exposed to arsenic. Exposure to arsenic can cause, vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.³⁵ Boeing claims in its HHRA summary "the inclusion of arsenic as a COPC appears to be biasing the incremental risks downward. Arsenic was selected as a soil COPC only because the maximum site detect exceeded two times the background comparison value, even though onsite arsenic levels are not statistically higher than background. If arsenic were excluded as a COPC, the incremental risk for this exposure scenario would be 3E-05" (p. 2856).

The total site HI for soil for this scenario is **0.9**, and the incremental HI is **0.3**, which is below the USEPA and DTSC threshold HI value of 1.

³³ 8.1.1.4 Groundwater Use Pathway (Page 2,857 of pdf)

³⁴ Potential routes of exposure to chemicals from direct contact with soil include incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors emitted from soil to ambient air.

³⁵ http://www.who.int/mediacentre/factsheets/fs372/en/

Table STL-5: Direct Soil Contact Cancer Values*				
Analyte	Carcinogenic RBSL (mg/kg)	Cancer Risk	Percent Contribution	
Arsenic	6.6E-02	1.1E-04	79.8%	
Benzo(a)anthracene	3.9E-01	1.3E-06	1.0%	
Benzo(a)pyrene	3.9E-02	9.8E-06	7.4%	
Benzo(b)fluoranthene	3.9E-01	1.5E-06	1.1%	
Monomethylhydrazine	1.2E-03	1.0E-05	7.8%	
Total Risk		1.0E-04		
PCB-TEQ ^a	3.6E-06	3.0E-05	-	

"*" data take from Table E1-5 from Appendix E1

RBSL=Risk Based Screening Level

DTSC Point of Exposure is 1E-06

PCB-TEQ= Polychlorinated biphenyl-Toxicity Equivalent

"a" PCB TEQ was calculated, but not included in the total. If it was included, the risk would be 1.3E-04.

Indoor Air Pathway³⁶

For the indoor air pathway, the total site ELCR is **3E-05**, which exceeds the DTSC point of departure of 1E-06. The primary contributor is to the pathway ELCR is TCE (97%; 3E-04), other contributors are below USEPA and DTSC thresholds. The total site HI is 8 for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributor to the site HI is TCE (98%; HQ=7).

Appendix E2: Ecological Risk Assessment³⁷

For avian species, the risk estimation from the site is an HI of **344**, which is far above the threshold of 1. The primary contributor to the ecological risk for avian species is lead, which lead poisoning in birds can cause lethargy, progressive weakness causing the inability to fly, and usually accumulates in the liver, kidneys, and blood.³⁸ As of yet, no data has been provided for the effects of silver in avian species, though it has shown in poultry to affect the liver.³⁹ Other chemicals above the threshold of 1 are listed in Table STL-6 below.

For mammals, the risk estimation from the site is an HI of **103**, which is well above the threshold on 1. The primary contributor to the ecological risk for mammals is cadmium, which can cause cancer, and targets the animal's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if an animal is exposed⁴⁰. All chemicals above the threshold of 1 are listed in Table STL-7 below.

³⁶ For the indoor air pathway, the potential route of exposure to volatile COPCs detected in soil vapor is inhalation of chemicals that could migrate from the vadose zone to inside a future residence.

³⁷ PDF pages 2,949-3,033

³⁸ https://www.nwhc.usgs.gov/disease_information/lead_poisoning/

³⁹ http://www.inchem.org/documents/cicads/cicads/cicad44.htm#6.0

⁴⁰ https://www.osha.gov/SLTC/cadmium/

Table STL-6: Risk Estimates for Birds (Hermit Thrush)-Food Chain Uptake via Soil*					
Analyte	Low EcoRBSL	High EcoRBSL	HQ-Low	HQ-High	
Cadmium	0.2	3	5	0.3	
Chromium	2.4	14	10	2	
Copper	1.1	24	20	0.8	
Lead	0.062	39	300	0.5	
Zinc	32	320	3	0.3	
Aroclor 1254	0.083	0.83	2	0.2	
Di-n-butyl phthalate	0.11	1.1	4	0.4	
Hazard Index			344		
PCB-TEQ Birds ^a	5.70E-06	0.000057	300	30	

* Data taken from Table E2-8 of Appendix E2

PCB-TEQ=Polychlorinated biphenyl-Toxicity Equivalent

"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 644. HQ/HI=Hazard Quotient/Index

EcoRBSL=Ecological Risk Based Screening Level

Low EcoRBSLs are conservative and are mostly based on no observed adverse levels.

High EcoRBSLs are based on mid-level effects or low observed adverse effect levels.

USEPA and DTSC Threshold HI is 1.

Since no Hazard Index was calculated, we had to calculate it ourselves. Note, the HI we've provided only includes HQs above 1.

Table STL-7: Risk Estimates for Mammals (Deer Mouse)-Food Chain Uptake via soil*					
Analyte	Low EcoRBSL	High Eco RBSL	HQ-Low	HQ-High	
Antimony	0.042	2	7	0.1	
Arsenic	2.1	31	3	0.2	
Cadmium	0.019	0.81	40	0.8	
Chromium	1.9	46	10	0.6	
Copper	1.5	350	10	0.05	
Lead	3.8	910	4	0.02	
Molybdenum	0.13	1.3	5	0.5	
Selenium	0.1	2.4	3	10	
Zinc	19	820	4	0.1	
DioxinFuran TEQ Mammal	5.00E-07	0.000005	7	0.7	
MCPA	0.12	0.61	10	2	
Hazard Index			103		
PCB-TEQ Mammal ^a	5.00E-07	0.000005	900	90	

* Data taken from Table E2-9 of Appendix E2

PCB-TEQ= Polychlorinated biphyl-Toxicity Equivalent

"a" PCB-TEQ Mammal was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1,003 HQ/HI=Hazard Quotient/Index

EcoRBSL=Ecological RBSL

Low EcoRBSLs are conservative and are mostly based on no observed adverse levels.

High EcoRBSLs are based on mid-level effects or low observed adverse effect levels.

USEPA and DTSC Threshold HI is 1.

Since no Hazard Index was calculated, we had to calculate it ourselves. Note, the HI we've provided only includes HQs above 1.

Appendix E3: Residual⁴¹ Risk⁴²

Garden Use

For the Suburban Residential Garden Exposure Scenario, Boeing estimates the total ELCR after remediation would be **2E-03**, which is far above DTSC's point of exposure of 1E-06. Primary contributors above USEPA and DTSC thresholds are listed below in Table STL-8. The primary contributor, 2,3,7,8-TCDD TEQ, is a dioxin that is an unintentional byproduct of some forms of combustion and several industrial chemical processes, thus they are found in the air and are deposited on surfaces. Exposure to dioxins and dioxin-compounds may result in skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.⁴³

⁴¹ Post-remediation risk values for human health risk

⁴² PDF Pages 3,135-3,153

⁴³ http://www.who.int/mediacentre/factsheets/fs225/en/

The HI for this scenario is **376**, still several hundreds of times higher than the USEPA and DTSC threshold of 1. Primary contributors above USEPA and DTSC thresholds are listed below in Table STL-9. The primary contributor is cadmium, which if exposed, can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed⁴⁴

Another key point to make is that monomethylhydrazine (MMH) was a primary contributor in the HHRA, but as we look at the tables in Appendix E3, we noticed that the EPC for MMH was missing from these tables. In other words, MMH was "removed," thus making it difficult to provide a cancer risk, or an HQ. This makes a clear statement that Boeing is once again making another attempt to reduce its cleanup obligations by altering data for their own benefit.

Table STL-8: Residual Human Health Risk-Garden Exposure Scenario*				
Analyte	Carcinogenic RBSL ^a (mg/kg)	Cancer Risk	Percent Contribution	
2,3,7,8-TCDD TEQ	7.51E-09	5.37E-04	28%	
Aroclor 1254	4.88E-04	1.68E-04	8.7%	
Aroclor 1260	4.89E-04	7.13E-05	3.7%	
Aroclor 1262	4.88E-04	1.21E-05	0.6%	
Aroclor 5460	4.86E-04	6.78E-05	3.5%	
Benzo(a)anthracene	8.05E-04	1.80E-04	9.4%	
Benzo(a)pyrene	8.09E-05	4.00E-04	20.9%	
Benzo(b)fluoranthene	8.05E-04	1.71E-04	8.9%	
Benzo(k)fluoranthene	8.09E-04	7.35E-05	3.8%	
Chrysene	8.06E-03	2.72E-05	1.4%	
Dibenzo(a,h)anthracene	2.38E-04	8.57E-05	4.5%	
Dieldrin	5.99E-05	1.04E-05	0.5%	
Indeno(1,2,3-cd)pyrene	8.13E-04	7.41E-05	3.9%	
Mirex	5.42E-05	3.74E-05	2%	
Total Risk		2.00E-03		

"*" Data taken from Table E3-2 of Appendix E3

"a" RBSL=Risk Based Screening Levels. RBSLs used in this HHRA are for assessing cancer risk and/or noncancer hazard incoporate these toxicity values, which are route specific. RBSL values were obtained from Section 3.3 of Attachment 1 of Appendix B

USEPA Target Risk Range of 1E-06 to 1E-04

DTSC Point of Departure Risk Value of 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STL-9: Residual Human Health Non-Cancer Risk- Garden Exposure Scenario*			
Analyte	Non-Carcinogenic RBSL ^a (mg/kg)	Hazard Quotient	Percent Contribution
1,1-Dimethylhydrazine	0.000248	3.23	0.9%
2,3,7,8-TCDD TEQ	0.00000252	16	4.2%
Antimony	0.139	2.05	0.5%
Aroclor 1254	0.00721	11.4	3%
Aroclor 1260	0.00723	4.83	1.3%
Aroclor 5460	0.00719	4.59	1.2%
Cadmium	0.00165	326	86.6%
Copper	11.1	1.48	0.4%
Formaldehyde	3.7	1.77	0.5%
Zinc	53.8	1.67	0.40%
Hazard Index		376	

"*" Data taken from Table E3-2 of Appendix E3

"a" RBSL=Risk Based Screening Levels. RBSLs used in this HHRA are for assessing cancer risk and/or noncancer hazard incoporate these toxicity values, which are route specific. RBSL values were obtained from Section 3.3 of Attachment 1 of Appendix B

TEQ=Toxic Equivalent

USEPA and DTSC Threshold HI is a value of 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

TEQ=Toxic Equivalent

⁴⁴ https://www.osha.gov/SLTC/cadmium/

Groundwater Use Pathway

It is also significant to note that Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-14), this gives us the impression that Boeing is not intending to do anything about the groundwater well.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still far above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA (which are summarized in the tables above) "demonstrate that *acceptable* risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the STL-4 RFI site" (emphasis added)⁴⁵. However, it is clearly shown in their own tables and data that the risks are *not* acceptable. Therefore DTSC must ensure that a full cleanup is done at this RFI site.

⁴⁵ Appendix E3 Section 3.0 "Conclusions"

Environmental Effects Laboratory⁴⁶

Site Background

The Environmental Effects Laboratory (EEL), also known as the Hydrogen Lab, is located on the boundary between Administrative Areas III and IV in the western portion of SSFL. The Site is currently inactive, and all structures have been demolished. Buildings 3268 and 3271 were used for the EEL Cryogenic Laboratory and associated test cells from 1968 through 2008. These buildings were used for testing various materials under high-pressure hydrogen conditions. Other structures associated with the testing operations included an equipment and material storage building, a mechanics workshop, a hazardous materials storage pad, transformers, and over 25 small aboveground storage tanks that were mostly used to store gases and hydraulic oil.

Appendix E1: Human Health Risk Assessment⁴⁷

Direct Contact with Soil⁴⁸

Potential routes of exposure to chemicals from direct contact with soil include incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors emitted from soil to ambient air. For the direct soil contact pathway, the total site ELCR is **4E-04** with an incremental⁴⁹ risk of 3E-04, which both exceed DTSC's point of departure of 1E-06. The primary risk drivers above USEPA and DTSC thresholds are listed in Table EEL-1. The primary contributor, arsenic, is a natural component of the earth's crust, but is highly toxic in its inorganic form, and can be exposed through drinking water, inhalation, and consumption of food that has been exposed to arsenic. Exposure to arsenic can cause, vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.⁵⁰ Keep in mind, Boeing notes "a statistical comparison of arsenic levels at the EEL RFI site (site EPC of 26.4 milligrams per kilogram and maximum detected value of 110 mg/kg) with background concentrations indicated that onsite arsenic levels are statistically higher than background" (p. 622).

Both the total site HI for soil and the incremental HI for this scenario are 2, which exceeds the USEPA and DTSC threshold HI value of 1. Primary contributors are listed in Table EEL-2.

⁴⁶ <u>http://www.dtsc-</u>

ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66635_Draft_RCRA_Facility_Investigati on_Data_Summary_and_Findings_Report_- Environmental_Effects_Laboratory.pdf

⁴⁷ PDF pages 617-656

⁴⁸ Potential routes of exposure to chemicals from direct contact with soil include incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors emitted from soil to ambient air.

⁴⁹ Risk from contamination above background levels onsite

⁵⁰ http://www.who.int/mediacentre/factsheets/fs372/en/

Table EEL-1: Direct Soil Contact Carcinogenic Risk*				
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution	
2,3,7,8-TCDD TEQ	4.81E-06	4.37E-06	1.1%	
Arsenic	6.58E-02	4.01E-04	96.8%	
Benzo(a)anthracene	3.87E-01	1.12E-06	0.3%	
Benzo(a)pyrene	3.87E-02	4.62E-06	1.1%	
Total Risk		4.00E-04		
PCB TEQ [®]	3.57E-06	2.00E-05		

* Data taken from Table E1-5 of Appendix E1 of EEL RFI Report

TEQ= Toxic Equivalet Quotient

PCB TEQ= Polychlorinated Biphenyl

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 4.2E-4

USEPA Risk Range is 1E-06 to 1E-04

DTSC Point of Departure is 1E-06

RBSL=Risk Based Screening Level

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-2: Direct Soil Contact Noncarcinogenic Risk*				
Analyte	Noncarcinogenic RBSL	Hazard Quotient	Percent Contribution	
2,3,7,8-TCDD TEQ	0.0000505	0.416	23.3%	
Antimony	26.4	0.03	1.7%	
Aroclor 1254	1.1	0.0429	2.4%	
Aroclor 1260	1.1	0.0344	1.9%	
Arsenic	21.6	1.22	68.6%	
МСРА	34.3	0.0274	1.5%	
Hazard Index		2		
PCB TEQ	0.0000386	2		

*Data taken from Table E1-5 of Appendix E1 of EEL RFI Report

TEQ= Toxic Equivalet Quotient

PCB TEQ= Polychlorinated Biphenyl

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 4.

USEPA and DTSC threshold HI value is 1.

RBSL=Risk Based Screening Level

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Garden Use⁵¹

For the homegrown produce consumption pathway, the total ELCR is **3E-01** and the incremental risk is 2E-01, which is far above DTSC point of departure of 1E-06. Primary contributors above USEPA and DTSC threshold are listed in Table EEL-3. The primary contributor is arsenic, which if exposed can cause vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.⁵²

The total site HI for this scenario is **486**, and the incremental HI of **377**, which both *greatly exceed* USEPA and DTSC threshold HI value of 1. The primary contributor is arsenic, and other contributors for this HI are listed in Table EEL-4. Notably, in the HHRA summary, it lists the HI for this scenario as 486, but Table E1-5 of the HHRA

⁵¹ Another pathway evaluated for the hypothetical future suburban resident is the consumption of homegrown produce that has accumulated chemicals from soil.

⁵² http://www.who.int/mediacentre/factsheets/fs372/en/

lists the HI as 363. For the sake of our table (EEL-4), we will use the lower value (363) since the chemicals listed are associated with that HI.

Table EEL-3: Garden Use Carcinogenic Risk*				
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution	
2,3,7,8-TCDD TEQ	7.51E-09	2.80E-03	1%	
Aroclor 1254	4.88E-04	9.70E-05	0.0%	
Aroclor 1260	4.89E-04	7.75E-05	0.0%	
Arsenic	9.92E-05	2.66E-01	97.3%	
Benzo(a)anthracene	8.05E-04	5.39E-04	0.2%	
Benzo(a)pyrene	8.09E-05	2.21E-03	0.8%	
Benzo(b)fluoranthene	8.05E-04	4.47E-04	0.2%	
Benzo(k)fluoranthene	8.09E-04	2.71E-04	0.1%	
Chrysene	8.06E-03	6.68E-05	0.0%	
Dibenzo(a,h)anthracene	2.38E-04	4.41E-05	0.0%	
Hexavalent Chromium	1.94E-03	5.81E-04	0.2%	
Indeno(1,2,3-cd)pyrene	8.13E-04	8.31E-05	0.0%	
Mirex	5.42E-05	3.39E-05	0.0%	
Total Risk		3.00E-01		
PCB TEQ ^a	7.50E-09	8.00E-03		

* Data taken from Table E1-5 of Appendix E1 of EEL RFI Report

TEQ= Toxic Equivalet Quotient

PCB TEQ= Polychlorinated Biphenyl

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, the correct risk would be 3.08E-1 RBSL=Risk Based Screening Level

USEPA Risk Range is 1E-06 to 1E-04

DTSC Point of Departure is 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-4: Garden Use Noncarcinogeic Risk*					
Analyte	Noncarcinogenic RBSL	Hazard Quotient	Percent Contribution		
2,3,7,8-TCDD TEQ	0.0000025	0.0028	1%		
Antimony	0.139	5.68	1.6%		
Aroclor 1254	0.00721	6.56	1.8%		
Aroclor 1260	0.00723	5.24	1.4%		
Arsenic	0.104	253	69.6%		
Hexavalent Chromium	1.08	1.05	0.3%		
MCPA	0.131	7.2	2%		
Hazard Index		363			
PCB TEQ ^a	2.52E-07	247			

* Data taken from Table E1-5 of Appendix E1 of EEL RFI Report

TEQ= Toxic Equivalet Quotient

PCB TEQ= Polychlorinated Biphenyl

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 610.

USEPA and DTSC threshold HI value is 1.

RBSL=Risk Based Screening Level

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Indoor Air Pathway⁵³

⁵³ For the indoor air pathway, the potential route of exposure to volatile chemicals detected in soil vapor is inhalation of volatile chemicals that could migrate from the vadose zone to inside a future residence.

For the indoor air pathway, the total site ELCR is **3E-05**, which exceeds the DTSC point of departure of 1E-06 by a factor of 30. The primary risk drivers are trichloroethene (TCE; 94%; 3E-05), and benzene (6%; 2E-06). The total site HI is 7 for this scenario, which exceeds the USEPA ad DTSC threshold value of 1. The primary contributor to the site HI is TCE (>99%; HQ=7). As mentioned in the previous chapter, exposure to TCE can affect reproductive organs and impairs neurological function, as well as kidney cancer, and liver cancer.⁵⁴

Groundwater Use Pathway⁵⁵

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which is above both the USEPA target risk range of 1E-06 to 1E-04 *and* exceeds the DTSC point of departure of 1E-06. The primary contributor, vinyl chloride, is used to make a variety of plastics and vinyl products. Acute exposure to vinyl chloride in air can result in central nervous system effects, and chronic exposure (via inhalation and oral) can result in liver damage and cancer.⁵⁶ Other primary risk drivers above USEPA and DTSC thresholds are listed below in Table EEL-5.

The HI for this scenario is **426**, which greatly exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors are TCE and cis-1,2-dichloroethene. To elaborate, cis-1,2-dichloroethene is a highly flammable, colorless liquid and is used to produce solvents and in chemical mixtures, which if inhaled or direct contact can have toxic effects, such as irritation of the lungs, skin, and eyes.⁵⁷ Other contributors are listed in Table EEL-6.

Note, the risk estimates for radionuclides of potential concern identified for Chatsworth Formation groundwater (at HAR-18) were calculated separately from those associated with chemicals of potential concern. The risk calculation table provided in Boeing's HHRA (Table E1-11) indicates that the ELCR is 2E-05, which exceeds DTSC's point of departure, with the primary contributor being Uranium-233/234 (94%; 1E-05). This calculated risk adds on to the total risk of groundwater well HAR-18.

⁵⁴ https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30

⁵⁵ Potential routes of exposure to chemicals in Chatsworth Formation groundwater include ingestion, dermal contact, and inhalation of vapors during assumed hypothetical domestic use.

⁵⁶ https://www.epa.gov/sites/production/files/2016-09/documents/vinyl-chloride.pdf

⁵⁷ https://pubchem.ncbi.nlm.nih.gov/compound/_Z_-1_2-Dichloroethylene#section=GHS-Classification
Table EEL-5: Groundwater Use Carcinogenic Risk*				
Analyte	Carcinogenic RBC (ug/L)	Cancer Risk	Percet Contribution	
1,1-Dichloroethane	2.51E+00	2.07E-06	0.0%	
1,1-Dichloropropene	2.19E-01	2.79E-05	0.1%	
1,4-Dioxane	2.47E+00	5.67E-06	0.0%	
Aldrin	3.94E-03	3.05E-06	0.0%	
gamma-BHC	3.49E-02	3.72E-06	0.0%	
Heptachlor	1.86E-03	2.37E-05	0.1%	
n-Nitrosodimethylamine	1.51E-03	2.38E-03	7.8%	
Trichloroethene	4.24E-01	1.53E-03	5%	
Vinyl Chloride	1.36E-02	2.65E-02	86.9%	
Total Risk		3.00E-02		
* Data taken from Table E1-10 of Appendix E1				

* Data taken from Table E1-10 of Appendix E1

RBC= Risk-based concentration

ug/L= Microgram per liter

USEPA Target Risk Range is 1E-06 to 1E-04

DTSC Point of Departure is 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-6: Groundwater Use Noncarcinogenic Risk*					
Analyte	Noncarcinogenic RBC (ug/L)	Hazard Quotient	Percent Contribution		
cis-1,2-Dichloroethene	1.04E+01	163	38.3%		
Manganese	4.33E+02	0.346	0.1%		
n-Nitrosodimethylamine	1.60E-01	22.5	5.3%		
Thalium	2.00E-01	0.24	0.1%		
Trichloroethene	2.82E+00	230	54.1%		
Vinyl Chloride	4.44E+01	8.11	1.9%		
Hazard Index	426				
* Data taken from Table E1-10 of Appendix E1					

RBC= Risk-based concentration

ug/L= Microgram per liter

USEPA and DTSC threhold HI value is 1.

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment⁵⁸

For avian species, the risk estimation from the site is an HI of $>4^{59}$ (move footnote to end of sentence), which is above the threshold of 1. All chemicals with a low HQ above the USEPA and DTSC threshold of 1 are listed in Table EEL-7 below. For mammals, the risk estimation from the site is an HI of >61, which is well above the threshold on 1. All chemicals above the USEPA and DTSC threshold of 1 are listed in Table EEL-8 below.

⁵⁸ PDF Pages 699-763

⁵⁹ Since the HI was not calculated for this table, we had to calculate our own, but we focused on Hazard Quotients that were above and HQ of 1, therefore HQ's below 1 were not included in our calculation, but we are acknowledging the fact that the HI is higher than what we have calculated.

Table EEL-7: Risk Estimates for Birds (Hermit Thrush)-Food Chain Uptake via Soil*					
Analyte	RME EPC	Low EcoRBSL	High EcoRBSL	HQ Low	HQ High
DioxinFuran TEQ Bird	1.17E-05	5.70E-06	0.000057	2	0.2
4,4'-DDT	0.00637	0.0035	0.58	2	0.01
Hazard Index				>4	
PCB TEQ Bird ^a	0.000145	5.70E-06	5.70E+05	30	3
* Data take frame Takle 52 7 of Annandin 52					

* Data take from Table E2-7 of Appendix E2

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ Birdwas calculated separately from the total HI. If added, the correct Hi would be >34.

Table EEL-8: Risk Estimates for Mammals (Deer Mice)-Food Chain Uptake via Soil*					
Analyte	RME EPC	Low EcoRBSL	High EcoRBSL	HQ Low	HQ High
Antimony	0.546	0.042	2	11	0.3
Arsenic	16.1	2.1	31	8	0.5
DioxinFuran TEQ Mammal	1.57E-05	5.00E-07	0.000005	30	3
МСРА	0.94	0.12	0.61	8	2
Aroclor 1248	0.0233	0.0064	0.064	4	0.4
Hazard Index				>61	
PCB TEQ Mammal ^a	3.27E-05	5.00E-07	5.00E-06	70	7

* Data taken from Table E2-8 of Appendix E2

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ mammal was calculated separately from the total HI. If added, the correct Hi would be >131 Note, no actual Hazard Index was provided, we had to calculate our own.

Appendix E3: Residual Risk⁶⁰

Direct Soil Contact (0-2ft below ground surface (bgs))

For this scenario, the residual risk is **2E-06**, which is above DTSC's point of departure. Primary contributor is 2,3,7,8-TCDD TEQ (41.1%; 1.02E-06), which if exposed, it may result in skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.⁶¹ Other main contributors include Aroclor 1254 (10.1%; 2.51E-07), and Hexavalent Chromium (38.8%; 9.66E-07).

Direct Soil Contact (0-10ft bgs)

The residual risk estimates for the 0-10 ft bgs interval are higher and therefore used for computation of incremental risk. For this scenario, the ELCR was **2E-04**, which is both above USEPA's target risk range and exceeds DTSC's point of departure. The primary contributor was arsenic (98.8%; 1.64E-04), which if exposed can cause vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.⁶²

Garden Use

⁶⁰ PDF Pages 837-855

⁶¹ http://www.who.int/mediacentre/factsheets/fs225/en/

⁶² http://www.who.int/mediacentre/factsheets/fs372/en/

For this scenario, the residual risk estimate is **2E-03**, which exceeds USEPA's target risk range of 1E-06 to 1E-04, and DTSC's point of departure of 1E-06. This is a major concern because Boeing claims that the risk after the cleanup would still be very high. The primary contributor to the risk is 2,3,7,8-TCDD TEQ, which if exposed could cause skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.⁶³ Other contributors are listed in Table EEL-9 below.

The HI for this scenario is 33, which is also above USEPA and DTSC's threshold HI value of 1. The primary contributor is once again, 2,3,7,8-TCDD TEQ, and other contributors are listed in Table EEL-10.

Table EEL-9: Garden Use Residual Carcinogenic Risk*				
Analyte	Carcinogenic	Cancer Risk	Percent Contribution	
2,3,7,8-TCDD TEQ	7.51E-09	6.55E-04	42.2%	
4,4'-DDT	2.87E-03	4.63E-06	0.3%	
Aroclor 1254	4.88E-04	1.19E-04	7.7%	
Benzo(a)anthracene	8.05E-04	3.49E-06	0.2%	
Benzo(a)pyrene	8.09E-05	3.46E-05	2.2%	
Benzo(b)fluoranthene	8.05E-04	6.20E-06	0.4%	
Dibenzo(a,h)anthracene	2.38E-04	9.83E-06	0.6%	
Heptachlor epoxide	1.71E-04	2.74E-06	0.2%	
Hexavalent Chromium	1.94E-03	6.43E-04	41.4%	
Indeno(1,2,3-cd)pyrene	8.13E-04	3.10E-06	0.2%	
Mirex	5.42E-05	7.03E-05	4.5%	
Total Risk		2.00E-03		
*Data taken from Table E3-2 of Appendix E3				

*Data taken from Table E3-2 of Appendix E3

USEPA Risk Range is 1E-06 to 1E-04

DTSC Point of Departure is 1E-06

RBSL=Risk Based Screening Level

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-10: Garden Use Residual Noncarcinogeic Risk*				
Analyte	Noncarcinog	Hazard Quotier	Percent Contribution	
2,3,7,8-TCDD TEQ	2.52E-07	19.5	59.2%	
Antimony	1.39E-01	2.33	7.1%	
Aroclor 1254	7.21E-03	8.07	24.5%	
Hexvalent Chromium	1.08E+00	1.16	3.5%	
Perchlorate	1.58E-02	1.11	3.4%	
Hazard Index		33		

*Data taken from Table E3-2 of Appendix E3

RBSL=Risk Based Screening Level

USEPA and DTSC Threshold HI value is 1.

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

⁶³ http://www.who.int/mediacentre/factsheets/fs225/en/

Groundwater

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-18), giving the impression that Boeing is not intending to do anything about the groundwater well.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA (our summaries of which are discussed above) "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the EEL RFI site if the CMS areas presented are included in site cleanup activities"⁶⁴. But as evidenced in these tables, the risks are not protective of human and ecological health. Therefore, DTSC must ensure that a full cleanup is done at this RFI site.

⁶⁴ Appendix E3 Section 3.0 "Conclusions"

Area III Sewage Treatment Plant⁶⁵

Background

The Area III Sewage Treatment Plant (STP-3) RFI site is located in the west-central portion of Administrative Area III at SSFL. The RFI site is currently inactive and all structures have been demolished. Facilities at the STP-3 RFI site identified during the RFA include Building 3600 (the sewage treatment plant); Buildings 3251, 3252, and 3267 (known collectively as the former Ranch House, where a metallurgical laboratory is believed to have been operated); the STP-3 RFI Site Pond; and the STP-3 RFI Site Clarifier period of operation of the suspected metallurgical laboratory are not available from historical documentation, although the ranch house buildings were demolished in the late 1980s.

Appendix E1: Human Health Risk Assessment⁶⁶

Direct Soil Contact

For the direct soil contact pathway, the total site ELCR is **3E-05**, and the incremental risk is also 3E-05, which exceeds DTSC's point of departure of 1E-06. The primary contributors are listed in Table STP-1. The total site HI for soil for this scenario is **4**, which exceeds the USEPA and DTSC threshold HI value of 1. Primary contributors are listed in Table STP-2 below.

Also, the PCB-TEQ risk and HI for this scenario is higher than the calculated total risk and HI, but Boeing is not including the PCB-TEQs because it claims that there are "uncertainties" in the numbers.

Table STP-1: Direct Soil Contact Carcinogenic Risk*					
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution		
2,3,7,8-TCDD TEQ	4.81E-06	5.50E-06	21.6%		
Aroclor 1254	2.32E-01	4.60E-06	18%		
Benzo(a)anthracene	3.87E-01	1.40E-06	5.5%		
Benzo(a)pyrene	3.87E-02	1.10E-05	43.2%		
Benzo(b)fluoranthene	3.87E-01	1.60E-06	6%		
Total Risk		3.00E-05			
PCB-TEQ ^a	3.57E-06	2.00E-04	-		

*Data taken from Table E1-5 of Appendix E1

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 2.3E-04 DTSC Point of Departure 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

⁶⁵ http://www.dtsc-

ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66620_Draft_RCRA_Facility_Investigati on_Data_Summary_and_Findings_Report_-_Area_III_Sewage_Treatment_Plant_RFI_Site.pdf

⁶⁶ PDF Pages 408-452

Table STP-2: Direct Soil Contact Noncarcinogenic Risk*					
Analyte	NonCarcinogenic RBSL	Hazard Quotient	Percent Contribution		
2,3,7,8-TCDD TEQ	5.05E-05	0.527	11.7%		
Aroclor 1254	1.10E+00	0.971	21.6%		
Cadmium	4.60E+00	0.35	7.8%		
Mercury	1.68E+01	0.997	22.2%		
Silver	2.30E+02	0.83	18.5%		
Thallium	7.61E-01	0.674	15%		
Hazard Index		4			
PCB-TEQ ^a	3.86E+00	22			

*Data taken from Table E1-5 of Appendix E1

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 26 USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Garden Use

For the homegrown produce consumption pathway, the total site ELCR is **1E-02** and the incremental risk is also 1E-02, which exceeds the DTSC point of departure of 1E-06. The primary risk driver is benzo(a)pyrene, which is an adhesive and sealant, as well as a fuel and fuel additive. Exposure to benzo(a)pyrene has carcinogenic effects and can cause chronic bronchitis, dermatitis, keratosis, damage to the reproductive system and leukemia⁶⁷. Other main risk drivers are listed in Table STP-3.

The HI is **1,838**, and the incremental HI is 1,599, which are almost two thousand of times greater than the USEPA and DTSC threshold HI. The primary risk driver is cadmium, which if exposed, can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed⁶⁸. Primary risk drivers are listed in Table STP-4. Note also that the PCB-TEQs for both risk and HI are not included in the totals because Boeing claims there are "uncertainties" in the numbers, which is convenient for Boeing because then it gives the illusion that a lesser quality cleanup is then needed when the risk is **1E-01**, and the HI is about **3,304**.

⁶⁷ https://pubchem.ncbi.nlm.nih.gov/compound/benzo_a_pyrene#section=Health-Hazard

⁶⁸ https://www.osha.gov/SLTC/cadmium/

Table STP-3: Garden Use Carcinogenic Risk*				
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution	
2,3,7,8-TCDD TEQ	7.51E-09	3.54E-03	26.9%	
Aroclor 1254	4.88E-04	2.19E-03	16.7%	
Aroclor 1262	4.88E-04	2.25E-05	0.2%	
Benzo(a)anthracene	8.05E-04	6.75E-04	5.1%	
Benzo(a)pyrene	8.09E-05	5.30E-03	40.3%	
benzo(b)fluoranthene	8.05E-04	7.45E-04	5.7%	
benzo(k)fluoranthene	8.09E-04	3.98E-04	3.0%	
Chrysene	8.06E-03	1.21E-04	0.9%	
dibenzo(a,h)anthracene	2.38E-04	8.57E-04	0.7%	
Indeno(1,2,3-cd)pyrene	8.13E-04	6.61E-05	0.5%	
Total Risk		1.00E-02		
PCB TEQ	7.50E-09	1.00E-01	-	

*Data taken from Table E1-5 of Appendix E1

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included, the total risk would be 1.1E-01 USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

RBSL=Risk Based Screening Level

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STP-4: Garden Use Noncarcinogenic Risk*				
Analyte	NonCarcinogenic RBSL	Hazard Quotient	Percent Contribution	
2,3,7,8-TCDD TEQ	2.52E-07	105	5.7%	
Antimony	1.39E-01	7.9	0.4%	
Aroclor 1254	7.21E-03	148	8.1%	
Aroclor 1262	7.21E-03	1.53	0.1%	
Cadmium	1.65E-03	976	53.1%	
Copper	1.11E+01	5.29	0.3%	
Mercury	5.04E-02	332	18.0%	
Nickel	6.07E+00	8.92	0.5%	
Silver	1.81E+00	1.06	5.7%	
Thallium	3.60E-03	142	7.7%	
Zinc	5.38E+01	4.38	0.2%	
Hazard Index		1,838		
PCB-TEQ ^a	2.52E-07	3,304		

*Data taken from Table E1-5 of Appendix E1

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 5,142 USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which exceeds the DTSC point of departure of 1E-06. The primary risk driver is vinyl chloride, which if exposed can result in central nervous system effects, and liver damage

and cancer. Other risk drivers are listed in Table STP-5. The HI for this scenario is **426**, which exceeds both the USEPA and DTSC threshold HI value of 1. The primary contributor is TCE, other contributors are listed in Table STP-6.

Boeing states "the potential risk from exposure to lead in groundwater is evaluated separately from other carcinogens and noncarcinogens. For this HHRA, potential risk from lead is evaluated by comparing the maximum EPC for lead in Chatsworth Formation groundwater to the USEPA Action Level in water 15 ug/L. Only one of the 10 well points in Boeing RFI Subareas 5/9 South had an EPC exceeding 15 ug/L at well point RD-55A where the EPC was 40.1 ug/L".

Table STP-5: Groundwater Use Carcinogenic Risk*					
Analyte	Carcinogenic RBC	Cancer Risk	Percent Contribution		
1,1-Dichloroethane	2.5E+00	2.1E-06	0.0%		
1,1-Dichloropropene	2.2E-01	2.8E-05	0.1%		
1,4-Dioxane	2.5E+00	5.7E-06	0.0%		
Aldrin	3.9E-03	3.1E-06	0.0%		
Heptachlor	1.9E-03	2.4E-05	0.1%		
N-Nitrosodimethylamine	1.5E-03	2.4E-03	7.8%		
Trichloroethene	4.2E-01	1.5E-03	5.0%		
Vinyl Chloride	1.4E-02	2.7E-02	86.9%		
Total Risk		3.0E-02			

*Data taken from Table E1-12 of Appendix E1

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

RBSL=Risk Based Concentration

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STP-6: Groundwater Use NonCarcinogenic Risk*					
Analyte	NonCarcinogenic RBC	Hazard Quotient	Percent Contribution		
1,1-Dichloroethene	1.3E+02	0.19	0.0%		
1,1-Dichloropropene	3.9E+01	0.157	0.0%		
cis-1,2-Dichloroethene	1.0E+01	163	38.3%		
Manganese	4.3E+02	0.346	0.1%		
N-Nitrosodimethylamine	1.6E-01	22.5	5.3%		
Thallium	2.0E-01	0.24	0.1%		
trans-1,2-Dichloroethene	9.3E+01	0.495	0.1%		
Trichloroethene	2.8E+00	230	54.1%		
Vinyl Chloride	4.4E+01	8.11	1.9%		
Hazard Index		426			

*Data taken from Table E1-12 of Appendix E1

RBSL=Risk Based Concentration

USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment⁶⁹

For plant species, we've calculated an HI of **130**, which is more than a 100 times above the USEPA and DTSC HI threshold value of 1. The two main contributors above an HI of 1 are chromium (HQ=70), and mercury (HQ=60)⁷⁰. Chromium is highly toxic for biota, and accumulation of chromium in plants causes high toxicity in terms of reduction in growth and biomass accumulation, induces structural alterations, interferes with photosynthetic and respiration process, and water and minerals uptake mechanisms, and lastly, death of the plant species.⁷¹ Mercury on the other hand can cause serious damage to plants and wildlife. Mercury concentrations in an ecological setting can cause death of biota, reduced reproduction, slower growth and development, and abnormal behavior.⁷²

For invertebrates, we've calculated and HI of at least **202**, with the main contributors being Mercury and Zinc. The effects of mercury have been explained above. Exposure to excessive amounts of zinc can have serious effects in the digestive system.⁷³ Also take into consideration that invertebrates tend to be a primary food source for other animals in the food chain, and bioaccumulation of zinc can be even more harmful as you go up the trophic levels. Other primary risk drivers above the threshold HI value of 1 are listed in Table STP-7.

For avian species, we've calculated with Boeing's data an HI of **1,367**, which is far above USEPA and DTSC's HI threshold value of 1. The primary contributors are lead and silver. Lead poisoning in birds can cause lethargy, progressive weakness causing the inability to fly, and usually accumulates in the liver, kidneys, and blood.⁷⁴ As of yet, no data has been provided for the effects of silver in avian species, though it has shown in poultry to affect the liver.⁷⁵ Other contributors can be found in Table STP-7.

Lastly, for mammals, we've calculated an HI of **638**, which is far above USEPA and DTSC's HI threshold value of 1. The primary contributor is nickel, which if exposed, an animal would affect the kidneys and have serious developmental and reproductive effects.

⁶⁹ PDF pages 454-505

⁷⁰ Table E2-5, PDF page 484

⁷¹ https://link.springer.com/article/10.1007/s10311-013-0407-5

⁷² https://www.epa.gov/mercury/basic-information-about-mercury#ecological

⁷³ https://www.merckvetmanual.com/toxicology/zinc-toxicosis/overview-of-zinc-toxicosis

⁷⁴ https://www.nwhc.usgs.gov/disease_information/lead_poisoning/

⁷⁵ http://www.inchem.org/documents/cicads/cicads/cicad44.htm#6.0

Table STP-7: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*						
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High	
Cadmium	1.61	0.2	3	8.0	0.5	
Chromium	73.6	2.4	14	30.0	5.0	
Copper	58.5	1.1	24	50.0	2.0	
Lead	59	0.062	39	1000.0	2.0	
Mercury	16.7	0.87	1.7	20.0	10.0	
Nickel	54.1	1.5	60	40.0	0.9	
Silver	191	0.99	29	200.0	7.0	
Zinc	236	32	320	7.0	0.7	
Aroclor 1254	1.07	0.083	0.83	10.0	1.0	
DioxinFuran_TEQ_Bird	1.42E-05	5.70E-06	0.000057	2.0	0.2	
Hazard Index				1367		
PCB TEQ Bird	0.001951	5.70E-06	5.70E-05	300.0	30.0	

*Data taken from Table E2-7 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

EcoRBSL=Ecological Risk Based Screening Level

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1667

Table STP-8: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*						
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High	
Antimony	0.748	0.042	2	20.0	0.4	
Cadmium	1.05E+00	0.019	0.81	60.0	1.0	
Chromium	50.9	1.9	46	30.0	1.0	
Copper	43.9	1.5	350	30.0	0.1	
Lead	40	3.8	910	10.0	0.4	
Mercury	11.5	2.2	-	5.0	-	
Nickel	53.6	0.13	30	400.0	2.0	
Silver	75.9	3.5	2.00E+01	1.0		
Zinc	177	19	820	9.0	0.2	
Aroclor 1248	2.00E-02	6.40E-03	0.064	3.0	0.3	
Aroclor 1254	5.62E-01	3.90E-02	0.39	10.0	1.0	
DioxinFuran_TEQ_Mammal	2.64E-05	5.00E-07	0.000005	50.0	5.0	
Aroclor 1260	3.41E-01	2.50E-02	0.25	10.0	1.0	
Hazard Index				638		
PCB TEQ Mammal	0.000437	5.00E-07	5.00E-06	900.0	90.0	

*Data taken from Table E2-8 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

EcoRBSL=Ecological Risk Based Screening Level

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1538

Appendix E3: Residual Risk⁷⁶

Garden Use

The post remediation risk value that Boeing predicts for this scenario is **3E-04**, which is still above the USEPA target risk range, and DTSC's Point of Departure. The primary contributors are listed below in Table STP-9. The main contributor to the post remediation risk is 2,3,7,8-TCDD TEQ, 2,3,7,8-TCDD TEQ (41.1%; 1.02E-06), which if

⁷⁶ PDF Pages 557-566

exposed, it may result in skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.⁷⁷

The post remediation HI that Boeing predicts for this scenario is 553, still far above the USEPA and DTSC threshold HI value of 1. The primary contributors are listed below in Table STP-10. The primary contributor is cadmium, which can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed⁷⁸

Table STP-9: Garden Use Residual Carcinogenic Risk*						
Analyte	Carcinogenic RBSL Cancer Risk Percent Contribution					
2,3,7,8-TCDD TEQ	7.51E-09	2.28E-04	74.9%			
Aroclor 1254	4.88E-04	1.23E-05	4%			
Aroclor 1262	4.88E-04	2.25E-05	7.4%			
benzo(a)pyrene	8.09E-05	3.58E-05	11.8%			
Benzo(b)fluoranthene	8.05E-04	4.61E-06	1.5%			
Total Risk		3.00E-04				

*Data taken from Table E3-2 of Appendix E3

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STP-10: Garden Use Noncarcinogenic Risk*					
Analyte	NonCarcinogenic RBSL	Hazard Quotient	Percent Contribution		
2,3,7,8-TCDD TEQ	2.52E-07	6.78	1.2%		
Antimony	1.39E-01	9.33	1.7%		
Aroclor 1262	7.21E-03	1.53	0.3%		
Cadmium	1.65E-03	391	70.7%		
Mercury	5.04E-02	1.46	0.3%		
Nickel	6.07E+00	7.52	1.4%		
Thallium	3.60E-03	1.32	24%		
Hazard Index		553			

*Data taken from Table E3-2 of Appendix E3

USEPA and DTSC threshold HI value is 1

RBSL=Risk Based Concentration

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-18), giving the impression that Boeing is not intending to do anything about the groundwater well.

⁷⁷ http://www.who.int/mediacentre/factsheets/fs225/en/

⁷⁸ https://www.osha.gov/SLTC/cadmium/

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and the tables make clear, the risk values are still often above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the STP-3 RFI site if the CMS areas presented are included in site cleanup activities"⁷⁹. But as we see in the provided evidence above, the risks are *not* acceptable. Therefore, DTSC must ensure that a full cleanup is done at this RFI site.

⁷⁹ Appendix E3 Section 3.0 "Conclusions"

Compound A⁸⁰

Background

The Compound A Facility RFI site is in the northeastern portion of Boeing RFI Subarea 5/9 South, located north of the STL-4 RFI site and south and east of the EEL and STP-3 RFI sites. The site is currently inactive, and all structures have been demolished. The Compound A Facility site was used in support of Rocketdyne Propulsion and Power operations. The Compound A Facility RFI site contains one solid waste management unit (SWMU)-Building 3418 (SWMU 6.4) that was identified in the RFA. Building 3418 was used for manufacturing chlorine pentafluoride (this chemical is referred to as "Compound A") and for manufacturing laser chemicals (nitrogen, fluoride, and antimony compounds) from 1967 through 1969. The Compound A Facility RFI Site boundary was defined to include operations associated with Building 3418. In addition, facilities or features near this SWMU were included in the Compound A Facility RFI site boundary. These include Buildings 3430 and 3768, the STL-4 air-stripping towers and transformer demolished in 2011, two forming pits, and explosive storage bunker, the Compound A on the east side of Building 3418, one suspect pond, and a debris area southwest of Building 3418.

Appendix E1: Human Health Risk Assessment⁸¹

Direct Soil Contact

For the direct soil contact pathway, the total site ELCR is **2E-04** and the incremental risk is 8E0-06, which exceeds the DTSC point of departure of 1E-06. The primary risk driver to the incremental soil ELCR is arsenic (99%; 2E-04). Boeing then states "a statistical comparison of arsenic levels at the Compound A Facility RFI site (site EPC of 11.2 mg/kg) and maximum detected value of 107 mg/kg with background concentrations indicating that onsite arsenic levels are not statistically higher than background. However, arsenic is considered a chemical of potential concern since the maximum detect exceeded two times the background comparison value". The total site HI for soil for this scenario is **2** and the incremental HI is 1, which exceeds the USEPA and DTSC threshold HI value of 1.

Garden Use

For the homegrown produce consumption pathway, the ELCR is **1E-01**, which is well above the USEPA target risk range and exceeds DTSC's point of departure of 1E-06. Boeing also states that there is no incremental risk over background. The primary contributor to the site ELCR is arsenic (99.9%; 1.09E-01), which if exposed can cause

⁸⁰ http://www.dtsc-

ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66621_Draft_RCRA_Facility_Investigati on_Data_Summary_and_Findings_Report_-_Compound_A_Facility_RFI_Site.pdf

⁸¹ PDF Pages 1,187-1,229

vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.⁸²

The total site HI for this scenario is **1,112**, and the incremental HI is 715, which exceed the USEPA and DTSC threshold HI value of 1.⁸³ The primary contributor is cadmium, which can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed⁸⁴ One thing we would like to address is that in the HHRA, are no tables that show Hazard Indices that would add up to the value above, which is extremely unprofessional, and they aren't even completing a full analysis.

Indoor Air Pathway

For the indoor air pathway, the total site ELCR is **5E-04**, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds DTSC's point of departure of 1E-06. The primary risk driver is TCE (>99%; 5E-04). The total site HI is **154** for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributor to the site HI is TCE (>99%; HQ=154). As mentioned in the previous chapter, exposure to TCE can affect reproductive organs and impairs neurological function, as well as kidney cancer, and liver cancer.⁸⁵

Groundwater Use Pathway

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which is both above the USEPA target risk range and the DTSC point of departure of 1E-06. Primary contributors are listed in Table CA-1. The primary risk driver is vinyl chloride, which if exposed can result in central nervous system effects, and liver damage and cancer.

The site HI is **426** for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors are listed in Table CA-2. The main contributor is Cis-1,2-dichloroethene, which if inhaled or direct contact can have toxic effects, such as irritation of the lungs, skin, and eyes.⁸⁶ For radionuclides in groundwater, the calculated ELCR is **2E-05**, which exceeds the DTSC point of departure of 1E-06. The primary risk driver is Uranium-233/234 (94%; 1E-05).

⁸² http://www.who.int/mediacentre/factsheets/fs372/en/

⁸³ PDF Page 1,192

⁸⁴ https://www.osha.gov/SLTC/cadmium/

⁸⁵ https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30

⁸⁶ https://pubchem.ncbi.nlm.nih.gov/compound/_Z_-1_2-Dichloroethylene#section=GHS-Classification

Table CA-1: Groundwater Use Carcinogenic Risk*					
Analyte	Carcinogenic RBC Cancer Risk Percent Contr				
1,1-Dichloroethane	2.51E+00	2.07E-06	0.0%		
1,1-Dichloropropene	2.19E-01	2.79E-05	0.1%		
1,4-Dioxane	2.47E+00	5.67E-06	0.0%		
Aldrin	3.94E-03	3.05E-06	0.0%		
Heptachlor	1.86E-03	2.37E-05	0.1%		
N-Nitrosodimethylamine	1.51E-03	2.38E-03	7.8%		
Trichloroethene	4.24E-01	1.53E-03	5.0%		
Vinyl Chloride	1.36E-02	2.65E-02	86.9%		
Total Risk		3.00E-02			
*Data taken from Table E1-12 of Appendix E1					
USEPA Target Risk Range 1E-06 to 1E-04	-				

DTSC Point of Departure 1E-06

RBSL=Risk Based Concentration

Table CA-2: Groundwater Use NonCarcinogenic Risk*				
Analyte	NonCarcinogenic RBC	Hazard Quotient	Percent Contribution	
1,1-Dichloroethene	1.26E+02	0.19	0.0%	
1,1-Dichloropropene	3.88E+01	0.157	0.0%	
cis-1,2-Dichloroethene	1.04E+01	163	38.3%	
Manganese	4.33E+02	0.346	0.1%	
N-Nitrosodimethylamine	1.60E-01	22.5	5.3%	
Thallium	2.00E-01	0.24	0.1%	
trans-1,2-Dichloroethene	9.29E+01	0.495	0.1%	
Trichloroethene	2.82E+00	230	54.1%	
Vinyl Chloride	4.44E+01	8.11	1.9%	
Hazard Index		426		

*Data taken from Table E1-12 of Appendix E1

USEPA and DTSC threshold HI value is 1

Appendix E2: Ecological Risk Assessment⁸⁷

For plant species, we've calculated an HI of **35**, which is above USEPA and DTSC threshold HI value of 1. Chromium is the primary contributor at a Hazard Quotient of 30. Chromium is highly toxic for biota, and accumulation of chromium in plants causes high toxicity in terms of reduction in growth and biomass accumulation, induces structural alterations, interferes with photosynthetic and respiration process, and water and minerals uptake mechanisms, and lastly, death of the plant species.⁸⁸

For soil invertebrates, we've calculated an HI of **8**, which is above the USEPA and DTSC threshold HI value of 1. The primary contributor is zinc, with an HQ of 4. For birds, we've calculated an HI of **1,141**, which is more than a thousand times higher than the USEPA and DTSC threshold HI value of 1. The primary contributor is nickel, and can affect the kidneys and have serious developmental and reproductive effects of the bird.

RBSL=Risk Based Concentration

⁸⁷ PDF Pages 1,259-1,323

⁸⁸ https://link.springer.com/article/10.1007/s10311-013-0407-5

Table CA-3: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*					
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High
Barium	130	44	89	3.0	1.0
Cadmium	1.2	0.2	3	6.0	0.4
Chromium	32.1	2.4	14	10.0	2.0
Copper	37.7	1.1	24	30.0	2.0
Fluoride	72.9	35	140	2.0	0.5
Lead	70.8	0.062	39	1000.0	2.0
Nickel	34	1.5	60	20.0	0.6
Silver	21.5	0.99	29	20.0	0.7
Zinc	463	32	320	10.0	1.0
2-Amino-4,6-Dinitrotoluene	2.55E-01	6.00E-03	0.78	40.0	0.3
Hazard Index				1141	
PCB TEQ Bird	0.000205	5.70E-06	5.70E-05	40.0	4.0

*Data taken from Table E2-7 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

EcoRBSL=Ecological Risk Based Screening Level

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1181

Table CA-4: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*					
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High
Antimony	2.56	0.042	2	60.0	1.0
Arsenic	1.12E+01	2.1	31	5.0	0.4
Cadmium	0.902	0.019	0.81	50.0	1.0
Chromium	32.2	1.9	46	30.0	0.7
Copper	31.1	1.5	350	20.0	0.1
Lead	55	3.8	910	10.0	0.1
Manganese	485	79	920	6.0	0.5
Molybdenum	0.749	0.13	1.3	6.0	0.6
Nickel	33.9	0.13	30	300.0	1.0
Selenium	3.13E-01	1.00E-01	2.4	3.0	0.1
Silver	1.51E+01	3.50E+00	69	4.0	0.2
Zinc	3.51E+02	1.90E+01	820	20.0	0.4
Aroclor 1254	7.82E-02	3.90E-02	0.39	2.0	0.2
DioxinFuran_TEQ_Mammal	6.85E-06	5.00E-07	0.000005	10.0	1.0
Hazard Index				526	
PCB TEQ Mammal	6.92E-05	5.00E-07	5.00E-06	100.0	10.0
*					

*Data taken from Table E2-8 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

EcoRBSL=Ecological Risk Based Screening Level

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 626

Appendix E3: Residual Risk⁸⁹

Direct Soil Contact

For soil contact, Boeing estimates the residual risk (post-cleanup) will be **2E-04**, still above both the USEPA target risk range and DTSC point of departure. The primary risk driver is arsenic (98.1%; 1.55E-04). The estimated residual HI is 2, still above the USEPA and DTSC threshold HI value of 1.

Garden Use

There are no calculations provided by Boeing for the Garden Use pathway for residual risk. In other reports, the garden use pathway residual risk was provided, so why was it not included in this report? This gives us the impression that Boeing will not attempt to clean up this pathway.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-18), giving the impression that Boeing is not intending to do anything about the groundwater well either.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as our table's demonstrate, the risk values are still often above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the Compound A RFI site if the CMS areas presented are included in site cleanup activities"⁹⁰. Once again, as we see from the data Boeing provided, the risks are *not* acceptable. Therefore, DTSC must ensure that a full cleanup is done at this RFI site.

⁸⁹ PDF Pages 1,397-1,413

⁹⁰ Appendix E3 Section 3.0 "Conclusions"

Unaffiliated Areas⁹¹

The Unaffiliated Areas (UA) of 5/9 South was not used for any industrial purposes. No SSFL activities were conducted on this land. The area does include several drainage channels and surface water. Boeing did not do any modeling for this area, arguing that contamination could not be present because no SSFL activities happened in this region.

Boeing has also found that many of the sites that are in close proximity to the UA are incredibly contaminated as shown by the other RFI reports. However, Boeing claims that the UAs are not contaminated whatsoever because no previous activity had ever occurred on that portion of the property. This is an unrealistic assumption, however, as contamination does not stay in one place—on the contrary, it travels via wind and ground and surface water. We argue that these areas must be tested before these areas are deemed for No Further Action.

We'd also like to note that this RFI report was incomplete; for example, Boeing submitted data charts on compact disks instead of including the charts in this RFI report. The data was then uploaded to the DTSC's website upon our request, months after they should have been posted. Furthermore, the data that was posted is quite inadequate and does not include basic summaries for human or ecological risk assessments.

⁹¹ http://www.dtsc-

ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66636_Draft_RCRA_Facility_Investigati on_Data_Summary_and_Findings_Report_-_Unaffiliated_Areas_of_5_9_South.pdf

Subarea 1A Central

Happy Valley North⁹²

Background

The Happy Valley Area of Concern identified in the RFA was subdivided into two RFI sites – the Happy Valley North (HVN) RFI site in Boeing Subarea 1A Central, and the Happy Valley South RFI Site in Boeing Subarea 1A South. A ridge separates the two RFI sites, forming a natural divide between the surface water in each area. The HVN RFI comprises an area of approximately 1.3 acres surrounding the former Chemistry Laboratory (Building 1315), the former Tunnel Facility (Building 1773), and various support buildings where energetics and propellants were stored and tested from the early 1950s to the mid-1990s.

In the northern part of the HVN RFI site, experiments utilizing energetics compounds and detonators were conducted at the Building 1315 Chemistry Lab, the adjacent test cells, and the detonation and energetics sups southwest of the building. In the southern portion of the HVN RFI site, the Tunnel Facility and the associated Control Center and its test cells were used to test rocket and gun propellants. Other structures associated with HVN operations included the Instrumentation/Mechanics Shops, an incinerator, a chemistry lab, workshops, the Peroxide Catalyst Production Building, the High Altitude Test Chamber, cooling towers, and several small storage and support buildings.

Two phases of interim measures were conducted at the HVN RFI Site. Between 1999 and 2000, an interim measure was implemented to screen debris and remove suspected energetic and ordnance items. Small piles of sand (approximately 5 cubic yards of material) near the Tunnel Facility, sediment from concrete lined drainages, and sediment within the detonation sump at Building 1315 were excavated, sifted, and disposed of offsite (UXB, 2002). During the Happy Valley Interim Measures (HVIM) conducted from 2003 to 2004, approximately 800 cubic yards of metals-impacted shallow soil at the Building 1316 and Tunnel Facility area were excavated to address elevated arsenic concentrations. Additionally, 30 cubic yards of perchlorate-impacted soil were excavated from the hill-slope east of Building 1316 (MWH, 2004a). Between 2004 and 2006, perchlorate-impacted soils were bio remediated *in situ* (without being moved from where they are onsite) in the Building 1316 area.

Appendix E1: Human Health Risk Assessment⁹³

When the HHRA summary lists off the main risk contributors to either the ELCR or HI, the risk values Boeing lists do not match with the risk values listed in the tables throughout the HHRA.

⁹² http://www.dtsc-

ssfl.com/files/lib rcra soils/boeingsubarea1acntrl/DraftRFIReports/Draft RCRA Facility Investigation D ata_Summary_and_Findings_Report_-_Happy_Valley_North_RFI_Site.PDF 93 PDF Pages 583-687

Direct Soil Contact

For the direct soil contact pathway, the total site ELCR is 4E-04 and the total incremental risk is 2E-04, which exceeds the USEPA target risk range of 1E-06 to 1E-04 and the DTSC point of departure of 1E-04. The primary risk drivers are arsenic (77%; 1.9E-04) and 1,4-dichlorobenzene (22%; 5.5E-05). Arsenic, being the main contributor can cause vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.⁹⁴

The total site HI for soil for this scenario is 2, which exceeds the USEPA and DTSC threshold HI value of 1. Boeing also states "the potential risks from exposure to lead in soil at the HVN RFI site were not evaluated since lead was not identified as a chemical of potential concern. A comparison of lead levels with background concentrations indicated that onsite lead levels are lower than background lead levels."

Garden Use

For the homegrown produce consumption pathway, the total site ELCR is **2E-01** and the total incremental ELCR is 1E-01, both of which are above USEPA target risk range of 1E-06 and 1E-04 and exceeds DTSC's point of departure of 1E-06. The main contributor is arsenic (100%; 1.2E-01). The total site HI for this scenario is 700 and the incremental HI is 400, both of which surpass by far the USEPA and DTSC threshold HI value of 1. The primary risk drivers are listed in Table HVN-1.

Table HVN-1: Noncarcinogenic Risk*				
Analyte	NonCarcinogenic RBSL	Hazard Quotient		
Arsenic	1.00E-01		220	
Cadmium	1.60E-03		410	
Mercury	5.00E-02		4.4	
2,3,7,8-TCDD TEQ	2.50E-07		7.1	
Aroclor 1254	7.20E-03		10	
Aroclor 1260	7.20E-03		1.5	
Hazard Index			700	
PCB TEQ	2.50E-07		210	
*Data taken from Table E1-5 of Appendix E1				

1-5 of Appendix E1

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 910 USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Indoor Air Pathway

For the indoor air pathway, the total site ELCR is **1E-05**, which is within the USEPA and target risk range of 1E-06 to 1E-04 and above the DTSC point of departure of 1E-06. The risk driver associated with the site ELCR for indoor air is trichloroethene

⁹⁴ http://www.who.int/mediacentre/factsheets/fs372/en/

(TCE) (100%; 1.2E-05). The total site HI for this scenario is 4, which is above the USEPA and DTSC threshold HI value of 1. The risk driver associated with the site HI for indoor air is also TCE (100%; HQ=3.5).

Groundwater Use

For groundwater use at Chatsworth Formation well HAR-16, the ELCR is **2E-02**, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds DTSC point of departure of 1E-06. The primary contributors are listed in Table HVN-2, with TCE being the main contributor.

The HI is 2,000 for this scenario, which is above and way beyond the USEPA and DTSC threshold HI value of 1. The risk drivers above the USEPA and DTSC threshold are listed in Table HVN-3.

The potential risk from exposure to lead in groundwater is evaluated separately from other carcinogens and non-carcinogens. For this HHRA, the potential risk from lead is evaluated by comparing the maximum EPC for lead in Chatsworth Formation groundwater to the USEPA Action Level in water of 15ug/L. None of the well points in Boeing RFI Subarea 1A Central had an EPC exceeding 15ug/L.

For radionuclides in groundwater, the risk estimates for radionuclides of potential concern identified for Chatsworth Formation groundwater (at HAR-16) were calculated separately from those associated with chemicals of potential concern. The risk calculation indicates that the ELCR is 6E-04, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds the DTSC point of departure of 1E-06. The only groundwater radionuclide of potential concern in HAR-16 was radium-226 (100%; 6.4E-04).

Table HVN-2: Groundwater Use Carcinogenic Risk*				
Analyte	Carcinogenic RBC	Cancer Risk		
1,2,3-Trichloropropane	1.80E-0	4	4.60E-05	
Tetrachloroethene	7.10E-0	2	6.20E-05	
Trichloroethene	4.20E-0	1	1.30E-02	
n-Nitrosodimethylamine	1.50E-0	3	6.50E-03	
Total Risk			2.00E-02	
*Data taken from Table E1-12 of Appendix E1				

*Data taken from Table E1-12 of Appendix E1

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

RBSL=Risk Based Concentration

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table HVN-3: Groundwater Use NonCarcinogenic Risk*				
Analyte	NonCarcinogenic RBC	Hazard Quotient		
Perchlorate	1.40E-01		26.0	
1,1,2-Trichloroethane	4.20E-01		1.2	
cis-1,2-Dichlorothene	1.00E+01		8.1	
Trichloroethene	2.80E+00		1900.0	
n-Nitrosodimethylamine	1.60E-01		62.0	
Hazard Index			2,000	

Appendix E2: Ecological Risk Assessment⁹⁵

For Avian species, we've calculated an HI of **100**, which is exactly a 100 times above the USEPA and DTSC threshold HI value of 1. The primary contributor is 2-Amino-4,6-dinitrotoluene, other contributors are listed in Table HVN-4. For mammals, we calculated an HI of **276**, which is above USEPA and DTSC threshold HI value of 1.

Table HVN-4: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*						
Analyte	RME EPC	Low TRV	High TRV	HQ-Low	HQ-High	
Cadmium	6.80E-01	2.00E-01	3.00E+00	3.4	0.2	
Selenium	8.00E-01	3.90E-01	1.50E+00	2.0	0.5	
2,4,6-Trinitrotoluene	3.90E-01	2.30E-01	5.80E+00	1.7	0.1	
2-Amino-4,6-dinitrotoluene	3.90E-01	6.00E-03	7.80E-01	66.0	0.5	
Pentachlorophenol	8.00E+00	2.80E+00	2.10E+01	2.9	0.4	
p-Nitroaniline	8.00E+00	3.40E+00	3.40E+01	2.4	0.2	
PCB TEQ Bird (Coplanar PCBs)	1.20E-04	5.70E-06	5.70E-05	22.0	2.2	
Hazard Index				100		

*Data taken from Table E2-5 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

TRV=Toxicity reference value.

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Table HVN-5: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*					
Analyte	RME EPC	Low Eco TRV	High TRV	HQ-Low	HQ-High
Arsenic	2.40E+01	2.10E+00	3.10E+01	11.0	0.8
Cadmium	4.10E-01	1.90E-02	8.10E-01	21.0	0.5
Selenium	7.50E-01	1.00E-01	2.40E+00	7.5	0.3
2,4,6-Trinitrotoluene	3.90E-01	1.30E-01	6.50E-01	3.0	0.6
2-Amino-4,6-dinitrotoluene	3.90E-01	6.10E-02	4.60E-01	6.5	0.9
1,2-dichlorobenzene	5.80E+02	1.30E+02	1.30E+02	4.5	4.5
1,3-dichlorobenzene	5.40E+01	2.30E+01	1.10E+02	2.3	0.5
1,4-Dichlorobenzene	9.20E+01	5.60E+00	2.80E+01	16.0	3.3
Pentachlorophenol	8.00E+00	3.80E+00	1.00E+01	2.1	0.8
MCPA	9.40E+00	1.20E-01	6.10E-01	78.0	15.0
2,3,7,8-TCDD TEQ Mammal	1.50E-06	5.00E-07	5.00E-06	3.0	0.3
Aroclor 1248	5.30E-02	6.40E-03	6.40E-02	8.3	0.8
Aroclor 1254	7.60E-02	3.90E-02	3.90E-01	1.9	0.2
PCB TEQ Mammal (coplanar PCBs)	5.40E-05	5.00E-07	5.00E-06	110.0	11.0
Hazard Index				275	

*Data taken from Table E2-6 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

TRV=Toxicity reference value.

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Appendix E3: Residual Risk⁹⁶

In researching the residual risk, we were disturbed to find that three chemicals in these residual risk assessments were "taken out." This was evidenced by the fact that the Exposure Point Concentration values have been set to "0", which prevents the ability to

⁹⁵ PDF Pages 689-827

⁹⁶ PDF Pages 829-849

calculate the cancer risk or HI. These chemicals are: 1,1,1-Trichloroethane; Hexachlorobutadiene; and p-Cymene. We've also seen this with Monomethylhydrazine (MMH) in the Systems Test Lab-IV residual risk values where MMH's (the primary contributor to the human health risk) EPC was also set to "0" in the residual risk assessment tables.

Direct Soil Contact

For this scenario, the site residual ELCR is **3E-04**, which is still above USEPA's target risk range, and DTSC's point of departure. The primary risk driver for this ELCR is arsenic (2.5E-04).

Garden Use

For this pathway, the site residual ELCR is **2E-01**, which is still above USEPA's target risk range and DTSC's point of departure. The primary risk drivers are listed in Table HVN-6. We also want to make another key point that Boeing's estimated residual risk of 2E-01 is the same as the risk level before the cleanup (see Appendix E1 of this chapter, above), this is another clear statement that Boeing is not intending to cleanup this site at all.

For this pathway, Boeing estimates that the residual HI will be **600**, which is still far above USEPA and DTSC's threshold HI value of 1. Primary risk drivers are listed in Table HVN-7.

Table HVN-6: Garden Use Residual Carcinogenic Risk*				
Analyte	Carcinogenic RBSL	Cancer Risk		
Arsenic	9.90E-05	1.70E-01		
Benzo(a)pyrene	8.10E-05	2.40E-04		
Benzo(b)fluoranthene	8.10E-04	1.50E-05		
Dibenzo(a,h)anthracene	2.40E-04	1.30E-05		
2,3,7,8-TCDD TEQ	7.50E-09	1.40E-04		
Aroclor 1254	4.90E-04	1.90E-04		
Aroclor 1260	4.90E-04	2.20E-05		
Total Risk		2.00E-01		
PCB TEQ [®]	7.50E-09	9.10E-03		

*Data taken from Table E3-2 of Appendix E3

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table HVN-7: Garden Use Noncarcinogenic Risk*				
Analyte	NonCarcinogenic RBSL	Hazard Quotient		
Arsenic	1.00E-01	160		
Cadmium	1.60E-03	450		
Mercury	5.00E-02	4.7		
2,3,7,8-TCDD TEQ	2.50E-07	4.2		
Aroclor 1254	7.20E-03	13		
Aroclor 1260	7.20E-03	1.5		
Hazard Index		553		
PCB TEQ	2.50E-07	270		

*Data taken from Table E3-2 of Appendix E3

USEPA and DTSC threshold HI value is 1

RBSL=Risk Based Concentration

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-16), giving the impression that Boeing is not intending to do anything about the groundwater well either.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA (which our summaries are listed above) "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the Happy Valley North RFI site if the CMS areas presented are included in site cleanup activities"⁹⁷. But as we see from Boeing's own risk numbers, the risks are *not* acceptable. Therefore DTSC must ensure that a full cleanup is done at this RFI site.

⁹⁷ Appendix E3 Section 3.0 "Conclusions"

Advanced Propulsion Test Facility⁹⁸

Background

The APTF RFI Site is approximately 3.3 acres located in the northeastern portion of Administrative Area I, generally west of the HVN and B359 RFI Sites. The RFI Site is currently inactive and contains no structures. The APTF test area (SWMU 4.9) has been used for research and development programs, including testing components used in liquid-fueled rocket engines, propellant research, and advanced laser research and testing. The site was activated in 1953 and supported research programs until 2005, when operations ceased (Boeing, 2008). Between 1960 and 1985, operational wastewater at the APTF RFI Site discharged to the APTF-1 surface impoundment (SWMU 4.10); the water was treated with hydrogen peroxide or hypochlorite and transferred to the APTF-2 surface impoundment (SWMU 4.11) where it would receive further treatment and/or be discharged to the Area I Road Drainage leading to R-1 Pond. Between 1985 and 1996, APTF wastewater was treated in a 1,000-gallon ozonator tank (Area I Area of Concern) and discharged to the R-1 Pond (ICF, 1993; SAIC, 1994). In 1985, APTF-1 and APTF-2 impoundment closure was initiated and conducted under the oversight of the California Department of Health Services. Soils were excavated, gunite liners were removed, and the impoundments were backfilled with soil from an unspecified borrow source in Administrative Area IV. A concrete slab was constructed over APTF-1, and a 6-inch vegetated topsoil layer was placed over APTF-2. Concrete-lined surface water diversion ditches were constructed around former impoundment APTF-2. Closure activities were completed in December 1988 (EMCON, 1989; SAIC, 1994), and the impoundments were certified closed by DTSC in 1995 (DTSC, 1995).

Site operations at the APTF RFI Site were conducted at test stands located in four aboveground test pits (Buildings 1342, 1786, 1764 and 1767). Components tested included injectors, combustors, pulse engines, cryogenic engines, thrust chambers, small turbopumps, bearings, and seals. Tests were monitored and controlled from Building 1314 located in the center of the site. A machine shop (Building 1338) located adjacent to the control center was used to store equipment and tools, and to assemble, disassemble, and clean equipment and components used in testing operations. The administrative office was located in Building 1383. Buildings 1370 and 1446 were constructed in the 1980s to support advanced laser research and testing programs. After the completion of the laser research programs, Building 1446 was used as a workshop and Building 1370 was used for the storage of charts, gauges, and miscellaneous instrumentation (Boeing, 2002). Over 150 ASTs have been documented as being present at the APTF RFI Site. Due to program changes and upgrades to the APTF area, tanks were commonly installed and removed throughout the site operational history. The ASTs contained water, fuels, oxidizers, and other chemicals used in testing operations and were located throughout the operational area of the site.

⁹⁸ http://www.dtsc-

ssfl.com/files/lib_rcra_soils/boeingsubarea1acntrl/DraftRFIReports/Draft_RCRA_Facility_Investigation_D_ata_Summary_and_Findings_Report_-Advanced_Propulsion_Test_Facility_RFI_Site.pdf

Appendix E1: Human Health Risk Assessment⁹⁹

Direct Soil Contact

For the direct soil contact pathway, both the total site and incremental ELCRs are **1E-05**, which are within the USEPA target risk range of 1E-06 to 1E-04 and DTSC point of departure of 1E-06. The total site and incremental His for soil for this scenario are **2**, both of which exceed the USEPA and DTSC threshold HI value of 1. The primary risk drivers associated with the HI are Aroclor 1254 and Aroclor 1260. Aroclors can cause serious liver damage, and can also severely damage the nervous system, as well as irritate the lungs and throat, cancers and birth defects.¹⁰⁰

Garden Use

For the homegrown produce consumption pathway, both the total site and incremental ELCR are **2E-02**, which are above the USEPA target risk range of 1E-06 and 1E-04 and the DTSC point of departure of 1E-06. The primary risk driver is n-Nitrosodimethylamine, which is used as an antioxidant, as an additive for lubricants, and formerly used in the production of rocket fuels. This chemical targets the liver; kidneys, lungs, and can cause cancer in these organs, as well as tumors in the stomach, and decreased pulmonary function.¹⁰¹ Other contributors are listed in Table APTF-1.

The total site and incremental His for this scenario are **2,000**, which exceed USEPA and DTSC threshold HI of 1. Primary risk drivers are listed in Table APTF-2, and the primary risk driver is cadmium. Boeing notes "lead was identified as a chemical of potential concern in the 0-2 ft bgs soil interval. The lead EPC (14mg/kg) in the 0-2 ft bgs soil interval exceeds the lead suburban residential garden RBSL of 6.9 mg/kg".

⁹⁹ PDF Pages 1,589-1,771

¹⁰⁰ https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+6357

¹⁰¹ https://pubchem.ncbi.nlm.nih.gov/compound/n-nitrosodimethylamine#section=GHS-Classification

Table APTF-1: Garden Use Carcinogenic Risk*				
Analyte	Carcinogenic RBSL	Cancer Risk		
Hexavalent Chromium	1.90E-03	5.30E-04		
n-Nitrosodimethylamine	9.50E-07	1.10E-02		
Benzo(a)anthracene	8.10E-04	1.10E-05		
Benzo(a)pyrene	8.10E-05	1.00E-04		
Benzo(b)fluoranthene	8.10E-04	1.40E-05		
Benzo(k)fluoranthene	8.10E-04	1.10E-05		
Dibenzo(a,h)anthracene	2.40E-04	1.80E-05		
Heptachlor epoxide	1.70E-04	1.40E-04		
2,3,7,8-TCDD TEQ	7.50E-09	2.30E-03		
Aroclor 1260	4.90E-04	1.00E-03		
Total Risk		2.00E-02		
PCB TEQ ^a	7.50E-09	1.00E-01		

* Data taken from Table E1-4 of Appendix E1 of APTF RFI Report

TEQ= Toxic Equivalet Quotient

PCB TEQ= Polychlorinated Biphenyl

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 1.2E-01

USEPA Risk Range is 1E-06 to 1E-04

DTSC Point of Departure is 1E-06

RBSL=Risk Based Screening Level

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table APTF-2: Garden Use Noncarcinogenic Risk*		
Analyte	NonCarcinogenic RBSL	Hazard Quotient
Antimony	1.40E-01	2.6
Cadmium	1.60E-03	1100
Copper	1.10E+01	37
Mercury	5.00E-02	14
Zinc	5.40E+01	3
Formaldehyde	3.70E+00	1.1
n-Nitrosodimethylamine	4.50E-05	240
Heptachlor epoxide	4.50E-03	5.1
МСРР	2.50E-01	9.6
2,3,7,8-TCDD TEQ	2.50E-07	69
Aroclor 1254	7.20E-03	130
Aroclor 1260	7.20E-03	70
Hazard Index		2,000
PCB TEQ	2.50E-07	3,000

* Data taken from Table E1-4 of Appendix E1 of APTF RFI Report

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 3,000

USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Indoor Air Pathway

For the indoor air pathway, the total site ELCR is **9E-05**, which is above the DTSC point of departure of 1E-06. The risk driver associated with the site ELCR is trichloroethene (TCE) (99%; 9.2E-05). The total site HI for this scenario is **30**, which is above the USEPA and DTSC threshold HI value of 1. The risk driver for the site HI is TCE (99%; HQ=26).

Groundwater Use

For groundwater use at Chatsworth Formation well HAR-16, the ELCR is 2E-02, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds DTSC's point of departure of 1E-06. The primary risk drivers are listed in Table APTF-3. The HI is 2,000 for this scenario, which exceeds the USEPA and DTSC threshold value of 1. Primary contributors are listed in Table APTF-4.

The risk estimates for radionuclides of potential concern identified for Chatsworth Formation groundwater (at HAR-16) were calculated separately from the chemicals of potential concern. The risk calculated for these radionuclides in groundwater is **6E-04**. which is above USEPA's target risk range, and exceeds DTSC's point of departure of 1E-06. The only groundwater radionuclide of potential concern in HAR-16 was radium-226 (6.4E-04; 100%).

		-		
Table APTF-3: Groundwater Use Carcinogenic Risk*				
Analyte	Carcinogenic RBC	Cancer Risk		
1,2,3-Trichloropropane	1.80E-04	4.60E-05		
Tetrachloroethene	7.10E-02	6.20E-05		
Trichloroethene	4.20E-01	1.30E-02		
n-Nitrosodimethylamine	1.50E-03	6.50E-03		
Total Risk		2.00E-02		
*Data taken from Table E1-12 of Appendix E1				
	•			

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

RBSL=Risk Based Concentration

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table APTF-4: Groundwater Use NonCarcinogenic Risk*				
Analyte	NonCarcinogenic RBC	Hazard Quotient		
Perchlorate	1.40E-01	26		
1,1,2-Trichloroethane	4.20E-01	1		
cis-1,2-Dichlorothene	1.00E+01	8		
Trichloroethene	2.80E+00	1900		
n-Nitrosodimethylamine	1.60E-01	62		
Hazard Index		2,000		
*Data taken from Table E1-12 of Appendix E1				

*Data taken from Table E1-12 of Appendix E1

RBSL=Risk Based Concentration

USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment¹⁰²

For avian species, we've calculated an HI of **1,010**, which is far above the USEPA and DTSC threshold HI value of 1. The primary contributor is copper, which if exposed by oral consumption (such as water with high copper levels) can cause liver damage, hemolytic crisis, and ultimately death.¹⁰³ Other contributors are listed in Table APTF-5.

¹⁰² PDF Pages 1,773-1,980

¹⁰³ https://www.ncbi.nlm.nih.gov/books/NBK225400/#ddd00077

For mammals, we've calculated an HI of **1,984**, which is far above USEPA and DTSC threshold HI value of 1. The primary contributor is the PCB TEQ Mammal, other contributors are listed in Table APTF-6.

Table APTF-5: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*					
Analyte	RME EPC	Low TRV	High TRV	HQ-Low	HQ-High
Cadmium	1.80E+00	2.00E-01	3.00E+00	9.0	0.6
Copper	4.10E+02	1.10E+00	2.40E+01	370.0	17.0
Cyanides	2.10E-01	1.80E-01	1.80E+00	1.1	0.1
Fluoride	4.00E+01	3.50E+01	1.40E+02	1.2	0.3
Lead	1.40E+01	6.20E-02	3.90E+01	220.0	0.4
Zinc	1.60E+02	3.20E+01	3.20E+02	5.0	0.5
2,4,6-Trinitrotoluene	4.00E-01	2.30E-01	5.80E+00	1.7	0.1
2-Amino-4,6-dinitrotoluene	4.00E-01	6.00E-03	7.80E-01	67.0	0.5
bis(2-Ethylhexyl) phthalate	3.80E-01	3.20E-01	-	1.2	-
2,3,7,8-TCDD TEQ Bird	1.10E-05	5.70E-06	5.70E-05	1.9	0.2
Aroclor 1254	9.60E-01	8.30E-02	8.30E-01	12.0	1.2
Aroclor 1260	5.10E-01	5.30E-02	5.30E-01	9.6	1.0
PCB TEQ Bird (coplanar PCBs)	1.80E-03	5.70E-06	5.70E-05	310.0	31.0
Hazard Index				1010	

*Data taken from Table E2-5 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

TRV=Toxicity reference value.

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Table APTF-6: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*						
Analyte	RME EPC		Low Eco TRV	High TRV	HQ-Low	HQ-High
Antimony		3.60E-01	4.20E-02	2.00E+00	8.6	0.2
Cadmium		1.80E+00	1.90E-02	8.10E-01	95.0	2.2
Copper		4.10E+02	1.50E+00	3.50E+02	270.0	1.2
Lead		1.40E+01	3.80E+00	9.10E+02	3.7	0.0
Molybdenum		6.30E-01	1.30E-01	1.30E+00	4.8	0.5
Selenium		3.80E-01	1.00E-01	2.40E+00	3.8	0.2
Zinc		1.60E+02	1.90E+01	8.20E+02	8.5	0.2
2,4,6-Trinitrotoluene		4.00E-01	1.30E-01	6.50E-01	3.1	0.6
2-Amino-4,6-dinitrotoluene		4.00E-01	6.10E-02	4.60E-01	6.6	0.9
2,3,7,8-TCDD TEQ Mammal		1.70E-05	5.00E-07	5.00E-06	35.0	3.5
Aroclor 1254		9.60E-01	3.90E-02	3.90E-01	25.0	2.5
Aroclor 1260		5.10E-01	2.50E-02	2.50E-01	20.0	2.0
PCB TEQ Mammal (coplanar PCBs)		7.50E-04	5.00E-07	5.00E-06	1500.0	150.0
Hazard Index					1984	

*Data taken from Table E2-6 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

TRV=Toxicity reference value.

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Appendix E3: Residual Risk¹⁰⁴

We found that two chemicals in these residual risk assessments were "taken out". By that we mean the Exposure Point Concentration values have been set to "0", which prevents the ability to calculate the cancer risk or HI. These chemicals are: Heptachlor Epoxide, and MCPP. We've also seen this with Monomethylhydrazine (MMH) in the Systems Test Lab-IV residual risk values where MMH's (the primary contributor to the human health risk) EPC was also set to "0" in the residual risk assessment tables. We've also seen this happen with the Happy Valley North residual risk values.

¹⁰⁴ PDF Pages 1,982-2,005

Direct Soil Contact

For this scenario, the site residual ELCR is **2E-06**, which is above DTSC's point of departure.

Garden Use

For this pathway, the site residual ELCR is **1E-02**, which is still above USEPA's target risk range and DTSC's point of departure. The primary risk drivers are listed in Table APTF-7. To leave this high risk amount of contamination behind even after a said "cleanup" is unacceptable. For this pathway, Boeing estimates that the residual HI will be **700**, which is still far above USEPA and DTSC's threshold HI value of 1. Primary risk drivers are listed in Table APTF-8.

Table APTF-7: Garden Use Residual Carcinogenic Risk*			
Analyte	Carcinogenic RBSL Cancer Risk		
Hexavalent Chroium	1.90E-03	8.60E-05	
n-Nitrosodimethylamine	9.50E-07	1.10E-02	
Benzo(a)anthracene	8.10E-04	1.10E-05	
Benzo(a)pyrene	8.10E-05	1.10E-04	
Benzo(b)fluoranthene	8.10E-04	1.50E-05	
Benzo(k)fluoranthene	8.10E-04	1.10E-05	
Dibenzo(a,h)anthracene	2.40E-04	1.90E-05	
2,3,7,8-TCDD TEQ	7.50E-09	2.30E-04	
Aroclor 1254	4.90E-04	1.50E-04	
Total Risk		2.00E-01	
PCB TEQ ^a	7.50E-09	1.50E-02	

*Data taken from Table E3-2 of Appendix E3

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Hazard Quotient
2.5
3 370
1 1.1
11
1 1.6
0 1.1
5 240
6.7
10
700
440

*Data taken from Table E3-2 of Appendix E3

USEPA and DTSC threshold HI value is 1

RBSL=Risk Based Concentration

PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 1,140 The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-16), giving the impression that Boeing is not intending to do anything about the groundwater well either.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the Advanced Propulsion Test Facility RFI site if the CMS areas presented are included in site cleanup activities"¹⁰⁵. But as we've shown above from Boeing's own documents, the risks are *not* acceptable. Therefore DTSC must ensure that a full cleanup is done at this RFI site.

¹⁰⁵ Appendix E3 Section 3.0 "Conclusions"

Building 1359¹⁰⁶

Background

The B359 RFI Site is located in the central portion of Administrative Area I, generally east of the APTF and HVN RFI Sites. The B359 RFI Site is currently inactive and contains no structures. The B359 RFI Site consists of approximately 3.5 acres. The B359 site was used primarily as an energetics research, testing, and storage area from the early 1950s to the early 1990s and includes the former North American Kindelburger Atwood (NAKA) area (Buildings 1325, 1328, 1741, and 1997), the Neptune Test Area/Potassium Loop Facility (Building 1790), and various support buildings where energetics and propellants were stored and tested. Perchlorate was used at the B359 RFI Site for the preparation and assembly of turbine spinners and igniters during the 1950s and 1960s. At the northwest portion of the facility was the High Energy Solids Lab (Building 1359), where the primary energetic material tests were performed within four test cells positioned along the north side of the building and facing a soil berm. The Propellant Physical Property Testing Building (Building 1325), located in the southwestern portion of the B359 RFI Site, was used for perchlorate milling and mixing with other compounds for rocket propellant development. The northeastern corner of the facility included the Neptune Test Area (also referred to as the Potassium Loop Facility), where saltwater conversion experiments were conducted in the 1960s. Other structures at the B359 RFI Site included the Igniter Curing Building (Building 1328), Lower Research Auxiliary Workshop (Building 1353), Photo Elastic Lab (Building 1354), Oxidizer Preparation Building (Building 1376), Hydrogen Peroxide Storage-Gas Flow Facility (Building 1373), and numerous chemical, igniter, and ordnance storage facilities. The B359 RFI Site also included three leach fields (B359 Areas of Concern): the Northeast Leach Field (associated with Building 1301 in the Instrument and Equipment Laboratory [IEL] RFI Site to the east); the Building 1374 Leach Field (associated with Building 1374 in the APTF RFI Site to the west); and the Building 1315 Leach Field (potentially associated with Building 1315 in the HVN RFI Site to the southwest).

During 2003 and 2004, soils with elevated concentrations of perchlorate from the Happy Valley South (HVS) RFI Site were excavated and transported to the B359 RFI Site as part of the Happy Valley Interim Measures (HVIM) project. These soils were transported to the B359 site for biotreatment of perchlorate. Prior to transportation of these soils from the HVS RFI Site, soils with elevated concentrations of metals within the B359 RFI Site were excavated and disposed offsite. Biotreatment activities then took place between 2004 and 2006 (MWH, 2007).

Appendix E1: Human Health Risk Assessment¹⁰⁷

¹⁰⁶ http://www.dtsc-

ssfl.com/files/lib rcra soils/boeingsubarea1acntrl/DraftRFIReports/Draft RCRA Facility Investigation D ata Summary and Findings Report - Building 1359 RFI Site.pdf ¹⁰⁷ PDF pages 1,308-1,467

Direct Soil Contact

For the direct soil contact pathway, both the total site and incremental ELCR are **1E-05**, which exceed the DTSC point of departure of 1E-06. The total site HI for soil for this scenario is **3** and the total incremental HI is 2, both of which exceed the USEPA and DTSC threshold HI value of 1. The only risk driver to the total incremental soil HI is Aroclor 1254 (HQ = 1.5; 66% contribution). Aroclors can cause serious liver damage, and can also severely damage the nervous system, as well as irritate the lungs and throat, cancers and birth defects.¹⁰⁸

Garden Use

For the homegrown produce consumption pathway, both the total site and incremental ELCR are **2E-03**, which are above the USEPA target risk range of 1E-06 to 1E-04 and the DTSC point of departure of 1E-06. Primary risk drivers are listed in Table B-1. The total site HI for this scenario is **500** and the incremental HI is 300, both of which exceed the USEPA and DTSC threshold HI value of 1. Main contributors are listed in Table B-2. Lead was identified as a COPC in the 0 to 2 feet bgs soil interval. The lead EPC (27 mg/kg) in the 0 to 2 feet bgs soil interval exceeds the lead suburban residential garden RBSL of 6.9 mg/kg.

Table B-1: Garden Use Carcinogenic Risk*				
Analyte	Carcinogenic RBSL	Cancer Risk		
Benzo(a)anthracene	8.10E-04	1.20E-04		
Benzo(a)pyrene	8.10E-04	4.40E-04		
Benzo(b)fluoranthene	8.10E-04	6.90E-05		
Benzo(k)fluoranthene	8.10E-04	1.70E-05		
chrysene	8.10E-03	1.20E-05		
Dibenzo(a,h)anthracene	2.40E-04	6.10E-05		
Indeno(1,2,3-cd)pyrene	8.10E-04	2.60E-05		
2,3,7,8-TCDD TEQ	7.50E-09	4.40E-04		
Aroclor 1254	4.90E-04	6.50E-04		
Aroclor 1260	4.90E-04	1.40E-04		
Total Risk		2.00E-03		
PCB TEQ ^a	7.50E-09	3.30E-02		

* Data taken from Table E1-4 of Appendix E1 of APTF RFI Report

TEQ= Toxic Equivalet Quotient

PCB TEQ= Polychlorinated Biphenyl

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 3.5E-02

USEPA Risk Range is 1E-06 to 1E-04

DTSC Point of Departure is 1E-06

RBSL=Risk Based Screening Level

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

¹⁰⁸ https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+6357

Table B-2: Garden Use Noncarcinogenic Risk*			
Analyte	NonCarcinogenic RBSL	Hazard Quotient	
Antimony	1.40E-01	2.9	
Barium	7.20E+01	2.8	
Cadmium	1.60E-03	330	
Copper	1.10E+01	1.3	
Mercury	5.00E-02	6.2	
Silver	1.80E+00	19	
Thallium	3.60E-03	87	
Zinc	5.40E+01	4.4	
НМХ	7.30E-01	1	
Perchlorate	1.60E-02	4.1	
МСРР	2.50E-01	6.8	
2,3,7,8-TCDD TEQ	2.50E-07	13	
Aroclor 1254	7.20E-03	44	
Aroclor 1260	7.20E-03	9.6	
Hazard Index		500	
PCB TEQ	2.50E-07	970	

* Data taken from Table E1-4 of Appendix E1 of Building 1359 RFI Report

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

For the groundwater use at Chatsworth Formation well HAR-16, the ELCR is **2E-02**, which is above the USEPA target risk range of 1E-06 to 1E-06 and exceeds the DTSC point of departure of 1E-06. The primary risk drivers are listed in Table B-3. The HI is **2,000** for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors are listed in Table B-4.

For the radionuclides in groundwater, the ELCR is **6E-04**, which is above USEPA's target risk range and DTSC's point of departure. The only groundwater chemical of concern in HAR-16 was radium-226 (100%; 6.4E-04).

Table B-3: Groundwater Use Carcinogenic Risk*			
Analyte	Carcinogenic RBC	Cancer Risk	
1,2,3-Trichloropropane	1.80E-04	4.60E-05	
Tetrachloroethene	7.10E-02	6.20E-05	
Trichloroethene	4.20E-01	1.30E-02	
n-Nitrosodimethylamine	1.50E-03	6.50E-03	
Total Risk		2.00E-02	

*Data taken from Table E1-12 of Appendix E1

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

RBSL=Risk Based Concentration

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table B-4: Groundwater Use NonCarcinogenic Risk*			
Analyte	NonCarcinogenic RBC	Hazard Quotient	
Perchlorate	1.40E-01	2.60E+01	
1,1,2-Trichloroethane	4.20E-01	1.20E+00	
cis-1,2-Dichlorothene	1.00E+01	8.10E+00	
Trichloroethene	2.80E+00	1.90E+03	
n-Nitrosodimethylamine	1.60E-01	6.20E+01	
Hazard Index		2,000	
*Data taken from Table E1-12 of Appendix E1			

RBSL=Risk Based Concentration

USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment¹⁰⁹

For avian species, we calculated an HI of 677, with lead being the main contributor. Lead poisoning in birds can cause lethargy, progressive weakness causing the inability to fly, and usually accumulates in the liver, kidneys, and blood. Other contributors are listed in Table B-5. For mammals, we calculated and HI of 597.

¹⁰⁹ PDF Pages 1,470-1,639
Table B-5: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*									
Analyte	RME EPC	Low TRV	High TRV	HQ-Low	HQ-High				
Antimony	2.00E+0	2 4.40E+01	8.90E+01	4.6	2.3				
Cadmium	5.40E-0	1 2.00E-01	3.00E+00	2.7	0.2				
Copper	1.40E+0	1 1.10E+00	2.40E+01	13.0	0.6				
Lead	2.70E+0	1 6.20E-02	3.90E+01	440.0	0.7				
Silver	3.40E+0	1 9.90E-01	2.90E+01	35.0	1.2				
Zinc	2.40E+0	2 3.20E+01	3.20E+02	7.4	0.7				
2,4,6-Trinitrotoluene	4.00E-0	1 2.30E-01	5.80E+00	1.7	0.1				
2-Amino-4,6-dinitrotoluene	4.00E-0	1 6.00E-03	7.80E-01	67.0	0.5				
Aroclor 1254	3.20E-0	1 8.30E-02	8.30E-01	3.8	0.4				
Aroclor 1260	6.90E-0	2 5.30E-02	5.30E-01	1.3	0.1				
PCB TEQ Bird (coplanar PCBs)	5.80E-0	4 5.70E-06	5.70E-05	100.0	10.0				
Hazard Index				677					

*Data taken from Table E2-5 from Appendix E2

RME-Reasonable Maximum Exposure USEPA and DTSC threshold HI value is 1

TRV=Toxicity reference value.

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Table B-6: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*									
Analyte	RME EPC		Low Eco TRV	High TRV	HQ-Low	HQ-High			
Antimony	4	1.10E-01	4.20E-02	2.00E+00	9.7	0.2			
Barium	2	.00E+02	1.20E+02	2.00E+02	1.7	1.0			
Cadmium	5	5.40E-01	1.90E-02	8.10E-01	28.0	0.7			
Copper	1	.40E+01	1.50E+00	3.50E+02	9.2	0.0			
Lead	2	.70E+01	3.80E+00	9.10E+02	7.1	0.0			
Selenium	2	2.30E-01	1.00E-01	2.40E+00	2.3	0.1			
Silver	3	.40E+01	3.50E+00	6.90E+01	9.8	0.5			
Zinc	2	.40E+02	1.90E+01	8.20E+02	12.0	0.3			
2,4,6-Trinitrotoluene	4	1.00E-01	1.30E-01	6.50E-01	3.1	0.6			
2-Amino-4,6-dinitrotoluene	4	1.00E-01	6.10E-02	4.60E-01	6.6	0.9			
2,3,7,8-TCDD TEQ Mammal	3	30E-06.	5.00E-07	5.00E-06	6.6	0.7			
Aroclor 1254	3	3.20E-01	3.90E-02	3.90E-01	8.1	0.8			
Aroclor 1260	6	5.90E-02	2.50E-02	2.50E-01	2.8	0.3			
PCB TEQ Mammal (Coplanar PCBs)	2	2.50E-04	5.00E-07	5.00E-06	490.0	49.0			
Hazard Index					597				

*Data taken from Table E2-6 from Appendix E2

RME-Reasonable Maximum Exposure

USEPA and DTSC threshold HI value is 1

TRV=Toxicity reference value.

Note, no actual Hazard Index was provided, we had to calculate our own.

The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Appendix E3: Residual Risk¹¹⁰

Garden Use

For this pathway, Boeing's residual risk estimates an ELCR of **7E-04**, which is above DTSC's point of departure. Primary risk drivers are listed in Table B-7. A key point we want to make here is that the PCB-TEQ (is calculated separately because Boeing claims there are "uncertainties" in the numbers, therefore Boeing did not include the PCB-TEQ ELCR and HI's in the total risk and HI) shows a higher risk than the total site. For this scenario, the residual ELCR is **1.1E-02**, which is higher than the total residual ELCR that Boeing has calculated.

¹¹⁰ PDF Pages 1,642-1,665

For this pathway, Boeing's residual HI is **400**, which is still far above USEPA and DTSC's threshold HI value of 1. Primary contributors are listed in Table B-8.

Table B-7: Garden Use Residual Carcinogenic Risk*							
Analyte	Carcinogenic RBSL	Cancer Risk					
Benzo(a)anthrcene	8.10E-04	1.40E-05					
Benzo(a)pyrene	8.10E-05	1.50E-04					
Benzo(b)fluoranthene	8.10E-04	1.60E-05					
Benzo(k)fluoranthene	8.10E-04	1.40E-05					
Dibenzo(a,h)anthracene	2.40E-04	1.50E-04					
Indeno(1,2,3-cd)pyrene	No RBSL listed	2.50E-05					
2,3,7,8-TCDD TEQ	7.50E-09	1.70E-04					
Aroclor 1254	4.90E-04	1.60E-04					
Arocor 1260	4.90E-04	3.40E-05					
Total Risk		7.00E-04					
PCB TEQ ^a	7.50E-09	1.10E-02					

*Data taken from Table E3-2 of Appendix E3 of Building 1359 RFI Report

USEPA Target Risk Range 1E-06 to 1E-04

DTSC Point of Departure 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table B-8: Garden Use Residual Noncarcinogenic Risk*					
Analyte	NonCarcinogenic RBSL	Hazard Quotient			
Antimony	1.40E-01	2.7			
Barium	7.20E+01	1.1			
Cadmium	1.60E-03	260			
Mercury	5.00E-02	4.5			
Thallium	3.60E-03	85			
Zinc	5.40E+01	1.1			
НМХ	7.30E-01	1			
Perchlorate	1.60E-02	4.4			
МСРР	2.50E-01	6.8			
2,3,7,8-TCDD TEQ	2.50E-07	5			
Aroclor 1254	7.20E-03	11			
Aroclor 1260	7.20E-03	2.3			
Hazard Index		400			
PCB TEQ	2.50E-07	330			

*Data taken from Table E3-2 of Appendix E3 of Building 1359 RFI Report

USEPA and DTSC threshold HI value is 1

RBSL=Risk Based Concentration

PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 730

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at Building 1359 RFI site if the CMS areas presented are included in site cleanup activities"¹¹¹. However, Boeing's own tables demonstrate that the risks are not acceptable, and DTSC must therefore ensure that a full cleanup is done at this RFI site.

¹¹¹ Appendix E3 Section 3.0 "Conclusions"

Unaffiliated Areas¹¹²

As explained in this report, a total of 14 samples were collected from 8 locations throughout the Subarea 1A Central Unaffiliated Areas (UA). These samples were analyzed for Volatile Organic Compounds (VOCs), dioxins and furans, total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and formaldehyde. Utilizing only 8 locations for sampling is not enough to determine how contaminated an area is. The areas could not be topographically arranged so that less chemicals flow there from the surrounding areas. It is not mentioned if these areas were chosen completely at random or chosen intentionally to give results with the least concentrations of chemicals. Boeing states:

"No SSFL historical operations were conducted in the Subarea 1A Central Unaffiliated Areas. Consequently, groundwater flow and contaminant transport modeling was not completed for these sites. Groundwater flow and contaminant transport modeling was performed for nearby Boeing RFI sites in Subareas 1A Central, 1A North, and 1A South that might contribute to groundwater contamination underlying the Subarea 1AC Unaffiliated Areas; refer to the Boeing RFI Subarea 1A Central, Subarea 1A North, and Subarea 1A South RFI site DSFRs for details on this modeling".

Despite operations not occurring above the ground in these UAs, groundwater systems are intrinsically connected and the groundwater in this area is most certainly contaminated as we have seen in these RFI reports of high-risk levels in groundwater. Chemicals and radionuclides are above characterization levels in these subareas, therefore it is only appropriate that groundwater flow and contaminant transport modeling be done in Subarea 1A Central UAs.

This UA is considered for No Further Action (because "no chemicals were detected at concentrations that exceeded human health or ecological-based characterization levels in the Subarea 1A Central UAs; therefore, human health and ecological risk assessments were not performed for these sites". However, 2 pages later, the reader is presented with information delegitimizing this information. Boeing states "Table 4-1 summarizes the nature and extent evaluations performed for soil at Subarea 1A Central UAs. Tables 4-2 and 4-3, which are provided electronically on the CDs that accompanies this DSFR, present details on the detect and non-detect sample results, respectively, exceeding characterization levels". These two statements are conflicting. Characterization levels are in place so that any chemical or radionuclides found above this concentration are an unacceptable threat to human and ecological life. This document does not even include by how much these levels are exceeded.

¹¹² <u>http://www.dtsc-</u>

ssfl.com/files/lib_rcra_soils/boeingsubarea1acntrl/DraftRFIReports/Draft_RCRA_Facility_Investigation_D ata_Summary_and_Findings_Report__Unaffiliated_Areas_of_1A_Central.PDF

Conclusion

The Draft Program Environmental Impact Report for cleanup of contamination at the Santa Susana Field Laboratory is fundamentally flawed. It wholly fails to evaluate the most important impacts of all—the impacts on public health and the environment from the radioactive and toxic chemical contamination that would remain under all of the alternatives put forward. Because DTSC in the PEIR has abrogated its longstanding commitments to a full cleanup of all the contamination at SSFL, which barred "leave in place" alternatives, and is instead proposing to leave in place large but unspecified amounts of contamination, the impacts of doing so must be examined. But they are not. Instead, what one gets is essentially a propaganda document, a one-sided attack on the very cleanup commitments DTSC itself had long made, rather than a scientifically defensible environmental impact report.

Boeing's own risk assessments for areas within 1A Central and 5/9 South, however, provide significant information that partially addresses the question of the impacts from the contamination itself. The results are startling—immense risks to public health and extreme exceedances of contaminant levels that pose harm to biological receptors—even after the minimal cleanup proposed. Furthermore, these data make clear that excepting contaminated areas from cleanup, for biological or other reasons, as vaguely proposed without detailed disclosure in the PEIR, would actually result in unacceptable risk to those biological receptors as the levels far exceed acceptable hazardous indices, and would similarly pose great risks to public health.

The entire premise of DTSC's longstanding commitments to a full cleanup of SSFL was that irrespective of the use of the SSFL land in the future, people reside nearby and agriculture is conducted nearby, so one must clean up SSFL to all the land uses allowed by Ventura County's land use designations for SSFL and the surrounding areas. If it is cleaned up so it is safe to live on SSFL or do agriculture there, it would therefore be safe for the people who live nearby or engage in agriculture in the area. Furthermore, claiming to want to protect biological features by not cleaning up the contamination that is polluting them is illusory. The data analyzed here demonstrate that what DTSC is now proposing, breaking its long commitments, would place at risk public health as well as those very biological receptors.

There are few acceptable remedies to such a fundamental set of flaws in the PEIR. Were DTSC to attempt to purportedly address in the final PEIR the risks to public health and ecological receptors from the contamination proposed to not be cleaned up pursuant to the various alternatives (including the No Action Alternative), this essential element of the PEIR would have been shielded entirely from public review and comment, in violation of CEQA. However, to finalize the PEIR without addressing the risks to public health and ecological receptors from the contamination that would remain under the various alternatives proposed would nullify the PEIR as a valid CEQA document.

Furthermore, DTSC has so severely lost public credibility, at SSFL and statewide, and the job done on the PEIR is so flawed, so much an effort to help the Responsible

Parties get out of their cleanup obligations, that any risk assessment that might be now included would have little authority or plausibility. (Indeed, since it appears DTSC allowed the EIR contractor to actually be a contractor of one of the RPs rather than contracted to DTSC, and because DTSC allowed the RPs to write and edit much of the PEIR, that conflict of interest further eliminates any credibility were there to be at this late stage such an assessment.

If the pattern seen to date continues, and DTSC attempt to arrange (probably through one or more of the RPs) preparation of evaluation of risks to public health and ecological receptors from the contamination, one would expect DTSC to throw out its own official risk based screening levels (RBSLs) from the approved Standardized Risk Assessment Methodology (SRAM) and selectively change the inputs (e.g., alter the Mass loading Factor but not the root uptake factors and produce ingestions rates) so as to dramatically drive down risk estimates. DTSC has already attempted such manipulation of the approved SRAM RBSLs by falsely claiming in the PEIR that the suburban residential SRAM-based garden RBSLs were based on assuming 100% of one's produce comes from a backyard garden and thus attempting to reject, based on misrepresentation, its own officially approved RBSLs. Elsewhere in the PEIR the SRAM is ignored entirely and cherry-picked changed inputs, not officially approved in the SRAM, are used to try to dramatically further drive down cleanup goals. We note that there is only one officially approved SRAM, that DTSC did direct Boeing to propose revisions to the residential risk levels but Boeing refused, submitting a proposed SRAM that simply removed the residential scenario entirely. DTSC is thus stuck. The official SRAM is the official DTSC-approved risk assessment methodology, and must be used. (We note that it was approved by DTSC without formal opportunity for public input or any CEQA coverage, and is absolutely critical to the cleanup.)

There really is only one approach that would meet CEQA requirements. A fundamentally redone PEIR needs to be prepared, one that includes an honest disclosure of the amounts of contamination, of what kind and what concentrations, proposed to be left in place, and an evaluation of how those levels exceed the SRAM-based suburban residential garden RBSLs (and rural residential RBSLs, revised to fix the grossly erroneous produce ingestion rates), and Low-TRV EcoRBSLs. This needs to be performed by a contractor who is not contracted to the Responsible Parties and be prepared independently, rather than just repeat claims made by the RPs. The revised draft PEIR would then need to be recirculated for public comment.

It is deeply unfortunate that DTSC has dragged its feet for so many years that the promised 2017 date for completion of cleanup has passed without that long-sought completion; indeed, the cleanup hasn't commenced. By producing such a grossly deficient draft PEIR, DTSC has now created a situation where one either is faced with a terribly weak cleanup, in violation of past commitments and the need to protect public health and the environment, or the need to essentially start over again, this time doing it right. It is tragic that DTSC has failed so thoroughly in its obligation to protect public health and the environment, that it has demonstrated such a complete capture by the

polluting interests it is to regulate. But a great deal is stake, and the only option is for DTSC to prepare a valid PEIR and recirculate it for public review and comment.

Attachment B



CITY OF SIMI VALLEY Home of The Ronald Reagan Presidential Library

March 4, 2013

Ms. Debbie Raphael, Director Department of Toxic Substances Control 1001 I Street Sacramento, CA 95814

Dear Ms. Raphael:

On behalf of the residents of Simi Valley, the Simi Valley City Council wishes to reaffirm its position with respect to the cleanup of radiological and chemical contamination at the Santa Susana Field Lab (SSFL). The City Council has long been on record that the public health and welfare is best served by remediation of the site to no less than background levels.

The City's main concern regarding the SSFL has been, and continues to be, that the site, and surrounding areas that may have been contaminated by SSFL activities, be remediated to a level that would ensure the health and safety of our current and future residents. Cleanup of the site should be achieved to a level that would accommodate the possibility of public use in ______ the future. The City of Simi Valley respectfully requests that the DTSC continue to assure that remediation of SSFL proceed in a manner that will effectively protect the environment and the health and safety of the adjacent communities into the foreseeable future.

The Simi Valley City Council supported the passage of Senate Bill 990 in 2007, and members of our City Council met with members of Congress to push for an independent, transparent, and expeditious cleanup to a level that would ensure the health and safety of our current and future residents.

Recent events, including the lack of a contract extension for certain EPA activities related to site clean-up assessments, the NASA Office of Inspector General audit questioning the level of cleanup to which the agency has committed in its Administrative Order of Consent, and the pending legal challenge to SB 990, present risks to assuring the SSFL site is remediated to standards most protective of public health. Further NASA has declared its land as excess Federal property, setting in motion the first steps toward its disposition to new ownership.

For these reasons, the Simi Valley City Council is again going on record to state its support of the cleanup standards envisioned in SB 990 and agreed upon in the AOC's on record with your agency. Additionally, by copy of the letter, the City Council calls on the U.S. General

Ms. Debbie Raphael March 4, 2013 Page 2

Services Administration to delay any transfer of the NASA property until the site has been cleaned to these standards. We appreciate DTSC's long standing commitment to the site's cleanup and for the lead role your agency has and continues to play in this vitally important community health matter.

Sincerely,

Robert O. Hube

Mike Judge

Mayor

Glen T. Becerra Council Member

Mayor Pro Tem

Steven T. Sojka Council Member

Keith L. Mashburn Council Member

cc: The Honorable Daniel M. Tangherlini, U.S. General Services Administration Ventura County Board of Supervisors City Council City Manager Interim Assistant City Manager, Government Affairs NASA Boeing Department of Energy Ruth Cox, Regional Administrator, U.S. General Services Administration

Attachment C



April 7, 2017

Stephanie Jennings NEPA Document Manager, SSFL Area IV EIS U.S. Department of Energy 4100 Guardian Street, Suite 160 Simi Valley, CA 93063

Dear Ms. Jennings:

Thank you for the opportunity to comment on the U.S. Department of Energy's (DOE) Draft Environmental Impact Statement (DEIS) for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory (SSFL), which DOE issued in January 2017.

Attached please find a Resolution passed by the Los Angeles City Council on March 3, 2017 that speaks to the City's concerns regarding three aspects of the DEIS, specifically:

- The DEIS should be based on remediation of the Department of Energy's SSFL site to the levels stipulated in the Administrative Order on Consent (AOC) with the Department of Toxic Substances Control (DTSC) and not include consideration of alternatives that would violate this Order.
- 2. The inclusion of ineligible exemptions in the Draft EIS dramatically increases the risk of cancers.
- 3. The alternate transportation plans have not been analyzed and should include direct conveyance of contaminated materials from the site to rail and other options including the use of fire roads and routes with less impact to residents and reduced traffic impact.

Ms. Jennings April 7, 2017 Page 2

A cleanup agreement was reached in 2010 and I urge swift action to address these concerns and ensure the most protective remediation as stipulated by the AOC. Thank you for your consideration.

Sincerely,

ERIC GARCETTI Mayor

cc: The Honorable Rick Perry, Secretary, U.S. Department of Energy The Honorable Mitch Englander, Los Angeles City Councilmember, District 12 The Honorable Mike Feuer, City Attorney, City of Los Angeles John Laird, Secretary, California Natural Resources Agency Matt Rodriquez, Secretary, California Environmental Protection Agency Barbara Lee, Director, California Department of Toxic Substances Control

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WHEREAS, any official position of the City of Los Angeles with respect to legislation, rules, whereas a local state or federal governmental body or agency must have first been adopted in the form of a Resolution by the City Council with the concurrence of the Mayor; and

SOLUTION

WHEREAS, the US Department of Energy has released a Draft Environmental Impact Statement for the cleanup of their portion of the Santa Susana Field Lab Property and comments on this draft are due by March 14, 2017; and

WHEREAS, beginning in the 1940s the federal government conducted rocket and nuclear testing activities at the Santa Susana Field Lab in Ventura County with substantial disregard for the environment; one of its nuclear reactors experienced a partial nuclear meltdown in 1959, and two other reactors experienced accidents with significant fuel damage, causing releases of radioactivity into the air; this, in addition to napalm and dioxin incineration in open-air burn pits, dumping of over 500,000 gallons of trichloroethylene and perchlorate, and other contamination from over the 50 years of operations, left the site highly polluted with radioactive and chemical contaminants; and

WHEREAS, the parties responsible for cleaning up the Santa Susana Field Lab are the Department of Energy, NASA and the Boeing Company; and

WHEREAS, in 2010, a legally binding cleanup agreement called Administrative Order on Consent, were entered into by NASA and the Department of Energy with the California Department of Toxic Substances Control which requires all of the detectible radioactive and chemical contamination at their Santa Susana Field Lab operations be cleaned up to background levels similar to those before the site was contaminated; and

WHEREAS, in May, 2012, the Department of Energy issued a notice regarding preparation of an Environmental Impact Statement regarding the cleanup and a draft was released for comment in January 2017 and comments are due on March 14, 2017; however, the Environmental Impact Statement of the Department of Energy does not analyze the impacts of cleaning the Department of Energy site to levels stipulated in the Administrative Order on Consent; and instead, 500,000 cubic yards of soil, some with known significant chemical and radiological contamination that would be covered by the Administrative Orders on Consent, are exempted from remediation; and

WHEREAS, of the options analyzed in the Draft Environmental Impact Statement, Option 1 proposes to leave more than 39% of the contamination - over 1/2 million cubic yards - on site exposing future users of the site and those in proximity to its runoff and detritus to unacceptable risk of future cancers and other maladies; and this is not, as the document suggests, compliant with the Administrative Order of Consent; and the even more untenable Options 2 and 3 leave up to 91% and 99% of pollution on site, respectively;

NOW, THEREFORE, BE IT RESOLVED, with the concurrence of the Mayor, that by the adoption of this Resolution, the City of Los Angeles hereby includes in its 2017-2018 Federal Legislative Program sponsorship and support of any administrative action by the US Department of Energy relative to the Draft Environmental Impact Statement for the cleanup of their portion of the Santa Susana Field Lab in Ventura County to incorporate the following comments:

1. The Environmental Impact Statement should be based on remediation of the Department of Energy's Santa Susana Field Lab site to the levels stipulated in the Administrative Order of Consent and not include consideration of alternatives that would violate this Order.

2. Ineligible exemptions utilized in the Draft Environmental Impact Statement that dramatically increase the risk of cancers should be excluded.

3. Alternate transportation plans should be analyzed that include direct conveyance of contaminated materials from the site to rail and other options including the use of fire roads and routes with less impact to residents and reduced traffic impact.

PRESENTED BY: MITCHELL INGLANDER Councilman 12th District SECONDED BY:

MAR - 3 7017

CITY CLERK FOR PLACEMENT ON NEXT

HOLLY L. WOLCOTT CITY CLERK

SHANNON D. HOPPES EXECUTIVE OFFICER

When making inquiries relative to

this matter, please refer to the

Council File No.: 17-0002-S31

City of Los Angeles



OFFICE OF THE CITY CLERK

Council and Public Services Division 200 N. SPRING STREET, ROOM 395 LOS ANGELES, CA 90012 GENERAL INFORMATION - (213) 978-1133 FAX: (213) 978-1040

> BRIAN E. WALTERS DIVISION CHIEF

CLERK.LACITY.ORG

OFFICIAL ACTION OF THE LOS ANGELES CITY COUNCIL

March 8, 2017

Council File No.:	17-0002-S31
Council Meeting Date: 🎷	March 08, 2017
Agenda Item No.: 🤄	48
Agenda Description:	RESOLUTION (ENGLANDER - MARTINEZ) relative to the City of Los Angelesincluding in its 2017-18 Federal Legislative Program sponsorship and support of any administrative action by the US Department of Energy relative to the Draft Environmental Impact Statement for the cleanup of their portion of the Santa Susana Field Lab in Ventura County.
Council Action:	RESOLUTION (ENGLANDER - MARTINEZ) - ADOPTED FORTHWITH
	· ·
Council Vote:	
NO BLUMENFIELD YES BONIN ABSENT BUSCAINO YES CEDILLO YES ENGLANDER	YES HARRIS-DAWSON YES O'FARRELL YES HUIZAR YES PRICE YES KORETZ YES RYU YES KREKORIAN YES WESSON YES MARTINEZ
Ley Luck	
HOLLY L. WOLCOTT CITY CLERK	
Pursuant to Charter/Los A	Angeles Administrative Code Section(s): 231(h)
FILE SENT TO MAYOR	02/02/2017
THE SENT TO MATOR.	
LAST DAY FOR MAYOR TO ACT	ſ: 03/20/2017
Х	
APPROVED	*DISAPPROVED *VETO
E.C.	
Clatt.	2 /0 /2017

MAYOR

3/9/2017 DATE SIGNED

This form has been electronically signed and authorized by Eric Garcetti AN EQUAL EMPLOYMENT OPPORTUNITY - AFFIRMATIVE ACTION EMPLOYER



LORI GLASGOW EXECUTIVE OFFICER COUNTY OF LOS ANGELES BOARD OF SUPERVISORS

> KENNETH HAHN HALL OF ADMINISTRATION 500 WEST TEMPLE STREET, ROOM 383 LOS ANGELES, CALIFORNIA 90012 (213) 974-1411 • FAX (213) 620-0636

MEMBERS OF THE BOARD

HILDA L. SOLIS

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SHEILA KUEHL

JANICE HAHN

KATHRYN BARGER

April 5, 2017

Ms. Stephanie Jennings NEPA Document Manager, SSFL Area IV EIS U.S. Department of Energy 4100 Guardian Street, Suite 160 Simi Valley, CA 93063

Dear Ms. Jennings:

I am writing on behalf of the Los Angeles County Board of Supervisors. The County of Los Angeles has reviewed the draft Environmental Impact Statement (EIS) for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory (SSFL) proposed by the U.S. Department of Energy (DOE) as lead agency under the National Environmental Policy Act. The draft EIS analyzes the potential environmental impacts of alternatives for conducting cleanup activities in Area IV of the SSFL and the adjoining Northern Buffer Zone, located in the County of Ventura, adjacent to the County of Los Angeles. The County of Los Angeles Board of Supervisors has noted that radioactive and chemical contaminants from the longclosed SSFL have affected the soil, air and water in nearby Los Angeles County communities for decades and have posed serious health risks, such as possible clusters of rare cancers in children and adults, in neighboring communities. The County of Los Angeles therefore urges a full and timely cleanup of the site.

The County of Los Angeles Board of Supervisors submits the following comments on the draft EIS during the public comment period which is currently scheduled to end on April 13, 2017:

1. Lack of Full Cleanup

The EIS does not address the full cleanup of the site, a clear violation of the 2010 Administrative Order on Consent (AOC) between the California Department of Toxic Substances Control and DOE. There are currently four alternatives considered in the EIS: three that address partial cleanups (i.e. "leave in place alternatives") and Ms. Jennings: April 5, 2017 Page 2

one that is the null (no cleanup). The AOC does not allow for consideration of lower levels of cleanup. The EIS should be based on remediation of SSFL to the levels stipulated in the AOC, provide full analysis of Full Cleanup and full restoration back to the site's environmental native state, and not include consideration of alternatives that would violate the AOC.

2. Lack of Full Analysis of Multiple Alternative Routes and Modes of Transportation

The EIS offers limited analysis of routes and transportation methods, and has preselected certain routes and methods that may have the most impact on surrounding neighborhoods. The limited analysis and pre-selection are misleading because the EIS makes it appear as though no other options are available that would further minimize impacts on residents and businesses. However, during the 2012-2014 alternatives development period, a number of other routes and transport methods were identified that could further minimize neighborhood impacts. These are not analyzed in the EIS and are dismissed as too time consuming to evaluate and/or implement (Pages 2-11 and 2-12). The lack of comprehensive analysis is a disservice to Los Angeles County neighborhoods, residents, businesses, and travelers. Alternate transportation types, methods, and routes should be analyzed in full including, but not limited to, the direct conveyance of contaminated materials from the site to rail and other options, as well as the use of fire roads and other routes to minimize truck traffic and impacts to residents and traffic.

3. Burden of Proof

The AOC mandates full cleanup with limited exemptions allowed only if based upon a Biological Opinion rendered by the U.S. Fish and Wildlife Service (USFWS). However, even though the Biological Opinion has not yet been rendered, every one of the EIS' cleanup alternatives already exempt several hundred thousand cubic yards of soil. Further, this exemption is contrary to a 2010 USFWS Biological Opinion issued to the U.S. Environmental Protection Agency that stated there were no unavoidable or unmitigable negative biological impacts at SSFL. It is not within the DOE's discretion to make such a determination of exemption. Exemptions utilized in the EIS that violate the AOC, and those that could increase the risk of cancers, should be excluded. The DOE should provide compelling and fact-based evidence rather than assertions as to why it believes certain amounts of soil should be exempt from cleanup. Ms. Jennings: April 5, 2017 Page 3

4. Additional Public Review Period Between Release of Biological Opinion and Final EIS

The EIS should be recirculated for additional public review and comments after the USFWS Biological Opinion is submitted and all public comments from the current review period are addressed, and before the EIS is finalized.

On behalf of the Los Angeles County Board of Supervisors, your consideration of the above issues related to this critical public health and safety cleanup project is greatly appreciated. The County of Los Angeles looks forward to your response with respect to the comments on the draft EIS.

Sincerely,

Ilia Gavala for

Lori Glasgow Executive Officer

LG:ls

c: Board of Supervisors



MEMBERS OF THE BOARD JOHN C. ZARAGOZA Chair STEVE BENNETT LINDA PARKS KELLY LONG PETER C. FOY

BOARD OF SUPERVISORS COUNTY OF VENTURA 625 WEST HILLCREST DRIVE, THOUSAND OAKS, CA 91360

March 7, 2017

Ms. Stephanie Jennings NEPA Document Manager, SSFL Area IV EIS U.S. Department of Energy 4100 Guardian Street, Suite 160 Simi Valley, CA 93063

Dear Ms. Jennings:

Thank you for the opportunity to comment.

Unfortunately the EIS does not analyze cleaning the DOE site to the agreed upon stipulations in the 2010 Agreement On Consent. Instead, hundreds of thousands of cubic yards of soil, some with known significant chemical and radiological contamination that would be covered by the AOC, are exempted from remediation. The public's health must be your first priority. A clear analysis of a project that will remediate contamination as agreed upon in the AOC needs to be thoroughly evaluated in the EIS.

The DOE must not leave unknown quantities and concentrations of contamination on site, nor avoid due diligence in analyzing full remediation of known contaminants in excess of background levels. The EIS's exemption of hundreds of thousands of cubic yards of soil, on the basis that it may impact biological or cultural resources, is premature, lacks transparency, reneges on DOE's agreement from the 2010 AOC, and if implemented, would threaten the public's health.

The Ventura County Board of Supervisors strongly recommends that the EIS be consistent with remediation of DOE's SSFL site to the levels stipulated in the AOC.

Sincerely John Zaragoza Chair, Board of Supervisors

cc: Matt Rodriquez, Secretary, Cal EPA Barbara Lee, Director, DTSC JULIA BROWNLEY 26TH DISTRICT, CALIFORNIA MEMBER OF CONGRESS http://juliabrownley.house.gov

COMMITTEE ON VETERANS' AFFAIRS RANKING MEMBER, SUBCOMMITTEE ON HEALTH SUBCOMMITTEE ON DISABILITY ASSISTANCI AND MEMORIAL AFFAIRS

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE SUBCOMMITTEE ON AVIATION SUBCOMMITTEE ON COAST GUARD AND MARITIME TRANSPORTATION SUBCOMMITTEE ON HIGHWAYS AND TRANSIT

The Honorable Rick Perry Secretary U.S. Department of Energy Forrestal Building, Room 7B138 1000 Independence Avenue SW Washington, DC 20585-0001



Congress of the United States House of Representatives

> **Washington, DC 20515–0526** April 13, 2017

WASHINGTON, DC OFFICE: 1019 LONGWORTH HOUSE OFFICE BUILDING WASHINGTON, DC 20515 PHONE: 202-225-5811 FAX: 202-225-1100

THOUSAND OAKS, CA OFFICE: 223 EAST THOUSAND OAKS BOULEVAND, SUITE 411 THOUSAND OAKS, CA 91360 PHONE: 805-379-1779 FAX: 805-379-1779

> OXNARD, CA OFFICE: 300 EAST ESPLANADE DRIVE, SUITE 470 OXNARD, CA 93036 PHONE: 805-379-1779 FAX: 805-379-1799

Dear Secretary Perry:

I write to comment on the U.S. Department of Energy Draft Environmental Impact Statement (DEIS) for the clean-up of the Santa Susana Field Laboratory (SSFL).

As you know, the SSFL is located along the Los Angeles/Ventura County border. Initially far from population centers, SSFL was the site of rocket engine testing and nuclear experimentation. It is undisputed that toxic chemicals were used, spilled, and negligently dumped at SSFL. Additionally, in the early 1950s, an uncontained sodium reactor at the SSFL experienced a partial nuclear meltdown.

A full clean-up of the SSFL is of critical importance to me, as well as to my constituents. The 2007 Consent Order and 2010 Administrative Order on Consent (AOC) were entered into with the State of California to ensure a full clean-up is performed by the responsible parties and it is my expectation that DOE will not only live up to its responsibilities under the AOC, but that no alternatives or exemptions inconsistent with the AOC will be pursued by DOE.

It is imperative that we get this right so that we eliminate the significant health and safety risks for people who will continue to live nearby, and those who will be using the site in future years. Any clean-up less than to background levels will leave both radioactive and chemical contamination in place regardless of the end use of the property.

Please ensure that these comments be entered into the public record.

Sincerely,

JULIA BROWNLEY Member of Congress

cc:

Ms. Stephanie Jennings, NEPA Document Manager SSFL Area IV, U.S. Department of Energy The Honorable Barbara Lee, Director, California Department of Toxic Substances Control The Honorable Matt Rodriguez, Secretary, California Environmental Protection Agency

Attachment D



BOARD OF SUPERVISORS COUNTY OF LOS ANGELES

821 KENNETH HAHN HALL OF ADMINISTRATION / LOS ANGELES, CALIFORNIA 90012 Tel: 213-974-3333 Fax: 213-625-7360 Sheila@bos.lacounty.gov

> SHEILA KUEHL SUPERVISOR, THIRD DISTRICT

December 15, 2015

Barbara Lee Director California Department of Toxic Substances Control 1001 I Street Sacramento, CA 95812

Dear Director Lee:

The Department of Toxic Substances Control has pending before it for approval a series of remarkable documents submitted by the Boeing Company regarding the contamination risks at the Santa Susana Field Laboratory (SSFL). The Boeing documents pending before DTSC are risk assessments and proposals for "no further action." They constitute Boeing's own estimates of the risks stemming from its own contamination, and request to be allowed to take no cleanup actions to redress most of those risks. As such, the documents are deeply troubling.

The documents disclose never before known extraordinarily high risks from the pollution, but, nonetheless, request that Boeing be relieved of the obligation to clean up most of it. Boeing's requests, if granted, would breach commitments DTSC made for a full cleanup and would result in the great majority of the contamination for which Boeing is responsible not being remediated. We urge you to reject Boeing's requests and reaffirm DTSC's commitment to a full cleanup.

Background

In 2010, as you know, DTSC entered into Agreements on Consent (AOCs) with the Department of Energy and NASA for the cleanup of all contamination that could be detected on their portions of SSFL. At the same time, DTSC stated that for the remaining parts of the property controlled by Boeing, DTSC's standard procedures required a comparable cleanup. DTSC said that even if there were no AOC and no SB990 (Kuehl, 2007), DTSC would rely on Ventura County zoning and General Plan designations, which allow uses, according to DTSC, that would require Boeing to employ the most protective cleanup standard at SSFL.

In July of this year, Ventura County confirmed again for DTSC that the zones permitted under its General Plan for SSFL "allow for a wide array of both residential and agricultural uses." In response, DTSC has publicly pledged to assure that the site is cleaned up to levels that would safely allow any of the uses allowed under the County's General Plan and zoning, as set forth in the County's July letter. However, Boeing's submissions propose cleaning up the site to a markedly less protective standard. We urge DTSC to reject that request and adhere to the 2010

commitments, reiterated recently in Ventura County's letter, with due regard to the transportation impacts on residents.

Indeed, what Boeing is now proposing is dramatically weaker than even what it has publicly promised, which was to clean the site to a "suburban residential" standard. Boeing earlier said that it would clean the site up so that it would be safe for people to live on site, grow a backyard garden, and drink water from wells. Even if no one lives on the site in the future, people who do live nearby (our constituents) would be protected by a "suburban residential" standard of cleanup. But the documents Boeing has submitted propose allowing concentrations of toxic materials in soil very much higher than Boeing's own figures for protecting suburban residents.

Boeing's Extraordinary Risk Estimates

Buried thousands of pages into Boeing's documents are the company's estimates of the cancer risk from the toxic pollution. They are, frankly, mind-boggling. At one portion of the site, Boeing estimates every fifth person would get cancer from the contamination were they living on the site. (This is in addition to the number who would get cancer otherwise.) At a second location, approximately every third person exposed would get cancer from the exposure. And at another location, Boeing's own estimate is that 96 out of 100 people exposed would get cancer from the contamination there. This is absolutely astonishing, but these are Boeing's own figures.

Boeing, however, then goes on to propose that it not be required to clean up the vast majority of the contaminated soil, despite the fact that Boeing, itself, estimates that the risk after such proposed minimal cleanup would remain so high that every fifth person would most likely get cancer from the remaining contamination.

Risk estimates this high are unprecedented. Site cleanups generally aim for risks of one in a million. DTSC has committed publicly to ensuring that this will be the risk factor remaining after cleanup. Boeing's estimated risk post-clean up, however, is thousands to hundreds of thousands of times higher than what DTSC promised.

These are Boeing's estimates for a suburban resident with a garden (the weaker standard than that which DTSC has said it would require, but the one Boeing has said it wants to use). We recognize that these are the estimated risks were one living on-site and no one at present does. But our constituents live nearby where they can also be exposed— albeit at lower levels— to toxic materials migrating from the site. The extraordinary magnitude of the contamination Boeing has now disclosed is greatly disturbing.

Conclusion

By proposing to declare as needing "no further action" about 98% of the SSFL soil for which it is responsible, Boeing is asking DTSC to allow it to walk away from its cleanup obligations. We urge you to reject the Boeing submissions and reaffirm DTSC's commitments to a full cleanup of the contamination in order to assure that any allowed future land uses can be conducted safely and without restriction. This is essential for protecting our constituents who live in the communities nearby.

Over the nearly seventy years since the site was established, there have been reactor accidents, open-air burning of radioactive and chemically hazardous wastes, and releases of large quantities of toxic compounds into the soil and groundwater and surface water. Boeing has now disclosed that the contamination is far worse than we had ever known before, with astonishing estimated risks. DTSC promised in 2010 to assure cleanup of all the detectible contamination by 2017, yet the cleanup hasn't even begun. We urge an end to delays and diversions and efforts to undo the cleanup commitments. It is time to get the cleanup done, carefully and completely. Thank you for considering my comments.

Sincerely,

SHEILA KUEHL Supervisor, Third District

Fran Var

SENATOR FRAN PAVLEY California State Senate 27th District

MITCHELL ENGLANDER Council President Pro-Tempore Councilmember, Twelfth District

KY:ea



SSFL cleanup concerns - Following up on June 30 meeting

Denise Duffield <dduffield@psr-la.org>

Wed, Jul 26, 2017 at 9:39 AM

To: "Nazemi, Mohsen@DTSC" <Mohsen.Nazemi@dtsc.ca.gov>, "Cope, Grant@EPA" <Grant.Cope@calepa.ca.gov> Cc: Daniel O Hirsch, Cindi Gortner, Dawn Kowalski, Melissa Bumstead, Bonnie Klea, Devyn Gortner, Maria Caine, Nicole Bernson, Bill Craven, Geoff Fettus, Rachel Wagoner, Fiona Nagle, Nany Farias, Jeremy Wolf, Lenny Young, Sharon Wagener, Barbara Lee, Matt Rodriquez

Dear Mohsen and Grant,

Thank you very much for meeting with us on June 30th.

We remain deeply concerned about several issues. Below is my summary of those issues, including information we said we would get to you as follow up. Also, we have some follow up questions and requests for you that are highlighted in yellow.

Compliance with and enforcement of AOCs

- While we were pleased with DTSC's criticism of DOE's Draft Environmental Impact Statement (EIS), particularly DTSC noting that all options DOE considered would violate the Administrative Order on Consent (AOC) and reiterating that DTSC will enforce the AOC, we are concerned that many of the problems in the EIS may bleed into DTSC's own Programmatic Environmental Impact Report (EIR). We explained how large an amount of contamination would remain behind in the DOE cleanup alternatives (from 34-99%), and provided again the detailed comments from NRDC, CBG, the City of LA, and Southern California Federation of Scientists, as well as the letters opposing DOE's actions by the Mayor and City Council of Los Angeles and the Los Angeles and Ventura County Boards of Supervisors all of which bear closer examination by DTSC. We noted that DOE has repeatedly broken the AOC, yet there has been no action taken to date by DTSC to enforce it. For example, the AOCs require completion of soil cleanup by 2017, but it has not even begun. We learned after our meeting that DOE has written to DTSC confirming that it will not meet the deadline and requesting to meet to discuss that and other matters. We would appreciate knowing the upshot of that discussion.
- NASA has similarly broken the AOC without action by DTSC. For example, it has just issued in its latest Field Notes a statement that it will indefinitely defer removing the rocket test stands, where the contamination is centered and which cannot be cleaned up with the stands in place. NASA now says it will only remove the test stands if there is an unacceptable safety or health risk that cannot be mitigated, which directly violates the AOC which requires all contamination above background to be remediated, including on structures, debris, and all other anthropogenic materials, and does not allow that to be breached via some claimed mitigation or assertion about a safety problem or risk that NASA asserts is "acceptable." NASA thus is violating the AOC and this will result in significant contamination remaining on site, yet DTSC has taken no steps to require compliance. We would appreciate being informed what steps DTSC is taking to enforce the NASA AOC, particularly with regards its recent statement on the test stands.
- We discussed DOE and NASA's budget for the cleanup. We understand the implications of a Trump
 administration and its general stance on environmental protection, but the AOCs require NASA and DOE to
 make their best efforts to obtain sufficient funds for the cleanup. If they do not get the funding, they are to
 ask again the subsequent year until they do, and the AOC obligations do not go away if in any particular
 year they have requested but not received all the funds needed for that year. We note, furthermore, that
 the Trump administration's DOE budget request for cleanup of DOE sites for the fiscal year beginning in
 the fall is essentially unchanged from this year, and the SSFL budget request is within a million dollars of

DTSC's EIR

EIR Process and Risk Assessment

- We expressed concern that the contractors and DTSC staff working on the EIR have repeatedly met with the Responsible Parties (RPs) and allowed them to draft parts of the state's EIR and review and suggest revisions to internal drafts, while there have been no such consultations with parties committed to the promised full cleanup. It is troubling that the contract for production of DTSC's EIR is between Boeing and the contractor, not between DTSC and the contractor, creating a perception, which these numerous interactions with the RPs reinforce, of undue influence by those who are responsible for the pollution at the site and have a vested interest in getting out of their obligations to clean up all the contamination.
- We expressed our pleasure that the letters DTSC sent to Boeing in August and September of last year directed it to include the risks from the backyard garden component of the suburban residential exposure pathway in its RCRA Facility Investigation (RFI) reports and the risk assessments therein. These had shown risks as high as 96 excess cancers per 100 people exposed, by Boeing's own estimates, as noted in a letter to Director Lee by LA Supervisor Kuehl, LA Councilmember Englander, and then-Senator Pavley. But we expressed concern that DTSC in December of last year sent another letter to Boeing, directing it to remove the risk assessments entirely from the RFI and Groundwater reports. Grant indicated he was unaware of the letter; we provide a copy attached hereto.
- In the December letter, DTSC said it wanted to change the assumptions in the Standardized Risk Assessment Methodology (SRAM) to reflect new assumptions EPA was adopting. This didn't make sense to us, since those assumptions are for radionuclides in EPA's PRG calculator, whereas the risk assessments are primarily for chemicals; and the SRAM specifies the use of DTSC's SRAM assumptions, and had expressly not approved use of EPA assumptions that were less protective. The garden scenario in particular is based on DTSC's SRAM-based assumptions. A separate column on garden use based on then-EPA assumptions was put in by Boeing at its request, but DTSC made clear that the more protective SRAM-based numbers were to be used. We expressed concern that DTSC was reversing itself now, and wished to use selectively chosen new inputs that were less protective and that would allow Boeing to leave more contamination not cleaned up.
- We asked how can DTSC issue an EIR when the risk assessments for the Boeing portion of the property do not exist. We expressed concern that the EIR will be one-sided, exaggerating the impacts from cleaning up the contamination and ignoring the risks from the contamination not being cleaned up. We were told by Mohsen that the risk assessments could still be done — by DTSC staff — for inclusion in the draft EIR. We don't understand this. If DTSC has told Boeing it cannot produce risk assessments at this time because of changes that are to occur to the SRAM assumptions, how can DTSC staff do the risk assessments themselves? And it took Boeing a year to do risk assessments for just two subareas, based on the old inputs. DTSC stated on May 18, 2017 in a monthly update that "Based on DTSC review comments and changes in risk assessment input parameters by the USEPA, the risk assessment process will need to undergo some changes. The changes to the process are to be submitted for DTSC review and approval though an addendum to the Standardized Risk Assessment Methodology (SRAM-2). It is anticipated this process will take some time to work through." (emphasis added) A month later, DTSC said that Boeing had submitted a draft SRAM-3 in late May for DTSC review, a few weeks before our meeting. We are of course troubled that these matters are being left in the hands of the Responsible Party to prepare, with DTSC's role that of sign-off; and that such important matters are also done in secret, with no opportunity for public review and comment. We ask: If DTSC has rescinded the few risk assessments Boeing has performed for a few portions of its site, and directed it not to prepare new ones pending finalization of a revised SRAM which will change risk inputs, and that hasn't occurred and is anticipated to "take some time to work through," how can DTSC, as Mohsen suggested, be preparing its own risk assessments? Have DTSC personnel in fact performed detailed risk assessments for all the Boeing sub-areas? If so, when were they completed? If they haven't been done, because the inputs have not been revised in the SRAM. how can there be an EIR? Will it not automatically be skewed, by detailing purported impacts from cleanup while not being able to assess impacts from the contamination and from not cleaning it up?
- Grant said that there will be three separate sets of documents yet to come, in this order -- DTSC's EIR; Boeing's Corrective Measures Studies (in which, among other things, Boeing will propose what areas to be cleaned up and to what levels, which must be based on the risk assessments that have been suspended), and a proposed Decision document -- ALL of which will have a public comment period. We are troubled by

this, which suggests the cleanup decision, already many, many years late, will be delayed more years. We are also troubled that Boeing is allowed to identify the proposed cleanup levels and areas that will and won't be cleaned up. We ask: How can there be an EIR to evaluate cleanup if the proposals for what is and is not be cleaned up, and to what levels, will occur after the release of the EIR? An EIR is to evaluate the proposed project; DTSC appears to be shifting the proposed cleanup levels to after the EIR, which would appear at variance with CEQA and which makes no logical sense. And critically, with the EIR itself years late, and now DTSC indicating an extensive process thereafter before any decision, when does DTSC now anticipate a cleanup decision and cleanup actually beginning

• We remain concerned that DTSC's DEIR will, much like DOE's EIS, hype environmental impacts without properly evaluating the risks - both human health and ecological.

Risk Assumptions, Offsite Contamination, Air Dispersion

- We are troubled by the primary risk assumptions DTSC is using, and that its Brandeis white paper which denies that any contamination from SSFL migrates at levels that pose a risk to health is essentially a setup for gutting the entire cleanup.
- DTSC directed Boeing to include a backyard garden it its risk assessment, but did not utilize that assumption in its own Brandeis white paper, instead using purported suburban residential risk based screening levels that are in fact about a thousand times more lax than DTSC's own current figures with the garden.
- In the meeting, you said that DTSC based its assumptions on Brandeis' assertion that no one lives on the property and that food grown in its garden is for "learning" purposes and not consumed by campers. These statements are false. Brandeis has staff and ranchers on the property 24-7, and of course the food it grows is for consumption. But in fact, as we showed you in the meeting, the DTSC white paper actually said the opposite—that DTSC used EPA's Preliminary Remediation Goals for suburban residential use with EPA's default assumptions, which includes the garden. We showed you that the actual EPA default values are more than a thousand times more protective than the values DTSC claimed and used in the white paper. Furthermore, DTSC claimed it was using the SSFL suburban residential risk based screening levels, which you conceded are supposed to include the garden.
- We pointed out that the DTSC paper was being used to claim that no contaminants could migrate from SSFL offsite, at least at any level of concern for health and ecological risk and that that was both scientifically false and undermines any possibility of cleanup of SSFL. Grant agreed it could be better worded, that DTSC was not making that claim. Melissa pointed out how much the words in the paper matter to the community, especially when Boeing's surrogates are using the paper to deny offsite risks.
 Will DTSC issue a clarifying statement, that the Brandeis paper found contamination had migrated from SSFL, at levels that could pose a level of risk of concern if any of the food grown on the property were consumed, and that the paper did not suggest that contamination at significant levels hadn't migrated in the past or couldn't migrate in the future to offsite areas?
- DTSC appears to have accepted Boeing's assumptions that airborne contamination could only have traveled a few feet or at most a few hundred yards. Yet the Cohen ATSDR study for the potential for offsite exposures had a team of people whose modeling showed the contamination could travel for miles. In addition, site historical data - including photos and oral testimony from workers - indicate huge plumes of smoke from rocket engine tests and the burning of radioactive and toxic materials at the burn pit that engulfed the site and traveled into the valleys. We provided you with a couple of those photos. We pointed out the lack of credibility of that dispersion model, which the white paper refers to as DTSC-approved dispersion assessments but are in fact merely Boeing self-serving claims that DTSC in secret approved with no public notice, review or comment opportunity. And the Boeing claim, that for most of the worst airborne release locations (rocket test stands, open-air burn pits for toxic chemicals), the wind wouldn't carry contaminants more than a few feet and in no case for an individual source, more than 100 feet, is simply absurd. Grant indicated he hadn't seen the dispersion analysis documentation and asked that we send it. A copy is attached. You will note that the language in the DTSC white paper is lifted directly from this Boeing document. Also note that Boeing's claim was that for almost all of its open-air burning/incinceration/detonation activities and rocket testing, contaminants did not travel more than a few feet, and in one case, STL-IV, no more than 100 feet. This is unbelievable. We note that DTSC has just announced it will clean up contamination from the Exide facility that was carried by air dispersion at leas 1.7 miles from the site. But for Boeing, it is adopting the polluter's claim that the wind at SSFL (which after all is atop a hill with people below) can't go further than a few hundred yards. We told you that one way

Boeing manipulated these results was by using, once again, and contrary to DTSC's directives from last year, residential risk based screening levels without the garden. As we have said repeatedly, these are about 1000 times less protective than the correct figure for the garden, and results in their claim that magically no contamination is transported more than a few feet. Please note, as we told you at the meeting, that the basis for the absurd claim is largely tied to Boeing's assertion that deposition didn't exceed Soil Characterization Levels (SCLs) beyond 100 feet for any airborne source like a rocket test or burnpit. As has been repeatedly discussed, those SCLs are based on suburban residential exposure without a garden, which DTSC has ordered Boeing to not do but instead to include the garden. When the garden is included, the value drops by roughly a factor of one thousand. Were the correct value, as DTSC supposed has ordered, used, the claim of a magic wall stopping any contamination going beyond a hundred feet or so would crumble. We note that DOE and DTSC are claiming that almost all of Area IV (which didn't have the intensive rocket tests of the Boeing areas) is contaminated, it is clear how absurd to claim that the contamination comes right up to and magically ends at the SSFL boundary. These absurd claims by DTSC, simply adopting the self-serving assertions by the Responsible Party of a magical glass wall around SSFL preventing offsite migration, accepted without even any public review or input, and apparently none by you in senior management, can cripple any chance of a cleanup if not fixed.

- We also pointed out once again that the entire EIR is based on soil measurements that were predicated on Soil Characterization Levels (SCLs) that didn't include the garden, that are also therefore 1000 times off. DTSC had repeatedly promised over the years that this would be fixed, Boeing could be ordered to go back and redo the measurements using SCLs that were correct; but that hasn't happened. How can there be an EIR if it is based on soil characterization levels that are a thousand times too high?
- I said I was extremely disturbed by DTSC in its press briefing on the Brandeis report referring to the Cohen study - a five year multi-million dollar study funded by the federal government and utilizing a team of half a dozen or more researchers - as merely an "opinion" and asked why DTSC hadn't met with Cohen and his team in preparation for the EIR. The only real input seems to be coming from the parties with a vested interest in a skewed EIR that results in less cleanup than promised.

Treatment of AOC exemptions

We expressed concern that DTSC's DEIR would allow misuse and misapply exemptions in the AOC. We
noted that DOE attempted to do this in its DEIS, and pointed to examples in the packets showing
ecological harm (See Land IQ comments - "Measures To Mitigate Impacts To Braunton's Milk-Vetch And
Santa Susana Tarplant Related To Soil Cleanup In SSFL Area IV And NBZ"). We were concerned by
comments made in the meeting that it is politically helpful to exempt from cleanup contamination using
biological and cultural claims that significantly exceed the exceptions allowed by the AOC.

Boeing easement.

- We discussed Boeing's easement, and our great concern that Boeing and DTSC will use this to further erode the 2010 DTSC commitment to base the Boeing cleanup on current Ventura County zoning and General Plan, to instead base the cleanup on an anticipated future use scenario. Grant indicated that DTSC would "consider" the easement in determining how much cleanup it will require; we expressed very great concern about those statements.
- I pointed out that people who live near the site do not live in open space, and despite DTSC's claims to the contrary, SSFL contamination most certainly migrates from the site and at levels harmful to health.
- Grant said that there is some EPA guidance that says Boeing's cleanup obligations can be reduced by unilaterally declaring the land open space. We disagreed. You also indicated that such guidance says potential harm to the offsite population is not a factor in cleanup decisions. We also disagreed. **Grant, can you please provide a copy of the guidance and page numbers for reference?**

Soil volume estimates.

• We expressed concerns that the responsible parties are inflating soil volume estimates in an attempt to exaggerate the amount of soil that would need to be removed. We noted that DOE, for example, assumed that if contamination was detected in a location, the entire area would need to be removed. We advocated for better sampling and a fact check on the estimates.

Demolition/Disposal

During our meeting, we asked you once again why DTSC was continuing to take the position that waste from Area IV (the nuclear area) at SSFL could be shipped for recycling or disposal in sites other than licensed low-level radioactive waste (LLRW) facilities, in contradiction to "the decision of CalEPA Secretary Rodriquez and DTSC Director Raphael that materials from Area IV with radiation levels above background <u>cannot</u> be routed for recycle or for non-rad disposal." (emphasis in original) We provided you again the DTSC email documenting that decision (attached here for your convenience), and indicated that in response to Public Records Act requests, DTSC and CalEPA have indicated that there were no records documenting any reversal of the Secretary and then-Director's decision.

Nonetheless, after intervention by a Boeing lobbyist with a middle-level DTSC official a few hours after issuance of the email about the decision by the agency and department heads, DTSC lower personnel continued for a couple of years to approve Boeing requests to demolish buildings and ship waste from them that had radioactivity above background for disposition at facilities that were not LLRW disposal sites (e.g., Buttonwillow). [This despite the decision of their superiors, and also despite a Tanner Act decision, in which DTSC had participated, about radwaste disposal at Buttonwillow that led to a settlement and CUP that further bars the practice.]

The numerous approvals by DTSC of Boeing requests to dismantle and dispose of the radioactive debris in a manner contrary to the Secretary and Director's decision resulted in a lawsuit and a court finding of likely violations of law and therefore issuance of a temporary injunction. DTSC in court has continued to take a position that is directly contradictory to the decision by the Secretary and Director referred to in the email. We asked you why, and you were at a loss as to an answer, but asked us to send you DTSC's assertions on the matter to the court, which we do hereby. (This is DTSC's response to the motion for an injunction, which it lost.) We have also attached a couple of the response briefs FYI. Lastly, we have included the technical study that details the shipments and Boeing's own measurements that show that the waste was above background. (The manifests do not disclose this, so the recipients had no way of knowing that the waste contained radioactivity above background).

We discussed briefly the AOC, which covers all of Area IV, not just the portion for which DOE had responsibility, requires all contamination to be cleaned up to background and all waste with radioactivity above background to go to a licensed LLRW site, and which covers all soil, which is defined to include structures, debris, and anthropogenic materials. It thus covers all the buildings and everything irrespective of who owns it (the soil that is to be cleaned up pursuant to the AOC is, of course, owned by Boeing). We also discussed DTSC jurisdiction over buildings, which you said was over buildings that had a hazardous materials permit *unless there were a release*. There of course have been releases; that is how the soil, groundwater, etc. outside the permitted buildings got contaminated. We expressed concern not just for SSFL but for DTSC authority statewide if the position now being taken to defend the actions at SSFL taken in variance to the orders of the heads of the agency and department were to continue, essentially tying DTSC's hands throughout California regarding contamination in most buildings. But the bottom line

You said you would review the situation. We look forward to your digging into the matter and hopefully fixing it. The case is to be briefed in the fall and it is frankly ridiculous that we are fighting about something that the Secretary and Director had already decided shouldn't occur. Why is DTSC insisting in court that waste from Area IV with radioactivity in excess of background be allowed to go for recycle or non-rad disposal when the CalEPA Secretary and DTSC Director ordered that they not be? Will DTSC now resolve the matter consistent with that decision?

Again, while we are thankful for the opportunity to meet with you, we remain as concerned as ever - if not more so - that when all is said and done, very little of SSFL's contamination will be cleaned up, and surrounding communities - as well as future site visitors - will remain at risk.

We look forward to your responses to our follow up questions and requests.

Sincerely,

Denise

Physicians for Social Responsibility-Los Angeles 617 S. Olive Street, Suite 1100 Los Angeles, CA 90014 213-689-9170 ext. 104 310-339-9676 cell www.psr-la.org

6 attachments

- 2016-12-09_SSFL_Letter_from_DTSC_to_RPs_Regarding_Risk_Assessments-2.pdf 353K
 66474_Air_Dispersion_Evaluation_Approach_for_Other_Boeing_Sources.pdf 9189K
 Weiner-BlackOnRaphaelRodriquezDemoDecision.pdf 86K
 Brief 131008.pdf 239K
- Page 12 Prief FINAL 131018.pdf 435K
- 141107 Opposition to Motion for Summary Judgment.pdf 1650K



Public unable to send SSFL comments via DTSC website!

Denise Duffield <dduffield@psr-la.org>

Fri, Sep 29, 2017 at 1:46 PM

To: "Malinowski, Mark@DTSC" <Mark.Malinowski@dtsc.ca.gov>

Cc: "Banks-Ordone, Michelle@DTSC" <Michelle.Banks-Ordone@dtsc.ca.gov>, "Rubin, Marcia@DTSC" <Marcia.Rubin@dtsc.ca.gov>, "Lopez Mendoza, Jerilyn@DTSC" <Jerilyn.LopezMendoza@dtsc.ca.gov>, "Lee, Barbara@DTSC" <Barbara.Lee@dtsc.ca.gov>, "Cope, Grant@EPA" <Grant.Cope@calepa.ca.gov>, "Nazemi, Mohsen@DTSC" <Mohsen.Nazemi@dtsc.ca.gov>

Hi Mark,

Thank you for your response. I'm puzzled, because going through the Boeing form as if I were going to send it in (see attached screenshot, which is what shows after typing in name and address), it lists your name and Secretary Rodriquez among a select group of elected officials, and very clearly states "your communication will be **emailed** to the appropriate decision-maker" (emphasis theirs). Are you and Secretary Rodriquez then also getting emailed copies of comments submitted this way?

Thanks much, Denise

On Fri, Sep 29, 2017 at 7:00 AM, Malinowski, Mark@DTSC <Mark.Malinowski@dtsc.ca.gov> wrote:

Hello Denise,

My apologies for not being able to respond sooner to your questions regarding the community input and comments on DTSC's SSFL draft Program Environmental Impact Report (PEIR) and draft Program Management Plan (PMP).

Comments on the draft PEIR and draft PMP submitted to DTSC during the public comment period, including those submitted via email, will be accepted as public comments and responded to as part of the response to comments that will be provided when the PEIR and PMP are finalized. However, DTSC strongly encourages everyone submitting comments on the draft PEIR or draft PMP to use the following link: http://ssfl.dtsc.commentinput.com/ rather than sending them to other DTSC email addresses. We would appreciate any efforts you could also provide to encourage or assist in directing comments to the http://ssfl.dtsc.commentinput.com/ link.

In response to your statement that "Boeing is directing comments on its propaganda website http://takeaction.protectsantasusana.com/ to Mark Malinowski and Matt Rodriquez," this is not the case. Instead, the Boeing website appears be directing the comments to the http://ssfl.dtsc.commentinput.com/ link and not to me or Secretary Rodriquez's email addresses.

I hope this addresses your concerns.

Should you have any questions or need additional information, please contact Michele Banks-Ordone at Michelle.Banks-Ordone@dtsc.ca.gov or at 818-717-6553. Thank you.

Mark Malinowski, Chief

Santa Susana Field Laboratory Team & Northern California Schools Branch

Dept of Toxic Substances Control

(916) 255-3717

From: Denise Duffield [mailto:dduffield@psr-la.org]
Sent: Tuesday, September 26, 2017 8:25 PM
To: Malinowski, Mark@DTSC <Mark.Malinowski@dtsc.ca.gov>
Cc: Banks-Ordone, Michelle@DTSC <Michelle.Banks-Ordone@dtsc.ca.gov>; Rubin, Marcia@DTSC
<Marcia.Rubin@dtsc.ca.gov>; Lopez Mendoza, Jerilyn@DTSC <Jerilyn.LopezMendoza@dtsc.ca.gov>; Lee, Barbara@DTSC <Barbara.Lee@dtsc.ca.gov>; Cope, Grant@EPA <Grant.Cope@calepa.ca.gov>; Nazemi, Mohsen@DTSC <Mohsen.Nazemi@dtsc.ca.gov>
Subject: Re: Public unable to send SSFL comments via DTSC website!

Dear Mark,

Thank you and DTSC staff for the comments extension and website improvements.

I would still like an answer to my question about whether comments currently being emailed to you, as have been now for over a week or so, are in fact being accepted for public comment as well.

Thank you,

Denise

On Fri, Sep 22, 2017 at 4:46 PM, Denise Duffield dduffield@psr-la.org wrote:

Mark,

You didn't answer whether or not you are accepting comments that Boeing is soliciting and having sent to you by email.

Are you accepting the comments that have been emailed to you via the Boeing site? If so, you should accept other comments emailed to you or DTSC as well.

You also ignored that I said that the webform is visible in the community update, but the community update is NOT easily visible on the DTSC website, nor would anyone know to look for the place to send comments there, it's buried in a list of documents. As you know, there have been several news stories about the EIR and many who are concerned are not on your email list and only have DTSC's website, which is nearly impossible to navigate to find the place for comments.

Again, are you accepting comments that you are receiving via email, as has been happening for the past week via Boeing's website?

If so, you must either 1) accept other comments emailed to you as well or 2) provide another valid email address.

Denise

On Fri, Sep 22, 2017 at 4:33 PM, Malinowski, Mark@DTSC <Mark.Malinowski@dtsc.ca.gov> wrote:

Hello Denise,

Comments on the Draft PEIR should be sent to:

http://ssfl.dtsc.commentinput.com/

Sorry you couldn't find the link. We have the link on the Public Notices and Community Update, but your point is a good one. I'll see what we can do to get the comment link added to the DTSC-SSFL website as well.

Thank you and have a great weekend. MM

Mark Malinowski, Chief

Santa Susana Field Laboratory Team & Northern California Schools Branch

Dept of Toxic Substances Control

(916) 255-3717

From: Denise Duffield [mailto:dduffield@psr-la.org] **Sent:** Friday, September 22, 2017 4:22 PM To: Malinowski, Mark@DTSC <Mark.Malinowski@dtsc.ca.gov>; Nazemi, Mohsen@DTSC <Mohsen.Nazemi@dtsc.ca.gov>; Cope, Grant@EPA <Grant.Cope@calepa.ca.gov> Cc: Banks-Ordone, Michelle@DTSC <Michelle.Banks-Ordone@dtsc.ca.gov>; Rubin, Marcia@DTSC <Marcia.Rubin@dtsc.ca.gov>; Lopez Mendoza, Jerilyn@DTSC <Jerilyn.LopezMendoza@dtsc.ca.gov>; Lee, Barbara@DTSC <Barbara.Lee@dtsc.ca.gov> Subject: Public unable to send SSFL comments via DTSC website!

Mohsen, Mark, Grant,

There is no email address to send SSFL EIR comments apparent on DTSC's website http://www.dtsc.ca.gov /SiteCleanup/Santa_Susana_Field_Lab/index.cfm. Indeed, there is no way visible at all to send in comments.

If someone digs through all the documents, a link to a web form is provided on the Community Update flyer pdf, but it is unlikely any members of the public are going to hit each document link until they find it.

So, two weeks have now gone by without the link to comments being easily accessible by the public.

This is unacceptable, and it is also frankly unacceptable to provide a confusing web form instead of a simple email address. Many people are used to email but are unfamiliar with dealing with webforms. This creates the impression that DTSC is trying to make it difficult for the public to comment, rather than simple and easy.

Also, I noticed that Boeing is directing comments on its propaganda website http://takeaction.prot ectsantasusana.com/ to Mark Malinowski and Matt Rodriquez. You can see for yourself by filling out their form and clicking "take action," which takes you to another page that indicates the comments are being emailed to Mark and Matt and copied to several elected officials as well.

Will comments emailed to Mark Malinowski be accepted as public comment submissions on the DEIR?

If not, will you please provide a simple email address where comments can be sent?

Thank you,

Denise

Denise Duffield Associate Director Physicians for Social Responsibility-Los Angeles 617 S. Olive Street, Suite 1100

Los Angeles, CA 90014 213-689-9170 ext. 104 310-339-9676 cell www.psr-la.org ---**Denise Duffield** Associate Director Physicians for Social Responsibility-Los Angeles 617 S. Olive Street, Suite 1100 Los Angeles, CA 90014 213-689-9170 ext. 104 310-339-9676 cell www.psr-la.org ---**Denise Duffield** Associate Director Physicians for Social Responsibility-Los Angeles 617 S. Olive Street, Suite 1100 Los Angeles, CA 90014 213-689-9170 ext. 104 310-339-9676 cell www.psr-la.org **Denise Duffield** Associate Director Physicians for Social Responsibility-Los Angeles 617 S. Olive Street, Suite 1100 Los Angeles, CA 90014 213-689-9170 ext. 104 310-339-9676 cell www.psr-la.org Fullscreen capture 9292017 11502 PM.jpg 157K

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Subscription We Multivervie (VP) See Net (VP)	Most Visited Getting Started						20						
Your communication will be sent by:		Your communication will be sent to: Mark Malinowski (NP) Sen. Henry Stern (DEM) Assembly Member Dante Acosta Mr. Peter Foy Sec. Matthew Rodriquez Mr. Matt Dababneh Ms. Jacqui Irwin Your letter: I am opposed to the proposed cleanup and cleanup development and backyard gardens at the Santa Su future use of the property as open space habitat now would be excessive and have unnecessary impacts of Santa Susana is an important part of a vital wildlife plants and grasses, and extensive riperian oak wood Many people live in the communities that surround to Sincerely; FirstName LastName 3050 E. Los Angeles Avneu Simi Valley, CA 93065	r alternatives for Boeing's property in the draft Environmental Impact Report that assume residen isana site. Since homes will never be built or gardens planted there, this level of cleanup is at o w that a conservation easement is in place. A cleanup level based on residential use with backys on the community, wildlife and habitat. corridor used by mountain lions, bobcat, deer, reptiles and over 100 bird species. It is also home lands. It was designated as an Indian sacred site that is home to Native American pictographs at the Santa Susana site.	ial Ids with t id garden to native d artifact	the second se								





Complaint re: Woodland Hills Warner Center and West Hills Neighborhood Councils

Denise Duffield <dduffield@psr-la.org>

Thu, Dec 14, 2017 at 5:03 PM To: jose.galdamez@lacity.org, darren.martinez@lacity.org, elise.ruden@lacity.org, kathleen.quinn@lacity.org

Dear Mr. Martinz, Ms. Ruden, Mr. Galdamez, and Ms. Quinn:

I am writing to object to the process and content of the letter (attached) that the Woodland Hills Warner Center Neighborhood Council (WHWCNC) approved at its November 8, 2017 Board Meeting to be sent to the Department of Toxic Substances Control (DTSC) regarding the cleanup of the contaminated Santa Susana Field Laboratory (SSFL). The letter grossly misrepresents the views of the Woodland Hills, West Hills, and Canoga Park communities, and contains many false statements.

A brief background on SSFL will help illustrate the concerns. Decades of nuclear and rocket engine testing activities at SSFL, including a partial nuclear meltdown and other toxic releases and spills, have left the site heavily polluted with radiological and chemical contamination. A federally-funded study conducted by the University of Michigan found the incidence of key cancers were 60% higher in the offsite population near the site compared to further away. A team led by Dr. Yoram Cohen of UCLA found that SSFL contamination migrates off site exposing the public at levels that exceed EPA levels of concern.

In 2010, DTSC signed agreements (Administrative Orders on Consent or AOCs) with the Dept. of Energy (DOE) and NASA that committed them to clean up all detectible contamination in their operational areas. DTSC also said it would require the Boeing Company, which owns most of the site, to clean up to comparable levels. Boeing subsequently launched a campaign to convince the public that SSFL requires minimal cleanup. It enlisted individuals with ties to the responsible parties to ferment opposition to the promised full cleanup, and exerted influence on DTSC to reverse course on cleanup commitments. In September, DTSC released a draft Program Environmental Impact Report (PEIR) for the cleanup that breaks its 2010 commitments and would leave vast amounts of contaminated soil not cleaned up. DTSC is accepting public comments on the PEIR until Dec. 14.

WHWCNC Concerns

On October 11, the Boeing Company - the polluter that is pushining to get out of its cleanup obligations - appeared before the WHWCNC to push for being allowed to leave the great majority of the contamination not cleaned up. Several community members attended the meeting and objected to the WHWCNC only hearing from one side and asked that equal time be provided at a subsequent meeting for proponents of the promised full cleanup to present the other side, before the council took any action. They were told that they would be contacted to arrange such a presentation, but they were not, and a follow up email to WHWCNC Environmental Committee member Karen DiBiase went unanswered. WHWCNC went ahead and acted to support Boeing's position to be relieved of most of its cleanup obligations.

The WHWNC letter to DTSC concludes that, "The WHWCNC Environmental Committee, along with members from our community, from Canoga Park Neighborhood Council and West Hills Neighborhood Council (collectively representing approximately 210,000 residences and businesses) has evaluated the PEIR and found it to be incomplete as it does not address "risk based" cleanup alternatives, and only discusses the transportation issues. The Woodland Hills-Warner Center Neighborhood Council supports Canoga Park and West Hills in their efforts to clean up the SSFL site to the a "risk based" alternative. WE STAND UNITED AS A COMMUNITY."

There are several troubling issues with this statement.

- The West Hills Neighborhood Council (WHNC) had not, in fact, formally evaluated or voted on DTSC's PEIR when WHWCNC approved the letter, nor had the Canoga Park Neighborhood Council. The WHNC vote on the PEIR is December 7, and the Canoga Park Neighborhood Council vote was December 6.
- Individuals from these neighborhood councils did meet to discuss the matter. We understand that Alec •

Uzemeck, who sits on West Hills Neighborhood Council (although he does not live in the area), met separately at a library with members of the Woodland Hills and Canoga Park neighborhood councils to discuss the PEIR. Uzemeck was formerly employed by Boeing's predecessor at SSFL, North American Aviation, and is a member of the SSFL CAG, a group opposed to full cleanup which was funded secretly by the Dept. of Energy, another of the Responsible Parties. Uzemeck has a conflict of interest in involvement with neighborhood councils on any SSFL-related matter, yet drafted the WHNC letter to DTSC and has consistently pushed the WHNC to oppose the SSFL cleanup agreements.

- The Woodland Hills Warner Center, Canoga Park, and West Hills neighborhood councils are not "elected to represent their communities" and do not "represent 210,000 residences and business" and those communities do not "stand united as community" in asking for risk-based alternatives. Neighborhood councils (there are 97 of them) are merely advisory bodies to the City Council of Los Angeles, which are the elected representatives. (See City Ethics Commission statement here.and Neighborhood Council training manual here.)The advice of these few neighborhood councils on the SSFL matter has been consistently rejected by the elected representatives of the City. Indeed, the City of Los Angeles (City Council, Mayor, and City Attorney) have consistently supported the 2010 SSFL cleanup commitments and rejected any advice against full cleanup. Further, thousands of people in West Hills, Woodland Hills, and Canoga Park support full cleanup. A petition launched by a West Hills resident urging DTSC to keep its cleanup commitments has over 67,000 signatures. It is grossly inaccurate to claim these areas are "united as a community" on SSFL.
- Most of the SSFL cleanup Boeing's property already is subject to a "risk-based" cleanup. If DTSC kept its 2010 cleanup promises to require Boeing to cleanup to allowable uses in the Ventura County General Plan and zoning (which include residential and agricultural uses), Boeing's risk-based cleanup would be comparable to the AOCs. Boeing is instead pushing for a standard that would leave most of the contamination not cleaned up a standard based on recreational use that ignores the fact that people who live near SSFL live in residential areas and SSFL contamination migrates offsite. Calling for a risk-based standard means little without examining the specific cleanup standards to be used and analyzing the health and ecological risks of the amount of contamination that could remain on site under each standard.

The letter contains other serious factual misstatements as well:

WHWCNC letter: "Cleanup should be based on the 2007 Consent Order. The 2010 Administrative Order on Consent (AOC) expired in July 2017 and as stated in your document," is not feasible as replacement soil is not available" and the Look up Tables (LUT) values do not support the end use of the site."

FACT CHECK: 1) The AOC did <u>not</u> expire in July 2017. The AOC stipulates that if the responsible parties have not completed cleanup by 2017, they will be fined \$15,000 a day. DTSC has failed to enforce that key provision. 2) The draft PEIR did <u>not</u> say that the AOC agreements were not feasible because replacement soil is not available. Rather, the draft PEIR said, "The sources of backfill soil needed to replace excavated soil have not been confirmed." 3) The end use of the site is irrelevant – SSFL is adjacent to residential areas and its contamination can migrate for miles. The only way to fully protect public health is if the contamination is fully cleaned up. Using LUTs ensures that SSFL will be cleaned up to local background levels of contamination, to restore the site to the way it was before it was contaminated by SSFL activities and so that no unnecessary cleanup would occur.

WHWCNC letter: Alternate 2 - Preliminary Estimated Administrative Order on Consent (AOC) Exceptions Alternative - This alternative was based on incorporating SB990 into the existing 2007 Consent Order. However, per DTSC's own analysis, this alternative is not possible to complete as it is impossible to locate enough backfill sources for DOE's use at SSFL to fulfill AOC requirements. The AOC did not allow for "on-site" cleanup.

FACT CHECK: 1) The AOC was <u>not</u> the result of the incorporating SB 990 into the 2007 Consent Order. It was proposed by then-Dept. of Energy's Nobel Prize winning Secretary, Dr. Steven Chu, and his Assistant Secretary of Environmental Management, Dr. Ines Triay. 2) As stated above, DTSC's EIR does <u>not</u> state that it is impossible to locate enough backfill for DOE's uses. 3) The AOC <u>does most definitely</u> allow for "on site" cleanup. The AOC explicitly states that, "Cleanup to Background Levels" shall include in situ or other onsite treatment of soils that is able to achieve the cleanup standards as specified in the AIP." See page 4 of the AOC here.

WHWCNC letter: "The only viable route to remediate the SSFL site is to use Woolsey Canyon."

FACT CHECK: There are multiple viable alternative routes and conveyance methods. Unfortunately DTSC's

PEIR fails to properly examine them. A comprehensive Alternative Transportation Options report prepared for DTSC in 2014 by advocates and community members that detailed feasible alternative routes and transportation methods was ignored.

In summary, the communities of West Hills, Woodland Hills, and Canoga Park are in close proximity to SSFL and subject to exposure to SSFL contamination that migrates, especially during wind, fire, or rain events. If SSFL contamination is not fully cleaned up, these communities will remain at risk. It is highly unethical for individuals on a neighborhood council to hear only from the polluter, promise to hear from the other side and break that promise, pass resolutions written in part by someone who is part of a group funded by one of the Responsible Parties, and both misrepresent and misinform their peers and communities on such a critical public health matter - especially when they appear to have been instigated and organized by an individual with ties to the parties responsible for cleaning up SSFL contamination.

Sincerely,

Denise Duffield Associate Director Physicians for Social Responsibility-Los Angeles

Denise Duffield Associate Director Physicians for Social Responsibility-Los Angeles 617 S. Olive Street, Suite 1100 Los Angeles, CA 90014 213-689-9170 ext. 104 310-339-9676 cell www.psr-la.org


November 8, 2017

SSFL CEQA Comments Department of Toxic Substances Control 8800 Cal Center Drive Sacramento, CA 95826

RE: Draft Program Environmental Impact Report (PEIR) for clean-up of Santa Susana Field Laboratory

Dear Michelle Banks-Ordone, DTSC Public Participation Specialist

The Woodland Hills-Warner Center Neighborhood Council (WHWCNC) is a one of 97 Neighborhood Councils whose members are elected to represent their communities.

The WHWCNC continuously has requested and supported a human health risk assessment cleanup for the SSFL site, based on EPA standards. Attached are our letters dated March 8, 2017 and December 10, 2014 when the WHWCNC submitted their comments on cleanup issues at SSFL. Also attached is a flyer for the public forum held on October 20, 2014 that had presentations by DTSC and The Water Board and all Responsible Parties at SSFL. This event was presented jointly by Woodland Hills-Warner Center Neighborhood Council and Canoga Park Neighborhood Council and was attended by over 300 community members. These letters are included here to remind DTSC that we are a united community, and represent over 75,000 residences and businesses in Woodland Hills.

On November 8, 2017, at a publicly held meeting, the Woodland Hills-Warner Center Neighborhood Council voted unanimously to approve the following comments with a vote of xx yes, 0 no, 0 abstain.

We continue to support a "risk based" cleanup which will best protect our community, protect the natural resources, wildlife habitats, and cultural areas at the site. We support the removal of soil with chemicals that are above a risk–based level. We support clean-up on site where possible, and support monitoring of the ground water and the on-site treatment of TCE and PCE plumes. We also request the daily amount of truck traffic be reduced to a cumulative daily maximum of 50, and that trucks used to transport material travel during daylight hours only, for driver and public safety reasons. We also respectively request the truckloads of radioactive material travel routes that avoid <u>our</u> populated areas, for public safety reasons.

Cleanup should be based on the 2007 Consent Order. The 2010 Administrative Order on Consent (AOC) expired in July 2017 and as stated in your document," is not feasible as

replacement soil is not available" and the Look up Tables (LUT) values do not support the end use of the site.

On page S-29, it states that "DOE consulted applicable CEQA and DOE NEPA regulations and guidance in determining reasonable alternatives to the cleanup to AOC LUT values for analysis in the EIS, and they must: a) rigorously explore and objectively evaluate <u>all</u> reasonable alternatives and b) devote substantial treatment to <u>each</u> alternative".

On pages S-5 through S-6, it states that "Boeing is the landowner of Area IV and the NBZ; therefore, Boeing will decide the potential future land use of these areas". In 2017, Boeing issued a letter of intent and has filed an Environment Easement for their property, to be safeguarded as Open Space. Their cleanup in Area I and Southern Buffer Zone (SBZ) is based on risk assessment for this end use. Open Space = Risk Based Cleanup (human health risk assessment). On page S-25, it states that "most cleanups are based on a risk assessment that follow EPA guidance". This is the recommended alternative that the WHWCNC requests at SSFL

The four alternates that were evaluated and presented in the PEIR, and in our opinion, do not represent a cleanup level choice, but only options on transportation of remediated soil and material from the site.

Alternate 1 – No Project Alternative

This alternative is required by CEQA to be included with the choices. As the site currently contains chemical and nuclear waste from decades of testing, a cleanup is necessary causing this alternative to not work.

<u>Alternate 2 – Preliminary Estimated Administrative Order on Consent (AOC) Exceptions</u> <u>Alternative</u>

This alternative was based on incorporating SB990 into the existing 2007 Consent Order. However, per DTSC's own analysis, this alternative is not possible to complete as it is impossible to locate enough backfill sources for DOE's use at SSFL to fulfill AOC requirements. The AOC did not allow for "on-site" cleanup. The Native American cultural areas at the site have also not been addressed or designated as "protected sacred lands" in the PEIR.

<u>Alternative 3 – Reduced Truck Trip Scenario</u>

This alternative only discussed the amount of truck trips, and not any level of cleanup at the site. DTSC has previously held several public meetings to discuss alternatives on how to remove the soil/material from the site. These meetings were attended by many of our neighborhood council members. The only viable route to remediate the SSFL site is to use Woosley Canyon. However, the alternate as presented only discusses the amount of truck traffic and not what will be carried down from the site and through our communities. The WHWCNC DOES REQUEST THAT THE AMOUNT OF TRUCK TRAFFIC BE REDUCED in order to safeguard human health and the risk to our neighborhoods during this remediation process.

Alternative 4 – Conveyer and Train Spur

It was noted in the PEIR, that during construction of either the Conveyer or Train Spur, trucks will continue down Woosley Canyon for at least two years. There was no consideration of the amount of truck traffic or the level of cleanup remediation in this alternative. It was again related to transportation and not actual cleanup levels. With this alternative, there is now an <u>added</u> health risk, safety concern, construction and maintenance costs, access to and use of private property, and full time use of fire roads needed in addition to use by the fire department to protect our communities. There is also the added risk of exposure to additional communities due to the loading/offloading of the conveyer and/or trains. There is no mention of the additional cleanup costs and the removal of the conveyer and/or train access after the remediation is completed. Therefore, this alternative will not work. DTSC also concludes that Alternatives 4A and 4B are the worst in terms of environmental impacts.

<u>**Conservation of Natural Resources Alternative**</u> – Why isn't this part of the proposed alternatives?

Per page S-33, "under this alternative, DOE would remediate Area IV and the NBZ to reduce the concentrations of chemical and radioactive constituents in the soil to levels necessary to protect human health". This alternative reduces risk to the public and the environment, yet conserves natural resources, including biological, cultural, and water resources. Cleanup would be targeted locations posing risk and areas would be subdivided into smaller areas to be evaluated.

Therefore, we request DTSC to revise the PEIR and objectively evaluate a "risk based" cleanup in the offered "alternatives" shown by DOE in their Draft EIS. We would like to see a human health risk assessment based on EPA standards, and that the PEIR should be revised to offer several alternative cleanup level scenarios.

The WHWCNC Environmental Committee, along with members from our community, from Canoga Park Neighborhood Council and West Hills Neighborhood Council (collectively representing approximately 210,000 residences and businesses) has evaluated the PEIR and found it to be incomplete as it does not address "risk based" cleanup alternatives, and only discusses the transportation issues.

The Woodland Hills-Warner Center Neighborhood Council supports Canoga Park and West Hills in their efforts to clean up the SSFL site to the a "risk based" alternative. WE STAND UNITED AS A COMMUNITY.

Sincerely,

Congress of Neighborhoods August 3, 2002

General Issues Regarding Neighborhood Councils Office of the City Attorney-Neighborhood Council Advice Division

History Of Neighborhood Councils

The system of neighborhood councils was created when the City of Los Angeles embarked on what has come to be known as "Charter Reform." In June of 1999, an amended Charter was submitted to the voters of the City of Los Angeles for adoption. That Charter was adopted and become operative on July 1, 2000. For the first time in the City's history, a citywide system of neighborhood councils and a Department of Neighborhood Empowerment was created, which was designed to "promote more citizen participation in government and make government more responsive to local needs...." Charter § 900.

What Is A Neighborhood Council?

Now that the City has embarked on certifying neighborhood councils, some councils are still asking the question: What *is* a neighborhood council in relationship to the City of Los Angeles and how does it fit in the "City family" compared to other City boards or commissions?

The City Charter states that neighborhood councils will have an "advisory role on issues of concern to the neighborhood," provide input to decision-makers before decisions are made and should include representatives of the "diverse interests in their area." However, nowhere in the Charter is there a precise *definition* of a neighborhood council.

Neighborhood councils, once certified, are local governmental agencies and are a part of the City family. As a City body, neighborhood councils are not unlike other advisory boards and commissions. As such, the City Attorney concluded that as "*advisory bodies* to the City created by the City Charter . . . neighborhood councils fall within the provisions of the Brown Act." City Attorney letter dated November 16, 2000. (Emphasis added). The City Attorney also concluded, in a separate letter, that the "Charter's design is for neighborhood councils to be official components of the organization of City government organized at a 'grass roots' level." City Attorney letter dated November 30, 2000. Thus, neighborhood councils are all of these things: advisory bodies to the City, which are organized at a grass roots level and, once certified, become an official component of City government, a local governmental agency.

The difference between neighborhood councils and other City advisory boards or commissions is that the jurisdiction of the neighborhood council is, in some sense, selfdefined, as opposed to being defined by ordinance, and the board members are selfselected, rather than appointed. The system was designed to allow neighborhood councils to decide for themselves what issues are important to them and what input they wish to give to the various decision-makers on these issues. Because they *are* part of the City's governmental structure, they are doing the public's business and must comport with the same type of rules as do other advisory bodies, such as the Brown Act, Public Records Act and the City's conflict of interest and ethics rules. However, as a City advisory body, neighborhood councils are protected from liability in the same manner as other City boards and commissions. (See discussion below.)

What Is The Status Of Their Advice?

The Charter provides that neighborhood councils should have input before decisions are made. Charter § 907. This means that neighborhood councils may take positions at their meetings as to what recommendations or advice they wish to communicate (either in writing or orally) to the decision-makers. The City decision-makers will take the recommendations of the neighborhood council into consideration when they render a decision on whatever matter is before them.

May A Neighborhood Council Also Incorporate Itself As A Non-profit Corporation?

As discussed above, a neighborhood council, once certified, becomes a local governmental agency. However, the Plan for a Citywide System of Neighborhood Councils ("Plan") also recognizes that "certified neighborhood councils shall be as independent, self-governing, and self-directed as possible" and that the Department shall assist certified neighborhood councils to pursue tax-exempt or non-profit incorporation "to strengthen their independence." Plan, Article II, Section 4. Thus, neighborhood councils may also pursue non-profit status, but the creation of that entity, a non-profit corporation, becomes a separate and distinct entity that is *not* part of the City family. One of the reasons for this is because a non-profit corporation has separate obligations to the state of California that may differ from the rules established under the Charter and the Plan. Thus, the City Attorney has stated that "a neighborhood council could incur separate and distinct liability for a breach of its duties as a non-profit corporation...." City Attorney letter dated April 5, 2001. For these reasons, in part, the City only certifies the neighborhood council as a City entity since it cannot necessarily assume responsibility for actions that the neighborhood council takes as a non-profit corporation.

What Kind Of Liability Protection Is There For A Neighborhood Council?

Generally, as an advisory body to the City, members of governing boards of neighborhood councils are subject to the same immunities as other City employees, boards and commissions. While the legal liability arena is complex and often is fact dependant, the general rule is that the City has an obligation not only to defend, but to indemnify a City official or employee for a court judgment against him or her as long as the conduct that resulted in the award of liability was within what the law defines as the "scope of employment." In the context of a neighborhood council, official activities that result from its role as an advisory body (such as conduct of meetings, recommendations that it makes, neighborhood improvement projects under Departmental rules and guidelines) would undoubtedly fall within this rule. However,

often what activities fall within the "scope of employment" depends on the facts of a particular case. The objectives of the Plan and Charter as well as each neighborhood council's by-laws will provide some general guidance should issues of liability arise based upon a particular set of facts.