



Matthew Rodriguez
Secretary for
Environmental Protection



Department of Toxic Substances Control

Barbara A. Lee, Director
5796 Corporate Avenue
Cypress, California 90630



Edmund G. Brown Jr.
Governor

February 16, 2016

Ms. Phuong K. Tran, P.E.
Environmental Engineering, CES
Southern California Edison
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Irwindale, California 91702

COMMENTS ON REVISED PHASE I ENVIRONMENTAL SITE ASSESSMENT,
PARCEL 5 AND PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT, SAN
ONOFRE NUCLEAR GENERATING STATION (SONGS) MESA FACILITY, LOCATED
AT 14300 MESA ROAD, SAN CLEMENTE, CALIFORNIA 92672 (SITE CODE: 401724)

Dear Ms. Tran:

The Department of Toxic Substances Control (DTSC) has reviewed the "Phase I Environmental Site Assessment" (Phase I ESA) dated November 2, 2015, and the "Revised Phase II Environmental Site Assessment Report" (Phase II ESA) dated November 3, 2015, prepared by Leighton Consulting, Inc. for SONGS Mesa Facility (Site).

Enclosed please find DTSC's Human and Ecological Risk Office comments on the Phase I and Phase II ESA Reports that identify the deficiencies in the risk assessment and also indicates that the data is insufficient, at this point, for conducting a risk evaluation and that further investigation is warranted at the Site at all three Parcels (5, 6, and 7). In addition, DTSC's Geological Services Unit (GSU) prepared comments pertaining to Parcel 5 only. Please incorporate these comments in a "Site Investigation Work Plan" (Work Plan) for Parcel 5. The GSU's comments are as follow:

1. Due to the unknown source of import fill at Parcel 5, GSU recommends the analysis for Semi-Volatile Organic Compounds (SVOCs) be included for the entire 24 soil discrete samples as specified in Table 1 and Figure 3 – Boring Locations and Features of Interest – Parcel 5 at Phase I ESA report. These locations intended for SVOCs analysis can be co-located with the sample locations collected for VOCs in the previous Phase II investigation.

2. Similarly as reason stated above, the uncharacterized import fill material warrants analysis of Title 22 metals for the entire site. In order to have the uniform distribution of sampling locations across Parcel 5, GSU recommends the metal samples can be composited from a 4-point locations covering four grids (200'x200') with four locations located at each specified grid. The 100 ft sampling grid layout is shown on Figure 3 at Phase 1 ESA report. Using this algorithm, the 4-grid sampling approach can be applied to the entire Parcel 5 in delineating metal distribution at two depth intervals (1' and 5' bgs). Leighton shall propose the metal analysis in the supplemental investigation. In addition, any future grid-based soil sampling should follow the above systematic design instead of the previously employed random sampling approach.
3. In light of the presence of septic leach field at Parcel 5, GSU suggests two additional sampling locations within the leach field be selected for further characterization. Discrete soil samples shall be collected from two depth intervals (1' and 5' bgs) at these two locations and analyzed for all site COCs including SVOCs and metals. Additionally, one grab groundwater sample needs to be collected for water quality analysis. Groundwater analyses shall be included VOCs, SVOCs, metals and nitrate. Filtered samples for metal analysis are recommended. If site access condition restricts the collection of grab sample within the leach field, GSU recommends the grab sample will be collected at the downgradient area of leach field for groundwater analysis.
4. GSU doesn't agree with the composited samples for TPH analysis due to the presence of volatile organic compounds. Any future analysis of TPH in soil samples shall be conducted in discrete samples to ensure the chemical distribution with VOCs be properly quantified.
5. Based on Table 7 – Summary of Volatile Organic Compounds in Soil Analytical Results, there were only three samples at depth of 1' bgs were analyzed for VOCs. It is inconsistent with the sampling rationale proposed in Table 1 indicating that 24 samples located in 12 locations for site-wide characterization had been analyzed for VOCs. In order to mitigate this deficiency, GSU recommends the remaining 21 samples be collected and included for VOCs analysis in supplemental investigation.
6. Following the site visit conducted on February 4th, 2016, GSU notices that the presence of scrap metals and other dumping and staging activities at the railroad easement area were occurred. In order to better define the subsurface condition, a detailed biased soil sampling plan must be presented to DTSC for review.

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7. Representative soil boring information including soil type, grain size and compaction/density shall be provided in support of Navy's argument that there is no substantial fill material had been placed at Parcel 5. In addition, historical topographic maps showing ground elevations comparing with current condition shall be presented to demonstrate if fill material has been indeed absent from Parcel 5.
8. Following completion of the site investigation activities, a human health (and ecological, if necessary) risk evaluation should be performed to support a decision on cleanup or site closure for Parcel 5.

DTSC will provide specific comments on the Phase I ESA and the Phase II ESA for Parcel 6 and Parcel 7 separately. Furthermore, a radiological assessment should be performed due to the Site's proximity and supporting operations to the SONGS Main Plant Facility. The Nuclear Regulatory Commission (NRC) and the California Department of Public Health (CDPH) should be contacted for reviewing and approving the radiation related assessments. A Community Profile, Community Survey, Community Relation Plan, and a Mailing List should be developed as part of the Site Investigation Work Plan.

Please submit the Work Plan for Parcel 5 to DTSC by March 15, 2016. Should you have any questions, please contact me at (714) 484-5471 or poonam.acharya@dtsc.ca.gov.

Sincerely,



Poonam Acharya
Project Manager
Schools Evaluation and Brownfields Cleanup Branch

Enclosure

cc: See next page.

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cc: (via email)

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MEMORANDUM

TO: Poonam Acharya
Project Manager
Cleanup Program - Cypress

FROM: Chawn Y. (CY) Jeng, Ph.D.
Staff Toxicologist
Human and Ecological Risk Office

DATE: December 23, 2015

SUBJECT: Review of Phase I and Phase II Environmental Site Assessment Reports, San Onofre Nuclear Generating Station (SONGS) Mesa Facility, San Clemente, California.

PCA: 12018

Site Code: 401724-11

The Human and Ecological Risk Office (HERO) reviewed Phase I and Phase II Environmental Site Assessment (ESA) Reports for the San Onofre Nuclear Generating Station (SONGS) Mesa Facility. These documents were prepared by Leighton Consulting, Inc. (Irvine, CA) on behalf of Southern California Edison (SCE). Comments on the reports are described below.

Background

The Site is on the Marine Corps Base (MCB) Camp Pendleton property at 14300 Mesa Road in the City of San Clemente, California, and leased from the Department of Navy (DON) by SCE for supporting the operations of the SONGS Main Plant Facility. It comprises Parcels 5 (2.2 acres), 6 (69 acres), and 7 (49 acres), and were developed with multiple buildings (guard house, laboratories, training facilities, fabrication shops, garages, warehouses, etc.), a fueling facility, vehicle parking areas, a helicopter landing pad, staging/storage yards, a sewage treatment plant (STP), and a recreational vehicle private campground (Camp Mesa).

Hazardous chemicals and petroleum substances were stored and used throughout the facility. These hazardous substances included cleaning agents, lubricants, solvents, fuels, greases, cooling agents, paints, and other substances typically associated with

vehicle maintenance and mechanical shops. Hazardous waste was transported from hazardous waste satellite storage areas to the chemical containment pad (W-40) in Parcel 6 for staging and bulking prior to appropriate characterization, transport, and disposal. Based on the historical Site operations, the chemicals of potential concern (COPCs) include but are not limited to total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), organochlorine pesticides (OCPs), chlorinated herbicides, polychlorinated biphenyls (PCBs), and metals.

SCE intends to close the SONGS Mesa Facility and terminate their 2011 DON Lease for Parcels 5, 6, and 7. The purposes of the Phase I and Phase II ESAs were to identify recognized environmental conditions (RECs), historical RECs (HRECs), or controlled RECs (CRECs) in connection with the Site, pursuant to the processes prescribed in ASTM International (ASTM) E1527-13, and to investigate COPCs that may be present in soil and soil vapor as a result of SCE's tenancy at the Site.

Scope of Review

HERO reviewed the following reports prepared by Leighton Consulting, Inc.:

- Phase I Environmental Site Assessment (Parcels 6/7), dated September 12, 2014;
- Phase I Environmental Site Assessment Addendum (Parcels 6/7), dated January 5, 2015;
- Phase I Environmental Site Assessment (Parcel 5), dated November 2, 2015; and
- Revised Phase II Environmental Site Assessment Report, dated November 3, 2015.

These documents were reviewed for scientific and technical content only, with focus on health risk-related issues. It should be noted that the Phase II ESA Work Plan was not reviewed or approved by DTSC prior to its implementation, and HERO defers to other DTSC staff regarding completeness of the Phase II ESA and other data gaps not identified in this memorandum. Minor typographic or grammatical errors which did not affect the review were not noted.

General Comments

- 1) HERO recommends describing ecological settings at the site and identifying chemicals of potential ecological concern to biota that actually or potentially occur at the site. A biological survey conducted by a qualified field biologist, if available, should be provided to DTSC for review. Pending review of this information, an ecological screening evaluation or risk assessment may be considered for the Site. Please refer to relevant DTSC ecological risk assessment guidance and tools (<http://www.dtsc.ca.gov/assessingrisk/eco2.cfm>) regarding the ecological evaluation process and requirements.
- 2) While beyond the scope of the current agreement and planned work with DTSC, a radiological assessment should be performed due to the Site's proximity and

supporting operations to the SONGS Main Plant Facility. Proper regulatory agency (NRC and/or California DPH) should be contacted for requirements and oversight of radiation-related activities.

Specific Comments

All comments below refer to "Revised Phase II Environmental Site Assessment Report":

- 1) **Section 1.2, Decision Criteria:** Both DTSC HERO Human Health Risk Assessment Note Number 3 (DTSC-SLs; October 2015) and USEPA Regional Screening Levels (RSLs; November 2015) have been updated recently. While HERO does not expect these updates would significantly alter the findings in the Phase II ESA Report, the latest DTSC and USEPA screening levels should be used in future submittals. For TPH, HERO recommends using the RSLs (the more stringent values if compositional data are not available) or the SFBRWQCB Environmental Screening Levels as screening criteria for direct contact pathways, as the LARWQCB Soil Screening Levels are intended for groundwater protection only.
- 2) **Section 3.0, Field Investigation:** HERO considers the available metal data are insufficient for supporting a reliable health risk evaluation. Specifically, metal analyses were limited to Buildings G-22, G-40, G-49, and Seaweed Drying Yard, according to Tables 1 and 9. However, the Phase I ESAs identified other areas with metalworking, metal/welding shops, and waste storage/dump stations in Parcels 6/7 (e.g., G-20, G-21, G-49, W-40, W-43, W-44, and W-51), and the potential presence of lead-based paint and undocumented fill in Parcel 5. In addition, arsenic may be associated with historical pesticide applications and should be considered a COPC and evaluated in the risk evaluation (see **Specific Comment 10-b**).
- 3) **Section 3.15, Deviations from the Work Plan:** Analytical results for the lighter TPH fractions (C8-C10 and C10-C18) may be biased low for composite soil samples due to loss of volatile compounds during sample handling and preparation. Usability of these data should be evaluated in future health risk evaluations. In addition, future analyses of TPH should be conducted in discrete soil samples to ensure proper quantification of the volatile fractions.
- 4) **Section 4.1, Building G-40:** HERO recommends collecting step-out and step-down (e.g., at 2 and 3.5 ft bgs) soil samples around the G40-LB2 location with lead concentration of 100 mg/kg in the 1-ft sample to delineate the lateral and vertical extent of lead-impacted soils in this area (see **Specific Comment 10-g**).
- 5) **Section 4.8, Data Validation and Evaluation:** The significance of rejected soil vapor sample results should be evaluated in future health risk evaluations. For example, some statements in the first paragraph on Page 55 are misleading ("...bromodichloromethane, 1,2-dibromo-3-chloropropane, 1,2-dibromoethane, 1,2-dichloroethane, hexachlorobutadiene, naphthalene, 1,1,2,2-tetrachloroethane, and

1,1,2-trichloroethane...no history of use, handling, or disposal of these chemicals at the Site...”), as naphthalene is a constituent in diesel fuels and some chlorinated VOCs in the rejected samples are often associated with PCE and TCE, two key COPCs identified at the Site.

- 6) **Section 5.1, Soil Risk Characterization:** (a) According to the Provisional Peer Reviewed Toxicity Values for Cobalt (USEPA 2008), the critical effect for deviation of chronic oral RfD (3E-4 mg/kg-day) is decreased iodine uptake in thyroid instead of the heart. (b) For TPH, site-specific or default aliphatic/aromatic compositions should be used to calculate noncancer hazards, and both TPH low and medium fractions should be treated as volatiles in the risk calculation (see **Specific Comments 10-d and 10-f**).
- 7) **Section 5.2, Soil Gas Risk Characterization:** According to Table 11 in Appendix H, the estimated cancer risks exceeded 1.0E-06 in 14 of the 33 (instead of 15 of the 34) soil gas samples collected at a depth of one foot bgs. In addition, the estimated cancer risk at G50-SV1a-10' (Table 13 in Appendix H) also exceeds 1.0E-06, and it should be noted. These discrepancies should be resolved in future submittals.
- 8) **Section 6.0, Conclusions:** While HERO does not object to establishment of soil gas action levels to guide future remedial actions, they should not be considered final cleanup goals (Page 54). Specifically, cumulative effects of all COPCs remaining in all environmental media should be assessed in a post-remediation risk evaluation to ensure the total cancer risk and noncancer hazard are acceptable for future land use for the site.
- 9) **Table 1:** (a) Some of the sample analyses presented in the data summary tables are not listed on Table 1, e.g., TPH in grid-based soil samples in Parcels 6/7 (Table 4) and metals in the Seaweed Drying Yard (Table 9). (b) It is unclear why VOCs were not analyzed in the soil samples collected at the location E50A-AST (Figure 4, near the two diesel ASTs) while VOCs were analyzed in other similar samples (E50A-UST1 and E50A-PL1).
- 10) **Appendix H – Human Health Risk Assessment (HHRA) Report** (prepared by Enviro-Tox Services, Inc.):
 - a) Section 1.0: For future reference, HERO recommends listing the latest DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual (revised in October 2015) and HERO HHRA Note Number 1, instead of “DTSC 2000 Guidance for the Dermal Exposure Pathway”, in the guidance list.
 - b) Section 2.1: HERO does not agree with the exclusion of arsenic from the risk evaluation as it might be used in pesticide applications during historical agricultural land use throughout the Site, and only limited samples collected from the Site were analyzed for metals. It should be retained as a COPC and

additional analyses should be conducted on a site-wide basis to support a reliable background/risk evaluation on arsenic.

- c) Section 3.2: HERO recommends expanding the conceptual site model (Figure 1) to include potential exposure to groundwater (e.g., drinking and non-domestic uses) and discussing why it is not considered a complete pathway.
- d) Sections 3.4 and 3.5: For future reference, both TPH low and medium fractions should be treated as volatiles instead of particulates in the risk evaluation (i.e., using the VF instead of the PEF) unless the latter approach can be supported by TPH carbon range analyses.
- e) Section 3.6: Supporting information for selecting sandy clay (SC) as the soil type in the top 15 feet in the Johnson and Ettinger model (Appendix B) should be provided and reviewed by DTSC Geologist for concurrence. Please note that this assumption appears contrary to the “site-specific” soil parameters shown on Table 2, and this discrepancy should be resolved in future submittals.
- f) Section 4.3: The carbon ranges used to assign to the maximum TPH concentrations for low, medium, and high aliphatic fractions on Table 7 appear inconsistent with those (C5-C8, C9-C18, and C19-C32, respectively) in the RSL table. Additionally, only BTEX and naphthalene were analyzed by EPA Method 8260 even though other aromatic hydrocarbons are present in TPH mixtures; HERO recommends using site-specific or default (e.g., 50% aliphatics and 50% aromatics) compositions to calculate noncancer hazards.
- g) Section 5.1.2: HERO questions adequacy of the data set in the Building G-40 area and the use of site-wide data set in the UCL calculation for the evaluation of lead exposure. Additional metal analyses should be performed (see **Specific Comments 2 & 4**), and smaller decision units (e.g., by parcel or building) should be considered in the risk evaluation.
- h) Table 1: Several of the source documents (e.g., DTSC 2014, USEPA 2009) cited on the table are not listed in Section 7.0 – References, and should be included in future submittals for completeness.
- i) Table 6: The source reference (“e”) to toxicity values on the table does not match those listed in the notes.
- j) Figure 4c: The estimated cancer risks and hazard indices for samples G50-SV1a-10' and G50-SV1a-15' should be shown on the figure for completeness.
- k) Appendix A: For future reference, HERO recommends preparing statistical summary tables of all analytes in the soil and soil gas samples, including the numbers of total and detected samples, and minimum, mean, and maximum detected concentrations, to facilitate data review.

Conclusions and Recommendations

The Phase II ESA Report recommends (a) additional assessment in the three localized areas at former buildings G-40, G-44, G-50, and (b) preparation of a remedial action plan (RAP). HERO's review has identified additional data gaps for the Site. To address these and other data gaps identified by DTSC, HERO recommends that site investigation work plans for individual parcels or areas of concern be prepared and

submitted for DTSC review. Preparation of the RAP should be postponed until completion of supplemental site investigation and an updated human health and ecological (if warranted) risk assessment.

To streamline the process, revisions of the current Phase II Environmental Site Assessment Report and the HHRA Report may not be necessary, provided that the deficiencies identified in this memorandum are addressed in future submittals, where applicable.

HERO notes that the recommendations made in this memorandum are site specific and should not be construed as a policy decision applicable to other sites. For additional questions, please feel free to contact me at (714) 484-5359 or cjeng@dtsc.ca.gov.

Reviewed by:

A handwritten signature in black ink, appearing to read 'William Bosan', followed by a stylized flourish or '3'.

William Bosan, Ph.D.
Senior Toxicologist
Human and Ecological Risk Office