
San Francisco Bay Regional Water Quality Control Board

March 3, 2020
Case No.: 07S0125
Geotracker ID: T0601300697 (jdw)

City of Richmond
Planning Division
Attn. Ms. Lina Velasco
450 Civic Center Plaza
Richmond, CA 95804
via email: lina.velasco@ci.richmond.ca.us

SUBJECT: Terminal One, 1500 Dornan Drive, Richmond, Contra Costa County – Requirement for Revision of October 2019 Draft Remedial Design Report

Dear Ms. Velasco:

It has come to our attention that the Regional Water Board's February 18, 2020 letter describing the results of our review of the October 2019 *Draft Remedial Design Report* for the Terminal One Site, may contain language that might be misinterpreted. The 2018 Remedial Action Plan Addendum (2018 RAP), as set forth in our March 21, 2019 letter, remains conditionally acceptable. In order to avoid misinterpretation in this regard, we have revised the last sentence of the second paragraph of the February 18, 2020 letter and are reissuing the letter as revised.

If you have any question, please contact me at (510) 622-2375 or via email jeff.white@waterboards.ca.gov.

Sincerely,

Jeff White
Water Resource Control Engineer

Attachment: Requirement for Revision of October 2019 Draft Remedial Design Report

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SUBJECT: Terminal One, 1500 Dornan Drive, Richmond, Contra Costa County – Requirement for Revision of October 2019 Draft Remedial Design Report

Dear Ms. Velasco:

Regional Water Board staff reviewed the October 2019 *Draft Remedial Design Report* (RD report) for the Terminal One Site (Site), prepared by Wood Environment & Infrastructure Solutions, Inc., on behalf of the City of Richmond. The RD report was prepared pursuant to Task 2 of the Site Cleanup Requirements Order No. R2-2004-0045 (Order). We considered comments on the RD report by the Brickyard Cove Alliance for Responsible Development (BCARD), BCARD's consultants, and other interested parties.

In March 2019, the Regional Water Board conditionally concurred that the 2018 Remedial Action Plan Addendum (2018 RAP) complied with Task 1 of the Order. The conditional concurrence required that the City submit a Task 2 RD report acceptable to the Regional Water Board's Executive Officer. However, the RD report does not adequately address the Water Board's conditions for the 2018 RAP, has other deficiencies as detailed below, and therefore is unacceptable.

A revised RD report acceptable to the Executive Officer containing the remedial design for the conditionally approved 2018 RAP must be submitted by **September 3, 2020**, to address the following comments.

- 1) Section 3.5, Soil Risk Management Plan; Section 3.6, Remedial Actions Integrated into the Proposed Development Plan; Section 4.1, Remedial Excavation; Section 5.1, Soil Excavation; and Appendix I, Soil Risk Management Plan** – The proposal to excavate soil with gross petroleum contamination will not adequately reduce risks to human health and the environment

JIM McGRATH, CHAIR | MICHAEL MONTGOMERY, EXECUTIVE OFFICER

and must be revised. Implementation of the May 2019, *Revised Work Plan for Remedial Design Investigation* was not completed, and the extent of gross contamination was not delineated to the east or south. Gross contamination extends well beyond the “proposed limits of shallow excavations” shown on Figure 21.

Because gross contamination in soil is a mixture of both diesel-range hydrocarbons (TPH_{DRO}) and oil-range hydrocarbons (TPH_{MRO}), an acceptable RD report must include cleanup standards for both:

Comment 1a) Define the gross contamination (GC) cleanup standards for soil:

- i) GC Cleanup Standard No. 1: less than 2,300 mg/kg TPH_{DRO}.
- ii) GC Cleanup Standard No. 2: less than 5,100 mg/kg TPH_{MRO}.
- iii) GC Cleanup Standard No. 3: as defined in the Order, post-remediation soil that contains no visible product and does not stain earth-moving equipment.

Attainment of GC Cleanup Standards 1 through 3 will reduce risks of direct contact with contamination, vapor intrusion to indoor air, and leaching to water.

Comment 1b) Describe in the text, and show on Figure 21, the limits of the *initial* excavations to remove gross contamination, based on GC Cleanup Standards 1 through 3. Initial excavations must include soil beneath at-grade residences and other occupiable, at-grade facilities, where sheen or separate-phase liquid likely exists, as illustrated on Figure 36 of the 2018 RAP. This includes the Southwest Tank Farm Area, where soil with gross contamination may be excavated to construct stacked parking and/or other facilities.

Comment 1c) Revise the description of the anticipated, maximum excavation depth from 7 feet to a variable depth of up to 13 feet or more, based on attainment of GC Cleanup Standards 1 through 3. At many locations, analytical results indicate, or boring logs note, gross contamination (or product) at depths of up to 13 feet.

Comment 1d) Describe the process by which initial excavations will be extended to remove all surrounding soil with gross contamination and achieve GC Cleanup Standards 1 through 3. Note, full delineation *and* removal of gross contamination may occur concurrently during redevelopment.

Comment 1e) Describe the plan for confirmation sampling of excavation bottoms and sidewalls to demonstrate attainment of GC Cleanup Standards 1 through 3.

Comment 1f) Describe the segregation, sampling and analysis for waste characterization, and offsite disposal of soil with gross contamination.

Comment 1g) Develop and include a plan for clean fill import and on-site soil reuse to ensure that 1) only clean fill is imported to the site, and 2) only acceptable soil generated during excavation/earthwork is reused. See the attached guidance.

Comment 1h) Employ a third-party, independent, California-licensed geologist or engineer to oversee remedial excavation, clean fill import, on-site soil reuse, and offsite soil disposal.

- 2) **Section 5.6, Self-Monitoring Program; Appendix G, Monitoring Well and Piezometer Installation Work Plan; and Appendix H, Monitoring Well Sampling and Analysis Work Plan** – The Self-Monitoring Program will not adequately monitor groundwater quality and slurry wall effectiveness. Revise the RD report to provide additional piezometer-well pairs along the slurry wall alignment; long-term, quarterly self-monitoring; and an acceptable Contingency Plan if the remedy is ineffective.

Comment 2a) Describe in the text and show on Figure 25 two additional piezometer-well pairs for adequate monitoring, where the distance between proposed pairs is too great: 1) near slurry wall exploratory borings SW2A and SW2B, where product was observed; and 2) near the southwest corner of the deep soil mix (DSM) buttress.

Comment 2b) We do not agree to a reduction of groundwater monitoring frequency. Shoreline groundwater monitoring is the primary metric to evaluate the effectiveness of the slurry wall to mitigate pollutant discharge to the Bay. Quarterly self-monitoring will likely be necessary for decades, given the nature and extent of residual contamination, and the proposed land use change.

Comment 2c) Describe in sufficient detail the metrics by which the slurry wall's effectiveness will be evaluated, to ensure successful mitigation of pollutant discharges to the Bay. Specify the maximum hydraulic gradient across, and the maximum mound height upgradient of, the slurry wall that, if exceeded, will trigger contingency responses. Specify the maximum concentration of 640 µg/L combined TPH_{DRO} and TPH_{MRO} in shoreline groundwater that, if exceeded, will trigger contingency responses.

Comment 2d) Develop and include a Contingency Plan that describes responses to be implemented (e.g., extraction and management of groundwater), in the event of substandard slurry wall performance and/or unacceptable pollutant discharge to the Bay.

- 3) **Sections 4.2 and 5.3, Slurry Wall and Appendix D, Slurry Wall Design Drawings and Specifications** – Additional information is necessary to ensure the slurry wall will effectively mitigate pollutant discharges to the Bay. Revise the RD report to include:

Comment 3a) A description of the anticipated life of the slurry wall/DSM buttress.

Comment 3b) Results of long-term compatibility testing, discussion of long-term slurry wall performance, and any necessary adjustment of the design slurry mix.

Comment 3c) A description of the minimum width of the slurry wall.

Comment 3d) A description in the text and illustration on Figure 25 of the groundwater flow paths along the slurry wall and locations of discharge to the Bay.

Comment 3e) Design drawings and specifications of the DSM buttress, to which the slurry wall will connect for an integrated hydraulic barrier. Also, provide a description of how vertical homogenization of soil and cement slurry will be accomplished to total depth during installation of DSM columns.

Comment 3f) Review and, if appropriate, certification of the Appendix D, Slurry Wall Design Drawings and Specifications by a third-party, independent, California-registered professional engineer. A purpose of the review and certification is to evaluate whether or not the slurry wall is sufficiently deep to prevent travel of contaminated groundwater beneath the slurry wall to the Bay. If the engineer is unable to certify the Design Drawings and Specifications, without modification, the use of industry standards as the bases for proposing design improvements is acceptable.

Comment 3g) Slurry wall Contractor's quality assurance/quality control (QA/QC) program.

- i. Describe the field key-in verification program, including collection of samples to identify Bay Mud (e.g., color, plasticity, and grain size), to confirm there is no continuous lens of coarse-grained material through which contaminated groundwater can travel beneath the slurry wall to the Bay. This may require the Contractor to excavate the trench deeper than the design depth to properly key the slurry wall into the Bay Mud.
- ii. Describe soil-cement-bentonite backfill testing for unconfined compressive strength and permeability at a frequency that is appropriate for the length and depth of the proposed slurry wall (e.g., one sample per 100 to 300 cubic yards).

Comment 3h) Engineering oversight of the QA/QC program by a third-party, independent, California-registered professional engineer, including field verification of wall-Bay Mud keying.

4) Section 5.2, VIMS – Podium Construction of Ground-Floor Residential Structures and Appendix C, Indoor Air Sampling and Analysis Plan – Section 5.2 and Appendix C must be revised to provide better protection of human health from risks of soil vapor intrusion (VI) to indoor air. Revise the RD report to include:

Comment 4a) Final detailed design of the VI mitigation system, including the details of the vapor/moisture barriers to mitigate VI to occupiable spaces via preferential pathways such as elevator pits/shafts, stacked parking structures, stairwells, sumps, and utilities.

Comment 4b) A pre-occupancy indoor air sampling and analysis plan (IASAP) that is consistent with DTSC's Vapor Intrusion Guidance (VIG; October 2011).

Comment 4c) Adequate description of the methods by which IASAP results will be evaluated to determine whether acceptable air quality is being achieved.

Comment 4d) A revised Appendix C, Section 8.0 (Reporting), proposing to submit, prior to any occupancy, a "summary report" of air sample data evaluation to the Regional Water Board for review and approval.

Comment 4e) A Contingency Plan to be implemented in the event pre-occupancy air quality is not acceptable, based on air sample data evaluation.

5) Upload to Geotracker the Third and Fourth Quarter 2019 Groundwater Monitoring Reports.

Electronic copies of all correspondence, technical reports, and other documents pertaining to the remedial work must be uploaded to the Geotracker database within five business days after submittal to the Regional Water Board. Guidance for electronic information submittal is available at:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/. Please note that this requirement includes all analytical data, monitoring well information (latitudes, longitudes, elevations, and water depth), site maps, and boring logs.

For more details on the requirements for an acceptable RD report, please contact me at (510) 622-2375 or via email jeff.white@waterboards.ca.gov.

Sincerely,

Jeff White
Water Resource Control Engineer

Attachment: DRAFT Guidance for Clean Fill Import and On-Site Soil Reuse

cc:

Brian Lewis, BCARD, brianthesailor@gmail.com

Cleve Livingston, Laconia, clivingston@laconiallc.com

Frank Szerdy, Wood, frank.szerdy@woodplc.com

Alan Wolken, City of Richmond, awolken@ci.richmond.ca.us

Attachment
Guidance for Clean Fill Import and On-Site Soil Reuse

The plan must use the following definitions:

- i. Clean Soil – Natural materials (e.g., topsoil, clay, silt, sand, gravel, rock, or a mixture or combination of such materials) that have concentrations of naturally occurring chemicals (e.g., metals) at or below background levels at the receiving site while concentrations of man-made chemicals are absent. Clean soil is also free of trash, debris, and construction material. Clean soil does not include coal or other carbonaceous material.
- ii. Acceptable Soil – Material acceptable for defined use(s) considering the following:
 - consists of natural materials (e.g., soil, clay, silt, sand, gravel, rock, or a mixture or combination of such materials) free of visible signs of trash, debris, staining, liquids, or construction material;
 - concentrations of naturally occurring chemicals (e.g., metals) do not exceed regional background levels; and
 - concentrations of anthropogenic chemicals (man-made or derived from human activity) do not present significant threats for relevant ecological and human exposure pathways (e.g. ingestion, inhalation, dermal contact, or nuisance) or concerns given the soil placement location and the potential for chemical migration (e.g. leaching/erosion into surface water, leaching into groundwater, or vapor intrusion into buildings, generation of transformation products).
- iii. Unacceptable Soil – Material with any of the following characteristics will be deemed unacceptable for import by the Regional Water Board:
 - meets the definition of a hazardous waste (state or federal);
 - contains free anthropogenic liquids based on visual inspection;
 - includes trash or debris;
 - contains concentrations of naturally occurring chemicals (e.g., metals) above relevant background levels; or
 - contains chemicals from human activity at concentrations that present significant threats for relevant ecological and human exposure pathways or concerns.

The Environmental Screening Levels (ESLs) can be used to address some of the exposure pathways or concerns. However, the ESLs do not address the following pathways/concerns:

- Leaching/erosion into surface water;
- Vapor intrusion into buildings; or
- Generation of petroleum biodegradation transformation products.

Attachment

Guidance for Clean Fill Import and On-Site Soil Reuse

Notes

1. Significantly contaminated soil that is excavated should be treated/remediated to the extent practicable prior to reuse. For on-site treatment and reuse, this would include monitoring until there is no significant change in successive sampling events.
2. The plan should specify the TPH quantitation ranges, consistent with ESL User's Guide Chapter 4.
3. Typical ways to address the following concerns are:
 - Leaching/erosion into surface water – Placement beneath a cover and best management practices.
 - Vapor intrusion into buildings – Robust screening evaluation of the import source property (e.g., Phase I ESA, in-situ soil vapor sampling).
 - Generation of petroleum biodegradation transformation products – Remediation to the extent feasible.