DEPARTMENT OF TRANSPORTATION
DISTRICT 11
4050 TAYLOR STREET, MS-120
SAN DIEGO, CA 92110
PHONE (619) 688-6668
FAX (619) 688-3122
TTY 711
www.dot.ca.gov

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Making Conservation a California Way of Life.

February 25, 2019

San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, California 92108-2700
Attn: Sherrie Komeylyan
[submitted via email to sandiego@waterboards.ca.gov in text searchable Portable Document Format (PDF)]

Subject: Comment – Tentative Order No. R9-2019-0005, Attn: Sherrie Komeylyan: **Review of Conditional Waivers of Waste Discharge Requirements for Low Threat Discharges in the San Diego Region**

Dear Ms. Komeylyan:

In response to the California Regional Water Quality Control Board, San Diego Region (the Water Board) initiating its renewal of the Conditional Waivers of Waste Discharge Requirements for Low Threat Discharges in the San Diego Region (Conditional Waivers), the Water Board has requested stakeholder input. Caltrans appreciates the Water Board requesting stakeholder input and has provided the following input related to Tentative Order No. R9-2019-0005, Waiver 9 – Discharges/Disposal to Land of Solid Wastes, Discharge/Disposal/Reuse of Soils Characterized as Inert from Contaminated Sites to Land.

Caltrans and Caltrans' consultant Kleinfelder have reviewed the Tier 2 Screening Level Selection Method described in the *Conditional Waivers of Waste Discharge Requirements for Low Threat Discharges in the San Diego Region* (California Regional Water Quality Control Board, San Diego Region) (the Waiver) with respect to Waiver 9 and arsenic.

Based on information obtained at the stakeholder meeting on November 6, 2018, Caltrans understands that the original purpose of the waiver was not to limit soil that had naturally occurring metals at concentrations greater than their respective Tier values and that the Water Board is considering Waivers under the current Waiver 9 as long as the naturally occurring background metals could be demonstrated as such. Caltrans supports a Waiver for arsenic from the limits provided in Waiver 9 for background concentrations of arsenic (and other metals, if applicable). Based on discussion with Water Board staff, we understand that the added provision

of Tentative Order No. R9-2019-0005, Waiver 9, is intended to clarify that naturally occurring arsenic in soil at sites without known anthropomorphic "contamination" is not regulated by the Water Board: *The export of soils from sites not known to be contaminated is not subject to enrollment under the Solid Waste Waiver.* Caltrans finds this approach acceptable, but incomplete.

While this clarification is helpful to some situations, the Tier 2 Screening Level Selection Method still does not integrate the best available science and current understanding of arsenic. The result is a Tier 2 soil screening level for arsenic that is well below the level adequately protective of human health, which means site cleanups and disposals of affected soil are costlier and more time-consuming than necessary. The shortcomings in the Waiver and cost-effective alternatives that also protect human health are discussed herein. In short, Caltrans would like to express the following:

1. The Existing Tier 2 thresholds are too low, particularly for arsenic, restricting access to available soil that is still protect human health and the environment. Please consider a more appropriate threshold of 12 mg/kg for arsenic similar to other regulatory agencies.
2. A New Tier 3 threshold should be introduced for transportation facilities with access controlled environment with a threshold of 20 mg/kg for arsenic.

A more detailed evaluation and commentary is provided in the following section.

Detailed Evaluation and Comments

In support of more appropriate thresholds for arsenic, Caltrans has identified four issues associated with Waiver 9 of Tentative Order No. R9-2019-0005, for Water Board consideration under the Conditional Waivers review. The four issues are:

- Background arsenic concentration for the establishing Tier 2 soil screening levels
- Arsenic bioavailability
- Use of California Human Health Screening Levels (CHHSLs)
- Inert waste designation

Each of these issues is discussed below.

1. <u>Background Arsenic Concentration</u>

The background mean concentration presented as an option in the selection of Tier 2 soil cleanup levels is adopted from Bradford et al. (1996), which California Department of Toxic Substances Control (DTSC) routinely dismisses as a background concentration estimates are regional estimates, not site-specific, and may not be representative of soil throughout the State of California. As noted in Appendix B of DTSC (2008), "*Use of regional estimates is arguably the least preferred option because it has the greatest potential to be least representative of site conditions (e.g., range of metals concentrations, unaccounted for variables).*"
A reasonable and technically defensible alternative is to use DTSC's *Arsenic Strategy*, which provides a method for establishing site-specific background concentrations of arsenic in

California soils (DTSC 2009). Using this method, DTSC has derived background soil concentrations for arsenic in the range of 11-12 mg/kg based on arsenic soil concentration data from sites in Southern California (DTSC 2008, 2009); however, on a site-specific basis, higher background concentrations of arsenic are not unusual. Kleinfelder, a Caltrans consultant, also using the DTSC method, obtained approval from DTSC for a background soil arsenic concentration of 21 mg/kg (email from Nicole Yuen, DTSC project manager, to Herbert Vogler, Kleinfelder project manager, June 17, 2016) on a site near San Jose. DTSC has also indicated to Kleinfelder that, in the Los Angeles area, an upper bound arsenic concentration of 20 mg/kg can be used in some soils. Therefore, this approach to establishing background arsenic concentrations is appropriate for use in establishing Tier 2 soil cleanup levels. Furthermore, this approach should be acceptable for other naturally-occurring metals as well.

2. Arsenic bioavailability, as discussed in HERO HHRA Note 6, should be incorporated into the development of Tier 2 (and Tier 1) soil screening levels.

Bioavailability is defined as that portion of the administered dose of a chemical that is absorbed into the blood of the exposed human or other animal. Bioavailability has been recognized for some time as an important consideration in human health and ecological risk assessments and in the development of risk- based screening and cleanup levels (Interstate Technology Regulatory Council [ITRC], 2017). United States Environmental Protection Agency (U.S. EPA) (2012) has published a default arsenic bioavailability estimate of 60%, which means that site-specific exposure estimates for arsenic should be adjusted downward to 60% of the measured soil concentrations. U.S. EPA has also published guidance for incorporating site-specific estimates of bioavailability into risk assessments. Similarly, the State of California (Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note 6, DTSC, 2016) has published the California Arsenic Bioavailability (CAB) method to "...accurately predict *in* vivo relative bioavailability of arsenic in California soils...".
As currently implemented, the four arsenic soil cleanup levels considered under Tier 2 in Waiver 9 do not account for arsenic bioavailability. Caltrans recommends revising the selection and implementation of Tier 2 soil cleanup levels for arsenic by integrating the CAB method. An example of applying CAB under Waiver 9 is as follows:

- Establish background arsenic concentration using the method in *Arsenic Strategies* (DTSC, 2009);
- Analyze arsenic bioavailability in background and contaminated soil using the CAB method (DTSC, 2016);
- Calculate exposure point concentration for arsenic based bioavailability in background soil according to the following approach:
    - For example, if the background arsenic soil concentration is 12 mg/kg and the bioavailability is measured to be 50%, then the exposure point concentration for arsenic in background soil based on bioavailability is 12 mg/kg x 0.5 = 6 mg/kg;

- Next, measure the bioavailability of arsenic in contaminated soil. If, for example, the bioavailability is 30%, then the site-specific cleanup level for arsenic is 6 mg/kg ÷ 0.3 = 20 mg/kg.

3. DTSC/OEHHA vacated CHHSLs in 2015.

California Human Health Screening Levels (CHHSLs) for industrial land use are currently adopted under Waiver 9 as one of four arsenic soil concentrations considered for selection as a Tier 2 soil cleanup level. As discussed in DTSC (2015), however, "*CHHSLs are no longer generally recommended for use in a human health risk evaluation because they are not routinely reviewed and revised as new scientific information becomes available*" [emphasis added]. DTSC now recommends the use of DTSC-modified screening levels (DTSC-SLs) or U.S. EPA Regional Screening Levels (RSLs) for compounds without a DTSC-SL (HERO HHRA Note 3, DTSC 2018). In contrast to CHHSLs, DTSC-SLs and U.S. EPA RSLs are routinely reviewed, and updates are published twice annually, generally in May and November. After a formal review process, new scientific information for a given compound is incorporated into the development of the DTSC-SLs and U.S. EPA RSLs; therefore, the values published in HERO HHRA Note 3 generally represent the best available science and an important improvement over the use of CHHSLs. Thus, Caltrans commends the Water Board for replacing CHHSLs with RSLs in Tentative Order No. R9-2019-0005 – Waiver 9 - Discharges/Disposal to Land of Solid Wastes, Discharge/Disposal/Reuse of Soils Characterized as Inert from Contaminated Sites to Land.

4. In general, the method for selecting Tier 2 soil cleanup levels (see footnote "e" to Table No. 3 in Waiver 9) does not rely on the best available scientific information or methods:
   a. There is no element of site-specificity. All cleanup level candidate values are generic and may be either not protective or overly protective on a site-by-site basis.
   b. Except for the RSLs, there is no element of health risk accounted for in the cleanup level candidates. The inert waste target, background concentrations, and Total Threshold Limit Concentration (TTLC) are unrelated to toxicity.
   c. The TTLC is a hazardous waste characterization criterion intended to represent landfill conditions. As such, the TTLC does not address health risk or land uses other than waste disposal sites, and is not, therefore, appropriate for establishing soil re-use standards.
   d. The three-step process for selecting the Tier 2 soil cleanup level appears to be a random process without a focus on appropriate soil characteristics for re-use.

In general, Caltrans recommends Tier 2 soil cleanup levels with the following characteristics:

1. Account for, and incorporate, site-specific conditions, including background concentrations and reasonably anticipated exposure conditions for pertinent receptor groups.
2. Incorporate the best available science, including current scientific and toxicological information.
3. Incorporate health risk and toxicology as the foundation for each cleanup level.
4. Incorporate current state and federal guidance for statistical evaluation of site concentrations and for establishing health risk-based cleanup levels.

In the Tentative Order No. R9-2019-0005, the Existing Tier 2 thresholds remain too low, particularly for arsenic, restricting access to available soil that is still protect human health and the environment. Please consider a more appropriate threshold of 12 mg/kg for arsenic similar to other regulatory agencies.

Caltrans would also like to suggest that in addition to the Residential and Commercial criteria in Waiver 9, that Waiver 9 include another criterion (e.g. Tier 3) related to controlled re-use of soil with metals, such as arsenic, at concentrations greater than their respective Tier values for placement in Caltrans' restricted Right-of-Way. Caltrans controls access to its freeway Right-of-Way (e.g. fencing precludes the public, Encroachment Permits needed for work access, etc.). Thus, significant human exposure to arsenic in soil in the freeway Right-of-Way is not expected. For example, DTSC allows Caltrans to retain aerially deposited lead (ADL) impacted soil on site in excess of hazardous waste criteria. Under the Agreement with DTSC soil found to contain lead is kept separate from non-hazardous soil. Caltrans construction contractors take dust control and security measures to keep people from coming into contact with it until it is reused on-site. The lead impacted soil is to remain in place (beneath the road, highway, freeways, or a layer of clean soil, etc.) for the life of the highway. Even though current freeways and roads are designed to last 30 to 50 years, Caltrans notes that additional upgrades and widening are much more likely than abandoning old freeways. Therefore, the lead remains secure, and human health and the environment are protected. Thus, a New Tier 3 threshold should be introduced for transportation facilities with access controlled environment with a threshold of 20 mg/kg for arsenic.

If you have any further questions, do not hesitate to contact Ken Johansson, Environmental Engineering Branch Chief at (619) 688-0182.

Sincerely,

BRUCE L. APRIL

Deputy District Director Environmental

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