



Linda S. Adams
Secretary for
Environmental Protection



Department of Toxic Substances Control



Arnold Schwarzenegger
Governor

Maziar Movassaghi
Acting Director
700 Heinz Avenue
Berkeley, California 94710-2721

November 19, 2010

Mr. Greg Haet
Associate Director, Environmental Protection
Office of Environment, Health & Safety
University of California, Berkeley
317 University Hall #1150
Berkeley, California 94720-1150

Dear Mr. Haet:

The Department of Toxic Substances Control (DTSC) received the *Year 5 Monitoring Report for the Western Stege Marsh Restoration Project for the University of California, Berkeley, Richmond Field Station* located in Richmond. The report, dated September 30, 2010, was prepared by Tetra Tech EM Inc. on behalf of the University of California. The report describes the results of the fifth year of monitoring of the remediated portion of West Stege Marsh as compared to four project targets. DTSC's Human and Ecological Risk Office, Ecological Risk Assessment Section (ERAS) and program staff reviewed the report. DTSC understands that additional monitoring data will be collected in support of Project Target 2 as part of the site-wide field sampling effort; however, as noted in the ERAS memorandum, it is unclear what specific types of samples will be collected (e.g., sediment, surface water, or stormwater) and at what frequency. It would be helpful to the reader to clarify this in the report, or identify the specific document that will include this information. ERAS' memorandum is also enclosed.

If you have any questions regarding this letter, please contact Lynn Nakashima of my staff at (510) 540-3839 or Lnakashi@dtsc.ca.gov.

Sincerely,

Barbara J. Cook, P.E.
Acting Assistant Deputy Director
Brownfields & Environmental Restoration Program
Department of Toxic Substances Control

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Enclosure

cc: Dr. James Eichelberger
Human and Ecological Risk Office
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826-3200



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MEMORANDUM

TO: Lynn Nakashima
Senior Hazardous Substances Scientist
Department of Toxic Substances Control (DTSC)
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

FROM: J. Michael Eichelberger, Ph.D. 
Staff Toxicologist
Human and Ecological Risk Office (HERO)
Ecological Risk Assessment Section (ERAS)

DATE: October 20, 2010

SUBJECT: YEAR 5 MONITORING REPORT FOR THE WESTERN STEGE MARSH
RESTORATION PROJECT, UNIVERSITY OF CALIFORNIA, BERKELEY,
RICHMOND FIELD STATION, RICHMOND, CALIFORNIA

PCA: 11050

SITE CODE: 201605-00

Background

The University of California Richmond Field Station is located on former industrial land and consists of 96-acres of uplands and 13-acres of tidal marsh and marsh edge habitat. Industrial use of the uplands, particularly for the manufacture of blasting caps containing mercury fulminate, has been documented as early as the 1870's and continued until 1950 when the University of California purchased the property for use as a research facility. Documented releases of chemicals of potential ecological concern (COPECs) including metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs) have been reported. An

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ecological risk evaluation of the uplands and West Stege Marsh was completed in 2001. Several remedial measures have been implemented since 2002, and include, but are not limited to, treatment and transport to the adjacent Zeneca property of mercury-contaminated soils, installation of a biologically active permeable barrier and excavation and removal of contaminated sediments from a portion of West Stege Marsh, and backfilling with clean fill to restore California clapper rail habitat. The site includes upland habitats, including rare coastal prairie and wetlands consisting of saltwater marsh.

Under the direction of the San Francisco Bay Regional Water Control Board, the University of California was required by Order No. 01-102 to conduct a 5-year monitoring program to assess the reestablishment of West Stege Marsh to a functioning habitat capable of supporting the California clapper rail (*Rallus longirostris obsoletus*), a federally endangered species (Federal Register 35: 1504; October 13, 1970). The monitoring plan was based on 4 project targets;

1. Restore the hydrologic complexity
2. Improve water quality within the marsh – surface water, storm water and sediment sampling with comparisons to screening criteria
3. Restore the low salt marsh (Pacific cordgrass), middle salt marsh (pickleweed), and the emergent and coastal scrub native plant communities – measurements of plant cover, vigor and diversity
4. Establish a compositionally and structurally complex ecosystem within the Western Stege Marsh with attributes important to wildlife, specifically focused on increasing habitat functions for the California clapper rail – California clapper rail surveys

The University of California is seeking concurrence with their conclusion that no further monitoring or remedial activities are required within the remediated marsh. ERAS provided comments to the Year 4 Monitoring Report for the West Stege Marsh in a memorandum dated December 14, 2009.

Document Reviewed

ERAS reviewed “Year 5 Monitoring Report for the Western Stege Marsh Restoration Project, University of California, Berkeley, Richmond Field Station, Richmond, California” prepared by Tetra Tech EM Inc. (Oakland, California) and dated September 30, 2010, hereafter referred to as the report. ERAS received the report as an Envirostor Work Request on October 7, 2010 for review.

Scope of the Review

The report was reviewed for scientific content related to ecological risk assessment. Grammatical or typographical errors that do not affect the interpretation of the text have not been noted.

General Comments

The report provides results from the 5th year of monitoring for the West Stege Marsh Restoration Project. The 5-year hydrology and revegetation standards appear to have been met. Copper, mercury, nickel and zinc were all detected in storm water sampling from the last year, but not at overall greater concentrations than in the 4 prior years. Mercury, nickel and zinc concentrations occasionally exceeded the Criterion Continuous Concentration (CCC) standard, but 10 of 11 filtered copper storm water samples exceeded the Criterion Continuous Concentration (CCC) of 3.1ug/L. Low levels of copper are exiting the site via storm water but at low concentrations and during intermittent periods during storm events. There is little indication that the storm water has contributed to the sediment metal concentrations over the last 5 years. Mercury sediment concentrations continue to be detected above the Effects Range-Median (ER-M), please see specific comment 2 below.

SPECIFIC COMMENTS

1. Page ES-1, Executive summary, Recommendations. The report states "*Overall, based on data obtained Years 1 through 5, the WSMRP site is progressing toward providing the functions of a tidal marsh typical of San Francisco Bay. Based on this trajectory and evaluation against the project targets, no further remediation or monitoring activities are recommended in the WSMRP (Western Stege Marsh Restoration Project) area.*" Please rectify this statement with the following statement "*Some sample concentrations exceeded some federal and state screening criteria for protection of aquatic life, including some criteria that Are within the range of ambient Bay Area concentrations; however, more sampling is necessary to assess the significance of these results*" found on page 30, in section 6.0 Conclusions and Recommendations, Project Target 2. Please clarify if the university is intending to continue sediment and/or surface water sampling.
2. Page 21, Section 4.2.3, Sediment. Mercury continues to be detected in sediment at concentrations above the ER-M but concentrations do not seem to be increasing with time. In ERAS' comments to the 4-year monitoring report, it was requested that the report include a graph showing mercury concentrations plotted over time. That was again not provided in the 5-year monitoring report. Nevertheless, given the information provided in the report, it does appear that sediment mercury concentrations have not significantly increased during the last 5-years.
3. Page 32, Section 6.0, Conclusions and Recommendations, Project Target 4. Based on the evidence provided in the report, ERAS believes that a compositionally and structurally diverse ecosystem has been developed in West Stege Marsh and that measured concentrations of Chemicals of Potential Ecological Concern in site media do not appear to be impeding this development.

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Conclusions

The University of California at Berkeley, Richmond Field Laboratory appears to have substantially met the requirements outlined in the report of establishing a functional ecosystem capable of supporting the California clapper rail. Certain metals, particularly copper and mercury have been found in storm water and sediment that exceed screening levels commonly used as regulatory thresholds, but the marsh appears to be healthy and has evolved into what appears to be a functional wetland. The University needs to clarify if it intends to conduct any further monitoring regarding sediments, surface water and storm water. ERAS believes it would be prudent to continue to monitor storm water discharge and sediment sampling at the point of discharge on a reduced monitoring schedule.

Reviewed by:  Brian Faulkner, Ph.D.
Staff Toxicologist, ERAS

Cc: James M. Polisini, Ph.D.
Senior Toxicologist, ERAS

Michael J. Anderson.
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