
North Coast Regional Water Quality Control Board

Attachment 1

Date: July 28, 2015

File: Humboldt Bay National Wildlife Refuge - White Slough Restoration Project,
ECM PIN CW-813925, WDID No. 1B15030WNHU

SUBJECT: Restoration project imported fill suitability assessment criteria

On March 17, 2015, the Regional Water Board staff received an application for Clean Water Act 401 water quality certification for the Humboldt Bay National Wildlife Refuge - White Slough Restoration Project. The project description states that restoration activities at White Slough will restore and re-establish approximately 37 acres of subsided tidal wetlands, enhancing ecological function of waters of the US and state. To re-establish the diked former tidelands the Applicant proposes to use imported fill material to raise the ground elevation to a level suitable for recruitment of tidal wetland vegetation and to maintain self-sustaining wetland conditions. Approximately 240,000 cubic yards of imported fill material is proposed to be used to re-establish and restore the tidal wetlands.

This attachment accompanies the water quality certification and describes requirements for sampling and analysis to determine suitability of matching imported fill for placement at the receiving site. Prior to discharging imported fill material at the project site the Applicant shall submit an *Imported Fill Suitability Assessment* (Report) for review and approval by Regional Water Board staff. This Report will identify constituents and characteristics of imported fill compared to the receiving site soils and numeric water quality objectives for bays and estuaries, and if necessary, conform to exposure toxicology thresholds for sensitive aquatic species that may be present in the re-established bay and estuary habitat.

Beneficial Reuse: Re-establishment of tidal wetlands

Dredged and excavated material from harbors, marinas, rivers, industrial, and agricultural sites may be considered a waste due to the likelihood of the accumulation of pollutants while residing in these environments. On the North Coast, these waste materials typically have measured levels of various organic compounds, metals and other constituents that are, or may be, higher than those naturally occurring at ambient levels in local soils. Depending on the nature and location of placement/disposal/reuse of waste materials,

pollutants within these materials may pose a threat to surface and/or ground water quality. These pollutants may also pose a threat to human health and sensitive ecological receptors. Accordingly, these materials are typically considered a non-hazardous or designated waste. Placement of these waste materials at sites to be re-established as waters of the state are subject to regulations of land disposal under California Code of Regulations, the Clean Water Act and the Water Quality Control Plan for the North Coast Region (Basin Plan).

The Report is a waste reuse evaluation tool to determine whether waste constituents are present in concentrations that could cause numeric water quality objectives to be exceeded and beneficial uses to be impaired, and to demonstrate that the proposed reuse is indeed a beneficial reuse and not simply disposal.

We understand that dredged and excavated imported fill material from harbors, marinas, rivers, industrial, and agricultural sites may be contemplated for reuse at the White Slough receiving site, to serve as fill to re-establish appropriate elevation for a self-sustaining tidal wetland. The beneficial uses identified in the Basin Plan for the restored receiving site will include but are not limited to Estuarine Habitat, Wildlife Habitat and Wetland Habitat.

If imported fill constituent levels exceed receiving site levels for specific chemicals, exposure toxicology may need to be further assessed, to ensure fine grained imported fill material is suitable for these beneficial uses and is compatible with species associated with the re-established aquatic habitats. The routes of exposure to sensitive aquatic species in these habitats considered by these guidelines are direct exposure to fill sediments and exposure to leachate after fill sediment placement.

Sampling and Analysis

Receiving Site

As part of the *Beneficial Reuse of Dredged Materials for Tidal Marsh Restoration and Sea Level Rise Adaptation in Humboldt Bay Feasibility Study*, the Applicant has conducted sampling and analysis of the White Slough Wildlife Refuge as a receiving site using the Incremental Sampling Method (ISM) to determine physical characteristics and chemical constituents at the White Slough receiving site.

Imported Fill Material

If previously collected data for imported fill exists it should be made available to Regional Water Board staff. Similar chemical constituent data for proposed imported fill material will need to be sampled using ISM and compared to ISM data obtained from the receiving site and numeric water quality objectives. Sampling analysis results shall be submitted to Regional Water Board staff showing comparison to the receiving site. If all levels of fill constituents are below those of the receiving site, the fill material will meet suitability requirements set by Regional Water Board staff. If some fill constituent levels are elevated

above receiving site, these constituent levels will be evaluated for risks associated with mobility, toxicity, and exposure to determine suitability.

Preliminary Sampling, Testing, and Analysis

1. Sample imported fill material using ISM
2. Analyze for total concentration levels of Cam 17 metals, PAHs, PCBs, Pesticides, Dioxins/Furans, TPH and values for pH, TOC, and sediment texture.
3. Conduct modified Deionized Water Waste Extraction Test (Di-WET) test on soluble and mobile constituents that are elevated above receiving site, analyze for soluble concentrations.

Supplemental Toxicological Testing and Analysis

If some fill constituent levels are elevated above receiving site and numeric water quality objectives, further testing and analysis may be deemed necessary by Regional Water Board staff to show exposure toxicological suitability.

1. Compare elevated import fill results with NOAA Screening Quick Reference Tables (SQuiRT) for preliminary screening for potential risks levels.
2. If imported fill constituent levels exceed receiving site values, conduct sediment exposure toxicology assessment with 10-day acute bioassay using appropriate sensitive organism representative of three life history stages (filter-feeding, burrowing, and deposit feeding) of appropriate benthic aquatic species, using imported fill sediment. (US Army Corps Inland Testing Manual protocol).

Imported Fill Suitability Assessment (Report)

The Report shall include tabulated data from imported fill sampling and analysis including analytes, test methods, reporting limits, measurement units, and results compared to receiving site and numeric water quality objectives for bays and estuaries. Additionally, the report may include results of preliminary SQuiRTs screening results and or aquatic toxicology testing of fill sediment if deemed necessary.

Suitability Determination

Imported fill material may be determined suitable by the Regional Water Board staff, for beneficial reuse and placement at the receiving site, if constituent results do not exceed receiving site sample results and if imported fill material results do not exceed water quality objectives for bays and estuaries. Imported fill may be suitable for reuse if some fill constituent levels are slightly elevated above receiving site or water quality objectives and the threat to water quality and beneficial uses is not significant. The Applicant may show, through additional testing/analysis or mitigation measures that constituent levels for risks associated with mobility, toxicity, and exposure for imported fill material are not significant.