

Comments on Tentative Waste Discharge Requirements for Port of Stockton West Complex Dock Dredging Project

Comments Submitted by

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August 10, 2004

On 6 August 2004 the Central Valley Regional Water Quality Control Board (CVRWQCB) issued a Notice of Tentative Waste Discharge Requirements for Port of Stockton West Complex Dock Dredging Project, San Joaquin County. Presented below are my comments on this tentative Waste Discharge Requirements Order.

As background to these comments, I wish to point out that the Port of Stockton's proposed dredging of the West Complex Dock area represents dredging of some of the most polluted sediments in the Deep Water Ship Channel. Immediately upstream of this area is the city of Stockton's domestic wastewater treatment plant discharge. Further, all along this area and upstream on the east side are the city of Stockton's stormwater runoff discharge points. Also, there is stormwater runoff on the west side that contributes pollutants to this area. In addition, the San Joaquin River watershed upstream of the Deep Water Ship Channel contributes pollutants to the sediments along the West Complex Dock. The Deep Water Ship Channel water in this region is listed as Clean Water Act 303(d) impaired because of excessive concentrations of several known pollutants. Further, there is a vast arena of unrecognized pollutants derived from the City's domestic wastewater discharges and stormwater runoff as well as the San Joaquin River watershed that could be present in the West Complex Dock area sediments, which, as part of dredging and dredged sediment disposal can contribute to further pollution/impairment of the Deep Water Ship Channel waters. This situation mandates that any dredging and dredged sediment disposal in the Port of Stockton's West Complex Dock area be highly regulated and comprehensively monitored to ensure that it does not cause further deterioration of an already deteriorated water quality.

Specific Comments

Overall, I find that the CVRWQCB's proposed Order covering the dredging of the Port of Stockton's West Complex Dock area addresses many of the issues that need to be addressed in regulating the dredging of this area. Specific comments on some issues of concern are discussed below. A number of the comments presented below are similar to my August 27, 2003, and February 9, 2004, comments, which are available from my website, www.gfredlee.com, as

Lee, G. F., "Comments on Notice of Tentative Waste Discharge Requirements for United States Army Corps of Engineers, Department of Water Resources and the Port of Stockton, Stockton Deep Water Ship Channel Maintenance Dredging Activities From Channel Mile 4.4 to Mile 41.0, Contra Costa, Sacramento, & San Joaquin Counties," Comments

Submitted to California Regional Water Quality Control Board, Central Valley Region, Sacramento, CA, February (2004).

<http://www.members.aol.com/duklee2307/SJRdredging-comments.pdf>

Lee, G. F., "Comments on Notice of Tentative Waste Discharge Requirements for the United States Army Corps of Engineers, Water Resources Department and Port of Stockton, Stockton Deep Water Ship Channel Maintenance Dredging, Contra Costa, Sacramento, & San Joaquin Counties," Comments Submitted to California Regional Water Quality Control Board, Central Valley Region, by G. Fred Lee & Associates, El Macero, CA, August 27 (2003).

<http://www.members.aol.com/apple27298/WDRcomments8-27-03.pdf>

Page 3, item 17, as I have stated in previous comments on regulatory approaches governing the dredging of Deep Water Ship Channel sediments, COD is not a reliable measure of oxygen demand. It should not be used for this purpose. It will generally overestimate the amount of oxygen demand that will occur in the samples that are subjected to this test. The Port should be required to follow procedures similar to those used by Litton (2003) to estimate oxygen demand of suspended as well as bedded sediments.

Page 6, item 34 states, "*Because the DMD site is not equipped with a liner, leachate from dredged sediments may migrate through the soil column via soil pore space to the underlying groundwater.*" The implication of this statement is that if a DMD site is lined, there will be no groundwater pollution. Those familiar with the kinds of liners that are sometimes used (such as compacted clay/soil or plastic sheeting) know that such liners are often not effective in preventing groundwater pollution. They can readily develop cracks, which allow polluted water to percolate through the bottom of the area into the underlying groundwaters. This situation can lead to the inability to properly monitor groundwaters for pollution, since the leakage of the polluted sediments can generate narrow plumes of polluted groundwater that would not be detected unless monitoring wells are located about 10 feet apart along the down groundwater gradient side of the disposal area.

Page 6, item 35, last line, the word "absorption" should be changed to "adsorption."

Page 7, item 35, second line states, "*The Discharger has estimated that the soil column attenuation factors for the DMD site range from 5 to 10.*" There is need to examine the technical basis for this estimate to determine its reliability. Further, a field monitoring program should be conducted to verify the actual attenuation factor.

Page 13, item 70 states,

"As part of the mitigation measure, the Discharger proposed to continuously operate the aeration device during the months of June, July, and August to provide a 0.2 mg/L DO increment above background conditions using the following formula:

$$DO \text{ load (lbs/day)} = 5.4 \times \text{flow (cfs)} \times DO \text{ concentration (mg/L)."}$$

The times when the aerator should be required to be operated should include December, January, February and March, since low-DO conditions have been found in the Deep Water Ship Channel during these months, which would be further aggravated by the deepening of the Channel along the West Complex Dock. These issues have been discussed in my writings on the low-DO problem in the DWSC, which are on my website, www.gfredlee.com. Further, the aerator should be required to be operated any time the DO is less than 6 mg/L during September 1 through November 30 – i.e., the DO water quality objective that is applicable to this region at that time.

Page 15, item 79, I question the justification for using OEHHA's public health goal of 2.1 µg/L for arsenic in drinking water when the US EPA allows 10 µg/L in drinking water.

Page 16, item 81, I question the appropriateness of using OEHHA's public health goal of 2 µg/L for lead in drinking water when the US EPA will allow up to 15 µg/L lead in domestic water supplies.

While I agree that the arsenic MCL of 10 µg/L and the lead action level of 15 µg/L are not protective, the CVRWQCB may have difficulty justifying the more protective values, when the US EPA and DHS will allow these concentrations in drinking water.

Page 16, item 84, as I discussed in my February 2004 comments (Lee, 2004) and in my August 2003 comments (Lee, 2003a), the regulation of organochlorine legacy pesticides, PCBs and dioxins must be based on bioaccumulation issues – not concentrations. Measurement of concentrations is not a reliable approach, since bioaccumulation from the water can occur to excessive levels in fish at concentrations below the detection limit. Further, food web accumulation from the sediments can occur that would not be reflected in water concentrations. The following paragraphs are excerpted from my August 27 comments.

“During 2002 Dr. Anne Jones-Lee and I (Lee and Jones-Lee, 2002) conducted a detailed review of the information available on the excessive bioaccumulation of the organochlorine pesticides, PCBs, dioxins, etc., in Central Valley waterbody fish. The chemicals of concern tend to be associated with aquatic sediments, where they bioaccumulate through the food web to excessive concentrations in edible fish tissue. This problem is one of the most important chemically caused human health-related water quality problems in the Central Valley. As we discussed, due to funding limitations it is not being adequately addressed by the Central Valley Regional Water Quality Control Board. The Central Valley Regional Water Quality Control Board should require that those doing the maintenance dredging (or other dredging) in the Deep Water Ship Channel and associated marinas and ports conduct bioaccumulation testing of the sediments that are to be dredged, to determine if they have concentrations of bioaccumulatable chemicals, such as the organochlorine legacy pesticides (DDT, et al.), PCBs, dioxins and furans. The procedure that should be used is,

US EPA, “Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates,” Second Edition, U.S. Environmental Protection Agency, EPA/600/R-99/064, Washington, D.C. (2000).

Additional information on this issue is provided by,

*US EPA, “Bioaccumulation Testing and Interpretation for the Purpose of Sediment Quality Assessment: Status and Needs,” U.S. Environmental Protection Agency, EPA-823-R-00-001, Washington, D.C. (2000),
<http://www.epa.gov/ost/cs/biotesting/>*

as well as in Lee and Jones-Lee (2002).

The use of benthic organism sediment uptake studies to assess bioavailable forms of organochlorine pesticides, PCBs, etc., has been demonstrated by Lee, et al. (2002) for sediments in Smith Canal, a city of Stockton waterway that is connected to the Deep Water Ship Channel.”

Page 17, item 9 states, “Dredging operations are prohibited anytime the ambient dissolved oxygen concentration within the impaired reach of the San Joaquin River is less than 5.0 mg/L.” I do not understand the need for this requirement if the Port is required to add oxygen so that the dredging does not depress the DO below ambient values. Further, if this approach is used, the 5 mg/L value should be changed to 6 mg/L during the period September 1 through November 30.

Page 18, item 14, the word “dredge” should be changed to “dredged sediment.”

Page 19, item 10, I do not agree that a registered geologist should be allowed to make an engineering evaluation about the structural stability of levees. A geologist’s education does not include work in the areas needed to properly make this evaluation.

Item 19, under “D. Effluent Limitations,” a limit of 0.05 µg/L is set for total mercury. The 0.05 µg/L limit is based on the current California Toxics Rule (CTR) criterion, which is known to be a non-protective criterion, under certain conditions, in preventing bioaccumulation of mercury in edible organism tissue. The 50 ng/L value is an artifact of the US EPA changing the way it determines excessive bioaccumulation. The CVRWQCB staff who are responsible for developing dredging permits should review the write-up that I prepared in 2003 on regulating mercury:

Lee, G. F., “Regulating Mercury in the Water Column and Sediments,” Report to Dredge Tailings Workgroup, by G. Fred Lee & Associates, El Macero, CA (2003).
<http://www.gfredlee.com/TotalMercuryandDissolvedMercuryStandards-rev.pdf>

According to Phil Woods, US EPA Region 9, the mercury discharge limit that should be used is about 5 ng/L to prevent excessive bioaccumulation. This would be protective against excessive methylmercury formation. Additional information on regulating methylmercury is available in US EPA (2001). The CVRWQCB staff need to expand their requirements for mercury monitoring associated with sediment characterization, dredging operations and discharges from dredged material disposal areas to include analysis of methylmercury.

As discussed by Lee and Jones-Lee (2004), mercury bioaccumulation is one of the most significant problems in the Sacramento-San Joaquin River Delta. The concentrations of mercury in the sediments and in the elutriate test are sufficient to lead to excessive methylmercury concentrations in the water that can bioaccumulate to excessive levels in edible organisms.

Page 20, items D5 and F2 state, “*Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the discharge at concentrations detectable within the accuracy of analytical methods approved by either the EPA or the Executive Officer.*” As discussed above and in my previous comments on dredging in the Deep Water Ship Channel, this approach is not protective. As discussed above, the analytical methods available for the legacy pesticides do not have sufficient sensitivity to detect water column concentrations that can bioaccumulate to excessive levels. The regulation of the legacy pesticides, PCBs and dioxins must be based on bioaccumulation testing using standard US EPA methodology (US EPA, 2000a,b).

Page 23, items (G) 6 and 7 require that the Port of Stockton submit certain reports to the Executive Officer. The public should be notified when these reports have been submitted and are available for review.

Comments on Draft Monitoring and Reporting Program

Page 2 indicates in footnote 2 to the Dredge Operation Monitoring Table that DO monitoring shall be conducted at mid-depth and within two feet of the river bottom. DO sampling should also include sampling near the surface.

Page 2, Dredged Material Disposal Facility Monitoring should include monitoring of the first discharge from the DMD that occurs a period of several weeks or more after the last addition of dredged sediment to the area.

Page 4, Effluent Monitoring Table, as discussed above, the chlorinated hydrocarbon pesticide monitoring is not adequate and needs to include bioaccumulation testing.

References

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US EPA, “Water Quality Criteria for the Protection of Human Health: Methylmercury,” EPA-833-F-01-001, U.S. Environmental Protection Agency, Office of Water, Washington, D.C. (2001).