CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

In re: Tentative Cleanup and Abatement Order No. R9-2011-0001 (Shipyard Sediment Cleanup)

Presiding Officer Destache

SAN DIEGO COASTKEEPER'S AND ENVIRONMENTAL HEALTH COALITION'S HEARING BRIEF

The bottom of San Diego Bay in the Shipyard Sediment Site is covered with toxic sediment from decades of pollution from ship construction, repair, and maintenance activities. After more than twenty years of studies, discussion, negotiation, and foot-dragging, it is time to hold accountable the parties responsible for causing the contamination and require them to clean it up.

Unfortunately, the proposed cleanup plan sets cleanup levels that allow so much pollution to remain in the sediment that its only hope for protecting some San Diego Bay beneficial uses is if those levels are strictly enforced. It contains loopholes that let the Dischargers get away with not cleaning up the sediment to even the marginally protective levels proposed. The post-remediation sampling plan practically ensures that problem areas remaining after dredging will never be identified. The cleanup plan virtually ignores the health of fish and sediment-dwelling wildlife. The dredging footprint excludes areas that pose a significant threat to the health of aquatic life. The monitoring program does not test to see if the remaining pollution harms aquatic life. This cleanup plan is a disappointment; it is not the best cleanup economically achievable.

After twenty years, the Regional Board can do better than this.

THE REGIONAL BOARD SHOULD FIX THE FOUR FAILURES IN THE TENTATIVE CLEANUP AND ABATEMENT ORDER AND DRAFT TECHNICAL REPORT AND ADOPT THE ORDER.

The Tentative Cleanup and Abatement Order No. R9-2011-001 ("Order"), supported by the Draft Technical Report ("DTR"), names responsible parties and sets cleanup levels designed to protect some of San Diego Bay's beneficial uses. San Diego Coastkeeper and Environmental Health Coalition support the Order's findings that the sediment at the site is contaminated and impairs beneficial uses of San Diego Bay.

The Environmental Parties also agree that the best way to deal with the contaminated sediment is to dredge it and remove it permanently from the bay. However, the Order and DTR contain four main failures that must be fixed for the remediation to meet state law requirements and to achieve a meaningful cleanup that will restore the bay.

The Four Failures

1. The Order and DTR fail to require the cleanup to actually achieve the alternative cleanup levels;
2. The monitoring program fails to identify water quality problems
3. The post-cleanup monitoring fails to address arsenic, cadmium, lead and zinc; and
4. The remedial footprint and monitoring fail to protect aquatic life.

Fortunately, these four failures are fixable. Here is how:

Failure #1: The Order and DTR fail to require the cleanup to actually achieve the alternative cleanup order.

Fix #1: Require that the cleanup achieve the alternative cleanup levels.

The Order and DTR spend hundreds of pages demonstrating that current pollutant levels harm San Diego Bay beneficial uses and developing alternative cleanup levels that, if achieved, would protect the bay's beneficial uses. But, claiming the need to account for "variability," the Order and DTR incorporate so many concessions that the Dischargers can stop dredging well before they actually *achieve* the alternative cleanup levels. This approach adds insult to injury

because the "alternative cleanup levels" themselves are already a concession to the Dischargers, since the law requires cleanup to background pollutant levels except in special circumstances. Failing to require the cleanup to actually achieve even these higher pollutant levels violates the law and renders the cleanup meaningless.

The Environmental Parties hold out hope that the cleanup team did not actually mean to let the Dischargers get away with not achieving the alternative cleanup levels. Indeed, the Order states "the Shipyard Sediment Site… **shall be remediated to attain**" the alternative cleanup levels. *See* Order Section A.2.c. But, despite the cleanup team's grand proclamations that the cleanup "shall" achieve the alternative cleanup levels, the details tell a different story. Three loopholes need to be closed to ensure that the alternative cleanup levels are met.

Loophole #1: Dredging is deemed "successful" even if post-dredging pollutant levels are higher than background levels.

The Order and DTR establish "alternative cleanup levels" for the Shipyard Sediment Site that higher than background pollutant levels. The alternative cleanup levels were calculated by calculating what site-wide average pollutant levels would be if the dredged areas (also referred to as the remedial footprint) were cleaned to background pollutant levels and that the rest of the pollution at the site is left untouched.[1]

The problem is that the Order does not actually require the Dischargers to keep dredging until they reach background pollutant levels. Instead, the Order and DTR allow the Dischargers to make one pass with the dredging equipment and excuse Dischargers from dredging more

[1] "Post-remedial SWAC calculations were completed with the assumption that the SWAC inside the [Proposed Remedial] footprint would be remediated to background concentrations…." DTR §32.2.3 at 32-12; *see also* Table A32-3.

sediment as long as the pollutant levels are not ***more than 120% greater*** than background pollutant levels.[2]

The math just doesn't add up. The alternative cleanup levels were calculated assuming the remediation footprint would be cleaned to background and all the other pollution at the site would remain untouched. If the "clean" areas are more polluted than background, and the other areas are left as-is, the average site-wide pollutant levels will be higher than the alternative cleanup levels.[3]

Closing this loophole is simple: require additional dredging until background levels for each pollutant are met within the remediation footprint.

Loophole #2: Measuring the cleanup's success primarily through samples from areas that were not remediated.

To measure the overall success of the cleanup, the Order establishes a Post Remedial Monitoring program. The Post Remedial Monitoring program requires Dischargers to collect a paltry amount of samples from a handful of sites and then mix them together—a process called "compositing"—which will mask the true extent of the remaining pollution and virtually guarantee that no additional action will be required.[4] The sediment sampling requirements described in the Order will provide data on the average levels of five pollutants in the top 2 cm of sediment contained within six arbitrary polygon groups.[5] Only two of the six sampling groups represent areas where remedial actions will be taking place, and these areas represent a relatively small proportion of the site as a whole. This means the assessment of how successful the clean-

[2] "If concentrations of [pollutants] in subsurface sediments are below 120 percent of background concentrations, then dredging is sufficient and will stop." DTR at 34-3.
[3] *See* Coastkeeper/EHC Comments dated May 26, 2011 at 17, Table 2.
[4] *See* MacDonald 2011 at 30.
[5] *See* Order, Section D.1.c. The Order and DTR divide the site into 66 differently-sized polygons created based on sampling locations.

up has been will largely rest on composite data from sites that were not remediated.[6] This approach does not make sense if the Regional Board is trying to collect information to measure the cleanup's success.

The fix is easy: collect samples from each area in the footprint—every remediated and unremediated polygon—and then average those pollutant levels across the site. If the site-wide pollutant levels are higher than the cleanup levels, more dredging is needed.

Loophole #3: Allowing dredging to stop before the alternative cleanup levels are met.

The Order sets alternative cleanup levels that it declares attain the best water quality reasonable, are consistent with the maximum benefit of the people of the State, and comply with water quality standards. The Order clearly mandates that "the Shipyard Sediment Site… **shall be remediated to attain**" these levels. *See* Order Section A.2.c (emphasis added). Common sense dictates that the Order and DTR should require that if the measured site-wide average pollutant levels after cleanup are greater than the alternative cleanup levels, the Dischargers need to dredge more polluted sediment until pollution levels are at or below the alternative cleanup levels.

Instead, the Order and DTR set "Post-Remediation Trigger Concentrations" to evaluate whether the site-wide average pollution levels after the cleanup exceed the cleanup levels. The Trigger Concentrations are unnecessary. Determining whether the post-cleanup pollutant levels exceed the cleanup targets is easy: if the post-cleanup average pollutant levels are above the cleanup levels, the cleanup is not successful and more sediment needs to be dredged.

[6] *See* MacDonald 2011 at 30.

Not only are the Trigger Concentrations unnecessary, they become the de-facto cleanup level. According to the Order, if pollutant levels are below the Trigger Concentrations, the cleanup is considered "successful" and no more remediation is required. If the pollutant levels exceed the Trigger Concentrations, the responsible parties need to develop a plan to study what additional measures, if any, they might take. In other words, the Trigger Concentrations effectively become the cleanup levels.

The Trigger Concentrations might make sense if they were identical to the alternative cleanup levels the Order identifies as representing the best water quality reasonable, consistent with the maximum benefit of the people of the State, and complying with water quality standards. The problem is that these Trigger Concentrations are significantly greater than the alternative cleanup levels. In some cases, like mercury, the Trigger Concentrations are actually *higher than current pollutant levels*. This means that the cleanup will be deemed "successful" in terms of mercury without removing a speck of mercury from the sediment**.**

This absurd conclusion demonstrates the problem with the Trigger Concentrations. The DTR correctly concludes that the current mercury level threatens human health and the environment. *See* DTR § 1.5.2.5 at 1-16, 1-17. The Order cannot reasonably conclude that the cleanup is "successful" if the current amount of mercury remains in the sediment.

The solution to this loophole is simple: the Trigger Concentrations should be set identical to the site-wide alternative cleanup levels. If the Trigger Concentrations are exceeded, more sediment should be dredged until alternative cleanup levels are met.

Failure #2: The monitoring program fails to identify water quality problems.
Fix #2: The Order and DTR should strengthen monitoring requirements.

The Order and DTR correctly require the Dischargers to take water quality samples during the dredging process to ensure that the dredging is not resuspending pollution and violating water quality standards. However, the water quality monitoring program falls short in two ways: ***(1)*** some of the requirements are specific but are not designed to collect data to accurately reflect water quality impacts during remediation and ***(2)*** some requirements are vague, allowing Dischargers to collect data in a way that masks the true water quality impacts during dredging.[7]

Without a robust, specific water monitoring plan and best management practices to ensure dredged sediment is not resuspended, there is a real risk that the dredging could violate water quality standards or spread contaminated sediment to areas that will not be dredged. The Dischargers claim that comments about monitoring—either during or after dredging—are inappropriate at this stage because they will be addressed in the Remedial Action Plan. But there are two problems with this argument. First, there is no comment period on the Remedial Action Plan, and the Dischargers are free to begin implementing it 60 days after submitting it to the Regional Board unless the Board directs otherwise in writing. This is the Environmental Parties' only opportunity to make sure the monitoring plans are robust. Second, the Order and DTR invited comments on the monitoring plans by providing some details and requirements for the plans.

The fix is simple: include clear, specific requirements for the water quality monitoring plan to accurately gauge the true impact of dredging on water quality and to avoid sediment and

[7] *See* Environmental Parties' comments, May 26, 2011 at 28-29; MacDonald 2011 at 22-23.

best management practices to protect water quality. Specific suggestions to improve water quality monitoring are provided in Exhibit A.

Failure #3: The post cleanup monitoring fails to address arsenic, cadmium, lead and zinc.

Fix #3: The Order and DTR should add trigger concentrations for arsenic, cadmium, lead, and zinc.

The Order and DTR identify four additional "secondary" pollutants found in significant amounts at the site—arsenic, cadmium, lead, and zinc. Arsenic, zinc and lead were identified as posing risk to human health and aquatic-dependent wildlife.[8] Despite the risk these pollutants pose and the fact that the DTR calculated post-cleanup average concentrations for them,[9] the Order declined to set alternative cleanup levels for those secondary pollutants. Instead, the Order claims that they "are highly correlated with primary [pollutants] and would be addressed in a common remedial footprint." Order at 13.

Assuming the cleanup will address these pollutants without actually measuring whether the pollutant levels were reduced to appropriate levels fails to protect San Diego Bay beneficial uses. To address this problem, the Regional Board should adopt post-cleanup Trigger Concentrations for these pollutants. If the pollutant levels for those secondary pollutants exceed the Trigger Concentrations after the cleanup, the Order should mandate additional dredging. The Environmental Parties recommend the Regional Board adopt the following Trigger Concentrations, based on the DTR's own analysis, for the secondary pollutants:

[8] *See* DTR Tables 23-1, 24-1, 27-1.
[9] *See* DTR Table 33-8.

Secondary Pollutants Trigger Concentrations[10]

Metric	Concentration/Value
Arsenic	**8.7 mg/kg**
Cadmium	**0.2 mg/kg**
Lead	**66 mg/kg**
Zinc	**221 mg/kg**

Failure #4: The remedial footprint and monitoring fail to protect aquatic life.
Fix #4: The remedial footprint should be expanded by eight polygons and Trigger Concentrations added to address aquatic life.

Fish and benthic invertebrates are important indicators of Bay health, and current pollution levels at the site impact fish and benthic invertebrates. Unfortunately, the cleanup plan fails to adequately address the impacts that pollutants at the site have on fish and benthic invertebrates. The remedial footprint is too small and excludes areas that threaten aquatic life, and the post-remedial monitoring fails to examine if remaining pollutant levels threaten aquatic life.

Loophole #1: The remedial footprint excludes areas that pose real risk to aquatic life.

The proposed remedial footprint improperly and arbitrarily excludes polygons that meet the requirements for cleanup. For example, under the DTR's own methodology, NA22 should be remediated because the primary pollutants in sediments are likely adversely affecting benthic invertebrates within this polygon. However, the Order and DTR improperly exclude NA22 from the footprint. DTR § 33.1.1 and Order at 17. The DTR suggests that because a Total Maximum Daily Load (TMDL) is being prepared for the mouth of Chollas Creek, and NA22 includes sediments at the mouth of Chollas Creek, dredging NA22 is unnecessary.

This assumption reveals a lack of understanding about what TMDLs do. TMDLs, by their very nature, are forward-looking policies meant to reduce the amount of pollutants that will be

[10] *See* MacDonald 2011 at 35; DTR Table 33-8.

allowed in water bodies on a going-forward basis. TMDLs do not to remove existing contamination.[11] The TMDL process will not provide a vehicle for remediating existing contaminated sediment within NA22 and should not be used to excuse NA22's exclusion from the remedial footprint.

A primary goal of the cleanup is to protect aquatic life, but the proposed remedial footprint excludes several other polygons with pollutant levels that likely pose high risks to benthic fish survival, growth, or reproduction.[12] Specifically, Polygons NA01, NA04, NA07, NA16, SW06, SW18 and SW29 pose unacceptable risks to fish and the benthic community.

Addressing this problem is simple: Polygons NA01, NA04, NA07, NA16, SW06, SW18 and SW29 should be added to the remedial footprint to address these risks.

Loophole #2: There is no requirement to measure whether remaining pollutants impact aquatic life.

The post-cleanup monitoring contains no monitoring requirements to assess the impact of the remaining pollution on aquatic life.

The fix is easy. Add the following Trigger Concentrations:

Metric	Concentration/Value[13]
Control-Adjusted Survival of Amphipods	**82%**
Control-Adjusted Normal Development of Bivalves	**76%**
Control-Adjusted Fertilization of Echinoderms	**70%**

[11] *See* MacDonald 2011 at 14; *see also* Idaho Sportsmen's Coal. v. Browner, 951 F. Supp. 962 (W.D. Wash. 1996) ("TMDL development in itself does not reduce pollution … TMDLs inform the design and implementation of pollution control measures.").
[12] *See* DTR § 32.5 and Order at 15; *see also* MacDonald 2011 at 20.
[13] *See* MacDonald 2011 at 35, Table 4.

These problems are fixable.

Requiring the Dischargers to meet the alternative cleanup levels, adding more monitoring requirements, and adding eight additional polygons is economically achievable, especially for the protection afforded to aquatic life. This process involves two economic analyses: ***(1)*** whether cleanup to background is economically infeasible and ***(2)*** whether the alternative cleanup levels represent the best cleanup economically achievable.

The Regional Board can agree with the Order's conclusion that cleanup of all pollutants to background is not economically feasible and disagree with the DTR's conclusion about whether *this* cleanup truly represents the best cleanup economically achievable. While the DTR provides some analysis showing that cleaning up all pollutants to background is economically infeasible, it provides no analysis or evidence supporting the arbitrary conclusion that a $58 million cleanup is the best economically achievable.[14]

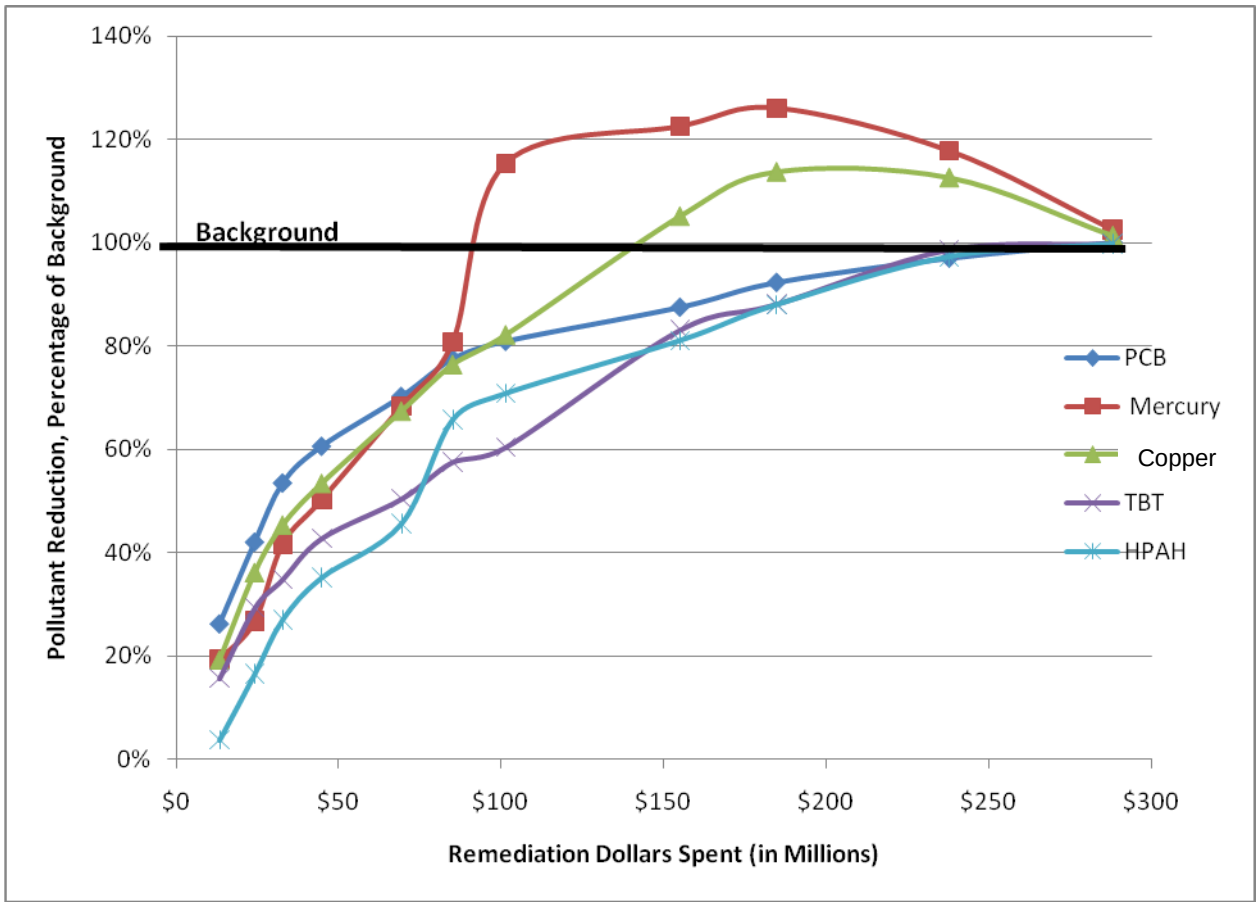
A close review of the sparse economic feasibility analysis suggests that this ***isn't*** the best we can do for the bay. On an exposure reduction per $10 million spent basis, a larger cleanup would actually achieve a greater "bang for your buck" because exposure reduction per $10 million is actually *higher* between $60 million and $102 million spent than it is from $45 million to $60 million spent.[15]

Unfortunately, the DTR presents the economic analysis in a form that makes it difficult to identify the point where spending more money on a cleanup produces only marginal benefit to the environment. The chart below contains the DTR's own economic analysis presented as a line graph instead of a bar graph. The Environmental Parties hope that presenting the same data in a

[14] *See* DTR § 32.7.1 (The totality of the justification: "The $58 million estimated cost of cleaning up 23 polygons, however, is likely beyond the initial high exposure reduction per cost scenario represented by cleaning up 12 polygons.").
[15] *See* DTR Figure 31-1, as revised on September 15, 2011.

different way will assist the Regional Board as it exercises its independent judgment about whether a better cleanup is economically achievable.

Percent Pollution Exposure Reduction Per $10 million, by Pollutant and in Constant Dollars.



CONCLUSION

The Regional Board needs to take decisive action to ensure a successful cleanup. Merely adopting the Order and DTR is not enough, because those documents are plagued by the four failures detailed above. To approve a cleanup that does not actually require the Dischargers to meet the cleanup levels deemed safe and to sanction a monitoring program that will mask ongoing pollution problems is akin to doing nothing at all to address the issue. Instead, the Regional Board should fix the four failures in the Order and DTR by incorporating the changes detailed in Exhibit A and then approve the cleanup. The Environmental Parties urge the Regional Board to seize this opportunity to demand a healthy bay and hold accountable those responsible for the pollution.

Respectfully Submitted on October 19, 2011 by:

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On behalf of San Diego Coastkeeper and
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EXHIBIT A. LIST OF REQUESTED CHANGES IN ORDER AND DTR

Failure	Fix
The Order and DTR fail to require the cleanup to actually achieve the alternative cleanup levels	Require additional dredging until background pollutant levels for each primary pollutant are reached in remediated polygons
	Require sampling and analysis from all 66 polygons instead of only 6 sampling groups and prohibit composite sampling
	Set "Trigger Concentrations" at the alternative cleanup levels for the primary pollutants
	Mandate additional dredging if site-wide alternative cleanup levels are not met
The monitoring plan fails to identify water quality problems	Conduct real-time monitoring of turbidity and dissolved oxygen, and collect surface water samples for analysis of all primary and secondary contaminants of concern to ensure basin plan standards are met
	Collect samples half-way through a flooding or ebbing tide at least four hours after dredging activities are initiated for the day
	Require all samples be collected in locations that are down-current from the dredging
	Establish the steps that must be taken if the water quality standards for one or more chemicals are exceeded during remediation.
	Define the "construction area" as a point at the center of the construction activity for the day on which the samples are taken
	Collect water samples at multiple water depths early in the sampling program to identify the depths that have the highest levels of monitored variables.
	Require grab samples for analysis of pollutants in surface water to be taken at the water depth with the highest turbidity
	Require daily water quality monitoring and should not allow weekly monitoring
	Explicitly state that measures to reduce or eliminate the transport of sediments that are resuspended during dredging must be used throughout the dredging program. Such measures may include the use of silt curtains, gunderbooms, mechanical dredge operational controls, use of a closed or environmental bucket, measures that apply to barge operation, and selected work windows

Failure	Fix	
	Explicitly list the water quality standards for dissolved oxygen, turbidity, and each primary and secondary contaminant concern and risk-driver that must be met at compliance monitoring locations	
	Require a full-time monitor to evaluate water quality and Best Management Practices on a daily basis	
	Require Dischargers to collect sediment samples within the top 10 cm	
	Direct the Dischargers to collect additional samples of deeper sediment in those erosion-prone areas.	
	Set target sampling depth at 0 - 10 cm	
	Require toxicity sampling for all polygons located within and adjacent to the remedial footprint	
The post-cleanup monitoring program fails to address arsenic, cadmium, lead, and zinc	**Pollutant**	**Trigger Concentration**
	Arsenic	8.7 mg/kg
	Cadmium	0.2 mg/kg
	Lead	66 mg/kg
	Zinc	221 mg/kg
The remedial footprint and monitoring fail to protect aquatic life	**Metric**	**Concentration/Value**
	Control-Adjusted Survival of Amphipods	82%
	Control-Adjusted Normal Development of Bivalves	76%
	Control-Adjusted Fertilization of Echinoderms	70%