

**SUPPORTING DOCUMENT 4: SAN DIEGO REGIONAL BOARD
RESPONSES TO COMMENTS FOR TENTATIVE ORDER NO R9-2008-0081**

A. Comments submitted by SCS Engineering dated October 28, 2008, by ARCADIS dated October 29, 2008 and November 5, 2008, and by HARGIS + ASSOCIATES dated November 5, 2008

GENERAL COMMENTS & MAJOR CONCERNS	REGIONAL BOARD RESPONSES
<p>1. <u>SCS Engineering has requested to add ammonia, microorganisms cultured via standard laboratory techniques, and sulfate and nitrate to Section A.1. "Condition of Eligibility"</u></p>	<p>Ammonia is an eligible macronutrient that may be used under the general WDRs. Microorganisms that are cultured via standard laboratory techniques for bioaugmentation applications, and sulfate and nitrate as electron acceptors, are acceptable treatment technologies that may be covered by the general WDRs. Project eligibility for coverage will be evaluated by the Regional Board after the applicant provides supporting documentation indicating that all provisions and prohibitions required in the tentative Order are met by the site-specific application of the proposed technology.</p> <p>The Regional Board did not make the requested change because the tentative Order includes a "category" of treatment technologies that covers the situation. Similar considerations are discussed below in our response to comment number 8, and also discussed in Supporting Document 3 (see Response to Comment number 2) Item 14.</p>
<p>2. <u>ARCADIS's comments dated October 29, 2008 are as follows:</u> <u>General Comments:</u> <u>"Given the ongoing in-situ groundwater remedy, what will be the approval procedure for existing dischargers with RWQCB-approved remedial workplans or Report of Waste Discharges (ROWD)?"</u></p>	<p>A new ROWD or application fee is not required for ongoing projects where the discharger previously provided the Regional Board with an ROWD and an application fee. The Regional Board will use the previously submitted information to evaluate the eligibility of the project for coverage under the general WDRs. The Regional Board will contact the discharger if additional information is required to make the application complete.</p> <p>For ongoing in-situ remediation projects, where the Standard Application Form (Form 200) and filing fee have NOT been submitted, the discharger should determine if they wish to apply for coverage of the project by the general WDRs or apply for individual WDRs. If the discharger wishes to apply for coverage by the general WDRs, then the discharger shall provide the Regional Board with the completed Form 200 and the application fee (first annual WDR fee) as required in the general WDRs. In addition, the discharger must submit a list of previously submitted technical reports and documents that they propose to use as being equivalent to a ROWD for their project.</p>
<p>3. <u>"Would a form of 'grandfathering' of sites with approved remedies occur?"</u></p>	<p>At a minimum, dischargers may apply for enrollment in the general WDRs by completing information on Form 200 and providing a complete list of supporting technical documents/reports, if these have been previously provided to the Regional Board, to serve as the ROWD and support the</p>

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	<p>application for enrollment. Alternatives to establishing eligibility for coverage by the general WDRs would be for the discharger to apply for coverage by individual WDRs or receive a conditional waiver issued by the Regional Board (under authority of Water Code section 13269).</p>
<p>4. <u>“Would BAE Systems be required to submit the Standard Form 200, even though project-specific information has been provided in the RWQCB-approved workplan and amendments provided under the site’s Corrective Action Order?”</u></p>	<p>Since BAE systems completed an application for WDRs in 2003, you do not need to resubmit a complete Form 200. However, BAE systems must provide the Regional Board with a list of supporting technical reports/documents that include all the information necessary for the Regional Board to evaluate eligibility for coverage of your project by the general WDRs.</p>
<p>5. <u>“Would the General WDRs be managed by the site’s RWQCB project manager, or under a separate group with responsibility in coordinating the program?”</u></p>	<p>For Regional Board lead cases, our past procedure has been to assign the project managers to oversee enrolled compliance with general WDRs.</p>
<p>6. <u>ARCADIS has specific comments as follows:</u> <u>“Finding 1, page 1, and Finding 8, page 2:… for consistency, the expanded list of compounds included at the end of Finding 8 should mirror those included in Finding 1. acceptable treatment processes listed under Finding 2 and in Section A. Conditions of Eligibility should include metals (i.e., hexavalent chromium and other metals amenable to in-situ remediation), and 1,4-dioxane. A complete list should also be reflected in Section A paragraph 3d.”</u></p>	<p>Of all types of pollutants, petroleum hydrocarbon constituents and VOCs account for significant portions of soil/ground-water pollution in the San Diego Region. At this time, the general WDRs target regulation of the remediation at these two types of cleanup sites. Other categories of pollutants must include their own considerations of toxicity, degradation by-products, environmental persistence and environmental mobility. At this time, those considerations have not necessarily been included in developing the proposed general WDRs. Therefore, Finding 9 (see Supporting Document 1 for Item 14) of the general WDRs was revised to be more specific as follows:</p> <p>“9. The materials that can be used to remediate VOCs and petroleum hydrocarbons in soil and/or ground water at a site in the San Diego Region under this Order are limited to those listed in the Section A, Conditions of Eligibility, listed below. This Order is not intended for use and application of other materials to remediate groundwater pollution or for remediation of waste constituents in ground water other than VOCs, perchlorate, nitrogen compounds (nitrate, ammonia, etc.), some selected pesticides and semivolatile organic compounds, and petroleum hydrocarbons.”</p> <p>For cleanup sites containing multiple pollutants, including petroleum hydrocarbons and VOCs, the <i>in-situ</i> remediation of petroleum hydrocarbons and VOCs pollutants are eligible for coverage under the tentative Order.</p>

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<p>7. "Finding 12 – CEQA: ... Section V of Attachment A (CEQA, Application Form 200), requests acknowledgement if the proposed project has undergone CEQA and if a public agency has determined that the proposed project is exempt from CEQA. Clarification is needed if any project submitted for a General WDR under the Tentative Order will require a CEQA determination or if it is exempt under CEQA, specifically in relation to a site with an existing RWQCB-approved groundwater remedy where the General WDR would be applicable."</p>	<p>A Negative Declaration has been prepared for the general WDRs to make sure that all projects enrolled under the general WDRs are in compliance with CEQA requirements. Projects deemed eligible for enrollment need not complete another CEQA action for purposes of enrollment in general WDRs. Enrollees may leave Section V of Standard Application 200 form blank for purpose of enrolling for coverage by the general WDR.</p>
<p>8. <u>ARCADIS requires the addition to "Section A. Conditions of Eligibility" of another sub-bullet that is inclusive of commercially-available food products and food by-products containing one or more carbon sources, such as molasses, corn syrup, cheese whey, yeast, and others.</u></p> <p><u>ARCADIS recommends that an item be added to make reference to "commercially available microorganisms suitable for bioaugmentation..."</u></p>	<p>Molasses, corn syrup, cheese whey, yeast as well as commercially available microbes for bioaugmentation purposes may be an eligible treatment process classified as reactive materials for creating reducing conditions, and may be proposed for coverage by the general WDRs at cleanup sites in the San Diego Region. Project eligibility for coverage will be evaluated provided that the applicant provides supporting documentation indicating that all provisions and prohibitions required in the tentative Order are met by the site-specific application of the proposed technology.</p> <p>The Regional Board did not make the requested change to the tentative Order due to the inclusion of a "category" of treatment technologies that cover the situation. Similar considerations are also discussed in Supporting Document 3 (see Response to Comment number 2) Item 14.</p>
<p>9. <u>"...Would the proposed reporting requirements be in effect for sites with approved and ongoing treatment?"</u></p>	<p>Yes. The discharger of ongoing treatment that is enrolled in the tentative Order must comply with the requirements of the associated Monitoring and Reporting Program.</p>
<p>10. <u>"Would analysis of all constituents listed in Paragraph 1(b) of Section B be required if a prior demonstration has been made to eliminate them from monitoring?"</u></p>	<p>No. If it has previously been demonstrated that some of the analytes listed in Paragraph 1(b) may be eliminated from monitoring, then it is not necessary to report results for those analytes.</p>
<p>11. <u>"Given the existing groundwater treatment at the site, and an existing reporting frequency that presents results of site remedial and monitoring activities, would a separate report related to the WDR be required, or would inclusion of WDR required monitoring information already reported be</u></p>	<p>The requirement regarding monitoring frequency has been revised to be at least on a quarterly basis after the application of the reactive material, see Supporting Document 1 (Table under Section C.1.) Item 14. The discharger may report compliance monitoring results as an appendix to existing monitoring reports as appropriate. However, the cover/transmittal letter and</p>

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<p><u>acceptable?"</u></p>	<p>table of contents for the affected monitoring report(s) should clearly indicate the inclusion of compliance monitoring data for the general WDRs.</p>
<p>12. <u>HARGIS + ASSOCIATES, INC. suggests including commercial bacterial culture under Section A. 1. "Condition of Eligibility"</u></p>	<p>Commercially available bacterial culture for bioaugmentation applications are acceptable treatment technology that may be covered by the general WDRs. Please see more information contained in our responses to comment No. 1 and 8 above.</p>
<p>13. <u>HARGIS + ASSOCIATES, INC. suggests deleting the requirement for hexavalent chromium sampling because hexavalent chromium is not likely present at all remediation sites.</u></p>	<p>In both bench scale and field scale studies, it has been reported that oxidative chemicals may mobilize chromium by oxidizing native trivalent chromium [Cr(III)] to hexavalent chromium [Cr(VI)] (US EPA, 2006). With thorough evaluation of site condition, and careful controls of the dosage and application rate of chemical injection as required in the tentative Order, the unintended oxidation of Cr(III) to Cr(VI) can be successfully prevented. As a result, the Regional Board believes it is prudent to monitor the Cr(VI) concentration at cleanup sites and no changes made in the tentative Order.</p>
<p>14. <u>ARCADIS comments dated November 5, 2008 include the following:</u></p> <p><u>" For clarity, the expanded list compounds covered under this Order in Finding 8 should also be included in Finding 1...ARCADIS requests inclusion of metals in the list of compounds presented in Findings 1 and 8." Additionally, ARCADIS suggested including this complete compound list in Conditions of Eligibility A3d. of the tentative Order</u></p>	<p>This comment is the same as Comment No. 6. Please refer to our responses to Comment No. 6 above.</p>
<p>15. <u>"Finding 3 (should be Finding 2) and Finding 7 both refer to physical treatment systems, however, the balance of the tentative Order does not discuss in-situ physical treatment systems (e.g., cosolvent or surfactant injection).</u></p>	<p>Cosolvent and surfactant injection are not eligible to be used under this tentative Order due to the different removal mechanisms of cosolvent/surfactant on contaminant removal. Similar considerations are discussed in Supporting Document 3 (see Response to Comment number 1) Item 14.</p> <p>Finding 2 has been revised as follows:</p> <p>"Cleanup of ground water at these sites may include the use and application of chemical, biological, and physical treatment systems, such as the addition of chemicals and other reactive materials into soil and ground water (in-situ) to promote ground water remediation. oxygen-releasing compounds, chemical oxidation, nutrient, and chemical addition for enhanced biodegradation into ground water (in-situ). Persons proposing to apply these</p>

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	<p>treatment systems to ground water are hereinafter Dischargers.”</p> <p>The physical treatment systems discussed in Finding 7 refers to the “built-in” feature of some of the reactive materials listed in Section A, 1 Condition of Eligibility, for example, the injection of some organic-carbon reactive material into soil provide absorption sites for the partitioning of pollutants from aqueous phase to the absorbed phase, and then removed from ground water.</p> <p>Therefore, no changes are made in the tentative Order</p>
<p>16. <u>ARCADIS suggested removing the “specific” requirement for the reinjection of treated ground water at “upgradient” of the plume in Finding 3 , because hydraulic control can be maintained with other configurations of injection and extraction wells, e.g., by placing extraction wells on the periphery of the plume and injection wells on the interior.</u></p>	<p>Finding 3 states that</p> <p>“...hydraulic control <u>can</u> be done actively with hydraulic control of the treatment zone as the amendments are added to the extracted ground water and injected upgradient into the treatment area”</p> <p>Finding 3 is a statement of findings and not a requirement for the location of reinjection. Other configurations of injection and extraction wells may be proposed. Project eligibility for coverage will be evaluated by the Regional Board after the applicant provides supporting documentation indicating that all provisions and prohibitions required in the tentative Order are met by the site-specific application of the proposed hydraulic control methods.</p> <p>The requested changes were not made in the tentative Order.</p>
<p>17. <u>ARCADIS suggested including methanol, molasses, corn syrup, cheese whey, and persulfate in Section A. Condition of Eligibility of the tentative Order. Additionally, ARCADIS suggested including biofouling control agents that are certified under the specifications of National Science foundation/American National Standard Institute (NSA/ANSI) 60-2005 (Drinking Water Treatment Chemicals – Health Effects) in Section A. Condition of Eligibility of the tentative Order.</u></p>	<p>Methanol, molasses corn syrup, and cheese whey as eligible electron/carbon donors and persulfate as an eligible electron acceptor under the general WDRs are acceptable treatment technologies that may be covered by the general WDRs. Similarly, the NSF/ANSI 60-2005 certified compounds that are routinely used to rehabilitation of drinking water wells in California under the California Waterworks Standard (Title 22, Section 64590 Direct Additives) may be proposed to be used as biofouling controlling agents under the general WDRs. Project eligibility for coverage will be evaluated by the Regional Board after the applicant provides supporting documentation indicating that all provisions and prohibitions required in the tentative Order are met by the site-specific application of the proposed technology.</p> <p>The Regional Board did not make the requested change because the tentative Order includes a “category” of treatment technologies that covers</p>

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GENERAL COMMENTS & MAJOR CONCERNS	REGIONAL BOARD RESPONSES
	<p>the situation. Similar considerations are discussed in our response to comment number 1, 8, 12, and also discussed in Supporting Document 3 (see Response to Comment number 2) Item 14.</p>
<p>18. <u>ARCADIS suggested removing the term "hydrogen release compounds" for clarity and to avoid confusion, because "hydrogen release compound" does not release hydrogen by itself but need microbial processes consuming the organic carbon substrate to produce hydrogen.</u></p>	<p>The Regional Board believes that it is already commonly knowledge within the consulting community that the term "hydrogen release compound" refers to organic hydrocarbons that release hydrogen upon the degradation/breakdown by bacteria.</p> <p>Therefore the requested changes were not made in the tentative Order.</p>
<p>19. <u>ARCADIS requested that the Regional Board clarify whether it is their intent to ban the injection of Fenton's reagent. Additionally, the ARCADIS suggested that the use of hydrogen peroxide into ground water containing ferrous iron might trigger "Fenton's chemistry" type reaction.</u></p>	<p>Fenton's reagents are particularly excluded from the tentative Order due to its potential for violent exothermic reactions which raise concerns for health and safety during its application (in the Los Angeles Region an explosion occurred during the application of Fenton's reagent at a cleanup site).</p>
	<p>The Regional Board believes that the application of hydrogen peroxide to ground water with common levels of ferrous iron concentration is not likely to cause significant exothermic reactions at levels comparable to that caused by Fenton's reagents. Based on the information provided at USGS website (http://www.h2o2.com/applications/industrialwastewater/fentonsreagent.html), the concentration of iron catalyst determines the generation rate of the hydroxyl radicals, and consequently determines the amount of energy released during the application of Fenton's reagents to cleanup sites. Typically used iron to hydrogen peroxide ratios are 1:5-10 (wt/wt) in Fenton's reagents. Iron levels less than 25 to 50 mg/L result in long reaction times and so decrease the rates of heat generation and release. As a result, for ferrous iron levels commonly encountered in ground water at cleanup sites within the San Diego Region (the MCL for iron in California is 0.3 mg/l, about 80 times lower than the lower limit required to activate Fenton's reagents), the application of hydroxide alone is not likely to cause the Fenton's reagents-level rapid heat production. Additionally, with careful controls of application rate, as required by the tentative Order, the application of hydrogen peroxide shall not cause significant concerns on the health and safety aspect.</p>