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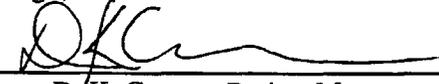
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DATE: 4/3/96
CTO #: 0073
LOCATION: MCAS El Toro

FROM: 
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**RESPONSE TO COMMENTS
DRAFT FINAL WORK PLAN FOR AIR SPARGING PILOT TESTING
MCAS EL TORO, CALIFORNIA**

<p>Originator: Patrick Brooks, CTO Leader, CTO 0073, Operable Unit 2A, MCAS El Toro</p> <p>To: Tayseer Mahmoud (S. Beard) Department of Toxic Substances Control</p> <p>Date: 5 March 1996</p>	<p>CLEAN II Program Contract No. N68-711-92-D-4670 CTO-0073 File Code: 0202</p>
<p><u>COMMENTS ON DRAFT AIR SPARGING PILOT TEST WORK PLAN</u></p>	<p><u>RESPONSES TO COMMENTS</u></p>
<p>1. Section 1.1, Figure 1-2; include additional information regarding the site description, such as distance between injection wells and monitoring wells. Accurate distances can not be inferred from the figures provided. Also, provide well construction data of the SVE and air sparging wells.</p>	<p>RESPONSE 1: The distances between air sparging wells 24AS1 and 24AS2A and the monitoring well 09_DBMW45 are 18.6 and 32.0 feet, respectively. The distance between 24AS1 and 24AS2A is 35.5 feet. Well construction details for the SVE and air sparging wells have been included in Appendix A.</p>
<p>2. Section 1.3, page 1-4; please eliminate the phrase "...no evidence of free-phase produce has been found..." What is interpreted as "evidence" is a technical opinion. The fact that free-phase product has not been observed does not necessarily imply free-phase product is not present in the subsurface of the VOC Source Area.</p>	<p>RESPONSE 2: The phrase has been deleted from the Draft Final Air Sparging Work Plan.</p>
<p>3. Section 1.4, page 1-5, bullet 2; it is unclear how the air sparging pilot test will evaluate the degree of heterogeneity. Will this determination result from bubble flux measurements?</p>	<p>RESPONSE 3: Heterogeneity of the aquifer with respect to air flow will be evaluated with the bubble flux test. Figure 5-1 has been added to the Draft Final Air Sparging Pilot Test Work Plan to illustrate the difference in bubble flux in a homogeneous and a heterogeneous aquifer.</p>
<p>4. Section 1.4, page 1-5, bullet 5 and other references throughout the <i>Work Plan</i>; note: although increased concentrations of dissolved oxygen (DO) is a clear indicator that oxygen has reached the monitoring well, unfortunately it does not indicate how efficient the system is working. DO does not show how the sparg air is distributed. Increasing concentrations may not be from bubbles but DO diffusing from the area of the (bubble) influence. However GSU agrees DO data should still be collected from the monitoring locations, but caution should be used when interpreting such data and overestimating the radius of influence..</p>	<p>RESPONSE 4: CLEAN II concurs with this comment. The radius of influence of the air sparging system will be evaluated using the bubble flux measurements as described in Section 5.2 of the Draft Final Air Sparging Pilot Test Work Plan.</p>
<p>5. Section 2.2, page 2-1, last paragraph; please delete the sentence "In addition, elevated TCE concentrations were not found that would indicate the presence of free-phase TCE." (see Comment 1).</p>	<p>RESPONSE 5: The sentence has been deleted.</p>

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<p>Originator: Patrick Brooks, CTO Leader, CTO 0073, Operable Unit 2A, MCAS El Toro</p> <p>To: Tayseer Mahmoud (S. Beard) Department of Toxic Substances Control</p> <p>Date: 5 March 1996</p>	<p>CLEAN II Program Contract No. N68-711-92-D-4670 CTO-0073 File Code: 0202</p>
<p>6. Section 3.3.1, page 3-4, all bullets; how often will these data be measured? For example, bullet 2, groundwater levels in monitoring wells could show very little change, if at all, and probably will quickly equilibrate (10 minutes to a couple of hours). How often and what method will be used to measure this type of data. This degree of detail should be included in the Work Plan.</p>	<p>RESPONSE 6: Table 3-1 has been revised to include methodologies and minimum measurement intervals. Table 3-2 summarizes the analytical methods.</p>
<p>7. Section 3.3.2, page 3-5; will initial conditions of water chemistry data (off-site laboratory analysis) and groundwater level data be collected prior to the air sparging phase of the pilot test?</p>	<p>RESPONSE 7: Yes, initial conditions will be documented, including dissolved oxygen, water level, pH, total hardness, and major cations and anions described in Section 3.3.2 and Table 3-2.</p>
<p>8. Section 3.3.2, page 3-5: The text states "The air sparging flow rate will be varied from approximately 3 scfm to 30 scfm." Please be more specific as to the criteria used to determine the duration and specific flow for each test run.</p>	<p>RESPONSE 8: CLEAN II anticipates that runs of approximately 3, 10, 20, and 30 scfm will be conducted. Each test will probably last one day so the operating parameters listed in Table 3.1 and 3.2 can be recorded. The sparging flow rate is dependent on both the hydrostatic pressure and the aquifer entry pressure, so the exact flow rates attainable with the test compressor is not known. The test compressor will provide 35 scfm at 125 pounds per square inch.</p>
<p>9. Section 3.3.2, page 3-6; specify how parameters, such as radius of influence, will be interpreted from the data collected during the pilot test.</p>	<p>RESPONSE 9: Bubble flux measurements will be used to estimate the radius of influence as described in Section 5.2 of the Draft Final Air Sparging Work Plan.</p>
<p>10. Section 3.3.2, page 3-6; After the test runs for the different flow rates are completed, it is suggested to let the system continue running for an extended amount of time (a few days) , to insure equilibrium was reached during the pilot test. This exercise may later preclude any unexpected situations.</p>	<p>RESPONSE 10: CLEAN II concurs with this comment. Continuation of the pilot test will also allow evaluation of changes in TCE concentrations in the aquifer over a longer period of time. CLEAN II anticipates a final run lasting at least 5 days.</p>

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<p>Originator: Patrick Brooks, CTO Leader, CTO 0073, Operable Unit 2A, MCAS El Toro</p> <p>To: Bonnie Arthur, Remedial Project Manager US EPA</p> <p>Date: 05 March 1996</p>	<p>CLEAN II Program Contract No. N68-711-92-D-4670 CTO-0073 File Code: 0202</p>
<p><u>COMMENTS - AIR SPARGING WORK PLAN</u></p>	<p><u>RESPONSES TO COMMENTS</u></p>
<p>1. Please coordinate the schedule with the BCT during our weekly conference call/field meetings.</p>	<p>RESPONSE 1: The air sparging pilot test schedule will be coordinated with the BCT during the weekly conference calls/field meetings.</p>
<p>2. Section 2.1, 24CPT66 does not record a sand and gravelly sand at approximately 150 ft bgs.</p>	<p>RESPONSE 2: Silty sand, sand, and gravelly sand are logged between 149 and 156 feet bgs in 24CPT66. This has been clarified and incorporated into the Draft Final Air Sparging Work Plan.</p>
<p>3. Section 2.2, the last sentence suggests that the vertical movement of water is limited by the silts and clays which bound the saturated sands. As discussed at our 12/13/95 weekly field meeting, EPA is not confident that air will be able to move through these much less permeable beds.</p>	<p>RESPONSE 3: CLEAN II agrees that there is a potential for impeded air flow in the aquifer. Data collected during the bubble flux measurement portion of the pilot test will be used to evaluate air sparging radius of influence and geometry of air flow. The evaluation of radius of influence and geometry of air flow is discussed in Section 5.2 of the Draft Final Air Sparging Work Plan.</p>
<p>4. Section 3.3.1, which monitoring wells are to be used in this phase? How will SVE capture radius be determined? A schedule for each phase would be helpful. When and how will the Navy evaluate intrinsic biodegradation.</p>	<p>RESPONSE 4: Two SVE wells have been installed at the pilot test area; one in each of the air sparging well borings (24AS1 SVE and 24AS2A SVE). When one of the SVE wells is being used for extraction, the other will be used to monitor remote vacuum. Monitoring well 09_DBMW45 will be used to monitor remote vacuum when either of the SVE wells are in operation. SVE capture radius is estimated by preparing a semi-log plot of remote vacuum versus distance from the extraction well. The distance at which remote vacuum equals one percent of the applied vacuum will be considered the effective radius of influence. A schedule will be provided to the BCT before the pilot test is initiated. Intrinsic bioremediation will be evaluated separately during the Phase II Feasibility Study.</p>
<p>5. Section 3.3.2, which monitoring wells are to be used in this phase? How will VOC concentrations be measured in groundwater from the air sparge wells? What are the criteria for determining negative pressure during the air sparging phase?</p>	<p>RESPONSE 5: Monitoring well 09_DBMW45 will be used to conduct the bubble flux test. Groundwater samples will be collected from monitoring well 09_DBMW45 and the two air sparging wells to evaluate VOC concentrations with time (see Table 3.1). Remote vacuum will be measured as described in Response 4.</p>
<p>6. Please add a section describing how the data will be evaluated.</p>	<p>RESPONSE 6: Section 5, Data Evaluation has been added to the Final Air Sparging Pilot Test Work Plan.</p>