



# Final FORMER MARINE CORPS AIR STATION (MCAS) TUSTIN 96th Restoration Advisory Board (RAB) Meeting Summary



**Meeting Location:** Tustin Senior Center, 200 South C Street, Tustin, California  
**Meeting Date/Time:** 22 May 2013/ 7:00 PM to 8:35 PM  
**Meeting Summary Prepared by:** Erika Marx, Accord MACTEC 8A Joint Venture (AM8AJV)

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MCAS TUSTIN  
SSIC NO. 5090.3.A

## ATTACHMENTS:

Presentation Slides:

- Environmental Program Status, Former Marine Corps Air Station (MCAS) Tustin
- Former MCAS Tustin OU-4B Moderate Concentration Sites IRP-5S(a), -6, and the Mingled Plumes Area (MPA) Remedial Action - Update
- Former MCAS Tustin Five-Year Review Report Addendum Update

**ATTENDEES:** Seventeen people attended the RAB meeting:

Navy: Jim Callian, Base Realignment and Closure (BRAC) Environmental Coordinator (BEC) and RAB Co-Chair; Content Arnold, Lead Navy Remedial Project Manager (RPM); and Louie Cardinale, Navy RPM.

Regulatory Agencies: Ram Peddada, RPM California Department of Toxic Substances Control (DTSC) and Patricia Hannon, RPM California Regional Water Quality Control Board (RWQCB) Santa Ana Region.

RAB Members: Robert Kopecky, Mary Lynn Norby, Randy Peebles, Chris Crompton, and Susan Reynolds.

Other Attendees: Tony Guiang, AMEC; Kaleena Johnson, Environ; Erika Marx, Accord Engineering, Inc.; Todd Schmieder, Tait & Associates; Mike Wolff, Environ Compliance Solutions, Inc. (ECS, Inc.); Dhananjay Rawal, ECS, Inc.; and Tom Mulder, AIS-TN&Associates Joint Venture (AIS-TN&A JV).

## WELCOME/INTRODUCTIONS/AGENDA REVIEW:

Mr. Jim Callian, BEC and Navy RAB Co-Chair, welcomed everyone to the Former MCAS Tustin 96th RAB meeting and thanked everyone for attending.

## ANNOUNCEMENTS/ REVIEW OF ACTION ITEMS:

Mr. Callian began the meeting with the following announcements and discussion:

- Mr. Callian stated that Mr. Matt West from the City of Tustin would not be attending tonight's meeting. Mr. Zweifel, RAB Community Co-Chair, was also not present at the meeting. He asked RAB members to request an excused absence from either he or Mr. Zweifel if they are unable to attend the RAB meetings.
- Mr. Callian initiated self-introductions.

- Mr. Callian announced that Ms. Patricia Hannon has taken over Mr. John Broderick's position as representative for the RWQCB.
- Mr. Callian presented the meeting agenda for new business (including Installation Restoration Program [IRP] Environmental Status Updates and regulatory agency status updates).
- Mr. Callian announced that tonight's presentations would include a remedial action status update for the OU-4B Moderate Concentration Sites presented by Mr. Tom Mulder, Certified Engineering Geologist (C.E.G), of AIS-TN&A JV; and an update on the Five-Year Review Report Addendum presented by Mr. Mike Wolff, Professional Geologist (P.G.), C.E.G., of ECS, Inc.
- Mr. Callian announced that RAB co-chair elections would be postponed until the next RAB meeting scheduled for 25, September 2013 because Mr. Zweifel was not in attendance.
- Mr. Callian stated that according to the RAB charter, RAB members who have not participated in three consecutive RAB meetings may be excused from the RAB. Mr. Callian went through a list of the names of people who have not been present for the last three consecutive RAB meetings. Prior to next RAB meeting, Mr. Callian will ask these members to excuse themselves from RAB membership.
- Mr. Callian requested the names of candidates for the RAB co-chair to be submitted for the co-chair elections at the next meeting.
- Mr. Callian presented the contact information for himself and the other key project representatives, including the RPMs from DTSC and RWQCB.
- Mr. Callian presented slides for the Administrative Record file located in San Diego and the Information Repository located at the University of California Irvine (UCI) Science Library. Mr. Callian also presented a list of environmental and reuse/redevelopment websites. He mentioned that the BRAC website is maintained by the Navy and is a very useful tool for viewing RAB documents.
- Mr. Callian stated that the next semiannual RAB meeting would be held on Wednesday, September 25, 2013 at this location. Next year's RAB meetings are scheduled for May 21, 2014, and either September 25 or December 10, 2014.
- Mr. Callian presented a slide that summarized the procedure for reviewing RAB meeting summaries; intended to expedite the process. The new procedure involves sending the draft RAB meeting summary out to the RAB members for their review and approval approximately 45 days after a RAB meeting is held. RAB members have 14 days to provide comments to the Community Co-Chair, who will then submit the comments to the Navy. The meeting summary will be finalized and posted on the BRAC website within 21 days after submittal to the Navy. Mr. Callian stated that the comments from the community should be sent to either Mr. Zweifel or himself.

#### **ENVIRONMENTAL STATUS UPDATE:**

Slide 1 – Presents a brief project history for Operable Unit (OU)-1A (Installation Restoration Program [IRP] Site 13 South –1,2,3-Trichloropropane [TCP] in Groundwater (GW)). The next steps for this site include on-going operation and maintenance (O&M) activities such as inspections, effluent sampling, groundwater monitoring and reporting, and using these data to evaluate and optimize the system. The Draft 2012 Annual Performance Evaluation Report (PER) is scheduled for submittal in June 2013.

Slide 2 – Presents a brief project history for OU-1B (IRP Sites 3 and 12 - Trichloroethene [TCE] in GW). The next steps for OU-1B are the same as OU-1A.

Slide 2 also outlines a brief project history for OU-3 (IRP Site 1 - Moffett Trenches Landfill). Mr. Callian noted that the remedial action for this Site includes hydraulic containment. The Site currently has a containment wall to prevent impacted groundwater from going into Peters Canyon Channel. The Draft 2012 Annual Long-Term Monitoring (LTM) Report was issued in May 2013. Next steps for OU-3 include continuing the annual inspections, reporting, groundwater and surface water monitoring in support of the next Five-Year Review. The BRAC Cleanup Team (BCT) has determined that groundwater and surface water monitoring would only be conducted and necessary in support of the next Five-Year Review; this decision was based on years of monitoring data that indicate there has been no contamination released from the site.

Slides 3 and 4 – Presents a brief project history for OU-4B Moderate Concentration Sites: (IRP-5S[a], IRP-6, and the Mingled Plumes Area [MPA] and Low Concentration Sites (IRP-11, IRP-13W, and Miscellaneous Major Spill [MMS-04]). Mr. Callian added that the MPA was aptly named because a single source for the plume could not be determined. The MPA comprises five different areas of concern.

For the Low Concentration Sites, the remedial action is institutional controls (ICs). Groundwater monitoring is conducted at the Low Concentration Sites to determine whether ICs should continue to be implemented. Mr. Callian added that the first annual monitoring event at the Low Concentration Sites conducted in January 2013 included the completion of land-use control (LUC) compliance certificates, which the property users use to ensure the Navy that there are no disturbances to the remedial systems in place. In-situ Bioremediation (ISB) injections at the Moderate Concentration Sites were completed from January to March of 2013. The remedial action (RA) for the Moderate Concentration Sites includes in-situ bioremediation (ISB). The next steps for the Moderate Concentration Sites include the first quarterly post-injection progress monitoring event in June 2013; an Operating Properly and Successfully (OPS) request letter in July 2013; the Draft Interim Remedial Action Completion Report (I-RACR), and the Draft Final Land Use Control (LUC) Remedial Design (RD) in August 2013.

Further, Ms. Arnold clarified that the OPS request, described earlier by Mr. Callian although listed under the Moderate Concentration Sites in the handouts, applies to the Low Concentration Sites (IRP-11 and -13W).

Mr. Callian added that for the Low Concentration Sites, the Navy anticipates an OPS request letter submittal for U.S. EPA approval. He noted the OPS determination was the last step prior to property transfer allowing the Navy to maintain continued oversight of the property during which time remedial goals (RGs) and remedial action objectives (RAOs) have not yet been achieved for the site.

Mr. Chris Crompton asked what the acronym OPS stood for and whether it was a report. Ms. Arnold explained OPS is an acronym for “operating properly and successfully” and in this particular case, the OPS request is anticipated to be submitted as a letter.

Mr. Crompton asked for clarification on the Draft I-RACR and whether it would be issued to the regulatory agencies. Ms. Arnold responded that the I-RACR documents that the remedy has been implemented per the design. She explained the document title was “interim” RACR or I-RACR because RAOs for the site have not yet been met. In addition, Ms. Arnold confirmed that the document is submitted to the regulatory agencies.

Slide 5 – Presents dates for final Findings of Suitability to Transfer (FOSTs) and Findings of Suitability to Lease (FOSLs) summaries, and acronyms/abbreviations.

Mr. Callian stated that the City of Tustin has asked the Navy to follow the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process on a particular site where there is alleged TCE contamination in the groundwater. During development activities, the city collected three groundwater grab samples from an open excavation and found TCE contamination in the groundwater. Mr. Callian stated that the Navy is working with the agencies to evaluate this area. Ms. Susan Reynolds asked where the contamination was detected and Mr. Callian responded that it was in Neighborhood E.

Mr. Crompton asked what the TCE concentrations were at the site, and Mr. Callian responded that concentrations were detected at approximately 25 micrograms per liter ( $\mu\text{g/L}$ ). He explained the Navy intends to conduct a Site Inspection (SI), which is one of the first steps in the CERCLA process, to determine whether there is a need for further action, or if no further action is required.

Mr. Crompton asked Mr. Callian what the city is constructing on that site and if the contamination has affected the construction activities. Mr. Callian responded that he did not know what is being constructed on the site, and that he believes the excavation area has not yet been closed. Mr. Callian reiterated the BRAC team is not involved with the redevelopment of land.

Mr. Crompton asked if the city can proceed with the transfer and construction after contamination has been found. Mr. Callian responded that the city could proceed with construction, but they instead chose to ask the Navy to go through the CERCLA process to determine if further action would be necessary.

Mr. Ram Peddada provided a brief explanation of how the City of Tustin came about discovering the TCE contamination in groundwater.

## **REGULATORY AGENCY UPDATE:**

### **Ms. Patricia Hannon (RWQCB)**

Ms. Hannon stated that she is currently reviewing the LTM Report for the OU-3 former landfill.

### **Mr. Ram Peddada (DTSC)**

Mr. Peddada noted he was also reviewing the LTM Report for the OU-3 former landfill.

## **PRESENTATIONS:**

### **Former MCAS Tustin OU-4B Moderate Concentration Sites IRP-5S(a), -6, and the Mingled Plumes Area (MPA) Remedial Action - Update**

Mr. Tom Mulder (AIS-TN&A JV, C.E.G.) began by introducing himself. Mr. Mulder stated that he is a geologist by training, and has been working in the field of environmental assessment and restoration for more than 20 years. He received his undergraduate degree at the University of Washington and his master's degree at the University of Southern California.

Slide 1 – Title slide.

Slide 2 – Presents an overview of the presentation and the main topics to be covered.

Slide 3 – Presents a figure of the site locations for OU-4B Moderate Concentration Sites (MPA, IRP-5S(a), and IRP-6).

Mr. Mulder added that for the MPA and IRP-5S(a), the chemical of concern (COC) is TCE, with concentrations below 100 µg/L. For IRP-6, the COC is 1,1-Dichloroethene (1,1-DCE), with concentrations of 1,1-DCE in groundwater at approximately 140 µg/L.

Slide 4 – Presents the RAOs and RGs for the sites, as presented in the final Record of Decision (ROD)/Remedial Action Plan (RAP) issued in January 2010. Mr. Mulder added that the RGs come from the federal and state drinking water standards.

Slide 5 – Presents the selected remedy for the site: ISB, monitored natural attenuation (MNA), ICs, and Five-Year Reviews. Mr. Mulder explained that contaminants in the groundwater will naturally degrade but at a very slow rate. The goal of ISB is to induce favorable aquifer conditions to promote and facilitate natural anaerobic biodegradation of contaminants.

Slide 6 – Presents the RD based on the Final RD/RA Work Plan issued in January 2013. The Work Plan was based on a pilot study conducted from 2010 to 2011 to evaluate several types of substrates. The most appropriate substrate (emulsified vegetable oil [EVO]) was selected for the RA at this site

Slide 7 – Explains the design for ISB injections and provides a photograph of actual ISB injections at the MPA. The injection mixture consists of 10 parts water, 1 part EVO, and *dehalococcoides* (DHC) bacteria. Mr. Mulder explained that the groundwater is extracted from the site and is pumped into a tank where it is mixed with the EVO and DHC bacteria; the mixture is then injected into the groundwater using a hydraulic push drill rig.

Mr. Callian noted that no oxygen is added to the mixing tank because it would kill the DHC bacteria. After the injection, the groundwater flows through the “picket fence array” of injection sites, and the bacteria are stimulated by the food-grade vegetable oil and begin to break down the contaminants.

Mr. Mulder added that the goal of the ISB treatment is to make the areas around the injections more conducive to anaerobic conditions in which the bacteria can promote the anaerobic degradation of TCE.

Slide 8 – Presents a figure of the RA fieldwork design.

Mr. Crompton asked how often the injection process would be repeated. Mr. Mulder responded that it varies, depending on the type of substrate used. For example, sodium lactate is consumed very quickly. In this case, EVO was used because it tends to have a longer residence time, and the oil will persist and be slowly consumed for at least a year, if not several years. Mr. Mulder pointed out the yellow areas on Slide 8 as the areas where TCE is detected at high concentrations. The area between the two key target areas where the pilot study was conducted has little to no TCE contamination because the groundwater had flowed through the picket fence rows of injections, and most of the TCE was broken down during this process.

Mr. Todd Schmieder asked if similar injections might be warranted in a couple of years at the same site. Mr. Mulder responded that hopefully the monitoring results will indicate that no additional injections would be needed. However, if RGs are not achieved within the allotted timeframe or the results are not showing a decrease in concentrations, additional injections may be needed. At this point, Mr. Mulder stated that the Navy is not anticipating the need for additional injections. He added that this remedy is a slow process because the water at the site is flowing through a very fine-grained lithology.

Slide 9 – Presents photos of the RA fieldwork at the MPA.

Slide 10 – Presents photos of the ISB injections at IRP-6.

Mr. Crompton asked why the road pictured in Slide 10 was not present in the photos on Slide 9. Mr. Mulder responded that the photos on Slide 9 were taken at the MPA. The photo on Slide 10 was taken at IRP-6 on Park Avenue, between Costco and Michael's Retail Store. Mr. Callian added that the Navy has interfaced extensively with the property owners in the area to ensure that the RA did not interfere with retail operations. Mr. Callian mentioned that the Tustin Costco is the largest in the country, and the Costco gas station is the 3<sup>rd</sup> largest volume retailer in the country. The retailers in the area were pleased with the Navy's consideration in trying not to interfere with their operations.

Slide 11 – Presents a figure of the RA fieldwork design.

Mr. Schmieder asked for clarification and further explanation for the use of the DHC bacterial culture. Mr. Mulder answered that DHC is a bacteria manufactured and produced specifically for use in the dechlorination process, as it promotes the anaerobic degradation of contaminants. Mr. Callian added that there are different bacterial cultures used for different steps in the dechlorination process, and that bacteria are now tailored to target specific contaminants.

Mr. Mulder stated that the pilot study has shown great results. The concentration of TCE at this Site was initially 140 µg/L and was reduced to 14 µg/L after the pilot study. Mr. Mulder added that very little of carcinogenic daughter products were produced after the pilot study, and there is more evidence of ethenes and ethanes being produced, which are innocuous compounds.

Slide 12 – Presents the next steps for the OU-4B Moderate Concentration Sites, including a Draft I-RACR in summer 2013, four quarterly performance groundwater monitoring events, and a Draft Annual PER in summer 2014.

Mr. Mulder added that the first two monitoring events are not anticipated to show significant reductions because ISB is a slow process. The third and fourth quarterly monitoring events would be more likely to produce better results, and by then, enough data will be available to evaluate how the remedy is progressing.

Slide 13 – Abbreviations and acronyms.

### **Former MCAS Tustin Five-Year Review Report Addendum Update**

Mr. Mike Wolff of ECS, Inc. began by introducing himself. Mr. Wolff, P.G, C.E.G., is a geologist and he studied at the University of California, Los Angeles. He has been working in the environmental field for 43 years.

Slide 1 – Title slide.

Slide 2 – Overview of the presentation.

Slide 3 – Presents background information for the sites. Mr. Wolff explained that the Addendum was necessary for two reasons. The first is that the U.S. EPA updated toxicity values for trichloroethene (TCE), and this prompted a reevaluation of potential vapor intrusion risk at IRP Sites 13S and 3. The updated toxicity values were posted on the U.S. EPA's Integrated Risk Information System (IRIS) in September 2011. The publication of this updated toxicity value for TCE also prompted a reevaluation of TCE concentrations reported in the Five-Year Review for the Low Concentration Sites (IRP-11 and -13W). The maximum TCE concentrations reported in the Five-Year Review Report at these sites ranged from 8 to 9 µg/L, slightly exceeding the maximum contaminant level (MCL) and cleanup goal.

Slide 4 – Presents the methods for the reevaluation of vapor intrusion. This includes evaluating potential cancer risks and non-cancer hazards, using both residential and industrial scenarios. The methodology used was an agency (DTSC and U.S. EPA)-concurrent vapor intrusion model.

Mr. Callian commented that the residential use scenario is the most stringent of the scenarios evaluated and assumes that a person living at the site would be exposed to maximum concentrations of contaminants over a lifetime. To augment, Mr. Wolff defined “lifetime” to be 70 years with a 24 hour per day/7 days a week exposure. Mr. Callian also noted that exposure would be at maximum concentrations over this lifetime, without considering concentration decreases due to the on-going remediation.

Ms. Mary Lynn Norby asked why the model would use an industrial scenario if residential scenario is more stringent. Mr. Wolff responded that it is for completeness, in the event that the site would be used for industrial or commercial activities in the future.

Slide 5 – Presents a summary of the cancer and non-cancer vapor intrusion risks using a residential scenario.

Mr. Crompton asked what impact the updated toxicity values for TCE and the reevaluation of vapor intrusion risk would have when reevaluating the cancer and non-cancer risks (known as Hazard Indices [or HIs]) for a site. Mr. Wolff explained the big change could be expected when reevaluating non-cancer risks, as the reference doses based on the new toxicity criteria would tend to result in higher HIs. He noted that no HIs exceeded the acceptable threshold of 1 at IRP-13S; however, HIs at two wells located in the hotspot area at IRP-3 exceeded this acceptable threshold.

Mr. Crompton asked if the model also used ASTM standards. Mr. Wolff responded that ASTM standards were not used, but the modeling used for evaluating potential vapor intrusion risk was consistent with regulatory agency procedures and guidance and is highly conservative.

Slide 6 – Presents a summary of the cancer and non-cancer potential vapor intrusion risks using an industrial use scenario. Mr. Wolff explained cancer risks were comparable to those evaluated in the Final Five-Year Review with no results exceeding  $10^{-6}$ . In addition, HIs did not exceed the acceptable threshold of 1 for non-cancer risks.

Slide 7 - Presents protectiveness statements for IRP-13S and IRP-3 under current site conditions as well as for future uses. He noted that the protectiveness of the remedies at these sites, for future consideration, would be addressed by implementing additional ICs for potential VI risk. Further, he noted this would be the stage whereby consideration for the requirements and regulatory guidance, mentioned earlier in the discussion by Mr. Crompton, would be used to determine the ICs for the sites.

Slide 8 – Presents issues and recommendations for IRP-13S and -3.

Mr. Schmieder asked if ICs established for this site would focus on the center of the plume, inside the plume, the edge of the plume, or outside of the plume. Mr. Wolff responded that the only areas of potential concern would be the hot spot area that existed in 2011. As the groundwater concentrations decrease, the potential VI risk at these sites decreases proportionately. Mr. Wolff stated that concentrations of COCs in groundwater in some areas have declined dramatically. Conclusions and recommendations were based on 2011 data. When future development plans arise, there might not be a need at that point in time for ICs on a technical basis. These issues will be worked out in consultation with the agencies. Mr. Callian added that the areas requiring ICs had not yet been determined, but would be determined in the future in consultation with the agencies.

Mr. Randy Peebles asked if the proposed ICs are consistent with the models that DTSC already has in place. Mr. Wolff responded that they might address engineering controls, monitoring, or some combination of these.

Mr. Crompton asked if this includes vapor barriers. Mr. Wolff responded that vapor barriers would be one of the engineering controls that DTSC guidance addresses.

Mr. Callian noted that in the industrial scenario, which applies to most of the property, there is no need for ICs. The need for engineering controls would be based on where the buildings are built relative to the plume. Mr. Callian added the Navy's goal is to limit ICs on public property and avoid implementing ICs that are not actually required.

Mr. Crompton asked if there are industrial uses that have residential elements, for example homeless shelters. Mr. Callian responded that a homeless shelter would be considered a sensitive use. Mr. Wolff also responded that it varies case by case, and one needs to examine the specific proposed use and what set of exposure parameters best covers that use. Residential parameters are very conservative because they assume a person would be exposed for an entire lifetime at maximum concentrations. If it is determined that these parameters are appropriate for a homeless shelter, then the residential exposure parameters would be used, regardless of whether the homeless shelter is within a zoned industrial-use area or not. Mr. Wolff added that as another example, an apartment on the ground level would have residential parameters due to the elevated risk of vapor intrusion. However, a second-floor apartment would probably not be subject to vapor intrusion, and thus residential criteria would not be used.

Ms. Arnold explained it was too early to determine which parameters would be used to evaluate potential VI risk and that the scenarios presented by Mr. Wolff were only examples. Mr. Wolff noted that the general guiding principle is to be conservative. In the case of a mixed-use area, generally, the more conservative parameters would be applied.

Mr. Schmieder asked if this only applies to Carve-Outs 5 and 6, in areas where the plumes are active and the hotspots are located. Mr. Wolff confirmed this. Mr. Schmieder also inquired about the areas that have been released; specifically those areas outside of the Carve-Outs. Mr. Callian reiterated that the areas requiring ICs have not yet been determined, but would be determined in consultation with the agencies. Further, he noted the Navy has no control over those areas outside of the Carve-Outs.

As an example, Mr. Wolff noted that the HIs for only two of the 39 wells at IRP-3 exceeded the acceptable threshold of 1. He added that when looking at overall risk and implications for reuse, this area is fairly small and localized. Mr. Wolff noted that looking at the site in a pragmatic way is useful when considering where ICs may be required.

Mr. Crompton asked whether the areas within IRP-3 where the Navy anticipates implementing ICs would be small. Mr. Callian responded that the IC boundaries have not yet been determined and would be determined in consultation with the agencies.

Ms. Kaleena Johnson asked about the status of the Navy's process in determining and defining the ICs for these sites. Mr. Callian responded that they have not yet initiated this process and are still in the beginning stages, adding that the Addendum was just issued in March 2013. Ms. Johnson asked if the Navy had a timeframe in mind on when they would initiate the process. Mr. Callian responded that there is no timeline at this point.

Ms. Johnson asked if FOST 9 is still being worked out. Mr. Callian responded that it is still on hold. Ms. Johnson asked where the process stands regarding property transfer. Mr. Callian responded that the

Explanations of Significant Differences (ESDs) will be issued to modify the respective Records of Decisions (RODs). Ms. Johnson asked if the ROD is for OU-1A, and Ms. Arnold responded that the RODs are for both OU-1A and OU-1B.

Slide 9 – Provides the technical assessment summary for the Low Concentration Sites (IRP-11 and IRP-13W.)

Slide 10 – Provides the protectiveness statements for Low Concentration Sites (IRP-11 and IRP-13W) which indicate the remedies in place at these sites are being implemented in accordance with the ROD/RAP and are protective of human health and the environment. Further he noted the no further action determination for the other Low Concentration Site (MMS-04).

Slide 11 – Provides the next steps, which include preparing two ESDs to document additional ICs for OU-1A and OU-1B RODs, and preparing an amendment to the LUC RD to implement ICs.

Slide 12 – Acronyms and abbreviations.

### **OPEN QUESTIONS AND COMMENTS:**

Mr. Callian opened the meeting for general questions and comments.

Ms. Johnson inquired about where the property transfer stands in regards to the completion of Final Addendum. Ms. Johnson asked for a timeline for when the ESD might be drafted. Mr. Callian responded that there is no timeline as of yet. Ms. Johnson asked why there is no timeline available yet. Mr. Callian responded that the Navy is currently working with the regulatory agencies, specifically DTSC, and has not formulated a schedule yet. This is a long, involved process. Ms. Johnson asked if there might be an update on where the process stands by the next meeting in September. Mr. Callian confirmed that he will have an update on where the process stands at the next meeting.

### **MEETING EVALUATION AND CLOSING:**

Mr. Callian asked if there were any comments on how to make the presentations better, or if there were any suggestions for topics at the next meeting besides Ms. Johnson's request.

Ms. Susan Reynolds asked for discussion of the groundwater monitoring results of the bioremediation area for OU-4B to be a topic for the next meeting. Mr. Cardinale added that only the results from OU-4B for the first quarter in June will be available at the next meeting in September. Ms. Reynolds asked why the second quarter results would not be available, and Mr. Cardinale responded that the information would not be available because of the time it takes to do the data validation.

Mr. Crompton asked if the groundwater report for OU-3 Moffett Trenches could be a topic at the next meeting. Ms. Arnold responded that the report does not include groundwater monitoring this year but it will include the ICs, O&M, and inspections.

Mr. Crompton asked if there would be an update at that time about the TCE contamination found during the excavation. Mr. Callian responded that there would not be an update at the next meeting. Mr. Crompton asked if there is a timeframe for when they will receive an update. Mr. Callian responded that the Draft SI Work Plan has not been produced yet and it is a lengthy process before the fieldwork could take place.

Ms. Norby asked if construction will halt during the process. Mr. Callian responded that he does not know, but there will be development in other areas in that general vicinity. Ms. Norby asked if the SI

would include any other testing. Mr. Callian responded that other testing may be conducted, but first the Navy needs to determine if there is a need to come-back to the site. A remedial investigation may be conducted, followed by a feasibility study, if necessary, which will evaluate remedial alternatives. Each of these steps are multi-year processes as mandated by the CERCLA process.

Mr. Crompton asked if the excavated area has already been transferred. Mr. Callian responded that it has. Mr. Crompton stated that if he would like to have a description of the process that will be followed for this site. Mr. Crompton inquired about what will happen to the property owners. Mr. Callian responded that at any point in the process, the property owners can go forward with the development and take care of the contamination themselves, or they can ask the Navy to come back and implement the CERCLA process which they did.

Mr. Crompton asked if this means that the property owners give up rights to the Navy and stated that he would like an explanation at the next RAB meeting on how this process works. Mr. Callian responded that the City of Tustin has asked the Navy to come back and evaluate the alleged contamination. Mr. Crompton stated that he does not understand how this process works. He asked if this means that the Navy would take control of this area. Mr. Peddada responded that the City of Tustin will give permission to the Navy to do the monitoring and evaluate what the potential contamination levels are, and the results will be documented in a report. Mr. Callian added that an example would be IRP-6. The Navy has been conducting site investigations on and around the Costco property at IRP-6 while gasoline storage tanks were being installed. The Navy's work at the site did not prevent further development on the site. A very high level of coordination is needed in order to do the work and not interfere with any activities already underway on a site.

Mr. Crompton stated that Mr. Callian's explanation was the answer he was looking for and that he was unclear about how the boundaries work when the Navy would be going onto a property that has already been transferred.

Ms. Norby asked Mr. Callian if the Navy would know more about this process by the next RAB meeting in September 2013. Mr. Callian responded that the work plan is still being prepared. Once the work plan is finalized, the fieldwork would be conducted, and the data would be evaluated to determine if further action or no further action is necessary. Mr. Callian added that this is a very long and involved process.

Mr. Schmieder asked if a developer could do the remediation and then send the bill to the Navy in order to expedite the process. Mr. Callian responded that this is not an available option. He added that the CERCLA process, as mandated by Congress, requires public involvement and input for every step of the process.

Ms. Norby asked if the DTSC is still involved with this particular site, and Mr. Callian responded that as a member of the BCT, the DTSC is involved, as well as the RWQCB and the U.S. EPA.

Mr. Callian asked if there were any more questions or comments, and there were none. Mr. Callian closed the meeting by stating that the next RAB meeting will be held on Wednesday, 25, September 2013. He thanked everyone for continued performance and input and for attending the meeting tonight.

The RAB meeting adjourned at 8:35 PM.

## **LIST OF HANDOUTS PROVIDED AT THE MEETING:**

- 22, May 2013 Former MCAS Tustin RAB Meeting Agenda
- Public Notice for the 22, May 2013 RAB Meeting
- Final RAB Meeting Minutes from the 26 September 2012 meeting
- Map of Former MCAS Tustin
- Presentation Slides: “Environmental Program Status, Former Marine Corps Air Station Tustin,” “Former MCAS Tustin OU-4B Moderate Concentration Sites IRP-5S(a), -6, and the Mingled Plumes Area (MPA) Remedial Action - Update,” and “Former MCAS Tustin Five-Year Review Report Addendum Update”
- Environmental Websites
- Points-of-Contact
- Former MCAS Tustin RAB Mission Statement and Operating Procedures
- Former MCAS Tustin RAB Fact Sheet/Membership Application
- Former MCAS Tustin Mailing List Coupon

Copies of the meeting summaries and handouts are available at the IR for former MCAS Tustin located in the Government Publication Section of the University of California, Irvine Main Library in Irvine, California. Library hours are 10:00 AM to 8:00 PM Monday through Thursday; 10:00 AM to 5:00 PM Friday; and 1:00 PM to 5:00 PM on Saturday and Sunday. The library phone number is (949) 824-7362 or (949) 824-6836. Copies of the meeting minutes and handouts are also available at the CERCLA AR File.

Final meeting summaries from previous RAB meetings can be found on the internet at the Navy BRAC Program Management Office (PMO) website.

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## **INTERNET SITES:**

### **Navy and Marine Corps Internet Access:**

BRAC PMO Web Site (includes RAB meeting minutes): <http://www.bracpmo.navy.mil/>

### **Department of Defense – Environmental Cleanup Home Page Web Site:**

Homepage: <http://www.dtic.mil/envirodod/>

### **U.S. EPA:**

Homepage: [www.epa.gov](http://www.epa.gov)

Superfund information: [www.epa.gov/superfund](http://www.epa.gov/superfund)

National Center for Environmental Assessment: [www.epa.gov/ncea](http://www.epa.gov/ncea)

Federal Register Environmental Documents: [www.epa.gov/federalregister](http://www.epa.gov/federalregister)

### **California Agencies:**

California Environmental Protection Agency Homepage: [www.calepa.ca.gov](http://www.calepa.ca.gov)

DTSC: [www.dtsc.ca.gov](http://www.dtsc.ca.gov)

Department of Health Services: [www.cdph.ca.gov](http://www.cdph.ca.gov)

Santa Ana RWQCB: [www.waterboards.ca.gov/santaana](http://www.waterboards.ca.gov/santaana)

### **Additional Websites: Reuse and Redevelopment**

Orange County Great Park: [www.ocgp.org](http://www.ocgp.org)

Great Park Conservancy: [www.orangecountygreatpark.org](http://www.orangecountygreatpark.org)



May 22, 2013

# ENVIRONMENTAL PROGRAM STATUS FORMER MARINE CORPS AIR STATION TUSTIN



**Operable Unit 1A (Installation Restoration Program [IRP] Site 13 South –  
1,2,3-Trichloropropane [TCP] in Groundwater (GW)**

**Carve-Out: CO-5**

**Brief Project History:**

- 2002: Time Critical Removal Action (hydraulic containment)
- 2004: Final Record of Decision (ROD): Selected remedy includes: Hydraulic containment of TCE-impacted GW; Construction, operation, and maintenance of GW extraction and treatment systems; and ICs; Hot-spot soil excavation also conducted to enhance the GW remedy
- 2007: Began Final Remedial Design (RD) and Remedial Action (RA)
- December 2007: Treatment system operational
- July 2008: 1<sup>st</sup> Quarter 2008 GW Monitoring Data Summary (MDS)
- October 2008: 2<sup>nd</sup> Quarter 2008 GW MDS
- December 2008: Final Interim-Remedial Action Completion Report (I-RACR); the main purpose of the I-RACR is to document that the remedy is constructed per the Final RD
- December 2008: 3<sup>rd</sup> Quarter 2008 GW MDS
- July 2009: 1<sup>st</sup> Quarter 2009 GW MDS
- September 2009: Final Long-Term Operation and Maintenance Plan (OMP)
- October 2009: 2<sup>nd</sup> Quarter 2009 GW MDS
- December 2009: 3<sup>rd</sup> Quarter 2009 GW MDS
- February 2010: Final 2008 Annual OU-1A/-1B Performance Evaluation Report (PER)
- December 2009: Obtained U.S. EPA OPS Designation
  - February 2010: Final OPS Report
- July 2010: 1<sup>st</sup> Quarter 2010 GW MDS
- September 2010: 2<sup>nd</sup> Quarter 2010 GW MDS
- November 2010: Final 2009 Annual OU-1A and -1B PER
- December 2010: 3<sup>rd</sup> Quarter 2010 GW MDS
- June 2011: Draft 2010 Annual PER
- September 2011: 2011 Semiannual GW MDS
- November 2011: Final 2010 Annual PER
- December 2011: 3<sup>rd</sup> Quarter 2011 GW MDS
- April 2012: 1<sup>st</sup> Quarter 2012 GW MDS
- August 2012: Draft 2011 Annual PER
- September 2012: Final 2012 Semiannual GW MDS
- December 2012: 3<sup>rd</sup> Quarter 2012 GW MDS
- December 2012: Final 2011 Annual PER

**Next steps:**

- **On-going operation and maintenance (O&M) activities include: biweekly, monthly, & quarterly inspections & effluent sampling; semiannual GW monitoring & reporting; data used to track system performance & annually evaluate & optimize the system**
- **Annual system optimization evaluation included in Annual PERs**
- **June 2013: Draft 2012 Annual PER**



May 22, 2013

# ENVIRONMENTAL PROGRAM STATUS FORMER MARINE CORPS AIR STATION TUSTIN



## Operable Unit 1B (IRP Sites 3 and 12 – Trichloroethene [TCE] in GW)

### Carve-Outs: CO-5 and CO-6

#### Brief Project History:

- 2004: Final ROD: Selected remedy includes:  
Hydraulic containment of TCE-impacted GW; Construction, operation, and maintenance of GW extraction and treatment systems; and ICs; Hot-spot soil excavation also conducted to enhance the GW remedy
- 2007: Began implementing Final RD/RA
- January 2008: Treatment system became operational
- July 2008: 1<sup>st</sup> Quarter 2008 GW MDS
- October 2008: 2<sup>nd</sup> Quarter 2008 GW MDS
- December 2008: Final I-RACR.
- December 2008: 3<sup>rd</sup> Quarter 2008 GW MDS
- July 2009: 1<sup>st</sup> Quarter 2009 GW MDS
- September 2009: Final Long-Term OMP
- October 2009: 2<sup>nd</sup> Quarter 2009 GW MDS
- December 2009: 3<sup>rd</sup> Quarter 2009 GW MDS
- February 2010: Final 2008 Annual OU-1A/-1B PER
- December 2009: Obtained U.S. EPA OPS Designation
- February 2010: Final OPS Report
- Subsequent milestones same as for OU-1A Project History above

### Next steps: Same as for OU-1A above

## Operable Unit 3 (IRP Site 1– Moffett Trenches Landfill)

### Carve-Out: CO-10 – PARCEL TRANSFERRED IN 2006

#### Brief Project History:

- December 2001: Final ROD
- May 2003: Final OMP
- November 2003: Final OPS Report
- March 2004: Obtained U.S. EPA OPS designation
- October 2006: Final First Five-Year Review
- January 2010: Final 2008 Annual GW Monitoring Report
- February 2011: Final 2009 Annual Long-Term Monitoring (LTM) Report
- July 2011: Final 2010 Annual LTM Report
- March 2012: Draft 2011 Annual LTM Report
- September 2012: Final 2011 Annual LTM Report
- **May 2013: Draft 2012 Annual LTM Report**

### Next steps:

- **Continue Annual Inspections (4<sup>th</sup> Qtr 2013) and Reporting**
- **GW and Surface Water Monitoring in Support of the Next Five-Year Review**



May 22, 2013

# ENVIRONMENTAL PROGRAM STATUS FORMER MARINE CORPS AIR STATION TUSTIN



## Operable Unit 4B

**Moderate Concentration Sites (IRP-5S[a], IRP-6, and the Mingled Plumes Area [MPA]) and Low Concentration Sites (IRP-11, IRP-13W, and Miscellaneous Major Spill [MMS-04])**

**Carve-Outs: CO-2, CO-5, and CO-9.**

### **Brief Project History:**

- 2004: Final OU-4 Tech Memo for 2003 shallow GW investigation
- 2005-2006: GW Monitoring
- 2007: IRP-6 and MPA Supplemental Investigation field activities
- September 2008: Final Tech Memo Supplemental Investigation at IRP-6 and MPA
- October 2008: Final Feasibility Study Report
- February 2009: Proposed Plan. Public comment period: February 04-March 06, 2009
- May 2009: Final Work Plan for GW Monitoring at OU-4B Sites
- August 2009: Installed additional wells at the MPA, MMS-04, IRP-11, and IRP-13W in accordance with the June 2009 Final Work Plan
- January 2010: 3<sup>rd</sup> Quarter 2009 Data Summary Report
- January 2010: Final ROD
- April 2010: Replacement Pages for the Final ROD, including signature sheet
- July 2010: Final Pre-Design Pilot Study Work Plan
- July to October 2010: Implemented Pre-RD Pilot Study
- October 2010: Final 2009 Annual GW Monitoring Report
- October 2010: Final 1<sup>st</sup> Quarter 2010 Data Summary Report
- November 2010: Final 2<sup>nd</sup> Quarter 2010 Data Summary Report
- May 2011: Final Pre-RD Pilot Study Report
- May 2011: Final 2010 Annual GW Monitoring Report
- June 2011: Issue Final RACR for MMS-04
- August 2011: Draft Land Use Control (LUC) RD & Long-Term OMP (Low Conc. Sites: IRP-11 & -13W)
- September 2011: Final 1st and 2nd Quarter Data Summary Report
- October 2011: Draft RD/RA Work Plan for Moderate (Mod.) Conc. Sites
- October 2011: Draft Fact Sheet, OU-4B
- March 2012: Final 3rd and 4th Quarter 2011 Data Summary Report
- November 2012: Draft Final RD/RA Work Plan for Mod. Conc. Sites
- November 2012: Final LUC RD & Long-Term OMP (Low Conc. Sites: IRP-11 & -13W)
- December 2012: Final RD/RA Work Plan for Mod. Conc. Sites
- December 2012: Final Fact Sheet for OU-4B Remedial Action
- **January 2013: 1st Annual Monitoring event at Low Conc. Sites**
- **January to March 2013: Completed In-Situ Injections at Mod. Conc. Sites**



May 22, 2013

# ENVIRONMENTAL PROGRAM STATUS FORMER MARINE CORPS AIR STATION TUSTIN



## Next steps:

- **Moderate Concentration Sites IRP-5S(a), -6, and the MPA**  
June 2013: Conduct First Qtrly Post-Injection Progress Monitoring Event  
July 2013: OPS Request  
August 2013: Draft I-RACR  
August 2013: Draft Final LUC RD



May 22, 2013

# ENVIRONMENTAL PROGRAM STATUS FORMER MARINE CORPS AIR STATION TUSTIN



## Final FOST Summary

FOST #1 signed August 29, 2001	Parcels 3, 21, 38, 39 and portions of 40
FOST #2 signed September 28, 2001	Parcels 4-8, 10-12, 14, 25, 26, 30-33, 37, 42 and portions of 40 and 41
FOST #3 signed April 22, 2002	Parcels 23, 29, 34, 35 and 36, and portions of 1, 16, 17, 24, 27, 28, 40 and 41
FOST #4 signed September 26, 2002	Portions of 24 (PS clean area in CO-5)
FOST #5 signed December 17, 2002	COs 8 and 11
FOST #6 signed September 29, 2004	CO-10 and portion of CO-5
FOST #7 signed May 20, 2005	COs 3 and 7 and portion of CO-5
FOST #8 signed February 2006	COs 1 and 4

## Final FOSL Summary

FOSL #2 signed February 28, 2002	COs 1 thru 4
FOSL #3 signed April 26, 2002	COs 5 thru 11

## Acronyms/Abbreviations

<p>AS/SVE – Air Sparge/Soil Vapor Extraction  AST – Aboveground Storage Tank  AOC – Area of Concern  BCT – BRAC Cleanup Team (Navy, U.S. EPA, DTSC, and RWQCB)  Cal/EPA – California Environmental Protection Agency  CO – Carve-Out area  Conc. - Concentration  DCE - Dichloroethene  FOSL – Finding of Suitability to Lease  FOST – Finding of Suitability to Transfer  ICs – Institutional Controls  I-RACR – Interim Remedial Action Complete Report  IRP – Installation Restoration Program  LTM – Long-Term Monitoring  LUC – Land Use Control  MDS – Monitoring Data Summary  MMS – Miscellaneous Major Spill  MNA – Monitored Natural Attenuation  MPA – Mingled Plumes Area  O&amp;M – Operation and Maintenance</p>	<p>OCSD – Orange County Sanitation District  OMP – Operation and Maintenance Plan  OPS – Operating Properly and Successfully  OU – Operable Unit  PCAP – Petroleum Corrective Action Plan  PER – Performance Evaluation Report  PS – Public Sale Parcel RA – Remedial Action  RAP – Remedial Action Plan  RD – Remedial Design  ROD – Record of Decision  RWQCB – California Regional Water Quality Control Board, Santa Ana Region  TCE – Trichloroethene  TCP – Trichloropropane  ug/L – micrograms per liter  U.S. EPA – United States Environmental Protection Agency  UST – Underground Storage Tank  VOC – Volatile Organic Compound  WBZ – Water Bearing Zone</p>
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**Former MCAS Tustin  
OU-4B Moderate Concentration Sites  
IRP-5S(a), -6, and the Mingled Plumes Area (MPA)  
Remedial Action - Update**

**Restoration Advisory Board Meeting  
May 22, 2013**

**Presented by  
Tom Mulder, CEG (AIS-TN&A JV)**



# Presentation Overview



## Background

- **Site locations**
- **Remedy overview**
- **Remedial Design (RD)**

## Update on Remedial Action (RA) field work

- **In situ bioremediation (ISB) injections, January-March 2013**

## Next steps



# Site Locations





# Remedy Overview



**Final Record of Decision (ROD) / Remedial Action Plan (RAP);  
January 2010**

## **Remedial Action Objectives (RAOs):**

- **Protect human health by limiting the use of shallow groundwater containing chemicals of concern (COCs) at concentrations exceeding health-protective levels, and**
- **Reduce concentrations of COCs in shallow groundwater at areas of attainment for OU-4B sites to health-protective levels**

## **Remediation Goals (RGs):**

- **Trichloroethene (TCE) – 5 micrograms per liter ( $\mu\text{g/L}$ )**
- **1,1-Dichloroethene (DCE) – 6  $\mu\text{g/L}$  (only for IRP-6)**



# Remedy Overview



## Selected Remedy

- **In-situ Bioremediation (ISB)**
- **Monitored Natural Attenuation (MNA)**
- **Institutional Controls (ICs)**
- **Five-Year Reviews**



# Remedial Design



## Final RD/RA Work Plan; January 2013

- **Based on results from pilot study injections.**

**Designed to achieve project objectives, including the RAOs and RGs in the shortest possible timeframe that is technically, logistically, and economically feasible**

- **Target key areas with ISB treatment where COC concentrations are not currently decreasing**
- **Transition to MNA to document decreasing / shrinking plumes**



# Remedial Design



## Permeable reactive bio-barriers (PRBB)

- Injections of emulsified vegetable oil (EVO) and *dehalococcoides* (DHC) bacteria – mixed with site groundwater



**ISB injections at Mingled Plumes Area**



# Remedial Action Field Work



## IRP-6

- **100 feet PRBB and 4 grid-area borings**
- **670 gal. EVO**
- **6,519 gal. site groundwater**
- **1.4 liters DHC**

### Legend

- Injection Location, June 2010
- Injection Location, February 2013
- ◆ MNA Monitoring Well (1st WBZ)
- ⊕ Monitoring Well (1st WBZ)
- Monitoring Well (2nd WBZ)
- Moderate Concentration Site
- Direction of GW Flow
- - - Approximate extent of TCE exceeding 5 ug/l
- - - Navy Carve Out (CO) Area
- Key Target Area
- Area of slightly elevated TCE (>20 ug/l)



# Remedial Action Field Work





# Remedial Action Field Work



**ISB injections at IRP-6**



# Remedial Action Field Work



## IRP-6

- **100 feet PRBB and 4 grid-area borings**
- **670 gal. EVO**
- **6,519 gal. site groundwater**
- **1.4 liters DHC**

### Legend

- Injection Location, June 2010
- Injection Location, February 2013
- MNA Monitoring Well (1st WBZ)
- Monitoring Well (1st WBZ)
- Monitoring Well (2nd WBZ)
- Moderate Concentration Site
- Direction of GW Flow
- - - Approximate extent of TCE exceeding 5 ug/l
- - - Navy Carve Out (CO) Area
- Key Target Area
- Area of slightly elevated TCE (>20 ug/l)



## Next Steps



- **Draft Interim Remedial Action Completion Report (I-RACR):  
Summer 2013.**
- **Four quarterly performance groundwater monitoring events**
  - **June 2013, Sept. 2013, Dec. 2013,  
Mar. 2014**
- **Draft Annual Performance Evaluation Report: Summer 2014**



# Abbreviations, Acronyms



- BCT BRAC cleanup team
- BRAC Base Realignment and Closure
- COC chemical of concern
- DCE dichloroethene
- DHC *Dehalococoides*
- EVO emulsified vegetable oil
- GW groundwater
- ICs Institutional Controls
- IRP Installation Restoration Program
- I-RACR Interim RACR
- ISB in situ bioremediation
- LTM long term monitoring
- LUC Land Use Control
- MCAS Marine Corps Air Station
- MMS miscellaneous major spill
- MNA monitored natural attenuation
- MPA Mingled Plumes Area
- NFA no further action
- OU Operable Unit
- PRBB permeable reactive bio-barrier
- RA Remedial Action
- RACR Remedial Action Completion Report
- RAO Remedial Action Objective
- RAWP Remedial Action Work Plan
- RD Remedial Design
- RG Remedial Goal
- ROD Record of Decision
- TCE trichloroethylene
- µg/L micrograms per liter
- WBZ water-bearing zone



# **Former MCAS Tustin Five-Year Review Report Addendum Update**

**Restoration Advisory Board Meeting  
May 22, 2013**

**Presented by  
Mike Wolff, P.G., C.E.G. – ECS, Inc.**



# Presentation Overview



- Background
  - Operable Unit (OU)-1A (Installation Restoration Program [IRP]-13S) and OU-1B South (IRP-3):
    - Vapor Intrusion (VI) Re-evaluation and Summary
    - Protectiveness Statements
    - Issues and Recommendations
  - OU-4B Low Concentration Sites (IRP-11 and -13W):
    - Technical Assessment Summary
    - Protectiveness Statements
- Next Steps
- Acronyms



# Background



- Final Five-Year Review Report (October 2011).
- Final Five-Year Review Addendum (March 2013).

## IRP-13S and -3:

- Updated trichloroethene (TCE) toxicity criteria posted in the United States Environmental Protection Agency (U.S. EPA) Integrated Risk Information System (IRIS) on September 28, 2011.
- Protectiveness statements

## IRP-11 and -13W:

- Conduct CERCLA five-year reviews.
- Protectiveness statements.



# VI Re-evaluation



- Potential cancer risk and non-cancer hazard
  - Residential use scenario
  - Industrial use scenario
- Methodology: Agency-concurred VI model



# VI Summary



## Residential Use Scenario:

- **IRP-13S and -3 Cancer Risk:**
  - Incremental cancer risk results comparable to those evaluated in the Final Five-Year Report using previous TCE toxicity criteria.
  - No results exceeded the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) acceptable risk range of  $10^{-6}$  to  $10^{-4}$ .
- **IRP-13S and -3 Non-cancer Hazard Index (HI):**
  - IRP-13S: HIs did not exceed acceptable threshold of 1.
  - IRP-3: HIs exceeded 1 at two wells.



# VI Summary



## Industrial Use Scenario:

- IRP-13S and -3 Cancer Risk:
  - Incremental cancer risk results comparable to those evaluated in the Final Five-Year Report using previous TCE toxicity criteria.
  - No results exceeded  $10^{-6}$ .
- IRP-13S and -3 Non-cancer Hazard Index (HI):
  - No results exceeded acceptable threshold of 1.



# Protectiveness Statements



- The remedies for IRP-13S and -3 are protective under current site conditions.
- The long-term protectiveness of the remedies for future residential or other sensitive-use scenarios will be addressed by establishing additional institutional controls (ICs) for potential VI risk.



# Issues and Recommendations



## Issues:

- Regulatory agencies have indicated a preference for multiple lines of evidence.
- Two wells at IRP-3 had HIs exceeding the acceptable threshold of 1.

## Recommendations:

- Provide notice of potential VI risk.
- Implement ICs for potential future residential or other sensitive uses.
- Areas requiring ICs (ARICs) will be determined in consultation with regulatory agencies.



# IRP-11 and -13W Technical Assessment Summary



Question A – Are the remedies functioning as intended by the decision documents?

- Based on the data review, site inspections, and interviews, the remedies are functioning as intended.

Question B - Are the exposure assumptions, toxicity data, cleanup goals, and RAOs used at the time of remedy selection still valid?

- VI risk was re-evaluated using updated TCE toxicity criteria.
- No cancer risk results exceeded NCP point of departure of  $10^{-6}$ , and no HI results exceeded NCP acceptable threshold of 1.
- Exposure assumptions, cleanup goals, and RAOs used at the time of remedy selection are still valid.

Question C - Has any other information come to light that could call into question the protectiveness of the remedies?

- No.



## IRP-11 and -13W Protectiveness Statements



- Based on these findings, the remedies at IRP-11 and -13W are being implemented in accordance with the ROD/RAP (DoN 2010) and are protective of human health and the environment.
- MMS-04 has already received a no further action determination, as documented in the Final RACR (AIS-T&N JV 2011a). No further five-year reviews are required.



## Next Steps



- Prepare two Explanations of Significant Differences (ESDs) to document additional ICs for the respective OU-1A and -1B Records of Decision (RODs)
- Prepare amendment to the Land Use Controls Remedial Design (LUC RD) to describe and implement ICs.



# Acronyms



ARIC	area requiring institutional controls
BRAC	Base Realignment and Closure
BCT	BRAC Cleanup Team
Cal/EPA	California Environmental Protection Agency
CEG	Certified Engineering Geologist
DTSC	California Department of Toxic Substances Control
ECS	Enviro Compliance Solutions, Inc.
ESD	explanation of significant differences
IC	institutional control
IRIS	Integrated Risk Information System
IRP	Installation Restoration Program
JE	Johnson & Ettinger (vapor intrusion model)
LUC RD	land use controls remedial design
MCAS	Marine Corps Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OU	operable unit
PG	Professional Geologist
RAB	restoration advisory board
RAP	remedial action plan
ROD	record of decision
RPM	Remedial Project Manager
TCE	trichloroethene
U.S. EPA	United States Environmental Protection Agency
VI	vapor intrusion