



FINAL FORMER MARINE CORPS AIR STATION (MCAS) TUSTIN 98th Restoration Advisory Board (RAB) Meeting Summary May 21, 2014



Meeting Location: Tustin Senior Center, 200 South C Street, Tustin, California

Meeting Date/Time: 21 May 2014/7:00 PM to 8:30 PM

Summary Prepared by: Fabiola A. Hatley, Accord MACTEC 8A Joint Venture (AM8AJV)

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MCAS TUSTIN

SSIC NO. 5090.3.A

Attachments:

Presentation Slides:

- Operable Units (OU)-1A and -1B Installation Restoration Program (IRP) Sites 13S, 12, and 3 Groundwater Remedy Status Update
- OU -4B Remedy Status Update IRP Sites 5S(a), 6, 11, 13W and Mingled Plumes Area (MPA)
- Neighborhood E Site Inspection Update

Attendees: A total of 14 people were in attendance for the Former MCAS Tustin RAB meeting:

Navy: Jim Sullivan, Base Realignment and Closure (BRAC) Environmental Coordinator (BEC) and RAB Co-Chair; Marc P. Smits, Navy Remedial Project Manager (RPM); and Morgan Rogers, Navy RPM.

Regulatory Agencies: Ram Peddada, Department of Toxic Substances Control (DTSC).

RAB Members: Desire' Chandler, RAB Community Co-chair; Mary Lynn Norby; Randy Peebles; and Susan Reynolds.

Other Attendees: Tony Guiang, AMEC; Kaleena Johnson, Environ; Fabiola A. Hatley, Accord Engineering, Inc.; Todd Schmieder, Tait & Associates; Michael Wolff, ECS, Inc., and Dhananjay Rawal, ECS, Inc.

Excused Absences: Content Arnold, BRAC Lead RPM; Louie Cardinale, Navy RPM; Patricia Hannon, Regional Water Quality Control Board (RWQCB); Robert Kopecky, Community Member; Matt West, City of Tustin; and Don Zweifel, RAB Community Member.

WELCOME/INTRODUCTIONS/AGENDA REVIEW:

Mr. Jim Sullivan, BEC and Navy RAB Co-Chair, welcomed everyone to the Former MCAS Tustin 98th RAB meeting and thanked everyone for coming. He noted the Former MCAS Tustin RAB was two meetings away from celebrating the 100th meeting; adding this was a milestone event for the RAB. Mr. Sullivan reminded attendees to sign the Sign-in sheets if they had not already done so.

Mr. Sullivan began by reviewing the meeting agenda and points of contact-. Mr. Ram Peddada, Ms. Patricia Hannon, and Mr. James Ricks were announced as the DTSC, Regional Water Quality Control Board (RWQCB), and United States Environmental Protection Agency (U.S. EPA) representatives, respectively. Mr. Sullivan explained the process by which U.S. EPA

categorizes sites. He explained there are National Priority List (NPL) and non-NPL sites. The U.S. EPA is the lead regulatory agency for NPL sites and the State is the lead regulatory agency for the non-NPL sites. Former MCAS Tustin is categorized as a non-NPL site and therefore, the State is the lead regulatory agency. For the State of California, DTSC is the lead agency at Former MCAS Tustin and U.S. EPA and the RWQCB are supporting agencies. Mr. Peddada noted the U.S. EPA has one statutory requirement at federal sites and that is determining whether a site is operating properly and successfully (OPS).

Mr. Sullivan reviewed the Information Repository (IR) and Administrative Records (AR) general information as well as helpful websites (Navy BRAC PMO, U.S. EPA, California EPA, DTSC, California Department of Public Health, RWQCB, Envirostor and Geotracker) where the public can obtain information on the Navy's environmental cleanup effort.

Mr. Sullivan informed attendees that the next meeting has been tentatively scheduled for Thursday, September 25, 2014 at the Tustin Senior Center, and provided a brief summary of the procedure for reviewing meeting summaries.

ENVIRONMENTAL STATUS UPDATE:

Mr. Sullivan explained that the environmental program at Former MCAS Tustin is at a very mature stage. Over the years, many sites have been transferred and now there are only several left to be transferred. The sites at Former MCAS Tustin are grouped in clusters called Operable Units (OUs), groups of similar sites that have similar restoration schedules. He referenced the map displayed on the poster board and identified the three remaining OUs at Former MCAS Tustin (OU-1, OU-3, and OU-4). Recently, Neighborhood E was added for a site investigation. Mr. Sullivan stated that detailed environmental status updates on some of these program components will be provided in tonight's presentations.

Mr. Sullivan noted that there are plans to create a new up-to-date map by the next RAB meeting. The new map will have a more current aerial photograph and include the last remaining active sites at Former MCAS Tustin. At Mr. Pedadda's request, self-introductions were made from those in attendance.

REGULATORY AGENCY UPDATE:

Mr. Ram Peddada (DTSC)

Mr. Peddada started by making an announcement on behalf of Mr. Ricks from the U.S. EPA that Mr. Ricks will no longer be actively participating in the RAB meetings due to budget cuts, and also because the U.S. EPA is not the lead regulatory agency at Former MCAS Tustin.

He continued by saying that DTSC has reviewed and commented on several documents since the last RAB meeting including documents relating to remedy completion at OU-4B, OU-3 long-term groundwater monitoring, Neighborhood E site inspection, and OU-1A and OU-1B groundwater remedy operations.

Ms. Susan Reynolds (RAB member) asked if the trichloroethene (TCE) action levels at OU-1A and OU-1B were revised to a more conservative level and if this revision was implemented per new U.S. EPA requirements. Mr. Peddada answered yes to both questions adding that these issues are revisited during the Five Year Review of the sites. To clarify, Ms. Desire' Chandler (RAB Community Co-Chair) asked whether the new property owners were responsible for further cleanup of the Site if it was determined, after transfer, that contaminants remain on site based on newly promulgated contaminant levels. With regard to OU-1A and OU-1B, and the potential for vapor intrusion risks, Mr. Morgan Rogers (Navy RPM) explained that the Navy will provide guidance on mitigation of potential vapor intrusion risk in the event that contaminants remain on site; and a guidance document will be prepared for future owners to follow. Ms. Kaleena Johnson (Environ) asked what this document was and whether this document would provide specific requirements for new property owners to follow to demonstrate they are mitigating risk at these sites. Mr. Rogers replied that the document is a Land Use Control (LUC) Remedial Design (RD) Amendment and that this document would provide specific details on what is necessary to demonstrate risk from contaminants left onsite; what type of reporting is necessary; and who the responsible party would be for providing oversight and concurrence. Mr. Sullivan advised the RAB that some of their questions may be answered in the RAB presentation given this evening on OU-1A and OU-1B. Mr. Rogers noted that the OU-1A and OU-1B presentation would focus primarily on groundwater issues and not vapor intrusion.

Mr. Randy Peebles (RAB member) asked if a formal response had been made to the comments from the City of Tustin (City), School District, and the County of Orange on the Draft LUC RD Amendment and Draft Explanation of Significant Differences (ESDs) document for OU-1A and OU-1B and the date of the response. Mr. Rogers answered that a Responses to Comments (RTCs) document, dated May 15, 2014, was prepared and had been mailed out to the regulatory agencies and Matt West with the City of Tustin.

Ms. Johnson expressed concern with different institutional control (IC) requirements being reported for the OU-1A and OU-1B in different documents (Five Year Review and LUC RD). She noted the requirement for ICs should be supported by scientific data and this has not been the case for these sites. Mr. Rogers explained the Navy has provided responses to this issue and recommended Ms. Johnson obtain a copy of the City of Tustin letter and the Navy's RTCs. Mr. Peebles noted there seems to be a disconnect between the effectiveness of ICs in achieving and meeting cleanup goals for different areas of the Site. Mr. Rogers responded that the Navy is taking a conservative approach to protecting human health and the environment by requiring and tailoring ICs to be protective of all potential future scenarios.

Mr. Sullivan introduced the first technical presenter of the night, Mr. Morgan Rogers.

PRESENTATIONS:

Operable Units (OU)-1A and -1B Installation Restoration Program (IRP) Sites 13S, 12, and 3 Groundwater Remedy Status

Mr. Rogers began with a title slide.

Slide 1 - Title slide.

Slide 2 – Presents an overview of the presentation.

Slide 3 – Presents a map showing the locations of OU-1A and OU-1B at Former MCAS Tustin.

Mr. Rogers provided a brief description of the sites at OU-1A and OU-1B including a summary of past activities.

Slide 4 - Presents the remedial action objectives (RAOs).

Mr. Rogers provided a summary of the RAOs for OU-1A and OU-1B.

Slide 5 – Presents a continuation of the RAOs.

Mr. Rogers noted the primary chemicals of concern (COCs) are 1,2,3-trichloropropane (1,2,3-TCP) and TCE at OU-1A, and TCE at OU-1B North and South. The numerical remedial goals (RGs) for the COCs are 0.5 micrograms per liter ($\mu\text{g}/\text{L}$) for 1,2,3-TCP and 5 $\mu\text{g}/\text{L}$ for TCE.

Slide 6 - Presents the remedy selected for OU-1A and OU-1B.

Mr. Rogers explained the selected remedy for OU-1A and OU-1B is hydraulic containment with hot-spot removal. He explained this meant containing the plume or keeping it from expanding outside of the site boundaries by treating the contaminants where the concentration is greatest. The remedy components include groundwater extraction, treatment, and performance monitoring; soil removal to optimize the remedy; ICs; and Five-Year Reviews. The groundwater treatment system for OU-1A/-1B North began in December 7, 2007; and for OU-1B South began in January 2, 2008. The groundwater well network is routinely monitored for COCs, and the treated water is sampled before being sent to Orange County Sanitation District (OCSD) to make sure it meets applicable discharge standards. He finished by saying that impacted soil from all three sites have been removed to reduce or eliminate the contaminant sources in the hotspot areas.

Mr. Rogers introduced Mr. Wolff, who presented the remainder of the presentation.

Slide 7 - Presents a continuation of the remedy selected for OU-1A and OU-1B.

Mr. Wolff explained that extraction conveyance system consists of 21 extraction wells (EWs), of which 15 are in operation, 6 at OU-1A, 3 at OU-1B North, and 6 at OU-1B South. The conveyance system transports the groundwater through a granulated activated carbon treatment system that is equipped with level sensors, pressure gauges, master control and alarm panel, and a communication system.

Slide 8 - Presents a continuation of the remedy selected for OU-1A and OU-1B.

Mr. Wolff presented a map of the OU-1A and OU-1B North system layout.

Mr. Todd Schmieder (Tait & Associates) asked if the electrical lines and electrical conduit boxes are close to the piping network. Mr. Dhananjay Rawal (ECS, Inc) replied they are in the same trench.

Slide 9 - Presents a continuation of the remedy selected for OU-1A and OU-1B.

Mr. Wolff presented a map of the OU-1B South system layout.

Slides 10 and 11 - Presents the operation and maintenance (O&M) components.

Mr. Wolff provided a summary of the O&M activities at OU-1A and OU-1B which include regular inspections, maintenance, and quarterly effluent sampling to verify compliance with OCSD discharge requirements. In addition, semiannual groundwater monitoring is conducted to evaluate capture via hydraulic containment and to track and optimize system performance.

Slide 12 -Presents conclusions documented in the 2013 Draft Annual Performance Evaluation Report. The Slide shows two figures showing the use of the Surfer® groundwater model in determining plume containment and capture in the first water bearing zone (FWBZ) and the second water bearing zone (SWBZ) at OU-1A.

Mr. Wolff explained there were two techniques used to evaluate plume containment and/or capture at OU-1A/-1B; the method using the Surfer® groundwater model and the method by which capture zones are calculated. By using the Surfer® groundwater model, groundwater level measurements from all 148 wells were used to generate a groundwater contour map with gradient vectors. As shown on the figures in Slide 12, he noted the gradient vectors represent the direction of groundwater flow at a particular point in space. Mr. Wolff explained the depression points or points of convergence (where gradient vectors converge) observed by and around the extraction wells in OU-1A are proof that hydraulic containment with hot-spot removal is successfully containing and capturing the plume at the FWBZ and SWBZ.

Slide 13 - Presents a continuation of the conclusions documented in the 2013 Draft Annual Performance Evaluation Report. The Slide shows two figures showing the method by which capture zones are calculated in determining plume containment and capture in the FWBZ and the SWBZ at OU-1A.

Mr. Wolff explained that at OU-1A, each capture zone, represented by the blue parabolas, were calculated using pumping rates, drawdown in the wells, and the groundwater levels in the area. Mr. Wolff explained, a plume surrounded by a parabola meant that the corresponding EW is successfully containing and capturing the plume and an overlap in the parabolas translates to some redundancy, which he noted is favorable. For instance, in the event that an EW breaks down or maintenance work needs to be performed, nearby EWs already contributing to plume containment are able to retain the groundwater hydraulic parameters hence allowing for plume containment to remain. Mr. Wolff explained that the smaller parabolas near the hot spot area are not used in the evaluation, as these are EWs for the purpose of mass removal rather than containing and/or capturing the plume.

Slide 14 - Presents a continuation of the conclusions documented in the 2013 Draft Annual Performance Evaluation Report. The Slide shows one figure demonstrating the use of the Surfer® groundwater model in determining plume containment and capture in the FWBZ at OU-1B North.

Mr. Wolff stated that the OU-1B North plume has changed favorably over time. The Surfer® groundwater model at OU-1B depicts depression points around local EWs. These depression points, he added, are proof that successful plume containment and capture is taking place in OU-1B North.

Slide 15 - Presents a continuation of the conclusions documented in the 2013 Draft Annual Performance Evaluation Report. The Slide shows one figure demonstrating the method by which capture zones are calculated in determining plume containment and capture in the FWBZ at OU-1B North.

Mr. Wolff pointed out an occurrence in OU-1B North, where the individual capture zones calculated (parabolas around EWs) do not extend all the way to and around the tip of the plume. However, the Surfer® model (Slide 14) showed that these capture zones do interact synergistically in the containment/capturing of the plume.

Slide 16 - Presents a continuation of the conclusions documented in the 2013 Draft Annual Performance Evaluation Report.

Mr. Wolff showed plume containment results at OU-1B South FWBZ and SWBZ using the Surfer® groundwater model.

Slide 17 - Presents a continuation of the conclusions documented in the 2013 Draft Annual Performance Evaluation Report.

Mr. Wolff explained that as in OU-1B North, results of the calculated capture zones method and the Surfer® groundwater model at OU-1B South showed that that a synergistic effect is aiding in plume containment at the FWBZ and SWBZ. This is supported by the results of the Surfer® groundwater model presented in Slide 16.

Slide 18 - Lists the next steps and schedule.

Mr. Wolff provided a summary of scheduled field activities and documentation for OU-1A and OU-1B.

To augment the earlier discussion on ICs, Mr. Wolff explained that the plumes at OU-1A and OU-1B are vapor sources that have the potential to contribute to vapor intrusion of structures. Further, the quicker the groundwater remedy is optimized, the less vapor intrusion becomes an issue during future planning.

Slide 19 - Presents a list of acronyms.

Mr. Schmieder asked if there was a way to determine what the actual reduction of contaminants is, or how the contaminants have changed with the passing of time, and if that information can be included in the monitoring reports. Mr. Wolff replied that the 2013 report, as with previous reports, includes a trend evaluation and statistical analysis for every key monitoring well. Data acquired from the beginning of remediation is included in the trend study, and the results are depicted in graphs and charts. Mr. Schmieder asked if it would be possible to have a

presentation on this topic. Mr. Wolff said it would be up to the Navy. Mr. Sullivan agreed to provide trend data for the next RAB meeting, and thanked Mr. Wolff for his presentation.

Ms. Chandler asked about the fate of the carbon used in the treatment of groundwater. Mr. Wolff replied that used carbon is regenerated.

Mr. Sullivan announced that Louie Cardinale was the Navy RPM for OU-4B, but in his absence, he will provide the status update.

Operable Units (OU)-4B Remedy Status Update Installation Restoration Program (IRP) Sites 5S(a), 6, 11, 13W and Mingled Plumes Area (MPA)

Mr. Sullivan began with a title slide.

Slide 1 - Title slide.

Slide 2 - Presents an overview of the presentation.

Slide 3 - Presents a map of OU-4B.

Mr. Sullivan explained that OU-4B is subdivided into what are referred to as moderate concentration sites (where VOCs in groundwater are greater than 20 µg/L) and low concentration sites (where VOCs in groundwater are less than 20 µg/L). The moderate concentration sites are IRP-5S(a), IRP-6 and MPA and the low concentration sites are IRP Site 11 and 13W.

Slide 4 - Presents the remedy overview.

Mr. Sullivan noted the Record of Decision (ROD) and Remedial Action Plan (RAP) were finalized in January 2010. The RAOs were listed in those documents as follows: protect human health by limiting the use of shallow groundwater containing COCs at concentrations exceeding health-protective levels, and reduce COC concentrations in shallow groundwater to health-protective levels. The RGs were set at 5 µg/L for TCE, and 6 µg/L for 1,1-dichloroethene (1,1-DCE).

Slide 5 - Presents a continuation of the remedy overview.

Mr. Sullivan explained the selected remedy at the moderate concentration sites is in-situ bioremediation (ISB) accompanied by monitored natural attenuation (MNA), ICs, and Five-Year Reviews. The selected remedy at the low concentration sites are ICs and Five-Year Reviews.

Slide 6 - Presents the remedial design at the moderate concentration sites.

Mr. Sullivan explained the Remedial Design/Remedial Action (RD/RA) Work Plan was completed in January 2013 and was based on the results from pilot study injections. The plan is to target key areas with ISB treatment where COCs do not show a decreasing trend and then transition into MNA.

Slide 7 – Presents a continuation of the remedial design at the moderate concentration sites. The slide shows a map of the groundwater injection and monitoring well network at IRP Site 6.

Mr. Sullivan explained full scale remediation (injections into groundwater) was started in February 2013. Injection locations were selected in such a way that they formed a transport barrier or permeable reactive bio-barrier (PRBB) for COCs in groundwater.

Slide 8 – Presents the remedial design at the low concentration sites.

Mr. Sullivan explained the remedial design was completed in 2012. ICs and groundwater monitoring is required at IRP- Site 11 and 13W per the remedial design.

Slide 9 – Lists the next steps and schedule.

Mr. Sullivan provided a list of documentation scheduled for submittal for both the low and moderate concentration sites including on-going performance monitoring at OU-4B. He also noted that the next Five-Year Review Report is scheduled for submittal in the Fall of 2016.

Mr. Sullivan noted there are some areas at OU-4B previously transferred to the City that require some additional ICs and he explained the Navy would collaborate with DTSC in implementing these ICs. Further, he explained that the Navy may implement ICs within property owned by the Navy, but for those areas already transferred, the Navy has to work through DTSC to implement any additional ICs.

Mr. Schmieder asked if there are any results available from the past years to show how ISB is working at OU-4B. Mr. Sullivan stated that there are performance monitoring reports available from previous years which show groundwater results. Mr. Schmieder noted it appears the same information and data is being reported in each of these RAB presentations and fails to convey the efficacy of the remedy and more important, how cleanup is progressing over time. Mr. Sullivan acknowledged his concern and replied this was something that would be addressed in future presentations.

Mr. Sullivan introduced Mr. Marc P. Smits (Navy RPM) to present the Neighborhood E Site Inspection Update. Mr. Smits gave a brief overview of his background and experience with Former MCAS Tustin team and then proceeded with the presentation.

Neighborhood E Site Inspection (SI) Update

Mr. Smits began with a title slide.

Slide 1 – Title slide.

Slide 2 – Presents an overview of the presentation.

Slide 3 – Presents a map of Neighborhood E.

Mr. Smits clarified for the audience that this investigation focuses on a portion of Neighborhood E as represented by the area surrounded by the red boundary shown on the map.

Slide 4 – Presents background information.

Mr. Smits presented information on the Site, including dates of correspondence between the City and the Navy concerning detections of TCE from groundwater grab samples in Neighborhood E. In response to the City's request for the Navy to further investigate the TCE contamination at the site, the Navy conducted a review of documents and determined that additional groundwater investigation was warranted.

Slide 5 – Presents a summary of 2009-2010 groundwater grab samples.

Mr. Smits presented a site map showing the areas where excavations occurred in Neighborhood E during 2009 and 2010, including areas where concentrations of TCE and its degradation products (e.g., cis-1,2-DCE) were detected. He explained that there were 11 locations where groundwater grab samples were collected and noted that 8 of the 11 groundwater grab samples had results for TCE and its degradation products that were either non-detect or below their respective maximum contaminant levels (MCLs). Mr. Smits added that there were only three locations in Neighborhood E where TCE or cis-1,2-DCE concentrations in groundwater exceeded MCLs. He noted that these areas will be the focus of the SI.

Slides 6 and 7 – Presents the conceptual site model.

Mr. Smits presented the CSM developed for the Site. He acknowledged that groundwater grab samples collected at the site from 2008 to 2010 reportedly had TCE concentrations exceeding MCLs; however, since 2010, site conditions may have changed as a result of dewatering and natural attenuation through evaporation. He added that from 2008 to 2010, the amount of dewatering, or the practice of pumping water from the area, was on the order of 2,000,000 gallons and was necessitated by groundwater seeping into the excavations. The Navy would like to assess the current conditions at the site to determine whether these changes have affected the concentrations of TCE previously detected in the groundwater grab samples.

Mr. Smits added that by knowing what had previously occurred at the site, the Navy is able to draw conclusions about the current site conditions, including the presence of residual contamination (TCE or degradation products) in the first water bearing zone (FWBZ). However, based on the activities that have occurred on site since 2010, a potential exists that the detected concentrations exceeding MCLs may no longer be present at the site.

Mr. Smits re-introduced Mr. Wolff to finish the presentation.

Slide 8- Presents the technical approach.

Mr. Wolff noted that site topography has changed since 2010 hence the first steps will involve exploratory drilling, careful logging of encountered features, and verification of where FWBZ occurs. The wells will then be designed to be screened to that FWBZ depth. Finally, quarterly groundwater sampling will be conducted in order to achieve repeatable, defensible data.

Slide 9 – Presents the summary of 2009-2010 groundwater grab samples on a map.

Mr. Wolff emphasized that the technical approach presented herein is a first step. The data collected is being used to evaluate current site conditions and determine if there something here that requires further action.

Slide 10 – Presents the decision rules.

Mr. Wolff presented the decision rules that were prepared pursuant to the CERCLA process. The decision to use drinking water MCLs as an evaluation criterion was taken based on the fact that MCLs are risk-based criteria, and are used as applicable or relevant and appropriate requirements (ARARs).

Slide 11 – Presents the timeline for finalizing the Site Inspection (SI) Work Plan.

Mr. Wolff noted the final SI Work Plan and response to comments will be issued on June 9, 2014. Field work is expected to commence on June 16, 2014.

Slide 12 - Presents a list of acronyms.

Ms. Mary Lynn Norby (RAB member) asked why the Navy was only concerned with investigating the FWBZ and not the SWBZ. Mr. Wolff explained that there is no data to suggest that the SWBZ has a problem. At this moment, only the very top part of the FWBZ, that which was exposed due to excavation has been shown to potentially be compromised. Once the investigation at the FWBZ has concluded and the true nature of the FWBZ is determined, there may be reasons to investigate the SWBZ. Ms. Norby asked if we had enough information to determine there are actually two water bearing zones at the Site and adjacent sites. Mr. Wolff replied there is supporting information to support that there are two separate water-bearing zones separated by an aquitard.

Ms. Chandler asked if development of Neighborhood E was put on hold until the risk is assessed. Mr. Sullivan said that the City has been involved in the review and comment of documents, and has not expressed issues or concerns relating to the development of Neighborhood E. Mr. Wolff added that low levels of TCE in groundwater does not warrant delay of development. He continued by saying that in his experience, sites where COC concentrations were far more elevated than were encountered at Neighborhood E have not delayed development plans.

Ms. Chandler asked about the fate of the soil that was removed over the last few years. She asked if contaminants remained in the soil or if they were aerated once the soil was excavated and moved around. Mr. Wolff said that the soil was disposed of to an off site facility after it had been excavated.

Ms. Norby asked if an OU had been on the site before it was transferred and subsequently called Neighborhood E. Mr. Sullivan replied Neighborhood E was not a CERCLA site. He continued by saying that this is the first step in the process of determining if there is an issue of concern on the site. Depending on the outcome of the inspection, the Navy, in collaboration with the regulatory agencies, may conclude that there is not an issue and recommend no further action. If the opposite is true and an issue is identified, then the Navy would proceed to the

remedial investigation phase. Mr. Wolff noted that areas of concern were previously identified and investigated in this area, but regulatory closure was sought and granted.

Ms. Reynolds asked if the SI would incorporate two quarters of proposed monitoring. Mr. Smits confirmed that the results of the first two quarters will be included in the SI Report. If it is identified that groundwater has been impacted, the Navy will move forward with further evaluation and monitoring of the Site.

Ms. Norby asked if construction could or could not continue at this point. Mr. Sullivan said that the Navy has been working closely with the City, and that during that time, the Navy has not been made aware of any problems with the development schedule.

FUTURE TOPICS/SCHEDULE NEXT RAB MEETING AND SUCOMITTEE MEETING/MEETING EVALUATION AND CLOSING

Mr. Sullivan asked the RAB and meeting attendees for requests for future topics for the next RAB meeting. He noted some requests made earlier during the meeting including providing a more up-to-date map of sites at Former MCAS Tustin, presenting more numerical data to support the progress of groundwater cleanup at Former MCAS Tustin sites, and providing further update on LUC RD Amendment and ESDs for OU-1A and OU-1B. Ms. Chandler asked the RAB and the Navy to consider presenting Mr. Don Zweifel (former RAB Community Co-Chairman) a notice of appreciation for his years of dedication and service to the RAB. Mr. Sullivan agreed and said he would work with Ms. Chandler on this action item.

Mr. Sullivan stated that Thursday, September 25, 2014 had been tentatively identified as the next meeting date. He requested feedback from the RAB on whether this date was feasible, adding that RABs were typically held on Wednesdays. He said that the proposed date of September 25, 2014 is not fixed, and may be changed if needed, but setting a date tonight will give the RAB co-chairs a date for planning. Ms. Chandler stated that she would like to have a meeting on a Thursday to see if that works better for more RAB members. Mr. Sullivan concurred and will update the website to show that the next RAB meeting is tentatively scheduled for September 25, 2014. There were no objections from the RAB members to keeping the Thursday date. Mr. Peebles asked for the meeting to coincide with the submittal of the 2013 Annual Groundwater Monitoring Report for OU-1A and OU-1B.

Mr. Pedadda asked for information on the work being performed at Hangar 1. Mr. Sullivan said that the current work at Hangar 1 is not part of the environmental program hence; he had no presentation to provide. He stated that the Navy is doing a stabilization of the roof structure.

Mr. Peebles asked for a timeline of the environmental program at Former MCAS Tustin. Mr. Sullivan answered that a timeline for the base is difficult to project, but that they could provide a timeline by the next meeting that shows the steps left until transfer is likely.

Mr. Sullivan concluded by stating that the meeting topics are not limited to the topics discussed at the meeting. He urged members to forward any meeting topics that come to mind after tonight. Either Ms. Chandler or he may be contacted regarding future meeting topics.

Ms. Chandler expressed interest in having a site walk. Mr. Sullivan said that depending on the phase of the environmental program a site walk may prove helpful. However, at sites with mature environmental programs, there is not much to see in the field when compared to earlier years. A site walk of Former MCAS Tustin is an option that can be considered if there is interest.

Ms. Norby asked if any documents will be issued before September 2014 that could be of interest to the RAB. Mr. Sullivan referred Ms. Norby to Ms. Chandler adding that all documents forwarded to the Agencies were also forwarded to Ms. Chandler. Mr. Sullivan offered to put a list together of documents that will be issued in the time between now and the next RAB meeting and distribute to all the members.

Mr. Sullivan thanked everyone for attending the 98th Former MCAS Tustin RAB meeting. The RAB meeting adjourned at 8:48 PM.

LIST OF HANDOUTS PROVIDED AT THE MEETING:

- 21 May 2014 Former MCAS Tustin RAB Meeting Agenda
- Presentation Slides: “Operable Units (OU)-1A and -1B Installation Restoration Program (IRP) Sites 13S, 12, and 3 Groundwater Remedy Status Update”, “OU-4B Remedy Status Update”, and “Neighborhood E Site Inspection Update”.
- May 2013 Mailers containing: Public Notice for the 21 May 2014 RAB Meeting, 21 May 2014 Former MCAS Tustin RAB Meeting Agenda, Final RAB Meeting Summary from the 25 September 2013 meeting, Former Marine Corps Air Station Tustin Environmental Program Status, and presentation slides titled, “Operable Units (OU)-1A and -1B Installation Restoration Program (IRP) Sites 13S, 12, and 3 Groundwater Remedy Status 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, Ayala Science 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 summaries and handouts are also available at the CERCLA AR File.

Final Summaries from previous RAB meetings can be found on the internet at the Navy BRAC Program Management Office (PMO) website: www.bracpmo.navy.mil.

INTERNET SITES:

Navy and Marine Corps Internet Access:

BRAC PMO Web Site (includes RAB meeting summary): <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

Superfund information: www.epa.gov/superfund

National Center for Environmental Assessment: www.epa.gov/ncea

Federal Register Environmental Documents: www.epa.gov/federalregister

California Agencies:

California Environmental Protection Agency Homepage: www.calepa.ca.gov

DTSC: www.dtsc.ca.gov

Department of Health Services: www.cdph.ca.gov

Santa Ana RWQCB: www.waterboards.ca.gov/santaana

Additional Websites: Reuse and Redevelopment

City of Tustin: www.tustinlegacy.com



**Operable Units (OU) -1A and -1B
Installation Restoration Program
(IRP) Sites 13S, 12, and 3
Groundwater Remedy Status Update
Former Marine Corps Air Station Tustin**

Restoration Advisory Board (RAB) Meeting

Morgan Rogers, PE, Navy Remedial Project Manager
Michael Wolff, PG, CEG – Enviro Compliance Solutions (ECS), Inc.

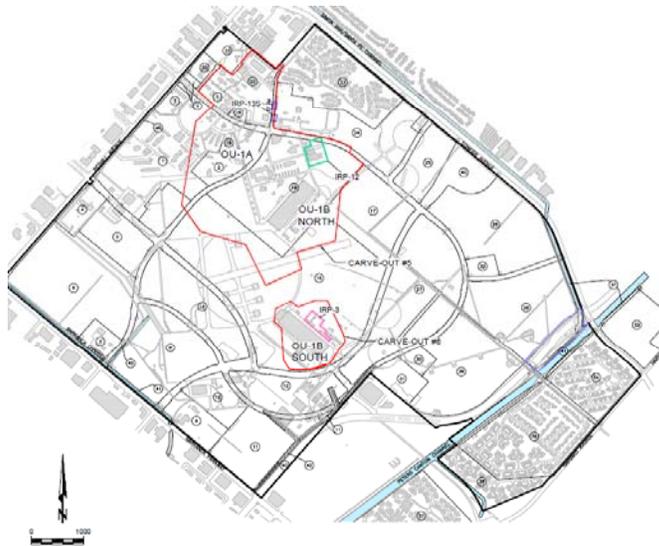
5/21/2014

Presentation Overview



- **Site Locations**
- **Remedial Action Objectives (RAOs)**
- **Remedy**
- **Operation and Maintenance (O&M)**
- **2013 Draft Annual Performance Monitoring Report**
 - **Capture Zone Analysis**
- **Next Steps / Schedule**
- **Acronyms**

Location



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Remedial Action Objectives (RAOs)



- Reduce concentrations of volatile organic compounds (VOCs) in groundwater to levels consistent with remediation goals (RGs), or until the plumes have stabilized, and prevent or limit VOC migration beyond the current plume boundaries.
- Protect human health by preventing extraction of VOC-impacted shallow groundwater for domestic use until RGs are achieved.
- Protect ecological receptors in Peters Canyon Channel and Barranca Channel by preventing the off-station migration of groundwater that contains VOCs at concentrations exceeding site RGs.
- Implement appropriate remedial actions as necessary to facilitate the transfer and reuse of the properties.

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Primary Chemicals of Concern (COCs)

OU-1A (IRP-13S)

- 1,2,3-trichloropropane (TCP)
- Trichloroethene (TCE)

OU-1B North (IRP-12)

- TCE

OU-1B South (IRP-3)

- TCE

Remediation Goals (RGs):

- 1,2,3-TCP = 0.5 micrograms per liter ($\mu\text{g/L}$)
- TCE = 5 $\mu\text{g/L}$



Hydraulic Containment with Hot-Spot Removal Components

- Groundwater extraction, treatment, and performance monitoring systems
- Soil removal to optimize the remedy
- Institutional Controls (ICs)
- Five-Year Reviews

Remedial action started:

- OU-1A/-1B North: December 7, 2007
- OU-1B South: January 2, 2008



Remediation System Components:

➤ **Extraction Systems**

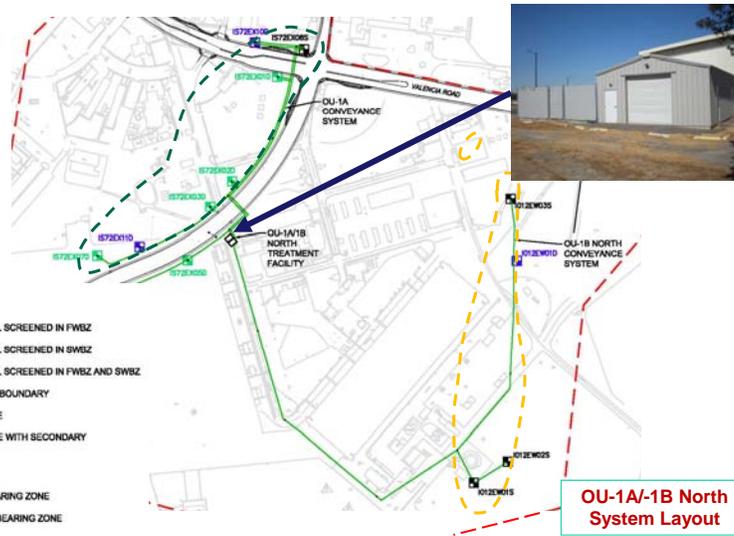
- 21 extraction wells (EWs) (15 operating)
 - 9 @ OU-1A (6 operating)
 - 4 @ OU-1B North (3 operating)
 - 8 @ OU-1B South (6 operating)

➤ **Conveyance Systems**

- High-density polyethylene piping and underground junction boxes

➤ **Treatment systems**

- Process equipment: holding tank, feed pump, bag filters, and granulated activated carbon (GAC) vessels
- Control equipment: level sensors, pressure gauges, master control and alarm panel, and communication system



Remedy (cont.)

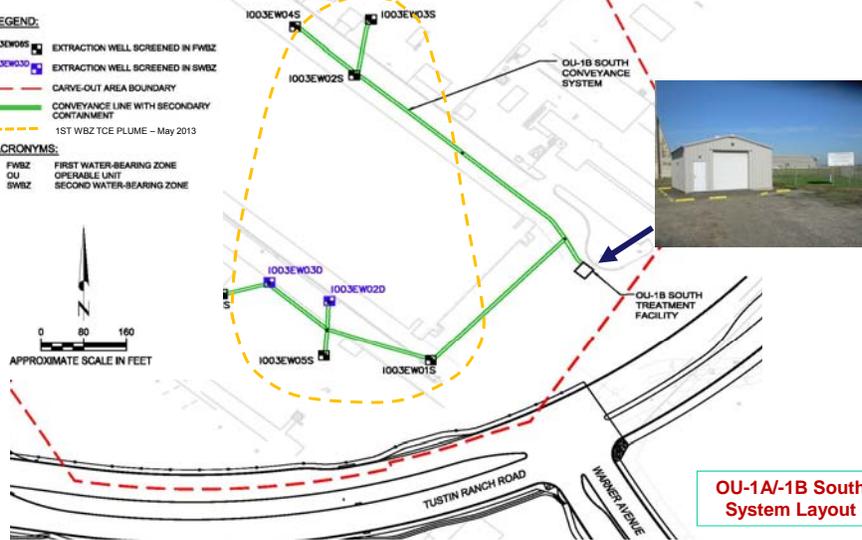
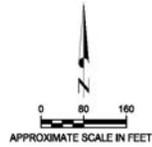


LEGEND:

- 1003EW045 ■ EXTRACTION WELL SCREENED IN FWBZ
- 1003EW030 ■ EXTRACTION WELL SCREENED IN SWBZ
- CARVE-OUT AREA BOUNDARY
- CONVEYANCE LINE WITH SECONDARY CONTAINMENT
- 1ST WBZ TCE PLUME -- May 2013

ACRONYMS:

- FWBZ FIRST WATER-BEARING ZONE
- OU OPERABLE UNIT
- SWBZ SECOND WATER-BEARING ZONE



OU-1A/1B South System Layout

Operation and Maintenance (O&M)



Regular Inspections and Maintenance of Remedial Components:

- **Biweekly**
- **Monthly**
- **Quarterly:**
 - Effluent sampling to verify compliance with Orange County Sanitation District (OCSD) discharge requirements



Semiannual Groundwater Monitoring:

- Water level measurements (148 wells) to track groundwater flow directions
- Groundwater sampling (36 wells) to track plumes
- Groundwater sampling at 15 EWs to track system performance

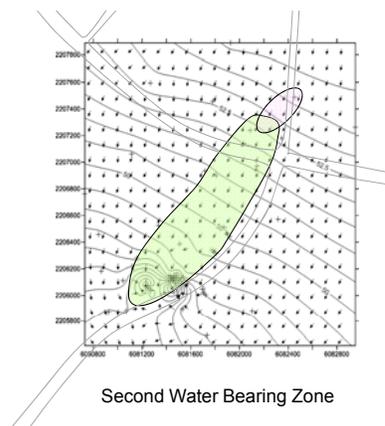
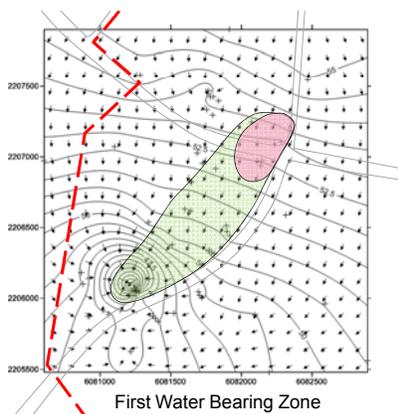
Data are used to:

- Evaluate plume capture
- Optimize the extraction systems and monitoring well network

2013 Draft Annual Performance Evaluation Report



OU-1A CAPTURE ANALYSIS: Surfer® Model



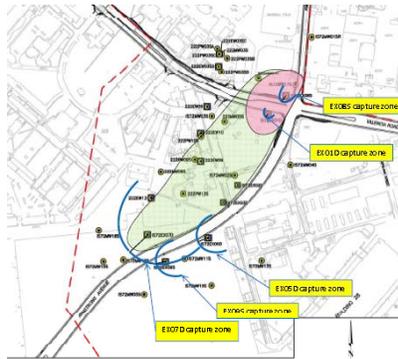
LEGEND:

- Carve-out boundary
- TCE Plume
- 1,2,3-TCP Plume
- Groundwater elevation contour (feet MSL)
- Gradient vector

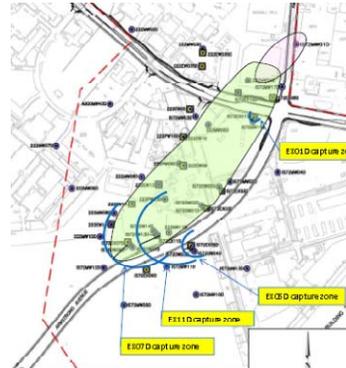
2013 Draft Annual Performance Evaluation Report



OU-1A CAPTURE ANALYSIS: Calculated capture Zones



First Water Bearing Zone



Second Water Bearing Zone

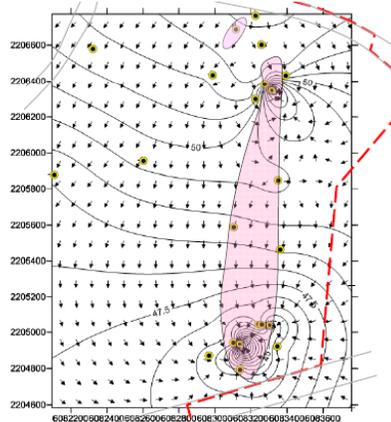
LEGEND:

- Carve-out boundary
- █ TCE Plume
- █ 1,2,3-TCP Plume
- - - Groundwater elevation contour (feet MSL)
- Gradient vector

2013 Draft Annual Performance Evaluation Report



OU-1B North CAPTURE ANALYSIS: Surfer® Model



First Water Bearing Zone

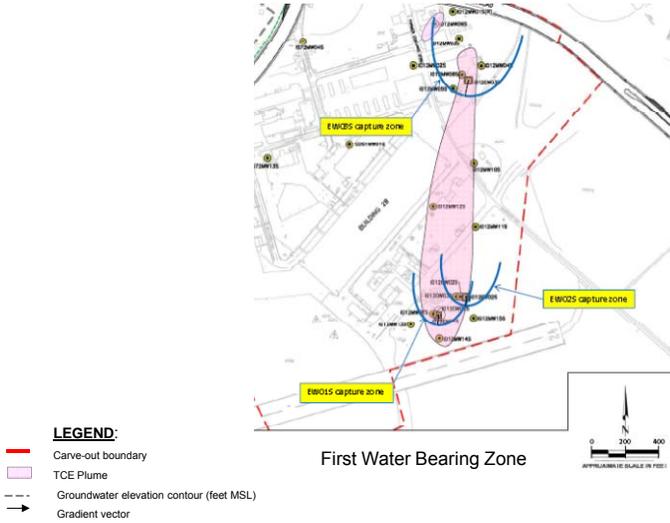
LEGEND:

- Carve-out boundary
- █ TCE Plume
- █ 1,2,3-TCP Plume
- - - Groundwater elevation contour (feet MSL)
- Gradient vector

2013 Draft Annual Performance Evaluation Report



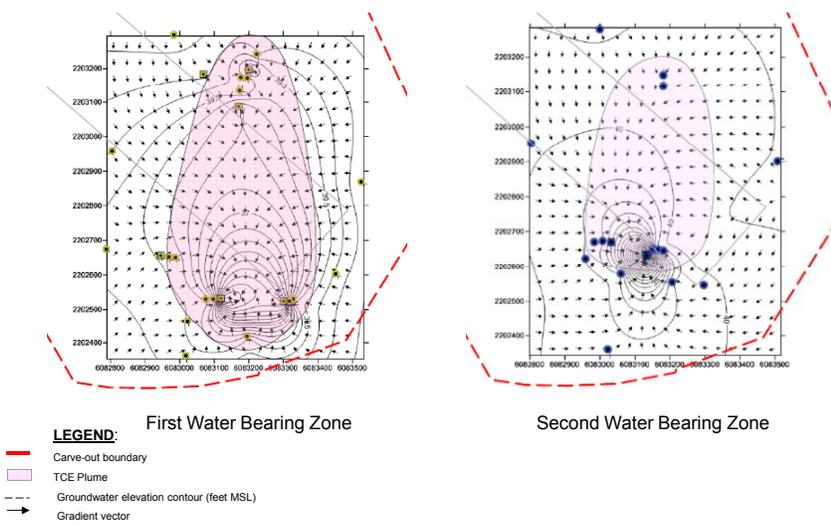
OU-1B North CAPTURE ANALYSIS: Calculated Capture Zones



2013 Draft Annual Performance Evaluation Report

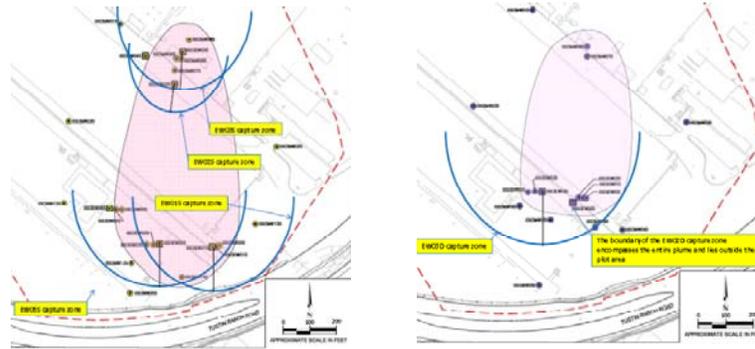


OU-1B South CAPTURE ANALYSIS: Surfer® Model





OU-1B South CAPTURE ANALYSIS: Calculated Capture Zones



LEGEND:

- Carve-out boundary
- TCE Plume
- Groundwater elevation contour (feet MSL)
- Gradient vector

Next Steps



- **Continue biweekly, monthly, and quarterly Operation and Maintenance (O&M) Inspections**
- **Quarterly effluent sampling for OCSD discharge requirements**
- **Semiannual and annual groundwater monitoring and reporting**
- **Annual plume capture and optimization evaluations**
- **Schedule:**
- **Draft 2013 Annual Groundwater Monitoring Report– May 29, 2014**

Acronyms



µg/L	micrograms per liter
BCT	BRAC cleanup team
BRAC	base realignment and closure
CEG	certified engineering geologist
DTSC	California Department of Toxic Substances Control
ECS	Enviro Compliance Solutions, Inc.
EW	Extraction Well
GAC	Granular Activated Carbon
IC	Institutional Control
IRP	Installation Restoration Program
MCAS	Marine Corps Air Station
NAVFAC	Naval Facilities Engineering Command Southwest
NFA	no further action
PG	professional geologist
RG	remediation goal
RPM	Remedial Project Manager
RWQCB	California Regional Water Quality Control Board, Santa Ana Region
TCE	trichloroethene
TCP	trichloropropane
VOC	volatile organic compound
WBZ	water-bearing zone

Questions?



OU-4B Remedy Status Update

Installation Restoration Program (IRP)

Sites 5S(a), 6, 11, 13W and Mingled Plumes Area (MPA)

Former Marine Corps Air Station Tustin

BRAC Cleanup Team (BCT) Meeting
Restoration Advisory Board (RAB) Meeting
James Sullivan, BRAC Environmental Coordinator

5/21/2014

Presentation Overview



Background

- **Site locations**
- **Remedy overview**
- **Remedial Design (RD) (Sites 5S(a), 6 and MPA)**
- **Remedy Implementation (Sites 11 and 13W)**

Update on Remedial Action (RA) field work

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

Next steps

Site Locations



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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)**

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Remedy Overview (cont.)



Moderate Concentration Sites (IRP Sites 5S(a), 6 and Mingled Plumes Area [MPA])

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

Low Concentration Sites (IRP Sites 11 and 13W)

- ICs
- Five-Year Reviews

Remedial Design Moderate Concentration Sites



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

Remedial Action Field Work Moderate Concentration Sites



IRP Site 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)

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Remedial Design Low Concentration Sites



Final Land Use Remedial Design and Long-Term Monitoring/Operation and Maintenance Plan – November 2012

- Implemented Groundwater Remedy – ICs
 - Groundwater Monitoring to assess concentrations of COCs and evaluate progress toward RAOs

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Next Steps



Moderate Concentration Sites

- **Ongoing Groundwater Performance Monitoring**
 - Begins May 27, 2014
- **Draft Final Land Use Controls Remedial Design (LUC RD)**
 - June 17, 2014
- **Draft Annual Performance Evaluation Report**
 - June 19, 2014
- **Final Interim Remedial Action Completion Report (I-RACR)**
 - August 7, 2014
- **Memo to File to Document Additional ICs – August 2014**

Low Concentration Sites

- **Ongoing Groundwater Monitoring – Next Event October 2014**
- **Final 2013 Annual IC Compliance Report – August 28, 2014**



Neighborhood E Site Inspection Update Former Marine Corps Air Station Tustin

Restoration Advisory Board (RAB) Meeting
Marc Smits, Navy Remedial Project Manager
Michael Wolff, PG, CEG – ECS, Inc.

5/21/2014

Presentation Overview



- Location
- Background
- Conceptual Site Model
- Technical Approach
- Decision Rules
- Timeline for Finalizing Site Inspection Work Plan
- Acronyms

Location



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Background



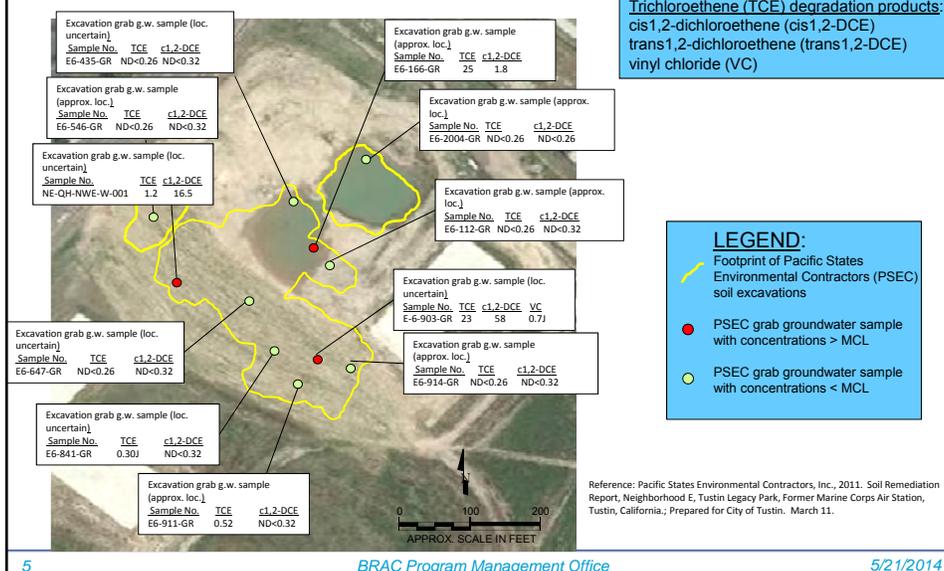
- Navy received a letter on January 19, 2012 from City of Tustin concerning detections of trichlorethene (TCE) in groundwater in Neighborhood E
- The letter requested that the Navy “return” to the Neighborhood E area to investigate and if necessary, conduct remediation
- Based on Navy’s review of documents related to Neighborhood E, the Navy determined that an additional groundwater investigation was warranted
- Conducting a Site Inspection (SI) at Neighborhood E under CERCLA

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Summary of 2009-2010 Groundwater Grab Samples



Conceptual Site Model



- Groundwater grab samples from 2008 – 2010 collected by developer's consultant had TCE with reported concentrations exceeding drinking water maximum contaminant level (MCLs)
- Site conditions may have changed since previous groundwater grab sample results indicated the presence of TCE and associated degradation products
- The following activities may have affected the groundwater conditions in the area:
 - Active dewatering during excavations (over 2 million gallons total)
 - Since 2010, a portion of excavated area has remained open, allowing groundwater seepage to occur
 - Continuous evaporation of accumulating groundwater in open excavations has occurred from 2010 to present

Conceptual Site Model (cont.)



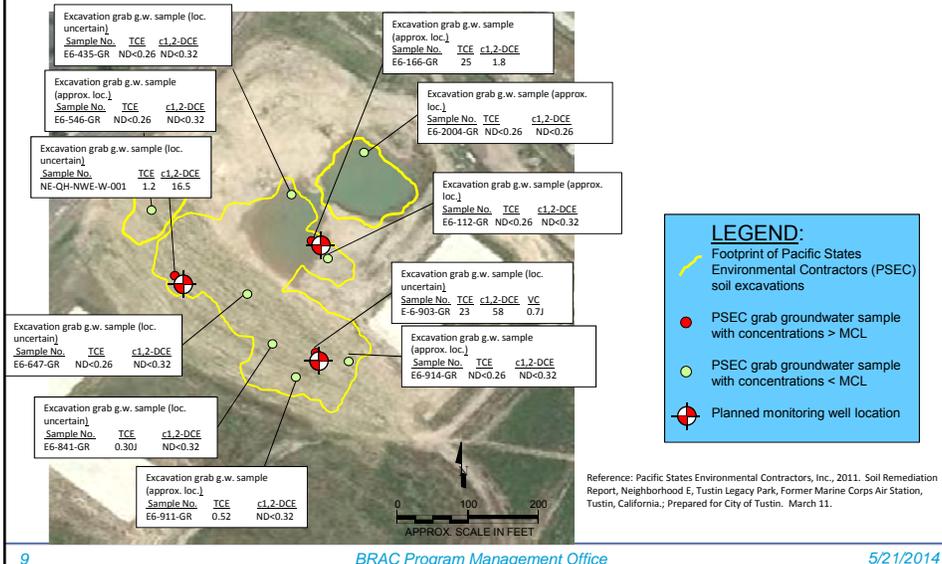
- May be residual contamination of the First Water-Bearing Zone (FWBZ) of groundwater
- TCE and/or degradation products may be reported within the general area of the previous excavations
- Concentrations exceeding drinking water MCLs may no longer be present
- Monitoring results will provide valuable information regarding the current conditions of the FWBZ

Technical Approach



- Groundwater samples will be collected from three (3) monitoring well locations
- Samples will be analyzed for TCE and degradation products, total petroleum hydrocarbons, benzene, toluene, ethylbenzene, xylene, and naphthalene
- Quarterly groundwater sampling will be conducted
- Groundwater level measurements will be conducted to enable determination of the groundwater flow direction

Summary of 2009-2010 Groundwater Grab Samples



Decision Rules



1. If none of the sampling results are reported at concentrations exceeding drinking water MCLs in both of the first two quarterly sampling rounds, no further evaluation will be recommended under CERCLA.
2. If sampling results are reported at concentrations exceeding drinking water MCLs in either of the first two quarterly sampling rounds, further evaluation under CERCLA will be recommended.

Timeline for Finalizing Site Inspection Work Plan



- Issue Final SI Work Plan – June 9, 2014
- Begin Fieldwork – June 16, 2014

Acronyms



μg/L	micrograms per liter
BCT	BRAC cleanup team
BRAC	base realignment and closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEG	certified engineering geologist
cis1,2-DCE	cis1,2-dichloroethene
ECS	Enviro Compliance Solutions, Inc.
MCAS	Marine Corps Air Station
MCL	Maximum Contaminant Level in drinking water
NAVFAC	Naval Facilities Engineering Command Southwest
PG	professional geologist
PSEC	Pacific States Environmental Contractors, Inc.
RPM	remedial project manager
SI	Site Inspection
TCE	trichloroethylene
trans1,2-DCE	trans1,2-dichloroethene
VC	vinyl chloride
WBZ	water-bearing zone

Questions?

